

# United Kingdom Atomic Energy Authority Annual Report and Accounts 2012/13



UK Atomic  
Energy  
Authority

HC 544





# United Kingdom Atomic Energy Authority **Annual Report and Accounts** **2012/13**

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# Contents

	Chairman's Statement	1
	Chief Executive's Review	3
	Management Commentary	5
	Authority Committee Structure	27
	Board of Directors	28
	Statement of Directors' and Accounting Officer's Responsibility	31
	Governance Statement	32
	Remuneration Report	37
	The Certificate and Report of the Comptroller and Auditor General to the Houses of Parliament	41
	Consolidated Statement of Comprehensive Income	43
	Consolidated Statement of Financial Position	44
	Consolidated Statement of Cash Flows	45
	Consolidated Statement of Changes in Taxpayers' Equity	46
	Notes to the Financial Statements	47
	Glossary	72

# Chairman's Statement

## Professor Roger Cashmore

The UK Atomic Energy Authority is approaching its 60th Anniversary in 2014. This will be an impressive achievement for an organisation which has undergone so many changes during its lifetime, and is testament to the hard work and dedication of its staff. Adaption to change is key for all organisations and we are currently going through a further change.

The Authority's key mission is now 'to position the UK as a leader in a future, sustainable energy economy by advancing fusion science & technology and related technologies to the point of commercialisation.' This supports the European Fusion Development Agreement's updated roadmap for fusion electricity produced in 2012 which aims for fusion electricity generation by the middle of this century<sup>1</sup>. As fusion power gets ever closer the Authority has to add to the existing physics and science capabilities a new technology strand – to bring to life the theories and models in real technology solutions.

The Authority Board is supporting the Executive in this endeavour. During the year we held Board meetings away from the Culham headquarters at university and industry partner facilities. These meetings allowed us to review how we can help each other – not only in fusion, but in fission-related research and development areas, such as materials, neutron modelling, high-performance computing and operational safety for example.

During the year, I also visited two fusion laboratories in Japan to find out at first-hand about the progress of the 'Broader Approach' fusion research agreement. The Broader Approach agreement, signed in February 2007, is for complementary fusion research and development between the EU and the Japanese government. These facilities are contributing to the design and development of the next international fusion device, ITER, currently under construction in the south of France and future demonstration reactors. I am proud of the work which the Authority does itself and to encourage other UK academic and industry participation in both the support of ITER and the Broader Approach.

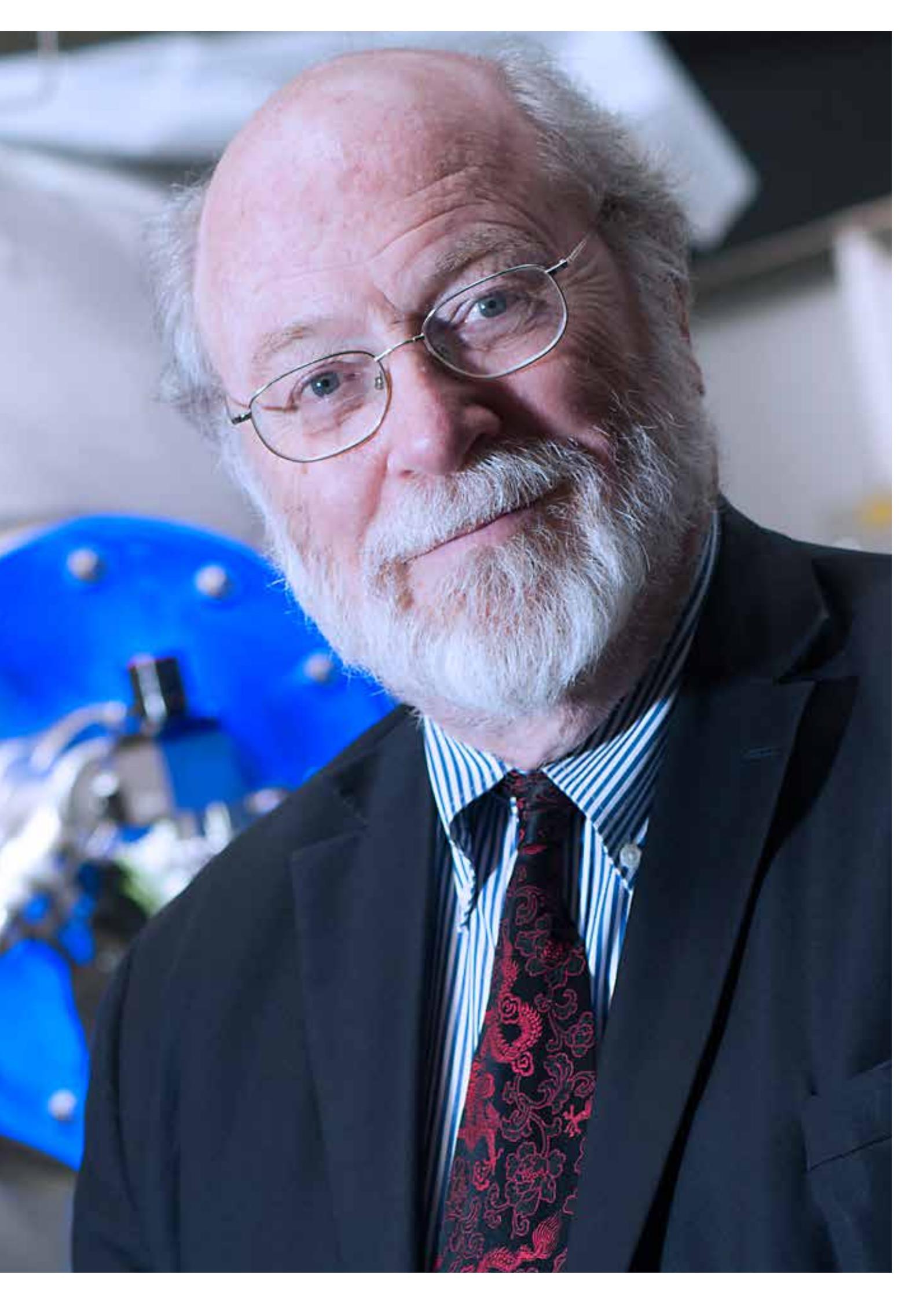
I was pleased to see the high prominence of fusion, and its links to fission, outlined in the Government's Nuclear R&D Roadmap, Nuclear Industry Strategy and related documents, published in March 2013. We will be pursuing the recommendations of the reports with our industry and university colleagues during the coming year. The first of these, to develop the National Nuclear Users' Facility, is already underway as described in the CEO's report.

During the year, the Authority Board extended the tenure of the Chief Executive, Professor Steve Cowley, for a further four years. This is excellent news for UK fusion. Steve provides world-leading expertise to a world-leading organisation. Steve was awarded the Institute of Physics' Glazebrook Medal during the year for his leadership of the UK fusion programme at Culham and for his seminal contributions to plasma and fusion science. I also congratulate Professor Sir Keith Burnett, who was awarded a knighthood for services to science and higher education in the New Year's honours. Both he and Steve Cowley are also members of the Prime Minister's Council for Science and Technology.

I would like to thank all the non-executive Board members, the executive and all members of staff at the Authority for their hard work during 2012/13, despite considerable external pressures, and look forward to continued success in 2013/14 as the Authority works on experiments on JET, the upgrade to MAST, and expansion of the technology and commercial programmes

**Professor Roger Cashmore**, CMG, FRS  
Chairman  
24th June 2013

<sup>1</sup>See <http://www.efda.org/newsletter/the-road-to-fusion-electricity/>



# Chief Executive's Review

## Professor Steve Cowley

The European "Roadmap to the Realization of Fusion Energy" was published earlier this year. This is a technical roadmap for the delivery of the first fusion electricity by mid-century and large-scale deployment of fusion by the end of the century. Fusion offers huge potential as a safe, efficient and carbon-free form of energy for the future. The Authority, through our fusion arm the Culham Centre for Fusion Energy (CCFE), will continue to play a leading role in realising the roadmap until fusion power is delivered. Our research excellence and a growing capability in key technologies will position the UK for an important role in the future fusion economy.

The first major step in progress towards fusion power - showing that fusion conditions can be reached - was achieved at Culham on the Joint European Torus (JET). We operate JET, the only machine currently capable of fusion, as part of the European fusion programme. JET has shown that it can generate up to 16 megawatts of fusion power for short periods and confine the fusion fuel as a plasma at 100 to 200 million degrees centigrade. Fusion is so important that seven international partners, including the European Union, are working together on a larger fusion device called ITER, which is currently being constructed in Southern France. ITER is designed to overcome the last scientific hurdle to fusion power; to attain a self-sustained fusion "burn".

Our research at Culham is making important contributions to preparation for ITER, particularly in refining its operating modes. In 2010-2011 we installed a new "ITER like" wall made of the metals Beryllium and Tungsten in JET using remote handling, i.e. without people inside the machine. Recent experiments on JET, the first since the ITER like wall was installed, have already revealed new ways to operate ITER that may yield superior performance. Experiments with the fusion fuel Tritium, planned for later this decade, will be crucial for exploring these regimes. Projections suggest that we will break our fusion power records in these experiments. JET also provides a unique opportunity to prepare the ITER generation. Indeed, the Authority is training a cadre of scientists on JET who will provide the basis of a strong UK presence on ITER.

Our own experimental fusion device, a spherical tokamak called MAST, is driving innovation of smaller and cheaper fusion reactors. Its design gives us the flexibility to test technologies and concepts before they are extended to the larger, more expensive, machines such as JET and ITER. UK universities are heavily involved in the MAST research programme and many PhD students have done their thesis research on MAST. We are working on a major upgrade to MAST that will start operation in the spring of 2015. This upgrade will deliver near fusion grade conditions at a fraction of the size of JET and will operate throughout the next decade. A unique feature of the upgrade is the Super-X divertor, a novel exhaust system for future fusion power reactors. The Super-X divertor spreads the exhaust heat over a large area to minimise erosion of the wall materials.

During the year, our scientists and their colleagues in universities and foreign laboratories have been working hard to analyse the data from the last MAST campaign. We have taken advantage of advances in computer modelling to improve our understanding of plasma performance in MAST. For example, the cutting-edge 3D plasma simulations of the effects of special coils in controlling plasma instabilities. These simulations have explained regimes where the troublesome eruptions of hot plasma from the edge are suppressed by the application of randomising magnetic fields from the coils. The video images of the bubbling plasma turbulence in MAST match beautifully high performance computer calculations of the same turbulence. This represents a significant improvement in our modelling ability and it is helping us optimise fusion systems and reduce the cost of fusion development.

A commercial fusion power plant requires technological advances in areas such as structural and functional materials and elements of reactor design. The Authority is shifting some of its focus towards these issues. In order to direct our efforts we have developed a high-level technology roadmap. Our aim is to play a key role in future fusion reactor design and development. In conjunction with this we are developing our business offering in fusion and other

markets where there is a strong synergy with our work and capabilities. A significant win this year is a €5.8m framework contract for ITER by our Special Techniques Group. Furthermore, we continue to work with UK industry to ensure that it is benefiting from the emerging fusion opportunities. To date British companies have won over €200m in ITER contracts.

The Ad Hoc Nuclear Research and Development Advisory Board under the Government Chief Scientist Sir John Beddington reported its recommendations in March of this year. The board recognised the UK strength in fusion research and the opportunity to benefit from the synergy between fusion and fission research with the statement that "The Board recommends that the UK's world-leading position for nuclear fusion R&D is maintained with the support of Government. The Board also recommends that Government acts to ensure that synergies between fusion and fission R&D are fully exploited for the benefit of both communities." It also recommended, "that a national nuclear users' facility is established to facilitate wider (especially academic) access to existing material handling facilities and to provide appropriate samples to a wider range of R&D laboratories including UK universities." One of three facilities which form the National Nuclear Users Facility is now located at Culham. This is the first part of a new Materials Research Facility at Culham, which will increase our already strong interactions with Universities and help advance research on both fusion and fission materials.

The Authority has major property holdings in Harwell-Oxford, which has recently been awarded a joint enterprise zone with Milton Park. We are working with our partners to further develop this already vibrant site and add up to 5,000 new jobs in science, technology and business. During the year, construction of a world-leading diamond materials R&D facility for Element 6 was completed and a further expansion is in the pipeline. Harwell-Oxford has been selected as a new catapult site in recognition of the growing space cluster. We are pleased to be able to host the European Space Agency Centre, on behalf of the UK. There was also positive news for development of our



Culham Science Centre. During the year, the local council has adopted our master plan into its core planning strategy. This will enable new development on the site and the creation of up to 1000 new jobs.

We are working on a proposal with local organisations to extend our award-winning apprentice training to benefit businesses and boost skills levels in the area. This will directly support the government's move towards employer ownership of skills training. As we continue to transition towards a more technology focused organisation and bid

successfully for externally funded contracts, the requirement for specialist expertise is increasing. We are recruiting hard to meet our capability needs. We are fortunate that many of our existing staff are highly motivated to work in fusion energy research, are engaged in interesting and challenging work and enjoy the culture of scientific and technological excellence at Culham. A testament to the calibre of our younger people is two recent early career awards from the Institute of Physics and Royal Academy of Engineers.

The strength of the Authority is in the highly skilled staff – the world-class scientists and engineers backed by efficient support staff. It is a pleasure to work with such committed people and I must thank them all for another exceptional year.

**Professor Steve Cowley**  
Chief Executive and Accounting Officer  
24th June 2013

# 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 & technology and related technologies to the point of commercialisation.

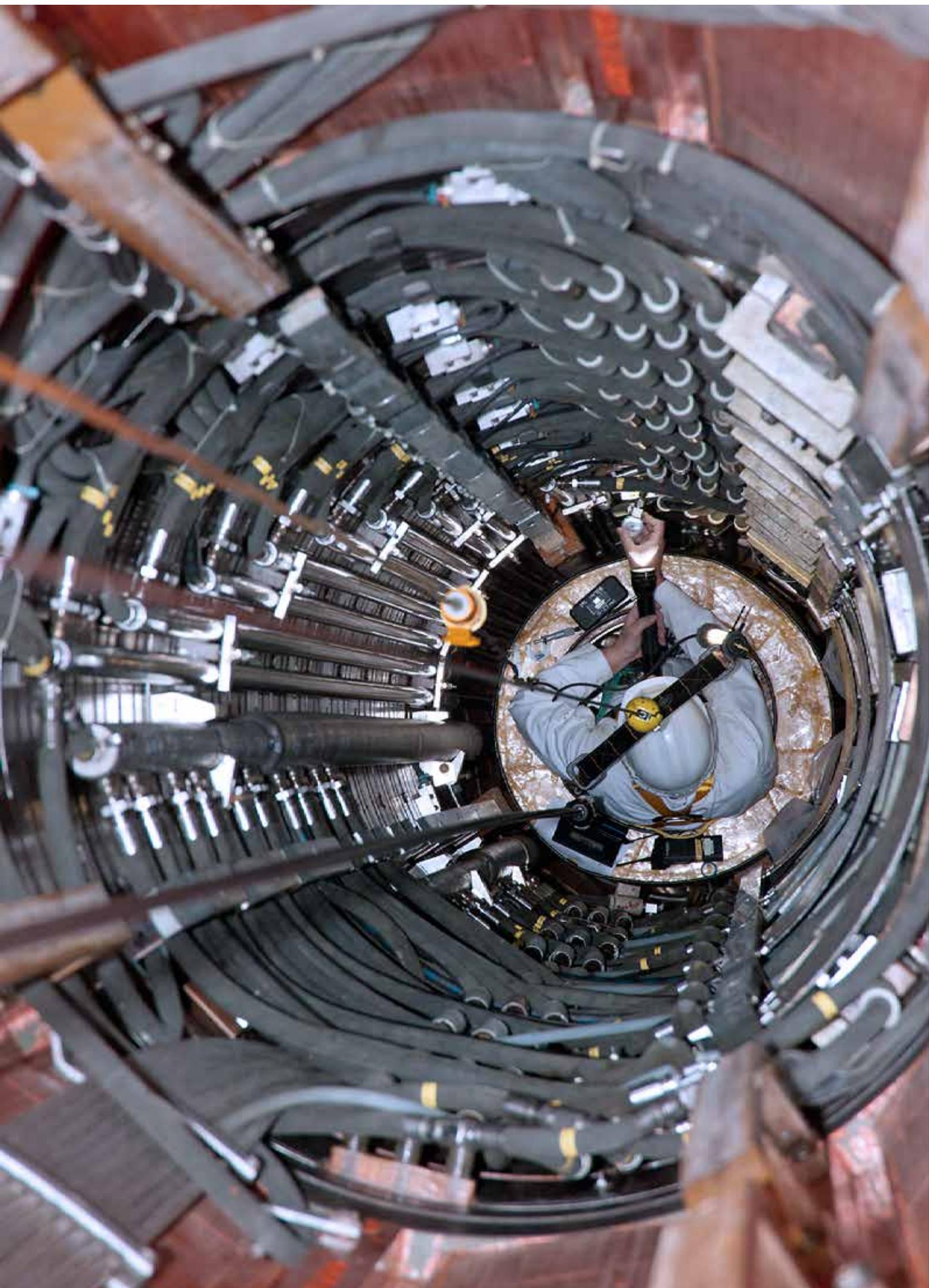
The Authority is a non-departmental public body that reports to the Department for Business, Innovation and Skills (BIS).

The Authority undertakes pioneering research at its fusion laboratory, the Culham Centre for Fusion Energy (CCFE). Fusion is when atoms in a plasma fuse together releasing energy. CCFE is home to the UK's flagship fusion device MAST (Mega Amp Spherical Tokamak) and hosts the world's largest fusion facility JET (Joint European Torus) on behalf of the European Fusion Development Agreement (EFDA). Both of these are tokamaks; devices which use magnetic confinement to control a plasma at temperatures hotter than the sun.

The work undertaken by CCFE is primarily 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.

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**Right** An engineer is lowered into the central magnet at the heart of JET during preparations for the 2013 campaign of experiments.



# Fusion Science

Culham is one of the world's leading centres of research to develop nuclear fusion as a source of energy for electricity generation. The aim of the European fast track to fusion programme is to build a demonstration fusion power station, DEMO, to put electricity on the grid by 2050.

EFDA's roadmap, published in January 2013, sets out in detail the steps required for Europe to attain this goal, based on existing funding predictions. The Authority welcomes the roadmap as a realistic and achievable plan which gives fusion laboratories across Europe a clear focus when planning their domestic research programmes.

## JET

JET, as the world's largest present-day tokamak, is of vital importance to ITER, a multi-billion € fusion device being built as part of an international collaboration to take fusion a step closer to commercial realisation. JET is closely involved in technical preparations for ITER including rehearsing plasma scenarios, testing materials and technologies, and building up expertise among physicists and engineers. As well as operating the facilities on behalf of EFDA, CCFE plays a full part in experiments conducted with colleagues from other EU countries.

In July 2012, JET finished its first experimental campaign since a major upgrade to test key systems for ITER. Initial results are encouraging and bode well for the future of fusion energy development and ITER in particular. Since the previous summer, 286 scientists from 20 European fusion research associations have run experiments to see how the plasma-facing materials in JET's new 'ITER-like' wall interact with the extremely hot plasma inside the machine. Early indications confirm that the materials mix of beryllium and tungsten is working well and will be suitable for use in the much larger and more powerful ITER device.

So far, plasma performance with the new wall has been very consistent and successful advances have been made in optimising the so-called 'hybrid' mode of operation, which exhibits high plasma confinement without some of the side effects of previous high performance regimes. In addition, fuel retention in the wall materials is significantly

reduced, by around a factor of ten, compared to operation with the previous carbon wall. This was one of the main motivations for the upgrade and is good news for ITER preparation.

At the end of the campaign, JET went into an engineering break. CCFE engineers have used remote handling technology to remove some samples of the plasma-facing components from the new wall, allowing researchers to see in more detail how the materials have behaved during the tests. JET is scheduled to start its next run of experiments in summer 2013.

## MAST

MAST has been in a scheduled shutdown during 2012/13. This is to allow essential maintenance and modifications. During the year a number of improvements have been made, including to the Neutral Beam Injection and microwave heating systems, and new diagnostics for measuring the plasma have been installed. These diagnostics have been developed with collaborators from the Australian National University, Durham University, Florida International University and Princeton Plasma Physics Laboratory.

Recommissioning activities took part in the later part of the year in readiness for the next experimental campaign, which will start in early 2013/14. This will be the last set of experiments on the existing MAST device before the MAST-Upgrade project enters the build phase towards the end of 2013.

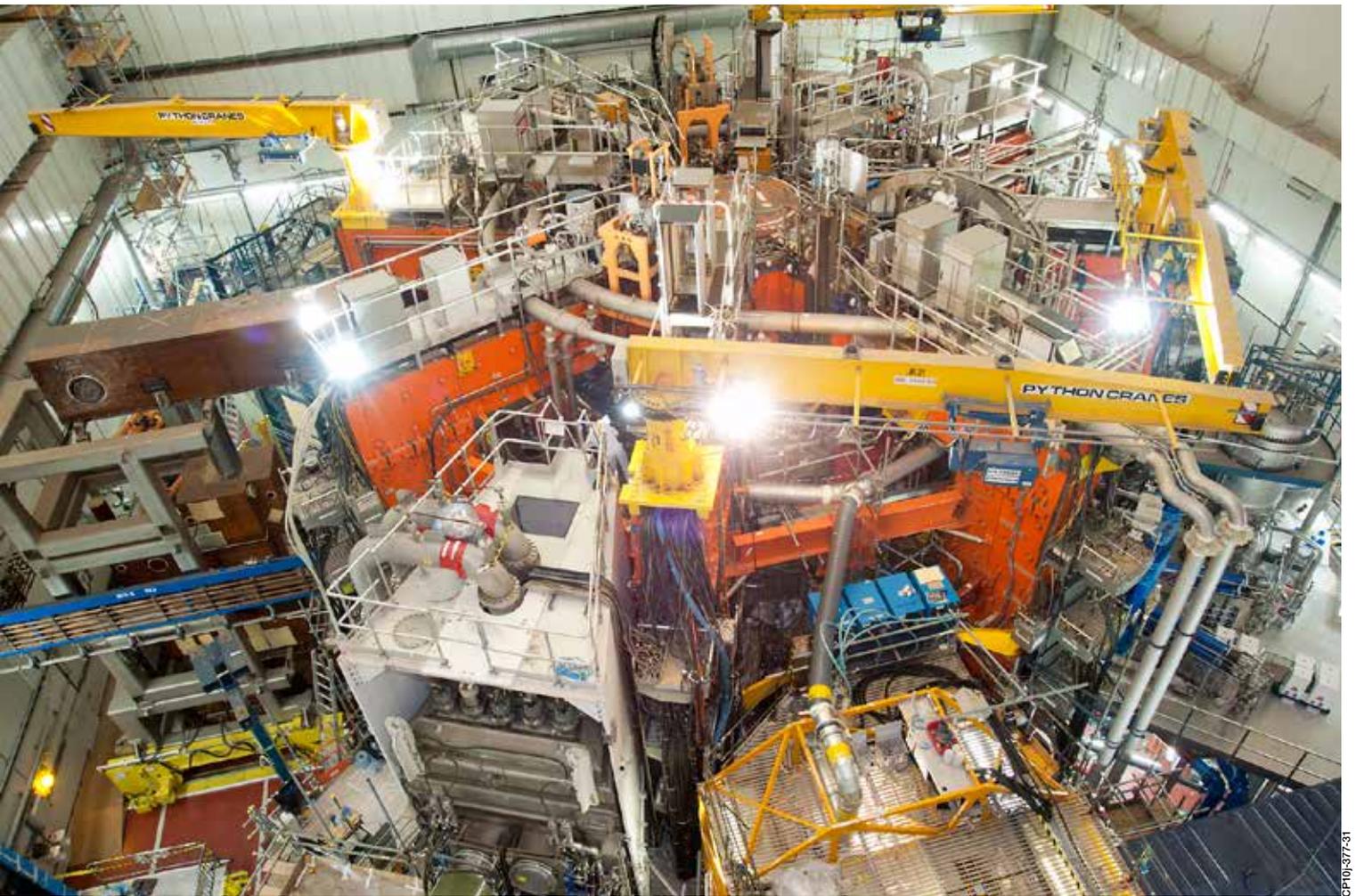
The MAST-Upgrade involves a complete overhaul of the machine's capabilities and the addition of several innovative systems that will give the UK a top-class fusion research facility for the next decade. Preparations for the upgrade have continued in the MAST complex. New machine components have started arriving and a new 50-tonne crane has been installed so that the tokamak can be moved to and from the upgrade assembly area.

In recent months, efforts have also been focused on analysing data from the last MAST experimental campaign, the most successful to date, resulting in a number of high profile scientific papers either published or in the pipeline. Many of these studies were carried out in collaboration with UK universities and have increased CCFE's understanding of physical processes which will have an important influence on plasma performance in future devices, such as ITER and spherical tokamaks including MAST-Upgrade.

## Theory and Modelling

CCFE has a strong theory and modelling programme that concentrates on the key plasma physics issues that need to be resolved for fusion. Much of this is in collaboration with UK universities and overseas fusion organisations. This work benefits from EPSRC and European supercomputers, as well as CCFE's own computing facilities.

In 2012/13, physicists at Culham have taken advantage of advances in computer modelling to improve their understanding



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of plasma performance in MAST. New 3D plasma simulations give a much fuller picture of what is happening within MAST than the 2D versions that were previously used. This has been particularly useful in analysing the results of experiments in which extra external magnetic coils are applied to the plasma.

One example is the study of Edge Localised Modes (ELMs), which are harmful instabilities that take energy out of the plasma, impairing the tokamak's performance. MAST has special magnetic coils that control ELMs by modifying the magnetic field at the plasma edge. 3D modelling shows what effect the coils are having in all regions of the plasma. This feedback is crucial to refining the ELM control system and giving a firm basis for decisions on such coils in ITER.

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**Above** The upgraded JET tokamak has produced impressive results that are aiding ITER preparations.

# Fusion Technology and Business Development

The vision for CCFE is to develop a major fusion technology and design centre at Culham in preparation for the post-JET era and to play a key role in the development of the technology advances and power plant designs required to deliver fusion as a future energy source.

To support this vision a technology roadmap was presented to the Authority Board in February 2013. This provides a framework for the move towards a more technology-focused programme, which includes building on existing key skill areas and the construction of a number of new technology facilities. The activities funded by our EPSRC grant enable much of the skill-building required but sources of additional funding are needed. Such funding will accelerate progress and complement our EPSRC grant activities. Business development opportunities are being pursued, including commercial contracts for fusion (ITER) and other customers, to meet some of these needs.

## EPSRC Technology and Materials Programmes

During 2012/13, significant work was carried out to gain a better understanding of the effect of irradiation on tungsten, which is one of the main materials planned to be used for the inner wall of the ITER tokamak and subsequent reactors. The year also saw the completion of analysis of carbon tiles from the JET vessel, which had been removed to make way for JET's new beryllium and tungsten lining. The data on how much carbon JET's plasma has eroded from the tiles will form an invaluable benchmark for assessing the performance of the current 'ITER-like' wall.

CCFE's contribution to EFDA's Power Plant Physics & Technology activities increased for the second consecutive year in 2012 and represents the largest single commitment in the technology research programme, although other projects are also being pursued outside this framework. A key study on remote maintenance procedures was a highlight of this year's programme. All maintenance procedures on the European Demonstration Fusion Power Reactor (DEMO) device will need to be performed by remote handling due to the levels of activation created by fusion neutrons. The design of DEMO is therefore proceeding with remote access and maintenance as a key requirement. In 2012/13, CCFE undertook the first bottom-up estimate of the duration of maintenance procedures for the reactor's blanket and divertor, including downtime and reliability estimates and using operational experience on JET.

One of the new facilities in the technology roadmap is a Materials Research Facility, which will further research on both nuclear fusion and fission materials. This facility is part of the National Nuclear Users' Facility (NNUF) initiative, which was announced by the UK Government on 27 March 2013 as part of its Nuclear Industrial Strategy. NNUF is being provided with £15 million funding via EPSRC for materials research facilities at Culham, the University of Manchester's Dalton Cumbrian Facility and the National Nuclear Laboratory (NNL) at Sellafield. The Culham facility will allow microscopy and micromechanical testing of mildly radioactive samples, which are too active for university laboratories, while NNL will cater for higher activity tests.

The first funding was available in 2012/13 and much of the specialist equipment has been bought. This will be commissioned and used in 2013/14 on non-active material, with a purpose-built building for active material coming online around the end of 2014/15. It is intended that CCFE's Materials Research Facility will grow to provide more R&D facilities and allow a wider range of tests.

## Business Development

The Authority has been pursuing a sustainable and balanced business development programme, leveraging off current strengths, and intended to position it to take advantage of both fusion and non-fusion opportunities.

The Authority has established a number of Strategic Business Units to focus its activities. These include:

- Applied Radiation Physics Group, which develops and uses state-of-the-art tools to predict, analyse and measure the impact of radiation to select the right designs and materials for cost-efficient and effective fusion reactors. It is also working with government and academia to prevent terrorism and smuggling by improving the detection of radiological and nuclear materials at the UK's ports;
- Special Techniques Group, which has a global reputation for smart materials-joining arising from making high-integrity windows and other components for fusion reactor vessels. Its customers span a range of hi-tech sectors including aerospace, offshore exploration, high-performance vehicle technology, medical and semi-conductor. During the year Special Techniques Group won a four-year contract worth up to €5.83M to supply ITER with a broad range of diagnostic and microwave window assemblies;
- The Tritium and Waste Handling group, which is providing key tritium handling expertise to ITER as well as applying 'best available techniques' to enable the recovery of tritium for reuse from waste materials, design and manufacture of specialist containment systems, and vacuum engineering consultancy.



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### ITER System and Contracts

During the year CCFE continued to be involved in a wide range of research and engineering design activities for ITER components. The European domestic agency for ITER, Fusion for Energy (F4E), allocates grants (40% funded) and fully-funded contracts to fusion laboratories and industry to develop and to construct components needed for ITER. CCFE has been successful in winning a number of these either directly (often as part of consortia of fusion laboratories, some of which it is leading) or as a sub-contractor

to industry. Systems being developed with CCFE involvement include parts of the ion cyclotron resonance and neutral beam heating systems, and magnetic diagnostics. In addition CCFE is supporting F4E and ITER in a number of specialist areas, including neutronics analysis (calculating how fast fusion neutrons travel through materials),

One example of CCFE's work for ITER is the completion of conceptual designs for the remote handling system for the Neutral Beam Cell, which will contain three beams to

**Above** New specialist equipment is enabling the Authority to play a greater role in UK materials research.

provide up to 50MW of heating power into the tokamak plasma. The Remote Handling Unit at CCFE designed a range of systems that will allow all maintenance operations to be performed within this environment without the need for manual intervention.

# Property Development & Other Activities

The Authority owns substantial property assets at Culham Science Centre and at Harwell Oxford, and is committed to developing these sites as world-leading centres for science, technology and business.



## Culham Science Centre

The Culham Science Centre is one of the largest employment centres within the South Oxfordshire District Council (SODC) area, providing employment for some 2,000 people. In addition to the Authority, almost 50 external companies, mainly in the science and technology sectors, are based at Culham. Some of these are resident in the Culham Innovation Centre, which is operated by Oxford Innovation Ltd. in partnership with the Authority and provides serviced accommodation for small and start-up businesses.

The Authority seeks to maximise the return from property assets at Culham, where these are not required for fusion research work. Despite the continuing challenging economic conditions this year, occupation of the commercial property space has been maintained at a high level. A number of companies at Culham have expanded into additional space during the year or have renewed their leases.

The Authority continues to work with the local planning authorities in preparing the way for the physical redevelopment of the site in the future. SODC's planning Core Strategy was adopted in December 2012 and supports the redevelopment and expansion of Culham Science Centre and the creation of up to 1,000 new jobs. A Framework Masterplan has been agreed in principle with the Council and work is well

advanced on the submission of planning applications to enable the re-use of some of the general purpose JET buildings following JET closure, and the replacement of demolished floor space with new buildings.

These developments will 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**  
O X F O R D

## Harwell Oxford

The Authority owns the majority of the land at the Harwell Oxford campus and, together with our joint venture partners, is committed to the campus vision to build a strong interactive community of people involved in science, innovation and business. Harwell Oxford is within the recently established Science Vale Enterprise Zone, which will assist the development of the campus and help to deliver new growth and jobs. Today over 4,500 people are employed at Harwell Oxford by some 150 organisations and the plans are to develop over 100,000 square metres of new laboratory, high technology industrial and office accommodation providing up to 5,000 new jobs.

Harwell Oxford has been chosen by the Technology Strategy Board as the location for the new Satellite Applications Catapult, in recognition of the growing space cluster being established at the site. Organisations involved in space technology development at Harwell Oxford already include the European Space Agency, the International Space Innovation Centre, and the Science and Technology Facilities Council. The space cluster will provide the springboard for development and commercial exploitation of space products and applications in this growing high-technology sector.

Construction of the major new 56,000 sq. ft. research and development facility for Element Six has been completed and the facility is now occupied. Element Six is a world leader in synthetic diamond applications, and the development will enable the company to consolidate their global innovation activities into one centre. A phase 2 extension to the building is already under discussion with Element Six, for delivery in 2014.

A significant area of land will shortly be available for development following the delicensing and de-designation by Ministers of an eastern area of the Harwell nuclear licensed site. This signifies that clean up and decommissioning has been completed in accordance with the Energy Act 2004.

An outline planning application has been submitted for residential development on the northern part of the Harwell site, adjacent to existing housing. The application provides for the demolition of some existing obsolete dwellings and the construction of up to 120 new homes. This will improve the utilisation of the land and help to address the local authority's shortfall in the supply of deliverable housing sites.



### Other activities

The Authority is responsible for the governance and oversight of the Authority's pension schemes, which cover over 45,000 members from the civil nuclear industry. In December 2012, administration of the schemes transferred from Babcock to Aon Hewitt.

The property programme and various legacy activities such as management of historic liabilities are funded by BIS by grant-in-aid under the Shareholder Programme Agreement.

**Above** Steve Moss of the Authority's property team explains development plans for the Culham Science Centre site.

# Key Performance Measures

The Authority seeks to nurture science and technological excellence and deliver breakthroughs at the frontiers of knowledge. As such it sets challenging scientific programmes and performance targets. Taking a balanced scorecard-type approach the other performance measures were set to help drive improvements in the other business activities and in support areas. This included new targets to cover implementation of strategy and reducing the number of vacancies in response to risks relating to resourcing.

Delivery against the UK fusion programme and MAST-Upgrade have been excellent; both showing an increase in performance on 2011/12. The JET performance measure was missed due to an unexpected failure of the JET cryogenic plant, in the first quarter, delaying the programme and impacting on the ability to deliver later milestone dates. Despite this, there has been good performance on JET including ground breaking science with the ITER like wall.

Targets for a number of business development activities were exceeded, but the overall target was missed due to delays in the issuing of invitations to tender for work by F4E. This also impacted on the volume of work against ITER contracts undertaken during the year, although the quality of work has been high.

Excellent performance was achieved in the internal and improvement measures, with increases in performance levels over 2011/12. As a result of a proactive recruitment campaign the vacancy target was met, although enhanced recruitment activities will continue in 2013/14.

Performance measure	Target	Achieved
<b>Key Scientific/Customer Measures</b>		
Achieve the Fusion Programme milestone dates agreed with EPSRC for 2012/13	80-100%	30 of 34 milestones (88%) were delivered on time
Achieve the performance milestone targets for JET Programme agreed with EFDA for 2012/13	80-100%	Target missed – 7 of 16 (44%) deliverables were achieved
Achieve the deliverables and milestone dates for the 2012/13 MAST-Upgrade project as agreed with EPSRC	80-100%	6 of 7 milestones (86%) were delivered on time
Achieve deliverables on ITER Contracts and F4E Grants and Contracts awarded to CCFE and consortium partners, where CCFE is in overall control of tasks	80-100%	Target missed - 6 of 9 deliverables (67%) were achieved
<b>Key Financial Measures</b>		
Achieve the business development revenue targets for business development activities, including 100% ITER-funded opportunities	Budget figure	Target missed – 75% of revenue target achieved
Achieve the operating profit targets from Authority commercial property management	Budget figure	Target exceeded
Achieve reductions in Administration costs in line with Government targets.	5%	Target met
<b>Key Internal/Process Measures</b>		
Achieve the milestone dates in the 2012/13 CCFE Strategy implementation programme agreed with the Board and BIS	80-100%	7 of 8 milestones (88%) were delivered on time
Achieve the milestone dates in the 2012/13 Safety, Health and Environment Programme	80-100%	16 of 18 milestones (89%) were delivered on time
<b>Key Innovation and Learning Measures</b>		
Reduce the number of qualifying vacancies	35% reduction	Target met
Achieve the milestone dates in the 2012/13 Continuous Improvement Programme	80-100%	11 of 13 milestones (85%) were delivered on time

# Principal Risks



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The principal risks to the Authority remain security of adequate funding and having the right skills and people in place to deliver the vision.

The Authority continues to work hard to engage with policy makers and influencers to retain support for fusion. While Horizon 2020 has yet to be finalised, there is strong support for continued operations of JET throughout the framework period. Following a positive mid-term review EPSRC is looking to discuss future grants for the UK fusion programme. These represent the two main sources of funding and once finalised should provide a period of relative stability. Work continues to identify and secure other sources of income and form collaborations with external organisations to provide the Authority with more resilience.

The combination of continuing government austerity measures and national shortages in areas such as engineering has impacted on the Authority's ability to retain and attract experienced staff. Furthermore, as the Authority continues to bid successfully for externally funded contracts and develop centres of technical excellence, the requirement for specialist expertise is increasing. A proactive recruitment campaign in 2012/13 has resulted in a significant number of recruits and this recruitment effort will continue in 2013/14, coupled with measures to enhance retention. However, recruitment and retention of the right calibre of staff remains very challenging. Longer-term mitigation includes continuing in-house development of talent.

**Above** Maintenance work at a water treatment plant at CCFE.

Safeguarding people and the environment are core values, and although the risk of a major incident continues to be low this risk is taken very seriously. Robust safety measures and systems are in place and safety and environmental performance continues to be high.

# People

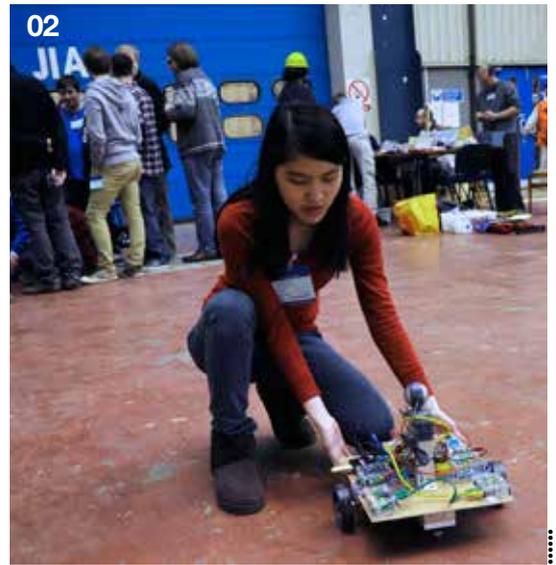
Attracting, retaining, developing and recognising the required skills and expertise for future success is one of the Authority's strategic objectives.





# Stakeholder Engagement

Efforts to engage key stakeholders at local, national and international level are of the utmost importance to retain support for fusion. The Authority is also working hard to ensure that UK industry is able to benefit from the fusion economy and to date over 30 UK companies have won in excess of €200 million in ITER contracts.



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1. Ed Vaizey MP visits a local school electronics project organised by CCFE engineer Margaret Graham (pictured at the back).
  2. A student robotics competition was one of many educational visits hosted at Culham in 2012/13.
  3. More than 1,000 members of the public visited CCFE at Open Evenings during the year.
  4. An industry event at Culham allowed UK companies to find out about the commercial opportunities from fusion.

2013 is an important year as the European Commission is finalising its programme and budget for Horizon 2020, the research funding framework for the rest of the decade, which include the European fusion research programme. The Authority continues to actively engage with UK MEPs and provide support to the EFDA Leader for wider engagement, stressing the importance of the European fusion programme in support of ITER.

On 19 February 2013, EPSRC held a mid-term review of the six-year £163.4m grant it awarded CCFE to fund the UK fusion research programme and MAST Upgrade project. The review was predominantly positive and recognised that CCFE is delivering a science programme that is internationally leading in key areas.

### Industry

As ITER construction work begins to enter its peak period, engagement with industry is also increasing. In October 2012, 120 industry delegates came to an ITER business opportunities event at Culham organised by the Authority and UK Trade & Investment. In March 2013, the Authority led a delegation of nearly 40 British companies to the ITER Business Forum in Toulon.

Significant wins during the year include a series of multi-million euro contracts for AMEC for Test Blanket Module concept design and development, a €6M framework contract for Nuclear Technologies for Planning and Scheduling Support Services, and a major framework contract for TWI, a Cambridgeshire-based technology engineering firm, to support the fabrication of key ITER components.

### Outreach and public engagement

Outreach work is important in inspiring young people about science, and in encouraging them to consider physics or engineering as a career choice. More

generally the Authority is keen to raise awareness about fusion and the research at Culham, both in targeted interest groups and among the public as a whole.

To this end, there is a busy and varied programme of public information and education at Culham. During 2012/13 there were 160 visits involving well over 2,000 visitors including VIPs, industry, the research community, schools, universities and professional societies. In addition, there were ten open evenings for the general public. Demand for visits continues to exceed capacity to take them.

Authority staff also gave many talks and demonstrations, particularly at schools and at local and national science events. Some highlights from 2012/13 include:

- Exhibiting at the Big Bang Fair in London in March 2013. This is the UK's largest science and engineering outreach event, and thousands of young people visited the CCFE stand;
- High-profile talks from Professor Steve Cowley, CEO, at the THiNK conference in India and at the Edinburgh Science Festival; and
- Organising & exhibiting at the Oxfordshire Science Festival in March 2013.

CCFE endeavoured to promote fusion in the media wherever possible. Notable media appearances included two major BBC documentaries "Seven Ages of Starlight" and "Order and Disorder", coverage in The Guardian and the Mail on Sunday and an opinion piece by Professor Steve Cowley on CNN's website.

CCFE also continued to cultivate an online following to spread the word about its work, via social networks such as Twitter, Facebook and LinkedIn, and through its own website, which was redesigned during 2012/13.

The Authority operates a local sponsorship fund, moderated by a staff panel, which provides donations to a range of charities, education and community projects. Donations in 2012/13 included radio kits for a local primary school and a physics microwave kit for a local secondary school, with the aim of encouraging enthusiasm and curiosity for the study of science.

26 requests for information were received in 2012/13 and treated under the Freedom of Information Act regime. All but one were completed within the 20-day limit.

### University Collaborations

CCFE has maintained its wide range of university collaborations, established over the last decade. There are links with over 20 universities, many involving PhD students, of which there are around 40 engaged on fusion research, based either at CCFE or their home university, and many with EPSRC Industrial CASE studentships.

While CCFE funds some university research projects, others are supported by their own EPSRC grants, with the largest at the University of Oxford (fusion and fission materials research) and University of York (plasma physics and training). The York Fusion Doctoral Training initiative provides many students that work with CCFE and also involves Durham, Liverpool, Manchester and Oxford. Other universities making important contributions to fusion research include Strathclyde (physics and mechanical engineering) and Imperial College London (materials, engineering and plasma physics). Furthermore, the increasing emphasis on fusion technology in CCFE's programme has resulted in new initiatives with Durham, Sheffield and Oxford, including a number of jointly funded faculty positions in the pipeline for 2013/14.

# Assurance

The Authority's approach to the prevention of accidents and ill health was recognised with a Gold Award in the 2012 Royal Society for the Prevention of Accidents (RoSPA) Occupational Health and Safety Awards.

## Health, Safety & Environment Incident statistics

One of the Authority's measures of safety performance is the Accident Frequency Rate, which is the ratio of work-related lost time injuries per 100,000 hours worked. The 4 quarter rolling average (for our employees and contractors combined) is 0.21 as measured in April 2013. This figure has remained broadly stable throughout the preceding year and compares favourably when benchmarked with other organisations. CCFE has maintained a very positive ratio of near-miss reports to incidents, reflecting a positive reporting culture. A continuing behavioural safety programme supported by the encouragement of senior managers has helped 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. A significant upgrade to the high voltage power supply system was successfully completed and the high standard of electrical safety at CCFE was maintained through the year.

## Health Physics

The total radiation dose to the 592 monitored/classified people at CCFE for 2012/13 continues to be well below legal dose limits and the Culham Site dose constraints. The highest individual cumulative radiation dose this year was 0.29 mSv, 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 0.006 mSv, which is a tiny fraction (0.25 %) of the average background radioactive dose received by members of the public (2.4mSv).

The CCFE Health Physics Group has shown continued excellence in beryllium analysis which has resulted in the laboratory being ranked as number one for accuracy in global testing trials.

## Discharge authorisations

All the active discharges from Culham were compliant with Environmental Permitting regulations (2010 & amendment 2011) for the accumulation and discharge of radioactive waste 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 new permit has been issued by the EA for the discharge of aqueous trade effluent and improvements have been made to the facilities to ensure the site discharges remain within limits. The first Operational integrated waste strategy for Culham site has been issued which is driving changes in waste management across the site. CCFE is currently in discussion with the EA regarding a variation to the Radioactive Permit which is expected to increase the available disposal routes aiding liability reduction.

## Management Systems and Quality

The Authority operates an integrated management system for all its activities and is certified to the internationally recognised standards for quality (ISO9001), environmental (ISO14001), and health and safety (BS OHSAS18001) management. This certification was reconfirmed in September 2012 following an external audit. 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, work has continued to integrate and

Below CCFE's beryllium analysis facilities are rated among the best in the world.



CPI121-306-008

simplify management systems removing unnecessary bureaucracy.

**Security**

The Authority, working with the Office of Nuclear Regulation and in accordance with their Instructions, maintains a strong security profile.

Improvements to solutions for all aspects of security, personnel, information and physical, are considered and implemented as appropriate. There has been a recent upgrade in perimeter CCTV coverage of the

site. Contingency plans for site emergencies have been reviewed and site exercises are held to practice individuals and systems using 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 an assessment was made using the Information Assurance Maturity Model and this will be used to inform improvements during 2013/14. An information audit was launched in February 2013, and will be used to

update the Information Asset register and Information Asset Owners. There were no reportable personal data related incidents during the year.

The Cabinet Office's Protecting Information Level 1 training is mandatory for all staff and network account holders and where appropriate staff are required to undertake Level 2 and 3 training. During the year the training was brought in-house.

# 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

Table 1 Summary of financial and non-financial information for 2012/13

Area		2011/12	2012/13
Greenhouse gas emissions (Scopes 1-3 excluding international air travel) (CO <sub>2</sub> (e) '000 Tonnes)		86.8	40.6
Estate Energy	Consumption (mill kWh)	66.4	54.4
	Expenditure (£k)	4,813	4,333
Estate Waste	Amount (tonnes)	795.5	857.7
	Expenditure (£k)	416	344
Estate Water	Consumption ('000m <sup>3</sup> )	83.2	69.4
	Expenditure (£k)	205	162

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

Biodiversity areas previously established under the Authority's Biodiversity Action Plan are maintained in a way as to encourage the natural development of these areas. Other routine grounds maintenance is done in such a way as to continue to promote biodiversity.

The Authority has changed its contracts documents in order to incorporate Sustainable Procurement standards in Pre-Qualification Questionnaires and Tender Documents. The Sustainability standards are applied in a range of areas as new or re-tender procurement exercises arise. 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. The Authority supports sustainable construction, although no new builds took place on site during 2012/13.

## 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. Further analysis during 2012/13 has reinforced this view. For example, whilst good correlation can be shown between gas consumption (mainly used for heating) and degree-days (the measure of the difference between the UK baseline temperature of 15.5°C and the actual outdoor temperature multiplied by the number of days), there is only very weak correlation with the much more significant electricity usage.

## Scope 1 emissions

During machine operations much of the high voltage equipment is filled with SF<sub>6</sub>, a very powerful greenhouse gas, and fugitive emissions (Scope 1) form the majority of the Authority carbon footprint. 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. Machine shutdowns took place for the majority of 2012/13 with the exception of operations in Q1. Data

collection of SF<sub>6</sub> usage has greatly improved as the weighing and recording of gas bottles is now regular procedure in the areas of use. This data is collated quarterly and reported within the Authority carbon footprint. Prior to January 2012 no quantitative SF<sub>6</sub> use data was available and so reported data was estimated. This, as well as the operational schedule of the machine, makes comparison between financial years difficult.

Actions have been taken during 2012/13 to reduce the leak rate, and therefore use, of SF<sub>6</sub> from identified equipment. The positive outcome of these actions will be fully realised during the next operational period.

Gas use (Scope 1), for heating and catering purposes, is regularly monitored and reported internally.

Vehicles owned by the Authority are also classified within Scope 1 emissions. Mileage logged by the limited number of owned vehicles is recorded and reported quarterly. This is included in the total Scope 1 emissions for completeness despite not having a significant bearing on the total.

Table 2

Greenhouse gas emissions		2011/12	2012/13
Non-financial indicators (1,000 tCO <sub>2</sub> e)	Total emissions (Scope 1-3)	86.84	40.56
	Total net emissions	86.84	40.56
	Gross emissions Scope 1 (direct)	50.91	18.19
	Gross emissions Scope 2 & 3 (indirect)	35.93	22.37
Related energy consumption (million kWh)	Electricity: Non-Renewable	56.09	39.81
	Electricity: Renewable	0.00	0.00
	Gas	10.27	14.56
	LPG	0.00	0.00
	Other	0.00	0.00
Financial indicators (£k)	Expenditure on Energy	4,817	4,333
	CRC Licence expenditure	<b>426</b>	444
	Expenditure on accredited offsets	–	–
	Expenditure on official business travel	322	375

### 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 scientific programme demands, and will continue to be in 2013/14.

### 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. As well as the actions detailed above, 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.

### Scope 2 and 3 emissions

Electricity (Scope 2) and business travel and commuting mileage (Scope 3) is routinely collected and reported internally. Data is therefore available for the reporting period.

The Culham site is located in rural South Oxfordshire and the options for public transport are limited. However, environmentally friendly methods of commuting are encouraged where possible. The Culham Traffic Count is conducted annually in September to provide data on the modes of transport chosen for commuting. The 2012/13 survey showed an increase in train use and cycling as the percentage of car drivers dropped below 80% for the first time since the survey was started in 2007. The Culham Traffic Count surveys provide the basis for calculating emissions from commuting for internal reporting. The

Authority promotes the use of sustainable transport for commuting through the Cycle to Work scheme, running a Cycle to Work day annually in summer and operating the Culham Car Share lift sharing scheme.

### Waste production

Controlled waste data has been collected and reported quarterly, highlighting an improvement in data capture from the previous financial year within which this data was unavailable. Hazardous waste data is available for Q3 and Q4 of 2012/13 due to working with a new waste contractor; data held with the previous contractor is not available. Therefore, it is anticipated that hazardous waste data will be complete for 2013/14, in addition to controlled waste. The provision of appropriate data as a requirement in waste management company contracts is now standard

procedure. Radioactive and Out of Scope of Regulations (OSR) waste are also included for completeness. OSR waste constitutes material where the activity is low enough to fall below the threshold set by the Environmental Permitting Regulations to be classified as radioactive waste. An amendment to the regulations in 2012 introduced a hazard-based isotope specific threshold therefore allowing some waste previously deemed as radioactive to be disposed of as OSR waste. Despite this reclassification, combined radioactive and OSR waste production has decreased by over 50% year-on-year while waste disposal has increased to reduce accumulations. During 2012/13, the requirement set by the Environment Agency of producing an 'Integrated Waste Management Strategy' was met. This strategy aims to drive management of waste further up the waste

# Sustainability Report continued

Table 3

Waste		2011/12	2012/13	
Non-financial indicators (tonnes)	Total waste disposed of		795.54	857.67
	Hazardous waste	Total	67.66	122.31
		Landfill	165.25	161.05
	Non-hazardous waste	Reused/Recycled	513.85	511.49
		Composted	27.04	24.96
		Incinerated (energy recovery)	0.00	0.00
		Incinerated (no energy recovery)	0.01	0.05
		Total non-hazardous waste	706.15	697.55
	Radioactive	Produced	44.59	20.59
		Disposed	21.73	19.13
	OSR	Produced	0.98	1.59
		Incinerated (no energy recovery)	0.00	18.69
	Total Radioactive / OSR waste disposed of		21.73	37.82
Financial indicators (£k)	Total disposal cost		416	344
	Hazardous waste disposal cost		No data	7
	Non-hazardous waste waste disposal costs	Landfill	No data	29
		Reused/recycled	No data	-5
		Composted	No data	1
		Incinerated (energy recovery)	No data	0
		Incinerated (no energy recovery)	No data	0
	Radioactive	Disposed	317.15	271
OSR	Incinerated (no energy recovery)	0.00	41	

Figures for production of radioactive and OSR (Out of Scope of Regulations) waste are included for information and do not form part of the waste disposal totals.

## Performance Commentary - Planned improvements

The aim of meeting reporting requirements for waste data collection has been met. Further efforts will be made in collection of hazardous waste data. Progress is now to

be made in reducing waste produced and moving waste up the hierarchy to reduce the environmental impact of disposal. Renegotiation of a contract and reclassifying of some radioactive waste to OSR led to a substantial saving in 2012/13 against standard charges.

## Controllable Impacts

Direct impacts result from Authority waste disposal. Authority staff are instructed to

reuse items to minimise waste sent for disposal and segregate waste appropriately to allow for easier recycling.

## 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.

hierarchy, ensure legal compliance and make certain that future waste management requirements can be met.

## Finite resource

### Water use

Water use data is routinely collected and reported internally, and measured data is available for the reporting period.

## Paper use

Paper use data is routinely collected and reported internally, and measured data is available for the reporting period. This data shows more than a 50% decline in paper use over the previous two years.

## Future plans

The Authority will continue to run an Environmental Management System certificated to ISO14001. This includes

a Safety, Health and Environment Policy approved by Senior Management and communicated to staff, contractors and the public. A register of environmental aspects and impacts arising from activities onsite is established and used to determine the Safety, Health and Environment (SHE) targets made in the annual Improvement Programme. This is created at the beginning of the financial year and delivered over the following 12 months. Successful

improvements made in 2012/13 through the Improvement Programme include the installation of LED street lighting in March 2013. This is expected to lead to a 74% power saving equating to 90,000 kgCO<sub>2</sub>e per annum. This positive action will be built upon in the 2013/14 Improvement Programme.

The Authority's future strategy is to continue to reduce emissions of SF<sub>6</sub> both by further short term improvements in equipment and operational procedures, and by investigations to identify a long term solution. Continual improvement of environmental performance is essential and so additional priority areas for 2013/14 include the reduction of resource use of paper, electricity and water where possible across site.

Table 4

Finite resource consumption		2011/12	2012/13	
Non-financial indicators ('000m <sup>3</sup> )	Water consumption (whole site)	Supplied	83.22	69.38
		Abstracted	N/A	N/A
		Supply per FTE	0.09	0.08
	Average number FTE staff/contractors	937	907	
	A4 paper reams equivalent	9,000	6,000	
Financial indicators (£K)	Water supply costs (whole site)	205	162	
	Paper supply cost	16	10	

**Performance Commentary - Planned improvements**

There is an ongoing process of identifying and fixing leaking pipes onsite. Pipework to and from the site water towers has been replaced to prevent leaks. 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.

Staff are encouraged to reduce paper use by using double-sided printing when printing is necessary and using projectors during meetings.

**Influenced Impacts**

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

**Notes**

- 1) 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)
- 2) The greenhouse gas emissions were calculated (from the raw data) using DEFRA/DECC conversion factors (<http://www.defra.gov.uk/publications/files/pb13773-ghg-conversion-factors-2012.pdf>)
- 3) Figures which have been partially or entirely estimated on tables 1-4 are in bold italics. Explanations of each estimate follow:
  - a. CRC Licence Expenditure - This represents the amount accrued in the 2012/13 Annual Accounts for CRC, and is a current best estimate. The comparative has been adjusted to show the actual expenditure on offsets in 2011/12.
  - b. Waste figures (all). See section on data collection above. Partial hazardous waste data is available. Prior-period figures have been revised to reflect improved data collection and analysis processes. The figure for 'Compost' is food waste sent for anaerobic digestion. Negative financial figures for 'Reused/Recycled' reflect rebates received from scrap metals.

# Financial Review

## Operating performance

Revenue for the year was £95,028k (2012-£79,934k). This increase was mainly due to increased expenditure on programmes (£3,337k on the MAST upgrade funded by EPSRC and £2,992k under the JET Operating Contract), and an increase of £8,164k in the UK contribution to JET, which was funded by income from EPSRC. The Group made an operating profit of £856k (2012- £2,718k). This variance was due to the reversal in the 2011/12 accounts of a £1,878k accrual for decommissioning costs no longer required, with a corresponding effect on that year's operating profit. The retained profit for the year after financing but before income tax was £958k, compared with £2,857k in 2012, again mainly owing to the effect of the accrual reversal above. Profit for the year after taxation was £2,733k compared with £3,206k in 2012. The lower 2012/13 retained profit was partially offset by a £1,426k increase in the income tax credit for the year (see below on Taxation).

## Nuclear Liabilities Estimate

The estimated cost of decommissioning and environmentally restoring the JET facilities at the Authority's Culham site is £235,023k, in 2012/13 money values and discounted at rates advised by HM Treasury to the date of the Statement of Financial Position. During the year, HM Treasury changed the general provisions discount rate so that years 1-10 of the provision cash flows are subject to negative discount rates. The effect of this change of discount rate on the provision was £36,766k. 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 the estimated decommissioning cost. The effect of certain key factors on the estimate has been disclosed in Note 21a.

## Taxation

The Statement of Comprehensive Income shows an income tax credit of £1,775k (2012- £349k). £1,609k relates to current taxation and £166k to deferred taxation.

## Current Taxation

The £1,609k tax credit for the year relates to the 2010/11 tax year. The Authority was able to submit a revised tax return for that year, carrying back 2011/12 trading losses to offset a proportion of the taxable profits arising from the sale of Chilton Fields. The trading losses were mainly derived from claims for research and development tax relief which the Authority submits annually to HM Revenue and Customs.

## Deferred Taxation

The deferred tax credit of £166k comprises a £326k credit to the income statement arising from a year end reduction in the corporation tax rate, partially offset by a £160k debit from the increase in valuation in investment property at year end.

## Insurance

During 2012/13, 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 AON Hewitt. Further details of Authority pension arrangements are set out in Note 22 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 £7,431 (2011/12 £10,930) 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 just over 6 days (2011/12 – 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, Director of Strategy and Technology

### Non-Executive Directors

Professor Sir Keith Burnett, CBE, FRS

Peter Jones, FCCA

Steve McQuillan

### Board Secretary

Eric Hollis

Biographical details of the Directors are included on pages 28 to 30. The responsibilities of the Directors are included on page 31.

## The Executive Committee

Professor Steve Cowley, Chief Executive Officer (CEO)

Martin Cox, Director of Strategy & Technology

Eric Hollis – Chief Financial Officer and Authority Secretary

Dr. Derek Stork – Director of Technology (to June 2012)

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

# Board of Directors

## Chairman and Non-Executives

1



### 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 Sir 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. Before this he was Chairman of the Physics department at Oxford.

2



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.

He later 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. He was knighted for services to science and Higher Education in 2013.

### 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

3



4



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. In 2012, he was awarded the Glazebrook Medal from the Institute of Physics

2



### 2 Martin Cox

Appointed to the Authority Board as Chief Operating Officer on 1 November 2010. He was 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. In May 2013 he was appointed Director of Strategy & Technology with responsibility for development of the strategy for increasing the technology activities at Culham as fusion research moves progressively towards energy production, including maximising our roles in ITER and the design of the DEMO fusion reactor. He is also responsible for our overall business development and major projects including the MAST Upgrade. He also has a key role regarding the contract with the EU Commission to operate JET on behalf of 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 (to June 2012)**

Became Assistant Director (Technology) in 2008 and was appointed Director of Technology on 1 November 2009. He led 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. He retired from the Authority in June 2012.

# 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 8.

# 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 across the Authority Group as a whole 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 the Secretary of State for 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 meets either once or 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. In addition, the Executive Committee now monitors progress on outstanding actions arising from internal audits on a monthly basis. These progress reports were introduced during the 2012/13 financial year to demonstrate senior management's commitment to closing out these actions.

### 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 29.

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:

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

Figure 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 four 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 four 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 page 28 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 and the implementation of recommendations arising from it; 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. The areas for improvement identified in last year's review (e.g. scheduling and balance of Board business) have shown marked improvements, although work on senior management succession planning is on-going. In assessing its effectiveness the Board recognised that more stringent monitoring of the control systems was required, and action has already been taken at both the Board and Executive levels.

The Board also reviewed the effectiveness of the chairmanship of the Remuneration and Audit Committees during the year, and concluded that both Board committees were operating well.

In view of the possibility of future tritium operations, it has been decided that Board oversight of assurance matters ought to be strengthened. Accordingly a Board Assurance Committee is being re-established. The Committee will be chaired by one of the non-executive directors and will include two external expert members familiar with tritium operations. The Committee will commence operation during 2013/14.

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, which includes two Directors from the Authority, one of whom is the Authority Chief Financial Officer.

The Group has a 50% interest in a joint venture, Harwell Science and Innovation Campus Public Sector Limited Partnership (HSIC PubSp), the public sector partner in Harwell Oxford, which is responsible for the development of the Harwell Oxford Campus. Both PubSp and Harwell Oxford have appropriate and fully documented governance arrangements in place, covering such matters as membership of and decisions made by their Boards of Directors, appointment and removal of Directors, funding and confidentiality. There is an Authority Director on the Boards of both HSIC PubSp and Harwell Oxford.

## **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.

# Governance Statement continued

## 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.

## 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. Risk appetite is embedded within the Authority's risk management arrangements and is recorded on the Authority's risk registers.

## Other Matters

The Authority's Statement of Financial Position includes liabilities of over £235m 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.

The Authority has robust processes in place to comply with the current austerity measures introduced across the public sector, which aim to reduce expenditure and monitor use of limited public sector resources. Since December 2012, acting on behalf of the Accounting Officer, the Chief Financial Officer has reviewed and signed off monthly data-sets of accounts payable transactions, with particular emphasis on procurement, travel, events and hospitality.

During the year under review, the Authority has reviewed the tax arrangements of all its off-payroll appointments. All contractors within the scope of this exercise have been required to provide evidence of tax compliance. All off-payroll appointments are tax compliant as at 31st March 2013. The Authority also has arrangements in place to ensure that any future off-payroll appointments are fully tax compliant.

## 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.

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 appropriate plans are in place to address weaknesses identified during the year.

One significant internal control issue was identified during the year, involving a fraud. While the financial impact of the fraud was not material to the financial position of the Authority, this fraud is regarded as a material event in itself. Immediate actions have been taken to ensure that this failure of internal control cannot recur. In consultation with BIS, an external review of the Authority's financial management and controls has been carried out. This review has made a number of recommendations. Some of the recommendations for improvement have already been implemented and a detailed action plan and timetable is being prepared to ensure that the remaining review recommendations are implemented.

I have considered the evidence provided to support the annual Governance Statement. My conclusion is that the Authority's overall governance and internal control structures are generally sound and fit for purpose but that some further action is required to implement the remaining recommendations of the external review.

Steve Cowley

**Chief Executive and Accounting Officer**

24 June 2013

# 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 performance against agreed objectives, confirmed by 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 2012/13 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.

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 <sup>(1)</sup> £	Benefits <sup>(2)</sup> £	Annual Bonus £	2013 Total £	2012 Total £
<b>Chairman</b>					
Roger Cashmore	25,000	–	–	25,000	25,146
<b>Non-Executive Directors</b>					
Keith Burnett	15,000	–	–	15,000	15,564
Peter Jones	15,000	1,096	–	16,096	16,547
Stephen McQuillan	15,000	401	–	15,401	15,527
<b>Executive Directors</b>					
Steve Cowley	176,005	22,684	16,893	215,582	216,019
Martin Cox	114,119	5,000	11,485	130,604	135,998
<b>Members of the Executive Committee</b>					
Eric Hollis	103,000	5,000	9,356	117,356	119,320
Derek Stork (to 12th June 2012)	20,747	1,014	–	21,761	121,925
	483,871	35,195	37,734	556,800	666,046

<sup>(1)</sup> Steve Cowley's salary increased from £155,295 to £205,000 on his re-appointment to the Authority Board on 1st November 2012, following a review and simplification of his overall remuneration package. The figures shown for 2013 are on an actual payment basis. (Derek Stork retired from the Authority in June 2012. His annual salary was £103,733.

<sup>(2)</sup> Expenses disclosed for the Chairman and Non-Executive Directors in 2013 and in the comparatives for 2012 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.

### Remuneration ratios

	2012/2013 £	2011/2012 £
Highest Paid Director's Total Remuneration	215,582	216,019
Median Total Remuneration	38,468	37,244
Ratio	5.6	5.8

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 2012/13 was £215,582 (2011/12 - £216,019). This was 5.6 times (2011/12 - 5.8 times) the median remuneration of the workforce, which was £38,468 (2011/12 - £37,244).

No employee received remuneration in excess of the highest-paid Director in either 2012/13 or 2011/12.

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

# Remuneration Report continued

## 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 22 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 2013 and include the value of added years paid for by Directors.

	Accrued Pension 2012 £	Lump sum 2012 £	Increase in accrued pension £	Increase in lump sum £	Accrued Pension 2013 £	Lump Sum 2013 £
<b>Executive Directors</b>						
Steve Cowley	6,145	18,435	2,144	6,433	8,289	24,868
Martin Cox	46,169	138,506	1,426	4,280	47,595	142,786
<b>Members of the Executive Committee</b>						
Eric Hollis	51,500	154,500	–	–	51,500	154,500
Derek Stork <sup>(1)</sup>	45,422	136,265	259	777	45,681	137,042
	149,236	447,706	3,829	11,490	153,065	459,196

<sup>1)</sup>2013 accrued pension and lump sum payments disclosed for Derek Stork are as at the date of his retirement from the Authority in June 2012.

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 2012 <sup>(1)</sup> £	Directors' contributions £	Increase net of contributions £	Transfer Value 2013 £
Steve Cowley	122,276	8,629	34,041	164,946
Martin Cox	985,578	7,167	23,711	1,016,456
<b>Members of the Executive Committee</b>				
Eric Hollis	1,059,436	–	–	1,059,436
	2,167,290	15,796	57,752	2,240,838

<sup>(1)</sup>The actuarial factors used to calculate CETVs changed in 2012/13. The CETVs at 31/3/12 and 31/3/13 have both been calculated using the new factors, for consistency. The CETV at 31/3/12 therefore differs from the corresponding figure in last year's report, which was calculated using the previous factors. Figures are not included for Derek Stork as he retired from the Authority during the year.

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  
24 June 2013

**Steve Cowley**

Chief Executive and Accounting Officer  
24 June 2013

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

## The 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 2013 under the Atomic Energy Authority Act 1954. The financial statements comprise: the group and Authority (consolidated) 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 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 2013 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 Secretary of State 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 Secretary of State directions made under the Atomic Energy 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 returns adequate for my audit have not been received from branches not visited by my staff; 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

26 June 2013

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 2013

	Note	Group		Authority	
		2013 £k	2012 £k	2013 £k	2012 £k
<b>Income</b>					
Revenue	5	95,028	79,934	94,684	79,636
Other income		18	79	209	307
Share of revenue of joint venture		(344)	(298)	–	–
		<b>94,702</b>	<b>79,715</b>	<b>94,893</b>	<b>79,943</b>
<b>Expenditure</b>					
Raw materials and consumables		17,355	12,330	17,355	12,330
Other external expense		20,693	17,117	20,693	17,117
Staff costs	6	43,652	42,554	43,652	42,554
Depreciation, amortisation and impairment		415	395	415	286
Other expense		11,731	4,897	11,980	5,263
Costs capitalised		–	(296)	–	(296)
		<b>93,846</b>	<b>76,997</b>	<b>94,095</b>	<b>77,254</b>
		<b>856</b>	<b>2,718</b>	<b>798</b>	<b>2,689</b>
<b>Operating Profit</b>					
Finance Income	9	479	477	251	290
Finance expense	9	(258)	(215)	(258)	(215)
Share of loss of joint venture after tax	14	(119)	(123)	–	–
<b>Profit before tax</b>		<b>958</b>	<b>2,857</b>	<b>791</b>	<b>2,764</b>
Income tax credit (debit)	11	1,775	349	1,775	349
<b>Profit for the year</b>		<b>2,733</b>	<b>3,206</b>	<b>2,566</b>	<b>3,113</b>
<b>Other comprehensive income</b>					
Net gain (loss) on revaluations		136	1,777	–	1,777
Actuarial gains (losses) on defined benefit pension plans		(112)	(141)	(112)	(141)
Income tax (debit)/credit relating to components of other comprehensive income		187	(189)	187	(189)
Other comprehensive income for the year		211	1,447	75	1,447
<b>Total comprehensive income for the year ended 31/3/2013</b>		<b>2,944</b>	<b>4,653</b>	<b>2,641</b>	<b>4,560</b>

The notes on pages 47 to 71 are an integral part of these financial statements.

# Consolidated Statement of Financial Position as at 31 March 2013

		Group		Authority	
	Note	2013 £k	2012 £k	2013 £k	2012 £k
<b>Non-current assets</b>					
Property, plant and equipment	12	21,677	20,450	21,677	20,450
Investment property	13	39,318	38,842	39,318	38,842
Intangible assets		5	12	5	12
Financial assets	14	9,802	2,467	13,049	5,731
Other receivables	16	247,641	202,543	247,641	202,543
<b>Total non-current assets</b>		<b>318,443</b>	<b>264,314</b>	<b>321,690</b>	<b>267,578</b>
<b>Current assets</b>					
Inventories		26	27	26	27
Trade and other receivables	16	15,100	11,988	15,146	12,023
Financial assets	14	9,705	14,463	-	5,000
Cash and cash equivalents	17	38,949	53,577	35,418	50,027
<b>Total current assets</b>		<b>63,780</b>	<b>80,055</b>	<b>50,590</b>	<b>67,077</b>
<b>Total assets</b>		<b>382,223</b>	<b>344,369</b>	<b>372,280</b>	<b>334,655</b>
<b>Current Liabilities</b>					
Trade and other payables	18	38,118	47,602	38,108	47,591
Provisions for liabilities and charges	21	6,580	7,485	5,275	6,735
<b>Total current liabilities</b>		<b>44,698</b>	<b>55,087</b>	<b>43,383</b>	<b>54,326</b>
<b>Non-current assets plus net current assets</b>		<b>337,525</b>	<b>289,282</b>	<b>328,897</b>	<b>280,329</b>
<b>Non-current liabilities</b>					
Other payables	18	94	94	94	94
Deferred income	19	1,431	60	1,431	60
Deferred income tax liabilities	20	8,912	9,265	8,912	9,265
Provisions for liabilities and charges	21	253,318	209,037	253,099	208,190
<b>Total non - current liabilities</b>		<b>263,755</b>	<b>218,456</b>	<b>263,536</b>	<b>217,609</b>
<b>Assets less liabilities</b>		<b>73,770</b>	<b>70,826</b>	<b>65,361</b>	<b>62,720</b>
<b>Taxpayers' equity</b>					
General reserve		13,658	13,658	13,658	13,658
Revaluation reserve		8,758	8,870	8,758	8,870
Retained earnings		51,354	48,298	42,945	40,192
		<b>73,770</b>	<b>70,826</b>	<b>65,361</b>	<b>62,720</b>

The notes on pages 47 to 71 are an integral part of these financial statements.

The Financial Statements on pages 43 to 71 were approved by the Board on 24 June 2013 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 2013

		Group		Authority	
	Note	2013 £k	2012 £k	2013 £k	2012 £k
<b>Cash flows from operating activities</b>					
Profit for the year		2,733	3,206	2,566	3,113
Adjustments for non-cash transactions:					
– Depreciation, amortisation, and impairment		415	395	415	286
– Deferred income released	19	(18)	(53)	(18)	(53)
– Change in fair value of investment property	13	(476)	(965)	(476)	(965)
– Net finance income recognised		(221)	(262)	7	(75)
– Income tax debit (credit)	11	(1,775)	(348)	(1,775)	(348)
– Share of loss (profit) of joint venture		119	123	—	–
Changes in working capital:					
– (Increase)/Decrease in trade and other receivables		(1,590)	983	(1,601)	973
– (Increase)/Decrease in inventories		1	(6)	1	(6)
– (Increase)/Decrease in current financial assets		4,758	5,275	5,000	5,000
– Increase/(Decrease) in trade and other payables		(8,094)	(8,103)	(8,093)	(8,106)
– Use of provisions		(2,005)	1,875	(1,932)	2,245
<b>Net cash inflow (outflow) from operating activities</b>		<b>(6,153)</b>	<b>2,120</b>	<b>(5,906)</b>	<b>2,064</b>
<b>Cash flows from investing activities</b>					
Purchase of property, plant and equipment	12	(1,636)	(406)	(1,636)	(406)
Investment in joint venture		(7,318)	(25)	(7,318)	(24)
Interest received		479	477	251	290
<b>Net cash inflow (outflow) from investing activities</b>		<b>(8,475)</b>	<b>46</b>	<b>(8,703)</b>	<b>(140)</b>
<b>Cash flows from financing activities</b>					
		–	–	–	–
<b>Net increase/(decrease) in cash and cash equivalents in the period</b>		<b>(14,628)</b>	<b>2,166</b>	<b>(14,609)</b>	<b>1,924</b>
Cash and cash equivalents at the beginning of the period		53,577	51,411	50,027	48,103
<b>Cash and cash equivalents at the end of the period</b>		<b>38,949</b>	<b>53,577</b>	<b>35,418</b>	<b>50,027</b>

The notes on pages 47 to 71 are an integral part of these financial statements.

# Consolidated Statement of Changes in Taxpayers' Equity

for the year ended 31 March 2013

Group	General reserve £k	Revaluation reserve £k	Retained earnings £k	Total £k
Balance at 1 April 2011	13,658	7,402	45,113	66,173
<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>Changes in Taxpayers' Equity 2012/2013</b>				
Total comprehensive income for the year	-	187	2,757	2,944
Depreciation transfer	-	(299)	299	-
<b>Balance at 31 March 2013</b>	<b>13,658</b>	<b>8,758</b>	<b>51,354</b>	<b>73,770</b>

Authority	General reserve £k	Revaluation reserve £k	Retained earnings £k	Total £k
Balance at 1 April 2011	13,658	7,402	37,100	58,160
<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>
<b>Changes in Taxpayers' Equity 2012/2013</b>				
Total comprehensive income for the year	-	187	2,454	2,641
Depreciation transfer	-	(299)	299	-
<b>Balance at 31 March 2013</b>	<b>13,658</b>	<b>8,758</b>	<b>42,945</b>	<b>65,361</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 26 June 2013.

## 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. The Authority relies on funding from the European Commission to finance the operation of the JET programme. The European Commission is currently working through the appropriate mechanisms to provide the rest of the funding for the remainder of the agreed EFDA work programme for 2013, which includes JET operation. In addition, the Commission has recently affirmed its commitment to a JET programme that runs until the end of 2018 to support the ITER 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.

This departure from the specified treatment in the FReM 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 FReM, these schemes are accounted for as defined contribution schemes in these financial statements and the obligations recognised are limited to the contributions due.

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.

# Notes to the Financial Statements

## 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 FReM, 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.

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.

# Notes to the Financial Statements

## 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.

## 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.

## 3.18 New and Amended Accounting Standards

Certain new standards, amendments and interpretations to existing standards have been published but are not effective on the Authority's accounting period.

The following new standards, amendments and interpretations to existing standards are not yet effective and have not been early adopted by the Authority:

- IFRS 7 Financial Instruments (Amendment): Disclosures effective 1 January 2013
- IFRS 9 Financial Instrument (New) effective 1 January 2015
- IFRS 10 Consolidated Financial Statements (New) effective 1 January 2013
- IFRS 12 Disclosure of Interest in other entities (New) effective 1 January 2013
- IFRS 13 Fair Value Measurement (New) effective 1 January 2013
- IAS 1 Presentation of Financial Statements (Amendment) effective 1 July 2012
- IAS 19 Employee Benefits (Amendment) effective 1 January 2013

- IAS 27 Consolidated and Separate Financial Statements (Amendment) effective 1 January 2013
- IAS 32 Financial Instruments: Presentation (Amendment) effective 1 January 2014

The Board anticipate that the adoption of these standards and interpretations in future periods will have no material impact on the financial statements of the Authority.

#### **4 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.

#### **5 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.

##### **5.1 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.

Other segments include grant-in-aid funding and insurance. None of these segments meets any of the quantitative thresholds for determining reportable segments in 2013 or 2012. The results of these segments are included in the "other" column in the segmental analyses below.

# Notes to the Financial Statements

The segment information for the reportable segments for the years ended 31 March 2013 and 31 March 2012 is as follows:

	Fusion research £k	Property management £k	Other £k	Total £k
<b>Year ended 31 March 2013</b>				
External segment revenue	84,838	4,966	5,224	95,028
Less: Share of revenue of joint venture	-	(344)	-	(344)
Other income	18	-	-	18
Expenditure	(84,856)	(4,146)	(4,844)	(93,846)
Operating profit/(loss)	-	476	380	856
Finance income	251	-	228	479
Finance expense	-	-	(258)	(258)
Share of profits (loss) of joint venture	-	(119)	-	(119)
Profit/(loss) before income tax	251	357	350	958
<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 (loss) of joint venture	-	(123)	-	(123)
Profit/(loss) before income tax	290	953	1,614	2,857

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

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

	2013 £k	2012 £k
<b>Revenues</b>		
Total revenue for reportable segments	89,804	73,238
Other revenue	5,224	6,696
Consolidated revenue per Statement of Comprehensive Income	95,028	79,934
<b>Profit or loss</b>		
Total profit or loss for reportable segments	608	1,243
Other profit or loss	350	1,614
Consolidated profit before income tax per Statement of Comprehensive Income	958	2,857

## 5.3 Geographical segments

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

Group	Revenue	
	2013 £k	2012 £k
United Kingdom	31,932	31,371
Europe	63,019	48,477
Rest of the world	77	86
	<b>95,028</b>	<b>79,934</b>

## 5.4 Revenue from major customers

	2013 £k	2012 £k
European Commission	61,791	47,604

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

# Notes to the Financial Statements

## 6 Staff Numbers and Related Costs

	2013 £k	2012 £k
Permanently employed staff:		
Salaries, bonuses and allowances	22,661	21,964
Social security costs	2,044	1,937
Pension costs – defined contribution plans (see Note 22a)	3,174	3,220
	<b>27,879</b>	<b>27,121</b>
Other staff	15,773	15,433
	<b>43,652</b>	<b>42,554</b>

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

	2013	2012
Directly employed	537	540
Other staff	370	397
	<b>907</b>	<b>937</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	
	2012/13	2011/12	2012/13	2011/12	2012/13	2011/12
< £10,000	–	–	–	(2)	–	(2)
£10,000 - £25,000	–	–	4	(3)	4	(3)
£25,000 - £50,000	–	–	6	(3)	6	(3)
£50,000 - £100,000	–	–	6	(7)	6	(7)
£100,000 - £150,000	–	–	1	(2)	1	(2)
£150,000 - £200,000	–	–	1	(1)	1	(1)
£200,000 - £250,000	–	–	1	–	1	–
£250,000 - £300,000	–	–	2	(1)	2	(1)
£300,000 - £350,000	–	–	1	–	1	–
£350,000 - £400,000	–	–	–	–	–	–
£400,000 - £450,000	–	–	–	–	–	–
£450,000 - £500,000	–	–	–	–	–	–
Total number of exit packages	–	–	22	(19)	22	(19)
Total resource cost £	–	–	2,021,548	(1,345,505)	2,021,548	(1,345,505)

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 were two exceptions, which were 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.

## 7 Operating profit

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

	2013 £k	2012 £k
Change in fair value of investment property	(476)	(965)
Net foreign exchange losses (gains)	43	243
Operating lease rentals – plant and machinery	143	159
Non-cash items:		
– Depreciation	409	280
– Amortisation	6	6

## 8 Auditor's remuneration

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

	2013 £k	2012 £k
<b>Audit fees</b>		
Authority	46	46
Authority pension schemes	23	23
	69	69
Other services	-	-
	<b>69</b>	<b>69</b>

## 9 Finance income and expense

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £k
<b>Income</b>				
Interest on term bank deposits	479	477	251	290
<b>Expense</b>				
Revalorisation of provisions:				
– Changes in price levels	6,149	6,881	6,149	6,881
– Unwinding of discount on provisions	4,316	4,032	4,316	4,032
– Effect of change in discount rate (Note 21)	36,766	-	36,766	-
– Escalation of reimbursement receivables (Note 21)	(47,051)	(10,779)	(47,051)	(10,779)
Interest on unfunded retirement benefits	78	81	78	81
	<b>258</b>	<b>215</b>	<b>258</b>	<b>215</b>

# Notes to the Financial Statements

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

	Programme £k	2013 Admin £k	Total £k	Programme £k	2012 Admin £k	Total £k
<b>Income</b>						
Income from activities	90,918	4,110	95,028	75,345	4,589	79,934
Other income	18	–	18	79	–	79
Interest receivable	479	–	479	477	–	477
Share of revenue of Joint Venture	(344)	–	(344)	(298)	–	(298)
Share of profit (loss) of Joint Venture	(119)	–	(119)	(123)	–	(123)
	90,952	4,110	95,062	75,480	4,589	80,069
<b>Expenditure</b>						
Raw Materials and Consumables	17,355	–	17,355	12,330	–	12,330
Other External Expense net of costs capitalised	19,759	934	20,693	15,922	899	16,821
Staff costs	40,364	3,288	43,652	39,331	3,223	42,554
Other expense	11,624	107	11,731	4,203	694	4,897
Non-cash items:						
–Depreciation	398	11	409	272	8	280
–Amortisation	6	–	6	6	–	6
–Impairment				109	–	109
Finance expense	258	–	258	215	–	215
	89,764	4,340	94,104	72,388	4,824	77,212
<b>Net Expenditure after Interest and before tax</b>	<b>(1,188)</b>	<b>230</b>	<b>(958)</b>	<b>(3,092)</b>	<b>235</b>	<b>(2,857)</b>

## 11 Income tax (expense)/credit

### Group and Authority

	2013 £k	2012 £k
<b>Current tax</b>		
Current tax credit (debit)	1,609	50
<b>Deferred tax</b>		
Origination and reversal of temporary differences	166	299
<b>Income tax credit (debit)</b>	<b>1,775</b>	<b>349</b>
Share of income tax of joint venture	–	–
<b>Total income tax (expense)/credit</b>	<b>1,775</b>	<b>349</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:

	2013 £k	2012 £k
Profit for the year	2,733	3,206
Income tax expense/(credit)	(1,775)	(349)
Profit excluding income tax	958	2,857
Tax calculated at the standard UK corporation tax rate of 24% (2012 – 26%)	258	803
Tax effects of:		
– Reversal of timing differences	95	61
– Expenses not deductible	(99)	(137)
– Enhanced relief for research and development expenditure	(186)	(642)
– Tax losses for which no deferred income tax asset was recognised	(68)	(85)
– Income tax credit for previous years	(1,609)	–
– Reversal of tax creditor from previous year	–	(50)
<b>Current tax expense (credit) for the year</b>	<b>(1,609)</b>	<b>(50)</b>

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

	2013 £k	2012 £k
Fair value gains on property, plant and equipment	(187)	189

The income tax credit of £1,609k relates to the 2010/11 tax year where the Authority has carried back 2011/12 trading losses to offset a proportion of the taxable profits relating to the sale of Chilton Fields.

# Notes to the Financial Statements

## 12 Property, plant and equipment

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 2011	7,859	4,891	2,993	7,177	22,920
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>
Additions	–	–	1,636	–	1,636
Disposals	–	–	–	–	–
Revaluation	–	–	–	–	–
<b>At 31 March 2013</b>	<b>6,942</b>	<b>7,586</b>	<b>4,662</b>	<b>7,473</b>	<b>26,663</b>
<b>Depreciation and impairment</b>					
At 1 April 2011	–	1,777	2,597	–	4,374
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>
Depreciation charge	–	331	78	–	409
Disposals	–	–	–	–	–
<b>At 31 March 2013</b>	<b>–</b>	<b>2,283</b>	<b>2,703</b>	<b>–</b>	<b>4,986</b>
<b>Net book value</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>
<b>At 31 March 2013</b>	<b>6,942</b>	<b>5,303</b>	<b>1,959</b>	<b>7,473</b>	<b>21,677</b>

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

There was £62k capital expenditure contracted for at the reporting date but not recognised in the financial statements. (2012 – nil).

### 13 Investment property

	Group and Authority	
	2013 £k	2012 £k
At 1 April	38,842	37,877
Change in fair value	476	965
<b>At 31 March</b>	<b>39,318</b>	<b>38,842</b>

Investment properties were valued at fair value at 28 February 2013 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	
	2013 £k	2012 £k
Rental income	2,021	2,042
Direct operating expenses:		
– Investment properties that generated rental income	1,651	1,622
– Investment properties that did not generate rental income	249	287

### 14 Financial Assets

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £k
<b>Non-current</b>				
At 1 April	2,467	2,674	5,731	5,707
Additions	7,335	–	7,318	24
Impairment	–	(207)	–	–
<b>At 31 March</b>	<b>9,802</b>	<b>2,467</b>	<b>13,049</b>	<b>5,731</b>
Investment in subsidiary undertakings	–	–	3,000	3,000
Investment in joint venture	9,802	2,467	10,049	2,731
	<b>9,802</b>	<b>2,467</b>	<b>13,049</b>	<b>5,731</b>
<b>Current</b>				
Term bank deposits	9,705	14,463	–	5,000

# Notes to the Financial Statements

## a) Investment in subsidiary undertakings

Name	Country of incorporation	Ownership interest % 2013	2012
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	
	2013 £k	2012 £k
At 1 April	2,467	2,674
Share of profits/(loss) net of tax	(119)	(123)
Additions	7,454	–
Impairment	–	(84)
<b>At 31 March</b>	<b>9,802</b>	<b>2,467</b>
Analysed as follows:		
Cost	9,921	2,590
Share of retained profits	(119)	(123)
	<b>9,802</b>	<b>2,467</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:

	2013 £k	2012 £k
<b>Profit net of tax</b>		
Income	346	300
Expenses	(465)	(423)
	<b>(119)</b>	<b>(123)</b>
<b>Assets</b>		
Current assets	6,968	1,321
Non-current assets	5,318	1,819
	<b>12,286</b>	<b>3,140</b>
<b>Liabilities</b>		
Current liabilities	419	423
Non-current liabilities	2,065	250
	<b>2,484</b>	<b>673</b>
<b>Net assets</b>	<b>9,802</b>	<b>2,467</b>

There are no contingent liabilities relating to the Group's interest in the joint venture, and no significant 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 2013 was 1.52% (2012 – 1.63%). The credit risk associated with these investments is considered to be low because of the size and status of the banks involved.

#### **15 Financial instruments by category**

All financial assets of the Group and the Authority were categorised as loans and receivables at both 31 March 2013 and 31 March 2012. All financial liabilities of the Group and the Authority were categorised as other financial liabilities at both 31 March 2013 and 31 March 2012.

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

## 16 Trade receivables, financial and other current assets

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £k
<b>Amounts falling due after more than one year</b>				
Reimbursement receivables (Note 21):				
– Site restoration	234,940	187,928	234,940	187,928
– Restructuring	12,642	14,548	12,642	14,548
Other receivables	59	67	59	67
	<b>247,641</b>	<b>202,543</b>	<b>247,641</b>	<b>202,543</b>

### Amounts falling due within one year

Trade receivables	2,747	1,231	2,747	1,231
Reimbursement receivables (Note 21):				
– Site restoration	83	79	83	79
– Restructuring	4,054	4,153	4,054	4,153
Prepayments and accrued income	5,879	5,400	5,816	5,256
VAT	711	1,013	711	1,013
Corporation Tax receivable (note 11)	1,609	–	1,609	–
Other receivables	17	112	126	291
	<b>15,100</b>	<b>11,988</b>	<b>15,146</b>	<b>12,023</b>

There are no impaired assets in any of the classes of trade and other receivables.

Receivables can be analysed as follows:

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £k
<b>Amounts falling due after more than one year</b>				
Other Central Government bodies	246,805	201,537	246,805	201,537
Bodies external to Government	836	1,006	836	1,006
	<b>247,641</b>	<b>202,543</b>	<b>247,641</b>	<b>202,543</b>

### Amounts falling due within one year

Other Central Government bodies	6,477	6,086	6,477	6,086
Local authorities	194	189	194	189
Bodies external to Government	8,429	5,713	8,475	5,748
	<b>15,100</b>	<b>11,988</b>	<b>15,146</b>	<b>12,023</b>

## 17 Cash and cash equivalents

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £k
Balance at 1 April	53,577	51,411	50,027	48,103
Net change in cash and cash equivalent balances	(14,628)	2,166	(14,609)	1,924
<b>Balance at 31 March</b>	<b>38,949</b>	<b>53,577</b>	<b>35,418</b>	<b>50,027</b>

The following balances at 31 March were held at:

Commercial banks and cash in hand	8,949	23,577	5,418	20,027
Short term investments	30,000	30,000	30,000	30,000
<b>Balance at 31 March</b>	<b>38,949</b>	<b>53,577</b>	<b>35,418</b>	<b>50,027</b>

## 18 Trade payables and other current liabilities

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £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	2,317	1,984	2,317	1,984
Accrued costs	9,313	5,959	9,306	5,951
Payments received on account	23,376	37,049	23,376	37,049
Social security and other taxes	680	593	680	593
Other payables	2,432	2,017	2,429	2,014
	<b>38,118</b>	<b>47,602</b>	<b>38,108</b>	<b>47,591</b>

Payables can be analysed as follows:

	Group		Authority	
	2013 £k	2012 £k	2013 £k	2012 £k
Other Central Government bodies	5,386	1,000	5,386	1,000
Bodies external to Government	32,732	46,602	32,722	46,591
	<b>38,118</b>	<b>47,602</b>	<b>38,108</b>	<b>47,591</b>

# Notes to the Financial Statements

## 19 Deferred income

Deferred income received in 2013 relates to a capital grant for the purchase of equipment for the Materials Research Facility which is to be established on the Culham site. The remaining deferred income consists of previous Government funding received to finance capital expenditure.

	Group and Authority	
	2013 £k	2012 £k
At 1 April	60	113
Deferred income received	1,389	–
Released to income statement	(18)	(53)
<b>As at 31 March</b>	<b>1,431</b>	<b>60</b>

## 20 Deferred income tax

Group and Authority	Investment property £k	Land and buildings £k	Total £k
At 1 April 2011	6,904	2,472	9,376
Income statement debit/(credit)	(299)	–	(299)
Charged directly to equity	–	188	188
<b>At 31 March 2012</b>	<b>6,605</b>	<b>2,660</b>	<b>9,265</b>
Income statement debit/(credit):			
– Revaluation	160	–	160
– Disposal	–	–	–
– Effect of change in tax rate	(326)	–	(326)
Charged directly to equity:			
– Revaluation	–	(76)	(76)
– Effect of change in tax rate	–	(111)	(111)
<b>At 31 March 2013</b>	<b>6,439</b>	<b>2,473</b>	<b>8,912</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 March 2012 budget subsequently announced that the UK corporation tax rate would reduce further, to 24% with effect from 1 April 2012 and 23% in the following year. The change to a 24% rate was substantively enacted on 26 March 2012. A further change in the tax rate to 23% was substantively enacted on 3 July 2012, with effect from 1 April 2013. The effect of this change on the deferred tax liability at 31 March 2013 is shown above.

Additional reductions to 21% for periods from 1 April 2014 and 20% with effect from 1 April 2015 were announced in the Autumn statement 2012 and the March 2013 budget and this will reduce the deferred tax liability by an additional £1,163k over the remainder of this period. 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 £4,166k (2012 – £2,869k) in respect of tax losses of £17,748k that can be carried forward against future taxable income, and a further £367k of tax depreciation.

## 21 Provisions for liabilities and charges

Group	Site Restoration £k	Restructuring £k	Other £k	Total £k
At 1 April 2011	177,172	24,921	4,633	206,726
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>
Changes in price levels	6,149	433	5	6,587
Unwinding of discount	4,136	674	–	4,810
Provided in the year	36,766	1,579	606	38,951
Provisions utilised in the year	(35)	(6,233)	(704)	(6,972)
<b>At 31 March 2013</b>	<b>235,023</b>	<b>20,503</b>	<b>4,372</b>	<b>259,898</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>
<b>At 31 March 2013</b>				
Non-current	234,940	15,832	2,546	253,318
Current	83	4,671	1,826	6,580
	<b>235,023</b>	<b>20,503</b>	<b>4,372</b>	<b>259,898</b>

# Notes to the Financial Statements

Authority	Site Restoration £k	Restructuring £k	Other £k	Total £k
At 1 April 2011	177,172	24,921	2,663	204,756
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 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>
Changes in price levels	6,149	433	5	6,587
Unwinding of discount	4,136	674	–	4,810
Provided in the year	36,766	1,579	679	39,024
Provisions not required written back	–	–	–	–
Provisions utilised in the year	(35)	(6,233)	(704)	(6,972)
<b>At 31 March 2013</b>	<b>235,023</b>	<b>20,503</b>	<b>2,848</b>	<b>258,374</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>
<b>At 31 March 2013</b>				
Non-current	234,940	15,832	2,327	253,099
Current	83	4,671	521	5,275
	<b>235,023</b>	<b>20,503</b>	<b>2,848</b>	<b>258,374</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 2013 is discounted at rates advised by HM Treasury to the reporting date. During the year, HM Treasury changed the methodology used for determining the discount rate applied to general provisions, which had previously been 2.2% for all cash flows. The rates now applied are:

	<b>Rate</b>
	%
Short term – 0 to 5 years from the date of the Statement of Financial Position (SFP)	–1.8
Medium term – after 5 and up to 10 years from the date of the SFP	–1.0
Long term – over 10 years from the date of the SFP	2.2

The application of negative discount rates to cash flows up to 10 years from the date of the SFP has increased the decommissioning provision by £36,766k and has been treated as a change in accounting estimate in accordance with Treasury guidance.

The provision is expressed in 2012/13 money values using RPI (3.2%) to inflate costs from the dates of the original assessment. The analysis of expected timing of discounted flows is as follows:

	<b>Group and Authority</b>	
	<b>2013</b>	<b>2012</b>
	<b>£k</b>	<b>£k</b>
Not later than one year	83	79
Later than one year and not later than five years	4,214	2,647
Later than five years	230,726	185,281
	<b>235,023</b>	<b>188,007</b>

The best estimate of the undiscounted cost of dealing with the liabilities is £249,908k (2012 - £242,239k).

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:

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

These assurances were reconfirmed by BIS in June 2013. 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 2012/13 Annual Accounts. This gives a range of undiscounted and discounted costs (including the best estimate) as follows:

Undiscounted costs -. £249,502k to £249,908k. (2012 - £241,495k to £242,239k)

Discounted costs -. £217,999k to £239,640k. (2012 - £180,216k to £195,199k)

When a later date for JET closure is assumed, the discounted costs are reduced substantially compared with those for earlier closure dates. This is because the updated Treasury discount rates above increase the discounted value in the earlier years of the phasing, when rates are negative, but reduce it in later years when the rate is positive. Assuming later JET closure moves more decommissioning costs into later years.

Costs associated with new equipment and facilities installed during the recent JET upgrade to replace existing equipment are not included in the estimates above, but are not expected to add significantly to the overall liability.

### **(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 2013. 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 2.35% in 2012/13. The undiscounted cost of the group provisions is £22,466k (2012 – £27,162k) 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:

# Notes to the Financial Statements

	Group and Authority	
	2013 £k	2012 £k
Not later than one year	4,671	6,130
Later than one year and not later than five years	8,931	10,029
Later than five years	6,901	7,891
	<b>20,503</b>	<b>24,050</b>

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

- (i) 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.
- (ii) Assurances covering restructuring provisions made before 1 April 2004 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.

## (c) Other provisions

Other provisions mainly comprise unfunded retirement benefit obligations (Note 22c) and claims relating to industrial-related injuries.

## 22 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 £3,155k (2012 – £3,199k).

### 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 £17k.

### (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

	2013 £k	2012 £k
At 1 April	1,646	1,457
Change in discount rate	112	56
Interest on liability	78	81
Benefits payable	(72)	(33)
Actuarial gain (loss)	–	85
	<b>1,764</b>	<b>1,646</b>

The interest on liability is 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 21).

## 23 Operating leases

### (a) The Group as lessee

Non-cancellable operating lease rentals are payable as follows:

	2013 £k	2012 £k
Not later than one year	164	112
Later than one year and not later than five years	321	–
Later than five years	–	–
	<b>485</b>	<b>112</b>

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:

	2013 £k	2012 £k
Not later than one year	1,529	1,448
Later than one year and not later than five years	2,071	2,726
Later than five years	104	116
	<b>3,704</b>	<b>4,290</b>

Rental income received during the year is disclosed in Note 13.

## 24 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 14).

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

# Notes to the Financial Statements

## **25 Statutory borrowing limit**

During 2012/13, 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

## **26 Events after the reporting period date**

Global property company, Goodman, a major partner in the Harwell Oxford campus joint venture along with the Science and Technology Facilities Council and the Authority, has taken the decision to transfer its stake in the partnership following a five year commitment to the project, to focus on its strategic UK science and business space assets. The Authority and STFC are actively seeking a new private sector partner.

In May 2013, the UK Minister for Universities and Science and the Director General of the European Space Agency (ESA) announced that the ESA's first UK facility, ECSAT, the European Centre for Space Applications and Telecommunications, would be located at the Harwell Oxford campus.

# Glossary

<b>2/3D</b>	2/3 Dimensional	<b>JET</b>	Joint European Torus
<b>AVC</b>	Additional Voluntary Contribution	<b>MAST</b>	Mega Amp Spherical Tokamak
<b>AEAIL</b>	AEA Insurance Ltd	<b>NNL</b>	National Nuclear Laboratory
<b>Authority</b>	UK Atomic Energy Authority	<b>NNUF</b>	National Nuclear Users Facility
<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>CRC</b>	Carbon Reduction Commitment Energy Efficiency Scheme	<b>PNISS</b>	Principal Non-Industrial Superannuation Scheme
<b>CETV</b>	Cash Equivalent Transfer Value	<b>R&amp;D</b>	Research & Development
<b>CIPD</b>	Chartered Institute of Personnel and Development	<b>RPI</b>	Retail Price Index
<b>CEO</b>	Chief Executive Officer	<b>STFC</b>	Science and Technology Facilities Council
<b>CERN</b>	European Laboratory for Particle Physics	<b>SIRO</b>	Senior Information Risk Officer
<b>CPS</b>	Combined Pension Scheme	<b>SPPP</b>	Shift Pay Pension Savings Plan
<b>CCFE</b>	Culham Centre for Fusion Energy	<b>SODC</b>	South Oxfordshire District Council
<b>DEMO</b>	Demonstration fusion power station		
<b>ELMs</b>	Edge Localised Modes		
<b>EPSRC</b>	Engineering and Physical Sciences Research Council		
<b>EA</b>	Environment Agency		
<b>EURATOM</b>	European Atomic Energy Community		
<b>EFDA</b>	European Fusion Development Agreement		
<b>ESA</b>	European Space Agency		
<b>EU</b>	European Union		
<b>FReM</b>	Government Financial Reporting		
<b>FTE</b>	Full Time Equivalent		
<b>F4E</b>	Fusion for Energy		
<b>HSIC PubSp</b>	Public sector partnership for the Harwell joint venture		
<b>IET</b>	Institution of Engineering & Technology		
<b>IMechE</b>	Institution of Mechanical Engineers		
<b>IoP</b>	Institute of Physics		
<b>IAS</b>	International Accounting Standards		
<b>IFRS</b>	International Financial Reporting Standards		
<b>ITER</b>	Next generation international experimental fusion reactor		



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