

# United Kingdom Atomic Energy Authority Annual Report and Accounts 2011/12



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Authority

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**CCFE**  
CULHAM CENTRE FOR  
FUSION ENERGY

United Kingdom Atomic Energy Authority  
**Annual Report and Accounts**  
2011/12

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# Chairman's Statement

## Professor Roger Cashmore

The UK Atomic Energy Authority (the Authority) manages the UK fusion programme at the Culham Centre for Fusion Energy (CCFE), a world centre of excellence in the field of magnetic confinement fusion. We operate the world's largest fusion experiment, JET, on behalf of the European Commission, and MAST, the UK's innovative alternative design, testing operational scenarios for the international experiment ITER and future demonstration reactors. We manage the property portfolio at our Culham site, and are members of the Joint Venture at the Harwell Oxford site, with both aiming to deliver world class centres of science, innovation and technology.

2011/12 was my first full year as Chairman of the Authority, and it was a privilege to witness the major steps taken during the year - including the restart of JET following an 18 month shutdown to install an ITER relevant wall to the machine, and the start of the major upgrade project at MAST, which will see it delivering experiments well into the middle of the next decade. We are also increasing the work we are doing for ITER directly - this is a significant project, and is the next step in the world's effort to deliver fusion electricity generation by the middle of this century. In the future, as JET reaches the end of its working life, we see a pivotal role for CCFE in designing the next step after ITER - demonstration reactors.

Fusion research is a thoroughly international activity and it has been vital to promote and expand links during this last year to the US, India, South Korea and Japan as well as with F4E (Fusion for Energy, the European Domestic Agency for ITER) and the ITER Organisation in Europe.

It was also a year of change within the nuclear research and development landscape of the UK. Following the review of nuclear R&D within the UK by the House of Lords Science and Technology Committee, published in November 2011, a new Nuclear Research and Development Advisory Board has been set up under the chairmanship of the Government's Chief Scientist. I am pleased that the

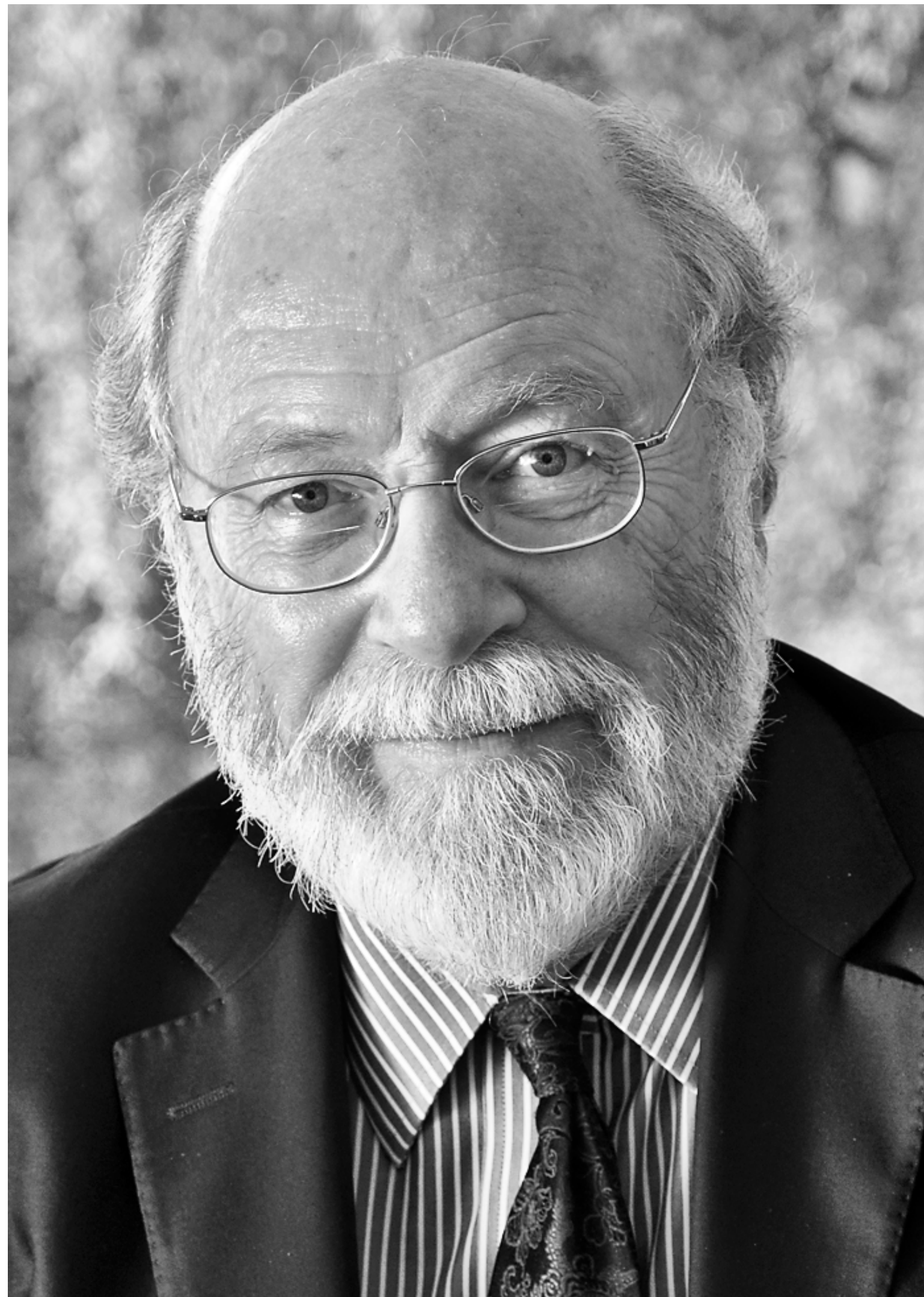
important contribution the Authority has made to nuclear R&D in the UK has been acknowledged by the appointment of the CEO, Steve Cowley, to this Board.

This fits with our stated aim of moving away from pure fusion research to a more technology based programme - where our work on materials for fusion reactors, and calculations of the interactions between the products of nuclear reactions and the surrounding machine, for example, have a direct impact on research for the future generation of advanced fission reactors. We are forming working links with other academic and industrial partners to take this work forward as part of a renewed effort to collaborate across the nuclear industry.

I see this as a natural step for the Authority. Following the downsizing of nuclear research and development at the end of the last century, the UK is now headed for a renaissance in nuclear power in the UK, in which the Authority can play a pivotal role - bringing its historical perspective as well as up to date fusion and fission related research and technology to bear.

During the last year I have been pleased to chair an invigorated Board, with new members Keith Burnett, Peter Jones and Steve McQuillan helping me, together with the Executive members, push forward an exciting new strategy to build on the Authority's fusion base towards a new future. I would like to thank them, as well as all staff and contractors at the Authority, for their hard work during 2011/12, especially during this period of austerity, and look forward to an exciting period over the next few years delivering this strategy.

**Professor Roger Cashmore**  
Chairman  
26 June 2012





# Chief Executive's Review

## Professor Steve Cowley

By the end of the century fusion is expected to account for a large fraction of the worldwide multi-trillion pound electricity market. The major thrust of our research is on developing fusion science and technology, and to ensure that the UK plays a leading role in this future fusion power economy. Through our fusion arm, Culham Centre for Fusion Energy (CCFE), we operate JET, the world's largest fusion device, on behalf of the European community. We also operate the UK experiment MAST, which is driving innovation towards cheaper and smaller fusion reactors.

We are working to ensure that UK industry is benefiting from the commercial opportunities arising from fusion research. As an example, British companies have won over €180m in ITER contracts to date – many of these contracts help to develop key technological capabilities in the UK's most competitive companies. ITER is a multi-billion € fusion device built through an international collaboration to achieve the first, largely self-sustained, fusion "burn" and thereby demonstrate the scientific viability of fusion. It is the critical step in the commercial realisation of fusion power. ITER is a challenging device to build and these are difficult economic times. The support of the UK's government and Members of the European Parliament has therefore been essential to this project

2011/12 has seen some truly ground-breaking scientific research at Culham. The initial JET plasmas with the new, all-metal ITER-like reactor vessel wall have exceeded our expectations. Experiments indicate that tritium absorption in the new wall will be a fraction of the absorption in the previous carbon wall. These results are critical for ITER where low tritium absorption is essential. Plasma performance with the all-metal wall is also good and suggests that the next fusion power campaign on JET (in 2015) will break records. However, the all-metal environment has provided challenges for the diagnosticians and there is much work to do to prepare for 2015.

This year's MAST campaign has been one of the best ever. A key achievement is the control of edge localised modes (ELMs), instabilities at the edge of the plasma. These filamentary eruptions result in transient heat loads to components facing the plasma that erode the metal surfaces. ELMs must be suppressed in fusion reactors. Coils installed recently in MAST have been used to reduce ELMs by perturbing the magnetic fields and limiting the plasma pressure.

The project for a major upgrade to MAST is now well underway. Industry is supplying key components and we are on course for the first plasma in April 2015. A unique feature of the upgrade is its ability to test the novel Super-X divertor concept. This could play a critical role in reducing the power density of the exhaust from a fusion power reactor. Culham's scientists and engineers have produced a wonderfully innovative design.

CCFE has developed a world leading capability in neutronics analysis for ITER. Detailed computer, CAD models of the ITER tokamak provide input to the neutronics calculations that determine the neutron fluxes and activation levels around the device. This helps in the designs of engineering components for ITER and ensures that it can be inspected and maintained in a safe way even after producing high levels of fusion power. This capability is finding uses both inside fusion research and other applications.

Our technology programme has continued to grow over the year, and is an important part of a shift towards a more technology-focused organisation. This has included leading some research on demonstration reactors as part of the European Power Plant Physics and Technology programme. Technological solutions for fusion reactors, our neutronics & modelling work and our materials research are all areas that have synergies with advanced fission research and development. Government is seeking to advance the UK's nuclear fission research efforts and is looking to use these synergies to help revitalise UK capability.

CCFE is developing plans to host part of a national user facility to advance materials research in fusion and fission.

The Authority has two major property holdings; the Culham Science Centre and Harwell-Oxford. One of our goals is to continue to develop these as centres of excellence for science and technology. This year, Harwell-Oxford and Milton Park were awarded a joint enterprise zone, which will attract new business to the area. The year has also seen the start of a £20m development of a world-leading diamond materials research and development facility for Element 6. Our commercial property activities at Culham remain buoyant, despite a subdued market. We have recently completed a master plan for the Culham Science Centre, which could see the first development in many years.

In June 2012, Derek Stork, Director of Technology, retired from the Authority. Derek was a key member of the team that made fusion a reality on JET. He was also responsible for initiating and leading CCFE's technology growth. We thank Derek for his long and productive service. Martin Cox will be taking forward this crucial work on development of technology.

**Professor Steve Cowley**  
Chief Executive and Accounting Officer  
26 June 2012





# MANAGEMENT COMMENTARY

The principal mission of the United Kingdom Atomic Energy Authority (Authority) is to position the UK as a leader in a future sustainable energy economy by advancing fusion science and technology and related technologies to the point of commercialisation.

The Authority is a non-departmental public body that reports to the department for Business, Innovation and Skills (BIS). The Authority is responsible for the UK's magnetic confinement fusion research, which it manages through its fusion arm Culham Centre for Fusion Energy (CCFE).

CCFE hosts JET (Joint European Torus) the world's largest fusion facility on behalf of the European Fusion Development Agreement (EFDA), and has the UK's flagship fusion device MAST (Mega Amp Spherical Tokamak). The work undertaken by CCFE is funded by the Research Councils UK Energy Programme through the Engineering and Physical Sciences Research Council (EPSRC), and by the European Union under the EURATOM treaty.

The next step in the fast-track programme is ITER, an international tokamak experiment being built in France, which involves China, the European Union, India, Japan, Russia, South Korea and the United States. This is intended to study conditions approaching those needed in a commercial power plant.

During 2011/12, the Board, Executive and senior management team undertook a strategic review and agreed seven strategic objectives and a number of underpinning strategies to support the Authority's mission. The strategic objectives are to:

- maintain and exploit the Authority's world class scientific and operational capability;
- deliver JET as a world class fusion facility for the benefit of the international fusion programme;
- complete the full upgrade of MAST to deliver novel solutions to DEMO and component testing;
- secure additional technology facilities;
- help UK industry and university partners profit from the fusion economy and associated spin-offs;
- develop a sustainable and balanced business development programme; and
- attract, retain, develop and recognise the required skills and expertise for future success.





# Fusion

CCFE is one of the world leaders in international endeavours to develop nuclear fusion as a source of energy for electricity generation. The aim of the European fast track to fusion programme is to have a demonstration fusion power station, DEMO, by 2040 and the first commercial reactor by 2050.

## JET

A review by an independent panel on behalf of the European Commission, published in October 2011, identified JET as having vital importance to ITER, in particular to provide input for ITER construction, ensure efficient operation of ITER and to provide a training ground for ITER scientists and engineers.

In May 2011, CCFE completed the largest series of enhancements to JET for 20 years, the centrepiece of which was a new inner wall to test plasma-facing materials for ITER. This ITER-like wall consists of thousands of beryllium and tungsten tiles. The restart programme resulted in the first plasma inside the upgraded machine on 28 August. Initial performance exceeded expectations and plasmas were readily established.

Since then, CCFE staff have continued to work closely with EFDA to re-commission JET's systems, gradually raising the power while avoiding damage to the new wall. In March 2012, power from Neutral Beam Injection (NBI), which is one of the main heating methods used in tokamaks, reached 21 megawatts. It has the design goal of achieving 35 megawatts of heating power, which is higher than any current tokamak. The extra heating power has been enabled by a CCFE-led project to upgrade the NBI systems on JET. It will give European fusion researchers routine access to high-confinement ("H-Mode") plasmas, which are needed to progress important studies for ITER, such as the impact of impurities on plasma performance. Plasma scenarios are being developed to achieve simultaneously high plasma performance and low power flux to the metal surfaces (to avoid melting). This is in preparation for further deuterium-tritium experiments on JET and for ITER directly.

The JET scientific programme has been progressing well in parallel with the phased restart of the machine. Many diagnostic systems are now producing extremely high quality data, some the best ever seen in JET, which is providing a sound basis for plasma modelling work. CCFE has been involved in a range of new infra-red and spectroscopy diagnostics designed specifically for understanding and optimising the plasma with the new metal wall, as well as protecting it. Many of these techniques will be needed on ITER.

## MAST

MAST is a spherical tokamak and its compact design has potential for testing of components and for future power reactor designs. Its latest experimental campaign (Campaign M8) was brought to a conclusion at the end of January 2012. This has turned out to be the most successful and productive MAST campaign to date.

Two particular highlights of the campaign are:

- excellent progress in investigating and controlling Edge Localised Modes (ELMs), instabilities which occur at the edge of the fusion plasma and limit the lifetime of some of the plasma-facing components. Additional magnetic coils, installed in 2009/10, have been used to study ELM control by applying perturbations to the plasma. New results have been obtained that are of interest to the design of similar coils on ITER and the decision whether or not to install them; and
- first images of turbulence in the core of a plasma inside MAST. The fluctuations associated with

turbulence cause movement of particles and energy from the plasma's core to its edge, resulting in degraded performance. Getting a clear picture of the turbulence is therefore essential in understanding and mitigating it for future devices. The measurements were made possible by a new Beam Emission Spectroscopy system developed by CCFE and colleagues at RMKI in Hungary. They will be invaluable to physicists who are modelling the performance of plasmas for next-generation tokamaks such as ITER.

The next experimental campaign will start towards the end of 2012/13 and run through to mid-2013. Then MAST will shut down for a major upgrade, which will implement £20 million of hardware improvements in order to strengthen its contribution to international research, in particular to find improved solutions to exhausting the power and particles from the plasma. The experimental hall that houses MAST has already been prepared for the considerable engineering effort that will be needed during the upgrade. Contracts have been placed for several of the major hardware elements of the upgrade, and further procurement will continue in 2012/13.



## Theory and Modelling

The theory and modelling programme concentrates on the key plasma physics issues that need to be resolved for fusion. These are addressed by analytic theory, and also by computational modelling. The main topics are plasma stability, turbulent transport, fast particle physics, integrated scenario modelling and, increasingly, the physics of plasma exhaust. CCFE uses a range of codes, some concentrate on detailed local calculations while others give global but less detailed simulations of the tokamak plasma. Much of this work is in collaboration with UK universities and overseas fusion organisations. In addition to CCFE's own computing facilities, this work benefits from EPSRC and European supercomputers. UK fusion scientists have also gained access to Helios, a new supercomputer in Japan; the world's fifth largest. Theorists at CCFE are starting to exploit next-generation computer technology, and one example is the Graphical Processing Units (GPUs). CCFE have installed three

dedicated workstations, each with four high-performance graphics cards, which are being used for algorithm development as well as production runs. A particular use is in tracking the distributions of high-energy particles in tokamaks such as MAST, which provides key understanding of diagnostic measurements. The use of GPU technology has allowed unprecedented resolution to be achieved in these calculations.

Above CCFE scientists and engineers pictured at MAST in early 2012



# Technology and Business Development

To help the UK be in a good position to benefit from the fusion power economy, the Authority is developing a strong fusion technology programme. Key elements of this programme include ITER, DEMO and power plant whole-system studies, materials and components research & development (R&D), and new technology facilities.

## Technology and Materials Programmes

To make fusion power economical requires high power density and materials working near their limits. The physics and technology challenges include understanding and optimising the power loads from the plasma and the material limits in the environment of a fusion reactor. EFDA is coordinating a European Power Plant Physics & Technology programme, in which CCFE is strongly involved in multiple roles.

Highlights of the year's technology programme include:

- major review of current knowledge on copper alloys and joining techniques for DEMO, which has consolidated worldwide research effort in these areas;
- study of proposed DEMO remote maintenance schemes and hot cell operations; and
- survey of tokamak reactor exhaust systems, with recommendations for integrated development of materials, control, engineering and plasma physics. A solution to the extreme, fluctuating power loads on the exhaust region (the 'divertor') has been put forward, whereby the divertor plasma is developed to act as a buffer to separate divertor surfaces from the main plasma. The flexible divertor configuration in the MAST upgrade referred to as the super-X divertor is based on this idea, aiming to help develop a better divertor solution. This novel approach would reduce the coupling between the issues of the divertor plasma facing components and the core plasma performance, making the problem more tractable.

A Technology Roadmap is under development, which includes consideration of a number of new technology facilities. As part of this the Authority has submitted a joint funding proposal, with National Nuclear Laboratory (NNL), Imperial College London and the Universities of Oxford and Manchester, for two Nuclear Material Research Facilities, one at Culham and the other at Sellafield.

Work by CCFE materials scientists in 2011/12 has for the first time combined neutronics, activation and materials damage modelling in one study to look at the evolving materials activation and damage at different locations in a future fusion power plant. The high-energy, high-intensity neutron fluxes produced by the fusion plasma will determine the lifetime of components in future commercial fusion devices. As well as producing defects, the neutrons bombarding the materials initiate nuclear reactions, leading to transmutation of the elemental atoms. Gases are produced by many of these reactions, particularly helium and hydrogen, which cause swelling and embrittlement of materials. Culham researchers calculated the variation in nuclear transmutation and gas production rates at various locations of a conceptual design of the next-step fusion device DEMO. This data was subsequently used in conjunction with some simple modelling of helium-induced grain-boundary embrittlement to estimate the potential lifetime-before-failure of several fusion-relevant materials to focus R&D down to the most critical areas. The integrated approach adopted by CCFE will now feature in the EFDA materials and technology programme.

## Business Development

In 2011, the Authority started a review of potential areas for development, leveraging core areas of expertise. The Authority already undertakes a range of commercial work, including ITER contracts, specialist machining/bonding, publication services and homeland security.

One of the areas being explored is advanced fission development. The House of Lords report on the UK's nuclear R&D capability recognised the Authority's **"world leading" work undertaken at Culham and "the many disciplines which are applicable to, and overlap with fission research capabilities"**. As a result of this Steve Cowley was appointed to the Nuclear R&D Advisory Board set up by the government in response to the House of Lords report, which is chaired by John Beddington, the Government's Chief Scientist.

There is potential to build on the synergies between fusion and fission, in particular areas such as materials R&D, neutronics/reactor modelling and key systems such as blankets.



## ITER System and Contracts

During the year CCFE took forward research and engineering design activities for a range of ITER components. The European domestic agency for ITER, Fusion for Energy (F4E), allocates part-funded grants and fully-funded contracts to fusion laboratories and industry to develop specialist ITER heating and measurement systems and to construct components. CCFE has been successful in winning a number of these as part of consortia, some of which it is leading. Systems being developed include: the radio-frequency ion cyclotron resonance

and neutral beam heating systems; the LIDAR diagnostic which uses lasers to measure the plasma temperature; neutronics (the study of how fast fusion neutrons affect surrounding materials); and studies for magnetic diagnostics.

One example of CCFE's work for ITER during the year was the completion of design for components of the neutral beam system. CCFE engineers have designed the calorimeter and Electrostatic Residual Ion Dump, which will now be demonstrated on a full-size neutral beam test facility at

RFX, Padua, Italy. The exceptional quality of the design work on this two-year project was acknowledged by an ITER review panel.

**Above** The year has seen an expansion of CCFE's commercial activities and links with industry



# Property Development & Other Activities

The Authority owns substantial property assets at Culham Science Centre and at Harwell in Oxfordshire, and is committed to developing these sites as leading high technology locations, combining leading edge publicly-funded R&D and commercial enterprise.

Both Culham and Harwell are part of the Science Vale UK area, which is already one of the most successful science and technology hotspots in the country, accounting for 13% of the R&D employment in south-east England. The Authority is a member of the Science Vale UK partnership, set up to promote the area and foster and encourage economic development.



## Culham Science Centre

A key science and technology centre for over 40 years, Culham Science Centre is planning for future growth, to ensure its continued leading role in fusion research and technology and also to provide for additional employment through widening the range and number of organisations on the site.

Culham is home to the UK fusion energy research programme and hosts JET, the world's largest fusion experimental facility. In addition, nearly 50 companies are located at Culham which, together with the Authority, provide employment for some 2,000 people. These include successful businesses involved in the energy, IT, laboratory services, biotechnology and healthcare, and business support sectors. Tenant retention and occupancy of the commercial property space was maintained at a high level during the year despite the continuing difficult property market.

The Authority is continuing to work with the local planning authorities in preparing the way for the physical development of the site in the future. Planning consent

was secured for replacement of an existing building and further applications will be brought forward as requirements arise. Discussions are underway with the planning authorities to allow the long term sustainable re-use of some of the general purpose JET buildings. This is necessary to ensure that Culham Science Centre continues its role as a leading international centre for fusion research and technology and as a location for science and technology-related businesses.



## Harwell Oxford

Harwell Oxford is being developed as a joint venture in which the Authority, as the main landowner, is a partner. The other partners are the Science and Technology Facilities Council and Goodman International, and the vision is to develop the campus into a world leading location for science, technology and business.

The Harwell Oxford campus already provides employment for over 4,500 people in around 150 organisations, and expansion plans for the campus will eventually see the creation of over 100,000 square metres of laboratory, high technology industrial and office accommodation providing up to 5,000 new jobs. This development will be assisted by Harwell's inclusion in one of the Government's Enterprise Zones. The Enterprise Zone occupiers will benefit from cheaper business rates, super fast broadband, and simplified planning arrangements. Also the additional business rates generated from Enterprise Zone growth will be available for investment in the Oxfordshire economy.



Element Six has started a £20m development to build the world's largest and most sophisticated synthetic diamond and super-materials R&D facility. Due for completion in spring 2013, the state of the art facility will provide laboratory space, offices, and production facilities. This is an exciting development for the Harwell Joint Venture and demonstrates the attractiveness of the Harwell Oxford campus as a major science and research location.

Remarking on the development Rt Hon Dr Vince Cable MP, Secretary of State for Business, Innovation and Skills, said: "The investment by Element Six, that will bring a world class research and development facility to Harwell, shows that the UK is a great place for innovative and cutting edge industries to invest. Along with a real boost to the local economy, providing around 50 new highly skilled engineering jobs, the investment shows that the Oxford region is a world leading location for hi-tech research, and that the UK is open for business."

*"The investment by Element Six, that will bring a world class research and development facility to Harwell, shows that the UK is a great place for innovative and cutting edge industries to invest. Along with a real boost to the local economy, providing around 50 new highly skilled engineering jobs, the investment shows that the Oxford region is a world leading location for hi-tech research, and that the UK is open for business."*

## Dr Vince Cable

MP, Secretary of State for Business, Innovation and Skills

## Other activities

The Authority is responsible for the governance and oversight of the Authority's pension schemes, which are managed by Babcock. These cover over 45,000 members from the civil nuclear industry including the Authority, Civil Nuclear Constabulary, NNL, Health Protection Agency and Ministry of Defence.

Other responsibilities include the management of historic liabilities such as those remaining from previous

restructuring of the Authority and the compensation scheme for radiation linked diseases, this is run on a joint basis with other nuclear employers and the trade unions.

The property programme and these legacy activities are funded by BIS by grant-in-aid under the Shareholder Programme Agreement.

**Above** Facilities at Culham have been improved with the refurbishment of the library area



# Key Performance Measures

The Authority seeks to set itself stretching targets, particularly regarding the scientific and technology programmes. The programme milestones seek to cover the range of activities at Culham: operation of fusion devices and fusion science, upgrades to fusion facilities and work for ITER and F4E. Other performance measures are included to cover the Authority's priorities and other activities. For 2012/13, the measures have been aligned with the strategic objectives and the strategies to delivery these.

The key performance measures and outturns for the year are set out below. All of the ITER and F4E deliverables and the majority of the Fusion Programme milestones were achieved. Half of the JET milestones were delivered on target; however, the remaining ones were impacted by the time taken to restart the machine, which was longer than planned due to technical complications bringing some of the new systems onto line. This is not unreasonable given the complexity and magnitude of the upgrade. Half of the MAST-Upgrade milestones were delivered on target; however there was slippage in delivering the remaining targets due to an unexpected requirement to undertake project assessment/value engineering following initial market sounding for key components. Overall the upgrade remains on track for completion in 2015.

Achievement of Property profit and administrative savings exceeded the target. The majority of the Safety, Health and Environment milestones were achieved. A fair performance was achieved on the milestones related to the Continuous Improvement Programme.

Performance measure	Target	Achieved
<b>Programme milestones</b>		
Achieve the milestone dates agreed with EPSRC for 2011/12	As stated in the milestone	34 of 43 milestones (79%) were delivered on time
Achieve the milestone dates for the 2011-12 MAST Upgrade project as agreed with EPSRC	As stated in the milestone	3 of 6 milestones (50%) were delivered on time
Achieve deliverables on ITER Contracts and F4E Grants and Contracts awarded to CCFE and consortium partners, in tasks where CCFE is in control	80 – 100%	All 11 deliverables were achieved on time
Achieve the milestone targets for JET Campaign performance milestones for 2011/12	As stated in the milestone	8 of 16 milestones (50%) were delivered on time
<b>Other performance measures</b>		
Achieve the milestone dates in the 2011/12 Safety, Health and Environment Improvement Programme	As stated in the milestone	25 of the 29 milestones (86%) were delivered on time
Achieve the milestone dates in the 2011/12 Continuous Improvement Programme	As stated in the milestone	6 of the 13 milestones (46%) were delivered on time
Property: Achieve good result re SPA commercial property operating profit	£644k – £694k	Target exceeded - operating profit of £841k achieved
Achieve reductions in Administration costs in line with Government targets	As described	Target exceeded - reductions of £61k in excess of target achieved

Right Flywheel Generator Control Station in J3 building

# Principal Risks

The Authority is recognised as a world leader in fusion research. Significant changes are expected in order to support the construction of ITER and DEMO, completion of the MAST upgrade, the eventual decommissioning of JET and the transition towards a more technology focused organisation. The principal risks associated with these changes involve funding, a mismatch in staffing skills/resources and a possible disenchantment with Fusion among policy makers.

Agreement between the European Commission, the European Council of Ministers and the European Parliament of fusion funding for 2012 and 2013 has eased pressure on the funding to

the JET and elements of the UK Fusion programmes. Development of Horizon 2020, the framework that will set out the priorities and funding until the end of the decade, is still underway. In response to funding pressures and exposure of the science programme, the Authority's Executive continues to implement austerity measures and cost saving exercises, in particular focused on reducing overheads and gaining greater efficiencies. In addition, the Authority is seeking to identify additional sources of funding and income for the future to increase its resilience.

The combination of the changes to the Authority, constraints on payment and recruitment of staff, and national skills

shortages mean that there is a risk of a significant mismatch between available skills and developing requirements. This is being managed by detailed resource planning, development of staff, and a culture change programme to ensure that staff are able to adapt to the changes ahead.

Safeguarding people and the environment remain key values of the Authority. Robust safety measures and systems are in place and the Authority has a continuous safety, health and environment improvement programme. As a result, safety and environmental performance remain good and the risk of a major incident continues to be low.





# People

Nurture science and technological excellence across the Authority to deliver breakthroughs at the frontiers of knowledge is one of the Authority's key strategies for future success and applies across all of the strategic objectives.



1. CEO Steve Cowley in action during the staff softball tournament
2. Margaret Graham, Manager for the mentoring scheme, explaining the benefits of the scheme
3. Opened during the year, the Learning Resource & Development Centre offers much-improved staff training facilities
4. Apprentice Tom West, with Steve Hall Apprentice Group Leader, receiving the OXETA Grand Award

## Development

A particular focus for 2011/12 has been on improving people and performance management. Significant process improvements have been implemented, which has enabled an exercise to better align personal objectives with the corporate strategic objectives and strategies. In 2012/13 there will be an increased focus on talent management and leadership development.

A new learning resource and development centre was opened in November 2011, providing centralised resources for training and development.

Following the successful pilot in 2010/11, the Authority mentoring scheme was launched in July 2011. The aims of the scheme are to motivate and develop staff personally and professionally so that they can adapt and grow with the evolving business.

## Students and apprentices

The Authority operates a two-year graduate training scheme, which provides a number of project placements and promotes accreditation to the Institution of Engineering & Technology, Institute of Mechanical Engineering and, in 2012/13, the Institute of Physics. In 2011, only three new graduates entered the scheme, due to the government recruitment freeze. However, for 2012, this number will rise significantly, with up to 11 new entrants. This will include the first graduate from the Power Academy, a national scheme to support and encourage graduates into working in electrical engineering, in which the Authority sponsors up to two scholars per year.

The calibre of the CCFE Apprentice scheme and its apprentices has again been recognised with a number of awards

this year. In January 2012, final year apprentice Tom West won a prestigious bursary Grand Award from OXETA and the Worshipful Company of Founders. In March 2012, Lydia Feasey and Leon Knight won the second and fourth year Apprentice of the Year awards, respectively, and Kieron Deakin won a special achievement award. The scheme's intake was increased back to four apprentices in 2011, and will increase to five apprentices in 2012.

Support continues for a spectrum of doctoral and post-doctoral students undertaking fusion and related research. In 2011, this included awarding 8 new industrial CASE studentships and a number of similar studentships, where the Authority provides funding, research experience and joint-supervision with the relevant universities.

Attendance at the 48th annual Culham Plasma Physics Summer School remained strong, with over 50 students from 24 countries.

## Staff Engagement

Staff communications have continued to evolve over 2011/12, to support the ongoing period of change. A range of face-to-face and electronic media are being used including all-staff presentations, regular team talks, the Intranet, video messages and on-site display screens. Effort has been made to ensure a wide range of articles including personal achievements, scientific progress, products and contracts won. Recent changes to organisation's strategic objectives have been cascaded through the organisation via a series of interactive meetings, presentations and staff broadcasts.

As part of the change programme a series of focus groups were held in summer 2011, to gather feedback against the five change enablers of "integration, simplification, flexibility, accountability & leadership". Follow up focus groups will be held later in 2013 to measure culture change.

Working in partnership with the Trade Union is an important aspect of employee relations. The Partnering Agreement, which sets out the basis on which management and unions work together, is in the process of being revised and updated.

## Staff Figures

The Authority had an average of 540 full time equivalent (FTE) employees during 2011/12, compared with 568 in 2010/11. This reduction is due to the effects of the public sector recruitment freeze, natural wastage and the ongoing programme of restructuring. In addition, an average of 397 FTE agency workers were employed.

During the year, the Authority carried out a voluntary early release exercise to help with the continuing requirement to change the skills profile of its employees and to drive culture change. 17 individuals left as part of this exercise, which will continue in 2012/13.

The average sickness absence per employee for the Authority during the 2011/12 year was 6.5 days per person, compared with 4.29 days in 2010/11. Although this is less than the most recently available public sector average of 8.1 days per person, the rate is being monitored by the Assurance Committee, chaired by the Head of Assurance.

The Authority is an equal opportunity employer and does not discriminate on the grounds of age, sex, ethnic origin, religious belief, sexual orientation, Trade Union membership or disability.



# Stakeholder Engagement

Fusion offers huge potential as a future energy source; with almost unlimited fuels, no carbon emissions, and inherent safety. Engagement with key stakeholders at local, national and international level is critical to maintain support for the successful development of fusion.



1. UK industry representatives at the ITER site during the ITER Business Forum in December 2011
2. Finalists of the Quiz Club national school science competition on a tour of CCFE
3. BBC TV science presenter Jim Al Khalili filming at JET in January 2012
4. Among high-profile visitors in 2011/12 were MEPs Vicky Ford and Richard Ashworth, pictured with EFDA Leader Francesco Romanelli (left)

CCFE is also working hard to ensure that UK industry is able to benefit from the fusion and to date UK companies have won in excess of €180 million in ITER contracts.

## Industry

CCFE runs an active industry liaison programme with the aim of bringing even more companies into the fusion sector and creating a base of technical expertise that will put the UK in a leading position as fusion moves towards commercial realisation.

In December 2011, CCFE led a delegation to the ITER Business Forum in France to further promote UK capabilities. The delegation included representatives from 35 firms, second only to the hosts France, and sent out a strong message that the UK is ready to help build ITER. 13 British firms also attended a remote handling Information Day hosted by F4E in Barcelona.

CCFE is part-funding a new Plasma and Fusion Industrial Officer at the York Plasma Institute, University of York, who will work with CCFE to help industry in the north of England benefit from ITER contracts.

## Outreach and public engagement

CCFE organises many visits by VIPs, schools, universities and professional societies and demand for visits exceeds capacity to take them. During 2011/12 there were:

- over 60 visits from educational institutions alone, involving around 1,250 visitors;
- ten open evenings for the general public, allowing more than 1,000 people to view the fusion facilities; and
- the Sun Dome, CCFE's science road-show for primary school age children, visited over 30 schools.

CCFE staff also gave many talks and demonstrations, particularly at schools and local and national science events, for example the Oxfordshire Science Festival in March 2012. CCFE also hosted the final of a national schools science quiz at Culham involving nearly 50 Year 5 students from 12 schools.

There were a number of notable media visits included science TV presenter Jim Al Khalili filming for an episode of BBC Horizon; other filming included for television programmes on CNBC, Al Jazeera and the Discovery Channel. Articles on the research at CCFE appeared in a range of news and technical media during the reporting period.

CCFE also increased its use of 'new media' and social networks, with their potential to communicate to a larger audiences. CCFE engineer Robin Stafford Allen and PhD plasma physics student Jack Snape were winners in the national science outreach competitions I'm a Scientist, Get Me Out of Here and I'm an Engineer, Get Me Out of Here. The contests, in March 2012, enabled them to talk to and inspire hundreds of science students from schools around the UK, and their success was a reflection on the excellence of CCFE's outreach programme.

The Authority operates a successful sponsorship fund, moderated by a staff panel, which provides donations to a range of charities, education and community projects.

53 requests for information were received in 2011/12 and treated under the Freedom of Information Act regime. All but one were completed within the 20-day limit. The Authority's publication scheme can be found at [www.atomic-energy-authority.org.uk](http://www.atomic-energy-authority.org.uk).

## University Collaborations

In the ten years since EPSRC became responsible for the UK fusion programme, university contributions to fusion research have expanded greatly. The number of universities involved has more than doubled to over 20 and over 40 PhD students are now working on fusion projects, compared with only a dozen a decade ago. CCFE supports the Fusion Doctoral Training Network (FDTN), a partnership of the universities of York, Durham, Liverpool, Manchester and Oxford. This has now been upgraded to a Centre for Doctoral Training, which will provide it with more guaranteed studentships from autumn 2012.

Throughout 2011/12, Durham, Liverpool, Warwick and York universities and Imperial College London were all heavily involved in the MAST campaign. One highlight was the contribution of researchers from Oxford in interpreting plasma turbulence data from MAST's new Beam Emission Spectroscopy system. Another valuable collaboration was the donation by York of a gamma detector to CCFE for measurement of decay rates in a materials irradiation project.

In addition, students from Oxford and the FDTN universities have taken part in CCFE's Sun Dome outreach project, helping to run science education shows for primary school students in their local communities.



# Assurance

Safeguarding the health and safety of the public, employees and contractors and protecting the environment are key values to the Authority.

## Health, Safety & Environment Incident statistics

As one of its measures of safety performance the Authority uses the Total Recordable Incident Rate (TRIR), which is the ratio of work-related injuries per 200,000 hours worked. The 12-month rolling average at March 2012 was 0.50, a slight improvement on the previous year. This low rate compares favourably with similar research organisations. CCFE has maintained a very positive ratio of near-miss reports to incidents, reflecting a positive reporting culture. A continuing behavioural safety programme helps maintain this culture. There were no major reportable injury accidents during the year.

## Electrical Safety

The JET and MAST experimental devices at Culham operate at very high voltages and currents and electrical safety is therefore of critical importance to the Authority's overall safety performance and is arguably the Authority's most significant day-to-day safety hazard. During the year the project to survey and upgrade over 2000 low voltage electrical cubicles was completed and further work is planned to ensure equipment and working practices meet the highest standards.

## Radiation dose

The total radiation dose to the 572 monitored/classified people at CCFE for 2011/12 is less than the previous year due to this reporting period not including any significant shutdown work. The total radiation dose continues to be well below legal dose limits and the Culham Site dose constraints. The highest individual cumulative radiation dose this year was 0.32mSv, substantially below the individual legal limit of 20mSv/year and the site dose constraint of 5mSv/year. The

average occupational dose received by employees was 0.008mSv, which is 0.3% of the average background radioactive dose received by members of the public (2.4mSv).

## Discharge authorisations

All discharges from Culham were compliant with Environmental Permitting regulations (2010 & amendment 2011), accumulation and discharge authorisation limits that were set by the Environment Agency (EA) and excellent progress has been made with the processing and disposal of solid and organic liquid radioactive waste. A permit variation request has been submitted to the EA for the discharge of aqueous trade effluent which was supported by robust environmental justifications and regulator consultations; it is expected that this will result in a revised permit which better suits the needs of the site. The first operational Integrated Waste Strategy for Culham site is near completion and is already driving change in the management of waste disposal across site.

## Management Systems and Quality

The Authority operates an integrated management system for all its activities certified to the internationally recognised standards for quality (ISO9001), environmental (ISO14001), and health and safety (BS OHSAS18001) management. In addition the Authority Health Physics Group is accredited to ISO17025, the international standard for testing laboratories. The internal audit programme provides assurance to management and stakeholders that the required standards are being maintained. Operating to the international standards has provided the Authority with a strong base from which to meet the demanding requirements set by

Fusion for Energy when commissioning work in relation to ITER. During the year, as part of the continual improvement process, a major update to Authority processes and systems has been undertaken. This has included a simplification and restructuring of the overall system and improvements to a number of key processes including technical management and the control of work.

## Security

The Authority continued to maintain robust standards of security and to work in accordance with the regulatory requirements of the Office for Nuclear Regulation.

The Authority continues to work to improve its security solutions involving personnel, physical and information security. There is a comprehensive site emergency plan in place. Arrangements are kept up to date with regular training and practice drills and tested by an annual emergency exercise involving cross-site teams.

Information security and risks are monitored by the Information Assurance Steering Board, chaired by the Senior Information Risk Officer. During the year a number of improvements were made including implementation of a comprehensive information security manual. There were no reportable personal data related incidents during the year.

The Cabinet Office's Level 1 training is mandatory for all staff and network account holders and where appropriate staff are required to undertake Level 2 training. Plans are in progress to bring the training in house, following the closure of the National School of Government and its training programme.



Cryogenics and high voltage are two of CCFE's potential safety hazards.



# Sustainability Report

The Authority reports quarterly against the Greening Government Commitments scheme, but an exemption has been granted with respect to the scheme's reduction targets, due to the nature of the energy research carried out at Culham.

## Summary Data

Area		2011/2012 Performance
Greenhouse gas emissions (Scopes 1-3 excluding international air travel) (CO <sub>2</sub> (e) '000 Tonnes)		86.8
Estate Energy	Consumption (mill kWh)	66.4
	Expenditure (£k)	4,817
Estate Waste	Amount (tonnes)	1,402.6
	Expenditure (£k)	99.4
Estate Water	Consumption ('000 m <sup>3</sup> )	83.2
	Expenditure (£k)	205

The Authority ran a yearly Biodiversity Action Plan with an annual budget of around £3k between 2005 and 2010. The biodiversity areas are maintained and other routine grounds maintenance is done in such a way as to continue to promote biodiversity.

The Authority is changing its contracts documents in order to incorporate sustainable procurement standards in Pre Qualification Questionnaires and Tender Documents. The Sustainability standards will be applied in a range of areas as new or re-tender procurement exercises arise. For example, the Authority catering contractor sources the best quality food, ideally from UK markets, which has been produced with animal welfare, safe harvesting standards and sustainability in mind.

## Data Collection

Electricity and water use, fugitive emissions, waste production and staff numbers vary depending upon whether the JET and MAST machines are operating during the reporting year. During operations, fugitive emissions

and electricity and water use increase. In periods where the machines are not operating (shutdowns) waste production and staff numbers increase. Given this background, it is not currently possible to normalise the data as the Authority has not been able to identify a suitable consistent factor considered appropriate to aid comparability between years. This will be pursued during 2012/13.

## Scope 1 emissions

High voltage equipment is emptied of sulphur hexafluoride (SF<sub>6</sub>) for the duration of machine shutdowns, and SF<sub>6</sub> emissions are therefore zero during these periods. During machine operations the high voltage equipment is filled with SF<sub>6</sub> and fugitive emissions (Scope 1) form the majority of the Authority carbon footprint. The equipment was empty of SF<sub>6</sub> during the first quarter of 2011/12. The annual figure shown in Table 2 is therefore lower than it would have been if the equipment had been operating for the entire year. Prior to January 2012 no quantitative SF<sub>6</sub> use data is available, and emissions prior to this have therefore been calculated based upon January-March emission data

and the estimated period of operation of the relevant equipment.

## Scope 2 and 3 emissions

Electricity and gas use and business travel mileage is routinely collected and reported internally, therefore the figures given for scope 2 and 3 in Table 2 are based upon data collected for the entire year.

## Waste production

Prior to this report, waste data has not been collected or reported internally. Therefore all waste figures shown in Tables 1 and 3 are estimated. As of March 2012 the Authority has included provision of appropriate data as a requirement in waste management company contracts, and it is anticipated that data will be available from Q1 2012/13 onwards. Waste figures provided do not currently include radioactive waste, which the Authority disposes of under an Environmental Permit and reports annually to the Environment Agency.

Table 2

Greenhouse gas emissions		2011/2012
Non-financial indicators (1,000 tCO <sub>2</sub> e)	Total emissions (Scope 1-3)	86.84
	Total net emissions	86.84
	Gross emissions Scope 1 (direct)	50.91
	Gross emissions Scope 2 & 3 (indirect)	35.93
Related energy consumption (million kWh)	Electricity: Non-Renewable	56.09
	Electricity: Renewable	0.00
	Gas	10.27
	LPG	0.00
	Other	0.00
Financial indicators (£k)	Expenditure on Energy	4,817
	CRC Licence expenditure	-
	Expenditure on accredited offsets	335
	Expenditure on official business travel	322

Table 1

For more detail (figures and discussion), please see Tables 2-4.

## Water use

Water use data is routinely collected and reported internally, and measured data was available for the reporting period. Therefore the water figure stated in Table 4 is based upon measured data for the entire year.

## Future plans

The Authority will continue to run an Environmental Management System certificated to ISO14001. This includes a Safety and Environment Policy (approved by Senior Management), a register of environmental aspects, measuring and reporting of environmental indicators and an annual Improvement Programme.

The Authority's future strategy is to improve collection of waste data, both financial and non-financial (see above), and to reduce emissions of SF<sub>6</sub> both by short term improvements in equipment and operational procedures, and by investigations to identify a long term solution.

## Performance Commentary - Planned improvements

Reduction of electricity use and SF<sub>6</sub> emissions have been priorities for the Authority's Improvement Programmes for the last few years, where possible around programme demands, and will continue to be in 2012/13.

## Controllable Impacts

Major direct, controllable impacts are the fugitive emission of SF<sub>6</sub> and electricity use (particularly during quarters where the machines are being operated).

## Influenced Impacts

The Authority is in a position to influence the method of commuting that staff choose. There is an onsite car share, cycle scheme and shower/changing facilities. A representative from the Authority takes part in negotiations with local public transport providers, with the aim of improving public transport to and from the site.



# Sustainability Report continued

Table 3

Waste		2011/2012	
Non-financial indicators (tonnes)	Total waste	1,402.63	
	Hazardous waste	Total	60.08
		Landfill	205.39
	Non-hazardous waste	Reused/Recycled	1,083.80
		Composted	5.41
		Incinerated (energy recovery)	33.28
		Incinerated (no energy recovery)	14.67
		Total non – hazardous waste	1,342.55
Financial Indicators (£k)	Total disposal cost	99	
	Hazardous waste disposal cost	No data	
	Non-hazardous waste disposal costs	Landfill	No data
		Reused/Recycled	No data
		Composted	No data
		Incinerated with energy recovery	No data
Incinerated without energy recovery	No data		

### Performance Commentary - Planned improvements

Improvements will be made to waste data collection during 2012/13, with the aim of meeting reporting requirements (financial and non-financial).

Note: The figure given above for total waste disposal cost is the absolute figure before income received from recycling.

The net figure is £16k

### Controllable Impacts

Direct impacts result from Authority waste disposal. Authority staff are instructed to reuse items to minimise waste sent for disposal.

### Influenced Impacts

The Authority is able to exert influence on tenants on the Culham site; compliance with all relevant waste management and environmental permitting legislation is written into contracts.

Table 4

Finite resource consumption		2011/2012	
Non-financial indicators ('000m <sup>3</sup> )	Water consumption (whole site)	Supplied	83.22
		Abstracted	N/A
		Supply per FTE	0.08
Average number FTE staff/contractors		937	
Financial Indicators (£k)	Water supply costs (whole site)	205	

### Performance Commentary - Planned improvements

There is an ongoing process of identifying and fixing leaking pipes onsite. At the Trade Effluent processing facility, operational and engineering changes will be implemented in the next 5 years in order to reduce water used in dilution.

### Controllable Impacts

Major direct users of water onsite are the site cooling water facility and the trade effluent treatment plant. Work is currently underway to reduce water use by both plants.

### Influenced Impacts

The Authority does not currently have any indirect influences on water consumption

### Notes

- The report above has been prepared in accordance with guidelines laid down by HM Treasury in 'Public Sector Sustainability Reporting' published at [www.financial-reporting.gov.uk](http://www.financial-reporting.gov.uk).
- The greenhouse gas emissions were calculated (from the raw data) using DEFRA/DECC conversion factors (<http://archive.defra.gov.uk/environment/business/reporting/pdf/110707-guidelines-ghg-conversion-factors.pdf>)
- Figures which have been partially or entirely estimated on tables 1-4 are in bold italics. Explanations of each estimate follow:
  - Scope 1 (fugitive) emissions.** See section on data collection above.
  - Expenditure on energy.** on gas in March 2012 has been estimated. This constitutes less than 2% of the total spend.
  - Expenditure on accredited offsets.** This represents the amount accrued in the 2011/12 Annual Accounts for offsets relating to 2011/12 CO<sub>2</sub> emissions, and is a current best estimate.
  - Waste figures (all).** See section on data collection above. The figure for 'Compost' is food waste sent for anaerobic digestion. The original figure was given in litres and converted to tonnes using a conversion factor obtained from WRAP (Waste and Resources Action Programme).



# Financial Review

## Operating performance

Revenue for the year was £79,934k (2011-£89,797k). This reduction was mainly due to lower income from the European Commission (–£8,866k), caused by timing differences in the receipt of JOC funding. The Group made an operating profit of £2,718k (2011 – £709k). This increase was due to an operating profit in AEAIL of £100k (2011 – loss of £398k) and the reversal of an accrual relating to the Authority's previous decommissioning activities which was no longer required (£1,878k). The retained profit for the year after financing but before income tax was £2,857k, compared with £7,231k in 2011, which included £6,276k profit on the sale of Chilton Fields. Profit for the year after taxation was £3,206k compared with £8,790k in 2011, when profit was increased by the sale of Chilton Fields and by an associated tax credit.

## Nuclear Liabilities Estimate

The estimated cost of decommissioning and environmentally restoring the JET facilities at the Authority's Culham site is £188,007k, in 2011/12 money values and discounted at 2.2% to the date of the Statement of Financial Position. It is expected that the part of the Culham site on which the JET facilities are located will be designated to the NDA after the current research programme has ended and the liabilities will be transferred to NDA at that time. Various uncertainties affect this estimate. The effect of certain key factors on the estimate has been disclosed in Note 22a.

## Taxation

The Statement of Comprehensive Income shows an income tax credit of £349k. This comprises a current tax credit of £50k relating to 2010/11, and a £299k credit for deferred taxation.

### Current Taxation

There is no current year tax charge relating to 2011/12 as the Authority's trading and non-trading profits are offset by a claim for research and development tax relief to HM Revenue and Customs.

### Deferred Taxation

The £299k credit for deferred taxation reflects an adjustment relating to investment property revaluation (debit of £300k), offset by an adjustment relating to the change of tax rate for the carried forward deferred taxation provision following the Government's announcement that the corporation tax rate would reduce to 24% from April 2012 (credit of £599k).

## Insurance

During 2011/12, the Authority insured most non-nuclear risks through its wholly-owned subsidiary, AEAIL. AEAIL also covers some nuclear risks, but in the main where necessary these continue to be covered by the UK Government under the Nuclear Installations Act 1965. The Authority will continue to cover most of its remaining insurance requirements through AEAIL.

## Pensions

The Authority retains overall responsibility for oversight of the management of the Combined Pension Scheme (CPS), the Principal Non-Industrial Superannuation Scheme (PNISS) and the Protected

Persons Superannuation Scheme (PPSS) and for the preparation of their annual accounts. The management of the Schemes and the preparation of their accounts is carried out under contract by Babcock. Further details of Authority pension arrangements are set out in Note 23 to the accounts. The Combined pension resource accounts are at [www.official-documents.gov.uk](http://www.official-documents.gov.uk).

## Borrowing

The Atomic Energy Authority Act 1986 permits the Authority to borrow from the National Loans Fund and elsewhere if the Secretary of State for BIS, with HM Treasury approval, consents. Borrowing is subject to an overall limit that stood at £200 million throughout the year. There were no borrowings during the current or previous year.

## Charitable and political contributions

During the year, the Authority made charitable contributions of £10,930 (2010/11 £10,320) to local charities in line with its policy of supporting local stakeholders. No political contributions were made in the current or previous year.

## Research and development

Costs associated with the Authority's research and development activities are charged to the income statement as incurred.

## Statement of payment policy and practice

The Authority follows the Confederation of British Industry Prompt Payment Code. Its policy is to settle the terms of payment

with suppliers when agreeing the terms of each transaction, to ensure that suppliers are aware of the terms of payment, and to abide by the terms of payment.

In addition, the Authority has complied, where applicable, with the prompt payment guidance for public sector organisations, issued in 2008/09. This set out the requirement to pay suppliers within 10 days in order to assist the cash flow of smaller businesses, subject to the submission of valid invoices and to the usual financial control procedures.

During the year, the Authority's suppliers were paid within an average of 7 days (2010/11-7 days), which is well within both the 30 days specified in the Prompt Payment Code and the 10 day public sector requirement referred to above.



# Authority Committee Structure

## The United Kingdom Atomic Energy Authority Board

The Directors of the Board, all of whom served throughout the year, are set out below.

### Chairman

Professor Roger Cashmore, CMG, FRS

### Executive Directors

Professor Steve Cowley, Chief Executive Officer (CEO)

Martin Cox, Chief Operating Officer

### Non-Executive Directors

Professor Keith Burnett, CBE, FRS

Peter Jones, FCCA

Steve McQuillan

### Board Secretary

Eric Hollis

Biographical details of the Directors are included on pages 28 to 29. The responsibilities of the Directors are included on page 31.

## The Executive Committee

Professor Steve Cowley, Chief Executive Officer (CEO)

Martin Cox, Chief Operating Officer

Eric Hollis – Chief Financial Officer and Authority Secretary

Dr. Derek Stork – Director of Technology

Biographical details of the Executive Committee are included on pages 29 to 30. Their remuneration has been included in the Remuneration Report.

Dr Stork retired from the Authority in June 2012. Appropriate arrangements for continuity in the Executive Team are in place.

# Board of Directors

## Chairman and Non-Executives



**1 Professor Roger Cashmore, CMG, FRS**  
Appointed Chairman of the UK Atomic Energy Authority on 30 July 2010. He is a Fellow of the Royal Society and in 2010 led the Royal Society working group on Nuclear Proliferation. He is a former Principal of Brasenose College in Oxford, and is a Professor of Experimental Physics in Oxford. Before returning to Oxford, he was Director of Research and Deputy Director General of CERN, the European high energy physics laboratory in Geneva, Switzerland, where he was responsible for the experimental programme at the Large Hadron Collider (LHC). Before leaving for CERN he was Chairman of Physics in Oxford and during his teaching and research career he has more than 200 publications in learned journals. He has been a Visiting Professor in Tsukuba in Japan, Brussels, Padua, Fermilab in the United States and holds an Honorary Doctorate from the Joint Institute of Nuclear Research in Dubna, Russia. He was awarded the C V Boys Prize of the Institute of Physics and a Research Award by the Alexander von Humboldt Foundation in Germany. In 2004 he was made a Companion of the Order of St Michael and St George (CMG) for services to international particle physics.

**2 Professor Keith Burnett, CBE, FRS**  
Appointed to the Authority Board on 1 November 2010. He became Vice-Chancellor of the University of Sheffield in 2007. Previously he was Head of the Division of Mathematical, Physical and Life Sciences at the University of Oxford, having been a professor of Physics there for almost twenty years.



His research is in the area of ultra cold atomic physics. His direct involvement in fusion science policy started when he was head of Physics at Oxford and chaired the review of fusion science for the DTI. This report led to the Engineering and Physical Sciences Research Council (EPSRC) taking up the funding role for the UK effort in fusion research. He was from 2001 to 2007 Chair of the Fusion Advisory Board which advised EPSRC, and hence the Authority, on fusion strategy.

Last year he chaired the expert group that helped develop the Research Councils UK Fusion strategy, and had the opportunity to assess the UK's programme for the years ahead. He is a member of the Prime Minister's Council for Science and Technology.

**3 Peter Jones FCCA**  
Appointed to the Authority Board on 1 November 2010. He became a non-executive director of National Nuclear Laboratory and Chairman of its Audit Committee in August 2009. Since 2005 he has been a member of the Competition Commission. His previous roles have included: Principal Private Secretary to the Chairman of the National Coal Board, and during a subsequent 19 year career in Corporate Finance at Samuel Montagu & Co. Limited and HSBC Investment Banking, as a senior adviser to the Department of Trade and Industry during the 2003-4 strategic review of BNFL, as a senior adviser to Scottish Power and British Coal during their respective restructurings and privatisations and to British Nuclear Fuels Ltd during the implementation of the



strategic review and also as a consultant to the Shareholder Executive and Department of Trade and Industry during the final preparations for the restructuring of the civil nuclear clean-up sector in 2004-2005.

Peter is also a qualified Chartered Certified Accountant and has had exposure to a wide range of financial management and planning issues in a variety of sectors varying from financial services to electricity production.

**4 Steve McQuillan**  
Appointed to the Authority Board in November 2010. He is currently the CEO of the listed UK Engineering group – Avingtrans plc. Previous positions included Director/CEO of the National Physical Laboratory (working for Serco) and Divisional Managing Director of Oxford Instruments Superconductivity Ltd. Steve also has advisory board roles in Engineering UK and the EEF.

A graduate electronics engineer, Steve is a Fellow of the Institute of Physics and a Fellow of the Institute of Directors.



# Board of Directors

## Executive Team

1



### 1 Professor Steve Cowley

Joined the Authority in September 2008 as Director of Culham and was appointed to the Board as Chief Executive Officer and Accounting Officer for the Authority on 31 October 2009. He is part time Professor at Imperial College London and is Chair of Princeton's Plasma Physics Laboratory Science Advisory Committee. He is also a member of the Prime Minister's Council for Science and Technology.

A qualified physicist and Fellow of the American Physical Society and the Institute of Physics, Professor Cowley started his career at Princeton University in 1987 following his post-doctoral work at Culham. In 1993, he joined University of California, Los Angeles (UCLA) and became a Professor in 2000. From 2001, he led the plasma physics group at Imperial College, London for three years. In 2004, he was appointed Director of the Centre for Multi-scale Plasma Dynamics at UCLA and held this position before joining the UK Atomic Energy Authority in 2008. He recently co-chaired the US National Academy's decadal assessment of, and outlook for plasma science. He has published over 120 papers and articles covering theory of fusion plasmas, the origin of magnetic fields in the universe, the theory of plasma turbulence and explosive behaviour in both laboratory and astrophysical plasmas.

2



### 2 Martin Cox

Appointed to the Authority Board as Chief Operating Officer on 1 November 2010. He is responsible for the day-to-day running of the UK's fusion research programme, and for the operation of JET on behalf of EURATOM and fusion laboratories across Europe. Mr Cox is a theoretical physicist who joined Culham upon graduating, working on plasma modelling. He then became involved in the operation of the experimental facilities. In 1994 he was appointed the Project Manager for the design and construction of the MAST device. From 2000, when the Authority assumed responsibility for the operation of JET on behalf of the European fusion community, he became manager of the Machine Operations Department, overseeing the operation of most of the JET facilities as well as MAST. In 2007 he was appointed Senior Manager for all aspects of JET operation and in 2008 was appointed Assistant Director (Operations). He was appointed Operations Director on 1 November 2009.

3



### 3 Eric Hollis

Has over 40 years' experience within the Authority. He began his career working at the London HQ on energy forecasting and has since undertaken a wide range of roles including development and application of HR policy at both HQ and site levels before becoming Head of the Authority's Finance Branch in 1986. After a number of finance-related roles, he was appointed the Head of Corporate Finance for the the Authority Group in 2003, and acted as UKAEA Ltd's Group Financial Controller from its creation in 2008. He has been on the Board of AEA Insurance Ltd since 1997, and on the Board of the Harwell Science and Innovation Campus Joint Venture since 2010. He has been heavily involved in a number of major organisational restructuring projects, and has played a key role in the development of corporate governance and financial strategy as the Authority has evolved. He was appointed Chief Finance Officer and Authority Secretary for the UK Atomic Energy Authority on 1 November 2009, and Director, Support Division in 2011.

4



### 4 Dr. Derek Stork

Became Assistant Director (Technology) in 2008 and was appointed Director of Technology on 1 November 2009. He leads the UK's work in providing ITER Systems, the Fusion Technology and Materials programmes, power plant studies, and the MAST Upgrade project. After gaining his PhD, Dr Stork became a Research Associate at CERN. He joined Culham in 1978, working in the Heating and Injection Group. In 1980 he was seconded to JET's Neutral Beam Systems Group. From 1987 he became involved with JET's physics programme as a Session Leader for the Divertor Task Force. Dr Stork then held senior positions at JET including Programme Leader and Head of Neutral Beam Heating Division. In 2000, he became Manager of Culham's Heating and Fuelling Department, responsible for JET and MAST heating systems. From 2000 to 2004 he was also Task Force Leader for JET Deuterium-Tritium experiments, leading the 2003 tritium campaign. Dr Stork has over 100 publications and conference contributions.



# Statement of Directors' and Accounting Officer's Responsibility

Section 4(3) of the Atomic Energy Authority Act 1954 requires the United Kingdom Atomic Energy Authority to prepare a statement of accounts for each financial year in the form and on the basis set out in the Accounts Direction. The financial statements are prepared on an accruals basis and must give a true and fair view of the state of affairs of the Authority and of its profit and loss, recognised gains and losses and cash flows for the financial year.

In preparing those financial statements, the Accounting Officer is required to comply with the requirements of the Government Financial Reporting Manual and in particular to:

- observe the Accounts Direction issued by HM Treasury, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis;
- make judgements and estimates that are reasonable and prudent;
- state whether applicable accounting standards as set out in the Government Financial Reporting Manual have been followed, and disclose and explain any material departures in the financial statements; and
- prepare the financial statements on a going concern basis.

The Accounting Officer of the Department for Business, Innovation and Skills (BIS) has appointed the Chief Executive as Accounting Officer of the United Kingdom Atomic Energy Authority. The responsibilities of an Accounting Officer, including responsibility for the propriety and regularity of the public finances for which the Accounting Officer is answerable, for keeping proper records and for safeguarding the Authority's assets, are set out in the Accounting Officers' Memorandum published by HM Treasury.

## External audit

The Accounting Officer and Directors confirm that:

- there is no relevant audit information of which the auditors are unaware;
- all relevant steps have been taken to ensure that they are aware of relevant audit information; and
- all steps have been taken to establish that the auditors are aware of the information.

Details of the remuneration of the Group's auditor are set out in Note 9.

# Governance Statement

## Scope of Responsibility

As Accounting Officer, I have responsibility for maintaining a sound system of governance and internal control that supports the achievement of the United Kingdom Atomic Energy Authority's policies, aims and objectives, whilst safeguarding the public funds and assets for which I am personally responsible, in accordance with the responsibilities assigned to me in Managing Public Money. I am assisted in this by the Chief Financial Officer.

## Purpose of the Governance Statement

The Governance Statement, for which I am personally responsible, sets out how I have discharged my responsibility to manage and control the Authority's resources during the year. It also sets out the governance framework and control structure of the Authority, its stewardship and corporate governance, and the framework for and effectiveness of the risk management process in place.

## The Authority's Governance Framework and Structure

### The Board

The United Kingdom Atomic Energy Authority is controlled through its Board of Directors, who are appointed by BIS. The Board's main role is to establish the Authority's vision, mission and values, set strategy and structure, and exercise accountability to the Authority's stakeholders.

The Board, which met five times during the year, has a schedule of matters reserved for its approval. This includes: establishing the overall strategic direction of the Authority within the policy and resources framework agreed with the responsible Government Minister; reviewing the Authority's corporate objectives and goals; approving the annual accounts, budget and corporate plan; reviewing and approving proposals to start new activities or to discontinue existing activities; ensuring that high standards of corporate governance are observed at all times; and reviewing the safety, environmental and security performance of the Authority.

The Board delegates responsibility for day-to-day and business management control to the Chief Executive who is assisted by key senior managers comprising the Executive Committee. The Executive Committee generally meets twice a month. Specific responsibilities delegated to the Executive Committee include: development of Authority performance measures; implementation of the strategies and policies as determined by the Board; monitoring of the operating and financial results against plans and budgets; and developing and implementing risk management systems.

### The roles of the Chairman and Chief Executive

The division of responsibilities between the Chairman of the Board and the Chief Executive is clearly defined and has been approved by the Board. The Chairman leads the Board in the determination of its strategy and in the achievement of its objectives.

The Chief Executive has direct charge of the Authority on a day-to-day basis and is accountable to the Board for the financial and operational performance of the Authority and its subsidiaries. The Chief Executive is also the Authority Accounting Officer and is responsible to Parliament through the Committee of Public Accounts for the stewardship of resources. His responsibilities are set out in a letter from the BIS Permanent Secretary and the accompanying Accounting Officer Memorandum. The Accounting Officer has a personal responsibility for the propriety and regularity of the public finances for which he is answerable; for the keeping of proper accounts; for prudent and economical administration; for the avoidance of waste and extravagance; and for the efficient and effective use of all available resources. He is also responsible for taking formal action if the Authority Board is contemplating a course that would infringe these requirements.



# Governance Statement continued

## Directors and Directors' independence

Throughout the year, the Board comprised the Chairman, two Executive Directors and three independent Non-Executive Directors. A list of Board members and their biographical details are at pages 28 to 30.

The Non-Executive Directors constructively challenge and help develop proposals on strategy, and bring strong, independent judgement, knowledge and experience to the Board's deliberations. The independent Directors are of sufficient calibre and number that their views carry significant weight in the Board's decision making.

The Board considers all its Non-Executive Directors to be independent in character and judgement. No Non-Executive Director:

- has been an employee of the Authority within the last five years;
- has, or has had within the last three years, a material business relationship with the Authority or its former or current subsidiaries;
- receives remuneration from the Authority other than a Director's fee;
- has close family ties with any of the Authority's advisers, Directors or senior employees;
- holds cross-directorships or has significant links with other Directors through involvement in other companies or bodies; or
- has served on the Board for more than nine years.

## Board Committees

### Attendance

The number of full Board meetings and committee meetings attended by each Director during the year was as follows:

	Board	Remuneration Committee	Audit Committee
Roger Cashmore	5 (5)	5 (5)	5 (5)
Keith Burnett	5 (5)	5 (5)	3 (5)
Steve Cowley	5 (5)	–	–
Martin Cox	5 (5)	–	–
Peter Jones	5 (5)	5 (5)	5 (5)
Steve McQuillan	4 (5)	4 (5)	4 (5)

Figures in brackets indicate the maximum number of meetings in the period in which the individual was a Board member.

The attendance figures demonstrate that all Board Members give high priority to their responsibilities and fully participate in the Authority's governance structure.

## Remuneration Committee

The Remuneration Committee met five times during the year. All its members are independent Non-Executive Directors. Where necessary, non-committee members are invited to attend.

The Committee's principal responsibility is to make recommendations to BIS on the level of Directors' remuneration. In addition the Committee regularly reviews the Authority's executive remuneration policy in relation to its competitors and industry norms and contract periods.

As the members of the Authority Board are appointed by BIS, the Authority does not maintain a nominations committee.

## Audit Committee

The Audit Committee met five times during the year. All its members are independent Non-Executive Directors.

During the year, the Committee had at least one member possessing what the Smith Report describes as recent and relevant financial experience (Peter Jones). It will be seen from the Directors' biographical details, appearing on pages 28 to 29 that the other members of the Committee brought to it a wide range of experience from positions at the highest level in the UK scientific and business community.

Under its terms of reference, the Committee is responsible for: monitoring the effectiveness of the external audit process and approving the terms of engagement and remuneration of the external auditor; endorsing the Authority's policy on the provision of non-audit services by the external auditor; monitoring and reviewing the effectiveness of the internal audit programme; reviewing the actions and judgements of management in relation to annual and other financial statements before submission to the Authority Board; and reviewing annually the system of internal control and the processes for monitoring and evaluating the risks facing the Authority.

## Corporate Governance Review Processes

The Authority's corporate governance arrangements are kept under constant review to ensure that they are compliant with best practice as applicable to the public sector, and with any additional Treasury requirements. In addition, the Board keeps its own performance under review. It has made a formal assessment during the year of its compliance with the Corporate Governance Code, and has assessed its own effectiveness. The assessment concluded that the Authority met the requirements of the Code. No major issues requiring inclusion in the Governance Statement were identified. However, it was concluded that succession planning and the scheduling and balance of Board business should be reviewed, and that the implementation of the Board's decisions should be reviewed annually.

As part of its commitment to the highest standards of business conduct and integrity, the Board has initiated a review of the Authority's compliance with the provisions of the Bribery Act of July 2011. Authority policies and procedures have been reviewed and updated where necessary to provide additional assurance of compliance with the new legislation, and the revised policies and procedures have been communicated to all employees and contractors.

The Authority's subsidiary, AEA Insurance Ltd, also has appropriate governance arrangements in place. These are formally reviewed and updated as necessary by its Board of Directors.

## The Risk and Internal Control Framework Responsibilities for Managing Risk

The Board has delegated day-to-day responsibility for risk management to the Executive Committee and each member of the Committee is responsible for ensuring that a sound system of risk management is in place in the area of the organisation that they represent. The Authority Chief Financial Officer has overall responsibility for co-ordinating risk management arrangements across the Group and has also been appointed the Senior Information Risk Owner (SIRO). He works with the other members of the senior management team to ensure consistency of approach.

## The Framework for Managing Risk

A Risk Management Champion, in his role as Head of Assurance, has been appointed to work with the members of the Executive Committee and their staff to facilitate the identification, evaluation and mitigation of key risks applicable to their areas of responsibility together with the design and operation of suitable internal controls. In addition, Information Asset Owners have been appointed throughout the Authority, to take the lead in identifying, monitoring and controlling data-related risks. Risks have been captured in terms of both threats and opportunities to achieving Authority objectives. The Authority Risk Register is regularly reviewed and updated to ensure that it is relevant to the activities of the Authority, and underpins the risk and control framework in place across the organisation.



# Governance Statement continued

## Key Risks

The Authority is exposed to a number of key risks which can be grouped into three areas:

- funding and development of current and future programmes and business, including risks associated with the timing of funding from key customers and with the development of additional commercial work;
- retention of key skills and capabilities within the organisation; and
- technical and reputational risks.

The action plans and strategies in place to mitigate these key risks are kept under regular review.

Business reports are prepared by the Authority executive team focusing on the following areas:

- key risks to the achievement of business objectives;
- progress against key performance indicators; and
- progress of programme against budget.

The Executive Committee considers the risk and performance reports quarterly and the financial report monthly. The Board takes an annual report on key risks and updates in the event of significant changes, and regular reports on performance and financial progress. The Board has formally reviewed a statement of the Authority's risk appetite, and confirmed the approach to this recommended by the Executive team.

The Authority's Statement of Financial Position includes liabilities of over £200m for site restoration and restructuring costs. Matching reimbursement receivables are recognised for the majority of these liabilities on the basis of assurances from BIS that it continues to accept responsibility in principle for these costs.

## Information Assurance

The Information Assurance Steering Committee, which reports, via the Authority's Assurance Committee, to the Authority Executive and Board, monitors information risks, agrees where action is required and oversees implementation of government guidance where necessary. The SIRO has confirmed that there are no issues relating to information risks or information assurance that require inclusion in the governance statement. There have been no reportable data breaches or data loss incidents during the year.

## Review of effectiveness of risk management and internal controls

As Accounting Officer, I have responsibility for reviewing the effectiveness of the systems of risk management and internal control. My review of the effectiveness of these systems is informed by the work of the internal auditors and the senior managers within the Authority who have responsibility for the development and maintenance of the internal control framework, the SIRO's report on how risks to information are being managed and controlled, and comments made by the external auditors in their management letter and other reports. I have been advised on the implications of the result of my review by the Board and the Audit Committee and a plan to address weaknesses and ensure continuous improvement of the system is in place.

The Authority has an internal audit department which operates in accordance with Government Internal Audit Standards and an Audit Charter approved by the Audit Committee. The work of the internal audit department is determined by analysis of the risks to which the Authority is exposed. The annual internal audit programme is based on this analysis. It includes reviews which test and challenge the effectiveness of the management of risks and information. The Head of Internal Audit provides me, as Accounting Officer, with regular reports on internal audit activity in the Authority. These reports include an independent opinion on the adequacy and effectiveness of the Authority's system of risk management and internal control. The Head of Internal Audit has confirmed that there is a generally sound system of risk management and internal control within the Authority group and that the adequacy and effectiveness of the control environment continues to operate to an acceptable standard.

Steve Cowley  
**Chief Executive and Accounting Officer**  
26 June 2012

# Remuneration Report

The United Kingdom Atomic Energy Authority applies the Principles of Good Governance relating to Directors' remuneration to the extent that they are appropriate to the Authority. The principal implementation arrangements are set out below.

## Remuneration policy

The remuneration of Directors is set by the Secretary of State for BIS with the approval of HM Treasury in accordance with the Atomic Energy Authority Act 1954. The Authority Remuneration Committee makes recommendations to BIS on the overall remuneration package for Executive Directors. The Non-Executive Directors who form the Committee are not involved in decisions relating to their own remuneration.

In reaching its recommendations, the Committee has regard to the following considerations:

- the need to recruit, retain and motivate suitably able and qualified people to exercise their different responsibilities; and
- the funding available to the Authority.

The Committee takes account of the evidence it receives about wider economic considerations and the affordability of its recommendations.

## Service contracts

Directors are appointed by the Secretary of State for BIS. This is normally for a three year term that may be renewed upon expiry in accordance with the guidelines issued by the Commissioner for Public Appointments.

## Remuneration and pension entitlements

The individual components of the remuneration packages are:

### Salary and fees

Executive Directors receive a basic salary which is reviewed annually. The Chairman and Non-Executive Directors receive fees for their services. Members of the Executive Committee also receive a basic salary which is reviewed annually.

### Benefits

Executive Directors are entitled to certain benefits under the terms of their service contracts. These principally comprise a company car or personal allowance in lieu of car and private health care, and, for the current CEO, relocation assistance.

All Directors are also reimbursed for reasonable expenses incurred in line with the policy for the Authority's employees. These reimbursements are not included in the table below.

### Performance related bonuses

The performance bonuses for Executive Directors are calculated in accordance with formulae that are agreed each year with BIS on the basis of recommendations from the Remuneration Committee. The total bonus is made up of two components: the performance of the Authority against specific quantified targets, and the performance of the individual against specific targets. Members of the Executive Committee receive bonuses based on formulae that are agreed each year by the Remuneration Committee. The performance related bonuses for 2011/12 shown in the table below are an estimate of the amounts which may be payable. The final amounts payable will be subject to approval by BIS where applicable.

# Remuneration Report continued

Individual Directors' remuneration for the year is shown in the table below, with salaries disclosed on an actual payments basis.

This part of the report is subject to audit.

	Salary/ Fees £	Benefits <sup>(1)</sup> £	Annual Bonus £	2012 Total £	2011 Total <sup>(2)</sup> £
<b>Chairman</b>					
Roger Cashmore	25,000	146	–	25,146	16,828
<b>Non-Executive Directors</b>					
Keith Burnett	15,000	564	–	15,564	6,340
Peter Jones	15,000	1,547	–	16,547	6,690
Stephen McQuillan	15,000	527	–	15,527	6,317
<b>Executive Directors</b>					
Steve Cowley	155,295	31,062	29,662	216,019	206,690
Martin Cox	114,119	5,000	16,879	135,998	129,310
<b>Members of the Executive Committee</b>					
Eric Hollis	103,000	5,000	11,320	119,320	117,075
Derek Stork	103,733	7,248	10,944	121,925	119,839
<b>Previous Non-Executive Directors</b>					
Lady Judge (to 30/7/10)	–	–	–	–	20,000
John Kennedy (to 31/5/10)	–	–	–	–	4,167
Mark Slaughter (to 31/5/10)	–	–	–	–	4,167
Ken Vowles (to 30/11/10)	–	–	–	–	16,667
Arnold Wagner (to 31/5/10)	–	–	–	–	4,167
	546,147	51,094	68,805	666,046	658,257

<sup>(1)</sup> The expenses disclosed for the current Chairman and Non-Executive Directors relate to travel to Culham for Board and other Committee meetings and include the tax liability on these expenses which was met by the Authority. 2011 comparatives have been restated to include these expenses.

<sup>(2)</sup> The 2011 comparatives for the current Chairman and Non-Executives cover only part of the year – from 30/7/10 for the Chairman, and from 1/11/10 for the Non-Executives.

## Remuneration ratios

	2011/2012 £	2010/2011 £
Highest Paid Director's Total Remuneration	216,019	206,690
Median Total Remuneration	37,244	36,503
Ratio	5.8	5.6

Reporting bodies are required to disclose the relationship between the remuneration of the highest paid director in their organisation and the median remuneration of the organisation's workforce.

The remuneration of the highest paid director in the Authority in the year 2011/12 was £216,019 (2010/11 – £206,690). This was 5.8 times (2010/11 – 5.6 times) the median remuneration of the workforce, which was £37,244 (2010/11 – £36,503).

No employee received remuneration in excess of the highest-paid Director in either 2011/12 or 2010/11.

Total remuneration includes salary, performance-related pay, benefits in kind and severance payments. It does not include employer pension contributions and the cash equivalent transfer value of pensions.

## Pension entitlements

Executive Directors and members of the Executive Committee are members of the United Kingdom Atomic Energy Authority Combined Pension Scheme that pays an annual pension based on pensionable final earnings together with a lump sum at normal retirement age. Benefits are also payable in the event of death or ill health retirement. The Authority also operates an unfunded pension arrangement for three former Chief Executives to take account of pensionable pay above the earnings cap introduced by the Finance Act 1989.

Further details of the pension schemes and unfunded pensions can be found at Note 23 to the accounts.

The pension entitlements shown in the table below (which is subject to audit) are those that would be paid annually on retirement based on service to 31 March 2012 and include the value of added years paid for by Directors.

	Accrued Pension 2011 £	Lump sum 2011 £	Increase in accrued pension £	Increase in lump sum £	Accrued Pension 2012 £	Lump Sum 2012 £
<b>Executive Directors</b>						
Steve Cowley	4,373	13,118	1,776	5,330	6,149	18,448
Martin Cox	44,742	134,227	1,430	4,290	46,172	138,517
<b>Members of the Executive Committee</b>						
Eric Hollis	50,844	152,532	656	1,968	51,500	154,500
Derek Stork	44,125	132,375	1,297	3,890	45,422	136,265
	144,084	432,252	5,159	15,478	149,243	447,730



# Remuneration Report continued

The following table (which is subject to audit) sets out the Cash Equivalent Transfer Value (CETV) of the Executive Directors' and Executive Committee members' accrued pension entitlements which have been calculated by the Scheme managers in accordance with the Occupational Pension Schemes (Transfer Values) Regulations 1996 as amended, having taken actuarial advice. The transfer values do not represent sums paid or payable to the Directors or Executive Committee members but represent a potential liability of the pension scheme or the Authority.

	Transfer Value 2011 <sup>(1)</sup> £	Directors' contributions £	Increase net of contributions £	Transfer Value £
Steve Cowley	84,515	6,480	27,862	118,857
Martin Cox	928,390	5,706	24,402	958,498
<b>Members of the Executive Committee</b>				
Eric Hollis	1,014,919	3,377	9,993	1,028,289
Derek Stork	1,011,142	5,187	25,048	1,041,377
	3,038,966	20,750	87,305	3,147,021

<sup>(1)</sup> The actuarial factors used to calculate CETVs changed in 2011/12. The CETVs at 31/3/11 and 31/3/12 have both been calculated using the new factors, for consistency. The CETV at 31/3/11 therefore differs from the corresponding figure in last year's report, which was calculated using the previous factors.

Members of the pension scheme have the option to pay Additional Voluntary Contributions; neither the contributions nor the resulting benefits are included in the above tables.

On behalf of the Board

**Keith Burnett**  
Chairman of Remuneration Committee  
26 June 2012

**Steve Cowley**  
Chief Executive and Accounting Officer  
26 June 2012

# The Certificate and Report of the Comptroller and Auditor General to the Houses of Parliament

## United Kingdom Atomic Energy Authority

I certify that I have audited the financial statements of the United Kingdom Atomic Energy Authority for the year ended 31 March 2012 under the Atomic Energy Authority Act 1954. The financial statements comprise the Group and Parent Statements of: Comprehensive Income, Financial Position, Cash Flows, Changes in Taxpayers' Equity; and the related notes. These financial statements have been prepared under the accounting policies set out within them. I have also audited the information in the Remuneration Report that is described in that report as having been audited.

## Respective responsibilities of the Board, Accounting Officer and auditor

As explained more fully in the Statement of Directors' and Accounting Officer's responsibilities, the Board and the Accounting Officer are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view. My responsibility is to audit, certify and report on the financial statements in accordance with the Atomic Energy Authority Act 1954. I conducted my audit in accordance with International Standards on Auditing (UK and Ireland). Those standards require me and my staff to comply with the Auditing Practices Board's Ethical Standards for Auditors.

## Scope of the audit of the financial statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the group's and the United Kingdom Atomic Energy Authority's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the United Kingdom Atomic Energy Authority; and the overall presentation of the financial statements. In addition I read all the financial and non-financial information in the Annual Report to identify material inconsistencies with the audited financial statements. If I become aware of any apparent material misstatements or inconsistencies I consider the implications for my certificate.

I am required to obtain evidence sufficient to give reasonable assurance that the expenditure and income recorded in the financial statements have been applied to the purposes intended by Parliament and the financial transactions recorded in the financial statements conform to the authorities which govern them.

## Opinion on regularity

In my opinion, in all material respects the expenditure and income recorded in the financial statements have been applied to the purposes intended by Parliament and the financial transactions recorded in the financial statements conform to the authorities which govern them.

## Opinion on financial statements

In my opinion:

- the financial statements give a true and fair view of the state of the group's and the United Kingdom Atomic Energy Authority's affairs as at 31 March 2012 and of the group's and the parent's comprehensive income for the year then ended; and
- the financial statements have been properly prepared in accordance with the Atomic Energy Authority Act 1954 and HM Treasury directions issued thereunder.

## Opinion on other matters

In my opinion:

- the part of the Remuneration Report to be audited has been properly prepared in accordance with HM Treasury directions issued under the Atomic Energy Authority Act 1954; and
- the information given in the Management Commentary and Board of Directors sections included in the Annual Report for the financial year for which the financial statements are prepared is consistent with the financial statements.

## Matters on which I report by exception

I have nothing to report in respect of the following matters which I report to you if, in my opinion:

- adequate accounting records have not been kept; or
- the financial statements and the part of the Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- I have not received all of the information and explanations I require for my audit; or
- the Governance Statement does not reflect compliance with HM Treasury's guidance.

## Report

I have no observations to make on these financial statements.

## Amyas C E Morse

Comptroller and Auditor General  
National Audit Office  
157-197 Buckingham Palace Road  
Victoria, London, SW1W 9SP

27 June 2012

The maintenance and integrity of the United Kingdom Atomic Energy Authority website is the responsibility of the Authority Board; the work carried out by the auditors does not involve consideration of these matters and accordingly the auditors accept no responsibility for any changes that may have occurred to the financial statements since they were initially presented on the website.

# Consolidated Statement of Comprehensive Income

for the year ended 31 March 2012

	Note	Group		Authority	
		2012 £k	2011 £k	2012 £k	2011 £k
<b>Income</b>					
Revenue	6	79,934	89,797	79,636	89,475
Other income		79	82	307	446
Share of revenue of joint venture		(298)	(322)	-	-
		<b>79,715</b>	<b>89,557</b>	<b>79,943</b>	<b>89,921</b>
<b>Expenditure</b>					
Raw materials and consumables		12,330	16,503	12,330	16,503
Other external expense		17,117	15,388	17,117	15,388
Staff costs	7	42,554	48,518	42,554	48,518
Depreciation, amortisation and impairment		395	295	286	295
Other expense		4,897	8,712	5,263	8,731
Costs capitalised		(296)	(568)	(296)	(568)
		<b>76,997</b>	<b>88,848</b>	<b>77,254</b>	<b>88,867</b>
<b>Operating Profit</b>					
		<b>2,718</b>	<b>709</b>	<b>2,689</b>	<b>1,054</b>
Finance Income	10	477	412	290	247
Finance expense	10	(215)	(216)	(215)	(216)
Profit on disposal of fixed asset		-	6,276	-	6,276
Share of profits (loss) of joint venture after tax	15	(123)	50	-	-
<b>Profit before tax</b>		<b>2,857</b>	<b>7,231</b>	<b>2,764</b>	<b>7,361</b>
Income tax credit (debit)	12	349	1,559	349	1,559
<b>Profit for the year</b>		<b>3,206</b>	<b>8,790</b>	<b>3,113</b>	<b>8,920</b>
<b>Other comprehensive income</b>					
Net gain (loss) on revaluation of property		1,777	409	1,777	409
Actuarial gains (losses) on defined benefit pension plans		(141)	92	(141)	92
Income tax (debit)/credit relating to components of other comprehensive income		(189)	124	(189)	124
Other comprehensive income for the year		1,447	625	1,447	625
<b>Total comprehensive income for the year ended 31/3/2012</b>		<b>4,653</b>	<b>9,415</b>	<b>4,560</b>	<b>9,545</b>

The notes on pages 45 to 68 are an integral part of these financial statements.

# Consolidated Statement of Financial Position

as at 31 March 2012

	Note	Group		Authority	
		2012 £k	2011 £k	2012 £k	2011 £k
<b>Non-current assets</b>					
Property, plant and equipment	13	20,450	18,546	20,450	18,546
Investment property	14	38,842	37,877	38,842	37,877
Intangible assets		12	18	12	18
Financial assets	15	2,467	2,674	5,731	5,707
Other receivables	17	202,543	194,678	202,543	194,678
<b>Total non-current assets</b>		<b>264,314</b>	<b>253,793</b>	<b>267,578</b>	<b>256,826</b>
<b>Current assets</b>					
Inventories		27	21	27	21
Trade and other receivables	17	11,988	13,268	12,023	13,293
Financial assets	15	14,463	19,738	5,000	10,000
Cash and cash equivalents	18	53,577	51,411	50,027	48,103
<b>Total current assets</b>		<b>80,055</b>	<b>84,438</b>	<b>67,077</b>	<b>71,417</b>
<b>Total assets</b>		<b>344,369</b>	<b>338,231</b>	<b>334,655</b>	<b>328,243</b>
<b>Current Liabilities</b>					
Trade and other payables	19	47,602	55,749	47,591	55,744
Provisions for liabilities and charges	22	7,485	7,062	6,735	6,012
<b>Total current liabilities</b>		<b>55,087</b>	<b>62,811</b>	<b>54,326</b>	<b>61,756</b>
<b>Non-current assets plus net current assets</b>		<b>289,282</b>	<b>275,420</b>	<b>280,329</b>	<b>266,487</b>
<b>Non-current liabilities</b>					
Other payables	19	94	94	94	94
Deferred income	20	60	113	60	113
Deferred income tax liabilities	21	9,265	9,376	9,265	198,744
Provisions for liabilities and charges	22	209,037	199,664	208,190	198,744
<b>Total non-current liabilities</b>		<b>218,456</b>	<b>209,547</b>	<b>217,609</b>	<b>208,327</b>
<b>Assets less liabilities</b>		<b>70,826</b>	<b>66,173</b>	<b>62,720</b>	<b>58,160</b>
<b>Taxpayers' equity</b>					
General reserve		13,658	13,658	13,658	13,658
Revaluation reserve		8,870	7,402	8,870	7,402
Retained earnings		48,298	45,113	40,192	37,100
		<b>70,826</b>	<b>66,173</b>	<b>62,720</b>	<b>58,160</b>

The notes on pages 45 to 68 are an integral part of these financial statements.

The Financial Statements on pages 41 to 68 were approved by the Board on 26 June 2012 and were signed on its behalf by:

**Steve Cowley**  
Chief Executive and Accounting Officer

**Eric Hollis**  
Chief Financial Officer



# Consolidated Statement of Cash Flows

## for the year ended 31 March 2012

	Note	Group		Authority	
		2012 £k	2011 £k	2012 £k	2011 £k
<b>Cash flows from operating activities</b>					
Profit for the year		3,206	8,790	3,113	8,920
Adjustments for non-cash transactions:					
– Depreciation, amortisation, and impairment		395	295	286	295
– Deferred income released	20	(53)	(81)	(53)	(81)
– Change in fair value of investment property	14	(965)	(687)	(965)	(687)
– Net finance income recognised		(262)	(196)	(75)	(31)
– Income tax debit (credit)	12	(349)	(1,559)	(349)	(1,559)
– Profit on sale of fixed assets		-	(6,276)	-	(6,276)
– Share of loss (profit) of joint venture		123	-	-	-
Changes in working capital:					
– (Increase)/Decrease in trade and other receivables		984	4,389	974	4,386
– (Increase)/Decrease in inventories		(6)	7	(6)	7
– (Increase)/Decrease in current financial assets		5,275	20,048	5,000	20,000
– Increase/(Decrease) in trade and other payables		(8,103)	(27,478)	(8,106)	(27,437)
– Use of provisions		1,875	(2,154)	2,245	(2,305)
<b>Net cash inflow (outflow) from operating activities</b>		<b>2,120</b>	<b>(4,902)</b>	<b>2,064</b>	<b>(4,768)</b>
<b>Cash flows from investing activities</b>					
Purchase of property, plant and equipment	13	(406)	(749)	(406)	(749)
Proceeds from disposal of property, plant and equipment		-	22,017	-	22,017
Investment in joint venture		(25)	(69)	(24)	(25)
Interest received		477	412	290	247
<b>Net cash inflow (outflow) from investing activities</b>		<b>46</b>	<b>21,611</b>	<b>(140)</b>	<b>21,490</b>
<b>Cash flows from financing activities</b>					
<b>Net increase/(decrease) in cash and cash equivalents in the period</b>		<b>2,166</b>	<b>16,709</b>	<b>1,924</b>	<b>16,722</b>
Cash and cash equivalents at the beginning of the period		51,411	34,702	48,103	31,381
<b>Cash and cash equivalents at the end of the period</b>		<b>53,577</b>	<b>51,411</b>	<b>50,027</b>	<b>48,103</b>

The notes on pages 45 to 68 are an integral part of these financial statements.

# Consolidated Statement of Changes in Taxpayers' Equity

## for the year ended 31 March 2012

Group	General reserve £k	Revaluation reserve £k	Retained earnings £k	Total £k
Balance at 1 April 2010	13,658	7,111	35,989	56,758
<b>Changes in Taxpayers' Equity 2010/2011</b>				
Total comprehensive income for the year	-	533	8,882	9,415
Depreciation transfer	-	(242)	242	-
<b>Balance at 31 March 2011</b>	<b>13,658</b>	<b>7,402</b>	<b>45,113</b>	<b>66,173</b>
<b>Changes in Taxpayers' Equity 2011/2012</b>				
Total comprehensive income for the year	-	1,588	3,065	4,653
Depreciation transfer	-	(120)	120	-
<b>Balance at 31 March 2012</b>	<b>13,658</b>	<b>8,870</b>	<b>48,298</b>	<b>70,826</b>
<b>Authority</b>				
	General reserve £k	Revaluation reserve £k	Retained earnings £k	Total £k
Balance at 1 April 2010	13,658	7,111	27,846	48,615
<b>Changes in Taxpayers' Equity 2010/2011</b>				
Total comprehensive income for the year	-	533	9,012	9,545
Depreciation transfer	-	(242)	242	-
<b>Balance at 31 March 2011</b>	<b>13,658</b>	<b>7,402</b>	<b>37,100</b>	<b>58,160</b>
<b>Changes in Taxpayers' Equity 2011/2012</b>				
Total comprehensive income for the year	-	1,588	2,972	4,560
Depreciation transfer	-	(120)	120	-
<b>Balance at 31 March 2012</b>	<b>13,658</b>	<b>8,870</b>	<b>40,192</b>	<b>62,720</b>

# Notes to the Financial Statements

## 1 General information

The Authority is an NDPB and was established by the Atomic Energy Authority Act 1954. The address of the Authority's registered office is Culham Science Centre, Abingdon, Oxfordshire, OX14 3DB. Its sponsoring government department is the Department for Business, Innovation and Skills. The Authority and its subsidiaries are referred to as "the Group".

The Accounting Officer authorised these financial statements for issue on 27 June 2012.

## 2 Basis of preparation

The financial statements comply with the provisions of the Atomic Energy Authority Act 1954 and the Accounts Direction issued by HM Treasury. The latter requires the financial statements to be prepared in accordance with the Government Financial Reporting Manual (FRm) issued by HM Treasury as updated annually. The accounting policies contained in the FRm apply International Financial Reporting Standards (IFRS) as adapted or interpreted for the public sector. Where the FRm permits a choice of accounting policy, the accounting policy which is judged to be most appropriate to the particular circumstances of the Group for the purpose of giving a true and fair view has been selected.

The financial statements have been prepared on a going concern basis. Political agreement on the 2012-2013 Euratom Framework Programme for nuclear research, which includes JET operation, was reached in December 2011, and confirmed in a European Council decision. The European Commission is now working through the appropriate procedures and funding mechanisms to implement the research programme. The Directors therefore believe that the continuing commitment of both the UK and Europe to fusion research, and the acceptance by BIS of responsibility for costs associated with Authority site restoration and restructuring liabilities, are sufficient to support continuing operations for the foreseeable future.

The financial statements are presented in pounds sterling, which is the Authority's functional currency, and have been prepared under the historical cost convention, except for land and buildings, investment properties, assets held-for-sale and derivative financial instruments which are stated at fair value.

The preparation of financial statements in conformity with IFRS requires judgements, estimates and assumptions to be made that affect the application of accounting policies and the reported amounts of income, expenses, assets and liabilities. Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the period in which the estimates are revised and in any future periods affected. Information about significant areas of estimation uncertainty and critical judgements in applying accounting policies that have the most significant effect on the amounts recognised in the consolidated financial statements is included in the notes to the financial statements.

## 3 Significant accounting policies

The principal accounting policies applied by the Authority in the preparation of these financial statements are set out below. These policies have been applied consistently in dealing with all items that are considered material to the financial statements.

### 3.1 Consolidation

#### (a) Subsidiaries

Subsidiaries are entities controlled by the Group. Control exists when the Group has the power to govern the financial and operating policies of an entity so as to obtain benefits from activities and actually exercises this power. In assessing control, potential voting rights that are currently exercisable are taken into account. The financial statements of subsidiaries are included in the consolidated financial statements from the date that control commences until the date that control ceases. The accounting policies of subsidiaries are changed when necessary to align them with the policies adopted by the Group.

#### (b) Joint ventures

Joint ventures are those entities over which the Group exercises joint control through a contractual arrangement. The results, assets and liabilities of joint ventures are incorporated in the consolidated financial statements using the equity method of accounting. Investments in joint ventures are initially carried in the statement of financial position at cost and subsequently adjusted by post-acquisition changes in the Group's share of the net assets of the joint venture, less any impairment in the value of individual investments. Losses of joint ventures in excess of the Group's interest in those joint ventures are not recognised, except where the Group has made a commitment to make good those losses.

#### (c) Transactions eliminated on consolidation

Inter-group transactions, balances and unrealised gains and losses on transactions between Group companies are eliminated on consolidation.

### 3.2 Revenue recognition

Revenue is recognised when the amount can be reliably measured, it is probable that future economic benefits will be received and when specific criteria have been met as described below. The amount of revenue is not considered to be reliably measurable until all contingencies relating to the sale have been resolved. Revenue is shown net of value added tax, returns, rebates and discounts.

#### (a) Service contracts

Revenue from cost recovery contracts for managing the UK's fusion research programme and the European Union's JET facility is recognised to the extent of costs incurred in the period that are expected to be recoverable from customers.

Revenue from other service contracts is recognised under the percentage-of-completion method. Revenue is generally recognised based on the services performed to date as a percentage of the total services to be performed. If circumstances arise that may change the original estimates of revenues, costs or extent of progress toward completion, estimates are revised. These revisions may result in increases or decreases in estimated revenues or costs and are reflected in income in the period in which the circumstances that give rise to the revision become known.

#### (b) Rental income

Rental income from investment properties is recognised in the statement of comprehensive income on a straight-line basis over the term of the lease. Lease incentives granted are recognised as an integral part of the total rental income over the term of the lease.

#### (c) Grant-in-aid

Grant-in-aid relating to revenue expenditure is recognised in the statement of comprehensive income in the same period as the related expenditure that it is intended to fund. Grant in aid relating to property, plant and equipment is included in non-current liabilities as deferred income and is credited to the statement of comprehensive income on a straight-line basis over the expected lives of the related assets.

This departure from the specified treatment in the FRm has been agreed with HM Treasury.

### 3.3 Research expenditure

Expenditure on research activities, undertaken with the prospect of gaining new scientific or technical knowledge and understanding, is recognised in the statement of comprehensive income when incurred.

### 3.4 Employee benefits

#### (a) Short-term employee benefits

Short-term employee benefits are recognised in the year in which the related service is provided. A liability is recognised for the amount expected to be paid under short-term bonus arrangements if the Group has a present legal or constructive obligation to pay this amount as a result of past service provided by employees and the obligation can be estimated reliably.

#### (b) Termination benefits

Termination benefits are payable when employment is terminated by the Group before the normal retirement date, or whenever an employee accepts voluntary redundancy in exchange for these benefits. The Group recognises termination benefits when it is demonstrably committed to either: terminating the employment of current employees according to a detailed formal plan without possibility of withdrawal; or providing termination benefits as a result of an offer made to encourage voluntary redundancy. Benefits falling due more than 12 months after the reporting date are discounted to their present value.

#### (c) Retirement benefits

Obligations for contributions to defined contribution schemes are recognised as an expense when they are due. The Group has no further payment obligations once the contributions have been paid.

The Group operates three defined benefit schemes for the benefit of its employees. Two of these are closed to new members. The schemes are unfunded multi-employer defined benefit schemes. In accordance with the FRm, these schemes are accounted for as defined contribution schemes in these financial statements and the obligations recognised are limited to the contributions due.



# Notes to the Financial Statements

The Group has a liability in respect of unfunded retirement benefits. The liability recognised in the statement of financial position is the present value of the defined benefit obligation at the reporting date, together with adjustments for unrecognised past-service costs. The defined benefit obligation is calculated annually by independent actuaries using the projected unit credit method. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using a real rate of interest set by HM Treasury. Actuarial gains and losses arising from experience adjustments and changes in actuarial assumptions are charged or credited to equity in the period in which they arise.

## 3.5 Segment reporting

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, has been identified as the Authority Board.

## 3.6 Foreign currency translation

Transactions in foreign currencies are translated to the functional currency of the Group using the exchange rates at the dates of the transactions. Monetary assets and liabilities denominated in foreign currencies at the reporting date are retranslated to the functional currency using the exchange rates at that date. Foreign exchange gains and losses resulting from the settlement of transactions and from the translation of monetary assets and liabilities are recognised in the statement of comprehensive income except when deferred in taxpayers' equity as qualifying cash flow hedges

## 3.7 Property, plant and equipment

Land and buildings are occupied by the Group and are shown at fair value, based on periodic, but at least quinquennial, valuations by external independent valuers, less subsequent depreciation for buildings. In the intervening years, these valuations may be updated by the Group with the assistance of independent advice as required. Fair value is based on market values for existing use as there are no alternative uses for the land and buildings.

Increases in the carrying amount arising on revaluation of land and buildings are credited to the revaluation reserve. Decreases that offset previous increases of the same asset are charged against the revaluation reserve; all other decreases are charged to the statement of comprehensive income. Each year the difference between depreciation based on the revalued carrying amount of the asset charged to the income statement and depreciation based on the asset's original cost is transferred from the revaluation reserve to retained earnings.

In accordance with the FR&M, other classes of property, plant and equipment with short useful lives or low book values are stated at historical cost less depreciation as a proxy for current valuations. Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to the Group and the cost of the item can be measured reliably. All other repairs and maintenance are charged to the statement of comprehensive income during the financial period in which they are incurred.

Land is not depreciated. Assets under construction are not depreciated until they are in use. Depreciation on other assets is calculated using the straight-line method to allocate their cost or revalued amounts to their residual values over their estimated useful lives, as follows:

– Buildings	up to 40 years
– Plant, machinery and equipment	up to 10 years

The assets' residual values and useful lives are reviewed, and adjusted if appropriate, at each reporting date.

An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount (Note 3.11).

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount and any amounts to be released from deferred income on disposal and are recognised in the statement of comprehensive income. When revalued assets are sold, any amounts included in the revaluation reserve are transferred to retained earnings.

## 3.8 Investment property

Investment property, comprising freehold land and buildings, is held either for rental yields or capital appreciation and is not occupied by the Group. Investment property is carried at fair value, representing open market value determined annually by external independent valuers.

Fair value is based on active market prices, adjusted, if necessary, for any difference in the nature, location or condition of the specific asset. In the absence of current prices in an active market, the valuations are prepared by considering the aggregate of the estimated cash flows expected to be received from renting out the property. Valuations reflect the allocation of maintenance and insurance responsibilities between the Group and the lessee and the remaining economic life of the property.

Changes in fair values are recognised in the statement of comprehensive income.

## 3.9 Intangible assets

Intangible assets comprise acquired computer software licences and are stated at cost, net of amortisation and any provision for impairment. The cost of intangible assets, less estimated residual value, is amortised on a straight line basis over their estimated useful lives of up to five years.

## 3.10 Non-current assets held for sale

Non-current assets are classified as assets held for sale when their carrying amount is to be recovered principally through a sale transaction and a sale is considered highly probable. They are stated at the lower of carrying amount and fair value less costs to sell if their carrying amount is to be recovered principally through a sale transaction rather than through continuing use.

## 3.11 Impairment of non-financial assets

Assets that are subject to depreciation or amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use. For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash flows. Non-financial assets that suffered impairment are reviewed for possible reversal of the impairment at each reporting date.

## 3.12 Inventories

Inventories are stated at the lower of cost and net realisable value. Cost is determined using the first-in, first-out method. The cost of work in progress comprises raw materials, direct labour, other direct costs and related production overheads. Net realisable value is the estimated selling price in the ordinary course of business, less applicable selling expenses.

## 3.13 Cash and cash equivalents

Cash and cash equivalents includes cash in hand, deposits held at call with banks and other short-term highly liquid investments with original maturities of three months or less.

## 3.14 Current and deferred income tax

The tax credit for the period comprises current and deferred tax. Tax is recognised in the income statement, except to the extent that it relates to items recognised directly in equity. In this case, the tax is also recognised in equity.

Current tax is the expected tax payable on the taxable income for the year, using tax rates enacted or substantially enacted at the reporting date, and any adjustment to tax payable in respect of previous years.

Deferred tax is recognised, using the liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the consolidated financial statements. Deferred tax is determined using tax rates (and laws) that have been enacted or substantially enacted by the reporting date and are expected to apply when the related deferred tax asset is realised or the deferred tax liability is settled.

Deferred tax assets are recognised only to the extent that it is probable that future taxable profit will be available against which the temporary differences can be utilised.

## 3.15 Provisions

Provisions are recognised when: the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount has been reliably estimated.

# Notes to the Financial Statements

Where there are a number of similar obligations, the likelihood that an outflow will be required in settlement is determined by considering the class of obligations as a whole. A provision is recognised even if the likelihood of an outflow with respect to any one item included in the same class of obligations may be small.

Provisions are measured at the present value of the expenditures expected to be required to settle the obligation using real rates of interest. The increase in the provision due to passage of time is recognised as finance expense.

Where assurances have been received from another party that they will reimburse some or all of the expenditure required to settle a provision, a reimbursement asset will be recognised to the extent of the amount expected to be reimbursed. The reimbursement asset is shown separately from the related provision in the statement of financial position.

## 3.16 Financial instruments

### (a) Non-derivative financial instruments

Non-derivative financial instruments comprise trade and other receivables, investments, cash and cash equivalents and trade and other payables and are recognised initially at fair value. Subsequent to initial recognition, non-derivative financial instruments are measured as described below.

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They are included in current assets, except for maturities greater than 12 months after the reporting date which are classified as non-current assets. The carrying values, less impairment provision, of loans and receivables are assumed to approximate their fair values.

Other financial liabilities are non-derivative financial instruments with fixed or determinable payments that are not quoted in an active market. They are included in current liabilities, except for maturities greater than 12 months after the reporting date which are classified as non-current liabilities. The carrying values of other financial liabilities are assumed to approximate their fair values.

### (b) Derivative financial instruments

Derivative financial instruments comprise financial instruments held to hedge foreign currency risk exposures and embedded derivatives in host contracts. Derivatives are initially recognised at fair value on the date a derivative contract is entered into and are subsequently re-measured at their fair value. The method of recognising the resulting gain or loss depends on whether the derivative is designated as a hedging instrument.

Financial instruments held to hedge foreign currency risk exposures are designated as cash flow hedges if the criteria for applying hedge accounting under IAS 39 are met. The effective portion of changes in the fair value of derivatives that are designated and qualify as cash flow hedges is recognised in equity. The gain or loss relating to the ineffective portion is recognised immediately in the statement of comprehensive income. Amounts accumulated in equity are recycled in the statement of comprehensive income in the periods when the hedged item affects profit or loss.

When a hedging instrument expires or is sold, or when a hedge no longer meets the criteria for hedge accounting, any cumulative gain or loss existing in equity at that time remains in equity and is recognised when the forecast transaction is ultimately recognised in the statement of comprehensive income. When a forecast transaction is no longer expected to occur, the cumulative gain or loss that was reported in equity is immediately transferred to the statement of comprehensive income.

If the criteria for applying hedge accounting are not met, the gain or loss on derivative financial instruments is credited or charged to the statement of comprehensive income instead of being deferred in equity.

Embedded derivatives are separated from the host contract and accounted for separately if the economic characteristics and risks of the host contract and the embedded derivative are not closely related. Changes in the fair value of separable embedded derivatives are recognised immediately in the statement of comprehensive income.

Embedded derivatives are separated from the host contract and accounted for separately if the economic characteristics and risks of the host contract and the embedded derivative are not closely related. Changes in the fair value of separable embedded derivatives are recognised immediately in the statement of comprehensive income.

## 3.17 Operating leases

Payments made under operating leases are recognised in the statement of comprehensive income on a straight-line basis over the term of the lease. Lease incentives are recognised as an integral part of the total lease expense over the term of the lease.

## 4 Changes in presentation of the financial statements

### 4.1 Statement of Comprehensive Income: Authority profit

To bring the Authority's accounts in line with other public sector bodies, the primary statements and notes to the accounts are now presented in £k rather than £m as in previous years. All comparatives have been restated in £k.

## 5 Financial risk management

Due to the nature of its activities, the Group is not exposed to the same degree of financial risk faced by other business entities. Financial instruments play a much more limited role in creating or changing risk and generally financial assets and liabilities are generated from day-to-day operational activities and not held to change the risks facing the Group in undertaking its activities. While the Group has significant financial liabilities relating to decommissioning and restructuring, most of the risks attached to these liabilities do not rest with the Group as they are broadly matched by reimbursement assets.

### (a) Foreign exchange risk

Foreign exchange risk arises when future commercial transactions or recognised assets or liabilities are denominated in a currency that is not the Group's functional currency. The Group operates internationally and is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to the euro. To manage foreign exchange risk, the Group may use forward contracts for the purchase or sale of foreign currencies.

### (b) Interest rate risk

As the Group has no borrowings or significant interest-bearing assets, the Group's income and operating cash flows are substantially independent of changes in market interest rates. Cash balances on deposit are held in highly rated fixed term deposits and the exposure to interest rate risk is minimal and appropriately managed.

### (c) Credit risk

The Group's income is received primarily from public sector bodies in the UK and Europe and the exposure to credit risk is therefore considered to be low.

### (d) Liquidity risk

The Group is primarily financed by income from other public sector bodies, in the UK and in Europe. Uncertainties about the timing and amount of some of this income, particularly income from Europe, expose the Group to liquidity risk. The Group has a facility to request temporary working capital funding from the Department for Business, Innovation and Skills should the need arise.

## 6 Segment information

As the majority of the Group's activities do not represent the provision of public services, segment information in accordance with IFRS 8 is included in these financial statements and the fees and charges analysis required by the FReM is not disclosed.

### 6.1 Reportable segments

The Group has two reportable segments, as described below, which are the Group's main business areas reported to the Authority Board. The business areas offer different services and are managed separately because they require different strategies and have different funding streams.

The following summary describes the operations in each of the Group's reportable segments:

- (a) Fusion research – research into using fusion to create a new source of energy that is safe and environmentally benign
- (b) Property management – management and development of the Culham and Harwell campuses for future scientific use.



# Notes to the Financial Statements

Other segments include grant-in-aid funding and insurance. None of these segments meets any of the quantitative thresholds for determining reportable segments in 2012 or 2011. The results of these segments are included in the "other" column in the segmental analyses below.

The segment information for the reportable segments for the years ended 31 March 2012 and 31 March 2011 is as follows:

	Fusion research £k	Property management £k	Other £k	Total £k
<b>Year ended 31 March 2012</b>				
External segment revenue	69,841	3,397	6,696	79,934
Less: Share of revenue of joint venture	-	(298)	-	(298)
Other income	79	-	-	79
Expenditure	(69,920)	(2,023)	(5,054)	(76,997)
Operating profit/(loss)	-	1,076	1,642	2,718
Finance income	290	-	187	477
Finance expense	-	-	(215)	(215)
Share of profits of joint venture	-	(123)	-	(123)
Profit/(loss) before income tax	290	953	1,614	2,857
<b>Year ended 31 March 2011</b>				
External segment revenue	82,807	3,594	3,396	89,797
Less: Share of revenue of joint venture	-	(322)	-	(322)
Other income	82	-	-	82
Expenditure	(82,889)	(2,585)	(3,374)	(88,848)
Operating profit/(loss)	-	687	22	709
Finance income	247	-	165	412
Finance expense	-	-	(216)	(216)
Profit on disposal of fixed asset	-	6,276	-	6,276
Share of profits of joint venture	-	50	-	50
Profit/(loss) before income tax	247	7,013	(29)	7,231

Revenue from external parties is measured in a manner consistent with that in the statement of comprehensive income.

## 6.2 Reconciliation between Reportable Segments and Statement of Comprehensive Income

	2012 £k	2011 £k
<b>Revenues</b>		
Total revenue for reportable segments	73,238	86,401
Other revenue	6,696	3,396
Consolidated revenue per Statement of Comprehensive Income	79,934	89,797
<b>Profit or loss</b>		
Total profit or loss for reportable segments	1,243	7,260
Other profit or loss	1,614	(29)
Consolidated profit before income tax per Statement of Comprehensive Income	2,857	7,231

## 6.3 Geographical segments

In presenting information on the basis of geographical segments, segment revenue is based on the geographical location of customers.

Group	Revenue	
	2012 £k	2011 £k
United Kingdom	31,371	32,838
Europe	48,477	56,925
Rest of the world	86	34
	<b>79,934</b>	<b>89,797</b>

## 6.4 Revenue from major customers

	2012 £k	2011 £k
European Commission	47,604	56,470

Revenue from the European Commission is attributable to the fusion research segment.

# Notes to the Financial Statements

## 7 Staff Costs

	2012 £k	2011 £k
Permanently employed staff:		
Salaries, bonuses and allowances	21,964	23,167
Social security costs	1,937	1,970
Pension costs – defined contribution plans (see Note 23a)	3,220	3,327
	27,121	28,464
Other staff	15,433	20,054
	<b>42,554</b>	<b>48,518</b>

The average number of full-time equivalent staff during the year was as follows:

	2012	2011
Directly employed	540	568
Other staff	397	467
	<b>937</b>	<b>1,035</b>

## Exit packages paid to employees

Exit package cost band	Number of compulsory redundancies		Number of other departures agreed		Total number of exit packages by cost band	
	2011/12	2010/11	2011/12	2010/11	2011/12	2010/11
< £10,000	–	–	2	(4)	2	(4)
£10,000 - £25,000	–	–	3	(5)	3	(5)
£25,000 - £50,000	–	–	3	(2)	3	(2)
£50,000 - £100,000	–	–	7	(5)	7	(5)
£100,000 - £150,000	–	–	2	(2)	2	(2)
£150,000 - £200,000	–	–	1	–	1	–
£200,000 - £250,000	–	–	–	–	–	–
£250,000 - £300,000	–	–	1	(1)	1	(1)
£300,000 - £350,000	–	–	–	(2)	–	(2)
£350,000 - £400,000	–	–	–	–	–	–
£400,000 - £450,000	–	–	–	–	–	–
£450,000 - £500,000	–	–	–	–	–	–
Total number of exit packages	–	–	19	(21)	19	(21)
Total resource cost £	–	–	1,345,505	(1,804,419)	1,345,505	(1,804,419)

The majority of the departure costs disclosed above relate to voluntary early release costs paid in accordance with redundancy terms set out in the Authority's Conditions of Employment Manual. There was one exception, which was separately approved. Exit costs are accounted for in full in the year of departure. Where applicable, the additional costs of early releases are met by the Authority and not by the Authority's Combined Pension Scheme (CPS). Ill-health retirement costs are met by the CPS and are not included in the table.

## 8 Operating profit

Operating profit has been arrived at after charging/(crediting):

	2012 £k	2011 £k
Change in fair value of investment property	(965)	(687)
Net foreign exchange losses (gains)	243	(104)
Operating lease rentals – plant and machinery	159	168
Non-cash items:		
– Depreciation	280	289
– Amortisation	6	6

## 9 Auditor's remuneration

The total remuneration of the Group's auditor, National Audit Office, for services provided to the Group was:

	2012 £k	2011 £k
<b>Audit fees</b>		
Authority	46	44
Authority pension schemes	23	23
	69	67
Other services (Audit of Whole of Government Accounting)	–	3
	<b>69</b>	<b>70</b>

## 10 Finance income and expense

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
<b>Income</b>				
Interest on term bank deposits	477	412	290	247
<b>Expense</b>				
Revalorisation of provisions:				
– Changes in price levels	6,881	9,240	6,881	9,240
– Unwinding of discount on provisions	4,032	3,759	4,032	3,759
– Escalation of reimbursement receivables	(10,779)	(12,856)	(10,779)	(12,856)
Interest on unfunded retirement benefits	81	69	81	69
Interest payable	–	4	–	4
	<b>215</b>	<b>216</b>	<b>215</b>	<b>216</b>



# Notes to the Financial Statements

## 11 Analysis of Net Expenditure by Programme and Administration Budget

	Programme £k	2012 Admin £k	Total £k	Programme £k	2011 Admin £k	Total £k
<b>Income</b>						
Income from activities	75,345	4,589	79,934	84,962	4,835	89,797
Other income	79	–	79	82	–	82
Interest receivable	477	–	477	412	–	412
Share of turnover of Joint Venture	(298)	–	(298)	(322)	–	(322)
Profit on disposal of fixed asset	–	–	–	6,276	–	6,276
Share of profit (loss) of joint venture	(123)	–	(123)	50	–	50
	<b>75,480</b>	<b>4,589</b>	<b>80,069</b>	<b>91,460</b>	<b>4,835</b>	<b>96,295</b>

<b>Expenditure</b>						
Raw Materials and Consumables	12,330	–	12,330	16,503	–	16,503
Other External Expense net of costs capitalised	15,922	899	16,821	13,357	1,463	14,820
Staff costs	39,331	3,223	42,554	44,932	3,586	48,518
Other expense	4,203	694	4,897	8,702	10	8,712
Non-cash items:						
– Depreciation	272	8	280	278	11	289
– Amortisation	6	–	6	6	–	6
– Impairment	109	–	109	–	–	–
Finance expense	215	–	215	216	–	216
	<b>72,388</b>	<b>4,824</b>	<b>77,212</b>	<b>83,994</b>	<b>5,070</b>	<b>89,064</b>
<b>Net Expenditure after Interest and before tax</b>	<b>(3,092)</b>	<b>235</b>	<b>(2,857)</b>	<b>(7,466)</b>	<b>235</b>	<b>(7,231)</b>

## 12 Income tax (expense)/credit

	Group and Authority	
	2012 £k	2011 £k
<b>Current tax</b>		
Current tax credit (debit)	50	(2,511)
<b>Deferred tax</b>		
Origination and reversal of temporary differences	299	4,070
<b>Income tax credit (debit)</b>	<b>349</b>	<b>1,559</b>
Share of income tax of joint venture	–	–
<b>Total income tax (expense)/credit</b>	<b>349</b>	<b>1,559</b>

The current tax on the Group's profit before tax differs from the theoretical amount that would arise using the weighted average tax rate applicable to profits of the consolidated entities as follows:

	2012 £k	2011 £k
Profit for the year	3,206	8,790
Income tax expense/(credit)	(349)	(1,559)
Profit excluding income tax	2,857	7,231
Tax calculated at the standard UK corporation tax rate of 26% (2011 – 28%)	803	2,025
Tax effects of:		
– Reversal of timing differences	61	20
– Expenses not deductible	(137)	(565)
– Capital gain in excess of accounting profit recognised	–	3,690
– Enhanced relief for research and development expenditure	(642)	(2,724)
– Tax losses for which no deferred income tax asset was recognised	(85)	65
– Reversal of tax creditor from previous year	(50)	–
<b>Current tax expense (credit) for the year</b>	<b>(50)</b>	<b>2,511</b>

The income tax charged/(credited) to equity during the year is as follows:

	2012 £k	2011 £k
Fair value gains on property, plant and equipment	189	124

# Notes to the Financial Statements

## 13 Property, plant and equipment

Group and Authority	Group and Authority				
	Land £k	Buildings £k	Plant and equipment £k	Assets under construction £k	Total £k
<b>Cost or valuation</b>					
At 1 April 2010	7,450	5,703	3,412	6,610	23,175
Additions	–	–	182	567	749
Disposals	–	(812)	(601)	–	(1,413)
Revaluation	409	–	–	–	409
<b>At 31 March 2011</b>	<b>7,859</b>	<b>4,891</b>	<b>2,993</b>	<b>7,177</b>	<b>22,920</b>
Additions	–	–	110	296	406
Disposals	–	–	(77)	–	(77)
Revaluation	(917)	2,695	–	–	1,778
<b>At 31 March 2012</b>	<b>6,942</b>	<b>7,586</b>	<b>3,026</b>	<b>7,473</b>	<b>25,027</b>
<b>Depreciation and impairment</b>					
At 1 April 2010	–	2,414	3,073	–	5,487
Depreciation charge	–	175	114	–	289
Disposals	–	(812)	(590)	–	(1,402)
<b>At 31 March 2011</b>	<b>–</b>	<b>1,777</b>	<b>2,597</b>	<b>–</b>	<b>4,374</b>
Depreciation charge	–	175	105	–	280
Disposals	–	–	(77)	–	(77)
<b>At 31 March 2012</b>	<b>–</b>	<b>1,952</b>	<b>2,625</b>	<b>–</b>	<b>(4,577)</b>
<b>Net book value</b>					
<b>At 31 March 2011</b>	<b>7,859</b>	<b>3,114</b>	<b>396</b>	<b>7,177</b>	<b>18,546</b>
<b>At 31 March 2012</b>	<b>6,942</b>	<b>5,634</b>	<b>401</b>	<b>7,473</b>	<b>20,450</b>

All property, plant and equipment is owned by the Group.

There was no capital expenditure contracted for at the reporting date but not recognised in the financial statements. The comparable figure for 31 March 2011 was £296k.

## 14 Investment property

	Group and Authority	
	2012 £k	2011 £k
At 1 April	37,877	52,920
Disposal	–	(15,730)
Change in fair value	965	687
<b>At 31 March</b>	<b>38,842</b>	<b>37,877</b>

Investment properties were valued at fair value at 28 February 2012 by independent valuers. The valuations were undertaken by GVA in accordance with the Valuation Standards of the Royal Institute of Chartered Surveyors, IFRS and guidelines in HM Treasury's FReM. The Group has adopted this valuation at the reporting date on the grounds that there were no material changes between the valuation date and the reporting date.

Investment properties are held for their investment potential. Rental income from tenants outside the Group is negotiated at arm's length. The following amounts have been recognised in the income statement:

	Group and Authority	
	2012 £k	2011 £k
Rental income	2,042	1,825
Direct operating expenses:		
– Investment properties that generated rental income	1,622	1,535
– Investment properties that did not generate rental income	287	351

## 15 Financial Assets

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
<b>Non-current</b>				
At 1 April	2,674	2,624	5,707	5,682
Additions	–	50	24	25
Disposals	–	–	–	–
Impairment	(207)	–	–	–
<b>At 31 March</b>	<b>2,467</b>	<b>2,674</b>	<b>5,731</b>	<b>5,707</b>
Investment in subsidiary undertakings	–	–	3,000	3,000
Investment in joint venture	2,467	2,674	2,731	2,707
	<b>2,467</b>	<b>2,674</b>	<b>5,731</b>	<b>5,707</b>
<b>Current</b>				
Term bank deposits	14,463	19,738	5,000	10,000



# Notes to the Financial Statements

## a) Investment in subsidiary undertakings

Name	Country of incorporation	Ownership interest %	
		2012	2011
AEA Insurance Limited	Isle of Man	100	100

All subsidiary undertakings are included in the consolidation. The proportion of voting rights in the subsidiary undertakings held directly by the Group does not differ from the proportion of shares held.

## b) Investment in joint venture

The Group has a 50% interest in a joint venture, Harwell Science and Innovation Campus Public Sector Limited Partnership, the public sector partner in Harwell Oxford, which is responsible for the development of the Harwell Oxford Campus. The interest in the joint venture is accounted for using the equity method in the Group financial statements.

	Group and Authority	
	2012 £k	2011 £k
At 1 April	2674	2,624
Share of profits/(loss) net of tax	(123)	50
Impairment	(84)	–
<b>At 31 March</b>	<b>2,467</b>	<b>2,674</b>
Analysed as follows:		
Cost	2590	2,624
Share of retained profits	(123)	50
	<b>2,467</b>	<b>2,674</b>

The following amounts represent the Group's share of the income, results, assets and liabilities of the joint venture. They are included in the Statement of Comprehensive Net Income and Statement of Financial Position:

	2012 £k	2011 £k
<b>Profit net of tax</b>		
Income	300	322
Expenses	(423)	(272)
	<b>(123)</b>	<b>50</b>
<b>Assets</b>		
Current assets	1,321	1,617
Non-current assets	1,819	1,629
	<b>3,140</b>	<b>3,246</b>
<b>Liabilities</b>		
Current liabilities	423	390
Non-current liabilities	250	182
	<b>673</b>	<b>572</b>
<b>Net assets</b>	<b>2,467</b>	<b>2,674</b>

There are no contingent liabilities relating to the Group's interest in the joint venture, and no contingent liabilities of the venture itself.

## (c) Term bank deposits

Term bank deposits are held with major UK banks. The average interest rate on the deposits held at 31 March 2012 was 1.63% (2011 – 1.48%). The credit risk associated with these investments is considered to be low because of the size and status of the banks involved.

## 16 Financial instruments by category

All financial assets of the Group and the Authority were categorised as loans and receivables at both 31 March 2012 and 31 March 2011. All financial liabilities of the Group and the Authority were categorised as other financial liabilities at both 31 March 2012 and 31 March 2011.

The majority of financial instruments relate to contracts to buy non-financial items in line with the Authority's expected purchase and usage requirements and the Authority is therefore exposed to little credit, liquidity or market risk.

# Notes to the Financial Statements

## 17 Trade receivables and other current assets

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
<b>Amounts falling due after more than one year</b>				
Reimbursement receivables (Note 22):				
– Site restoration	187,928	177,151	187,928	177,151
– Restructuring	14,548	17,078	14,548	17,078
Other receivables	67	449	67	449
	<b>202,543</b>	<b>194,678</b>	<b>202,543</b>	<b>194,678</b>
<b>Amounts falling due within one year</b>				
Trade receivables	1,231	1,508	1,231	1,508
Reimbursement receivables (Note 22):				
– Site restoration	79	21	79	21
– Restructuring	4,153	4,890	4,153	4,890
Prepayments and accrued income	5,400	6,064	5,256	6,089
VAT	1,013	785	1,013	785
Other receivables	112	–	291	–
	<b>11,988</b>	<b>13,268</b>	<b>12,023</b>	<b>13,293</b>

There are no impaired assets in any of the classes of trade and other receivables. Receivables can be analysed as follows:

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
<b>Amounts falling due after more than one year</b>				
Other Central Government bodies	201,537	193,205	201,537	193,205
Bodies external to Government	1,006	1,473	1,006	1,473
	<b>202,543</b>	<b>194,678</b>	<b>202,543</b>	<b>194,678</b>
<b>Amounts falling due within one year</b>				
Other Central Government bodies	6,086	6,323	6,086	6,323
Local authorities	189	–	189	–
Bodies external to Government	5,713	6,945	5,748	6,970
	<b>11,988</b>	<b>13,268</b>	<b>12,023</b>	<b>13,293</b>

## 18 Cash and cash equivalents

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
Balance at 1 April	51,411	34,702	48,103	31,381
Net change in cash and cash equivalent balances	2,166	16,709	1,924	16,722
<b>Balance at 31 March</b>	<b>53,577</b>	<b>51,411</b>	<b>50,027</b>	<b>48,103</b>
The following balances at 31 March were held at:				
Commercial banks and cash in hand	23,577	18,145	20,027	18,103
Short term investments	30,000	33,266	30,000	30,000
<b>Balance at 31 March</b>	<b>53,577</b>	<b>51,411</b>	<b>50,027</b>	<b>48,103</b>

## 19 Trade payables and other current liabilities

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
<b>Amounts falling due after more than one year</b>				
Payments received on account	94	94	94	94
<b>Amounts falling due within one year</b>				
Trade payables	1,984	288	1,984	288
Accrued costs	5,959	9,017	5,951	9,011
Payments received on account	37,049	41,246	37,049	41,246
Social security and other taxes	593	3,118	593	3,118
Other payables	2,017	2,080	2,014	2,081
	<b>47,602</b>	<b>55,749</b>	<b>47,591</b>	<b>55,744</b>

Payables can be analysed as follows:

	Group		Authority	
	2012 £k	2011 £k	2012 £k	2011 £k
Other Central Government bodies	1,000	3,488	1,000	3,488
Bodies external to Government	46,602	52,261	46,591	52,256
	<b>47,602</b>	<b>55,749</b>	<b>47,591</b>	<b>55,744</b>



# Notes to the Financial Statements

## 20 Deferred income

Deferred income consists of previous Government funding received to finance capital expenditure.

	Group and Authority	
	2012 £k	2011 £k
At 1 April	113	194
Deferred income received	–	–
Released to income statement	(53)	(81)
<b>As at 31 March 2012</b>	<b>60</b>	<b>113</b>

## 21 Deferred income tax

Group and Authority	Investment property £k	Land and buildings £k	Total £k
At 1 April 2010	10,974	2,596	13,570
Income statement debit/(credit)	(4,070)	–	(4,070)
Charged directly to equity	–	(124)	(124)
<b>At 31 March 2011</b>	<b>6,904</b>	<b>2,472</b>	<b>9,376</b>
Income statement debit/(credit):			
- Revaluation	300	–	300
- Disposal	–	–	–
- Effect of change in tax rate	(599)	–	(599)
Charged directly to equity:			
- Revaluation	–	413	413
- Effect of change in tax rate	–	(225)	(225)
<b>At 31 March 2012</b>	<b>6,605</b>	<b>2,660</b>	<b>9,265</b>

The March 2011 Budget announced that the UK corporation tax rate would reduce from 28% to 23% over the 4 year period from 1 April 2011. The first reduction in the rate from 28% to 26% was substantively enacted on 29 March 2011 and was effective from 1 April 2011. The deferred tax charge arising for 2011/12 on revaluation has therefore been calculated at 26%. The March 2012 budget subsequently announced that the UK corporation tax rate would reduce further, to 24% with effect from 1 April 2012, and to 23% and 22% in the two following years. The change to the 24% rate was substantively enacted on 26th March 2012 and the effect of this change on the deferred tax liability at 31 March 2012 is shown above.

The additional reductions to 22% will reduce the deferred tax liability by an additional £772k in the period to 1 April 2014. This has not been included in the financial statements as the rates are not substantively enacted.

Deferred income tax losses are recognised for tax depreciation and tax loss carry-forwards to the extent that the realisation of the related tax benefit through future taxable profits is probable. The Group did not recognise deferred income tax assets of £2,869k (2011 – £2,399k) in respect of tax losses of £11,834k that can be carried forward against future taxable income, and a further £119k of tax depreciation.

## 22 Provisions for liabilities and charges

Group	Site Restoration £k	Restructuring £k	Other £k	Total £k
At 1 April 2010	164,384	29,088	5,468	198,940
Changes in price levels	9,240	758	10	10,008
Unwinding of discount	3,616	721	–	4,337
Provided in the year	–	1,713	53	1,766
Provisions not required written back	(54)	(1,776)	(123)	(1,953)
Provisions utilised in the year	(14)	(5,583)	(775)	(6,372)
<b>At 31 March 2011</b>	<b>177,172</b>	<b>24,921</b>	<b>4,633</b>	<b>206,726</b>
Changes in price levels	6,881	1,145	14	8,040
Unwinding of discount	3,898	627	–	4,525
Provided in the year	72	3,762	177	4,011
Provisions not required written back	–	(344)	–	(344)
Provisions utilised in the year	(16)	(6,061)	(359)	(6,436)
<b>At 31 March 2012</b>	<b>188,007</b>	<b>24,050</b>	<b>4,465</b>	<b>216,522</b>
<b>At 31 March 2011</b>				
Non-current	177,151	19,615	2,898	199,664
Current	21	5,306	1,735	7,062
	<b>177,172</b>	<b>24,921</b>	<b>4,633</b>	<b>206,726</b>
<b>At 31 March 2012</b>				
Non-current	187,928	17,920	3,189	209,037
Current	79	6,130	1,276	7,485
	<b>188,007</b>	<b>24,050</b>	<b>4,465</b>	<b>216,522</b>

# Notes to the Financial Statements

Authority	Group and Authority			
	Site Restoration £k	Restructuring £k	Other £k	Total £k
At 1 April 2010	164,384	29,088	3,497	196,969
Changes in price levels	9,240	758	10	10,008
Unwinding of discount	3,616	721	–	4,337
Provided in the year	–	1,713	50	1,763
Provisions not required written back	(54)	(1,776)	(119)	(1,949)
Provisions utilised in the year	(14)	(5,583)	(775)	(6,372)
<b>At 31 March 2011</b>	<b>177,172</b>	<b>24,921</b>	<b>2,663</b>	<b>204,756</b>
Changes in price levels	6,881	1,145	14	8,040
Unwinding of discount	3,898	627	–	4,525
Provided in the year	72	3,762	550	4,384
Provisions not required written back	–	(344)	–	(344)
Provisions utilised in the year	(16)	(6,061)	(359)	(6,436)
<b>At 31 March 2012</b>	<b>188,007</b>	<b>24,050</b>	<b>2,868</b>	<b>214,925</b>
<b>At 31 March 2011</b>				
Non-current	177,151	19,615	1,978	198,744
Current	21	5,306	685	6,012
	<b>177,172</b>	<b>24,921</b>	<b>2,663</b>	<b>204,756</b>
<b>At 31 March 2012</b>				
Non-current	187,928	17,920	2,342	208,190
Current	79	6,130	526	6,735
	<b>188,007</b>	<b>24,050</b>	<b>2,868</b>	<b>214,925</b>

## (a) Site restoration

The decommissioning provision represents the estimated costs of decommissioning fusion research facilities at the Authority's Culham site, including the storage, processing and eventual disposal of radioactive wastes.

Calculation of the liabilities is based on the technical assessments of the processes and methods likely to be used in the future to carry out the work. Estimates are derived from the latest technical knowledge and commercial information available, taking into account current legislation, regulations and Government policy. Summary figures are built up by aggregating detailed estimates for individual liabilities. Allowance is also made for infrastructure costs, which are an appropriate share of site running costs and other overhead costs attributable to plant and buildings. The calculation is reassessed annually.

The best estimate of the cost of dealing with the liabilities at 31 March 2012 is discounted at 2.2% to the reporting date and expressed in 2011/12 money values using RPIX to inflate costs from the dates of the original assessment. The analysis of expected timing of discounted flows is as follows:

	Group and Authority	
	2012 £k	2011 £k
Not later than one year	79	21
Later than one year and not later than five years	2,647	1,518
Later than five years	185,281	175,633
	<b>188,007</b>	<b>177,172</b>

The best estimate of the undiscounted cost of dealing with the liabilities is £242,239k (2011 – £233,323k).

A letter issued by the then Secretary of State for Energy in 1986 stated that the Government was prepared to continue to accept responsibility in principle for those costs which the Authority incurs in treating and disposing of nuclear wastes and in decommissioning plant arising from:

- programmes carried out by the Authority and its predecessors prior to 1 April 1986; and
- programme agreement work undertaken for BIS and its predecessors after 1 April 1986.

These assurances were reconfirmed by BIS in June 2012. On the basis of these assurances a matching receivable is included in the statement of financial position.

Since much of the work required to deal with the liabilities will not be done until well into the future, there is a significant uncertainty as to the amount of the provision and the associated receivable due from BIS. This significant uncertainty does not impact on either net assets or the net profit reported in the financial statements.

The Authority has assessed the impact of the date of JET closure, which is a key variable, on the best estimate included in the 2011/12 Annual Accounts. This gives a range of undiscounted and discounted costs as follows:

Undiscounted costs – £241,495k to £242,239k (2011 – £232,996k to £233,607k).  
Discounted costs – £180,216k to £195,199k (2011 – £169,729k to £184,917k).

Costs associated with new equipment and facilities installed during the recent JET upgrade are not included in the estimates above as these cannot be assessed with sufficient certainty at this stage for provision to be made.

## (b) Restructuring

The restructuring provisions represent termination benefits payable under early retirement arrangements to employees who had retired early, or had accepted early retirement, before 31 March 2012. These benefits continue at least until the date at which the employee would have reached normal retirement age. The restructuring provisions are discounted to the reporting date at the discount rate for pensions liabilities, which is 2.8% in 2011/12. The undiscounted cost of the group provisions is £27,162k (2011 – £28,457k) and the benefits are estimated to be payable over a period up to 30 years.

The analysis of the expected timing of discounted flows is as follows:

	Group and Authority	
	2012 £k	2011 £k
Not later than one year	6,130	5,231
Later than one year and not later than five years	10,029	10,900
Later than five years	7,891	8,790
	<b>24,050</b>	<b>24,921</b>

Part of the expenditure required to settle the restructuring liabilities will be reimbursed by other parties as follows:

- Lump sums paid to employees on early retirement are refundable to the Group from the appropriate pension scheme at or after the date on which the individual concerned would have reached normal retirement age.
- Assurances covering restructuring provisions made before 1 April 2004 and for certain early retirements in 2011 and 2012 have been received from BIS and expenditure related to these provisions is reimbursed by BIS.

On the basis of these reimbursement arrangements, receivables have been included in the statement of financial position.



# Notes to the Financial Statements

## (c) Other provisions

Other provisions comprise unfunded retirement benefit obligations (Note 23c) and claims relating to industrial-related injuries.

## 23 Retirement benefits

### (a) Defined benefit schemes

The Group has three defined benefit schemes: the Combined Pension Scheme (CPS), the Principal Non-Industrial Superannuation Scheme (PNISS) and the Protected Persons Superannuation Scheme (PPSS). These schemes have members from other employers as well as the Group. No information in these financial statements relates to other employers participating in the CPS, PNISS or PPSS, although the Group has overall responsibility for the management of the schemes. No contingent liability is expected to arise from this responsibility.

In common with other public sector schemes, the CPS, the PNISS and the PPSS do not have many of the attributes of normal pension schemes. All contributions are paid to and benefits paid by HM Government via the Consolidated Fund. Any surplus of contributions made in excess of benefits paid out in any year is surrendered to the Consolidated Fund and any liabilities are met from the Consolidated Fund via the annual Parliamentary vote. The Government does not maintain a separate fund and actuarial valuations are based on a theoretical calculation as to how a typical UK pension scheme would have invested the historical surplus of contributions over payments.

In accordance with the FReM, the schemes are accounted for in these financial statements as defined contribution schemes.

Employer contributions are calculated in accordance with HM Treasury methodology "Superannuation Contributions Adjusted for Past Experience" and are based on the expected cost of members' benefits as they accrue. The total contributions paid by the Group during the year were £3,199k (2011 – £3,307k).

### (b) Defined contribution schemes

The Group manages two defined contribution schemes, the Additional Voluntary Contribution (AVC) scheme and the Shift Pay Pension Savings Plan (SPPP) scheme, both of which are fully insured schemes administered by Prudential Assurance Company Ltd to whom contributions are paid.

The AVC scheme includes members from the Group and from other employers who are members of CPS or PPSS and who have opted to pay additional voluntary contributions. No employer contributions are made to this scheme.

The members of the SPPP scheme include shift working employees of the Group and other employers who are members of CPS or PPSS. The costs of the SPPP scheme, which are directly linked to shift pay earnings, are charged to the statement of comprehensive income at the time the shift pay is paid. The total contributions paid by the Group during the year were £19k.

### (c) Unfunded retirement benefits

Three former Authority chief executives have unfunded retirement benefits which are not included in the Authority pension schemes. The movement in the liability for these benefits is shown below:

	Group and Authority	
	2012 £k	2011 £k
At 1 April	1,457	1,572
Change in discount rate	56	(71)
Interest on liability	81	69
Current service cost	–	(68)
Benefits payable	(33)	(24)
Actuarial gain (loss)	85	(21)
	<b>1,646</b>	<b>1,457</b>

The interest on liability and (for 2011) current service cost are included in the statement of comprehensive income and the actuarial loss is included in taxpayers' equity. The closing liability, discounted at the appropriate pensions liability discount rate, is included in other provisions for liabilities and charges in the statement of financial position (Note 22).

## 24 Operating leases

### (a) The Group as lessee

Non-cancellable operating lease rentals are payable as follows:

	2012 £k	2011 £k
Not later than one year	112	96
Later than one year and not later than five years	–	–
Later than five years	–	–
	<b>112</b>	<b>96</b>

The Group leases vehicles and office equipment under operating leases.

### (b) The Group as lessor

The Group leases its investment property with lease terms of between 0.5 and 25 years. The leases contain market review clauses in the event that the lessee exercises the option to renew. The lessee does not have an option to purchase the property at the expiry of the lease period.

The future minimum lease payments under non-cancellable leases are as follows:

	2012 £k	2011 £k
Not later than one year	1,448	1,438
Later than one year and not later than five years	3,920	3,171
Later than five years	2,045	2,065
	<b>7,413</b>	<b>6,674</b>

Rental income received during the year is disclosed in Note 14.

## 25 Related-party transactions

The Authority is an NDPB sponsored by BIS which is regarded as a related party. During the year, the Group had various material transactions with BIS and with other entities for which BIS is regarded as the responsible department, in particular EPSRC. STFC is the Authority's partner in the Harwell Science and Innovation Campus Public Sector Limited Partnership (note 15).

In addition, the Group had various material transactions with other government departments and other central government bodies. Most of these transactions have been with NDA and with the Civil Nuclear Constabulary.

No Board member, key manager or other related party has undertaken any material transactions with the Group during the year.

## 26 Statutory borrowing limit

During 2011/12, the statutory borrowing limit set by Section 3 of the Atomic Energy Authority Act 1986 as amended by The United Kingdom Atomic Energy Authority (Limit on Borrowing) Order 1991 remained at £200m. There were no borrowings by the Authority during the current or previous year.

# Glossary

<b>AVC</b>	Additional Voluntary Contribution	<b>NNL</b>	National Nuclear Laboratory
<b>AEAIL</b>	AEA Insurance Ltd	<b>NPL</b>	National Physical Laboratory
<b>Authority</b>	UK Atomic Energy Authority	<b>NBI</b>	Neutral Beam Injection
<b>BIS</b>	Department for Business Innovation and Skills	<b>NDPB</b>	Non-Departmental Public Body
<b>BS</b>	British Standard	<b>NDA</b>	Nuclear Decommissioning Authority
<b>CETV</b>	Cash Equivalent Transfer Value	<b>OGC</b>	Office of Government and Commerce
<b>CEO</b>	Chief Executive Officer	<b>PNISS</b>	Principal Non-Industrial Superannuation Scheme
<b>CERN</b>	European Laboratory for Particle Physics	<b>PAC</b>	Programme Advisory Group
<b>CPS</b>	Combined Pension Scheme	<b>PPSS</b>	Protected Persons Superannuation Scheme
<b>CCFE</b>	Culham Centre for Fusion Energy	<b>R &amp; D</b>	Research and Development
<b>DEMO</b>	Demonstration fusion power station	<b>RSRL</b>	Research Sites Restoration Ltd
<b>DSRL</b>	Dounreay Site Restoration Ltd	<b>RPIX</b>	Retail price index – all items excluding mortgage interest payments
<b>ELMs</b>	Edge Localised Modes	<b>STFC</b>	Science and Technology Facilities Council
<b>EPSRC</b>	Engineering and Physical Sciences Research Council	<b>SPPP</b>	Shift Pay Pension Savings Plan
<b>EA</b>	Environment Agency	<b>SIRO</b>	Senior Information Risk Officer
<b>EURATOM</b>	European Atomic Energy Community	<b>TRIR</b>	Total Recordable Incident Rate
<b>EFDA</b>	European Fusion Development Agreement		
<b>FReM</b>	Government Financial Reporting Manual		
<b>FTE</b>	Full Time Equivalent		
<b>FAB</b>	Fusion Advisory Board		
<b>FDTN</b>	Fusion Doctoral Training Network		
<b>HMRC</b>	Her Majesty's Revenue and Customs		
<b>IAS</b>	International Accounting Standards		
<b>IFRS</b>	International Financial Reporting Standards		
<b>ITER</b>	Next generation international experimental fusion reactor		
<b>JET</b>	Joint European Torus		
<b>MAST</b>	Mega Amp Spherical Tokamak		

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