UK Atomic Energy Authority

Annual Report and Accounts 2023/24

HC 175

United Kingdom Atomic Energy Authority

Annual Report and Accounts 2023/2024

For the period 1 April 2023 to 31 March 2024

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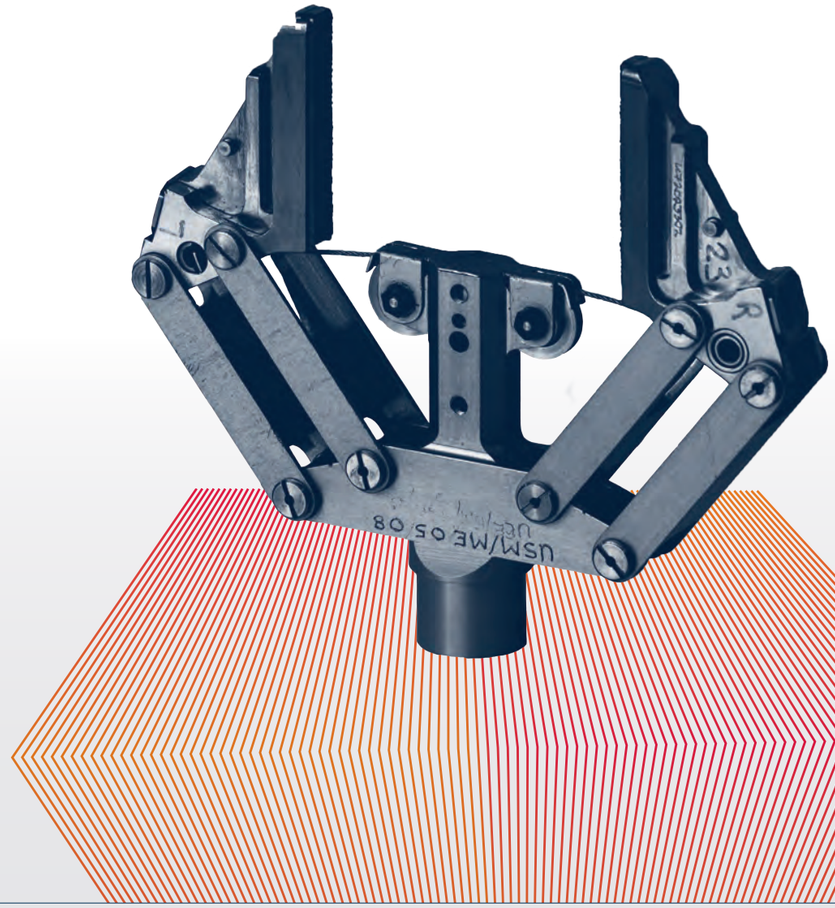
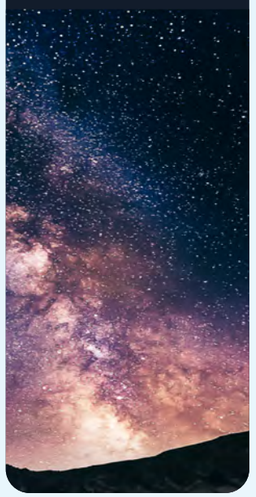


Fusion energy at a glance

UKAEA leads the world in fusion research with a wide range of programmes covering plasma science, robotics, materials testing and development, and tritium science. Our scientists and engineers are working with partners around the globe to develop fusion as a new source of clean energy for tomorrow's power stations.

WHAT IS FUSION?

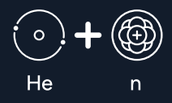
Fusion takes place in the heart of the stars and provides the power that drives the universe.



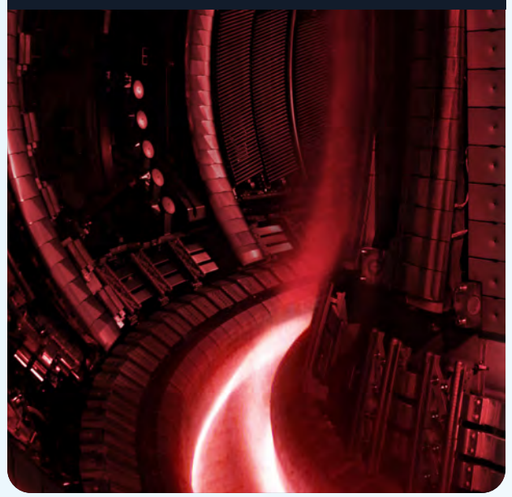
Scientists and engineers all over the world are developing the technology to sustain this process on Earth to create a new source of sustainable energy.

HOW DOES IT WORK?

Fusion energy can be generated in a variety of ways, with UKAEA focused on Magnetic Confinement Fusion (MCF).



Energy is released when the lighter deuterium and tritium atoms fuse together to form a heavier helium atom and a neutron.

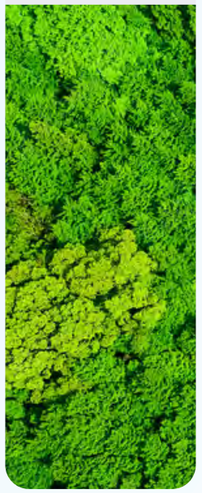


> **Stephen Hawking**
> *I would like nuclear fusion to become a practical power source. It would provide an inexhaustible supply of energy, without pollution or global warming.*

BENEFITS OF FUSION

Low carbon

Fusion energy is carbon-free at the point of generation.

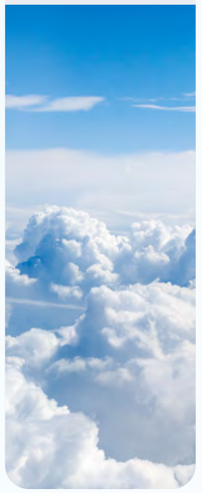


Lower hazard

A chain reaction cannot occur, and the waste produced will be shorter lived, lower level than in fission.

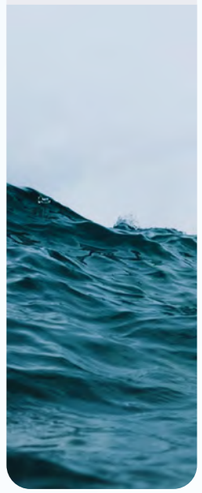
Continuous

Fusion energy is continuously deployable, as it does not depend on external factors such as wind or sun.



Sustainable

Fusion fuel is potentially abundant in our seas and the Earth's crust.



High fuel efficiency

Fusion produces more energy per gram of fuel than any other process that could be achieved on Earth.

AT A GLANCE

Strategy

UKAEA is a Public Sector Research Establishment (PSRE) responsible for the delivery of the UK's fusion energy research programmes. It is classed as a non-departmental public body (NDPB) and is sponsored by the Department for Energy Security and Net Zero (DESNZ).

STRATEGIC PILLARS

TECHNICAL LEADERSHIP

UKAEA's research programmes, delivered with its academic and industrial partners, focus on developing, innovating upon, and applying the fundamental science and engineering underpinning fusion power plant design. The UK Fusion Research Programme comprises the majority of UKAEA's research activity; it focuses on the fundamental research and development required to commercialise fusion energy and train the next generation of fusion scientists and engineers. The programme is funded by the Engineering and Physical Sciences Research Council (EPSRC), which is part of UK Research and Innovation (UKRI). In March 2022 the previous EPSRC programme grant was completed, and a new five-year research programme began with a focus on solving the integrated scientific and engineering challenges that are fundamental to Magnetic Confinement Fusion (MCF).

INTERNATIONAL LEADERSHIP

UKAEA has long-standing international relationships in MCF fusion research. Recent new partnerships such as the UK-US strategic partnership have been established to strengthen collective effort by scientists and engineers to address technical challenges, allow shared access to facilities and stimulate new R&D opportunities, harmonise international regulatory frameworks and codes, develop resilient supply chains, and promote skills development. International collaborations will help to accelerate the development of global fusion energy, and reduce the cost and risk of the commercialisation of fusion energy.

COMMERCIAL LEADERSHIP

The ability to realise commercial value from fusion is subject to demand for fusion facilities and scope of application into existing commercialised areas. This value may relate to intellectual property associated with specific processes, systems, technologies, and components used in fusion facilities and/or less tangible know-how, related to the ability of a corporate entity (research laboratory, major engineering firm, or SME supplier) to design, develop, operate, and decommission such facilities. As fusion's technical risks are addressed over the coming years, it is expected that inward investment into fusion will increase, both in relation to specific IP and into corporate structures that offer fusion know-how and capability.

OUR MISSION

Leading the delivery of sustainable fusion energy and maximising the scientific and economic benefit

OUR STRATEGIC GOALS

SOLVING PROBLEMS

Solve challenges of sustainable fusion energy - from design through to decommissioning - with world-leading science and engineering.

PRODUCT

Enable partners to design, deliver, and operate commercial fusion power plants.

PROSPERITY

Drive UK economic growth and a thriving industry that exports fusion technology around the world.

PLACE

Create clusters that accelerate innovation in fusion and related technologies.

PEOPLE

Develop the talented, diverse people needed to deliver fusion energy.

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Operating model

WHAT WE DO?

BUILD
THE KNOWLEDGE
BASE OF FUSION

- Operate fusion research facilities and sustain technical centres of excellence for use by fusion powerplant programmes in the UK and internationally
- Solve challenges across the full lifecycle of fusion, from design to operations to decommissioning, and integrate solutions across disciplines

DELIVER FUSION
POWERPLANTS, SYSTEMS
AND TECHNOLOGIES

- Work with industrial partners in a national programme to deliver the STEP prototype fusion powerplant
- Use our skills, facilities, and expertise to work with industry in developing fusion power plant systems and technologies

ENABLE
THE FUSION
COMMUNITY

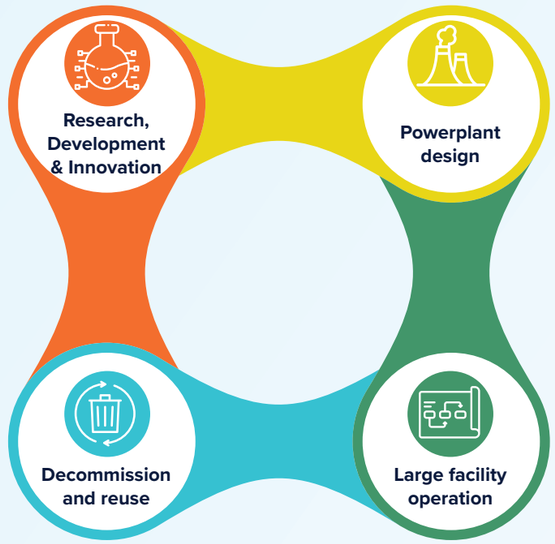
- Provide thought-leadership on the opportunities and requirements for fusion power
- Create fusion innovation clusters
- Grow a fusion industry
- Produce skilled people
- Inform fusion regulatory and insurance practices
- Identify growth opportunities for fusion technology

HOW WE DO IT?

UKAEA has capability across the full spectrum of technical disciplines needed for fusion:

PLASMA SCIENCE AND OPERATIONS | INTEGRATED ENGINEERING | ROBOTICS | TECHNOLOGY | TRITIUM FUEL CYCLE | MATERIALS | COMPUTING

UKAEA delivers programmes across the full lifecycle of fusion:



AT A GLANCE

HOW ARE WE STRUCTURED?

UKAEA GROUP

THE UK'S PUBLIC-SECTOR RESEARCH ESTABLISHMENT FOR FUSION

- The research arm of UKAEA Group

UK INDUSTRIAL FUSION SOLUTIONS

- A company limited by shares, initially owned wholly by UKAEA and to deliver the STEP programme

OTHER JOINT VENTURES (JV) / SUBSIDIARIES / ROLES

- Joint Venture for Harwell
- Captive insurance company, AEAIL
- Administer the UKAEA Pension scheme on behalf of DESNZ

PRINCIPLES

These principles are a commitment from UKAEA to its staff and wider partners and stakeholders:

SAFETY
Safety and wellbeing of our people is our top priority

EQUALITY OF OPPORTUNITY
Diversity of thought and people who are representative of society is crucial for our mission

ENVIRONMENTAL SUSTAINABILITY
We will strive for energy-efficient delivery, minimising our environmental impact

RESPONSIBLE FINANCIAL MANAGEMENT
We will use our resources carefully and will be accountable for our investment decisions

WORKING WITH BUSINESS
Strong and effective public-private partnerships are an essential part of our operation

STAKEHOLDERS

Our Stakeholders are the foundation of our strategy and delivery model:

Year in numbers

These numbers provide an overview of our performance related to our strategic goals.

The performance report gives a more detailed breakdown for each goal, giving the measure of performance based on the aligned Corporate Performance Measures (CPMs).

SOLVING PROBLEMS

Solve the challenges across the full fusion life-cycle

SCIENTIFIC CONTRIBUTION

88 **conferences**

41 **PhD students** started from 20 **universities**

219 **posters**

80 **published papers**

90 **oral presentations**

JET
1953 **Scientific plasmas**
Contributing to
22 **experiments**

MAST-U
1088 **Scientific plasmas**
Contributing to
7 **EUROfusion programmes and 35 UKAEA programmes**

PRODUCT

Enable partners to design, deliver, and operate commercial fusion power plants

STEP

To date:
Explored
>66 **integrated concepts** with
>150 iterations

Been to
66 **technical decision boards** that have taken
>65 decisions

Successfully passed the
Concept
Maturity
Level 5 Review

PROSPERITY

Drive UK economic growth and support industry

INNOVATION

>30 **tech transfer** projects facilitated

BUSINESS DEVELOPMENT

233 **bids** submitted

34 **successful bids**

£114M **total bid value** (successful + live)

PLACE

Create clusters that accelerate fusion and related technologies

CONSTRUCTION PROJECTS

Completed 23/24:

Extension to Oxfordshire Advanced Skills (OAS)

Offices building

Commenced 23/24:

Culham Campus Development Project (CCDP)

Central Support Facility (CSF)

PEOPLE

Develop skilled, innovative people needed to deliver fusion

STAFF

1964 **Employees**

5.2% **Average employee growth**

10.0% **Employee turnover**

GENDER PAY GAP

12.7% **Mean**
↑ from 12.2%

25.3% **Median**
↓ from 26.3%

Chair's statement

"SINCE I HAVE BEEN ON THE BOARD, I HAVE TRULY BEEN INSPIRED BY THE WORK AT UKAEA, IT IS ONE OF THE UK'S MOST EXCITING SCIENTIFIC AND ENGINEERING ORGANISATIONS."

Lady Eithne Birt CB
Chair

Professor David Gann
Chair - July 2023

It is a great honour to have been part of UKAEA's vital mission to provide a new, safe, and clean source of energy. After 5 years in post, I am stepping down to become inaugural Chair of UK Industrial Fusion Solutions (UKIFS), to deliver the STEP prototype fusion energy plant at West Burton.

During my time as UKAEA's Chair our mission has become of even greater prominence and importance, and I am proud of our growth in scientific and technical capability. The number of people we employ has doubled and our budget increased by 150%. We have broken world records and made considerable technical progress across a range of fusion challenges. It has been a real pleasure to see UKAEA deliver internationally recognised leadership in fusion during this time.

My thanks go to Lady Eithne Birt CB who took over as interim Chair of UKAEA from 1st August 2023 and who has already been an integral part of the board over 4 years and is perfectly placed to lead UKAEA in this time of changes globally in the fusion sector as well as internal organisational transformation.

Lady Eithne Birt CB
Chair - August 2023

My time as interim chair has been a time of change both internationally, in the fusion ecosystem as well as internally: with JET transitioning to a new phase of its lifecycle; and the announcement of the £650M fusion futures programme focused on building industry capability. The UKAEA board has been able to guide strategic direction in this changing environment, whilst also ensuring appropriate levels of corporate governance during this time of organisational change.

This year's successes at UKAEA have been inspiring. Even with there being a focus on the transition of JET to the innovative decommissioning and repurposing programme, the JET team was still able to deliver a world record after 40 years of operations. The new phase of JET means an opportunity to harness the experience and skills at UKAEA to drive development of new technologies in the area of detritiation and waste management control in order to demonstrate the commercial viability of STEP and other fusion powerplant concepts.

With the decision not to associate with Euratom, came the announcement of fusion futures, building industry capacity and capability with a new fusion fuel cycle facility, enhanced support for fusion R&D and science and engineering skills growth. This programme marks an exciting time for fusion looking towards developing the future capacity and capability needed to develop commercially deployable fusion powerplants. It also provides opportunities for development of our international collaborations which this year have grown further with the start of the international office, signing of international partnerships with the US and Canada and confirmation that UKAEA remains a part of the EUROfusion consortium. The STEP programme, to deliver a prototype fusion powerplant, moves at pace, and has developed the concept design receiving positive feedback regarding the approach, from external reviewers. Although the technical challenges of STEP will remain considerable throughout the programme, there have been advances this year that are already having an economic benefit to the UK shown by the innovation and business development sections in the annual report. The board has provided guidance around the creation of UKIFS as a subsidiary of UKAEA, to be the delivery body for this STEP Programme. Updates to the UKAEA framework agreement, UKIFS governance structure, UKIFS spin-out policy have all been guided ready for UKIFS to be formally made a trading subsidiary, with the board expertise perfectly placed to advise on the new challenges of this new delivery body.

With the changing environment this year it is only right that we review the overall UKAEA strategy, ensuring alignment and incorporating how the inclusion of UKIFS affects the UKAEA PSRE strategic direction. The board has welcomed this discussion and it is something that will be developed over the coming year with the evolving external fusion ecosystem.

We welcomed Mary Ryan and Robin Grimes to the Board as non-executive directors this year. Mary and Robin's background in research and development is an important addition to the board make-up and breadth of expertise. Lee McDonough, Director General of DESNZ provides an important link and oversight from our sponsoring department, and she brings a wealth of experience in government policy and programme delivery. The new executive directors Ruth Elliot, CFO and Tim Bestwick, CDO have been formalised as executive members of the board finishing a well-rounded skills and experience composition for board, fit for UKAEA's strategic development.

Since I have been on the board, I have been inspired by the work at UKAEA, truly one of the UK's most exciting scientific and engineering organisations . This year has seen big leaps towards realising the delivery of sustainable fusion energy and the programme is already providing scientific and economic benefit to the UK. It has been my pleasure to be interim chair this year in a time of exciting fusion growth. I look forward to helping steer UKAEA in the coming year as the fusion landscape changes and I handover the Chair of the board to Bernard whose scientific and industry experience is an ideal fit for the exciting opportunities ahead.

Bernard Taylor
Chair - April 2024

I am very excited to be joining UKAEA at this time. UKAEA has a world class resource of fusion scientists and related skills and I look forward to working with Ian Chapman and his team to continue to build our capabilities and to deliver fusion energy for the UK.

Chief Executive's statement

"OUR MISSION IS TO MAKE FUSION POWER A REALITY AS QUICKLY AS POSSIBLE AND CAPTURE VALUE FOR THE UK AS WE DO SO."

Professor Sir Ian Chapman
Chief Executive and Accounting Officer

I routinely begin these remarks with reflections on climate change, and lamentably, each year the impacts become more severe and the imperative to act becomes more acute. This year has been no different. As I write, we have experienced ten months in a row that are the warmest on record for the respective month of the year. Indeed, the global-average temperature for the past twelve months (April 2023 – March 2024) is the highest on record, at 0.70°C above the 1991-2020 average and depressingly 1.58°C above the 1850-1900 pre-industrial average. Despite the Paris accord, signed only nine years ago, aiming to keep global temperature rises below 1.5°C, we have broken through that waymarker already, and remain on a deeply unsustainable path. The costs are huge – both the human costs with climate change causing at least hundreds of thousands of deaths per year, and the economic costs of at least £100Bn's per year. The world desperately needs solutions – new, low-carbon sources of energy – which is why our mission to deliver sustainable fusion energy is so vital.

In delivering this, we also aim to maximise the economic benefits to the UK. The country needs sectors which have global high-growth potential where the UK has comparative advantage – fusion is exactly that. Both parts of our mission are therefore equally important – delivering low-carbon energy, but also driving our economy.

2023/24 has been a totemic year for UKAEA. We saw the cessation of operations on JET, and fittingly after 40 years as the world's foremost fusion research facility, we end operations with new world records. With equal ramifications, this year provided clarity that the UK would not associate to the Euratom research and training programme, coupled with announcement of a £650M Fusion Futures programme – this single investment matches the total UK fusion investment over the past five years,. Finally, we also completed the first tranche of our STEP prototype power plant programme, having met all of our goals for the first five years.

On the first of these three major programmes – JET – I was immensely proud of our brilliant operations team for meeting such demanding goals this year, despite being at the lowest team size for the last twenty years. We completed the third, and final, high-power deuterium-tritium operations and produced the best year of operation on JET that I can recall. There were many hugely important scientific results essential for the next generation of fusion devices, including producing 69MJ of fusion energy over 5 seconds, beating our own 2021 record by 17%. In February we celebrated the JET team and it was a privilege to welcome back 750 scientists and engineers who have contributed towards JET since the 1970s. It was a truly fitting way to end operations on a machine which has left an indelible mark on scientific history. But JET is not just metal and concrete – it is the people that made JET what it is, and it is these dedicated and inventive people that will be the true legacy. I also hope that a lasting legacy of JET is one of ambition: The jump from its predecessors to JET was immense – a giant leap into the unknown, a high-risk gamble relying on the ingenuity of people. In the late 1970s, the geopolitics and the price of oil made that a gamble worth taking, and we have delivered in the face of that risk. We need to channel that ambition and urgency. To find the sources of low-carbon energy we need, we as a society need to be brave and take risks. As we finished the year, we began a programme to decommission and repurpose JET, an opportunity not only to demonstrate the sustainability of fusion by minimising legacy waste, but also to reimagine how we can use the JET assets.

The decision not to associate to Euratom was not one of turning our back on international partnerships, but one of securing value for money for the UK taxpayer. Indeed, an important tenet of the Fusion Futures programme is international collaboration, exemplified by the agreements to collaborate in fusion signed this year with Canada and the US, with others in discussion. Thanks to the collegiate approach of our European collaborators, we have remained a part of the EUROfusion consortium for the past four years despite the uncertainty around the legal basis of our participation; I am delighted that by the end of this year we had secured a formal basis for the continuation of our participation as an associated partner to the German beneficiary. As well as supporting international collaboration, Fusion Futures will also see us build the UK fusion sector through a range of interventions including: the LIBRTI experiment, a first-of-a-kind programme to demonstrate predictable tritium breeding from a source of high-energy fusion-spectrum neutrons; an unprecedented investment in skills development to train an additional 2000 people in fusion ranging from apprentices, graduates, PhDs, and post-doctoral students; an extension of the successful Fusion Industry Programme; and a wide-ranging commitment to develop industry capability working in fusion in the UK.

As we conclude the first tranche of the STEP prototype power plant programme, we are in good shape. We have achieved all the major milestones we set out to achieve, on time and budget, viz: maturing the concept design, which has now had over 1,200 person years of effort representing one of the most detailed fusion power plant designs ever undertaken; we have found a site and are proceeding well with characterisation and clearance; primary legislation

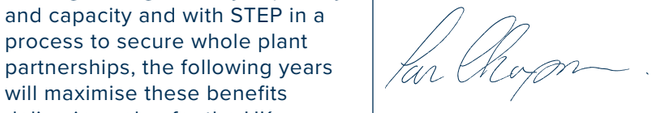
Chief Executive's statement continued

this year to confirm a bespoke, proportionate regulatory framework for fusion in the UK, with consultation now live on a National Policy Statement for fusion; and we have established UK Industrial Fusion Solutions as a new subsidiary company. Undoubtedly STEP is a high-risk venture, with a number of major obstacles still to overcome before we could begin building the power plant, but it is a high-risk venture worth pursuing – even if we cannot overcome all the challenges, just the act of trying is placing the UK at the very forefront of fusion delivery.

It is a great pleasure for me to represent our brilliant people, and this year we have welcomed a further 400 new starters to the organisation, which has continued to grow to around 2600 people. We are a hugely multicultural team, comprising 65 different first nationalities, and embracing ideas from people with a huge diversity of experience. We need the best minds to solve the major challenges we have in achieving our mission. This year we have realigned our organisational structure, so it is fit for the future of UKAEA now that JET operations have ceased and as we look forward to a partnership with UKIFS. Speaking of UKIFS, I am delighted to have secured Paul Methven and David Gann as CEO and Chair respectively – we couldn't have better people in either role!

We are acutely aware that we can only do our work thanks to the support of our stakeholders including the UK taxpayers. Therefore, we aim to maximise the benefits they see in the near-term as well as delivering fusion on the longer-term. This year we have driven inward investment into the UK on experimental collaborations with the US Department of Energy, worth around $10m, supported employment in the engineering and scientific sector and boosted jobs and turnover in the supply chain, with the fusion industry programme alone increasing turnover of small and medium enterprises by 61%. With the new international and innovation teams growing, the fusion futures funding driving industry capability and capacity and with STEP in a process to secure whole plant partnerships, the following years will maximise these benefits delivering value for the UK taxpayer. We have also been revitalising our Culham campus, notably with a new main building for UKAEA opened this year, which will be a great asset for decades to come, as well as our first major new building for tenants, funded by Legal and General due to open later this year.

Finally, a personal thank you to our previous chair, David Gann, and this year to Lady Eithne Birt for so ably stepping up as Interim Chair. I have learned a great deal from both and am grateful for their efforts. I also look forward to working with our new chair, Bernard Taylor, in taking UKAEA from strength to strength. We have so much to do... In a world where we need to shutdown 10,500 MW of coal power every month to 2040, but yet in 2023 we actually increased coal power by 4,030 MW per month, the need for fusion is abundantly clear. Our mission is to make fusion power a reality as quickly as possible and capture value for the UK as we do so.



Professor Sir Ian Chapman
Chief Executive and Accounting Officer
22nd July 2024

UKAEA IN CONTEXT

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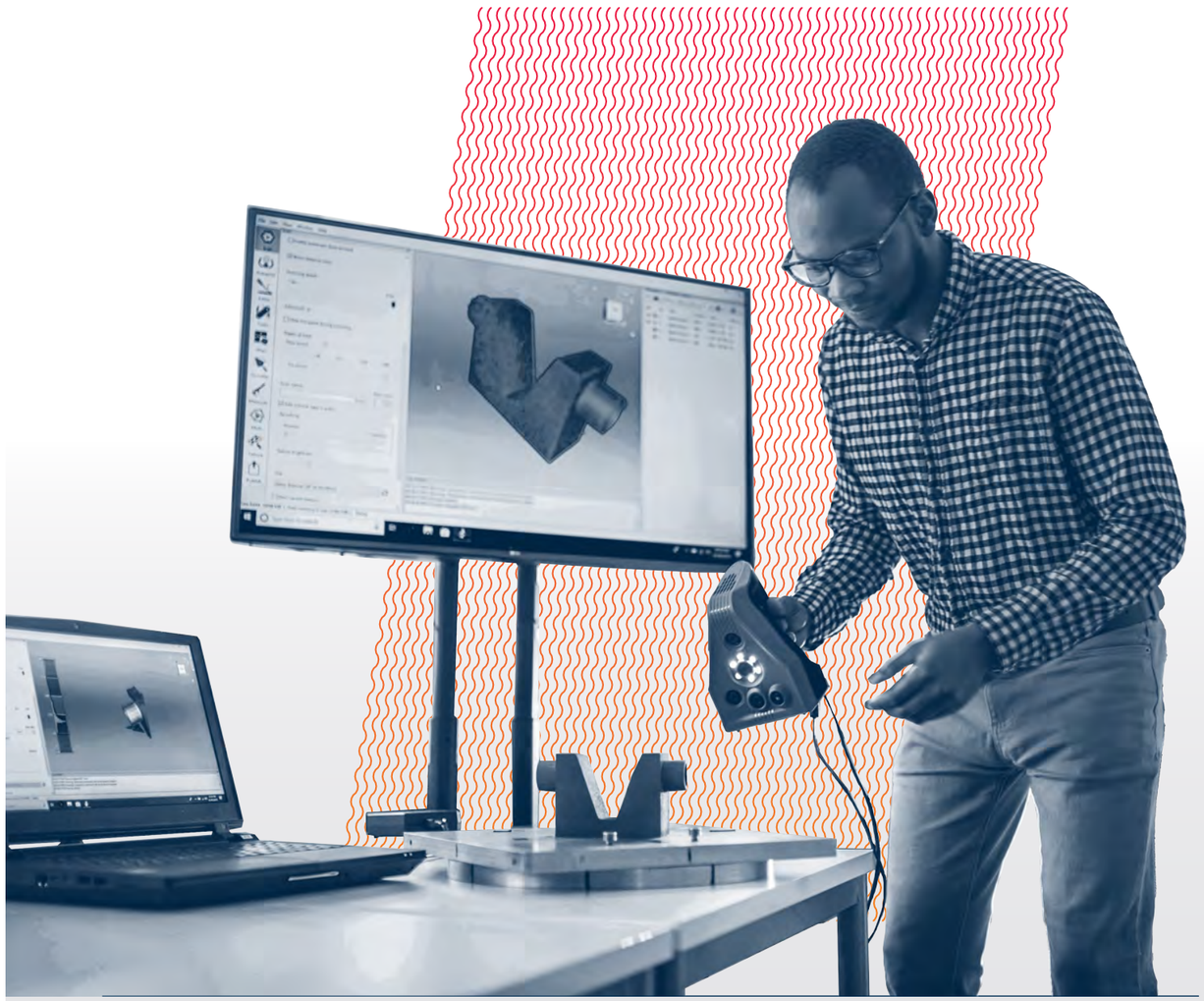
20 Key Changes this year



Historical fusion context

1920s

Arthur Eddington suggests that stars draw their energy from the fusion of hydrogen into helium.

1930s

Rutherford and Oliphant at the University of Cambridge show the fusion of deuterium into helium and observe that "an enormous effect was produced".

1940-50s

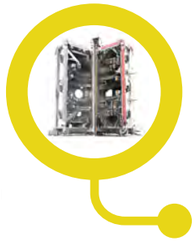
Researchers start looking at possibilities of replicating the process of fusion on Earth. The UKAEA starts the ZETA experiment in 1957.

1960s

Culham Laboratory in Oxfordshire opens. Lev Artsimovich from the USSR presents results at the 1965 IAEA conference at Culham describing encouraging results from a device called a tokamak- many magnetic confinement fusion devices are now based on this design.

1970s-80s

Small tokamak devices were then built at Culham such as TOSCA. European countries came together to design and build JET at Culham.



1990s

JET sets 1st world records and the Culham laboratory operates the first full-sized spherical tokamak, START, followed by MAST.

2000s

Several privately backed fusion companies launch.

In the last decade

September 2013

MAST fusion device has its final plasma after 14 years of operation, ready to start the MAST Upgrade Programme.

August 2014

The RACE centre of excellence opened with the building following in 2016. RACE collaborates internationally design, operate and deliver robotics for extreme industrial environments.

May 2016

The Materials Research Facility (MRF) opens, enabling industrial and academic researchers to analyse the effects of irradiation on materials as part of the National Nuclear User Facility (NNUF) initiative.

October 2019

The conceptual design phase for STEP, a prototype fusion power plant begins.

October 2019

The Oxford Advanced Skills (OAS) centre opens on Culham Campus aiming to train up to 350 apprentices each year.

October 2020

The Fusion Technology Facility (FTF) in South Yorkshire opens, our first new research site outside of Culham since the 1950s, bringing highly skilled jobs, fostering collaborations with research organisations and engaging industry.

October 2020

MAST Upgrade starts operation with the engineering team achieving the Royal Academy Major Project Award. The upgrade enabled longer pulses, increased heating power and a stronger magnetic field – and an innovative new plasma exhaust system.

May 2021

A second JET campaign begins, using the fuel mixture of deuterium and tritium.

June 2022

Tritium research centre (H3AT) opens at Culham to lead the delivery of tritium lifecycle solutions and technology both in fusion and adjacent sectors.

October 2022

West Burton site announced as the future home of STEP. It will create thousands of highly skilled jobs in the area and attract high-tech industries.

April 2022

RAICo Programme Collaboration starts to use robotics and AI in nuclear decommissioning environments.

This year's highlights

April 2023

The Materials Research Facility hosts a user-engagement workshop for the £2m National Nuclear Users Facility grant.

May 2023

UKAEA launches new tritium training course as part of its commitment to upskill the fusion industry.

June 2023

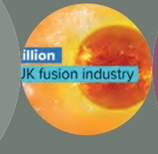
The very first tritium test rig for STEP starts trials on site at Culham.

July 2023

Collaboration agreed between UKAEA, Dell Technologies, Intel and the University of Cambridge to explore digital capabilities within fusion.

August 2023

UKIFS inaugural chair Professor David Gann CBE appointed.



September 2023

Fusion Futures Programme: investment of up to £650m through to 2027.

October 2023

STEP Concept Baseline reviews complete and presented to a group of international fusion experts.

November 2023

Oxfordshire Advanced Skills completes expansion to their building on Culham Campus.

December 2023

JET runs last pulse (having achieved a world record in October) and starts repurposing and decommissioning.

January 2024

UKAEA awards £7.4m to 5 organisations to develop lithium technologies for fusion.

February 2024

JET announces new fusion energy record

March 2024

UKAEA and Kyoto Fusioneering Ltd sign an agreement regarding breeding blanket design.

Performance report
UKAEA IN CONTEXT

Performance
Accountability
Annual Accounts

Key changes this year

The landscape of fusion is changing at pace; the commercial fusion sector is growing, ITER construction is well underway, and globally there is a visible drive towards fusion power plants. UKAEA's mission will only be successful if we both innovate and grow UK fusion research, supply chains, and industry. All of these will become an ecosystem which can realise a power plant demonstrator and a subsequent commercial fleet. We are increasing our efforts to support research and innovation across all stages of the fusion lifecycle.

EXTERNAL CHANGES

INTERNATIONAL LANDSCAPE

Partly driven by the UK's concerted strategy and approach, other nations have become much more focused on fusion and are developing strategies, public-private partnerships, and increasing investment. We are mindful that the landscape is changing at pace, presenting challenges as well as opportunities. (see Page 47)

EURATOM RESEARCH AND TRAINING (EURATOM R&T) PROGRAMME EXIT:

On 7 September 2023, £650m of new investment was announced into UK programmes and initiatives instead of associating with the Euratom Research and Training programme (Euratom R&T) via the new Fusion Futures programme (see below). The external changes associated with this decision and aligned with the programmes core principle of international collaboration are:

- EUROfusion

  Membership of the EUROfusion consortium requires UK's association to the Euratom R&T programme. UKAEA currently has an associated partner agreement with Max-Planck Institute for Plasma Physics in Garching, Germany (which is a EUROfusion member), and continues to collaborate under the EUROfusion Grant Agreement, despite being unable to receive grant funding from EUROfusion.

- ITER

  Previously, as part of Euratom, UK industry secured around £650m of contracts from ITER and were targeting a further £1bn with UKAEA support. Access to these contracts is only available to Fusion for Energy (F4E) members (F4E is the EU's procurement agency for ITER contributions) which requires association to Euratom. As a result, UK entities have been judged ineligible to win or participate in ITER contracts since 2020. We are seeking a cooperation agreement with F4E in the coming year to enable participation in ITER contracts.

- SPENDING REVIEW

  The current Spending Review (SR) period runs from 22/23 to 24/25. From financial year 25/26 onwards UKAEA will need to bid for new funding from the Government to continue its fusion R&D programmes.

Performance report
UKAEA IN CONTEXT

INTERNAL CHANGES

More information can be found by clicking on the links below:

- Fusion Futures Programme: investment of up to £650m through to 2027, including:
  - Up to £200m towards the Lithium Breeding Tritium Innovation (LIBRTI) programme, see page 32.
  - Up to £200m towards development of industry fusion capability, see page 42.
  - Up to £50 million for development of commercial plots at the Culham Campus, see page 53.
  - Up to £55 million for a Fusion Skills Programme, see page 61.
  - Up to £35 million additional funding for the Fusion Industry Programme (FIP), see page 43.
  - Up to £25 million to enhance international collaborations on fusion R&D, see page 47.
  - Up to £18 million for a Technology Transfer Hub, see page 42.
- JET ceased operations in December 2023, see page 27.
- JET transitions to the decommissioning and repurposing programme, see page 28.
- Establishing UK Industrial Fusion Solutions Ltd (UKIFS), a wholly owned subsidiary of UKAEA and delivery body for STEP, see page 36.
- Organisational development under the Fit for the Future Programme (F4F), see page 61.
- Established a Strategy and Analysis function, see page 72.
- Innovation Department growth, see page 42.
- International Department established - Strategic alignment within UKAEA and DESNZ in support of planned and prioritised overarching country to country, government to government, and high level strategic international relationships, see page 47.

PERFORMANCE AGAINST STRATEGIC GOALS

24 Goal 1: Solving Problems

36 Goal 2: Product

42 Goal 3: Prosperity

50 Goal 4: Place

56 Goal 5: People

68 Enabling Goal: Corporate Performance

Measuring Performance

The following sections will describe each of our strategic goals in more detail and put the internal changes mentioned previously in the context of these goals. The performance against each goal will be assessed using the Corporate Performance Measures (CPMs), which were selected to represent the breadth of activities at UKAEA, and were assigned before the start of the financial year. However, the CPMs do not constitute a list of every individual element of UKAEA's work as this is focused on measurable activities only.

These are agreed within the organisation, led by the executive team, and approved by the executive committee and board in March 2023. In 2023/24, we targeted 50 milestones, we achieved 37, partially achieved 6, and missed 7. The milestones are set to be stretching; this year's 86% achievement is within the 80-90% range achieved over the past 5 years. A summary of the key successes and impact of partial/ missed milestones follows.

A colour code is used throughout the following sections:

Milestone achieved | Milestone partially achieved | Milestone Missed

STRATEGIC GOALS

TARGET 50 | FULLY ACHIEVED 37 | PARTIALLY ACHIEVED 6 | MISSED 7

11 of 14

Goal 1 - Solving Science & Engineering Problems
Solve challenges of sustainable fusion energy - from design through to decommissioning - with world-leading science and engineering.

4 of 8

Goal 2 - Product
Enable partners to design, deliver, and operate commercial fusion power plants.

9 of 11

Goal 3 - Prosperity
Drive UK economic growth and a thriving industry that exports fusion technology around the world.

4 of 4

Goal 4 - Place
Create clusters that accelerate innovation in fusion and related technologies.

5 of 6

Goal 5 - People
Develop the talented, diverse people needed to deliver fusion energy.

4 of 7

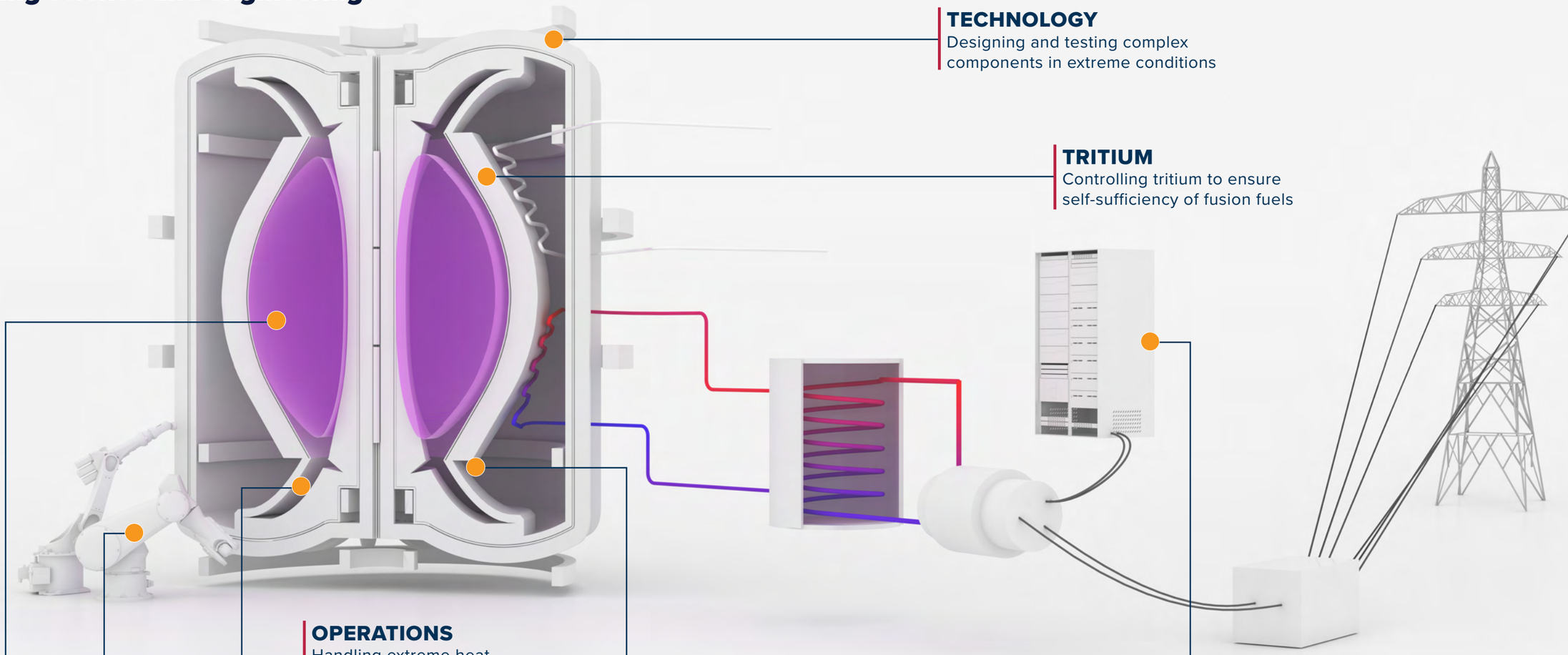
Enabling Goals
Corporate performance

Goal 1: Solving Problems

“Solve challenges of sustainable fusion energy with world-leading science and engineering.”

Performance report
HOW WE PERFORMED

A collection of scientific and engineering challenges stands between us and the realisation of a fusion powerplant. Our talented people, our unique breadth of capabilities, and our strong partnerships continuously push the boundaries of technology every day to overcome these hurdles.



TECHNOLOGY
Designing and testing complex components in extreme conditions

TRITIUM
Controlling tritium to ensure self-sufficiency of fusion fuels

OPERATIONS
Handling extreme heat without inflicting performance limiting damage

ROBOTICS
Safely maintaining and replacing components in the harsh fusion environment with robotics

PLASMA
Achieving burning fusion plasmas in reliable and controlled conditions

MATERIALS
Materials that can operate in and survive the intense fusion environment

DIGITAL
Bridging the gap from today's data to powerplants with advanced modelling and simulation

Performance
Accountability
Annual Accounts

Celebrating 40 years of JET
Joint European Torus

What is JET:

The Joint European Torus (JET) was the world's most powerful magnetically confined fusion experiment in operation, and was based at Culham Campus, Oxfordshire. Since it began operating in 1983, JET has played a pivotal role in advancing fusion research by testing techniques to sustain and control fusion reactions, carrying out important work to assist the design and construction of future power plants.

Construction progress of JET in the 80s

Inside JET in the 90s

Innovation: From the revolutionary idea of bringing Europe together to accelerate fusion research, through to its last run of experiments, JET was a true innovator. The team that designed and built it put in large engineering margins which meant JET could be kept at the forefront of research with upgrades and modifications. It was also the first tokamak to operate with the deuterium-tritium fuel mix planned for fusion power plants and set landmarks and records throughout its operational life.

People: JET's achievements were made possible by the thousands of scientists, engineers, operations, and support staff who have worked together on this cutting-edge project. This international team of experts drawn from different backgrounds, cultures, and disciplines were united in achieving common goals with the commitment, enthusiasm, and camaraderie displayed over the decades critical to the programme's success. With JET's operations starting in 1983, multiple generations of scientists and engineers have gained vital experience, and then transferred to other international fusion projects or moved further afield into related industries.

Staff in the JET control room for the last pulse

Although JET has ceased operations, its legacy remains profound, serving as a cornerstone of fusion research and paving the way for future generations of fusion experiments. Its contributions have been instrumental in advancing our understanding of plasma physics, fusion engineering, and fusion energy facility design and bringing humanity closer to achieving the dream of unlimited, secure, and low-carbon energy.

The JET celebration event with the original designers and operators of JET

EUROfusion

JET

UK Atomic Energy Authority

1983 First Plasma

1984 Official opening by Her Majesty Queen Elizabeth II

1991 First deuterium-tritium plasma - WR

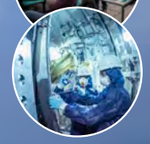
1997 First deuterium-tritium experiments - WR

2011 ITER-like metal wall installed

2021 Second deuterium-tritium experiments - WR

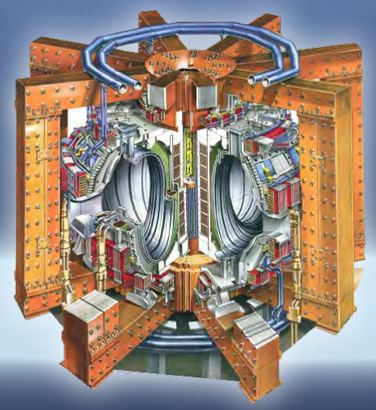
2023 Third deuterium-tritium experiments* - WR

2023 JET scientific operations ended in December



2024 JET handed over to Decommissioning and Repurposing programme

WR = World Record at the time

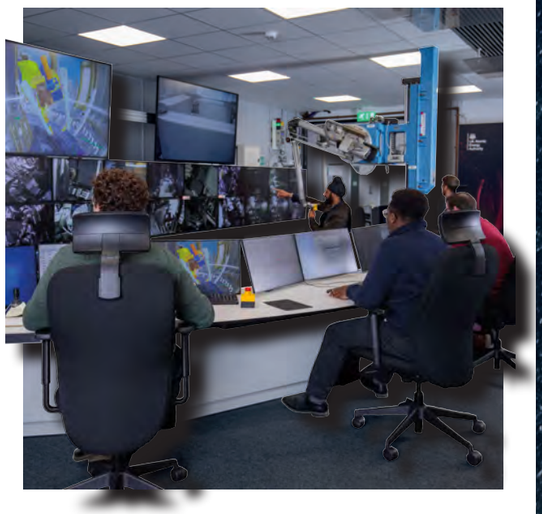


***JET established a new fusion energy world record - 69 megajoules of high fusion power consistently produced for 5 seconds**

What's next

JET experiments analysis and publications, and the exploitation of its unique dataset in support of fusion power plants will continue over several years. JET is now moving into an innovation-driven repurposing and decommissioning programme, aiming to maximize value, repurpose resources, and foster expertise crucial for future fusion endeavours, see page 28.

JET Decommissioning & Repurposing (JDR)



REMOTE HANDLING CONTROL ROOM UPGRADES

Decommissioning of the JET machine will start inside the vessel and will be the most complex remote handling campaign performed to date by UKAEA. Preparation, research, and delivery will take ~10 years. The technologies employed will encompass every aspect of UKAEA's robotics facility (RACE).

The JET robotic manipulator (MASCOT) system has been fully upgraded, improving reliability, availability, capability, and flexibility. The Octant 1 tool-carrying boom has been upgraded too, from new local and remote cubicles through to bespoke control software and safety systems. JET now has one of the most advanced robotics and remote handling systems anywhere in the world.

It is hoped that JDR will become an exemplar of best-practice organisation, management, and delivery of large-scale remote decommissioning. Removing components and understanding the challenge of dealing tritiated materials will be key for decommissioning and future fusion machines and powerplants.

The first operational deployment will start in summer 2024.

TRANSITION INTO JET SHUTDOWN

JET Transition is a significant series of projects and work packages. It takes JET and all its auxiliary systems from operations to full shutdown, and then – at the completion of the Sample Retrieval project – from shutdown into decommissioning.

At the end of plasma science in December 2023 the JET tokamak was put into a passive state over the Christmas period. Work is now focusing on implementing a full shutdown isolation prior to in-vessel work, and inspections to de-risk future decommissioning activities.

There is a range of other work packages underway and more planned for later in 2024, including the venting of the vessel, removal of diagnostics, cubicle isolations, and a new regime of plant maintenance and inspections to ensure that JET remains in a safe state.

Retaining knowledge and intangible know-how during this process is a key focus of JDR and UKAEA.

JET Decommissioning and Repurposing (JDR) is a new chapter at UK Atomic Energy Authority. As JET reached the end of science operations, the Authority began the transition to a repurposing and decommissioning phase. This work will maintain the Authority's place at the forefront of the global fusion energy sector.

JET decommissioning will set the pathway for the development of regulations and will inform the design of future fusion machines and powerplants. It is a cross-UKAEA programme, with a core team supplemented by expertise on a project-by-project basis.

DETRITIATION RESEARCH

Detritiation reduces tritium contamination of the tokamak machine, which 1) reduces environmental impact by lowering radioactivity levels 2) reduces cost of disposal and increases options for recycling and 3) makes recovered tritium available to be re-used as fuel.

Research into efficient detritiation of hard waste (including metal components containing tungsten, beryllium, Inconel, stainless steel, etc) and soft waste (such as PPE worn in the JET estate) has been underway since October 2022.

Detritiation will be a 'business-as-usual' operation within a future fusion powerplant. JDR's work is therefore not just about decommissioning, but about informing an essential part of the fusion engineering and scientific planning and delivery process.

REPURPOSING BUILDINGS AND LAND AT CULHAM CAMPUS

Planning is underway for the clearance of a large part of the vast JET power systems to enable the repurposing of buildings and land, so that UKAEA can be agile and responsive to new opportunities which may arise within the fusion sector.

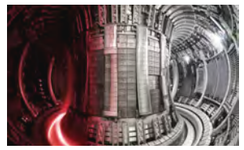
Industrial clearance is complex work involving the waste management of many industrial hazards including 60 transformers, nearly 500,000 litres of oil, and a range of exotic and hazardous legacy materials, including mercury, beryllium, and asbestos.

This project will be a clear demonstration of JDR's commitment to the waste hierarchy, with an emphasis on recycling and repurposing. The project will also stress-test an integrated suite of Programme Execution Plans which have been developed to deliver new JDR projects and work packages.

Performance Against Targets: JET

Operating JET

KEY ⬟ Achieved ⬟ Partially achieved ▲ Missed



MILESTONE SUMMARY	OUTCOME
⬟ **Support ITER research-plan with JET operations**	This performance measure is important for the EUROfusion JET programme and is about removing uncertainty and de-risking the control of the plasma for future fusion devices such as ITER and DEMO. It demonstrated the core plasma where fusion occurs can be effectively separated from the much colder plasma that reaches the internal surfaces of the machine using control schemes that are relevant for future fusion devices and powerplants. The knowledge learnt here was then used during the rest of the Tritium fuelled experiments later in 2023 helping the machine to achieve the world-record pulse.
⬟ **Operate JET effectively to successfully deliver the science experiments**	The specific systems required to perform the experiments were the Active Gas Handling System (AGHS), the injection systems, and the cryoplant, the latter causing limitations in previous tritium experiments. These all operated effectively and were delivered to the standard needed to ensure successful JET experiments using the fusion fuel tritium.
⬟ **Share JET operational experience**	Five papers were submitted in a special issue of the Plasma Physics and Controlled Fusion (PPCF) journal sharing operational experience and knowledge. Publishing JET operations papers is complemented by other activities such as contributing to international expert technical groups. This ensures that teams designing fusion powerplants and preparing their operation can benefit from the unique operational experience from JET.

Performance Against Targets: JET Decommissioning & Repurposing (JDR)

Preparing for JDR

MILESTONE SUMMARY	OUTCOME
⬟ **JET Decommissioning & Repurposing Planning and Approval**	Planning for the JDR programme continued at pace, and a business case was collated and approved for the first Tranche of funding.
⬟ **Prepare for decommissioning work**	Preparation for the JDR work was completed ready for decommissioning to start- this included clearance work and relocation of staff and essential facilities.
⬟ **Setup agreements for repurposing of JET assets**	Processes and procedures were set up to enable the formation of agreements between different internal UKAEA departments and programmes, and between UKAEA and other external parties. A total of 15 agreements were signed (original target was 10). The implementation of these processes and procedures has placed the JDR programme in a good position to take advantage of repurposing opportunities in the future.

Performance report

OUR RESEARCH PROGRAMME

The fusion research programme focuses on solving the integrated scientific and engineering challenges that are fundamental to magnetic confinement fusion. The programme is conducted under grants, funded in majority by the Engineering and Physical Sciences Research Council (EPSRC), and spans multiple disciplines that represent the key scope areas across the life cycle of a fusion power plant.

ROBOTICS

Remote Applications in Challenging Environments (RACE) is a world-leading centre developing robotic solutions for fusion and other applications such as nuclear decommissioning and international science projects. One of the projects is **Robotics and Artificial Intelligence Collaboration (RAICO)**, a collaboration with partners in robotics and AI technologies that are required for the deployment of remotely operated solutions for the fission and fusion sectors.

FUSION FUEL (TRITIUM)

The fusion fuel tritium is a fast-decaying radioactive hydrogen isotope with scarce reserves. At the world-leading **Hydrogen-3 Advanced Technology (H3AT)** tritium research centre we study how to process, store, and recycle tritium for fuelling fusion power stations.

INTEGRATED RESEARCH

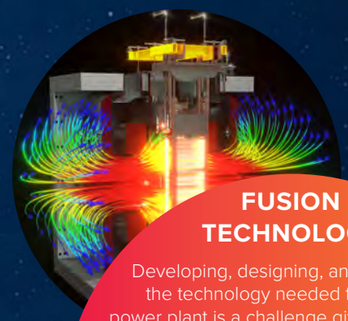
UKAEA has a breadth of world-leading experience across many fusion disciplines, and it is the integration across disciplines that is globally unique. The new **Lithium Breeding Tritium Innovation (LIBRTI)** facility is a scientific and technical undertaking that will require a close working relationship across disciplines and with industry partners. It aims to pave the way for fusion power plant-scale tritium breeding by demonstrating that the amount of tritium bred can be quantitatively predicted, and can be accurately and reproducibly achieved.

PLASMA

At the heart of every fusion power plant, the ionized fuel remains a design challenge as well as an opportunity to improve the efficiency and performance of the whole device. At UKAEA we develop theory and models to describe fusion plasmas, test them against experiment on devices such as MAST-U and JET, and apply them to the design and operation of fusion devices such as STEP.

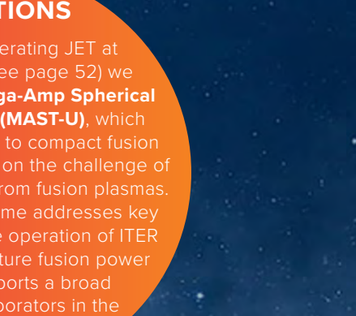
OPERATIONS

In addition to operating JET at our Culham site (see page 52) we also operate the **Mega-Amp Spherical Tokamak Upgrade (MAST-U)**, which is exploring the route to compact fusion power plants, focused on the challenge of safely removing heat from fusion plasmas. The science programme addresses key physics issues for the operation of ITER and the design of future fusion power plants, and supports a broad network of collaborators in the UK and internationally.



FUSION TECHNOLOGY

Developing, designing, and fabricating the technology needed for a fusion power plant is a challenge given its extreme environment. The fusion technology programme researches innovative design, manufacture, and testing processes that are needed to deliver the technological and structural components of a fusion powerplant. This includes the **Fusion Technology Facility (FTF)** in Rotherham which offers unique testing capabilities such as **Combined Heating and Magnetic Research Apparatus (CHIMERA)** for materials and components under extreme heat, magnetic, or mechanical loads.



DIGITAL

Focuses on the design and optimisation of fusion power plant operations through automation, simulation, machine learning, and digital twins. The UKAEA team is collaborating with several partners, both public and private, to leverage the latest advances in the field towards fusion applications.

MATERIALS

The fusion facility is an extreme environment with the combination of irradiation and thermal, magnetic, electric and mechanical loads, it must be made of materials capable of tolerating this harsh environment. The Materials Research Facility (MRF) and associated research programme rely on a rapidly expanding network of national and international partners in industry and academia, and takes its direction from the UK Fusion Materials Roadmap launched in late 2021.

RETURN TO CONTENTS

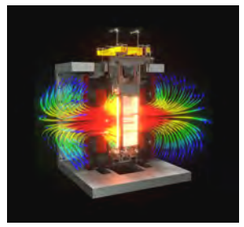
Performance Against Targets: Fusion Research

Our research programme, delivered with our academic and industrial partners, focuses on developing, innovating upon, and applying the fundamental science underpinning fusion power plant design.

Fusion Research

KEY Achieved · Partially achieved · Missed

MILESTONE SUMMARY	OUTCOME
PLASMA: Demonstrate MAST-U plasmas in support of STEP	For a magnetic confinement fusion device to reach optimal performance, the hot plasma core and edge pedestal must be decoupled from the divertors where heat and particles are exhausted, where the plasma can be substantially cooler. Experiments were recently performed on MAST-U that demonstrated it is uniquely capable of achieving this decoupling at the highest heating power available, reducing the plasma temperature by a factor 100 in the divertors with no impact on the hot fusion core. This effect was demonstrated in two alternative divertor configurations, the Super-X and X-point target, providing important initial results on their relative costs and benefits to inform the design of STEP and other future tokamaks.
OPERATIONS: Increase access to powerplant relevant conditions on MAST-U	The cryoplant is a sub-system of MAST-U that will enable a lower vacuum in the fusion device allowing access to more powerplant relevant conditions. The system integration was complex and involved manufactured parts from multiple suppliers leading to some delays in the initial schedule and partial completion of this milestone. The installation of the system was completed and partly commissioned this year, with the final commissioning planned for summer 2024.



FUSION TECHNOLOGY: Complete component delivery for CHIMERA	This year saw delivery of the Magnet Yoke components, delivery and installation of the cable bridge, and delivery and installation of the AC Generator. The high technical complexity has meant a revision of scope has been needed and has caused delays in the component delivery leading to this milestone being missed. The remaining magnet components and vacuum vessel are currently in production and due to be delivered next year.
NEW LIBRTI FACILITY: Establish governance & concept design	LIBRTI launch proceeds at pace with recruitment underway for the key leadership roles and the creation of a Concept of Operations. A Prior Info Notice / Request for Information was launched globally, to start the collaborative and procurement canvassing processes.

KEY Achieved · Partially achieved · Missed

MILESTONE SUMMARY	OUTCOME
ROBOTICS: provide the proof of concept of a digital robotics platform under the Long Ops Programme (*see Long Ops website for more info*)	The digital robotics platform (next generation digital mock up) was developed and applied to key stakeholder use-cases - Fukushima Daiichi sample and debris retrieval (TEPCO), Windscale Pile 1 decommissioning (Sellafield), and JET decommissioning and repurposing (UKAEA), that can be used for planning, training and operational rehearsals.
DIGITAL: Internal and national strategy development	The Fusion Computing Roadmap was drafted internally following review with the Executive and Research Strategy Committees. A national roadmap for identifying and tackling computing challenges will be delivered on a longer timescale than initially planned, resulting in partial achievement of this milestone.
FUSION FUELS (TRITIUM): Implement experimental facilities and deliver world-class data	DELPHI is an ion implantation device at Culham Campus, this year the facility has enabled world class research to take place, including a publication on hydrogen retention in erbium. The facility has also been upgraded to be tritium compatible, enabling isotope effects to be studied. EUROPA and HERA are new facilities currently in construction, they will enable important experiments to be undertaken on the permeation of tritium in breeder blankets, and the detection of tritium throughout the fuel cycle respectively. A review paper has this year been submitted for publication explaining the current global landscape of permeation experiments for fusion, and the critical role that EUROPA will play. Design studies for the two rigs have also been written and submitted for internal review prior to publication.
INTEGRATED RESEARCH: Exploit breadth of fusion disciplines	A unique aspect of UKAEA is the breadth of expertise in R&D in many aspects of fusion research. We demonstrated this year our ability to deliver impact by linking up that expertise to accelerate fusion solutions to key research problems. This year our team: • demonstrated the use of robots for inspecting pipe sections in a fusion plant mock-up, using expertise from our materials, tritium, and robotics research areas, with some challenges remaining for this inspection and testing method in large fusion devices. • developed a range of new models that aid our understanding of fusion fuel cycles and the performance of materials in a fusion environment, combining our digital, tritium, and materials research areas. • developed a new materials screening mechanism to test materials like steel, combining our materials and technology research areas. This is important as it will allow us to screen materials faster (and therefore discount unsuitable materials at an early stage), thus saving time and cost.

Goal 2: Product

“Enable partners to design, deliver, and operate commercial fusion power plants.”

Building on a pioneering legacy in spherical tokamak research, the UK has embarked on the first phase of the Spherical Tokamak for Energy Production (STEP) programme to design and build a compact, energy-producing, prototype fusion power plant. Alongside STEP, we collaborate in the EUROfusion DEMO programme – the largest body of fusion knowledge and expertise in the world. We take an alternative path to STEP based on JET and ITER, leading in areas where UKAEA expertise can drive the programme forwards. There are multiple – and, highly demanding – technical challenges that must be faced on the path to fusion energy as outlined by Goal 1. In these key challenge areas, we will focus development where fundamental innovation is required to translate our research, and the research of others, into viable solutions at mid-level technological readiness. In other areas we will be an expert partner, developing in-house expertise to allow close engagement with the leading organisations and industry partners.

UKIFS & STEP

The STEP (Spherical Tokamak for Energy Production) programme aims to design and build a prototype fusion power plant capable of demonstrating net energy production, in the UK by 2040. Through the delivery of the STEP facility (hereafter STEP), and in conjunction with parallel UKAEA programmes and interventions, the STEP programme aims to drive the growth of a world-leading UK fusion industry capable of developing and exporting fusion energy facilities and technologies around the world.

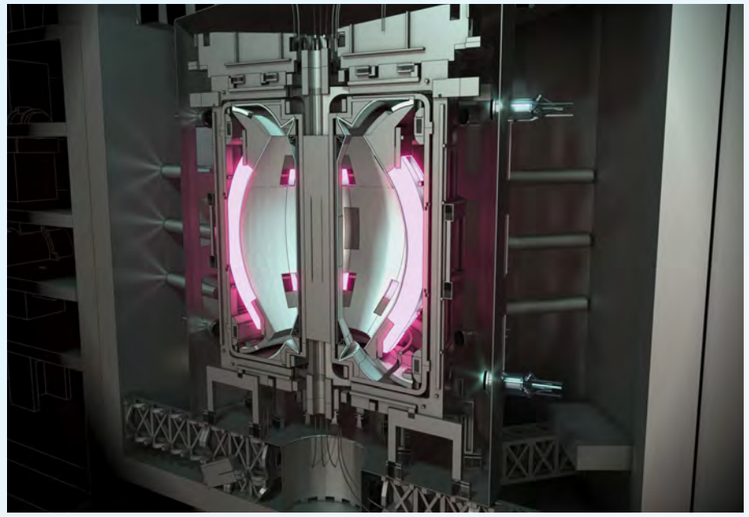
During 2024, UK Industrial Solutions Ltd (UKIFS), a wholly owned subsidiary of UKAEA Group, will become responsible for the delivery of STEP, which will be built at West Burton, a former coal-fired power station site, in Nottinghamshire.

The STEP Programme is divided into three tranches. The first tranche ended 31 March 2024, which focused on the following key aims:

- STEP’s concept design
- Development of an organisation to deliver a major technology and infrastructure programme
- Selection of a site
- Early engagement with regulators to support development of fusion’s regulatory framework

Progress in all the areas above has been commended by independent reviews led by the Infrastructure and Projects Authority (IPA) and the Fusion Technical Advisory Group (FTAG). The latter is a group of international experts convened by the Department for Energy Security and Net Zero (DESNZ) to provide it with independent technical assurance. However, given the technical uncertainties associated with fusion, the challenges involved in developing a detailed engineering design for STEP – a first of a kind prototype fusion plant – remain considerable.

STEP is central to the delivery of UKAEA’s Mission. STEP provides the means of building a prototype fusion power plant in the UK by 2040, and will be the primary long-term stimulant for growing a UK fusion industry via focused effort on a major single infrastructure programme.



STEP MISSION

“To deliver a prototype fusion energy plant, targeting 2040, and a path to commercial viability of fusion.”

The elements of STEP’s mission are summarised as follows:

- Prototype fusion energy plant. To achieve both parts of STEP’s Mission, the plant must demonstrate: net energy; fuel (tritium) self-sufficiency; maintainability; demonstrable safety; and a path to acceptable total cost of ownership.
- Targeting 2040. Delivering STEP at pace is critical to capitalise on the UK’s global research lead in fusion to help secure a commercial advantage and to address climate change and energy security. Driving for pace also helps with cost management (through focusing effort) and is a major enabler to industrial stimulation.
- Path to commercial viability. The supply chain that must be developed through STEP but must not end with STEP; the programme is only truly successful if industrial capability stimulated through STEP continues to support multiple fusion programmes globally (though that continuation is beyond the STEP Programme scope and will depend on private commercial funding).

STEP CONCEPT DESIGN

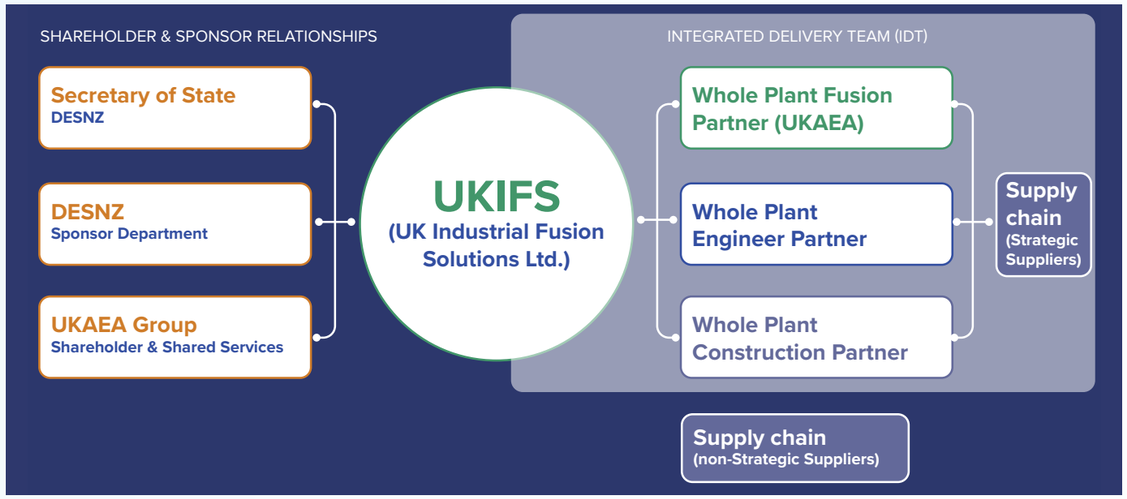
STEP is based on the spherical tokamak approach to fusion. Compared to a conventional tokamak, this approach is expected to offer a prototype fusion energy facility that is cheaper to build, requires less space and will produce a higher quality plasma in terms of energy production potential. Building on UKAEA’s world-leading capabilities in spherical tokamaks, the STEP programme is expected to provide the UK with a strategic advantage via an industrial capability associated with a more commercially viable fusion power plant design.

Having explored over 40 designs and taken over 600 design decisions, the STEP team’s progress towards a finalised concept design was reviewed by the Fusion Technical Advisory Group (FTAG) in February 2024. FTAG positively endorsed the post Concept Maturity Level 5 pivot assessment while acknowledging the significant journey ahead. The panel recognised the substantial strides made since the last review and unequivocally acknowledged the STEP programme's position as a frontrunner globally in fusion power plant design.

A holistic and integrated design that tries to address all, not merely some, of the key characteristics needed for commercial fusion plant, has been developed. FTAG said this is outstanding progress, while also noting the scale of the challenge ahead.

The STEP team has delivered five Concept Maturity Level reviews and has authored 71 papers (FY23-24) that demonstrate STEP’s technical progress. STEP’s concept design will be finalised in early 2025 and will then progress to detailed engineering design. A range of patents have also been secured to date, in the fields of new materials, tokamak components, tritium technology, electrical components, manufacturing process, and software.

UKIFS OPERATING MODEL



HOW WE PERFORMED

UKIFS OPERATING MODEL

UK Industrial Fusion Solutions Ltd (UKIFS) is a company limited by shares and a wholly owned subsidiary of UKAEA Group. It has been formed to take on responsibility for the delivery of the STEP Programme in 2024. UKIFS will be accountable to the UKAEA Board and through UKAEA Group to the Department for Energy Security and Net Zero (DESNZ).

Following the appointment of a UKIFS Chair, non-executive directors and a CEO, the UKIFS Board was established. A number of senior executives have also been appointed to UKIFS, in Finance, Programme Management, Engineering and Commercial areas.

With UKIFS as the client organisation, STEP's industrial model will be a collaboration between public and private sectors. A significant milestone was reached in May 2024, with the launch of a Whole Plant Partner (WPP) procurement process, to formally go to market to search for STEP's Engineering Partner and Construction Partner, to work alongside UKAEA as the Fusion Partner.

The vision for STEP at West Burton was launched at a community engagement event in Sturton le Steeple, a village near West Burton.

WEST BURTON SITE

West Burton in Nottinghamshire was chosen as the home of the STEP facility in October 2022. The former coal-fired power station site is currently being decommissioned.

STEP provides an opportunity for growth and regeneration in the East Midlands. Strong relationships have already been forged with the public and local stakeholders such as Midlands Engine, Nottinghamshire County Council, Bassetlaw District Council, Lincolnshire County Council and West Lindsey District Council. Governance forums are in place to help to ensure all stakeholders work together to drive wider benefits.

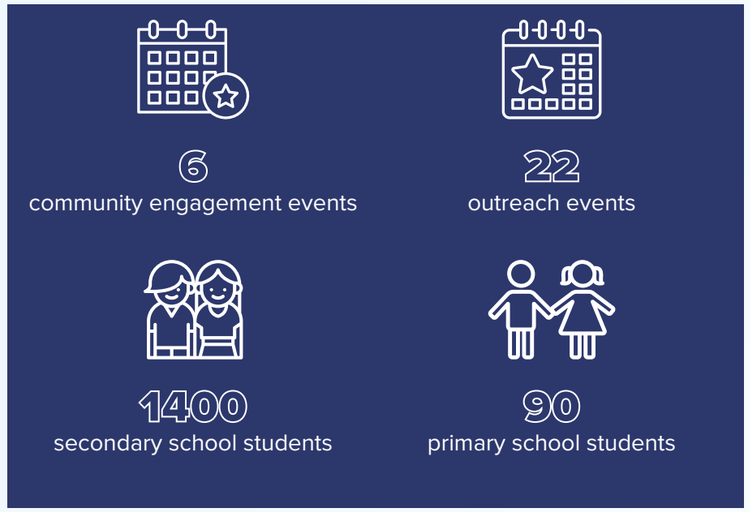
A STEP team is already based at West Burton and has opened a UKAEA site office. The team is undertaking site characterisation works and will continue to engage with local stakeholders to prepare for future planning permissions and consents.

In February 2023, STEP launched an online, interactive tool to explain how the site vision is being developed. It details current considerations for the layout of the site including transport links, environment, access, economic impact and invites members of the community to engage and provide feedback.

HOW WE PERFORMED

COMMUNITY ENGAGEMENT

Transparent and proactive community engagement is building public support for STEP in the local area. STEP hosts regular community engagement events to share information about how the programme is progressing and to listen to feedback. Events have taken place in surrounding communities of the West Burton site, including Sturton le Steeple, Retford, Gainsborough, and Lincoln.



LOCAL RESIDENTS' QUOTES:

"The mining industry was a major employer and wealth creator in the area, but it's gone, and we need something to replace it. I think this (STEP) is the beginning of it, in fact I'm sure of it."

"I think STEP is very important for my family, particularly my grandchildren... I think it will create lots of good jobs."

Regional university visits to the West Burton site and Culham Campus, including the Universities of Manchester, Birmingham, Sheffield, Lancaster, Lincoln, and York.

Cllr Jones, Bassetlaw District Council: *"STEP means to me, brilliant opportunities, huge growth and employment, new skills. It means new housing, it means a better quality of life... but what I really think it means, is a new technical hub for Great Britain."*

Watch this video to hear from more local residents: STEP Community Engagement Event - Retford Town Hall (youtube.com)

Performance Against Targets: **Product**

Combined with technical advancements, we develop the enabling environment needed for a commercial fusion sector in the UK, contracting out more than half of STEP R&D activities to industry and academia, as well as selecting the future site for the STEP prototype as a driver of local and national socioeconomic growth. Through MAST-U and collaboration with other fusion devices such as ITER, we ensure that the unique skills and expertise developed over decades of operating JET are retained in the UK, bridging the gap to commissioning and operation of the first fusion power plants. Through providing expertise in areas including remote maintenance, tritium systems, plasma design, and engineering design, we are supporting the EUROfusion DEMO programme.

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
POWER PLANTS: Design and start to use a robotic system with adaptive control for flexible loads, showing paths to fusion power plant sized devices.	As part of the mitigation of remote handling risks in the future fusion power plants and to advance RACE's understanding of handling heavy, flexible payloads lining the inside of the vessel a 130kg nominal payload industrial manipulator was delivered to RACE in March 2024. Previous systems at RACE have only had capacity for 5kg, so this increase allows researchers to understand the scaling limits of exiting control algorithms, providing insights into robotics operation on facilities closer to fusion power plant sizes and masses.
POWER PLANTS: Publish a pathways to fusion strategy document with the aim of helping the fusion community think about the deployment opportunities of fusion power plants, and disseminate this widely to exemplify our thought leadership in the field.	While the intended document could not be published in time, key ideas and themes were presented to the board in July 23, and were combined with other discussions around the same topics to form a larger, more complex and evolving task than originally set out by this milestone. Part of the Fusion Futures programme is to continue exploring future energy landscapes and fusion uses, and how they might guide technology choices and development.

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
STEP: Deliver an investible concept design and complete review of the proposal by the Fusion Technical Advisory Group (FTAG).	The compact concept design has reached a mature stage, now being formalised in a proposal, and undergoing thorough internal and external scrutiny. While certain elements will remain consistent with the current design, significant adjustments are required to streamline complexity, reduce costs, and enhance the path to commercial viability. FTAG acknowledged that risk reduction activities were inflight and acknowledged the challenging journey ahead while stating: "the STEP programme's position as a frontrunner globally in integrated fusion power plant design". This milestone was partially achieved due to the FTAG date change requested to accommodate adaptations from decisions made during the previous review stage.
STEP: Enable wider visibility and peer review of the emerging STEP design.	Despite delays caused by concept design revisions and external review, a comprehensive set of high-quality papers was submitted to the Royal Society, meeting the agreed schedule despite being one month past the CPM deadline.
STEP: Define the STEP target operating model and publish a clear transition plan to UKIFS initial operating capability.	The STEP target operating model was issued and agreed by the Programme Board and a transition plan was agreed upon by the Executive Committee. This will enable phased implementation of the UKIFS and STEP programme capability necessary for UKIFS ownership and effective management of the STEP major programme through the next Tranche of funding.
STEP: Progress approval to proceed with the next Tranche.	The Outline Business Case for STEP's next Tranche was approved by appropriate committees. In line with standard approval processes, a Full Business Case will be submitted this year.
STEP: Launch the Whole Plant Partners procurement process to ensure the industrial capability needed to deliver STEP.	STEP's industrial model will be a collaboration between public and private sectors. Noting the scale, ambition and long-term nature of these commercial arrangements, we have formally gone to market for our Engineering Partner and Construction Partner, to work alongside UKAEA as the Fusion Partner.
STEP: Co-ordinate a vision and plan of the STEP site with regional stakeholders.	Developing a vision for STEP at West Burton was launched at a community event in the local area, following extensive engagement with local authority stakeholders. The interactive online vision tool highlights principles for how the site will develop, including sustainable transport, ecology & environment, connecting with communities, and clean growth & innovation. Public feedback is invited until 31 July 2024.

Goal 3: Prosperity

"Drive UK economic growth and a thriving industry that exports fusion technology around the world."

A full-scale fusion power plant may be some years away, but the social, scientific and economic impact of the fusion programme are more immediate. UKAEA is committed to maximising the transfer of innovation and knowledge from fusion into adjacent sectors and supporting industry with our capabilities in the fusion sector and beyond.

FUSION FUTURES– DEVELOPING INDUSTRY CAPACITY & CAPABILITY

As part of the Fusion Futures Programme as introduced in the "external changes" section previously, up to £200M of funding will go towards securing access to, or providing directly, large scale design and build opportunities to UK industry. These are opportunities to develop industry capacity and capabilities which are key to the development of future fusion powerplants.

To achieve this, UKAEA will:

1. Stimulate industry capacity growth through access to large value work packages, ensuring Tier 1 and 2 companies are of sufficient size to support future fusion powerplant development.
2. Prompt industry capability growth in areas which have been identified as significant requirements for future fusion powerplant development through work packages, including workforce upskilling.

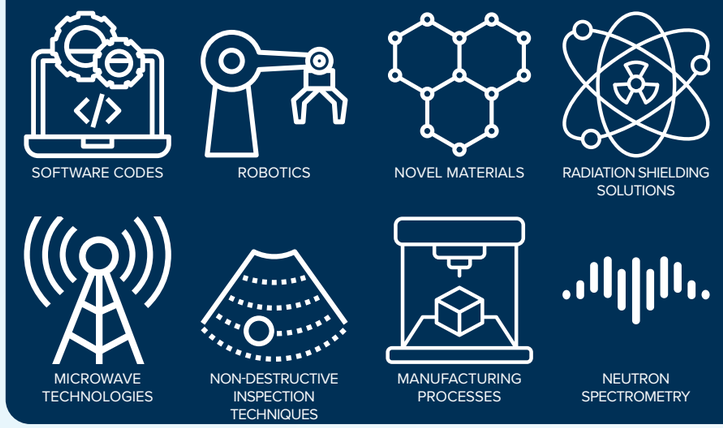
INNOVATION

The Innovation Department supports all parts of UKAEA in exploiting technology transfer and commercialisation opportunities into the wider fusion ecosystem and into other sectors and in doing so create value in the UK. UKAEA's innovation strategy and processes look to effectively manage knowledge assets to help maximise their social and economic benefit and measure the impact generated.

This year the Innovation Department has set up and launched the **Technology Transfer Hub**, under the **Fusion Futures Programme**. The Technology Transfer Hub provides the capability to develop a pipeline of opportunities and create a broad cross sector network to proactively exploit technology transfer and commercialisation opportunities from fusion into global markets. The Hub was critical to the **300% increase** in this year's activities aimed at identifying and developing opportunities for technology transfer across UKAEA and investigating exploitation routes for UKAEA Knowledge Assets. This increase was facilitated by a **100% growth in the Innovation team** and its capability and capacity in technology transfer and IP activities.

Innovation has facilitated at least **30 technology transfer projects**, and in doing so secured more than **£0.5M to help drive the development of these technologies** and gain a better understanding of relevant markets and exploitation routes. These Innovation projects facilitated interactions with a wide range of organisations and initiatives, to support the exploitation of UKAEA Knowledge Assets.

UKAEA Knowledge Assets investigated and pursued for technology transfer potential included:

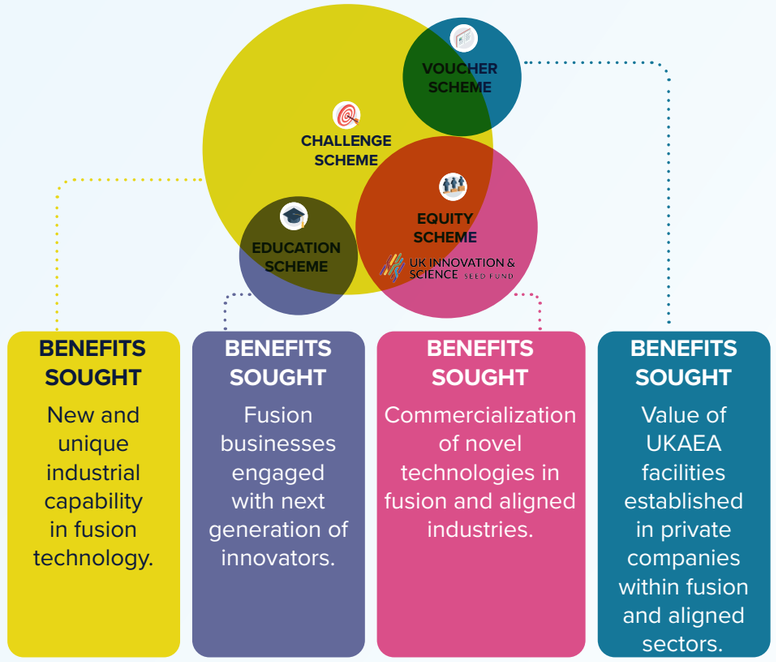


+ the UKAEA capabilities and knowhow that underlie these technologies.

FUSION INDUSTRY PROGRAMME

The objectives of the Fusion Industry Programme (FIP) are to:

- Increase innovation in industry by tackling the key technical challenges facing fusion energy's development.
- Encourage greater use of UKAEA's capabilities by the fusion supply chain and fusion-adjacent industries in support of industrial economic growth.
- Positively influence career choices of the next generation and expose businesses to bright new minds and short-term project opportunities in fusion companies.
- Create a portfolio of new, fast-growing, and commercially successful businesses based on technology innovation arising from fusion programmes.



"Accelerate the growth of the UK's fusion industry."

UK INNOVATION & SCIENCE SEED FUND

- 3 UKAEA Secondees to UKI2S
- 3 Investments completed through UKIFS Fusion Fund

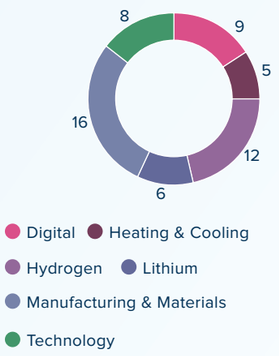
£0.5M invested in Machine Discovery

- Machine Discovery pioneered machine learning technology for fusion applications.

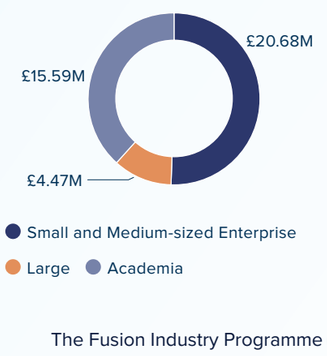
£0.5M invested in WAVE PHOTONICS

- Wave Photonics aims to enable the photonic chips market to be capable of automating photonic chip designs, as is the case in electronics.

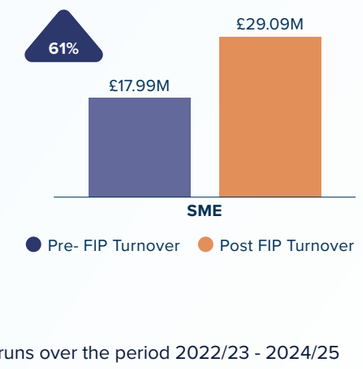
FIP CHALLENGE SCHEMES
Themes & Contracts



CHALLENGE SCHEMES
Investment by Company Type



IMPACT ON TURNOVER

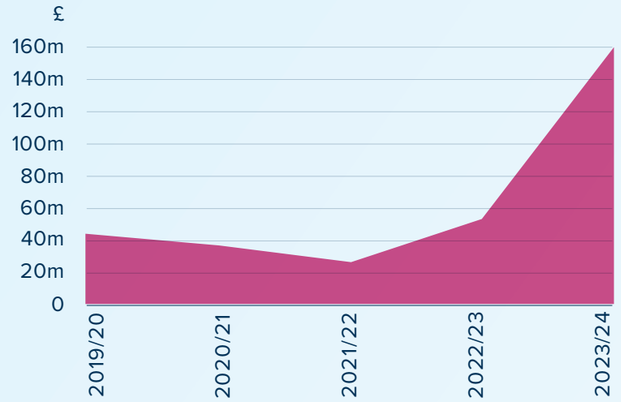


The Fusion Industry Programme (FIP) runs over the period 2022/23 - 2024/25

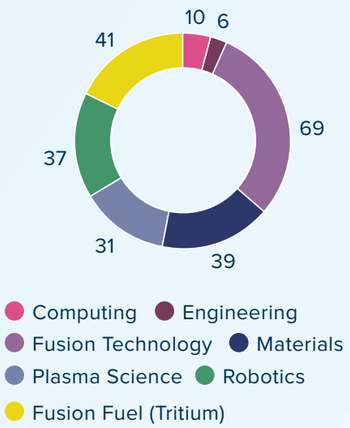
BUSINESS DEVELOPMENT

The Business Development division aims to develop and nurture engagement with industry, academic institutions, and funding bodies, acting as the commercial interface for UKAEA. This year has seen significant increase in engagement with fusion and fusion-adjacent companies, both in research collaborations and commercial proposals. ITER activity has decreased due to not associating with Euratom (see page 20) but this could increase in the coming year if association is agreed to Fusion for Energy (F4E) (ITER's procurement agency).

BIDS SUBMITTED PER YEAR (GRANTS AND COMMERCIAL)



BIDS SUBMITTED PER RESEARCH AREA



Activities this financial year

2023/24

233 **bids** submitted

34 **successful** and 137 **still live**

resulting in a total bid value in FY 23/24 **£114M** (successful and live) for UKAEA and UKAEA's partners

Historically, business development activity has included a high proportion of grant applications, which can take a long time to progress.

2024/25

Business development plan an increase of 50% in proactively generated commercial or international opportunities and to improve positive closures from ongoing bids, with a real-time pipeline review using a Customer Relationship Management (CRM) platform. Risks have been identified and are being addressed in areas of attrition, the lack of data management tools, and skills gap in customer.

THE FUSION CLUSTER

FUSION CLUSTER

The spirit of the Fusion Cluster is one of working together. Established in October 2021, this collaborative effort now consists of over **200 organisations**, ranging from fusion energy developments to universities, government organisations and investors. Over its 2.5 years of operation, the Fusion Cluster has facilitated significant achievements, including the development of a strong talent pool in fusion through training programmes, and partnerships with academic institutions.

It provides:

- Support for start-ups.
- Access to world-leading facilities.
- Opportunities for networking and knowledge sharing through events, newsletters, and directories.

In the past year, the Fusion Cluster has organised various events to foster collaboration and knowledge exchange. These events include community-building activities such as screenings of the Star Makers movie, which focuses on the JET world record set in 2021, and additionally tours of JET for staff working in other fusion companies.

One of the most important aspects of the Fusion Cluster's work is raising awareness of fusion. For New Scientist Live's schools' day last year, the Fusion Cluster produced a teachers' pack that was distributed to over 130 teachers of 6000 high-school students. Building on the hugely successful Fusion22 event, the upcoming Fusion24 showcase organised by the Fusion Cluster aims to deliver inspirational panel discussions among key players across fusion.

Raising Awareness at the Climate Tech Panel

Outer Thinking Summit

INTERNATIONAL DEVELOPMENT OFFICE

With the field of fusion having a strong and international dimension, we have this year created an international development office. The office delivers policy, strategy, and technical advice to the UKAEA Senior Leadership and the DESNZ policy team with respect to overarching high level strategic international relationships.

WHY NOW?

- Fusion Futures confirmed the intent to fund large-scale collaborations as well as exploring similar agreements with other countries, focusing on the areas of R&D, regulation and skills across academia, national laboratories, and industry.
- The evolving international landscape
  - Continue with successful, established relationships and collaboration programmes, finding new routes together if needed.
  - Enhance promising opportunities in new areas that don't undermine the wider landscape.

INTERNATIONAL PARTNERSHIPS FORMED THIS YEAR

UK and US form major partnership to accelerate global fusion development

This international agreement, signed in Washington DC, has been forged to make fusion commercially viable, and to enable both nations' fusion sectors to benefit from closer R&D collaboration, knowledge-sharing, and skills development.

UK-Canada Partnership

A memorandum of understanding regarding a partnership on fusion energy cooperation, which will enhance collaboration on key areas of fusion including R&D, regulation, and skills, was signed at the International Energy Agency's (IEA) Ministerial Meeting.

The announcement of this partnership also coincides with a new collaboration agreement between the UK Atomic Energy Authority (UKAEA) and the Canadian Nuclear Laboratories (CNL).

REGULATION

In October 2023 the Energy Act was passed, which included an amendment to the Nuclear Installations Act 1965. The amendment confirms that a nuclear site licence will not be required for fusion energy facilities and makes the UK the first country to legislate for fusion regulation. This decision on the regulation for fusion provides clarity for the fusion sector and allows for a proportionate framework that continues to protect the public and the environment under the Health & Safety Executive and the Environment Agency (or Devolved Agencies). UKAEA continues to provide training and familiarisation opportunities to the regulators as part of building expertise in fusion.

Performance Against Targets: **Prosperity**

Strong partnership with the private sector is essential to developing fusion power plants, to address both the rate of progress and the scale of the technical challenges. UKAEA is committed to maximising the transfer of innovation, skills, and knowledge from fusion into adjacent sectors.

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
RACE: Deliver the Remote Handling System Mast Fabrication for the European Spallation Source Active Cells Facility (ESS ACF).	All sections of the Remote Handling System Mast Fabrication for the European Spallation Source Active Cells Facility (ESS ACF) were successfully delivered. The delivery process included welding, inspection, heat treatment and machining.
H3AT: Deliver world class facilities to support UK fusion research. Place all sub-system procurements for the H3AT Tritium Loop.	The project progressed documentation for placement of all contracts. A shortage in senior engineering resource impacted progress, as well as the requirement to manage the documentation information under export control legislation, which prevented all contracts being placed, causing us to miss the original target date for this milestone. The procurement procedures, supporting documentation, and information management approach were updated to accommodate the changes required and support future projects subject to export control. The first contract was awarded on 15 March 2024.
FUSION INDUSTRY PROGRAMME: Deliver the second phase of the Fusion Industry Programme.	The Fusion Industry Programme (FIP) has delivered a pipeline of innovative technology solutions from industry across 5 challenge areas. The FIP education scheme was successfully scaled up to more than 30 summer placement opportunities, an increase on the planned target of 20. An assessment of the voucher scheme's suitability for use across the entire business was undertaken, leading to 8 opportunities now being delivered.
INTEGRATED ENGINEERING: Establish at least two external engagements with fusion partners that bring engineering work to the IE Division.	Integrated Engineering division has successfully engaged with two external entities during the FY2023-2024. A complex machining contract was performed for Idaho National Labs , where material test samples were incorporated into a series of test pins for irradiation. This was completed under the National Nuclear User Facility (NNUF) programme. Integrated Engineering also entered into a collaboration with Kyoto Fusioneering to develop a fusion breeder blanket concept using model based system engineering techniques. This was funded via the International Science Partnerships Fund (ISPF) programme.
BUSINESS DEVELOPMENT & INNOVATION: Enable the successful delivery of Business Unit business plans.	There have been 233 bids with 34 successful and 137 still live, resulting in a total bid value in FY 23/24 of £114M for UKAEA and UKAEA's partners.

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
BUSINESS DEVELOPMENT & INNOVATION: Increase the number of companies involved in fusion and supporting UKAEA's activities.	There was a 55% increase in the number of companies attending fusion procurement events from FY 22/23 to FY 23/24.
IMPACT REPORTING: Publish the first UKAEA impact report evaluating our economic and scientific impact during 2023/24.	The Impact Report, originally due for publication by the end of March 2024, faced delays due to resource constraints throughout 23/24. Work is underway to overhaul UKAEA's Benefits Framework and analysis function, to enable the publication of an Impact Report next reporting year.
BUSINESS DEVELOPMENT & INNOVATION: Establish the conditions for innovation companies and start-ups to succeed.	The milestone to enable three or more investments from the UKIFS fusion fund has been successfully met. The Innovation department has placed secondees within UKI2S who have enabled these investments to take place.
INTERNATIONAL: Support HMG in creating a new international alliance in fusion.	UKAEA has made contributions to the international fusion landscape. Our expertise has played a part in forming a new partnership between the UK and USA to develop fusion technology. We have hosted three international conferences, and continue to support the ITER Organisation through a number of existing in-kind and match funded projects.
INTERNATIONAL: Promote fusion and UKAEA on the international stage.	
INTERNATIONAL: Enable the UK to maintain valuable contributions to ITER; support delivery of strategic UK projects to ITER.	

Goal 4: Place

Our sites

Create clusters that accelerate innovation in fusion and related technologies

Cumbria – RAICo

Home to
<10 employees at present

Size of site
1,000m²

The first of a network of Robotics and Artificial Intelligence Collaboration (RAICo) hubs to support decommissioning of nuclear sites.

Opened at the end of March 2023, RAICo contains facilities required to support the development of robotics and artificial intelligence solutions for nuclear decommissioning and fusion engineering challenges.

South Yorkshire – Fusion Technology Facility

Home to
47 employees

Size of site
2,230m²

Strategically placed at the heart of the UK's advanced manufacturing region, our site at Rotherham enables UKAEA to engage industry in commercial fusion development.

South Yorkshire hosts a number of the Fusion Technology Facility's test facilities. Its centrepiece will be CHIMERA - a unique device, designed to test prototypes in the extreme temperature, heat flux and magnetic environment representative of fusion power conditions.

Culham – UKAEA HQ

Home to
1911 employees

Size of site
0.6km²

The first of a network of Robotics and Artificial Intelligence Collaboration (RAICo) hubs to support decommissioning of nuclear sites.

Opened at the end of March 2023, RAICo contains facilities required to support the development of robotics and artificial intelligence solutions for nuclear decommissioning and fusion engineering challenges

West Burton – STEP

Home to
<10 employees at present

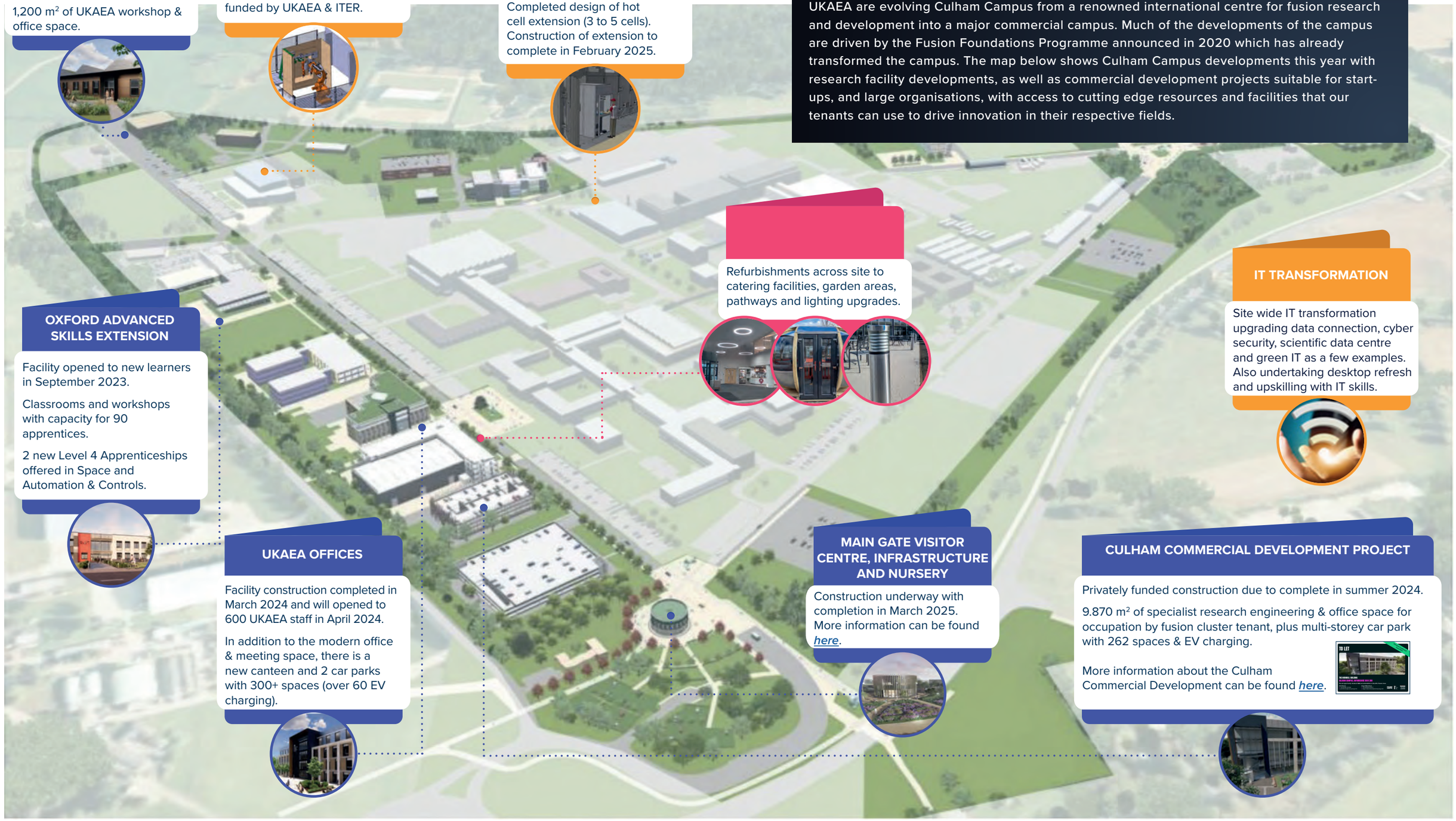
Size of site
3.6km²

West Burton in Nottinghamshire has been chosen as the home of the STEP prototype power plant, announced by the Secretary of State in October 2022. The former coal-fired power station is currently being decommissioned - see page 38 for more info.

All employee numbers on the page are correct as of 31st March 2024

Culham Campus Spotlight

UKAEA are evolving Culham Campus from a renowned international centre for fusion research and development into a major commercial campus. Much of the developments of the campus are driven by the Fusion Foundations Programme announced in 2020 which has already transformed the campus. The map below shows Culham Campus developments this year with research facility developments, as well as commercial development projects suitable for start-ups, and large organisations, with access to cutting edge resources and facilities that our tenants can use to drive innovation in their respective fields.



CENTRAL SUPPORT FACILITY

Construction of facility commenced in March 2024, with completion in March 2025.

1,200 m² of UKAEA workshop & office space.

ITER ROBOTICS TEST FACILITY

Completed a series of 17 mock up trials proving feasibility of remote handling tasks. Jointly funded by UKAEA & ITER.

MATERIALS RESEARCH FACILITY – HOT CELL EXTENSION

Completed design of hot cell extension (3 to 5 cells). Construction of extension to complete in February 2025.

OXFORD ADVANCED SKILLS EXTENSION

Facility opened to new learners in September 2023.

Classrooms and workshops with capacity for 90 apprentices.

2 new Level 4 Apprenticeships offered in Space and Automation & Controls.

UKAEA OFFICES

Facility construction completed in March 2024 and will opened to 600 UKAEA staff in April 2024.

In addition to the modern office & meeting space, there is a new canteen and 2 car parks with 300+ spaces (over 60 EV charging).

Refurbishments across site to catering facilities, garden areas, pathways and lighting upgrades.

IT TRANSFORMATION

Site wide IT transformation upgrading data connection, cyber security, scientific data centre and green IT as a few examples. Also undertaking desktop refresh and upskilling with IT skills.

MAIN GATE VISITOR CENTRE, INFRASTRUCTURE AND NURSERY

Construction underway with completion in March 2025. More information can be found *here*.

CULHAM COMMERCIAL DEVELOPMENT PROJECT

Privately funded construction due to complete in summer 2024.

9,870 m² of specialist research engineering & office space for occupation by fusion cluster tenant, plus multi-storey car park with 262 spaces & EV charging.

More information about the Culham Commercial Development can be found *here*.

Performance Against Targets:
Place

We are committed to growing a world-leading fusion cluster in the UK on Culham Campus, and we will expand our presence elsewhere in the UK to tap into the skills and expertise needed to deliver our mission and play our part n socio-economic development. We will strive to be a leading example of sustainable development as we drive towards net zero at our sites.

Contributes to UN sustainability goals:

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
CULHAM: Complete the Oxford Advanced Skills expansion, the new UKAEA Offices, the Commercial Development Project building, and begin building work for at least one fusion tenant at Culham.	UKAEA offices were handed over on April 24. The Oxford Advanced Skills (OAS) extension was handed over on Aug 23. The commercial tenant building is in development and is planned for completion in summer 2024.
CULHAM: Establish route for future campus development.	UKAEA has the ambition to further develop the Culham Campus into a public-private partnership, with a mix of private sector companies all supporting our fusion cluster aims. To enable this, UKAEA has agreed that the best route to achieve this is by establishing a joint venture style partnership with a private sector partner with the expertise and funding to support cluster development and new facilities comparable to the JV at the Harwell Campus. Over 2023/24 UKAEA appointed Strategic Property advisors who, over that period, have been evaluating the scale of opportunity and potential options open to UKAEA to partner. The conclusion for this is that UKAEA will seek to establish an appropriate JV relationship over the coming year.
SOUTH YORKSHIRE: Increase UKAEA's presence in Yorkshire by at least ten people and plan for expansion of the Fusion Technology Facility.	The number of staff at FTF has grown to 47 (as of 31/03/24) from 32 in 22/23, and a costed proposal for FTF expansion has been collated with funding being sought.
SOUTH YORKSHIRE: Engage with the supply chain and create new grant proposals with regional companies.	Engagement Events: **May 2023–**Local Stakeholder event at FTF (local MP & councillors, and regional players). **June 2023–**Lincoln event held in conjunction with Lincoln University and Innovate UK, focusing on regional suppliers. **March 2024–**Event for the organisations at the Advanced Manufacturing Park in Rotherham. Grant proposals have been created with regional entities.

West Burton

OAS Extension - Culham

FTF - South Yorkshire

Goal 5: People

"Develop the talented, diverse people needed to deliver fusion energy"

PEOPLE AND CULTURE

Success through our people: People are at the heart of every part of our business. Creativity, innovation, energy, and motivation are the driving forces of our success.

The 'People and Culture' Department strive to support the objectives of UKAEA by providing a high standard of service to all our customers, employees and managers, potential employees, stakeholders, and partners. We achieve this through leading, developing, training, encouraging, and motivating our people to reach their full potential. We aim to develop the talent of UKAEA to meet all our current and future challenges and goals, and providing a fulfilling, safe, and inclusive work environment for everyone.

We are dedicated to growing a pipeline of talent in the fusion sector, underpinned by our commitment to Equality, Diversity, Inclusion, and Wellbeing (EDI&W), and our main duties and public sector equality duties. Our aim is to be an employer of choice. Valuing and celebrating all forms of diversity whilst enabling an inclusive culture is the right thing to do; attracting, retaining, and developing people equitably to their full capability, regardless of individual differences.

We celebrate the diversity of our staff and are proud of having created a friendly and open environment, where everyone's opinion is valued, and curiosity and questioning is encouraged. We recognise that this requires effective leadership and management , the recruitment and retention of talented people; and a culture that encourages learning and improvement through consistent and open engagement with our staff. We are building a team to collaboratively develop the next strategy and five-year inclusion and wellbeing plan, with input from leaders and people across the organisation. This will support effective delivery of the new disability and wellbeing-related processes.

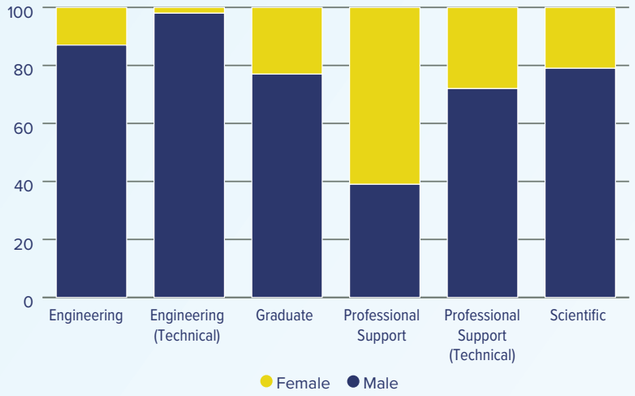
WHO WE ARE

UKAEA is a multicultural organisation, with a third of all nationalities represented within our workforce – that's people from 65 different countries.

We have increased staff numbers steadily year on year driven by the expansion of programmes such as STEP and JET decommission and repurposing.

Reflective of the sectors in which we operate, 27% of our employees are female and 73% male. Self-reported gender identity shows that 0.51% of employees identify as non-binary and that a similar number of our colleagues are transgender.

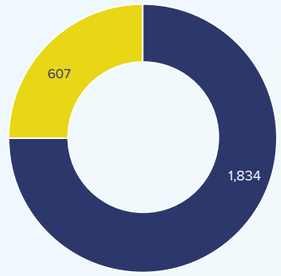
Within the workforce the number of women are distributed unevenly across job families, with most women working in professional support (non-technical) roles. 24% of the organisation have people management responsibilities, 27% of our people managers are women and around 7% of managers are from ethnic minority backgrounds.



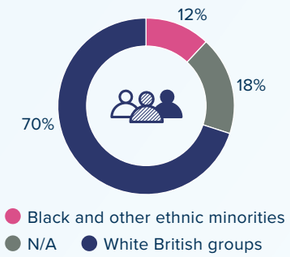
HOW WE PERFORMED

We have a relatively young demographic compared to the working population in the south-east benchmark ONS, March 2023

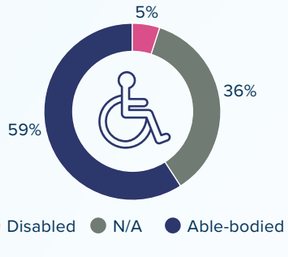
PEOPLE (FULL TIME EQUIVALENTS) 2023/24



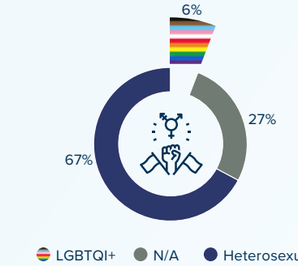
In addition to our permanent staff, we also have a number of agency workers on assignment at UKAEA. In **March 2024** we had **426 Agency workers** at UKAEA.



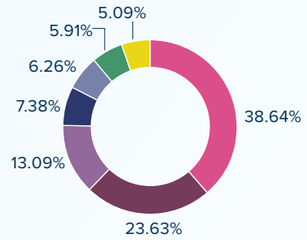
At least 12% of us are from black and other ethnic minority backgrounds (18% of employees have not shared this level of detail) Response rates for diversity monitoring are highest for ethnicity, including white British groups.



At least 5% have a disability (36% of employees have not shared this level of detail) and 200+ members are currently in the disability network.



At least 6% are LGBTQI+ (27% of employees have not shared), with all the networks maintaining great efforts to make everyone welcome.



We are split across four main job families. Most of our staff are technical, with engineers making up more than half of the total number of employees.

We have **more than seven different religions** and many belief systems represented, as well as atheist and agnostic colleagues and an active network who share informative and engaging articles, particularly around different celebrations, and host related events.

SKILLS AT UKAEA

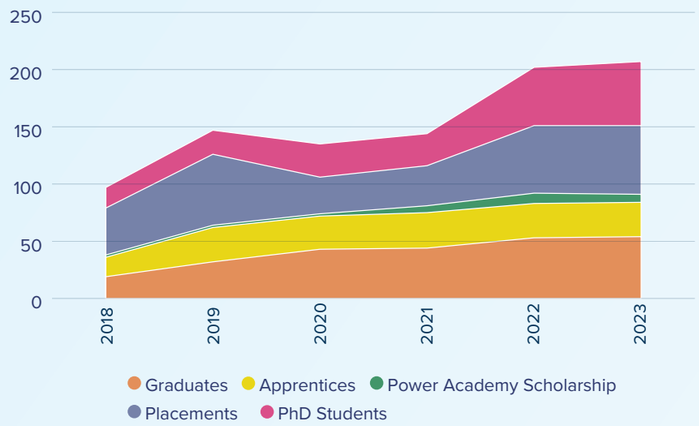
We depend on a wide variety of skills and skilled people at UKAEA to deliver our mission and objectives.

We are an employer of skilled people, with vibrant apprenticeship and graduate schemes alongside a dedication to supporting our people in their own skills development.

We are a partner to universities across the UK and to training providers, including in the Oxfordshire Advanced Skills centre partnership.

We are a champion and a leader for fusion skills, bringing together our community with initiatives like the Fusion Skills Council, and the Fusion Cluster.

SKILLS GROWTH AT UKAEA



AS AN EMPLOYER

Approximately **17%** of our organisation are on, or are alumni of, our apprenticeship and graduate schemes.

Our **APPRENTICESHIP SCHEME** supports apprentices across a diverse range of different standards that span both **STEM** and **professional support disciplines**.

Our graduate scheme has grown consistently, with an ESTIMATED **84 graduates** expected to enter our workforce in 2024 and 105 graduates across our business at present.

Our apprentices and graduates continued to achieve national recognition with graduate, **Tom Webster** shortlisted for **Engineering Graduate of the Year** at the Engineering Talent Awards 2023.

We have **focussed on increasing the diversity** of both schemes, with **40%** of our **graduate intake** and **30%** of our **apprentices** identifying as **female** in 2023.

We continue to provide an **active summer placement scheme** providing **60 students** with unique experiences within our programmes in **2023**.

As a partner

With the **MANUFACTURING TECHNOLOGY CENTRE (MTC)** and **SCIENCE AND TECHNOLOGY FACILITIES COUNCIL (STFC),** we are delivering the **OXFORDSHIRE ADVANCED SKILLS CENTRE** to provide

high quality training

for apprentice engineers and technicians

across 47 technology businesses

within the Thames Valley.

With universities, we sponsor and co-supervise

more than 130 PhD students

across 30 different universities

in the UK all focussing on scientific and technological fusion research.

We have provided

support for Professorial Chairs

in a variety of technical areas at the universities of **MANCHESTER, BIRMINGHAM, YORK, AND SHEFFIELD,** alongside reader positions across the university landscape.

We have supported students to take up

more than 80 summer internships

across 18 businesses

within the fusion sector through the FUSION INDUSTRY PROGRAMME EDUCATION SCHEME.

As a champion for fusion skills

We have begun a
NEW, NATIONAL PROGRAMME
on behalf of the fusion sector to enhance the UK's fusion skills ecosystem and
TRAIN UP TO
2200 people
in fusion skills in the
next 5 years.

We have convened the **FUSION SKILLS COUNCIL** as a cross-sector group combining **universities, businesses, suppliers, recruiters,** and **training providers** from the UK's fusion sector to provide cohered and strategic guidance as this programme develops.

We have published a **report on Fusion Skills** through the **FUSION CLUSTER** that focusses on **challenges and opportunities** in growing the fusion workforce.

We undertake a **wide-ranging outreach programme to schools and universities** TO ENHANCE AWARENESS AND ENTHUSE the next generation of the fusion workforce.

We are an **active contributor** to the NUCLEAR SECTOR SKILLS PLAN, providing both financial and organisational support to **pursue skills growth** across the adjacent nuclear sector.

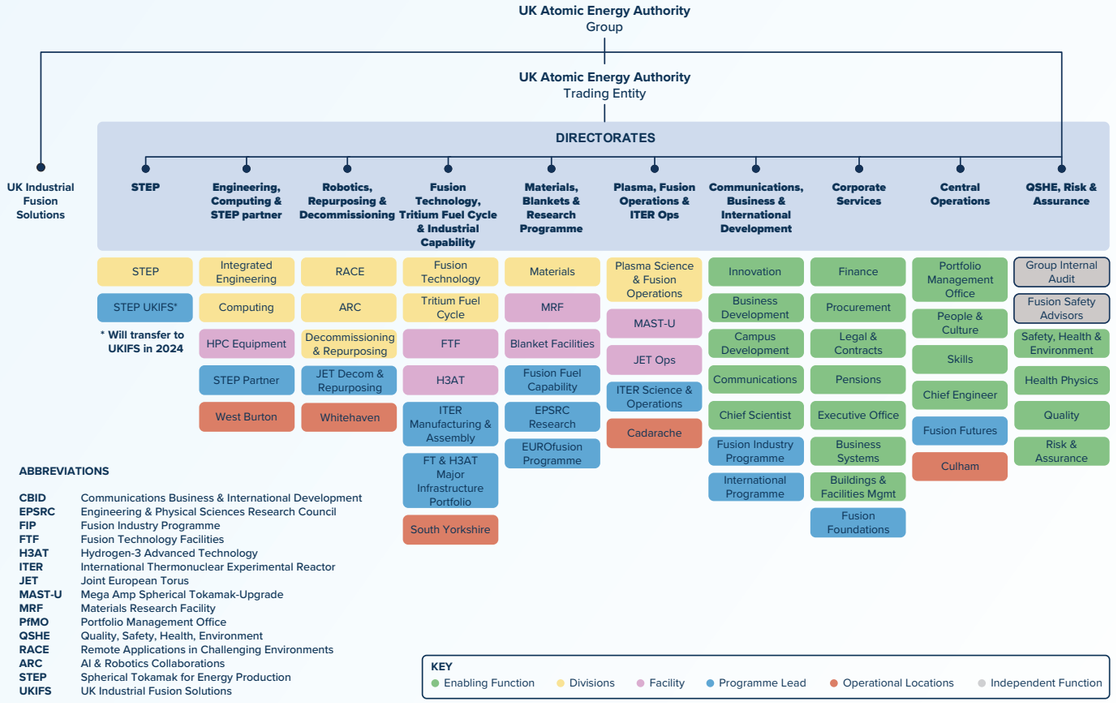
ORGANISATIONAL DEVELOPMENT

At a time of significant change for UKAEA and the evolving fusion industry, UKAEA has rolled out a "Fit For The Future" plan focused on targeted organisational changes. The reorganisation was targeted to ensure that the Authority is in the best possible shape to deliver on its Mission and to seize the many exciting scientific, engineering and business opportunities that are becoming increasingly available.

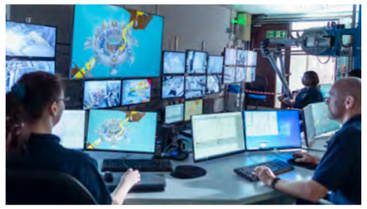
The forces of change that necessitate the need to reorganise are many and varied. Internally they included the closure of JET operations at the end of December 2023, the creation of UKIFS to lead the STEP programme and the £650 million Fusion Futures investment initiative. UKAEA has tripled in size in recent years in terms of both revenues and staff numbers. This period of rapid organic growth has resulted in duplication of resources in some areas, and a structure that is sub-optimal for current and future requirements.

UKAEA is uniquely and strongly positioned because of the breadth of the offering that it has built which includes a full fusion lifecycle programme capability (research to powerplant design to operations to decommissioning) combined with a broad spectrum of technical fusion strengths in areas such as Plasmas, Integrated Engineering, Robotics, Technology, Fuel Cycle, Materials and Computing. This is supplemented by the need to work with other domestic and international entities (both public and private sectors) and build strong customer relationships. The new organisational structure reflects this, with 10 technical divisions, focused on these fusion strengths and supported by enabling functions.

As part of this reorganisation and the growth of the STEP programme, we have widened our cohort of senior leaders from 17 to 29 in this financial year, now at 1.5% of total headcount (within the cap of 2% of total headcount set by our Sponsoring Department) and we expect this to grow slightly further in 2024/25. The new structure and increase in senior headcount have been designed to be flatter and leaner than the previous organisational set-up, with enhanced flexibility to respond to changing conditions and increasing opportunities in the fusion sector.



The UKAEA people strategy can be found here: **UKAEA People Strategy 2022-2027**.
It is structured around 3 pillars:



VALUING OUR PEOPLE...

...to attract, develop and retain talented, innovative and motivated individuals who are deeply invested in our mission and goals.

DEVELOPING OUR CULTURE...

...to nurture a high-performing, diverse, engaged and agile workforce with the skills to exploit opportunities and embrace change.

BUILDING OUR ORGANISATION...

...to provide the tools to build a future-focused organisation, with the design and planning to operate effectively and efficiently, with connectivity across locations.

2023 STAFF SURVEY

The survey received over 1000 responses (43% of staff) and was generally positive about our culture. Highlights include:

87% of staff understand how their work fits into overall aim of UKAEA.

83% of staff feel their working time can be flexible.

84% of staff have some say in the way they do their work.

Key actions from the survey:

· **Stress and workload**
Around 30% of the responders highlighted negative experiences with stress management under the wellbeing theme. Between 1 November and 30 November, **a stress survey was undertaken**. This had a completion rate was 43% which was benchmarked against the HSE Stress Indicator Tool. As a result, **workshops on stress management have been made available** for all employees and the health and wellbeing programme was boosted with the arrival of the **Head of Equality, Diversity and Inclusion and a Wellbeing Lead**.

· **Leading and Managing change**
UKAEA is undergoing a significant period of change, and the survey highlighted a split on how UKAEA changes were viewed by staff and how staff can contribute to decisions. As a result of this feedback a **framework for managing the Human Elements of Change** has been put in place for leaders of change. In addition, **workshops on leading change and working with change** are available for all employees and **training to generate change champions** is underway to increase lines of communication on changes that will impact staff.

· **Managing performance**
In the management section of the survey, management of poor performance was highlighted as a concern. As a result, we have **increased workshops focussing on managing performance** for existing line managers, with a plan to make an essential pre-requisite for those about to undertake management responsibilities.

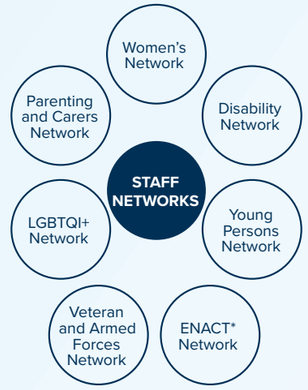
GENDER PAY GAP

In 2023, the uneven gender distribution across all UKAEA grades, continues to impact UKAEA's gender pay gap. This continues to be caused by the proportion of women employed in the scientific and engineering STEM roles compared to men (which tend to attract higher pay). UKAEA Gender Pay Gap Report 2023 - GOV.UK (***www.gov.uk***)

At all levels of management, we have a collective responsibility to narrow our gender pay gap. Our commitment to do this in the coming years is reflected in our latest published action plan and guidance for leadership across each division to help us to continuously improve, despite the challenges.

STAFF NETWORKS

We have several established networks, and all with dedicated executive sponsor support.



* ethnicity, nationality and culture

WELLBEING AND MENTAL HEALTH

We have an established group of mental health first aiders who can support staff and help signpost to wellbeing resources. We hold regular events on a wide range of wellbeing topics and provide an individual health assessment option to all employees. To enable everyone to thrive we are establishing new processes to assist with workplace adjustments for staff with long-term conditions, and we have access to a neurodiversity specialist team to assist this process.

FLEXIBLE WORKING

Following feedback from those taking family and care related leave last year, this year we are investing in membership of the UK's longest-established Family Friendly support organisation, Working Families to support flexible working. We will be working to improve our support and guidance for leave options, and enhancing communications about the range of options available, including job sharing and of on-site and remote working, where the role allows. We are supportive of those who need compassionate leave or flexible hours for any reason.

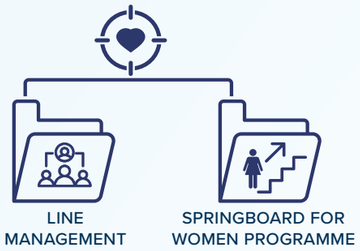
PROFESSIONAL DEVELOPMENT SCHEME IS ACCREDITED BY:

Institution of MECHANICAL ENGINEERS
IOP Institute of Physics
IET

LEARNING & CAREER DEVELOPMENT

There has been significant investment in ensuring that all UKAEA employees can work safely through attendance on a broad range of health, security and safety courses and an agreed suite of mandatory training courses. In 2023/2024 two additional programmes were introduced:

NEW PROGRAMMES TO THE CORE DEVELOPMENT CURRICULUM



The learning & development and early careers teams also work to continuously support wider learning, growth, and career development initiatives. As well as an increasing number of specialist, e-learning and blended programmes, we value informal and formal mentoring and have invested in technology in 2023 to support managers and leaders to easily sign up and become mentors. Our professional development scheme is accredited by the Institutes of Mechanical Engineers, Engineering and Technology, and Physics with opportunities for individuals to develop their technical skills and knowledge and have this recognised through chartership.

PARTNERSHIPS

Last year we worked in partnership with STEM Returners, Vercida, Returning Works, Advance HE (Athena SWAN), and Equal Engineers. These charters, specialist agencies, and industry standard bodies help us to achieve progress towards a more representative, fair, and inclusive workplace. We also joined the Business Disability Forum and are aligning with the Government Disability Confident scheme. This year we will also be working with the Employers Network for Equality and Inclusion, and Working Families, to seek to align ourselves to their respective benchmarks.

INFLUENCE

We are proud and committed to support the transformation of the culture of the wider UK nuclear industry. We champion the Women in Nuclear network (to include the secondment of a UKAEA employee into their team) and are keen to engage with the Race Equality in Nuclear network. In March 2023, in partnership with Jacobs, we pioneered the Nuclear Rainbow Forum towards making the nuclear industry more inclusive and welcoming to the LGBTQI+ community. Generous and enthusiastic staff also support plenty of internal and external initiatives. In 2024 this will include the highly respected Amos Bursary scheme empowering British, young people of African and Caribbean heritage.

Outreach

"The staff and people at the centre were a real inspiration for me. They were real examples for me to tell my students about."

OGDEN TRUST CPD DAY

"It was fantastic seeing the facilities, speaking to the engineers and learning more about all the great things UKAEA is doing."

LORD RAVENSDALE

Once per month during the academic year, for up to 80 students, **25 schools** expected in 24/25.

Hosted approximately 15 teachers for a continuing professional development session with the Ogden Trust.

3 live streams to a total of 5 schools for British Science Week this year.

School visits for GCSE and A-Level groups

60 visits for universities, early career scientists and engineers and other interested groups this year, providing tours of our facilities for over 550 people.

Science Festivals: Goodwood Festival of Speed; IF Oxford Ideas Festival; ATOM Science Festival; Festival of Science and Curiosity, Nottinghamshire; New Scientist Live; Oxford Brookes Science Bazaar; Get Up To Speed, Sheffield; Daresbury Open Event 23; Science In Your Future.

"Excellent, was able to have 1:1 discussion with the facilitators which was invaluable"

FOSAC FAMILY MAGNETS WORKSHOP


Goodwood Festival of Speed

IF Oxford Ideas Festival


New Scientist Live

"The true value of science and engineering and for this to be delivered by the experts themselves it was very inspiring."

FOSAC STAR MAKERS SCREENING

Public Open Evenings occurs once a month between March – October, with up to 80 tickets available for each event. These regularly sell out in a matter of hours!

We have developed and facilitated school workshops for both **primary** and **secondary** schools, as well workshops specially developed for pupils with special educational needs. We have also developed a **family stage show**, run public family workshops, screened documentaries, given talks, taken part in panels, attended science fairs and raced SPOT on the Iffley Road race track!

We also manage visits from ministers, MPs, peers and overseas dignitaries such as science minsters and Rafael Grossi (IAEA Director General).

"The trip was great...it's made me reconsider my career pathway, maybe at the UK Atomic Energy Authority?"

FROM A SCHOOL VISIT


Oxford Brookes Science Bazaar


SPOT on the Iffley Road race track

Family stage show


Science In Your Future

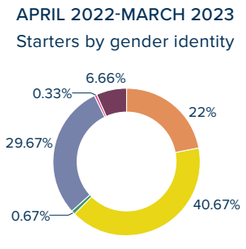
Performance Against Targets:

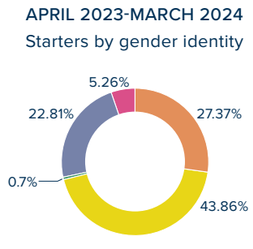
People

Contributes to UN sustainability goals:

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
EQUALITY DIVERSITY AND INCLUSION: Introduce and embed an approach of personal responsibility for developing an equitable, diverse, and inclusive culture.	Training was provided on personal responsibility for EDI, such as active bystander, and bullying and harassment awareness, with 69% of staff having undertaken at least one EDI module. Three inclusion council meetings were held in 2023 and three will be held in 2024 to review the Public Sector Equality Duty (PSED) framework.
EQUALITY DIVERSITY AND INCLUSION: Increase the number of women externally recruited by 10%.	The number of female hires increased from 69 in 22/23 to 110 in 23/24, from 22% to 27% of all new recruitment. To achieve this, we have established a training programme for all interview panel members to include training on unconscious bias, and developed and run a proof of concept returnship pilot focused on women in STEM.
PAY: Seek pay flexibility case to improve recruitment and retention of talent.	Pay flexibility case was requested this year, however the business case was submitted a few months later than planned causing the milestone to be missed.
MANAGEMENT: Complete the senior management team to be effective and deliver on all aspects of UKAEA's strategy.	The senior leadership team for UKAEA has strengthened in 23/24, including a new CFO; a new COO; and the Head of Executive Office.





Female Male Non-binary Not disclosed Prefer not to say Other

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
ORGANISATIONAL CHANGE: Deliver organisational development programme to suit the internal changes (see page 21).	Structure of all divisions agreed and implemented in all relevant systems. Staff feedback demonstrates clarity on how new structure aligns with strategy, process and rewards / recognition. (See further detail on organisation development on page 61)
SKILLS: Develop a skills strategy for the fusion sector and obtain approval to proceed with suggested interventions.	The business case was submitted and approved and resulted in £50m in the Fusion Futures programme as announced on 7th September 2023.

Enabling Goal: Corporate Performance

SAFETY AND HEALTH

The UKAEA Mission and Goals are underpinned by our focus on safety and health. The UKAEA aims to protect and maintain the safety, health, and welfare of all who carry out work on our behalf and anyone who can be affected by our operations.

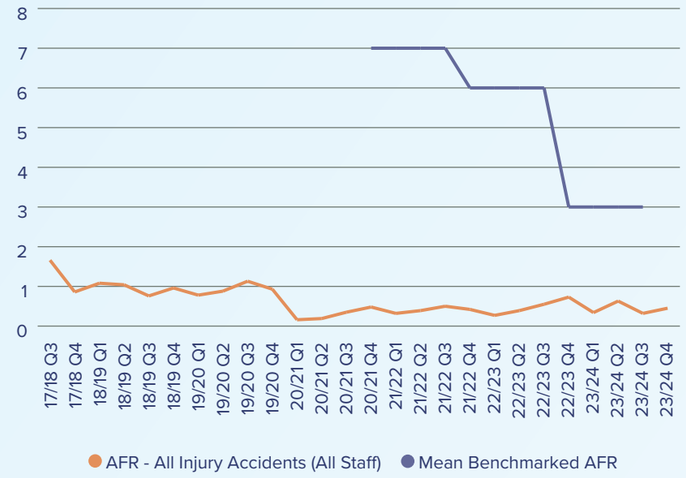
SAFETY & HEALTH PERFORMANCE

At the end of quarter four, we achieved a zero Accident Frequency Rate (No. of accidents > one day lost time per 100,000 hours) and an all-injury rate Accident Frequency Rate of 0.45, significantly lower than benchmarked research and technology organisations.

We understand that these low rates are not an assurance of good safety performance, and more importantly the need to drive a proactive safety and health culture, continually improving how our people, processes, systems, and equipment all interact. Attendance at mandatory training is also a focus area to achieve a higher attendance rate than achieved this year and processes have been embedded to drive continual improvement in this area.

We recognise that there can be gaps between the planning of work and how it is actually carried out. The enthusiasm of our people to complete work has at times resulted in minor or near-miss incidents that could have been more serious. In each case, we have looked at the cause in detail and shared the lessons learnt, including holding whole organisation stand downs.

ACCIDENT FREQUENCY RATE



KEY ACTIVITIES THIS YEAR

Completed 96 Director-led Observe, Engage, Improve walkabouts.

Following the confirmation that the Health and Safety Executive (HSE) and Environment Agency (EA) are the regulators for fusion, we held several site visits, building our relationship positively and openly.

A program of change was implemented to our Culham site, reducing the site speed limit, implementing calming measures, and undertaking a wide program of communications. This resulted in a significant drop in near-misses and no injury accidents in the last two quarters.

We grew our behavioural safety program, completing a record number of peer-led training sessions, keeping up with the organisation growth.

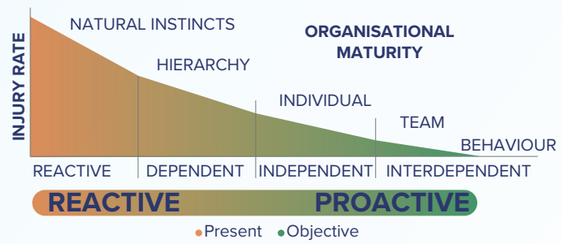
We fully implemented our 5 Golden Rules.

UKAEA SITE 5 GOLDEN RULES

UKAEA launched the 5 Golden Rules for Culham and South Yorkshire sites as part of its commitment to a Zero Harm culture with a focus on collective responsibility in the areas of Safety, Health, Environment and Wellbeing. The Golden Rules have been selected as essential behaviours to keep people safe whilst on site and protect the Authority's assets and reputation for quality and scientific good practice.The rules emphasise our individual responsibility while encouraging us to help our colleagues, support and respect our neighbours and to look after our visitors.

Looking forward our focus will be on improving our safety and health culture using established tools and models to help direct and measure our progress. The Bradley curve represents the proactive safety culture we are aiming for, where everyone takes collective responsibility to reduce workplace incidents.

BRADLEY CURVE - THE CONNECTION BETWEEN INCIDENTS AND ATTITUDES OF WORKERS



2024/25

To develop this proactive safety culture, we will:

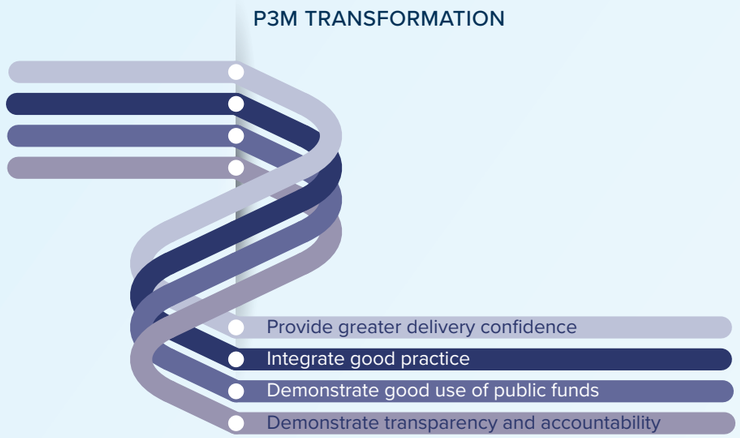
- Establish a new baseline through completion of a safety climate survey.
- Build on our monitoring programme, using more leading metrics to help our managers understand where to focus.
- Understand gaps in understanding between people and process so we can simplify and improve.
- Grow our behavioural safety programme.
- Continue to strengthen the leadership element of health and safety.

PROGRAMME & PROJECT MANAGEMENT

The Portfolio Management Office (PfMO) is an enabling function at UKAEA that provides Portfolio, Programme and Project Management (P3M) services across UKAEA to help achieve UKAEA's strategic goals. The PfMO operates a hub and spoke model and has 150+ P3M professionals matrixed out across the business.

We are delivering against a diverse portfolio at UKAEA, both in terms of the types of projects and programmes we deliver (e.g. engineering, science, computing, R&D, construction, investment, skills), to the range in the size/scale/complexity of what we are delivering (major programmes like STEP and Fusion Futures to smaller projects focusing on business improvement, IT transformation, safety, etc).

To help better position UKAEA as a delivery focused organisation, a five-year Project, Programme and Portfolio Management (P3M) transformation journey is underway (currently in year two). The key to this transformation has been weaving in approaches that enables UKAEA to champion good practice in the P3M profession, without stifling innovation and R&D.



Activities over the last year, integrating the P3M transformation:

- Creating a golden thread between the executive and project teams through a new P3M project register and reporting tool.
- Establishing the corporate portfolio board providing leadership and direction for the organisation and relation to P3M.
- Conducting a maturity assessment to baseline P3M at UKAEA using the Government Functional Standard.
- Developing in launching the Delivery Life Cycle (DLC) Framework to help make UKAEA's P3M profession more consistent.
- Setting up a hub and spoke model to treacle the P3M transformation down into the organisation.
- Establishing the portfolio management community of practice to help break down silent working and to provide a song breaking board for the P3M transformation.

Golden thread – UKAEA mission and strategic goals cascade to a purpose for the PfMO

- Mission
- 5 strategic goals
- Organisational strategy
- Executive Office
- Executive Committee **& Corporate Portfolio Board (CPB)**

- **Governance, controls and assurance**
- Enabling delivery and effectiveness on projects, including **capabilities** and tools
- **Centre of Excellence** – Driving P3M good practice
- Providing trusted, accurate, timely **data** to inform decision-making
- Providing a **service** to CPB, Divisions, programs and projects

- **Hub and spoke model**
- PfMO **Business Partners** (Portfolio Managers, Program Managers, Group Leaders)
- Delivery of programs and projects across UKAEA to drive change **(outputs, outcomes and benefits)**

Other activities over the last year:

- Establishing the Project Academy to attract and retain good talent.
- Kicking off a maturity journey and around benefits, impact and evaluation for UKAEA.
- Development of a Corporate Change Board, and escalation threshold limits to ensure a clear remit of Change Authorities.
- Introducing a PfMO advisory service to Tier 1 programmes.
- Coordination of quarterly reporting to DESNZ from Tier 1 programmes.
- Introduction of monthly assurance step with programme manager and Head of PfMO.

2024/25

Plans for the coming year (2024/25) will focus on: the P3M Culture (promoting and building a stronger P3M culture at UKAEA), planning, cost estimation and roll-wave planning, improving decision gateways, maturing portfolio management within the organisation, launching a P3M Community Hub and Knowledge Centre to help create a sense of one project community at UKAEA, and training up a cohort of change management champions across the organisation.

Continued focuses from this year will include Benefits maturity, the Project Academy, a Lessons Learnt platform, Change Control and Governance.

TECHNICAL GOVERNANCE

The realisation of fusion power can only be achieved via systematic progress of technical issues to realise complex technologies and devices. This progress is underpinned by prioritising safety, which is enabled by a demand for quality, the application of technical rigour, and a culture of continuous learning. As the engineering and fusion safety conscience of the organisation, the Office of the Chief Engineer(OCE) is a key facet in achieving UKAEA's mission.

The OCE remit covers projects from early concept (such as LIBRTI), through design approvals (for projects like H3AT), and continues to decommissioning and repurposing (such as JET). The extensive range of activities and varying complexity of hazards at UKAEA means OCE have to be agile, proportionate, and pragmatic in their response to the changing needs of the business.

The OCE empowers the 'Engineering Authority' with delegated authority directly from the CEO, and serves as principal advisor to the CEO on the technical readiness and execution of our programmes and projects. As an enabling function, OCE provides technical and safety assurance, modelling and assessment services, asset management leadership, technical improvements to programmes, projects and facilities, and a technical writing function.

The bulk of this work contributes significantly to second of the three-line assurance model helping to support the right level of demonstration of technical and safety in the delivery of fusion science and engineering.

Key activities this year:

- Publication of a Technical Governance providing a 'one-stop shop' for technical product delivery processes, responsibilities, and expectations.
- Central visibility of maintenance and the state of equipment is now available for many of the facilities through the work on Asset Management.
- Formal framework established for senior technical authorities aligning with a growing and maturing engineering delivery capability.

2024/25 In the future, developing areas such as codes and standards and continuing to improve the processes and tools around product delivery assurance, further roll out of asset management, and technical writing service will continue. Through working with users, OCE will continue to help assure the technical solutions that fusion needs.

OCE team

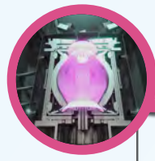
ANALYSIS AND EVALUATION

UKAEA undertakes qualitative and quantitative analysis to assess the economic, scientific, social, and environmental short and long-term impacts across UKAEA's activities and programmes. This is to support the monitoring and evaluation of its activities, and identify the benefits to the UK. To date, the Department for Energy Security and Net Zero and UKAEA's programmes have commissioned external specialists to undertake independent impact evaluation of fusion research at UKAEA. A report by London Economics published in 2020 on the impact of UK investment in fusion identified a total economic impact to the UK economy of around £1.4bn in relation to £350 million of public investment in UKAEA's fusion research over 10 years, and that this had supported around 36,000 job years over the same period.

[1]UK government (2020). Impact of the UK's public investments in UKAEA fusion research. Available at: **https://www.gov.uk/government/publications/impact-of-the-uks-public-investments-in-ukaea-fusion-research**

A LOOKAHEAD

There are several key milestones to look out for over the coming years across the UKAEA Group:

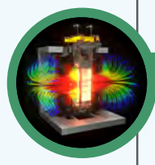


2024

Establishment of UKIFS as a trading subsidiary.

2025

STEP's industry partners announced (to form integrated delivery team).



2026

CHIMERA ready for operations.

Five Spin out companies established.

2027

LIBRTI facility complete.

2028

A new fusion skills centre opens.

H3AT tritium loop project complete.

MAST-U reaches full design capability.

2030

2000 people trained in fusion skills and adjacent sectors.

2032

JET machine disassembly complete.

2030s

STEP construction begins.

Performance Against Targets:
Corporate Performance

The delivery of our mission and goals is only possible because of our people working within a culture of safety, security, and commitment to quality, under robust governance and with a focus on the wider enabling environment for fusion in the UK.

Contributes to UN sustainability goals:

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
SECURITY: **Continued development work on compliance to our legislative and mandatory security standards is maintained, and improve our compliance scoring for government standards for cyber security, physical security, and personnel security**	We have maintained our momentum in driving compliance with our legislative and mandatory security standards and have shown several improvements in cyber security, physical security, and personnel security functions in line with departmental security health check reporting.
SAFETY: **Maintain the health, safety, and environmental performance of the organisation**	In addition to the health and safety figures on accident frequency rate (see page 68), the following figures were achieved this year. **Non-Conformance Report** (documents the details of a Non-Conformance identified in a structured way) **closures on time** - Target 85%, Achieved = 95% **Deviations** (documents a temporary departure from approved processes, procedures, instructions, specifications, or established standards) **closure on time** - Target 85%, Achieved 99% **Mandatory training** - Target 90%, Achieved 74% The mandatory training attendance was lower than our target, this led to partial achievement of this milestone. The main cause of this was an update in one of our courses in the latter half of the year, leading to a lower-than-expected completion percentage.
ENGINEERING QUALITY: **Complete appointment of key roles and registration of assets for UKAEA facilities and ensure maintenance of all assets is being undertaken.**	This year UKAEA moved asset management processes into business as usual for four strategically important facilities within UKAEA's portfolio. The engagement in these areas is positive. The data created can be viewed centrally, and is being used to reduce recurrent failures of assets and make data-based decisions on improvements.
GOVERNANCE: **Complete successful response to a tailored public body review by HMG of UKAEA.**	All assessment materials and evidence was submitted on time, with feedback from the Review Team being very positive. The outcome of the review was published in October 2023, and we are working with DESNZ to complete the recommendations. An independent deep dive was not required.

KEY Achieved Partially achieved Missed

MILESTONE SUMMARY	OUTCOME
ASSURANCE: **Audit actions are completed on time.**	<table><tr><th></th><th>ACHIEVED</th><th>TARGET</th></tr><tr><td>RED/MAJOR</td><td>83%</td><td>100%</td></tr><tr><td>AMBER/MINOR</td><td>84%</td><td>84%</td></tr><tr><td>GREEN/OFI/AOC</td><td>83%</td><td>60%</td></tr></table> The Red/Major was missed so this milestone was only partially completed.
CORPORATE EFFICIENCY: **Demonstrate improvement in corporate efficiency by ensuring that overall corporate overheads remain at below 5% of revenue.**	Corporate overheads were higher than the target by 0.3%. This was driven by cost increases ahead of revenue growth, in areas including: office computing; licences; and capability development in risk and assurance, and people teams to support organisational change.
PORTFOLIO PERFORMANCE: **Put in place culture, governance, and infrastructure to ensure regular reporting of UKAEA portfolio of programmes and projects.**	Standardised data reporting has been rolled out across all major programmes. The P3M reporting tool and associated dashboards allow an effective overview of the UKAEA portfolio of programmes and projects which has been integrated with the Corporate Portfolio Board (subcommittee of the executive committee), allowing escalation of items by exception where suitable.

PERFORMANCE OVERVIEWS

Managing our risks

Risk landscape

The external risk landscape has continued to evolve over the last year, bringing with it challenges with increasing geopolitical tensions requiring increasing resilience and effective mitigations. Safety continues to be our top priority and we have no tolerance towards any risk of harm to our people, our workers, and our environment. We continue to have robust controls in place to minimise the risk, a continual safety improvement programme is in place to drive effective mitigation, and a mature safety culture ensuring compliance with health and safety regulations.

UKAEA's risk landscape has shifted during the 2023/24 financial year due to the decision to not to associate to Euratom, with this decision came the announcement that £650 million would be invested into fusion energy research and development, to grow and strengthen industry and the available supply chain. In response to this we have initiated a portfolio of major programmes (known as "Fusion Futures") targeting each of these areas of stimulus to be delivered over a four-year period. The upside of this significant investment brings with it huge potential to grow the fusion industry, however it also brings with it increased risk to UKAEA from a capacity and capability perspective, as well as the risks associated with delivering multiple major concurrent programmes. It will be challenging to resource the Fusion Futures programmes as well as maintaining other programmes of work, delivering, and spending within the schedule. As the Fusion Futures programme matures, there is confidence that the portfolio can be effectively resourced without adversely impacting delivery of other priorities, however it is considered to be one of our top risks.

Geopolitical tension has continued to increase, with the ongoing Russian/Ukraine conflict, attacks by Houthi rebels on shipping lanes, and the current conflict in the Middle East all contributing to a risk of both shortages and of high global price increases to key materials. We continue to monitor the impact on our supply chain, and the current procurement pipeline is undergoing improvements in order to create a greater forward look and anticipate needs well in advance. We continue to strategically invest in capabilities, people, processes, structures, and technology to navigate the risks arising from an evolving and fraught geopolitical landscape. Despite robust mitigations in place, the external environment, macroeconomic climate, and geopolitical unrest will continue to impact as we strengthen our resilience.

The ongoing evolution of the sophistication of cyber-attacks remains a high risk to UKAEA, legacy technology and software, and the current capability of global actors also has an impact on the continually shifting threat towards UKAEA. Participation in the new GovAssure process as well as an updated cyber security strategy bring together our cyber security and defence activities to promote as secure an environment as possible.

The STEP programme continues to drive forward, with the creation of UKIFS as a subsidiary within the UKAEA group structure, the STEP programme transition to the new Operating Model and key governance arrangements are being finalised. The previous design iteration has undergone a pivot to adjust design choices to make the programme delivery more achievable and within tolerances.

Following the final JET pulse in December 2023 the process has begun to transition from operations, to the Jet Decommissioning and Repurposing (JDR) programme, which is expected to conclude in Q2 2024. As a result, there is ongoing budget and work programme definition, and the formation of multi-directorate and multi-disciplinary teams which can then deliver the key milestones set out in the programme for the 24/25 financial year.

Our Risk Appetite

INCREASING APPETITE FOR RISK

APPETITE TOLERANCE RATING	**Very low** (Averse)	**Low** (Minimalist)	**Moderate** (Cautious)	**High** (open)	**Very high** (Bold)
	Avoidance of risk is a priority	Preference for very safe options with minimal risk where potential benefit/ reward is not a key driver.	Preference for safe options with some risk tolerated where justified by rewards.	Willing to consider all potential options and choose the one most likely to result in successful delivery even when risks are high.	Eager to be innovative and choose activities offering potentially very high rewards even if these activities carry very high risk.

STRATEGIC

BUSINESS DEVELOPMENT ACTIVITIES

OPEN

Whilst growing business development opportunities for the UKAEA and UK industry is important, we also recognise that resources – may be constrained to pursue these opportunities which may detract us from our core mission. In pursuing our prospects, we would expect to see a return on investment commensurate with the increased risk. We need to have robust management arrangements in place to monitor when prospects are not developing as intended and be prepared to realign activities in a timely fashion to limit the downside of opportunities that are not delivering.

SCIENTIFIC RISK

OPEN BOLD

To maintain the UK's position as a world leader in fusion, we are prepared to push the boundaries of known science and, on occasions, step into the unknown to achieve delivery of our strategic objectives. This we are prepared to do and indeed these scientific behaviours are ones we expect of our people. However, in taking these scientific risks, we need to recognise that there may be other associated risks where we have a much lower appetite for risk e.g. risks to the safety and health of our people and quality.

FINANCIAL

FRAUD AND FINANCIAL COMPLIANCE

AVERSE

We have a zero tolerance to fraud and operate robust financial control systems to protect against fraud, and will take action wherever fraud is identified. Our operating processes will take a low tolerance as we endeavour to minimise risks of fraud associated with financial transactions, whilst balancing operating and financial controls. We will not engage in any speculative foreign exchange or other similar contracts, but may consider the use of Foreign Exchange hedging instruments for the purpose of mitigating exposure to foreign exchange fluctuations.

BUDGET

CAUTIOUS

As a Non Departmental Public Body we are committed to ensuring public money is spent effectively and efficiently. However, highly risk averse behaviour could lead to worse overall outcomes and failure to secure a return on investment. For example, reduced and delayed funding or underspend would constrain our ability to deliver our objectives. We therefore have a limited and balanced appetite for activities that fail to deliver value-for-money for the taxpayer.

POLICY

POLICY

OPEN

We aim to make a significant, sustainable, and socially responsible contribution to the UK by cultivating world leading science and innovation by delivering on our mission and goals. We recognise that this will involve an increased degree of risk and are comfortable with this, providing the potential benefits and risks are fully understood, authorised, and include appropriate mitigations. There is an ever-present risk that political or external parameters could change, legislation required to enact policy is delayed, or funding is constrained. Therefore, our appetite in this area will be High to capitalise on potential policy opportunities. Whilst recognising that to mitigate the impact of rapid and profound change, we will need to broadly scan future strategic challenges and choices, so we remain agile to potential threats and opportunities.

OPERATIONS

OPERATIONS

CAUTIOUS

We have robust operational and engineering processes and systems. These include effective project management and design, machine protection procedures, technical design standards, and rigorous safety cases. Staff are provided with operational training, mentoring, and ongoing education to include hazard awareness and control. We expect technical staff to exercise good technical judgement in operations and comply with internal processes (See also Safety and health of people).

PROPERTY

PROPERTY

CAUTIOUS

Our goal is to create clusters that accelerate innovation in fusion and related technologies, which includes developing Harwell and Culham sites as Science and Innovation Centres, and effectively manage the lease in place in respect of our recently acquired site in Rotherham. This includes maintaining UKAEA property assets and maximising commercial potential, balancing cost against benefits and returns. Moderate property risks may be tolerated where justified by the lifecycle of a property asset. However, as a minimum, safety, environmental, or other legal requirements will be met.

PROJECT & PROGRAMME

PROGRAMME MANAGEMENT

CAUTIOUS

We aim to balance resources, capabilities, and progress to comply with declared programmes and meet scheduled delivery. We are prepared to consider re-prioritisation of lower priority programme elements to deliver high priority programme goals, provided the risk to budget compliance is moderate.

COMMERCIAL

COMMERCIAL

CAUTIOUS

In commercial undertakings, we will exercise good business practice to protect the business and its ongoing growth and development, we also have a high appetite for novel and cutting-edge undertakings balanced against a low appetite in propriety of such arrangements. We will be prepared to take some risk where the financial or strategic return merits it. See above for the special case of business development activities.

PEOPLE & CULTURE

ETHICAL

MINIMALIST

Responsible business conduct is fundamental to the success of our organisation. We expect our staff to always work to high ethical standards and therefore have low tolerance of risk in this area.

CULTURE

OPEN

To enable successful and effective delivery of UKAEA objectives and outcomes, we must embrace a culture of appropriate transparency and collaboration with our stakeholders, taking calculated risks in order to maximise our success.

SAFETY & ENVIRONMENT

SAFETY AND HEALTH OF PEOPLE

AVERSE

The health and safety of personnel be they employees, contractors, visitors or members of the public is paramount to us. We take our obligations in this area extremely seriously and expect all safety risks to be fully mitigated not only in line with all applicable legislation but also considering shared best practice with similar research organisations.

PROTECTION OF THE ENVIRONMENT

MINIMALIST

We do not wish to take risks with regard to damage to the environment. Any significant damage could be detrimental to the good name of fusion in addition to enforcement or prosecution by the regulator.

SECURITY

SECURITY

MINIMALIST

UKAEA is an open, outward-facing public sector research organisation that works in an international arena. That openness brings great opportunities, but also vulnerabilities, so we aim to protect our assets, namely our people, property, and information. This includes risk from cyber-attacks, and loss of sensitive business or personnel information. As such we have a low tolerance of risk in this area.

INTELLECTUAL PROPERTY

CAUTIOUS

UKAEA's focus on progressing fusion means we need to strike a balance between protecting Intellectual Property and taking a collaborative approach with our partners to advance the field of fusion, and/or grow a fusion industrial base. UKAEA's risk appetite will vary depending on programme and area of technology. It may be 'low' for strategic technologies in key areas of technology particular to UKAEA's design approach, but 'high' in areas that are highly collaborative and may be exploited widely within the industry and supply chain.

REPUTATION

INFORMATION MANAGEMENT AND SCIENTIFIC INTEGRITY

MINIMALIST

Since the quality of our scientific output is critical to our mission, we do not plan to take risks with the integrity of our scientific output, and the scientific data that supports it. We expect these risks to be as low as reasonably practicable through robust resilience plans which include peer review and problem tracking systems. In addition, we need to ensure that integrity of our science is good, and we can back up any contentious scientific claims with robust evidence to maintain our reputation.

REPUTATION AND PUBLIC RELATIONS

CAUTIOUS

We regard our continuing good name reputation as essential to our success. Additionally, and we recognise that funding of our activities relies on it to a significant extent, and are confident in that it supports us in promoting fusion. Accordingly, we are prepared to take a balanced and moderate risk in this area.

COMPLIANCE

COMPLIANCE WITH LEGISLATION

AVERSE

We will operate strictly in accordance with all laws at all times. Any non-compliances identified will be addressed as soon as is reasonably practicable.

COMPLIANCE WITH NON-LEGISLATIVE REQUIREMENTS AND GOOD PRACTICE

CAUTIOUS

We will create a robust basis for compliance and compliance against non-legislative requirements, and good practice. We will strive to comply with standards we choose to adopt e.g. ISO 9001.

Our Principal Risks

SOLVING PROBLEMS
Solve challenges of sustainable fusion energy - from design through to decommissioning with world-leading science and engineering.

PRODUCT
Enable partners to design, deliver, and operate commercial fusion power plants.

PROSPERITY
Drive UK economic growth and a thriving industry that exports fusion technology around the world.

PLACE
Create clusters that accelerate innovation in fusion and related technologies.

PEOPLE
Develop the talented, diverse people needed to deliver fusion energy.

RISK DESCRIPTION	STRATEGIC PRIORITY	RISK APPETITE	MITIGATIONS	ANNUAL RISK TREND
THE FOLLOWING STRATEGIC RISKS PRESENTED IN 2022/23 HAVE BEEN RETIRED OR MODIFIED IN 2023/24				
Failure to associate to Euratom		Cautious	The decision not to associate to Euratom was followed by the announcement of a large investment to further R&D and industry stimulus.	↓
Failure to deliver STEP Programme Objectives (Modified to become a whole programme risk)		Bold	Establishment of UKIFS as an effective client organisation; procurement of whole plant industry partners and development of an effective integrated delivery team across UKIFS, UKAEA and industry; securing next stage funding through the business case process; driving definition of the design to the target level; demonstrating key technologies on which the design depends; and, driving delivery of near-term benefits, especially in the region around West Burton.	↔
THE FOLLOWING STRATEGIC RISKS HAVE BEEN INTRODUCED IN 2023/24				
Failure of UKAEA to deliver the Fusion Futures portfolio alongside existing commitments, supply chain capacity, and the global fusion landscape.		Bold	Fusion Futures portfolio management and governance structures in place. Programme plans being developed and scheduled for initial work planning in 2024.	↔
Failure to secure a spending review settlement sufficient to deliver on UKAEA strategic goals.		Cautious	UKAEA are reviewing all programme and operational spend to determine what is essential for strategic delivery ahead of developing a bid for funding in the next Spending Review, as part of its business planning process. UKAEA continues to engage with the Government closely to reinforce the rationale and evidence for investing in fusion R&D.	↔
Failure to effectively manage people (internal and external), processes, and related budgets during transition from JET science operations to decommissioning		Cautious	Definition of the 2024 budget and work programme including the sample retrieval campaign has improved. The development and recruitment for cohesive, multi-disciplinary teams to deliver work packages is underway.	↓
There is a risk of over balance in the JET Lifetime Plan (which underpins the Site Restoration provision) due to uncertainty in the estimates and assumptions and risk of errors in the methodologies used in preparation of the estimate.		Cautious	The JDR Programme is undertaking a regular review of assumptions and as part of the Cost Assurance Plan sets out the ongoing approach including the use of Reference Class Forecasting to benchmark contingency.	↔
STRATEGIC RISKS CARRID FORWARD IN 2024/25				
Failure to deliver H3AT, and CHIMERA facilities are delayed or without the required capability		Bold	Recruitment for programme resources is ongoing, with additional resource options being explored. Change in Glove Box and Isotope Separation System procurement package has been changed to an Innovation partnership.	↔
MAST-U enhancements budget is insufficient to deliver the capabilities promised within the agreed timescales		Cautious	MAST-U enhancements programme has been scoped for re-structure to include potential additional funding for installation of components. Risk part materialised in the 23/24 financial year.	↑

RISK DESCRIPTION	STRATEGIC PRIORITY	RISK APPETITE	MITIGATIONS	ANNUAL RISK TREND
OPERATIONAL RISKS CARRIED FORWARD IN 2024/25				
Staff capability and capacity is insufficient to meet objectives		Cautious	New pay and reward case submitted to HM Treasury for approval. Increased proactivity in recruitment campaign, and a strategic workforce planning framework to improve skills capture and professional development is being implemented.	↔
Inflation above assumed rate causes increased pricing and shortage of supplies, putting intolerable pressure on agreed budgets and deliverables		Cautious	Continued monitoring of inflationary pressures on budgets, building in agility to identify funding pots to cover potential shortfalls caused by the increase to prices/labour costs. Identification of packages of work originally to be completed by UKAEA, that could be shared with industry to reduce pressure.	↔
There is a risk of loss of critical information from, or significant disruption to the business of UKAEA from threat actors (internal or external) who take control of, disrupt, or damage digital and/or operational systems		Minimalist	Work is underway to align to the new GovAssure process, and to undertaking the Cyber Assessment Framework assessments on external firewalls. New strategy developed to bring all cyber and information security activities under a single area of governance.	↔
There is a threat the current heightened geopolitical risk from countries in conflict leads to increased cyber-attacks, further impacts to the global supply chain, and impacts to UKAEA programme with rising fuel, energy, and material costs.		Minimalist	UKAEA continues to operate in line with UK Government policy and guidance. There is increased due diligence being conducted on the use of international suppliers to reduce the risk of engaging those with links to Russia or Russian goods. UKAEA is confident that is has no contractual relationships with Russian entities at this time.	↑
Failure of UKAEA to adopt new asset management practices (operating model, tools, techniques) and embed the change required (new behaviours) results in serious health and safety events, and reputational damage.		Averse	UKAEA has an asset management framework in place, and resources dedicated to supporting all parts of UKAEA with the roll out of asset management in practice. There has been positive take up of this in the organisation, with another KPI developed to further drive adherence.	↓
Lack of adherence to compliance standards at UKAEA		Averse	Gap analysis is being conducted across site by the quality unit, to strengthen adherence to the management system which is undergoing rationalisation in order to streamline it, and make it clearer. There are a number of assurance activities underway to map out areas of compliance, and develop action plans to increase the levels of assurance that UKAEA can provide regarding its compliance to obligations and standards.	↔
Current provision of utilities prevents the successful delivery of property development plans		Cautious	UKAEA has a comprehensive action plan to reduce both impact and likelihood of the risk. At a local level, sourcing limited low voltage power supplies from existing nearby substations, and the procurement of a 'Battery Bank' energy storage solution will provide existing infrastructure and new buildings with interim power as wider network plans are enacted. These wider network plans rely on expediting the connection of SSE's new High Voltage ring, and the transferring of ownership of the SSE main substation to UKAEA to allow greater control over allocation of power.	↓

Sustainability and waste

Sustainability report

Overall operational performance

During 2023/24, UKAEA's overall greenhouse gas emissions increased slightly compared to the previous year due to higher energy usage. Although JET has stopped operating, the construction activity from new developments at the Culham site, as well as some of these buildings coming online, meant that energy levels increased overall. Similarly, water consumption levels remained higher than the levels seen during 2018-2021.

Overall waste levels reduced compared to 2021/22 and 2022/23 due to activities producing less tonnage of heavy recycled items like metal and skip wastes. However, they remain high compared to the levels seen during 2018-2021. This is due to several factors - extensive works on site that included clearances and removals, an increasing number of employees and the recovery of business growth following the Covid-19 pandemic. Recycling decreased from 80% last year due to heavier land fill waste, from construction, but remained high, with 72% of non-hazardous waste going for reuse or recycling.

Summary of financial and non-financial sustainability information for 2023/24

Area		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Greenhouse gas emissions ($1,000\ tCO_2e$)		15.37	15.60	22.10	17.60	17.30	15.52	18.74
Estate Energy	Consumption (mill kWh)	36.10	49.80	77.80	68.70	74.60	70.63	81.61
	Expenditure (£k)	4,055	5,686	9,345	7,249	10,020	14,605	16,340
Estate Waste	Amount (tonnes)	503.04	659.20	643.79	297.89	861.58	861.10	719.65
	Expenditure (£k)	310	371	319	124	202	162	198
Estate Water	Consumption ('000 m^3)	62.70	97.95	92.89	98.61	102.09	107.12	108.04
	Expenditure (£k)	144	279	206	276	234	370	357

Estate Energy and Greenhouse gas emissions

Greenhouse gas emissions		2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Non-financial indicators ($1,000\ tCO_2e$)	Total emissions (Scope 1-3)	15.37	15.60	22.11	17.60	17.27	15.52	18.74
	Gross emissions Scope 1 (direct)	1.45	1.20	1.32	1.76	1.65	1.90	1.98
	Gross emissions Scope 2 & 3 (indirect)	13.92	14.40	20.79	15.84	15.62	13.62	16.76
Related energy consumption (million kWh)	Electricity: Non-Renewable	29.80	44.74	72.02	62.00	66.95	64.00	73.93
	Electricity: Renewable	-	-	-	-	-	-	0.24
	Gas	6.33	5.01	5.80	6.70	7.64	6.63	7.43
	LPG	-	-	-	-	-	-	-
	Other	-	-	-	-	-	-	-
Financial indicators (£k)	Expenditure on Energy	4,055.00	5,686.00	9,345.00	7,249.00	10,020.00	14,605.00	16,340.50
	CRC Licence expenditure	294.00	330.00	-	-	-	-	-
	Expenditure on accredited offsets	-	-	-	-	-	-	-
	Expenditure on official business travel	569.00	677.00	655.00	42.00	451.00	1,058.95	1,205.68

NOTE:

The greenhouse gas emissions were calculated (from the raw data) using DEFRA conversion factors: https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting. The emissions categories we currently report under Scope 3 are: energy transmission and distribution emissions and business travel. Electricity consumption data is aligned with GGC scope of UKAEA owned and operated m^2. From 23/24 FY electrical financials have been amended to more accurately align with this scope.

Waste Disposal

Waste			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Non-financial indicators (tonnes)	**Total waste disposed of**		**503.04**	**659.20**	**643.79**	**297.89**	**861.58**	**861.10**	**719.65**
	Hazardous waste	**Total**	**24.48**	**19.89**	**30.49**	**16.87**	**40.28**	**49.02**	**20.86**
	Non-hazardous waste	Landfill	13.36	56.36	40.30	18.81	26.48	16.30	40.24
		Reused/ Recycled (inc. ICT)	270.94	409.16	394.20	200.03	594.05	625.30	477.65
		Composted (inc. food)	37.36	33.84	36.72	7.04	18.35	8.84	15.62
		Incinerated (energy recovery)	100.10	99.04	102.32	40.29	147.35	129.20	129.35
		Incinerated (no energy recovery)	0.07	0.03	-	2.36	0.08	0.26	1.11
		Total non-hazardous waste	421.83	598.43	573.54	268.53	786.31	779.90	663.97
	Radioactive	Produced	40.94	50.05	49.81	31.46	57.50	46.55*	37.40
		Disposed	56.73	40.88	39.76	12.49	34.99	32.18	34.82
	OSR (see note below)	Produced	36.49	9.81	25.63	7.55	16.16	1.63**	16.52
	Total Radioactive / OSR waste disposed of		**56.73**	**40.88**	**39.76**	**12.49**	**34.99**	**32.18**	**34.82**
Financial Indicators (£k)	Total disposal cost		309.50	371.27	319.05	124.37	202.02	161.56	197.60
	Hazardous waste disposal cost		24.00	16.50	25.20	19.77	57.70	45.78	30.98
	Non-hazardous waste disposal costs	Landfill	2.00	4.00	16.50	3.83	7.47	8.78	13.40
		Reused/ Recycled	5.00	30.00	64.43	12.21	-8.96	-23.75	-11.63
		Composted	1.50	1.30	1.59	1.95	0.84	-	2.91
		Incinerated (energy recovery)	21.00	20.47	24.33	8.58	40.32	37.56	36.25
		Incinerated (no energy recovery)	-	-	-	-	-	0.12	-
	Radioactive	Disposed	256.00	299.00	187.00	78.03	104.65	93.07	125.69

* Previously reported as 84.21 Tne
** Previously reported as 0.10 Tne OSR Disposed

NOTES:
1. The figure for 'Composted' includes food waste sent for anaerobic digestion.
2. Out of Scope of Regulations (OSR) waste is material where the activity is low enough to fall below the threshold set by the Environmental Permitting Regulations to be classified as radioactive waste, so it is disposed of through non-radioactive routes.

Finite Resource Consumption

Finite Resource Consumption			2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Non-financial indicators ('000m3)	Water consumption (whole site)	Supplied	62.70	97.95	92.89	98.61	102.09	107.12	108.04
		Abstracted	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Supply per FTE	0.06	0.08	0.06	0.05	0.05	0.05	0.04
	Average number FTE staff/ contractors		1,130.00	1,249.00	1,461.00	1,818.00	2,087.00	2,306.00	2,441.00
	A4 paper reams equivalent*		4,800.00	5,200.00	9,200.00	200.00	3,200.00	1,600.00	1,200.00
Financial indicators (£k)	Water supply costs (whole site)		144.00	279.00	206.00	276.00	234 ***	370.00	357.29
	Paper supply cost**		7.00	8.00	12.00	<1	3.20	9.50	8.90

* note this does not include printroom publication paper supply.
** previously counted at 10 reams per box in error, this year 5 reams per box
*** previously reported as £245k

Business Travel

Scope 3 Business Travel Emissions			2022/23	2023/24
Domestic Travel	Distance Travelled (km)	Hire vehicles	478,671	515,688
		Taxi	49,388	71,467
		Bus / Coach	42,298	61,264
		Rail	344,972	452,797
		Flight	55,371	58,892
	Emissions (tCO2e)	Hire vehicles	81.70	86.02
		Taxi	7.35	14.87
		Bus / Coach	1.31	1.95
		Rail	12.24	16.06
		Flight	7.20	9.48
Other Travel	Distance Travelled (km)	Short Haul International	1,381,413	1,554,607
		Long Haul International	2,392,668	2,274,300
		International (non-UK)	262,592	494,858
		Rail - Eurostar	24,676	39,449
	Emissions (tCO2e)	Short Haul International	112.13	170.60
		Long Haul International	244.24	350.77
		International (non-UK)	25.49	51.35
		Rail - Eurostar	0.11	0.18
	Emissions with RF factor* (tCO2e)	Short Haul International	212.09	238.68
		Long Haul International	462.00	439.14
		International (non-UK)	48.22	90.87

* Air travel CO_2 emissions are multiplied by the Radiative Forcing (RF) factor, to account for the higher global warming potential from emissions released at higher altitudes.

NOTE: That this is the second year of reporting business travel emissions and we hold no prior data.

Consumer Single Use Plastics (CSUP)

CSUP	2022/23	2023/24
Total quantity of CSUP	273,183	294,865

NOTE: That this is the second year of reporting Consumer Single Use Plastic (CSUP) and we hold no prior data

Environment and sustainability
The goal of fusion research is to provide a low carbon energy source for the second half of this century. Whilst on the path to sustainable fusion energy, we aim to make our progress as environmentally friendly as possible. UKAEA takes its environmental responsibilities very seriously and ensures all statutory obligations relating to waste management and standard discharges to the environment are strictly complied with. Our environmental management system is certified to ISO 14001, the international standard that provides a system for managing environmental commitments and performance.

Our sustainability strategy has been updated, and now describes where we will focus our efforts in the first phase of delivery between 2023 – 2026. The aim of this phase is to reduce our greenhouse emissions in key areas, and to develop further decarbonisation plans for the following stages to support the net-zero transition. For more information on the strategy see page 86.

Greening Government Commitment
UKAEA is exempt from Greening Government Commitment (GGC) operational targets because the nature of the experiments is such that safe, technically, and financially feasible energy efficient measures cannot be adopted to the extent required for meeting the commitments. However, for transparency purposes we report our emission, waste, and resource consumption data together with our strategy and objectives for reducing our impact. In line with GGC requirements we also report the actions we take for biodiversity, sustainable procurement, climate change adaptation, and sustainable construction. Rural proofing is not applicable to UKAEA, and this is therefore not included.

Greenhouse Gas Emissions
The greenhouse gas protocol sets out the process for reporting emissions categorised in three scopes. In line with government requirements, we report on our scope 1 and 2 emissions, along with the business travel aspect of scope 3. Scope 1 covers emissions from sources that an organisation owns or controls directly, for example from burning fuel in our fleet of vehicles. Scope 2 covers the emissions that a company causes indirectly, and such as where the energy it purchases and uses is produced, for example the emissions caused when generating the electricity that are used in our buildings. Scope 3 covers the emissions that are not produced by the company itself and are not the result of activities from assets owned or controlled by them, but by those that it is indirectly responsible for up and down its value chain; an example of this is when we buy, use, and dispose of products from suppliers.

The energy used directly in the running of our fusion experiments is one of our main greenhouse gas emission sources. Running fusion experiments is a highly energy intensive activity and represents a short-term emissions cost as an investment in a much longer-term sustainable future. For this reason, fusion related emissions are excluded from our sustainability strategy so as not to impact the development of fusion energy.

In addition to the energy used directly by our fusion experiments, energy used for the running of our buildings, as well as energy used in the making of the products and services we buy, represent our most significant sources of greenhouse emissions. Although we do not formally report on all the scope 3 categories, initial analysis shows that scope 3 emissions are a significant part of UKAEA's carbon footprint, exceeding those from scopes 1 and 2 combined, and that those associated with purchased goods and services are the most significant of all the scope 3 sub-categories. Goal 3 in our Sustainability Strategy is focused on sustainable procurement and scope 3 emissions.

Biodiversity and nature recovery plans
At Culham, all of our new developments are to maintain and improve biodiversity on site in line with local authority biodiversity net gain requirements as a minimum, striving to retain and enhance tree canopy cover and vegetation throughout the campus and along the boundaries. The biodiversity strategy adopts a sequential mitigation approach, starting with on-plot mitigations, and if this is not practicable, we consider off-site mitigation and payment to local council biodiversity process.

We also have ongoing initiatives for wildflower and tree planting, shrub bed replacement with insect friendly options, a reduction in mowing, and installation of insect hotels, owl and bird boxes. We maintain and protect areas on our site which have established biodiversity beds and encourage staff to enjoy these areas in a considerate way. Note that the requirement for nature recovery plans is not applicable to the Culham Campus as it does not hold significant natural capital.

Our new site at West Burton is currently in the process of being fully characterised. The site is made up of a combination of greenfield and brownfield sites, and the STEP programme is currently undertaking rigorous biodiversity net gain impact studies to ascertain the future options for habitat compensation.

Sustainable procurement
Environmental standards are integrated as part of the tender process for our key contracts. We also observe the Government buying standards for sustainable procurement in the areas relevant to our activities. In addition, promoting sustainability in our supply chain is one of our three main sustainability goals. We have recently created a new Sustainability role dedicated to supporting the procurement team with these efforts.

Climate change risks and adaptation
Relevant risks are captured and managed in line with our enterprise risk management systems, and through the relevant committees, which are chaired by senior management and overseen by the Board. Plans are in place for emergencies, including extreme weather events or environmental incidents. A Climate Change Adaptation Plan is being developed, and processes will be reviewed in the coming year against the Task Force on Climate-related Financial Disclosures guidance.

Projects with long-term implications, such as new building construction projects, are being designed for durability and resilience. As part of these projects, high standards of flood and surface water management are also adopted.

Continuous improvement
As part of the ISO14001 Certification, we are required to demonstrate that we have considered our key environmental risks and opportunities, and shown our commitment for continuous improvement in the areas where the impact is the greatest.

Sustainability strategy

The sections below set out how we have performed against the goals in our Sustainability Strategy.

Contributes to UN sustainability goal

12 ENSURE SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS

GOAL 1
NEW BUILDINGS AND INFRASTRUCTURE
Design and construct new buildings with a focus on sustainability

Goal 1 New Buildings

Our business is rapidly developing with new sites being acquired and major development in progress at Culham Campus. To minimise the additional greenhouse emissions and carbon footprint associated with the construction and design of these buildings, we consider sustainability at all stages of the design and build.

Our aim is for our new building developments to achieve net-zero carbon in operation. In 2023-24, we assessed six new buildings which are at different stages of development. The data available to date shows that all of these buildings have significantly reduced energy demand, however they will also require off-site carbon offsetting for the remaining energy use, to achieve net-zero. All projects have to adhere to internal targets of efficiency before offsetting can be considered. Building type and project limitations are also considered when assessing this.

Opportunities are sought to install additional on-site renewable technology at a later stage, to remove the need for offsetting. Lessons learnt will be captured from these projects and will help to standardise carbon measurement methodologies and targets for future developments.

All our new building projects are achieving a BREEAM Excellent rating. As part of this process, the buildings had thermographic surveys completed, considered indoor air quality, thermal comfort, acoustics and security. They also maximised energy performance and scored highly for metering, external lighting, as well as low and zero carbon (LZC) technologies.

Three of the projects achieved maximum transport credits by facilitating sustainable means of transport. All projects achieved maximum credits for water meters and leak detection, and they all considered responsible sourcing of materials. Construction waste was also recorded, and targets were set.

An ecologist was appointed on all projects and targeted ecological enhancement measures. A landscape and ecology management plan was created for all projects. Flood and surface water management, as well as refrigeration leak detection, were also embedded in the designs.

We also aim for our new building developments to achieve low embodied carbon, using the RIBA 2030 Climate Challenge as a benchmark. In 2023-24, we looked at the embodied carbon assessments for six new buildings which are at different stages of development. They were scored against the embodied carbon targets, as well as the completeness and quality of the data and methodologies.

Three of the projects conducted a Life Cycle Assessment (LCA) in line with BREEAM, the other three went beyond BREEAM and did a Whole Life Cycle Assessment (WCLA) in line with the Royal Institute of Chartered Surveyors (RICS) methodology. In future, UKAEA aims to standardise the methodology used.

All projects have significantly reduced embodied carbon and adopted responsible sourcing of materials. As not all our buildings fall into either school or office categories, and most of them are mixed use, in many cases it was not possible to reach the target recommended by the RIBA 2030 Climate Challenge. As guidance develops in this area and wider benchmark categories are defined, UKAEA will redefine its targets in line with this.

Download Sustainability strategy

GOAL 2
EXISTING ESTATE
Improve the energy performance of the existing estate

Goal 2 Existing Estate

Culham Campus largely consists of legacy buildings. Some date back to the 1960s when energy efficiency was not considered important, and others were built in the 1980s specifically for temporary use during the anticipated 10-year lifespan of JET. The energy performance of these buildings must be improved to reduce our greenhouse emissions and carbon footprint. New energy monitoring systems have been installed to monitor energy consumption and have recently been connected to a live network for visibility and tracking.

In parallel with improved data collection, significant progress was made with energy reduction measures during 2023/24. The programme of solar photovoltaic (PV) installation continued, with nine of our buildings currently having active PV systems, totalling an installed capacity to date of around 790 kWp. Five buildings had these fitted in 2023/24, following the first four we did in 2022/23. Roof insulation works have also been completed for one of the buildings commenced in the previous year.

The impact of the newly installed solar PV across site is being quantified, showing significant reductions in energy consumption, carbon footprint, and cost. This is also the case with the recently installed LED lights in many buildings, which have replaced fluorescent lights and led to significant energy savings (approximately 570,000 kWh of electricity saved annually, or the equivalent of 117 tonnes of CO2 avoided).

GOAL 3
SUPPLY CHAIN
Promote sustainability in our supply chain

Goal 3 Supply Chain

UKAEA must go further than simply considering sustainability within our procurement process. We must actively promote change and sustainability in our growing supply chain.

A process was developed for collecting supply chain Scope 3 emission data, enabling us to identify that supply chain emissions are by far the largest source of all emissions at UKAEA. We identified the top ten suppliers for UKAEA, accounting for 60% of total carbon emissions. As a result, we are focusing on gathering correct data from the top ten suppliers to obtain more transparent and accurate information.

The initial phase is centred on starting a conversation about sustainability. This will be accomplished by explaining the reasoning behind the recent focus on scope 3, sharing critical carbon emission data, as well as developing a carbon reduction plan if the contract exceeds £5 million. The next phase will be moving forward to create a decarbonisation plan. This will then allow us to spot any areas for improvement, reduce contributions, and improve scope 3 emission data.

Training has also been enhanced for contract project managers and procurement tools updated to facilitate work on supply chain decarbonisation. A Graduate Sustainability role has been created this year to support with these projects.

Green IT

UKAEA is working to embed sustainability in all our IT processes, from procurement through to installation and end of life. 2023/24 has been a successful year promoting the Green IT and sustainability message, and preparing systems to be able to present quantifiable improvements.

We developed a UKAEA Green IT Strategy and initiated several projects such as setting up an intranet page that monitors IT power and compares that to overall building power. IT related waste is also a key area of focus, and we strive to maximise reuse and recycling opportunities. For example, we are exploring the option to recycle or repurpose most of our laptops through a change to our current process, while ensuring this is safe to do from a security point of view.

Waste

UKAEA's activities on the Culham Campus create a varied range of waste streams. Some of these waste streams are complex and require extensive input from experts to ensure UKAEA complies with its legal obligations under the waste duty of care and code of practice, amongst other relevant legislation. The duty of care legislation makes provision for the safe management of waste to protect human health and the environment. The code of practice sets out practical guidance on how to meet waste duty of care requirements. It is issued under section 34(7) of the Environmental Protection Act 1990 in relation to the duty of care set out in section 34(1) of that act.

The 2023/24 period has seen a focus on site clearance work to allow development of Culham Campus. In support of this there has been a project of categorisation and characterisation of assets held on-site in support of the JET project. Now the JET project has transitioned to decommissioning and repurposing, it has been possible to dispose of historical assets which have no further use. Several buildings that had reached their end of life have been removed and disposed of. The fleet of ISO containers used on-site for temporary storage has also been reduced. The trade effluent system that services the JET facilities saw a significant increase in chloride levels during the reporting period. This was as a result of high demand on cooling water during the final high-power experimental campaign of JET. The Environment Agency was informed of this but due to careful management of the effluent, no discharges from site breached any of the conditions of UKAEA's Environmental Permitting Regulations permit to discharge effluent.

Waste types
UKAEA, its tenants, and contractors working on-site produce in the region of 1000 tonnes of waste per year (excluding building and demolition wastes). The majority of the waste can be streamed into five categories: controlled, hazardous, radioactive, water, and gaseous discharge.

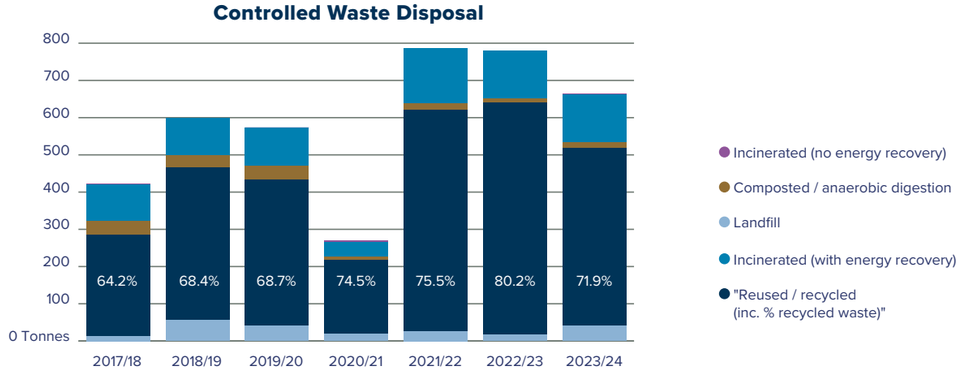
Controlled
Controlled waste is routine office and industrial waste which is not contaminated with hazardous materials or radioactivity. We segregate all controlled waste into material types, sending 90% for recycling or energy capture, minimising the amount of waste going to landfill.

Hazardous
Hazardous waste includes materials or substances which are harmful to humans or the environment. Our dedicated on-site hazardous waste storage facility segregates the different types of hazardous materials to prevent cross contamination, and is disposed is by licensed carriers only.

Radioactive
The majority of radioactive waste on site is of low activity/ contamination. Only small volumes of intermediate waste are produced, which is carefully managed to minimise the amount requiring disposal. Processing waste, such as the thermal treatment of solids, allows for down categorisation and releases tritium which can be recycled for future use within our research facilities. We manage all radioactive waste in accordance with the UKAEA environmental permits issued by the Environment Agency (environmental permitting regulations permit EPR/LB3330DP). We select the most appropriate waste routes in accordance with the best available techniques and waste acceptance criteria.

Water
Aqueous waste comes from a number of sources on site: general washing in bathrooms and kitchens, water from operational areas, foul drainage, and radioactive water from some research facilities. Uncontaminated water (primarily from kitchens and bathrooms) is disposed via the Thames Water sewage system. The remaining non-radioactive water is discharged via a dedicated trade effluent system under controlled conditions to comply with the UKAEA Environment Agency permit. Low level radioactive water, produced within our research facilities, is discharged via a dedicated radioactive drain system to the trade effluent system under an Environment Agency permit.

Gaseous discharges
Non-radioactive gas discharges are controlled where applicable under the relevant legislation, such as greenhouse gases. Our radioactive gaseous discharges (tritium being the main isotope of importance) are regulated, monitored, and discharged under an Environment Agency permit. All of our exhaust stacks have in-line monitoring systems, and there are tritium alarms in and around the operational areas. Where higher levels of tritium are found, such as in the JET vessel, the air is passed through an abatement system which removes the tritium for storage, processing, and recycling.

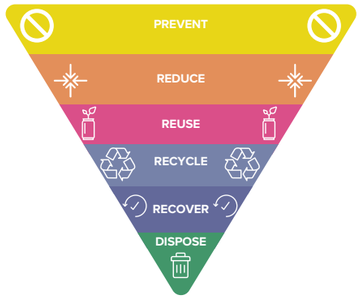


Note: Source data from waste disposal table (page 83)

The significant increase in waste arising in recent years is mainly attributed to the enabling works and site clearance for major construction projects on the Culham Campus.

Waste management

As well as ensuring UKAEA meets all its legal obligations relevant to waste activities, it also vigorously applies the principles of the waste hierarchy.



Prevent
UKAEA's waste teams are regularly consulted on various projects at the conception stage, advising on waste minimisation techniques.

Reduce
From materials research for future fusion power plant design, to reducing the waste burden, to promoting reusable coffee cups at our favourite coffee outlets, waste reduction is at the heart of most of UKAEA's activities.

Reuse
UKAEA has been proactive in offering redundant plant and equipment for reuse by different facilities on-site, or by other organisations. We have also applied for permits to allow the reuse of construction waste on-site, such as soil removed during excavation works.

Recycle
UKAEA has a recycling rate of 71.9% for its controlled waste streams, diverting hundreds of tonnes of waste from landfill.

Recover
The materials detritiation facility on Culham Campus has been operating with great success for several years now and is able to recover tritium from hard materials. Recovery methods like this will be crucial during the decommissioning of JET, substantially reducing the quantity of intermediate level waste.

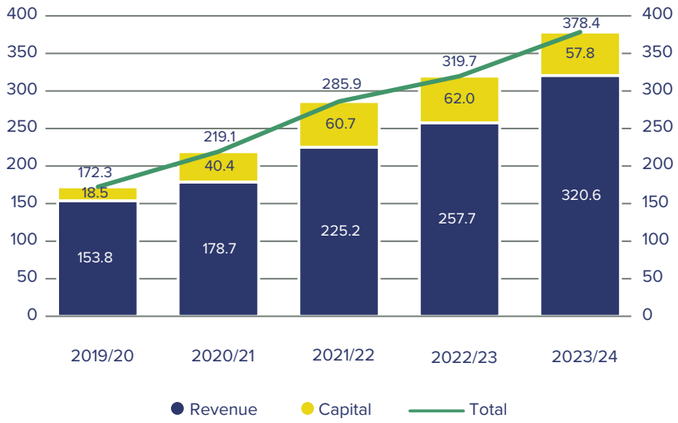
Dispose
With some of the more complex waste streams we perform best available technique studies to ensure that all possible options are considered in advance of disposal. We carry out compliance monitoring of the disposal contractors and disposal sites to ensure that all legal and environmental obligations are fulfilled.

Professor Sir Ian Chapman
Chief Executive and Accounting Officer
22nd July 2024

Financial review

UKAEA Group incorporates the results of United Kingdom Atomic Energy Authority, AEA Insurance Ltd and UKAEA's share of trading results and net assets of the Harwell Science and Innovation Campus Joint Venture. The Annual Accounts on pages 145 to 180 provide financial statements and further information. The key highlights are presented below:

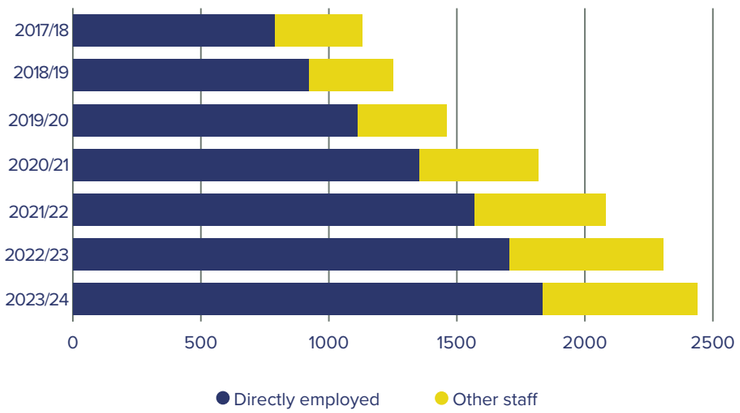
Total funding profile over last 5 Years (£m)



Over the last five years, funding has increased to enable the growth in science, research and operational funding for the experimental fusion programmes, and investment in facilities.

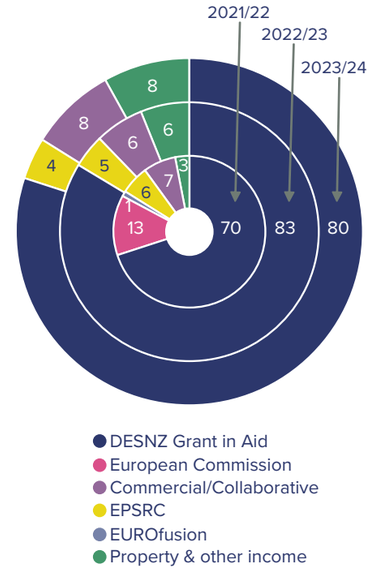
+18% since prior year
+220% over 5 years

People (full time equivalents)



Staff Full Time Equivalents have increased steadily year on year, driven by the expansion of programmes such as STEP, Fusion Futures and Foundations. Temporary staff have remained flat for the last few years on average, dropping in the latter quarter of the year as JET Scientific Operations ceased and the focus moved to preparing for decommissioning.

Income by source (excluding capital) (%)

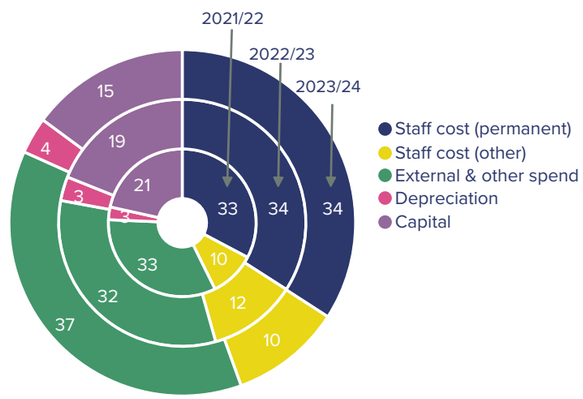


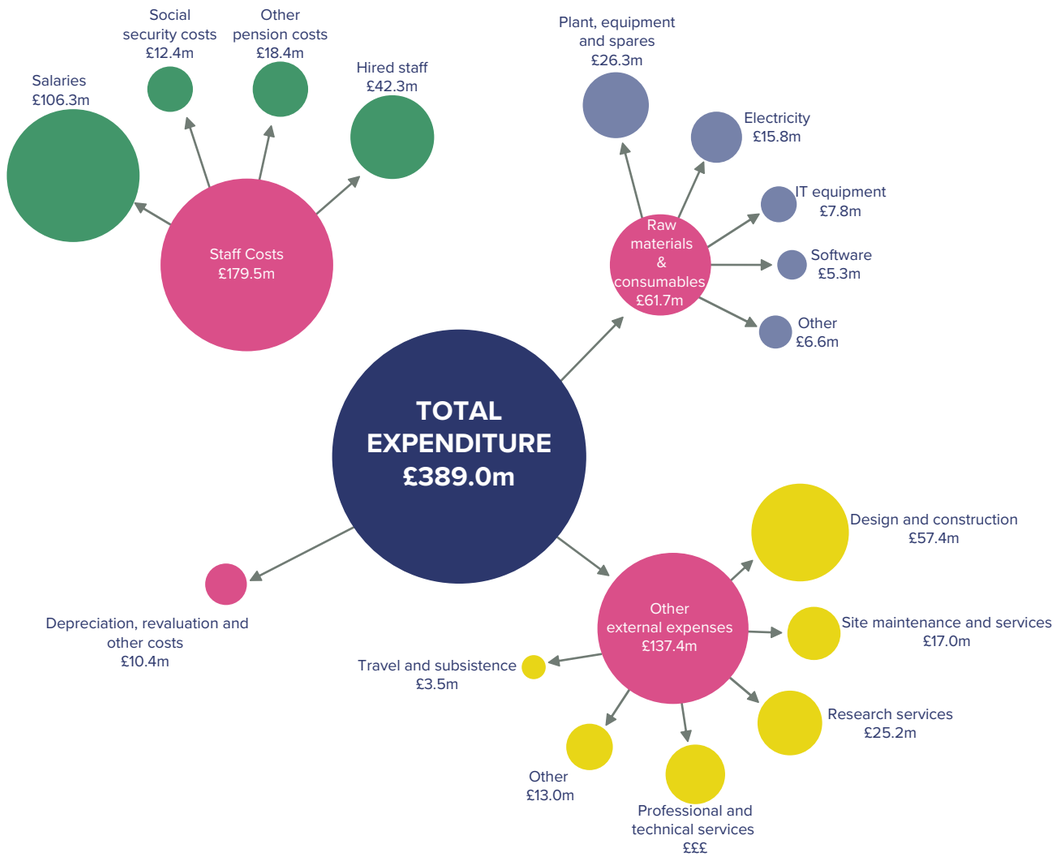
Revenue income £320.6m
The majority of the income is from our sponsoring department, DESNZ, at £248.3m. This is in respect of a series of major ongoing projects to develop the UK fusion capability – STEP, H3AT, Fusion Technology and operation of the JET experiment in Culham. Grant in Aid (income from our sponsoring department) now accounts for 81% of total income. EPSRC maintains responsibility for Fusion Research, which has remained broadly flat over the three years, as has UKAEA involvement in collaborative projects including the European Spallation Source, and our decommissioning LongOps project with TEPCO's Fukushima Dai-ichi reactor and Sellafield in the UK. The proportion of non-government income has increased slightly due to the construction of a new office and workhall that has been delivered by UKAEA and will be owned by Legal & General, hence both income and expenditure are reported.

Capital income/expenditure £57.8m
Development of scientific research facilities at Culham and Rotherham have continued during the year, with construction costs of new buildings near completion and continuation of contracts for the plant and machinery required to deliver the equipment for the scientific programmes. The Fusion Foundations programme which commenced in the 2020/21 financial year to enhance infrastructure, facilities, and skills to enable world-leading fusion and innovation in the UK, contributed the largest increase in Fixed Assets, with ongoing work on office and training facilities, an IT transformation programme and enhancements to site power infrastructure. The source of capital funding is predominantly our sponsoring department, DESNZ, with £0.7m of expenditure funded through collaboration and external grants.

Expenditure
What did we spend it on?
UKAEA spends most of its revenue income on people, both permanent staff and contingent labour. These are predominantly engineering and operations people who are operating our facilities and programmes. Over the past three years, as UKAEA facilities and research has grown the proportional spend on staff, operating expenditure and capital has remained consistent. The depreciation is mainly in respect to the buildings on the Culham site that are utilised by UKAEA. The balance of spend is external, encompassing utilities, plant and equipment, site services and construction.

Expenditure by type (including capital) (%)

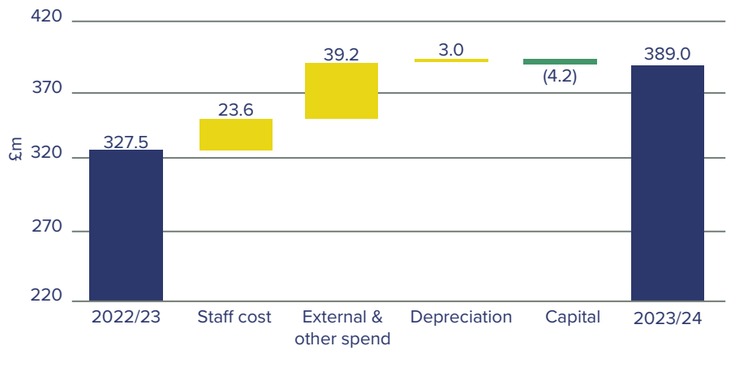




Total expenditure in the year was £389.0m, £61.5m higher than in 2022/23 with the increase from both staff costs and external expenditure. The increase is driven by programmatic growth, with external expenditure growing more than staff due to new programmes such as Fusion Industry Programme, which are focussed on industry engagement and therefore have a higher external spend and lower proportion of internal UKAEA costs.

Key changes compared to prior year expenditure:

Revenue and capital expenditure vs last year (£m)



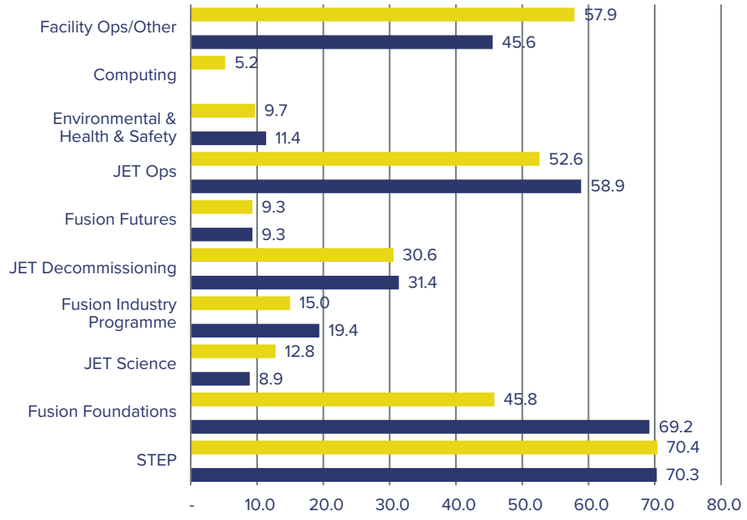
How did UKAEA perform compared to the funding budget provided by DESNZ as Grant In Aid?

UKAEA expenditure, which is not covered by external income, is subject to budgetary control by DESNZ. The majority of UKAEA budget is funded from the Capital Departmental Expenditure Limit (CDEL), the budget was set at £324.4m for 2023/24. Since early in the year, UKAEA forecasted slippage of £15m, of which £10m related specifically to a construction collaboration on the UKAEA site, which was not able to proceed in the year due to the availability of financing to the external party and £5m for the Fusion Industry Programme which due to a later approval had slipped into 2024/25.

The actual outturn was £309.3m vs budget of £324.4m. The forecasted slippage of £5m for the Fusion Industry Programme has been included in 2024/25 budgets instead.

This CDEL budget performance is reported to management and DESNZ in the categories below:

Budget Outturn with DESNZ (£m)



Overall outturn

As the majority of our funding is from government via Grant in Aid or external grants, UKAEA aims to balance income and expenditure (excluding depreciation) at an operational level. This was achieved in 2023/24 with £13.3m of depreciation translating through to a £10.6m operating loss. Positive movements in tax then offset an in-year loss in the Harwell JV, resulting in an overall loss of £6.6m. Revaluation of property gains (net of tax impact) then extend the total comprehensive income for the year to £8.1m.

Provisions

What is the JET Life-time Plan?

A key item on UKAEA balance sheet is the provision for site restoration: UKAEA hosted the Joint European Torus (JET) facility at Culham, which ceased scientific operations in December 2023 after 40 years. The site restoration provision represents the estimated costs of decommissioning this facility and restoring the site upon which it sits. Due to the nature of fusion experiments, the fuel types used, and the advanced remote handling systems which will be used for decommissioning for the first time, this decommissioning project will be of great scientific and technical importance. It will also be subject to unique uncertainties and risks. The JET Lifetime Plan is to conduct this decommissioning and restoration. It is compiled in collaboration with the Nuclear Decommissioning Authority (NDA). It contains three major activities:

1. Decommissioning the JET experimental tokamak fusion machine.
2. Storing, processing, and disposal of radioactive wastes.
3. Demolishing structures, including buildings, and restoring the ground – once their use for decommissioning is complete.

The JET Life time Plan is set out as a costed project plan, DESNZ, as sponsoring department, provides

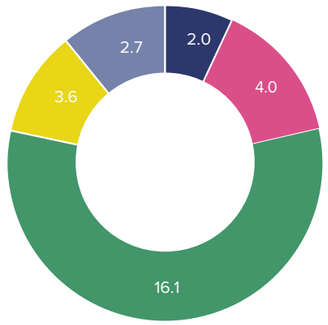
UKAEA with a Letter of Comfort that it will cover the cost of decommissioning JET. UKAEA therefore recognise a matching receivable.

The JET Scientific Operational Programme was completed at the end of December 2023 and there is a period of operational shutdown and transition into a Decommissioning and Repurposing Programme. As a substantial programme across multiple years (at least 17), JET Decommissioning will require business case approvals from DESNZ and HM Treasury. This will be approached in tranches – providing oversight of the full programme and requesting approvals for a defined period of spend. The first tranche of the programme has been fully approved in an Outline business case (OBC) and funding has been approved for 2023/24 and 2024/25. A Full Business Case (FBC) is in progress. The current tranche covers the early in-vessel decommissioning phase until March 2025. This business case sets out the base case for decommissioning (Life time Plan) alongside options to pursue Alternative Strategies to repurpose the JET facilities for UK science and innovation where there is a strong value for money case to do so. There were two Alternative Strategies presented, at 2% and 18% lower nominal programme cost – the main difference being the extent of building decommissioning. A comparative ('Do Nothing') long-term Care and Maintenance strategy was also presented at 33% higher nominal programme cost. The strategic decision from the JET decommissioning business case was to pursue an Alternative Strategy, receiving full approval in October 2023.

This year's utilisation

UKAEA had an outturn of £28.5m on site restoration activities previously provided for:

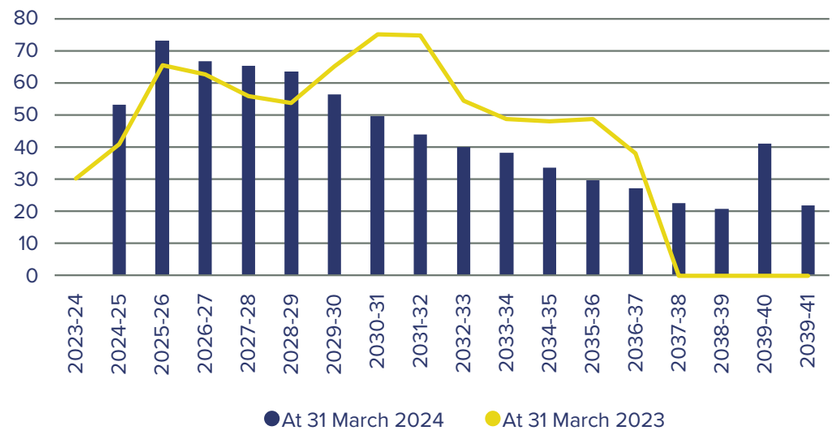
Site Restoration Provision Utilisation £m



Note: the JET Decommissioning and Repurposing programme had a higher outturn of £30.4m, which includes items not provided for, such as research and development of alternative waste treatment techniques.

Future Estimate

Decommissioning spend estimate (£m)



The provision is aligned to the strategy approved in the business case. For some buildings which the business case aims to retain and repurpose, but long-term planning permission or an identified future income stream to maintain them is not yet in place, the cost of decommissioning is included in the Life-time Plan estimate. The current assessment of the Life-time Plan (Decommissioning) is that a provision of £747.7m (2023: £762.5m) is required – including inflation and discounted to current value. This is slightly lower than the previous year, as whilst the nominal cost estimate has increased by 10% due to updates to electricity usage and realised inflation on staff, indirect and direct costs, these changes are negated by the activity that has taken place during the year and the combined effect of inflation and discount rates (for further detail on rates used and potential impacts of rate changes, please see note: 19.1).

The unique facilities at Culham will enable UKAEA to use novel detritiation (tritium removing) techniques to reduce Intermediate Level Waste (ILW) from JET whilst also generating intellectual property benefiting operational and decommissioning costs across the UK and internationally (see page 28). These novel techniques will also deliver the assumed cost savings in processing, packing, transport and long-term decay storage. Although the techniques are novel, UKAEA has conducted research to confirm that a significant number of the materials present in the machine can be detritiated. However, there is an uncertainty in the estimates, validity of assumption and risk of errors in the methodologies used in preparation of the estimate, which is being mitigated by regular reviews of the assumptions and use of reference class forecasting to benchmark contingency (see page 80).

Professor Sir Ian Chapman
Chief Executive and Accounting Officer
22nd July 2024

ACCOUNTABILITY REPORT

Accounting Officer's statement

Section 4(3) of the Atomic Energy Authority Act 1954 requires the United Kingdom Atomic Energy Authority (also referred to as "the Authority") to prepare a statement of accounts for each financial year in the form and on the basis set out by HM Treasury. 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 income and expenditure, Statement of Financial Position 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 any additional guidance issued by HM Treasury, including the relevant accounting and disclosure requirements, and apply suitable accounting policies on a consistent basis
- make judgements and estimates on a reasonable basis
- 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
- prepare the financial statements on a going concern basis; and
- confirm that the Annual Report and Accounts as a whole is fair, balanced, and understandable and take personal responsibility for the Annual Report and Accounts and the judgements required for determining that it is fair, balanced, and understandable.

The Accounting Officer of the Department for Energy Security and Net Zero (DESNZ) 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 Managing Public Money published by HM Treasury.

As the Accounting Officer, I have taken all the steps that I ought to have taken to make myself aware of any relevant audit information and to establish that UKAEA's auditors are aware of the information. So As far as I am aware, there is no relevant audit information of which the auditors are unaware.

Directors' report

The following items, required as part of the Directors' report, are included. Composition of the UKAEA Board on page 108. Disclosure of personal data-related incidents on page 127.

Public Body Review
During this reporting period, our sponsoring government department concluded a Public Body Review for UKAEA. Twelve recommendations were made across the four key areas of Efficacy, Efficiency, Governance and Accountability. Good progress has been made in actioning the recommendations with most now either complete or nearing completion. A summary can be found on page 106.

Future outlook and going concern
UKAEA has a pipeline of major investment, supported mainly through an original Spending Review allocation from DESNZ of £708m for R&D for the period 2022/23 to 2024/25. This includes the balance of funding for ongoing programmes such as the £222m investment in STEP and £184m 'Fusion Foundations' investment to deliver the foundations necessary for a thriving fusion sector.

The commitment to fusion research from international parties remains strong. There has been significant funding to deliver the expansion of programmes at UKAEA.

The JET facility ceased scientific operations at the end of 2023. DESNZ has confirmed that UKAEA will lead the preparation of the decommissioning programme, which enables this to be integrated with repurposing and regeneration of the JET site, and, to explore the opportunities for research and technical development in the decommissioning of a fusion device for the first time.

UKAEA's Statement of Financial Position includes liabilities of £776.7m for site restoration and historic organisational restructuring costs. Matching reimbursement receivables are recognised for most of these liabilities on the basis of assurances from our Sponsoring Department that it will continue to accept responsibility in principle for these costs, and provides for them in their departmental resource accounts. These assurances are re-confirmed annually and there is therefore no effect on UKAEA's ability to operate as a going concern. The financial statements have therefore been prepared on a going concern basis.

I have reviewed all evidence provided to support the annual Governance statement. My conclusion is that UKAEA's overall governance and internal control structures are generally sound and fit for purpose.

Professor Sir Ian Chapman
Chief Executive and Accounting Officer
22nd July 2024

Governance statement

Scope of responsibility and purpose of the governance statement
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.

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

Corporate governance

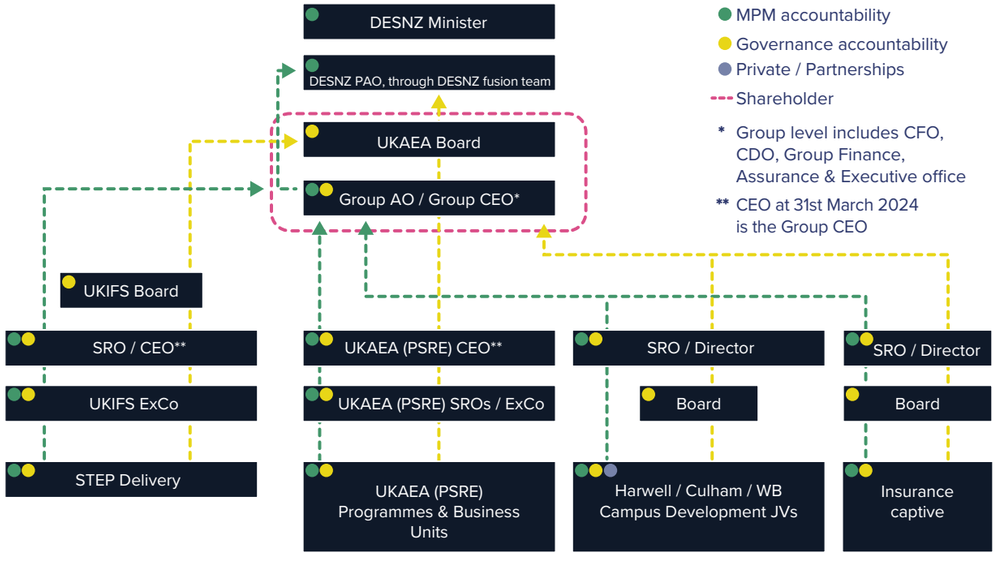
Framework agreement
The Framework Document between the Department for Energy Security and Net Zero (DESNZ) and the UK Atomic Energy Authority (UKAEA) sets out the overall governance framework and the formal operating relationship. An updated version is being reviewed with the intent to publish later in 2024. The Framework Document acts as a central reference point for everyone involved between the sponsoring Department and UKAEA, and supports them in making strategic, policy, and financial decisions and agreements with confidence.

UKAEA Group
The UKAEA Group has 50% control of a joint Public Sector Limited Partnership (HSIC PubSP), the public-sector partner in Harwell Science and Innovation Campus Ltd Partnership (HSIC), which is responsible for the development of the Harwell Campus. Both HSIC PubSP and HSIC 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. During the year, our Head of Campus Development was on the Board of HSIC PubSP and our Chief Development Officer was on the boards of both HSIC PubSP and HSIC.

UKAEA's subsidiary, AEA Insurance Ltd, has appropriate governance arrangements in place. These are formally reviewed and updated as necessary by its Board of Directors, which includes UKAEA's Director of Finance and Business Systems. A compliance and company secretarial summary is tabled for review at each board meeting. A risk register and provisions for an annual internal audit of controls and risks are also in place.

In February 2023, the establishment of UK Industrial Fusion Solutions Ltd (UKIFS) was announced to deliver a prototype fusion energy plant at West Burton in Nottinghamshire. The new organisation is a company limited by shares established to work together with industry to deliver the prototype plant by 2040. UKIFS is a wholly owned subsidiary of UKAEA with its own board, directors and governance arrangements. It was not trading in the financial year 2023/24.

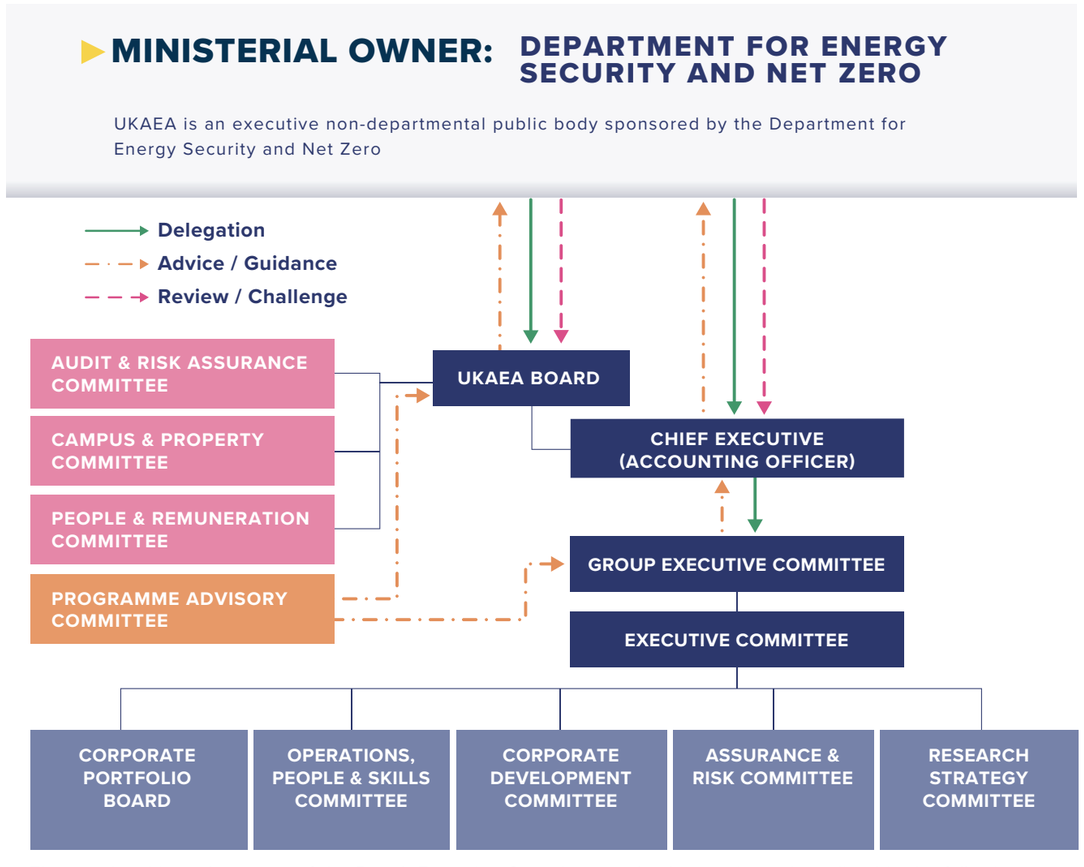
Corporate structure
UKAEA is a non-departmental public body sponsored by the Department for Energy Security and Net Zero.



The UKAEA is responsible for the management of the Combined Pension Scheme (CPS) and related pension schemes, which are for eligible UKAEA employees and other participating employers. The CPS is an unfunded, final salary defined benefit scheme. A Pensions Oversight Board, chaired by UKAEA's Director of Finance and Business Systems, was established in 2024 to provide additional assurance to UKAEA. A separate annual report and accounts is prepared for the pension schemes and published on gov.uk. UKAEA has dormant registrations at Companies House for UK Fusion Solutions Ltd and UKAEA Ltd.

As part of our continued efforts to enhance our governance arrangements a review of committee structures was undertaken which resulted in some changes to terms of reference, delegated authorities and reporting lines. The Group Executive Committee has been established and is continuing to evolve, providing oversight across the UKAEA Group and its subsidiaries, HSIC PubSP and the PSRE, see section 116 for more detail on Group Executive Committee.

Governance model



The membership and purpose of the Board, Executive Committee, and sub-committees is outlined in the following pages

The Programme Advisory Committee provide technical advice and report on the quality, relevance and importance of UKAEA's research in a national and international context particularly in the areas of plasma physics, materials, robotics, tritium and technology and how they align with UK and international strategic priorities. All other committees are reported on in the Governance section of the Accountability Report.

Risk management

An integrated system of risk management is in place across the organisation, see pages 77 to 81 of the Performance report for a summary of the key risks facing UKAEA.

Risk assurance framework
Our assurance framework comprises three key areas: governance, risk management, and internal control. All processes are assured through the UKAEA three lines of assurance model, which provides the Board with an appropriate level of comfort that we are managing risks effectively and have a sound system of internal controls in place.

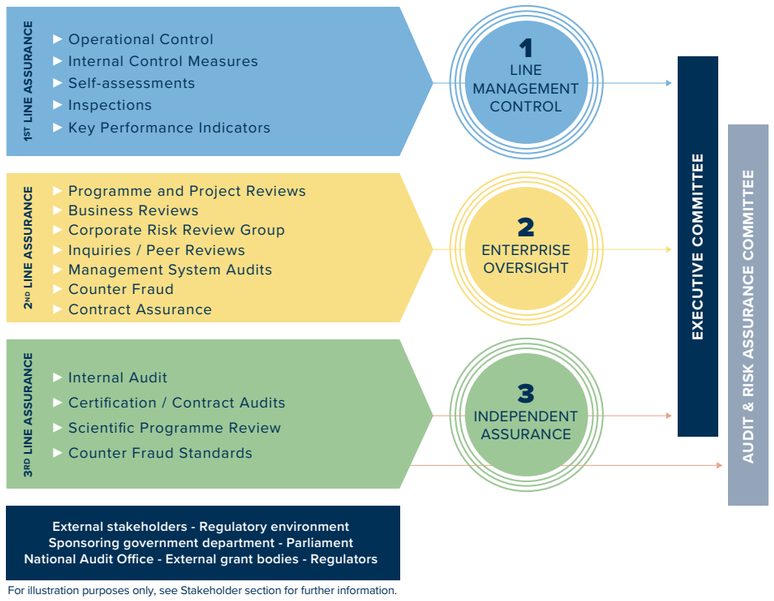
UKAEA is actively maturing the assurance mechanisms it utilises to assess the effectiveness of its governance and control arrangements within the 'three lines' model, following guidance, principles, and best practice from the HM Treasury's 'Orange Book'.

UKAEA will continue to provide risk and assurance support to UKIFS as it transitions into operation in the coming year through the existing arrangements with the STEP programme, this allows a standardisation of the risk and assurance processes across the group structure.

As we mature towards a fully integrated governance, risk, and assurance framework, we are mapping assurance measures to identify key strengths and potential gaps and developing realistic and proportionate action plans where appropriate.

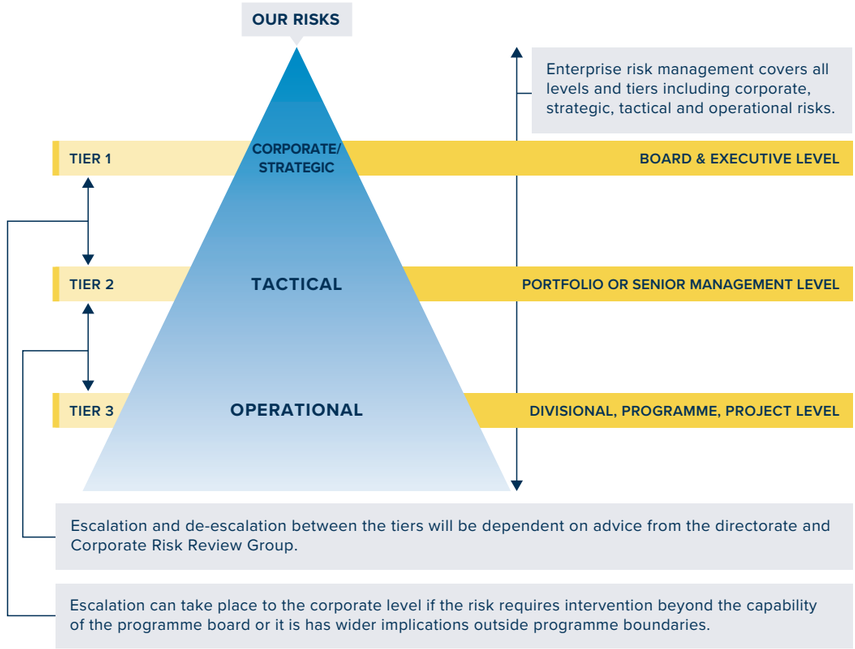
Our CEO (as Accounting Officer) is responsible for reviewing the effectiveness of the risk management and internal control systems. This review of the effectiveness of these systems is informed by the work of senior managers within UKAEA who have responsibility for the development and maintenance of the internal control framework, an internal audit function. feedback from the external auditors including their management letter and other reports.

The assurance framework allows the Accounting Officer to be confident that key regulatory and safety risks are being controlled and that we have demonstrable compliance with the standards set by regulatory and government bodies.



For illustration purposes only, see Stakeholder section for further information.

Our enterprise risk management process
The early identification and effective management of risk is fundamental to the achievement of our mission, goals and strategic objectives. Our approach encompasses risk management across our broad range of activities at operational, tactical and strategic levels. Risk registers are held at each level of the risk hierarchy including operational project risk registers and tactical portfolio risk registers which can be escalated to the corporate/strategic risk register if appropriate. The Board have a view on top risks as recommended by the Executive Committee and provide strategic guidance.



UKAEA operates a mature enterprise risk management (ERM) process embedded at all levels of the business. Effective risk management drives decision making through our transparent and open positive risk culture. The ERM process is compliant with best practice laid out by the Institute of Risk Management, Treasury 'Orange Book' and ISO31000. The risk process ensures that:

- Interconnected risk management operates at all levels of the business and our people are empowered to escalate their risks and concerns.
- Significant risks, associated mitigations and control effectiveness are tracked, challenged and moderated by programme/project boards and the corporate risk review group, with active engagement by senior management through the Executive Committee, Audit and Risk Assurance Committee, and the Board.
- The risk appetite is endorsed by the Board and risks are assessed against the risk appetite in balancing innovation and enabling opportunities against the need for greater focus on reducing risk.

Risk appetite is a key part of our ERM framework, helping us to find the right balance between innovation and caution, without exposing the organisation to irrecoverable damage or stagnation. The UKAEA Board has overall responsibility for our risk appetite, determining the amount and type of risk that we are willing to take in pursuit of our strategic objectives and the amount of risk that we can bear whilst supporting effective decision making. Our risk appetite is set to reflect the evolving risk landscape of the organisation. Operational risk appetite is maturing to further enhance the quality of risk information supporting decision making. Our CEO is accountable to Parliament for ensuring that all risks are managed effectively.

Tactical and operational risks are owned by relevant senior managers or subject matter experts. Our robust governance structure enables the review and escalation of risks as appropriate. The corporate risk review group, which meets quarterly, provides oversight of enterprise risk including corporate, programme and major project risks. The group reviews the status and progress of mitigations identified by the risk owners, and the effectiveness of the controls. The Audit and Risk Assurance Committee, on behalf of the Board, formally reviews key risks on an ongoing basis in conjunction with UKAEA's risk appetite statement, reporting and/or escalating to the Board as required. Performance of programmes and major projects including current status, risk, and financial metrics, is reviewed on a monthly basis by the Executive Committee.

The creation of the executive Assurance and Risk Committee (see page 119) provides a key stage in the reporting of risk and assurance matters, providing leaders in the organisation with the opportunity to review and comment on strategic risks and mitigation plans prior to reporting to the board Audit and Risk Assurance Committee.

Quantitative cost and quantitative schedule risk analysis for major projects and programmes, provides greater insight on the effect of uncertainty on a programme's budget and milestones thus allowing senior leadership to develop controls and mitigation plans to increase the probability of project success and to increase the maturity of the contingency process within UKAEA.

Risk management processes

Our framework for managing risk is embedded across the organisation and benefits from the ongoing commitment and participation of leadership. Risks are regularly reported to the Board via Audit and Risk Assurance Committee, and quarterly to UKAEA's sponsoring government department

RISK GOVERNANCE		ENTERPRISE RISK MANAGEMENT FRAMEWORK
Standards	Orange Book ISO 31000, 9001, 14001 & 45001	Risk strategy/ Policy/Appetite
Review	Corporate Risk review Divisional Risk review Project / Programme Board Risk review	Risk architecture/Roles and reporting structure
Approval	Executive committee	
Oversight	UKAEA Board Audit and Risk Assurance Committee Sponsoring government department	Risk protocols/System

Assurance

Group Internal Audit

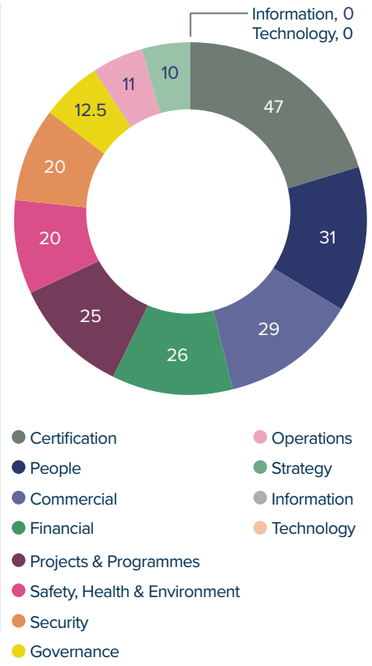
UKAEA has an internal audit function which operates across the UKAEA Group in accordance with Public Sector Internal Audit Standards and Government Functional Standard GovS009: Internal Audit. It provides assurance on the adequacy and effectiveness of UKAEA Group risk management, control, and governance frameworks driven by UKAEA Group's strategic objectives, risk appetite, and potential risk exposures.

Operating in line with the Internal Audit Charter, approved by the UKAEA Audit and Risk Assurance Committee (ARAC) and Accounting Officer, Group Internal Audit executes their responsibilities through the delivery of a 3-year rolling programme that extends across multiple audit disciplines, and reports progress regularly to ARAC.

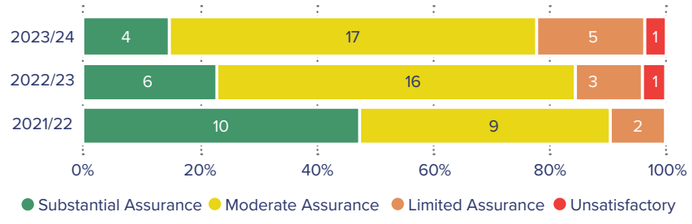
A programme of management systems audit is focused on operational safety, health, environment, and quality performance and has historically sat alongside the Internal Audit plan. This was formally merged into the internal audit function in June 2023, combining to create the Group Internal Audit Unit. This provides a holistic view of assurance across operational and functional areas to the Accounting Officer and ARAC.

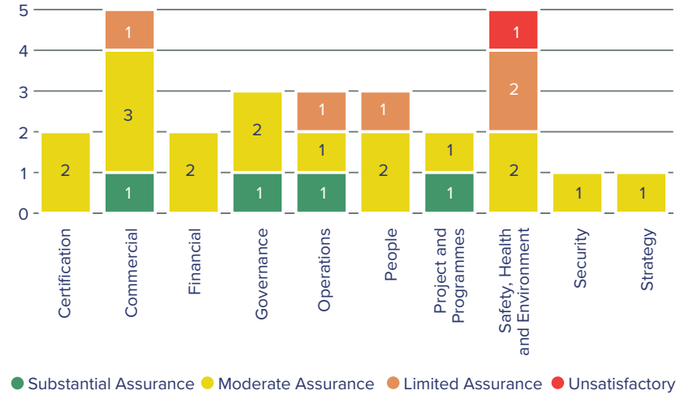
Focusing assurance on the top corporate risks, key controls, and significant changes faced by UKAEA in 2023/24, this year's audit plan delivered audit engagements across the following areas:

Audit Days per Risk Area



Audit Opinions





The proportion of audit results with a limited assurance opinion has increased over the past 3 years, this is partly attributed to:

- A revised Management System Audit programme, utilising both process and vertical auditing which has increased coverage of operational safety, health, environment, and quality assurance,
- Maturing risk management processes and culture providing improved risk information, identifying areas of concern.

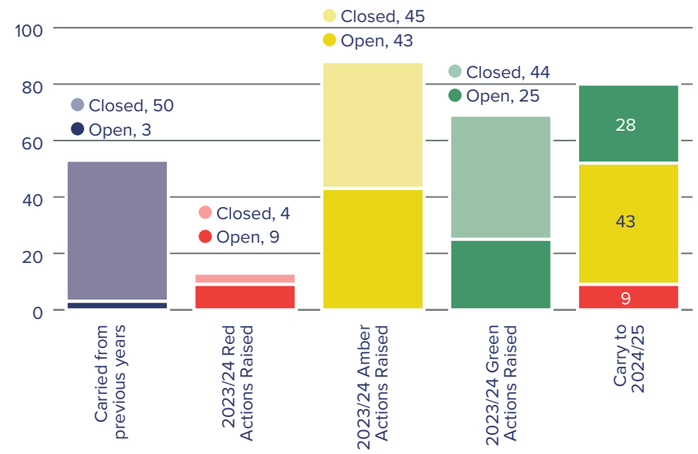
Further analysis on the overall opinion of the UKAEA internal control, governance and risk management framework is provided by the Group Head of Internal Audit as part of the Annual Opinion on page 105.

The audit results highlighted the following areas requiring improvement:

Operations	People	Safety, Health & Environment
Asset Management Operational areas have made strides in improving the management of assets, however, efficient implementation of the planned preventative maintenance schedule could not be demonstrated, and further improvements are required. Proposed changes have been agreed and endorsed by the Executive Committee for implementation in 2024/25.	**People Policies** Current documentation was identified as being ineffective and inefficient in areas, therefore a comprehensive review of People Policies is required. A strategic approach has been identified in partnership with Union representatives to review and update these policies through 2024/25.	**Occupational Health Provision** Ineffective arrangements for the provision of Occupational Health (OH) Services were demonstrated, most notably due to inadequate contract management. Additional support is now in place for the management of the OH contract and will facilitate a review of the contract in 2024/25. This review is being supported by the Safety, Health & Environment (SHE) Unit to strengthen arrangements. **Monitoring & Inspection** Responsibilities and requirements for proactive SHE monitoring have not been adequately defined. A risk-based inspection programme is being developed for site wide roll out in 2024/25. This also includes strengthening oversight of contractor SHE arrangements. **Work Control** Inconsistent implementation of work control and authorisation identified areas requiring improvement to strengthen the control environment, including retention of key documents within the operational safe system of work. A Permit & Work Authorisation Project is currently underway to standardise the approach.

An improving trend was seen within audit engagements focused on the commercial, governance, and project and programme management frameworks, demonstrating successful embedding of control improvements within those areas. However, it is still noted that further improvements are required in respect to UKAEA contract management capabilities and work is underway to deliver these.

Audit Actions Status by Severity at 31st March 2024



Audit Actions
There were 169 actions arising from the 2023/24 audits and 53 carried across from previous years. All audit actions due for completion in 2023/24 were completed by the end of the financial year, with 82% completed within the agreed timescales. All audit recommendations raised were accepted with timely responses from management and robust action plans provided.

Group Internal Audit Annual Opinion

Based on the audit work undertaken for the year and considering all available evidence, in my opinion, I can provide moderate assurance that there is a generally sound system of internal control, governance, and risk management within UKAEA. However, this is still on a downward trend from last year as within this there are some high priority control weaknesses that management need to address. In forming this opinion, the following has been considered:

- All audits undertaken in the year, including revised changes approved by ARAC, with 97% of the audit programme completed and the final audit in planning;
- Substantial audit opinions from the JET Decommissioning and Repurposing Programme and the Office of the Chief Engineer audits showing improvement from previous audits;
- 22% of audits receiving Limited or Unsatisfactory assurance compared to 15% last year, including:
  - o Unsatisfactory audit opinion from the Occupation Health Services Contract Audit highlighting inadequate contract management;
  - o Limited assurance opinion from the Contract Management audit recognising improvements made since the Unsatisfactory opinion last year for an industrial services supplier contract management audit, though it highlighted wider weaknesses in contract management capability across UKAEA which require improvement;
  - o Limited assurance opinion in the People Department audit highlighting elements of the Condition of Employment Manual are out of date, a project is underway to address this;
- A downward trend in Health & Safety audit opinions with 1 Unsatisfactory and 2 Limited. The 2 inquiries conducted were as a result of Health & Safety incidents which is a reduction from the previous year;
- 100% of audit recommendations accepted by management with robust and timely action plans in place;
- Continued support from management ensuring audit actions are completed on time resulting in nil overdue actions at year end;
- Root cause analysis of audit findings is predominately process driven highlighting a weakness in the first line of defence;
- Observations from the payroll assurance board, and the U4BW change advisory board embedded assurance showing good control and monitoring;
- Risk culture is improving across the organisation, with the top risks reported regularly to the Executive and the ARAC, and reviewed by the audit programme quarterly against existing and emerging risks;
- Risk appetite embedded in the risk management system with regular review by the Board, and
- Certification to ISO 9001, 14001, 45001 and 17025 were continued, there were minor recommendations, but all have been addressed.

Government Functional Standards
UKAEA has continued to implement the requirements of the Government Functional Standards across thirteen applicable functions. Progress of implementation is reviewed quarterly, with most functions now meeting the baseline requirements. Improvement plans continue to be refined and implementation owners have been tasked with setting their appetite for improvement for the forthcoming year.

Oversight of progress is monitored quarterly with function owners reporting on progress of compliance with the standards. Additionally, external peer reviews have been carried out for several functions and it is probable that this type of activity will apply to other functional standards as the government assessment framework matures.

Self Assessment
UKAEA continues to utilise a number of self-assessment tools supplied via our Sponsoring Department or Cabinet Office that are based on government standards and maturity models. These provide a valuable insight and measure of assurance to UKAEA management. However, reporting continues to present some challenges as not all functions have the self-assessment tools. Those functions that have not been issued with the government sponsored self-assessment tools have continued to report progress only against the mandated 'shall' statements. Work will continue in 2024/25 to develop a solution that provides greater alignment and consistency in the reporting methodology.

During 2023, a Public Body Review was conducted UK Atomic Energy Authority: public body review 2023 - GOV.UK (www.gov.uk) and 12 recommendations were made across the four key areas of Efficacy, Efficiency, Governance and Accountability.

Good progress has been made in actioning the recommendations with most now either complete or nearing completion. A summary is in the table below:

Action	Status	Action	Status
1. Develop the long-term strategic plan for UKAEA's core Research and Development	●	7. Liaison with the Cabinet Office on efficiency benchmarking tools	●
2. Standardise and simplify performance reporting	●	8. Deliver the Counter Fraud continuous improvement plan	●
3. Capturing the interim benefits of fusion programmes	●	9. Undertake an internal Board Effectiveness Review	●
4. Maintain close links with DSIT	●	10. Agree the new Framework Document	●
5. Capturing continuous improvement and efficiency activity	●	11. Develop the process for Board succession planning	●
6. Undertake Harwell Joint Venture Review	●	12. Annual chair's letter (aligned to the appointment of the new Chair)	●

● underway
● complete

Other control and governance structures

Decommissioning provision review
UKAEA, with reference to the Nuclear Decommissioning Authority, have completed a review of the Lifetime Plan which underpins the decommissioning provision, the impact of which is included in the Financial Statements (see note 19.1). This has followed the principles set out in "The Aqua Book", a good practice guide published by the Government for assurance of financial analysis. Further explanation of the key components and scope of the life-time plan is included in the section on Financial Performance.

Whistleblowing Policy
UKAEA has an established whistleblowing policy available to all workers. During the year, some concerns were raised through the whistleblowing process, however, following review they were not deemed to be valid whistleblowing cases.

Declaration of outside interests
UKAEA has a detailed declaration of outside interest policy. Board members and the Executive Committee are required to complete an annual declaration of interests. At the commencement of Board meetings, the Chair requests for members to confirm any conflict.

A Board Register of Interest is published on ***Gov.uk*** Involvement in any tender exercise requires a declaration to be made, which is assessed by the Director of Procurement.

During the year we have strengthened our advice, guidance and training materials in the areas of Corporate Governance, such as Declaration and Management of Outside Interests and Gifts and Hospitality, to ensure impartiality, integrity and transparency in the work that we do.

Alexander Tax Review
UKAEA is compliant with the requirements of the Alexander Review (2012). All senior staff and non-executive members are paid via UKAEA payroll. In all cases, this results in appropriate tax contributions being deducted at source.

During the year under review, UKAEA reviewed the tax arrangements of its off-payroll appointments. All contractors within scope of this exercise have been required to provide evidence of tax compliance.

MacPherson Review of Quality Assurance - Business Critical Models
UKAEA conducted a review of analytical modelling as advocated by the MacPherson review (2013) and can confirm that it conducts no analytical modelling within the scope of the review.

Cabinet Office Controls
UKAEA complies with the suite of Cabinet Office controls.

Freedom of Information
As a public authority, the UKAEA has a legal obligation to provide information through an approved publication scheme and in response to requests. All requests must be responded to within 20 working days of receipt.

Any FOI requests are directed, by the staff receiving the request, to be made in writing and are forwarded or sent directly to foienquiries@ukaea.uk. The email account is published on the UKAEA website which also receives FOI enquiries directly and is monitored by the FOI officers.

UKAEA follows the Information Commissioner's Office guidance. An acknowledgement is issued to each original FOI, and it is aimed to acknowledge the request within 1-2 working days of receipt. Each request is tracked and responded to within a 20-working day timeframe, beginning from the first working day after the request has been received.

In the current year, UKAEA received 39 FOI requests, decreasing from 86 received the previous year. The compliance of response within 20 days was 79% (31 of 39), mainly due to internal absence, this is a decrease from previous years, and we are currently reviewing internal processes to improve this.

Governance of Knowledge and Information Assets
The CFO is the executive lead for information security and the Chief Development Officer (CDO) is the executive lead for knowledge assets. Following the publication of the Government draft standard in April 2021 (The Rose Book: Knowledge asset management in government), the CDO has led a review of the UKAEA process and a UKAEA Knowledge Asset Management Strategy (KAMS) is due to be published in summer 2024, in line with recommendations and guidance from The Rose Book and Knowledge Asset Management Strategies: guidance for public sector organisations.

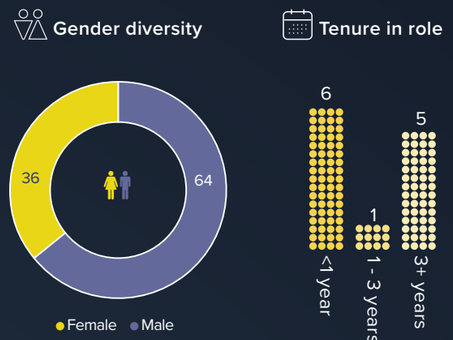
Counter Fraud
During the past year, we have progressed against the annual plan and continued to implement actions in line with the Government Counter Fraud Standard GovS 013. Through our relationship with GIAA, we can access Accredited Counter Fraud Specialists as required.

Better Payment Practice
UKAEA supports the Better Payment Practice Code in its treatment of suppliers with the aim of paying undisputed invoices as soon as possible. The key principles are to settle the terms of payment with suppliers when agreeing the transaction, to settle disputes on invoices without delay and to ensure that suppliers are made aware of the terms of payment and to abide by those terms.

During the year, UKAEA has achieved a 95% success rate for payment of suppliers in accordance with terms (2022/23 96%). The average number of payment days from invoice date was 5.68 days (2022/23 5.72 days). These statistics are reported for all invoices received, we do not distinguish if the invoice was valid or not.

UKAEA Board Report

Board Diversity



As at 31st March 2024

Overview and Key Duties

The Board, which met six times during the year, has a schedule of matters reserved for its approval. This includes: establishing the overall strategic direction of UKAEA within the policy and resources framework agreed with the responsible government minister; reviewing UKAEA's corporate objectives, goals, and performance against these; 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; reviewing corporate risks, and reviewing the safety, environmental, and security performance of UKAEA.

In addition to routine business and updates, issues covered at Board meetings throughout the year included:

May 23	UK-US collaborations Intellectual Property Update JET Decommissioning and Repurposing (JDR) Outline Business Case Strategy Session and Delivery Plan for 2023/24 Fusion Fuel capability
July 23	STEP / UKIFS status update Property Strategy Programme Advisory Committee outcome Fusion Pathways
September 23	Annual report and accounts Board Effectiveness Review UKIFS governance arrangements CHIMERA and H3AT projects Fusion Fuel Capability
November 23	UKAEA spin-out policy Financing Fusion STEP Concept Maturity Level 5 Fusion Futures
January 24	Future of UKAEA Fusion Energy Partners Fusion Futures Outline Business Cases UKIFS Update Plasma Science and Operations
March 24	UKAEA Budget 2024/25 Corporate Performance measures 2024/25 Framework Document approval UKIFS Governance arrangements UKAEA Strategy (discussion with UKAEA executives)

The Board delegates responsibility for day-to-day and business management control to the CEO who is assisted by senior management. During 2023/24, following some internal restructuring, the UKAEA Group Executive Committee was formed to provide oversight of performance and delivery of UKAEA Group including its subsidiaries, taking account of material issues of strategic risk and opportunities for the organisation, alongside generating recommendations for the UKAEA Group Board. The Group Executive Committee meets bi-monthly. (More detail is included on pages 116 to 117.

Board Composition

The Directors' biographical details included on pages 110 to 113 demonstrate the diverse range of experience from positions at the highest level in the UK scientific and business community. Two new independent Non-Executive Directors joined the Board in October 2023, Mary Ryan and Robin Grimes.

The composition of the UKAEA Board is in line with other bodies that report to DESNZ.

Ruth Elliot and Justin Kingsford joined UKAEA in May 2023 taking up the roles of Chief Financial Officer and Chief Operating Officer respectively.

Attendance

Non-Executive Director		Executive Member	
David Gann[2]	2(2) 2 as Chair	Ian Chapman	6(6)
Eithne Birt[1]	6(6) 4 as Chair	Ruth Elliot	6(6)
Stephen Barter	6(6)	Tim Bestwick	6(6)
Richard Hookway[4]	6(6)	Lee McDonough DESNZ[5]	2(3)
Luc Bardin	6(6)	**Board Attendee**	
Sue Gray	6(6)	Justin Kingsford	6(6)
Stephen Hillier[4]	6(6)	Joe Milnes	1(1) Interim COO
Mary Ryan[3]	3(3)	DESNZ observer	6(6)
Robin Grimes[3]	3(3)	David Gann	4(4)

Changes in 2023/24

(1) Lady Eithne Birt was appointed as Interim Chair in August 2023

(2) David Gann stepped down from the Board in July to take up the position of Chair of UKIFS Ltd.

(3) Mary Ryan and Robin Grimes were appointed to the Board on 1st October 2023

(4) Richard Hookway's term was extended to October 2027 and Stephen Hillier's term to October 2026

(5) Lee McDonough joined the Board as the DESNZ Departmental Representative Director in November 2023.

Changes to the Board since March 2024

Bernard Taylor has been appointed as UKAEA's next Chair, commencing on 29 April 2024. He takes over from the Interim Chair Lady Eithne Birt.

GOVERNANCE

KEY

- (A) Audit & Risk Assurance Committee
- (C) Campus & Property Committee
- (R) People & Remuneration Committee
- (A) Audit & Risk Assurance Committee Chair
- (C) Campus & Property Committee Chair
- (R) People & Remuneration Committee Chair

Lady Eithne Birt CB
Non-Executive

- Governance
- Transformation
- Strategy
- Government relations

Experience:
Eithne was the founding Director General of the National Probation Service in 2000, building on 21 years' experience as a practitioner and senior manager. She was made a Companion of the Bath in 2004 in recognition of her public service achievements. She was appointed Managing Director of Fujitsu's UK Government Business from 2005-2011.

External appointments:
Eithne was co-founder of Bluelight Global Solutions, an intelligent security solutions provider, in 2014 and has been its Chair since. She became a Patron of The Topsy Foundation UK in 2016, a charity provider of services to children in South Africa.

(R)

Professor Sir Ian Chapman FRS FREng
Executive

- Research and innovation
- Leadership
- International collaboration
- Government relations

Experience:
Ian became CEO of the UK Atomic Energy Authority in October 2016. Ian was knighted for services to global fusion energy in 2023. As CEO, he has overseen a major growth in the organisation, including the genesis of several major government programmes, to deliver UKAEA's ambitious mission and strategy. Ian is a fusion physicist whose primary research interests are in understanding and controlling macroscopic instabilities in fusion plasmas, with over 200 journal papers published and a number of international awards.

External appointments:
Ian is a Member of Princeton Plasma Physics Advisory Board, a Member of Chinese Academy of Sciences Plasma Physics Advisory Board, the Chair of IAEA International Fusion Research Committee, a Board member for Guernsey Electricity Ltd, and a Clean Energy Advisor to Temasek Holdings Ltd.

(A)

Stephen Barter FRICS FRSA
Non-Executive

- Leadership
- Strategic planning
- Governance
- Property development and funding

Experience:
Stephen has over 40 years' experience in real estate, holding senior leadership roles with an international property company (Grosvenor), a sovereign wealth fund (QIA), an international real estate consultant (CBRE), and a Big Four accounting firm (KPMG). He is also a chartered surveyor. He has worked extensively with both government and the private sector, within the UK and internationally. He now has a portfolio career as Board Chair, Non-Executive Director, Trustee, and Advisory Board member. His many pro bono involvements have focused on education and the arts, particularly music.

External appointments:
Stephen is Non-Executive Chair of Mailbox Investment Holdings plc, a Non-Executive Director of H3 TradeCo (formerly Nexus Group), and a Member of Cambridge University's Property Board. He is a Special Advisor to Network Rail, Transport for London, Fusion Group (a student accommodation developer), and (via KPMG) the Foreign, Commonwealth, and Development Office. Among other pro bono appointments, he is Chair of the West Midlands Public Land Task Force (which enables stronger collaborations between public landowners to promote growth), and a member of the London Symphony Orchestra Advisory Council. He was, for many years, Deputy Chair of the University of the Arts London.

(C)

Dr Luc Bardin
Non-Executive

- Global business leadership
- Strategic Partnering & alliancing
- Transformational value

Experience:
Luc has over 35 years' experience in leading global organisations in complex areas of B2B, B2G, FMCG, and Retail, notably as past member of BP plc's Downstream Executive Committee and CEO of multiple global businesses. In 2014, he founded Strategic Partnering Ltd to help organisations break through the limitations of vertical silos and build for transformational value opportunities from partnering and alliancing, notably towards net-zero. As such, he has and continues to advise governments and the private sector in the UK and internationally, notably in the healthcare, energy, mobility, and defence sectors. He has authored several published scholarly articles and books on strategic partnering.

External appointments:
Luc is Chair at Strategic Partnering Ltd, Foresight Factory Ltd, and several startups. He is Adjunct Professor at Imperial College Business School.

(A) (R)

Dame Sue Gray
Non-Executive (from Jan 2023)

- Leadership
- Strategic Planning
- Capital projects & capability programmes
- Stakeholder management

Experience:
Sue joined the UKAEA Board in January 2023 as a Non-Executive Director. Currently Chair of CirculAIRity (a start-up company looking to provide sustainable aviation fuel). Previously had a long career as an engineer in the Royal Air Force (RAF) and was privileged to be the most senior female officer ever to serve in the British Armed Services.

Sue's last appointment was as Director General of the Defence Safety Authority, where she led a team of specialists responsible to the Secretary of State for Defence for the regulation, assurance, enforcement, and investigation of Health and Safety across the Armed Services in 8 different domains: Land, Air, Sea, Nuclear, Ordinance, Medical Services, Fire Safety, and Environmental Protection.

External appointments:
In addition to CirculAIRity, Sue is a Trustee of the Royal Academy of Engineering, the RAF Central Fund (Charity), plus the Armed Forces Equine Charity; she is also a passionate STEM advocate and Board Mentor for CriticalEye.

Richard Hookway
Non-Executive

- Leadership
- Finance
- Strategy
- IT

Experience:
Richard has over 35 years of executive and strategic leadership experience in the energy sector. He served as CFO for the Downstream Segment of BP, and as COO for Global Business Services and IT for the BP Group. Subsequently he was appointed to the board of Centrica plc as Executive Director and CEO of Centrica Business. He currently holds a portfolio of non-executive roles in both the public and not-for-profit arenas where he serves as a Board Chair and Chair of Audit Committees.

External appointments:
Richard serves as a Supervisory Board member and member of the audit committee at Royal Vopak N.V., and as a non-executive director, member of the Governance, Nominations and Ethics Committee, and Chair of the Audit Committee at Parkland Corp. He also serves on the Supervisory Board and chairs the audit committee of JSC Naftogaz of Ukraine. In the not-for-profit sector he is a member of the Board of Trustees and Chair of the Audit and Risk Committee of the British Council, and also Chairs Swim England and its Remuneration Committee.

(A)

Sir Stephen Hillier GCB CBE DFC
Non-Executive

- Leadership
- Governance
- Risk management
- Portfolio, programme and project delivery

Experience:
Stephen joined the UKAEA Board as a Non-Executive Director in October 2021. Currently the Chair of the Civil Aviation Authority, he previously had a long career in the Royal Air Force, ultimately becoming Chief of the Air Staff, the head of the Service, from 2016 to 2019. He has considerable experience of leading large, high-profile, and complex organisations, portfolios and programmes, within closely regulated and scrutinised environments.

External appointments:
In addition to the Civil Aviation Authority, Stephen chairs an advisory board for a plc, and a small heritage aviation company. He is also the Chair of Trustees of the RAF Museum and has a variety of roles in a range of other charities.

(A)

Ruth Elliot
Executive
Joined UKAEA in May 2023, appointed to the Board in July 2023

- Working with government
- Leadership
- Finance

Experience:
Ruth joined UKAEA from UK Research and Innovation, where she was Deputy CFO. Ruth trained as an accountant with Deloitte, but has spent most of her career in a variety of central government organisations and has extensive experience in leading corporate functions, as well as experience in developing and implementing government policy. Ruth is a Fellow of the Institute of Chartered Accountants in England and Wales.

External appointments:
Ruth is the Chair of Ridgeway Education Trust, a multi-academy trust based in South Oxfordshire, and a Trustee of BMS World Mission, which works to support those facing hardship in over 30 countries around the world.

(A) (C)

Tim Bestwick OBE
Executive
Appointed to the Board in July 2023
- Technology start-up companies
- Development and commercialisation of technology
- Intellectual property
- Research and innovation campuses

Experience:
Tim joined UKAEA in 2018, to lead innovation and commercialisation at UKAEA, and start the UK Fusion Cluster. Before coming to UKAEA, Tim led commercialisation and innovation at STFC, developing the major research and innovation campuses at Harwell and Daresbury, setting up 17 spin-out companies and developing the UKI2S Investment Fund. Tim is Chair of the Harwell Science and Innovation Campus Ltd Partnership (HSIC) and also Chair of the Space Partnership, where industry, academia, and government collaborate on shared priorities, and collective action to deliver the UK's National Space Strategy. Tim is past Chair of Eureka, the world's largest public network for R&D and Innovation, in addition to this, he was also Chief Operating Officer and founder of optoelectronics start-up company Kamelian, and Director of Technology of Bookham Technology. He also worked for Sharp Corporation and IBM Research in the US. Tim was appointed to the Board on 5th July 2023.

During 2022/23, Tim served as Chief Technology Office.

External appointments:
Director, Harwell Science and Innovation Campus

Sir Robin Grimes FRS FREng
Non-Executive
- Nuclear science
- Scientific advisory to the academic community

Experience:
Robin was appointed as the Ministry of Defence Chief Scientific Adviser on nuclear science and technology matters in October 2017. He was the Foreign & Commonwealth Office Chief Scientific Adviser from February 2013 to August 2018. He is currently Professor of Materials Physics at Imperial College. His research focuses on the use of high performance computing techniques to understand the behaviour of materials for energy applications.

Robin was knighted in the 2022 New Year Honours for services to UK resilience and international science relationships.

Lee McDonough
Non-Executive
Appointed to the Board in July 2023
- Net zero strategy
- International net zero: climate finance, energy, and trade
- Science and innovation for climate and energy
- Nuclear protection, development, and decommissioning

Experience:
Lee is Director General, Net Zero, Nuclear and International at the Department for Energy Security and Net Zero (DESNZ).

She is responsible for the delivery and implementation of the UK's Net Zero programme as well as leading on international climate policy.

Lee was Director General, Net Zero, Nuclear and International at the Department for Business, Energy and Industrial Strategy (BEIS) from November 2022 to February 2023. Before this she was Director General, Net Zero Strategy and International at BEIS from June 2021 to November 2022.

Lee has previously held roles in the Department of Health and Social Care as Director General, NHS Policy and Performance Group and as Director General, Acute Care and Workforce.

Professor Mary Ryan
Non-Executive
Appointed to the Board in October 2023
- Synchrotron science
- Environmental remediation

Experience:
Mary is currently the Vice Provost for Research and Enterprise and the Armourers and Brasiers' Chair for Materials Science at Imperial University. She leads a large interdisciplinary group focused on understanding nanoscale materials, and nanoscale interfaces in and between materials and their environments.

Her research on nanoscale materials and interfaces spans diverse application areas including energy materials and nanomaterials for bio-sensors and therapies, in addition to the mechanisms that lead to human and environmental toxicity associated with nanostructures. A key aspect of this work is understanding the reactivity and stability of nanostructures in operando in order to maximize efficiency and lifetime of devices and systems.

She was elected Fellow of the Royal Academy of Engineering in 2015 and is a Fellow IoM3 of the Institute of Corrosion. She was awarded CBE for contributions to Materials Science in the 2022 Queen's Birthday honours.

Dr Mark Bayley CBE
Non-Executive
Retired May 2023
- Finance
- Large project delivery
- Leadership

Experience:
Mark has spent much of his career in the delivery of large and complex projects at the interface between the private and public sectors. He was CFO then CEO of LCR, the developer of the High Speed 1 railway. Mark also held senior roles at HS2 and in MOD procurement.

External appointments:
Mark is a Non-Executive Director of Network Rail and the Water Services Regulation Authority (Ofwat), and a Non-Executive member of the Department for Transport Audit, Risk and Assurance Committee. He is also Chair of the Board of Trustees at the Shadwell Opera.

Ⓒ

Bernard Taylor CVO, CBE, DL
Non-Executive
Appointed to the Board in April 2024
- Leadership and Governance
- Commercialising Innovation
- Corporate Finance and International Business
- Government relations

Experience:
Bernard became Chairman of the UK Atomic Energy Authority in April 2024. Bernard is a scientist (organic chemist) who worked in manufacturing industry and then in corporate finance at a senior level for more than forty years. He retired in 2019 from being Chairman of Evercore Partners International Limited (a firm he led and founded in Europe in 2006) and became Chairman Emeritus. Past experience includes holding senior positions at Smiths Industries plc, Baring Brothers, Flemings (CEO), and J P Morgan Chase (Vice Chairman-Europe), where his work often involved using his scientific knowledge in commercial situations. He is a Fellow of the Royal Society of Chemistry.

External appointments:
Bernard is Deputy Steward of the University of Oxford and a member of the University's Remuneration Committee, Mathematical, Physical and Life Sciences Division Board, Medical Sciences Division Board and a Director of Oxford University Endowment Management, a Fellow of St. John's College, and a Fellow of New College. He is Chairman of the Advisory Board of the Royal Society, Chairman of Thomas White Oxford Ltd and its joint venture with Stanhope plc and Ontario Teachers' Pension Plan, a director of UK Biobank Ltd, and a Deputy Lieutenant of Oxfordshire. Bernard is a past Chairman of the Ashmolean Museum, the Royal Commission for the Great Exhibition of 1851, and Garsington Opera.

Professor David Gann CBE
Non-Executive
Stepped down from the Board in July 2023 to take up the position of Chair of UKIFS Ltd
- Strategy
- Leadership
- Innovation
- Governance

Experience:
David is Chair of UK Industrial Fusion Solutions. He previously Chaired the UKAEA Board between 1 August 2018 and 31 July 2023. He was also Pro-Vice-Chancellor Development and External Affairs at the University of Oxford, Professor of Innovation and Entrepreneurship at Saïd Business School, and Fellow, Magdalen College. David's business and academic work focuses on new technology, innovation strategy, and entrepreneurship. He has held posts on Boards with the UK's Ministry of Defence and Department of Health and Social Care.

External appointments:
David is a Non-Executive Director of VenCap International plc and VenCap Channel Islands Ltd, a leading venture fund-of-funds; Chairman of the Advisory Board for the Montanaro Global Innovation Fund; Deputy Chairman of the Villars Institute Foundation; and a director of the London Symphony Orchestra.

Ⓡ

Directors' Independence
The Non-Executive Directors constructively challenge and help develop proposals on strategy, and bring strong and 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 UKAEA within the last five years.
- has, or has had within the last three years, a material business relationship with UKAEA or its former or current subsidiaries.
- receives remuneration from the Authority other than a director's fee and expenses incurred in carrying out their duties.
- has close family ties with any of UKAEA'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.

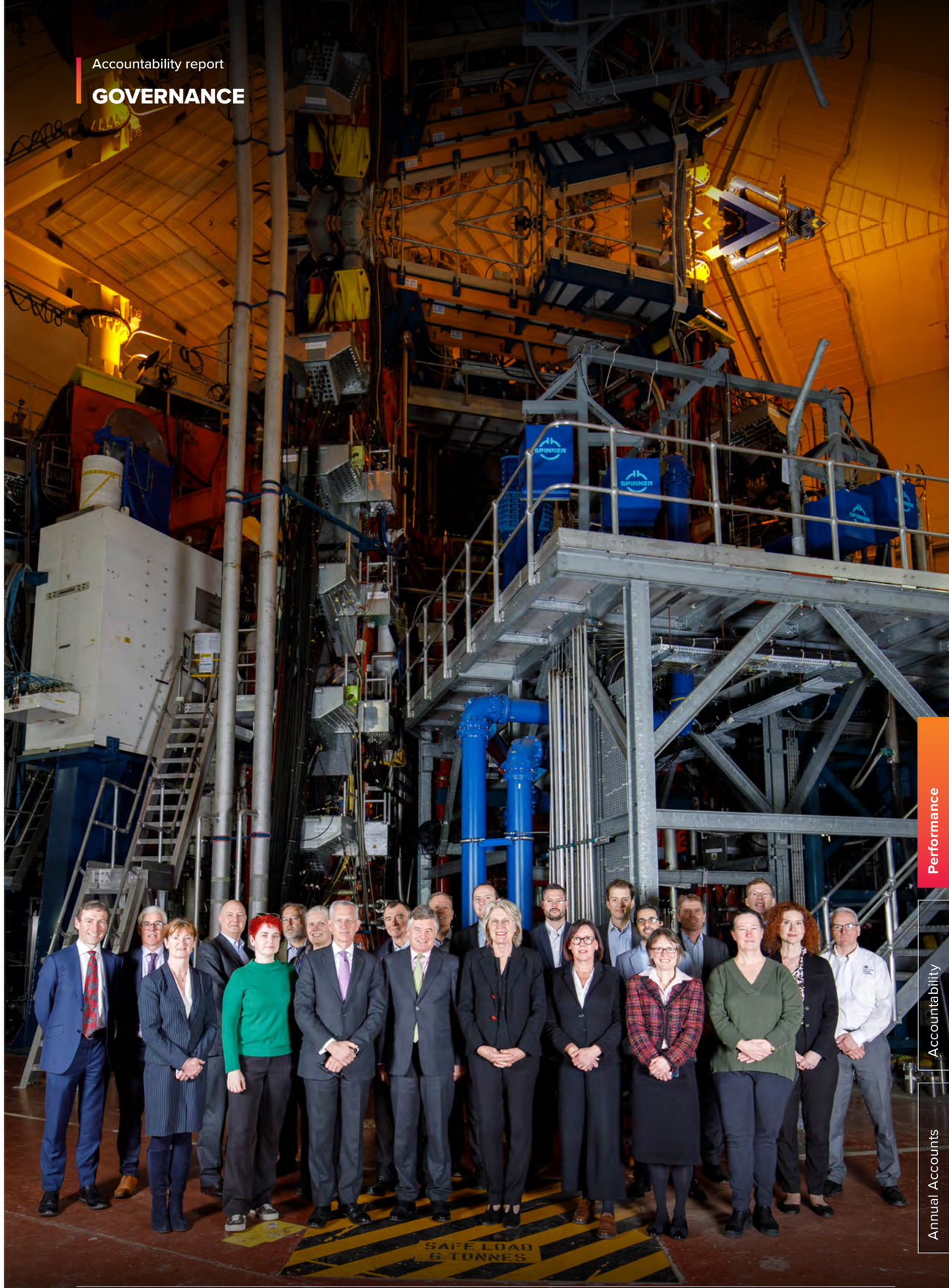
Evaluation of Board Performance
A Board effectiveness review was undertaken in September 2023 via a survey issued to all members of the UKAEA Group Board, which at the time comprised of 7 NEDs and 3 Executive Directors. This identified a number of improvements since the last review, including revised governance arrangements and renewed focus on strategic matters discussed at the Board, although it was recognised that this would require further attention as UKIFS develops. Areas identified where effectiveness could be improved further included the Board's oversight of science, technology, and innovation activities, and the economic impacts of these.

Recommendations from the review were adopted and good progress is being made to address these. The key actions complete are as follows:
- two new NEDs have been appointed, strengthening the science and technology knowledge base.
- an extensive board induction pack has been developed, which is available to all NEDs.
- improvements to administrative processes supporting board meetings.

External Review
In addition to the Board sub-committees, external advice is a key element of the corporate governance process. The Programme Advisory Committee, which has an external chair and membership, all of whom have backgrounds in fusion and industry, provides expert external scrutiny of UKAEA programmes and strategy, and reports directly to the Board. The key role of the committee is to review the UKAEA scientific programme and provide guidance and advice to the Executive on the implementation and planning for these, as well as independent assurance to the Board that the whole UKAEA programme is soundly based and achievable.

Compliance with the Corporate Governance Code
UKAEA's corporate governance arrangements are kept under review to ensure that they are compliant, where applicable, with the provisions of corporate governance in central government departments: Code of Good Practice April 2017. The Chair and Non-Executives are appointed by our sponsoring department.

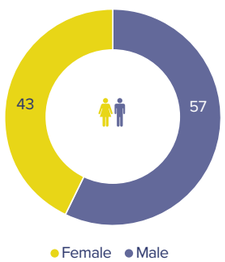
Accountability report
GOVERNANCE



Performance
Accountability
Annual Accounts

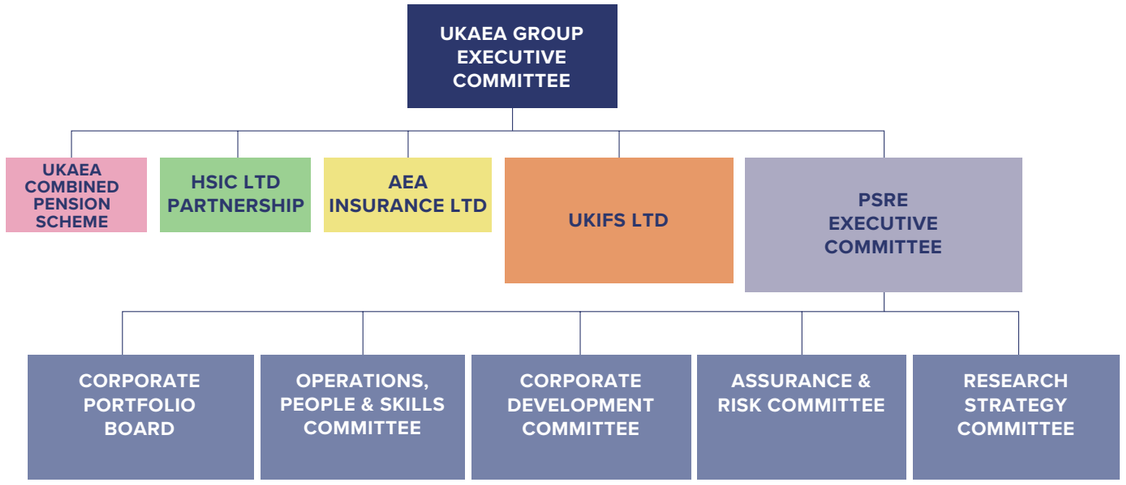
UKAEA Group Executive Committee Report

UKAEA Group Executive Committee	
Terms of Reference	Last reviewed and approved in March 2024
Overview	Due to the UKAEA Group's expansion, and the establishment of UKIFS as a subsidiary requiring support, the UKAEA Group Executive Committee (GEC) was formed in November 2023 to provide oversight of performance and delivery of the Group including its subsidiaries, taking account of material issues of strategic risk and opportunities for the organisation, alongside generating recommendations for the UKAEA Group Board. GEC also provides oversight of the UKAEA Combined Pension Scheme on behalf of DESNZ.
Roles and Responsibility	The Group Executive Committee is the overall oversight and decision-making body for performance and delivery of the UKAEA Group. It delivers the UKAEA strategic direction on behalf of the UKAEA Group Board, bringing together all aspects of our business. The scope of the committee includes the following: • Developing the strategy for the Group and driving its delivery. • Providing oversight of delivery performance of the UKAEA Group subsidiaries – AEA Insurance Ltd and UKIFS Ltd – to achieve that strategy. • Providing oversight of key corporate plans and strategies, including property, people, and spinouts. • Reviewing the UKAEA Group financial performance and major funding requests. • Reviewing the risk landscape. • Considering and reviewing corporate governance/assurance matters and approval of major policy changes. • Providing oversight of the management of the UKAEA Combined Pension scheme and Harwell Science and Innovation Campus Ltd Partnership (HSIC). • Approving the annual Group Internal Audit programme. • Making and reviewing submissions to the UKAEA Group Board. • Ensuring cohesion of culture across entities within the group.
Chair	Ruth Elliot, Chief Financial Officer and Director of Corporate Services
Number of Meetings	3

Membership		
Gender diversity  As at 31st March 2024	Ruth Elliot, Chief Financial Officer and Director of Corporate Services	3/3
	Nicola Barber, Group Director of QSHE, Risk, and Assurance	3/3
	Tim Bestwick, Chief Development Officer and Deputy CEO	2/3
	Alli Brown, Director of Finance and Business Systems	3/3
	Ian Chapman, Chief Executive Officer and Accounting Officer	3/3
	Justin Kingsford, Chief Operating Officer	2/3
	Paul Methven, Chief Executive Officer of UK Industrial Fusion Solutions Ltd, and Senior Responsible Owner for STEP	2/3

Matters covered	Since the committee was established in November last year, the matters covered included the following: • Interim approval of the UKAEA Framework Document, proposing changes to the UKAEA Board in preparation for final sign off with DESNZ. • Development of process for regular reporting to Sponsor Department. • Review of STEP transition milestones. • Approval of UKIFS governance arrangements. • Development of reporting mechanisms for UKIFS governance and STEP programme performance into this Committee and then onto UKAEA Board. • Review of UKAEA's Group Internal Audit Plan. • Approval of the establishment of a Pensions Oversight Board. • Development of a workstream on Insurance and Liabilities, agreeing terms of reference for a review. • Approval of Harwell Science and Innovation Campus Ltd Partnership (HSIC) Review terms of reference. • Review of plans for Culham Campus Development in relation to government approvals required.

As part of the Group reporting structure, the subsidiaries, delivery organisations and the Public Sector Research Establishment (PSRE) Executive Committee report into the GEC.



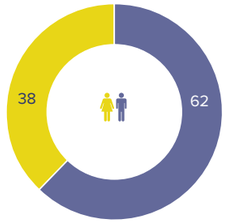
- UKAEA Combined Pension Scheme – managed on behalf of DESNZ.
- Harwell Science and Innovation Campus Ltd Partnership (HSIC), - UKAEA as the public sector partner has 50% control of the Joint Venture.
- AEA Insurance Ltd – subsidiary of UKAEA.
- UK Industrial Fusion Solutions Ltd, wholly owned subsidiary, a company limited by shares.
- Public Sector Research Establishment Executive Committee.

Public Sector Research Establishment (PSRE) Executive Committee Report

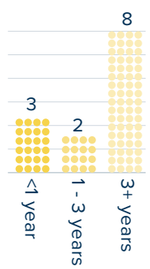
PSRE Executive Committee	
Terms of Reference	Last reviewed and approved in February 2024
Roles and Responsibility	The PSRE Executive Committee is chaired by the CEO and has responsibility for decision-making and oversight of the activities of the PSRE. It analyses performance and operational delivery of Divisions and Programmes, and assesses material issues of risk and opportunity. It has accountability for ensuring that the activities of the PSRE are run effectively and efficiently to meet agreed objectives within budget, as well as setting the behaviours of the organisation to embed a strong delivery culture. The committee meets monthly.
Chair	Ian Chapman, Chief Executive Officer and Accounting Officer
Number of Meetings	12

Membership and Attendance

Gender diversity



Tenure in role



As at 31st March 2024

Ian Chapman, Chief Executive Officer and Accounting Officer	12(12)
Nicola Barber, Group Director of QSHE, Risk, and Assurance	11(12)
Paula Barham, Director of Procurement	2(3)
Tim Bestwick, Chief Development Officer and Deputy CEO	10(12)
Alli Brown, Director of Finance and Business Systems	11(12)
Rob Buckingham, Executive Director for Robotics, Repurposing & Decommissioning	10(12)
Jackie Costello, Interim Director of People	4(5)
Ruth Elliot, Chief Financial Officer and Director of Corporate Services	9(10)
Liz Haynes, Director of People and Organisational Development	1(1)
Andrew Hynes, Head of CODAS & IT	1(3)
Justin Kingsford, Chief Operating Officer	9(10)
Edward Lewis-Smith, Head of Strategy, Governance and Executive Office	6(7)
Paul Methven, CEO, UK Industrial Fusion Solutions Ltd, and Senior Responsible Owner for STEP	7(8)
Fulvio Militello, Executive Director of Plasma Science & Fusion Operations	12(12)
Joe Milnes, Executive Director for Engineering, Computing, and STEP Partner	11(12)
Lyndsey Mooring, Head of the Executive Office	5(5)
William Morris, Chief Scientist	6(7)
Amanda Quadling, Executive Director of Materials, Blankets and Research	9(12)
Bekkie Scales, Director of People	4(6)
Steve Wheeler, Executive Director for Fusion Technology, Fuel Cycle and ITER Components	11(12)

Matters covered	During reporting year 23/24, the matters covered included the following: • Reports from sub-committees (see below) - standing item • Programme and project updates, including STEP, LIBRTI, ITER, Skills, Fusion Technology & H3AT, and JDR - standing item • Divisional quarterly updates, including Materials, Tritium & Technology, Robotics, Plasma, Computing, International, Innovation & Business Development, and Integrated Engineering - standing item • Finance reporting - standing item • Spending review updates - standing item • Commercial and supply chain updates - standing item • Strategy, policy and analysis updates - standing item • Fusion Safety Authority updates - standing item • People and culture updates • Pay remit information and implementation • Organisational restructuring • Engineering functional standards and SAP processes

To assist the Executive Committee, five sub-committees report into it, alongside specific programme boards responsible for the governance of for UKAEA programmes and major projects.

- **Corporate Portfolio Board (CPB)** is responsible for providing assurance that UKAEA's major programmes are delivering their objectives and targeted benefits, and that they are well governed with sufficient controls in place to demonstrate responsible use of public funding.
  - o During 2023/24 CPB replaced the Programmes and Major Projects Committee.
- **Research Strategy Committee (RSC)** is responsible for maintaining the strategic positioning of the UKAEA research programmes, considering the advice of the Fusion Advisory Board, Programme Advisory Committee, and UKAEA's obligations to international collaborations. The committee identifies, proposes, and assesses new research opportunities and provides assurance to the Executive on research governance processes.
  - o During 2023/24 RSC replaced the Research Programme Strategy Committee.
- **Operations, People and Skills Committee (OPSC)** is responsible for the effective management and oversight of operational services delivery and cross-cutting activity that impacts on the operational outputs of UKAEA PSRE's divisions and programmes. It sets and monitors KPIs for People, QSHERA, Office of the Chief Engineer and UKAEA's waste strategy on behalf of PSRE.
  - o During 2023/24 OPSC replaced the Research Programme Strategy Committee.
- **Commercial Development Committee (CDC)** is responsible for UKAEA's strategic partnering and collaboration across the fusion sector and monitors UKAEA's activities around innovation, investment, communication, and supply chain development. The Committee has also oversight of strategic planning for Campus development and property assets and driving UKAEA's Strategy for Sustainability.
  - o During 2023/24 CDC replaced the Building and Estates Committee, taking on wider aspects of corporate development.
- **Assurance and Risk Committee (ARC)** is responsible for assuring the Executive that the activities and processes of UKAEA have sound systems of internal control. It has oversight of enterprise risk and ensuring the effectiveness of the risk management framework.
  - o During 2023/24 ARC replaced the Assurance Executive Committee.

GOVERNANCE

KEY

G Group Executive Committee (GEC) E PSRE Executive Committee

Ruth Elliot
Chief Financial Officer and Director of Corporate Services - Joined May 2023

Experience:
See page 111 for Ruth Elliot's bio.

Professor Sir Ian Chapman
Chief Executive Officer and Accounting Officer

Experience:
See page 110 for Ian Chapman's bio.

Tim Bestwick OBE
Chief Development Officer and Deputy CEO

Experience:
See page 112 for Tim Bestwick's bio.

Justin Kingsford
Chief Operating Officer - Joined May 2023

- Operations
- High performing teams
- Major Programme and Project delivery

Justin joined UKAEA in May 2023 from the Army and brings a wealth of experience in operations, major project management, and team building. He was commissioned into The King's Royal Hussars in 1996 and deployed on operations to Bosnia, Kosovo, and Northern Ireland. He also spent two tours in American Headquarters on operations in Afghanistan and Qatar. More recently, he spent five years as Programme Director for two programmes in the Government Major Projects Portfolio, and a further two years in the Defence Infrastructure Organisation.

Paul Methven
CEO, UK Industrial Fusion Solutions Ltd, and Senior Responsible Owner for STEP - Member of ExCo until Nov 23

- Major programme leadership
- Governance
- Strategic partnering and large-scale commercial relationships

Paul joined UKAEA September 2020 from the Ministry of Defence, where he was Director of Submarine Acquisition at the Submarine Delivery Agency. In this role he was Programme Director for Dreadnought and has previously led a number of other complex major programmes across the MoD.

Alli Brown
Director of Finance and Business Systems

- Business systems and assurance
- Finance operations and shared services
- Business planning

Alli joined UKAEA in 2017. She is a member of the Chartered Institute of Management Accountants. Alli has broad senior experience across different sectors including scientific research, manufacturing, and telecoms. Her role encompasses all aspects of finance with overall responsibility for the core business system enabling HR, Procurement, and Finance. Alli leads the management of the UKAEA Combined Pension Scheme on behalf of DESNZ.

External appointments: UKAEA appointed Board member for AEAIL, a subsidiary captive insurance company.

Nicola Barber
Group Director of QSHE, Risk, and Assurance

- Governance
- Leadership
- Assurance
- Enterprise risk management

Nicola joined UKAEA in 2022 and is a certified member of the Institute of Risk Management. Nicola has worked in a number of disciplines within the nuclear industry for the last 16 years. This includes holding senior roles in risk and assurance across a number of nuclear sites. Nicola's previous experience also includes leading planning teams in the Rail and Oil & Gas industries and project management in the Utility industry.

External appointments:
Member of the Nuclear Special Interest Group Steering Group for the Institute of Risk Management.
UKAEA appointed Board member of RADSAFE CLG.

Professor Rob Buckingham
Executive Director for RACE, RAICo and JET Decommissioning and Repurposing

- Robotics and design for remote operations
- Innovation-led change

Rob was appointed Executive Director in March 2023. He remains responsible for RACE, the UKAEA's centre for Remote Applications in Challenging Environments. Added to this he is Senior Responsible Officer for RAICo, the Robotics and AI Collaboration with the Nuclear Decommissioning Authority and the University of Manchester, and Senior Responsible Officer for the JET Decommissioning and Repurposing Programme which starts in earnest at the end of JET Science in December 2023.

He was lead author of the UK's Robotics and Autonomous Systems 2020 Strategy (2014) and The Cyber-Physical Infrastructure (2022). Before joining the UKAEA, Rob co-founded and was Managing Director of OC Robotics which developed and commercialised snake-arm™ robots. He is a Fellow of the Royal Academy of Engineering and a Fellow of the Institute of Engineering and Technology. Rob received an OBE for services to robotics engineering in the 2021 New Year Honours.

External appointments:
LuffyAI Non-Executive Director, UK Robotics Growth Partnership, and NDA Future Challenge Board

Professor Fulvio Militello
Executive Director of Plasma Science & Fusion Operations

- Fusion science and technology
- Leadership
- Science programme management

Fulvio was appointed Director of Tokamak Science and MAST-U in December 2021, following a career as a research scientist and manager at UKAEA in 2008. Before joining the Authority, he worked in Italy, France, and the United States as a plasma physicist, authoring 100 scientific papers and a book on plasma boundary physics. Fulvio led the EUROfusion programme for alternative divertors, he has been Adjunct Professor of Physics at Chalmers University (Sweden) and is Visiting Reader at Imperial College London.

Dr Joe Milnes
Executive Director for Engineering, Computing, and STEP Partner

- Project delivery
- Operations
- Technical leadership

Joe joined UKAEA in 2000. His background is in engineering, and he has a PhD in thermal-hydraulic modelling. Joe has held a variety of engineering and management roles across JET, MAST-U and ITER. As well as leading operations on JET, he also chairs and advises reviews of fusion facilities worldwide.

Joe served as interim Chief Operating Officer / head of JET operations between November 2022 and May 2023.

Dr Amanda Quadling
Executive Director of Materials, Blankets and Research

- Collaborative R&D
- Laboratory operations
- Science innovation

Amanda is a mineralogist with a PhD in Materials Science and Engineering. She has spent the last twenty years creating and managing laboratories, incubators, commercial service divisions, and Centres of Excellence focused on products and services in the energy sector and head industry. She was previously on the Technology Advisory Board of global corporate Morgan Advanced Materials and Technical Director for UK manufacturer Mandl Materials (tungsten, dielectrics, electroceramics). In 2019, Amanda was named 10th most influential women in UK engineering 2019 (Financial Times). She is now UKAEA's Director of Materials and focused on delivering a Fusion Materials Roadmap for the UK.

External appointments:
Amanda was previously a Board member for the British Ceramic Confederation. She currently represents UKAEA on the Governing Board of The Henry Royce Institute (for Materials), Chairs the Advisory Board for Bangor University's Nuclear Futures Institute, and is a member of NIRAB (the Nuclear Innovation and Research Advisory Board) to BEIS.

Stephen Wheeler
Director of Fusion Technology

- Operations management
- Project governance
- Leadership
- Operational growth

Stephen joined UKAEA in 2015 following a career in industry first in engineering design and later managing advanced production facilities in Europe and North America. He successfully established the RACE business unit operation and over five years delivered five-fold growth. In April 2020 he was appointed Director of Fusion Technology.

Secretariat:

Edward Lewis-Smith G E
Head of Strategy, Governance and Executive Office
- Secretariat of GEC from Nov 23 until Dec 23.
- Secretariat of ExCo from Oct 23.

- Policy and strategy
- Government and politics
- Business Case development and project initiation
- Economic Analysis

Edward joined UKAEA in 2023 to take up the new role of Head of Strategy, Governance and Executive Office. Before coming to UKAEA, Edward worked for twelve years across the Civil Service in areas including international research infrastructure (BEIS), European defence and security (MoD),Personal Taxation policy, and Project Design and Operation (both HM Treasury). Between 2018-2023 Edward led work in government on UKAEA programmes and fusion energy R&D policy, developing the UK's policy position on fusion regulation, and representing the UK oversees on fusion.

Nina Tomlin G
Executive Officer
- Secretariat of GEC from March 23

- Governance
- Policy and strategy
- Management and coordination

Nina joined UKAEA in February 2024 as an Executive Officer working on policy, strategy, analysis, and governance. She had previously worked at the University of Oxford for thirteen years in different roles – as Director of International Strategy, Head of Student Administration (Maths Institute), Administrator (Institute of Biomedical Engineering), and as Head of Administration and Finance (Department of Computer Science and Department of Politics and International Relations). Nina also has experience of working in a range of third and public sector organisations (The Ditchley Foundation, Amnesty International and the Electoral Commission), and European Union institutions (European Parliament and European Commission).

Retirements from the Committees during the reporting year

Paula Barham E
Director of Procurement
- Member until July 23

- Leadership
- Strategy
- Complex procurement projects

Paula has worked at UKAEA for over 25 years. She is an experienced procurement leader managing the team of 35+. She specialises in transformation and complex strategic procurement projects, having a strong delivery track record in this area.

Paula is MCIPS qualified and has been key in developing a comprehensive view of UKAEA's supply chain and application of commercial strategies to manage industry capacity.

Jackie Costello E
Interim Director of People
- Member from May 2023 until Sept 23

- People strategy
- Employee engagement
- HR systems optimisation

Jackie joined UKAEA in 1982. Having started as an administrator, she has enjoyed a diverse and highly successful career within Human Resources, progressing to Interim Director of People in 2023 whilst a permanent Director was recruited. This role at UKAEA is responsible for delivery of all aspects of the People Department and she is motivated by enabling individuals and organisations to thrive.

Bekkie Scales E
Director of People - Oct 2023 until April 2024

Liz Haynes E
Director of People and Organisational Development
- Member until May 2023

- People strategy
- Organisation development and design
- Employee engagement

Liz joined UKAEA in 2021. She is a Chartered Fellow of the Chartered Institute of Personnel and Development. Liz's career spans the private and public sectors, including roles in the Civil Service with Border Force, BEIS, and the Cabinet Office, where she delivered a number of major ministerial programmes. Her role at UKAEA encompasses all aspects of the People Function and she is motivated by enabling individuals and organisations to thrive.

External appointments:
Liz is a trustee of Seb's Foundation, a charity providing academic and sporting opportunities for young people from socially disadvantaged backgrounds.

Dr Andrew Hynes (from April 2022) E
Head of CODAS & IT
- Member until June 2023

- Research computing
- Information technology
- Cyber security
- IT leadership & programme management

Andrew Hynes joined UKAEA in 2014 following a career in industry and academia. His career spans biochemistry research, drug discovery, bioinformatics, and IT strategy and delivery. In recent years he has specialised in scientific computing and digital transformation.

External Appointments:
Member of the EIROForum IT Thematic Working Group and AIRTO Cyber Security Special Interest Group.

Dr William Morris E
Chief Scientist
- Member until Nov 23

- Fusion science and technology
- Technical and scientific leadership
- Research governance and assurance

William joined UKAEA in 1987 after a spell at Princeton. Originally a tokamak plasma physicist, he headed the experimental tokamak programme at Culham and the related department (including JET experimentalists). William has provided scientific and strategic advice to the European programme since the 1990s, expanding from plasma science to the full spectrum of science and technology. He was the inaugural chair of the EUROfusion Science and Technology Advisory Committee (STAC) from 2014-2018, was an author and co-editor of the 2018 European Fusion Roadmap, and was a member of the DEMO Technology Advisory Group until the pre-concept gate review in 2020. Since then, he has focused further on the integration of science and technology for fusion, taking account of uncertainties in both, and on wider strategic aspects alongside encouraging theory, rigour and evolution in research.

Dr Lyndsey Mooring E
Head of the Executive Office - Secretariat until Sept 24

Lyndsey joined UKAEA in 2018. She originally joined as a Development Engineer, establishing and leading United Kingdom Atomic Energy Authority Annual Report and Accounts 2023/2024 53 research on non-metallic materials and components across UKAEA's major programmes of NFTP and STEP, leveraging a successful research and product development career in aligned private sector industries.

She is now UKAEA's Head of the Executive Office and is focused on supporting the directorate in all aspects of corporate delivery. She is secretary for the Board and Executive meetings. Lyndsey is also the UKAEA sponsor for the Fusion Industry Programme.

UK Industrial Fusion Solutions Ltd
UK Industrial Fusion Solutions Ltd (UKIFS) is a subsidiary of UKAEA and is currently not trading during the year. UKIFS will report into Group Executive Committee, two non-executive directors have been appointed to date: David Gann as the Chair and Charlotte Valeur. Until the subsidiary starts trading, the board has operated in shadow form with the UKAEA Accounting Officer and a DESNZ Departmental representative in attendance. The CEO has now been appointed. Articles of Association and the Corporate Structure Document (the governance framework between UKAEA, UKIFS and DESNZ) have been agreed in principle.

Board Committee reports

People and Remuneration Committee

People and Remuneration Committee	
Terms of Reference	Approved in May 2023
Roles and Responsibility	The People and Remuneration Committee has delegated responsibility from the UKAEA Board for reviewing the remuneration policy and making recommendations to DESNZ on the level of directors' and executives' remuneration. It also endorses the UKAEA's people and EDI strategies, offering advice on major proposed changes to pay and remuneration arrangements or terms and conditions of UKAEA employees. To drive the efficacy of UKAEA's Inclusion Council, the Chair of the committee also acts as chair to the Council. As the members of the UKAEA Board are appointed by DESNZ, UKAEA does not maintain a Nominations Committee.
Chair	Lady Eithne Birt
Number of Meetings	4

Membership and Attendance	Non-Executive Directors	
	Eithne Birt*	4/4
	Luc Bardin	4/4
	Sue Gray	4/4
	David Gann**	1/1
	* Eithne Birt was appointed UKAEA Interim Chair in August 2023. She is also Chair of the People and Remuneration Committee.	
	** David Gann retired from UKAEA Board as Chair and was appointed as UKIFS Chair in August 2023.	
	Committee Attendees	
	Ian Chapman, CEO (Non-member)	4/4
	DESNZ representative (Non-member)	4/4

Matters covered	• Agreed Executive objectives for the 2024/25 financial year. • Undertook Non-Executive Director succession planning. • Undertook annual performance reviews of executive directors, discussing pay and bonus payments based on performance against the objectives set. • Reviewed progress made on the UKAEA's pay strategy. • Reviewed progress of the equality, diversity and inclusion agenda. • Oversight of UKAEA's people strategy, including recruitment and early careers.

Accountability report
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Chair's report

People are the UKAEA's most valuable asset. The focus of this Committee on people issues has therefore continued at pace, always taking care to be in close alignment with the recruitment and retention of the wide, complex mix of skills and experience needed for the organisation to achieve its strategic goals and delivery targets. We have also worked closely with colleagues in the newly formed UKIFS to assist and support their endeavours to design and form the organisation.

One critical task of the Committee was to set the performance objectives for the CEO and his Senior Executive Team, assessing individual performance against these measures and determining the end of year performance bonus' to be paid to each. This year, the models used to do so were themselves reappraised and significantly changed to ensure an effective delineation of the objectives which then, together, would capture and reward the totality of the executives' responsibilities and achievements. The evidence brought before the Committee at the end of the year demonstrated high performance by the CEO and the senior executive team in 22/23.

The Committee has also been engaged in assisting the CEO to reshape his senior executive team, reevaluating job weight and content, and running a competitive interview process in the allocation of new roles. For the first time, he is able to say that he has a complete senior team.

Last year the UKAEA published its first 5-year People Strategy. In this first year, the Committee has been able to review a number of its components such as the annual people plan, and the beginnings of the implementation of a strategic workforce planning framework aimed at helping the organisation attract, secure, and develop the exceptional individuals it needs in all areas of key interest. These are still in their early stages, and it is recognised that there is a good deal more work to be done to fulfil the commitments of the Strategy and amend it where necessary.

Competition in the employment market continues to absorb time and energy. The Committee has therefore continuously been appraised of, and approved the UKAEA's intended Pay Strategy for the whole organisation and tracked its progress.

Our endeavours to help increase the diversity and inclusion of the organisation also took a meaningful stride forward with the further development of the Inclusion Council, which is becoming a powerful and inclusive mechanism for progressing this agenda. I have been delighted to see how many staff members have come forward to give their time to lead or participate in a growing number of support groups who form its whole.

More focus was given by the Committee to succession planning for the UKAEA Board, with determined attempts to encourage a more diverse compliment of Non-Executive Directors. There are now three women Board Members, a first measure of some success.

My report should again close by recognising the enormous work that has been done by colleagues in DESNZ, working alongside UKAEA staff, to bring our remuneration challenges and pay strategies to the attention of His Majesty's Government.

In 2023-24, UKAEA has continued to develop as an organisation, adapting its structures and processes to ensure that they reflect and enable its changing strategic focus and priorities, whilst assisting and supporting its new subsidiary, UK Industrial Fusion Solutions Ltd. It has been another full and challenging year for the People and Remuneration Committee.

Chair
Lady Eithne Birt CB

Performance
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Audit and Risk Assurance Committee

Audit and Risk Assurance Committee	
Terms of Reference	Approved in February 2024
Roles and Responsibility	The Committee supports and advises the Board and Accounting Officer (AO) by independently reviewing the integrity, efficacy, and effectiveness of the Safety, Health and Environmental (SHE) management system, the risk management processes, the control environment and the integrity of the financial statements, and the UKAEA annual report.
Chair	Richard Hookway
Number of Meetings	4

Membership and Attendance		
	Non-Executive Directors	
	Richard Hookway (Non-Executive Director)	4/4
	Luc Bardin (Non-Executive Director)	4/4
	Stephen Hillier (Non-Executive Director)	4/4
	Committee Attendee	
	Alli Brown (Director of Finance & Business Systems)	4/4
	Ian Chapman (Chief Executive Officer and Accounting Officer)	2/4
	Ruth Elliot (Chief Financial Officer and Director of Corporate Services)	4/4
	Justin Kingsford (Chief Operating Officer)	3/4
	Nicola Barber (Group Director of QSHE, Risk and Assurance)	4/4
	Stuart Biltcliffe (Financial Controller)	4/4
	Ian Korner (Head of Pensions from 11/09/23)	3/3
	Sarah Laws (Group Head of Internal Audit)	4/4
	Steve Blake (Interim Head of Safety, Health, Environment to 31/10/23)	2/3
	Suzanne Melvin (Head of Safety, Health, and Environment from 15/01/24)	1/1
	Jakub Kaniewski (Network Engineer & Cyber Security Section Leader)	4/4
	External Audit Representative	4/4
	DESNZ representative	3/4

Matters covered	Key areas considered by the Audit and Risk Assurance Committee during the year were:
	• Internal Audit Charter, Strategy and Plan endorsement. • Overview of Internal Audit programme and management's progress to resolve issues and risks identified. • Overview of the Assurance programme, Strategy and Framework, and overview of the effectiveness of internal controls. • UKAEA's statutory accounts, including compliance with HM Treasury guidance, and the application of accounting policies and assumptions. • Review of JET Lifetime Plan which underpins the site restoration provision. • Pension Scheme Accounts review. • Risk Management and Risk Appetite. • Review of Significant safety, health, and environment matters. • Review of Information Security. • Counter Fraud Risk Assessment and Action Plan. • The Committee's Performance Effectiveness Review exercise.

Information Security
The Chief Financial Officer and Director of Corporate Services is the executive lead for information management. Information risks are overseen by an information assurance steering committee which feeds significant risks into the corporate risk review group. Information Asset Owners maintain local information repositories and ensure business continuity. During the last year there has been a focus on modernising security controls and tackling technical debt. Communication and training have continued, including tabletop exercises and cyber security awareness training. An information security audit was completed which provided assurance on cyber security controls with some recommended improvements. UKAEA is aligning with the Government's Cyber Assessment Framework and work is ongoing to achieve the information security management system standard (ISO 27001).

There have been no reportable data breaches or data loss incidents during the year.

Composition of the Audit and Risk Assurance Committee
For the year to 31st March 2024, the committee had one member possessing what the Smith report and HM Treasury's Audit and Risk Assurance Committee handbook describe as recent and relevant financial experience; Richard Hookway (see biography on page 111).

Independent Oversight
As our external auditor, the NAO are given complete access to all financial and other information and the committee meets (without management present) with the NAO. The committee chair meets with the Head of Internal Audit, the Group Director of QSHE, Risk and Assurance, and the secretary of ARAC on a regular basis.

Chair's report

ARAC met on 4 occasions throughout the year to fulfil its role providing oversight of the system of internal control, financial accounting, and reporting, the management system for health, safety and the environment, cyber security, whistleblowing, and fraud and all matters relating to both internal and external audit. The Committee also oversees risk management and reporting. During the past year, the Committee spent significant time on each of these areas reviewing regular reports and conducting "deep dives" into specific risk areas.

As a result of its work, ARAC concluded that the Executive Committee and the wider UKAEA Team continue to make significant progress in managing and mitigating risks.

This progress has been against a backdrop of constraints on staffing levels and the ability to hire the right people with the right skills. This in itself is one of the key risks, which continues to place significant strain on our ability to deliver the highly scientific, technical, and niche work underpinning our corporate goals. Several mitigating actions are underway.

The focus in the coming year will be:
- Continuous review of the overall risk landscape to seek assurance over management and mitigation of risks.
- STEP programme objectives; delivering appropriate assurance in conjunction with the newly established UKIFS board and its ARAC.
- "Fusion Futures" portfolio delivery within the timeline set out by the UK Government, managing both risk and opportunity.
- Oversight of the financial and control dimensions of the JET decommissioning and repurposing programme.
- Continuous review of HSE (Health, Safety Environment).
- Improving adherence to control and compliance standards.
- Oversight and review of issues arising from the Internal Audit Programme.
- Continued improvement of UKAEA contract management including framework of governance, risk management and control.

The organisation will need to continue to demonstrate value for money across all its major programmes whilst retaining its world-leading reputation for fusion research. ARAC will play its part in providing assurance to this end.

Chair
Richard Hookway

Campus and Property Committee Report

Campus and Property Committee	
Terms of Reference	Approved in September 2022
Roles and Responsibility	The Campus and Property Committee advises the Board and provides guidance to the Executive team on strategic campus development and property relating to the UKAEA Group, which includes Culham Campus, the Fusion Technology Facility in South Yorkshire, UKIFS site in West Burton, and Harwell Science and Innovation Campus Ltd Partnership.
Chair	Stephen Barter
Number of Meetings	2

Membership and Attendance	Non-Executive Directors	
	Stephen Barter	2/2
	Mary Ryan	0/1
	Committee Attendees	
	Tim Bestwick (Chief Development Officer & Deputy Chief Executive Officer)	2/2
	Ruth Elliot (Chief Financial Officer and Director of Corporate Services	1/1
	Keith Musgrave (Head of Buildings & Facilities Management)	2/2
	Iain Wallace (Head of Campus & Property Development) *	1/2
	* Simon Peck and David Gilham attended in Iain Wallace's absence	

Matters covered	
	• Development of the UKAEA Property Strategy and associated delivery plans. • Culham Campus development activities including the approach to the selection of a Private Sector Partner. • Progression and performance of the Harwell Science and Innovation Campus Ltd Partnership. • Updates of the Highways Infrastructure Fund Programme Didcot (HIF) planning application and the ongoing inquiry related to the HIF plan. • Work to define requirements for STEP / UKIFS at the West Burton site.

Chair's report

The Committee has continued to provide a helpful role in advising the Executive team and the Board on property matters. Following the acquisition of the UKIFS site at West Burton and the potential decommissioning of the JET facilities at Culham, attention is now focused on preparing an updated and forward-looking estate strategy for UKAEA's portfolio. This will guide the Board and the Executive Team on the future priorities for investment and the approach to achieving the desired outcomes from the Estate in support of UKAEA's mission. At the same time, work has continued in making land available for commercial development to attract potential collaborative partners and complementary businesses to UKAEA's campuses, to further advance UKAEA's corporate objectives.

Maintaining and developing competitive facilities and sustaining a vibrant and collaborative eco-system at each campus, remain vital to the successful delivery of UKAEA's purpose.

Chair
Stephen Barter

Accountability report
GOVERNANCE

Remuneration and staff report

Directors' remuneration

Remuneration policy

The remuneration of Directors appointed to the UKAEA Board is set by the Secretary of State for DESNZ with the approval of HM Treasury in accordance with the Atomic Energy Authority Act 1954. The UKAEA People and Remuneration Committee makes recommendations to DESNZ on the overall remuneration package for Directors who are appointed to the UKAEA Board. 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 UKAEA.

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

Service contracts

Executive Directors who are members of the UKAEA Board are appointed by the Secretary of State for DESNZ. This is normally for a three-year term and is dependant upon continuing employment with UKAEA.

Remuneration and pension entitlements

The individual components of the remuneration packages are:

Salary and fees

The CEO, deputy CEO and CFO as Executive Directors receive an annual basic salary. The Chair and Non-Executive Directors receive fees for their services. The People and Remuneration Committee makes recommendations to DESNZ as appropriate.

Benefits

Executive Directors are also reimbursed for reasonable expenses incurred in line with the policy for UKAEA's employees. These reimbursements are not included in the following table.

Performance related bonuses

The performance bonuses for Executive Directors are calculated in accordance with performance against agreed objectives, confirmed by DESNZ on the basis of recommendations from the People and Remuneration Committee. The total bonus is made up of two components: the performance of UKAEA against specific quantified targets, and the performance of the individual against specific targets. The performance-related bonuses shown in the table are calculated on the basis of assessment by the People and Remuneration Committee of performance against the relevant specific targets.

Board Directors' remuneration for the year (subject to audit)

Individual Board Directors' remuneration for the year is shown in the following table, with salaries, allowances, fees and bonuses disclosed on an accruals basis.

	Fees / Salary and allowances		Benefits[a]		Annual bonus[b]		Pension benefit[b]		Total	
	2023/24 £k	2022/23 £k	2023/24 to nearest £100	2022/23 to nearest £100	2023/24 £k	2022/23 £k	2023/24 £k	2022/23 £k	2023/24 £k	2022/23 £k
Prof David Gann Chair to 31 Jul 2023	5-10	20-25	-	100	-	-	-	-	5-10	25-30
Dr Luc Bardin Non-Executive Director	10-15	10-15	200	500	-	-	-	-	15-20	15-20
Stephen Barter Non-Executive Director	10-15	10-15	300	1,600	-	-	-	-	15-20	15-20
Dr Mark Bayley Non-Executive Director to 13 May 2023	0-5	10-15	100	300	-	-	-	-	0-5	15-20
Lady Eithne Birt Non-Executive Director to 31 Jul 2023, Interim Chair from 1 Aug 2023	20-25	10-15	-	-	-	-	-	-	20-25	10-15
Dame Sue Gray Non-Executive Director from 1 Jan 2023	10-15	0-5	-	100	-	-	-	-	10-15	0-5
Prof Robin Grimes Non-Executive Director from 1 Oct 2023	5-10	-	400		-	-	-	-	5-10	
Sir Stephen Hillier Non-Executive Director	10-15	10-15	200	1,100	-	-	-	-	15-20	15-20
Richard Hookway Non-Executive Director	10-15	10-15	100	1,300	-	-	-	-	15-20	15-20
Lee McDonough Non-Executive Director from 13 Nov 2023, Director General, Net Zero, Nuclear and International at DESNZ	-	-	-	-	-	-	-	-	-	-
Mary Ryan Non-Executive Director from 1 Oct 2023	5-10	-	-	-	-	-	-	-	5-10	-
Prof Sir Ian Chapman Executive Director, CEO	220-225	185-190	-	-	40-45	25-30	63	11	325-330	220-225
Tim Bestwick Executive Director from 9 Jun 2023, Deputy CEO	105-110	-	-	-	10-15	-	25	-	140-145	-
Ruth Elliot Executive Director from 10 May 2023, CFO	105-110	-	-	-	10-15	-	22	-	140-145	-
Antonia Jenkinson Executive Director to 24 Jan 2023, CFO	-	110-115	-	-	-	10-15	-	3	-	130-135

Notes:
a. Expenses benefits disclosed for the Chair and Non-Executive Directors in 2023/24 and in 2022/23 relate to travel for Board and other meetings at Culham and include the tax liability on these expenses which was met by UKAEA. These expenses vary depending on the distance of the individual's home from Culham.
b. Where applicable, annual bonuses of Directors are subject to approval by DESNZ. 2022/23 bonuses are actual.
c. The value of pensions benefits accrued during the year is calculated as (the real increase in pension multiplied by 20) plus (the real increase in any lump sum) less (the contributions made by the individual). The real increases exclude increases due to inflation or any increase or decrease due to a transfer of pension rights. In some cases, the pensions benefit is negative in real terms where pay increases and additional service have not offset the effect of inflation.

2023-24 notes:
Prof David Gann - annual equivalent fee whilst Chair of the UKAEA Board was £20k - £25k. Prof David Gann left the UKAEA Board during the year 2023/24 in order to become Chair of the Board of UKIFS - annual equivalent fee for 2023/24 (for time as UKAEA Chair and time as UKIFS Chair) was £30k - £35k.
Dr Mark Bayley - annual equivalent fee was £10k - £15k
Prof Robin Grimes - annual equivalent fee was £10k - £15k
Mary Ryan - annual equivalent fee was £10k - £15k
Tim Bestwick - full time annual equivalent salary was £130k - £135k.
Ruth Elliot - full time annual equivalent salary was £135k - £140k.

2022-23 notes:
Antonia Jenkinson - full time annual equivalent salary was £140k - £145k.
Dame Sue Gray - annual equivalent fee was £10k - £15k

Fair pay disclosures (subject to audit)

Remuneration ratios	2023/24 £	2022/23 £
Highest paid Director's total remuneration for the year excluding pension benefit	260k-265k	210k-215k
	Salary and allowances	**Performance pay and bonuses payable**
Highest paid Director - percentage change from the previous financial year [a]	18.7%	54.5%
Employees taken as a whole, excluding the highest paid Director - average percentage change from the previous financial year [b]	1.4%	16.6%

Notes:
(a) This calculation is based on the mid-point of the band used in disclosing Directors' remuneration for each of salary and performance pay and bonuses payable
(b) Calculated as the total on an annualised basis for all employees (apart from the highest paid Director) as at 31 March, divided by the full time equivalent number of employees (excluding the highest paid Director) as at 31 March.

Employee remuneration ratios	Salary £	Other pay and benefits [a] £	Total remuneration £	Highest paid Director's remuneration as a multiple of the percentile [b]
2023/24				
25th percentile	35,520	1,978	37,498	7.1
Median percentile	46,293	8,579	54,872	4.8
75th percentile	57,454	3,200	60,654	4.4
2022/23				
25th percentile	35,961	1,802	37,763	5.6
Median percentile*	46,293	8,319	54,612	3.9
75th percentile	49,084	10,959	60,043	3.5

Notes:
(a) Other pay and benefits includes bonus and allowances such as market premium and responsibility allowance
(b) Calculated using mid point of £5k disclosure band for highest paid Director's remuneration

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

For the 2023/24 financial year, the pay award for most staff is due to be implemented in August 2024 due to ongoing engagement with the government. Increases in pay for senior staff were implemented from 1st August 2023, including the highest paid director whose pay was revised by the government during the financial year. This has caused a widening of the gap between the pay of the highest paid director and the 25th percentile, median and 75th percentile pay points. We would expect to see these multiples reduce next year, when the pay award is implemented.

In 2023/24 and in 2022/23 no employees received remuneration in excess of that of the highest paid Director.

Remuneration of employees excluding the highest paid Director ranged from £19,003 to £232,500 (2022/23: £18,902 to £152,919).

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

Pension entitlements (subject to audit)

Executive Directors are members of the United Kingdom Atomic Energy Authority Combined Pension Scheme (CPS) which 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. UKAEA also operates an unfunded pension arrangement in respect of 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 later in the Remuneration and staff report.

The pension entitlements shown in the table below are those that would be paid annually on retirement based on service to 31 March 2023 and include the value of added years paid for by Directors.

	Accrued pension as at 31/03/24 £k	Lump sum as at 31/03/24 £k	Real increase in accrued pension [a] £k	Real increase in lump sum [a] £k
Prof Sir Ian Chapman	37	112	3	10
Tim Bestwick [b]	17	50	1	4
Ruth Elliot [c]	1	4	1	4

Notes:
(a) The real increase has been calculated after subtracting inflation.
(b) Figures for Tim Bestwick are from 9 June 2023 when they joined the UKAEA Board.
(c) Figures for Ruth Elliot are from 10 May 2023 when they joined the UKAEA Board.

The following table sets out the Cash Equivalent Transfer Value (CETV) of the Executive Directors' 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 but represent a potential liability of the pension scheme or UKAEA.

	CETV at 31/03/23 £k	Real increase in CETV [a] £k	CETV at 31/03/24 £k
Prof Sir Ian Chapman	517	53	759
Tim Bestwick [b]	369	28	416
Ruth Elliot [c]	0	20	29

Notes:
(a) The real increase has been calculated after subtracting inflation.
(b) Figures for Tim Bestwick are from 9 June 2023 when they joined the UKAEA Board.
(c) Figures for Ruth Elliot are from 10 May 2023 when they joined the UKAEA Board.

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.

Staff report

Staff costs (subject to audit)	2024 £k	2023 £k
Directly employed staff:		
Salaries, bonuses and allowances	106,300	86,921
Social security costs	12,447	10,604
Pension costs – defined contribution plans (see below)	18,417	15,760
	137,164	113,285
Temporary staff	42,312	38,640
	179,476	**151,925**

* Comparatives amended in respect of re-categorisation of costs

Staff numbers (subject to audit)

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

	2024	2023
Directly employed	1,834	1,704
Temporary staff	607	603
	2,441	**2,307**

Temporary (non-payroll) staff may be 'off-payroll workers' who are engaged via an intermediary, or they may be on the payroll of another organisation within the supply chain. Most of the temporary staff are engaged to carry out specialist work in UKAEA's scientific facilities.

Staff composition as at 31 March 2024 (not subject to audit)

All figures in the tables below relate to actual staff numbers at the year end rather than to full time equivalents.

Board and senior staff

	Male	Female	Total
Board members	7	5	12
Executive Committee members	8	5	13
Senior staff	20	9	29

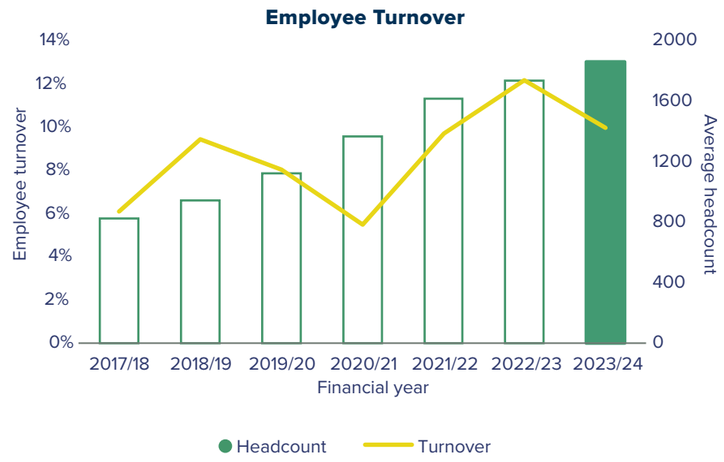
All Employees

	2024		2023	
Male	1,440	73.3%	1,339	75.2%
Female	524	26.7%	442	24.8%

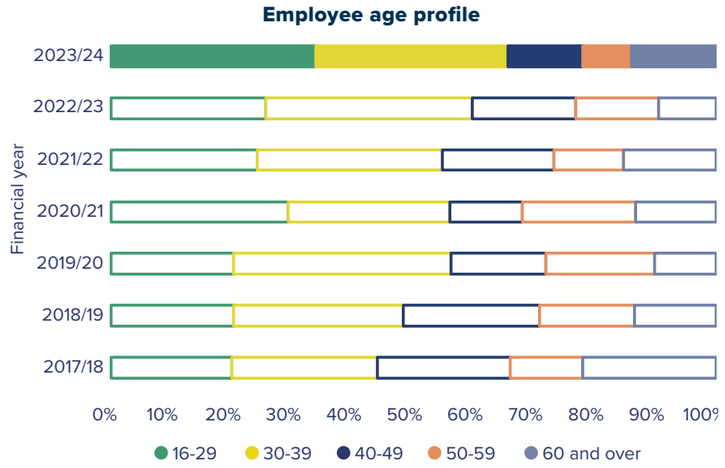
Sickness absence (not subject to audit)

The average sickness absence per employee for UKAEA during the year 2023/24 was 6.6 days (2022/23: 5.7 days).

Staff Turnover **2024** 9.71% **2023** 12.16%



Employee turnover (number of leavers as a proportion of average headcount) has decreased from a peak in 2022/23. See People section in the Performance report for further detail.



UKAEA pension schemes (subject to audit)

(a) Defined benefit schemes

UKAEA 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 UKAEA. No information in these financial statements relates to other employers participating in the CPS, PNISS or PPSS. UKAEA has overall responsibility for the management of the schemes under a Framework Agreement with DESNZ. 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.

(a) Defined benefit schemes continued
In accordance with the FReM, the schemes are accounted for 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 UKAEA during the year were £17,936k (2023: £14,453k).

(b) Defined contribution schemes

UKAEA manages two defined contribution schemes, the Additional Voluntary Contribution (AVC) scheme and the Shift Pay Pension Savings Plan (SPPSP) scheme, both of which are fully insured schemes administered by Prudential (a trading name of Prudential Distribution Limited, which is a subsidiary of M&G plc.) to whom contributions are paid.

The AVC scheme includes members from UKAEA 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 SPPSP scheme include shift working employees of UKAEA and of other employers who are members of CPS or PPSS. The costs of the SPPSP scheme, which are directly linked to shift pay earnings, are charged to the Statement of comprehensive net income at the time the shift pay is paid. The total contributions paid by UKAEA during the year were £25k (2023: £26k).

(c) Unfunded retirement benefits

There are unfunded retirement benefits in respect of three former UKAEA Chief Executives which are not included in the UKAEA pension schemes.

The movement in the liability for these benefits is shown below:

	Group and Authority	
	2023/24 £k	**2022/23 £k**
At 1 April	1,705	2,281
Interest on liability	68	35
Benefits payable	(98)	(85)
Change in discount rate	-	(684)
Actuarial gain/(loss)	(35)	158
At 31 March	**1,640**	**1,705**

The interest on liability is recognised in the Statement of comprehensive net income and the actuarial gain/(loss) is recognised 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 (further details of provisions are given in Note 19).

Staff policy
UKAEA's pay policy is determined by our sponsoring department, DESNZ.

Our Trade Union is Prospect and we have an extant framework on how we engage and consult. We use our existing mechanisms to seek their feedback and thinking on current issues.

UKAEA is committed to promoting equality, diversity, and inclusion inside and outside of the organisation, and to ensuring that the working environment is welcoming, supportive, and inclusive for all. In 2020 we launched a 'Being Inclusive' strategy as a five-year campaign coordinating a series of actions centring around four main commitments:
- **People**: "UKAEA will take positive action to improve the opportunities and lived experience of all individuals working at, or interacting with, the organisation."
- **Environment**: "UKAEA will take positive steps to identify and improve the physical working environment for all of its people, particularly those with disabilities, whether they are visible or hidden."
- **Communication and engagement:** "UKAEA will improve internal and external communications to fully reflect its ED&I commitment and progress to maximise the awareness and engagement of all stakeholders."
- **Policies and practices:** "UKAEA will integrate equality, diversity and inclusion into all our policies and practices."

UKAEA's equal opportunities policy requires that all job applicants enjoy equal opportunity for employment on the basis of ability, qualifications, experience and suitability for the work. We deliver in-house training on diversity and equality, unconscious bias and specific recruitment training. These courses cover equality, diversity and inclusion, ensuring that line managers are aware of their responsibilities towards, and the benefits of, these topics.

UKAEA's equal opportunities policy provides a framework for ensuring that equality is considered throughout the employment of staff. For those who become disabled during their employment, we provide occupational health facilities which provide direct support to the employee and advise line managers on modifications and restrictions which are required. In addition to the training mentioned above, People Department Business Partners provide coaching on flexible working and unconscious bias to ensure that employees with disabilities are given equal opportunity in training, career development and promotion. UKAEA is also registered with the Disability Confident Scheme.

Expenditure on consultancy and temporary staff

The expenditure on temporary staff (the provision of workers to cover business-as-usual or service delivery activities within an organisation) was £42,312k (2023: £38,640k), as detailed in the Staff costs on page 161. The increase year on year relates mainly to temporary staff recruited to support the increasing breadth of programmes.

UKAEA spend on consultancy (the provision to management of objective advice relating to strategy, structure, management, or operations of an organisation, in pursuit of its purposes and objectives) was £3,051k (2023: £735k). Such advice is sought when UKAEA does not have the skills set required within its support services and the particular requirement falls outside the 'business-as-usual' environment. When used appropriately, consultancy can be a cost effective and efficient way of getting the temporary and skilled external input that UKAEA needs. The increase in expenditure year on year includes work relating to the STEP prototype powerplant and operating model.

Off-payroll appointments

(a) Highly paid off-payroll worker engagements as at 31 March 2024, earning £245 per day or greater

Number of existing engagements	209
Of which the number that have existed at the time of reporting for	
Less than one year	71
Between one and two years	48
Between two and three years	37
Between three and four years	16
For four or more years	37

(b) All highly paid off-payroll workers engaged at any point during the year ended 31 March 2024, earning £245 per day or greater

Number of temporary off-payroll worker engagements in force during the year ended 31 March 2023	307
Of which:	
Number not subject to off-payroll legislation	289
Number subject to off-payroll legislation and assessed as within the scope of IR35	-
Number subject to off-payroll legislation and assessed as not within the scope of IR35	18
Number of engagements reassessed for consistency/assurance purposes during the year	8
Of which:	
Number of engagements that saw a change to IR35 status following the review	-

(c) Off-payroll engagements of board members, and/or senior officials with significant financial responsibility, between 1 April 2023 and 31 March 2024

Number of off-payroll engagements of board members and/or senior officials with significant financial responsibility during the financial year	-
Total number of individuals on payroll and off-payroll that have been deemed 'board members and/or senior officials with significant financial responsibility' during the financial year	22

(d) AEA Insurance Limited (see also Note 15.1): Off-payroll engagements of board members, and/or senior officials with significant financial responsibility, between 1 April 2023 and 31 March 2024

Number of off-payroll engagements of board members, and/or senior officials with significant financial responsibility, during the financial year	2
Total number of individuals on payroll and off-payroll that have been deemed 'board members, and/or senior officials with significant financial responsibility' during the financial year.	3

AEAIL is a captive insurance company registered in the Isle of Man and subject to their tax and National Insurance legislation. AEAIL does not employ anyone.

Two AEAIL Directors, who have been engaged since 2002 and 2022 respectively, are off-payroll by default and one of them is paid a small fee by AEAIL.

The third Director of AEAIL, who has been engaged since 2019, is an employee of UKAEA and on the UKAEA payroll.

Trade Union facility time

Facility time is when an employee takes paid time off from their normal role to carry out their duties and activities as a trade union representative.

Table 1: Relevant union officials

	Number	Full time equivalent number
Employees who were relevant union officials during the year	19	19

Table 2: Percentage of time spent on facility time

Percentage of working hours spent on facility time by employees who were relevant union officials	Full time equivalent number of employees
0%	1
1-50%	18
51-99%	0
100%	0

Table 3: Percentage of total pay bill spent on facility time

Total cost of facility time (£k)	77
Total pay bill (£k)	137,164
Percentage of the total pay bill spent on facility time, calculated as: (total cost of facility time ÷ total pay bill) x 100	0.06%

Table 4: Paid trade union activities

Time spent on paid trade union activities as a percentage of total paid facility time hours calculated as: (total hours spent on paid trade union activities by relevant union officials during the year ÷ total paid facility time hours) x 100	Nil

Exit packages paid to employees (subject to audit)

Exit package cost band	Number of compulsory redundancies		Number of other departures agreed	
	2023/24	**2022/23**	**2023/24**	**2022/23**
Total number of exit packages	0	0	0	0

Other Parliamentary disclosures

Fees and charges (subject to audit)
UKAEA does not receive fees and charges for public services, as defined by HM Treasury in Managing Public Money. There are therefore no related disclosures.

Losses and special payments (subject to audit)
There were no losses or special payments in the year (on an accruals basis) that require disclosure.

Remote contingent liabilities (subject to audit)
UKAEA has no significant remote contingent liabilities to report.

Professor Sir Ian Chapman
Chief Executive and Accounting Officer
22nd July 2024

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

Opinion on financial statements
I certify that I have audited the financial statements of the United Kingdom Atomic Energy Authority and its Group for the year ended 31 March 2024 under the Atomic Energy Authority Act 1954.
The financial statements comprise the United Kingdom Atomic Energy Authority and its Group's

- Statement of Financial Position as at 31 March 2024;
- Statement of Comprehensive Net Income, Statement of Cash Flows and Statement of Changes in Taxpayers' Equity for the year then ended; and
- the related notes including the significant accounting policies.

The financial reporting framework that has been applied in the preparation of the Group financial statements is applicable law and UK adopted International Accounting Standards.
In my opinion, the financial statements:
- give a true and fair view of the state of the United Kingdom Atomic Energy Authority and its Group's affairs as at 31 March 2024 and its profit for the year then ended; and
- have been properly prepared in accordance with the Atomic Energy Authority Act 1954.

Opinion on regularity
In my opinion, in all material respects, the income and expenditure 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.

Basis for opinions
I conducted my audit in accordance with International Standards on Auditing (UK) (ISAs UK), applicable law and Practice Note 10 *Audit of Financial Statements and Regularity of Public Sector Bodies in the United Kingdom (2022)*. My responsibilities under those standards are further described in the *Auditor's responsibilities for the audit of the financial statements* section of my certificate.

Those standards require me and my staff to comply with the Financial Reporting Council's *Revised Ethical Standard 2019*. I am independent of the United Kingdom Atomic Energy Authority and its Group in accordance with the ethical requirements that are relevant to my audit of the financial statements in the UK. My staff and I have fulfilled our other ethical responsibilities in accordance with these requirements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Conclusions relating to going concern
In auditing the financial statements, I have concluded that the United Kingdom Atomic Energy Authority and its Group's use of the going concern basis of accounting in the preparation of the financial statements is appropriate.

Based on the work I have performed, I have not identified any material uncertainties relating to events or conditions that, individually or collectively, may cast significant doubt on the United Kingdom Atomic Energy Authority and its Group 's ability to continue as a going concern for a period of at least twelve months from when the financial statements are authorised for issue.

My responsibilities and the responsibilities of the Accounting Officer with respect to going concern are described in the relevant sections of this certificate.

PARLIAMENTARY ACCOUNTABILITY AND AUDIT REPORT

The going concern basis of accounting for the United Kingdom Atomic Energy Authority and its Group is adopted in consideration of the requirements set out in HM Treasury's Government Financial Reporting Manual, which requires entities to adopt the going concern basis of accounting in the preparation of the financial statements where it is anticipated that the services which they provide will continue into the future.

Other Information
The other information comprises information included in the Annual Report, but does not include the financial statements and my auditor's certificate and report thereon. The Accounting Officer is responsible for the other information.

My opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in my certificate, I do not express any form of assurance conclusion thereon.

My responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or my knowledge obtained in the audit, or otherwise appears to be materially misstated.

If I identify such material inconsistencies or apparent material misstatements, I am required to determine whether this gives rise to a material misstatement in the financial statements themselves. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

I have nothing to report in this regard.

Opinion on other matters
In my opinion the part of the Remuneration and Staff Report to be audited has been properly prepared in accordance with the Atomic Energy Authority Act 1954.

In my opinion, based on the work undertaken in the course of the audit:
- the parts of the Accountability Report subject to audit have been properly prepared in accordance with the Atomic Energy Authority Act 1954; and
- the information given in the Performance and Accountability Reports for the financial year for which the financial statements are prepared is consistent with the financial statements and is in accordance with the applicable legal requirements.

Matters on which I report by exception
In the light of the knowledge and understanding of the United Kingdom Atomic Energy Authority and its Group and their environment obtained in the course of the audit, I have not identified material misstatements in the Performance and Accountability Reports.

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 by the United Kingdom Atomic Energy Authority and its Group or returns adequate for my audit have not been received from branches not visited by my staff; or
- I have not received all of the information and explanations I require for my audit; or
- the financial statements and the parts of the Accountability Report subject to audit are not in agreement with the accounting records and returns; or
- certain disclosures of remuneration specified by HM Treasury's Government Financial Reporting Manual have not been made or parts of the Remuneration and Staff Report to be audited is not in agreement with the accounting records and returns; or
- the Governance Statement does not reflect compliance with HM Treasury's guidance.

Responsibilities of the Accounting Officer for the financial statements
As explained more fully in the Statement of Accounting Officer's Responsibilities, the Accounting Officer is responsible for:
- maintaining proper accounting records;
- providing the C&AG with access to all information of which management is aware that is relevant to the preparation of the financial statements such as records, documentation and other matters;
- providing the C&AG with additional information and explanations needed for his audit;
- providing the C&AG with unrestricted access to persons within the United Kingdom Atomic Energy Authority and its Group from whom the auditor determines it necessary to obtain audit evidence;

PARLIAMENTARY ACCOUNTABILITY AND AUDIT REPORT

- ensuring such internal controls are in place as deemed necessary to enable the preparation of financial statements to be free from material misstatement, whether due to fraud or error;
- preparing financial statements which give a true and fair view in accordance with the Atomic Energy Authority Act 1954;
- preparing the annual report, which includes the Remuneration and Staff Report, in accordance with the Atomic Energy Authority Act 1954; and
- assessing the United Kingdom Atomic Energy Authority and its Group's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Accounting Officer anticipates that the services provided by the United Kingdom Atomic Energy Authority and its Group will not continue to be provided in the future.

Auditor's responsibilities for the audit of the financial statements
My responsibility is to audit, certify and report on the financial statements in accordance with the Atomic Energy Authority Act 1954.

My objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue a certificate that includes my opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

Extent to which the audit was considered capable of detecting non-compliance with laws and regulations including fraud
I design procedures in line with my responsibilities, outlined above, to detect material misstatements in respect of non-compliance with laws and regulations, including fraud. The extent to which my procedures are capable of detecting non-compliance with laws and regulations, including fraud is detailed below.

Identifying and assessing potential risks related to non-compliance with laws and regulations, including fraud
In identifying and assessing risks of material misstatement in respect of non-compliance with laws and regulations, including fraud, I:
- considered the nature of the sector, control environment and operational performance including the design of the United Kingdom Atomic Energy Authority and its Group's accounting policies.
- inquired of management, the United Kingdom Atomic Energy Authority's head of internal audit and those charged with governance, including obtaining and reviewing supporting documentation relating to the United Kingdom Atomic Energy Authority and its Group's policies and procedures on:
  - o identifying, evaluating and complying with laws and regulations;
  - o detecting and responding to the risks of fraud; and
  - o the internal controls established to mitigate risks related to fraud or non-compliance with laws and regulations including the United Kingdom Atomic Energy Authority and its Group's controls relating to the United Kingdom Atomic Energy Authority's compliance with the Atomic Energy Authority Act 1954, and Managing Public Money;
- inquired of management, the United Kingdom Atomic Energy Authority's head of internal audit and those charged with governance whether:
  - o they were aware of any instances of non-compliance with laws and regulations;
  - o they had knowledge of any actual, suspected, or alleged fraud;
- discussed with the engagement team including property and site restoration provision specialists regarding how and where fraud might occur in the financial statements and any potential indicators of fraud.

As a result of these procedures, I considered the opportunities and incentives that may exist within the United Kingdom Atomic Energy Authority and its Group for fraud and identified the greatest potential for fraud in the following areas: posting of unusual journals, complex transactions, and bias in management estimates. In common with all audits under ISAs (UK), I am required to perform specific procedures to respond to the risk of management override.

I obtained an understanding of the United Kingdom Atomic Energy Authority and its Group's framework of authority and other legal and regulatory frameworks in which the United Kingdom Atomic Energy Authority and its Group operate. I focused on those laws and regulations that had a direct effect on material amounts and disclosures in the financial statements or that had a fundamental effect on the operations of the United Kingdom Atomic Energy Authority and its Group. The key laws and regulations I considered in this context included the Atomic Energy Authority Act 1954,

PARLIAMENTARY ACCOUNTABILITY AND AUDIT REPORT

Managing Public Money, employment law and pensions legislation, and tax legislation.

Audit response to identified risk
To respond to the identified risks resulting from the above procedures:
- I reviewed the financial statement disclosures and testing to supporting documentation to assess compliance with provisions of relevant laws and regulations described above as having direct effect on the financial statements;
- I enquired of management, the Audit and Risk Assurance Committee and in-house legal counsel concerning actual and potential litigation and claims;
- I reviewed minutes of meetings of those charged with governance and the Board and internal audit reports; and
- I addressed the risk of fraud through management override of controls by testing the appropriateness of journal entries and other adjustments; assessing whether the judgements on estimates are indicative of a potential bias; and evaluating the business rationale of any significant transactions that are unusual or outside the normal course of business.

I communicated relevant identified laws and regulations and potential risks of fraud to all engagement team members and remained alert to any indications of fraud or non-compliance with laws and regulations throughout the audit.

A further description of my responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: ***www.frc.org.uk/auditorsresponsibilities***. This description forms part of my certificate.

Other auditor's responsibilities
I am required to obtain sufficient appropriate audit evidence 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.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control I identify during my audit.

Report
I have no observations to make on these financial statements.

Gareth Davies
Comptroller and Auditor General

Date 23rd July 2024

National Audit Office
157-197 Buckingham Palace Road
Victoria
London
SW1W 9SP

ANNUAL ACCOUNTS

Consolidated statement of comprehensive net income

for the year ended 31 March 2024

	Note	Group 2024 £k	Group 2023 £k	Authority 2024 £k	Authority 2023 £k
Income					
Revenue	4/5	323,898	259,702	319,559	256,328
Other income	6	1,048	1,367	1,236	2,071
Less: Share of revenue of joint venture		(4,339)	(3,374)	-	-
Total operating income		**320,607**	**257,695**	**320,795**	**258,399**
Expenditure					
Staff costs	7.1	173,059	149,474	173,059	149,474
Purchase of goods and services	7.2	147,604	109,074	147,680	109,664
Depreciation, amortisation and impairment		13,301	10,296	13,301	10,296
Costs charged to provisions		(1,422)	(2,319)	(1,422)	(2,319)
		332,542	266,525	332,618	267,115
Other operating expenses	7.3	1,378	(1,020)	1,378	(1,020)
Revaluation adjustment	12	(2,738)	(64)	(2,738)	(64)
Total operating expenditure		**331,182**	**265,441**	**331,258**	**266,031**
Operating (loss)/profit		**(10,575)**	**(7,746)**	**(10,463)**	**(7,632)**
Finance income	8	1,398	559	1,154	454
Finance expense	8	(171)	31	(171)	31
Profit/(loss) on disposal of assets		(6)	-	(6)	-
Share of profit/(loss) of joint venture after tax	15.2	(5,024)	7,232	-	-
Profit/(loss) before tax		**(14,378)**	**76**	**(9,486)**	**(7,147)**
Current tax (charge)/credit	9	8,027	4,819	8,027	4,819
Deferred tax (charge)/credit	9	(216)	(2,833)	(216)	(2,833)
Profit/(loss) for the year		**(6,567)**	**2,062**	**(1,675)**	**(5,161)**
Other comprehensive net income					
Net gain/(loss) on revaluations - property, plant and equipment	10	5,715	28,214	5,715	28,214
Net gain/(loss) on revaluations - joint venture	15.2	8,422	13,177	-	-
Actuarial gains/(losses) on defined benefit pension plans		35	526	35	526
Tax (charge)/credit relating to components of other comprehensive income	9	516	(6,388)	516	(6,388)
Total other comprehensive net income for the year		14,688	35,529	6,266	22,352
Total comprehensive net income for the year		**8,121**	**37,591**	**4,591**	**17,191**

The notes on pages 150 to 180 are an integral part of these financial statements.

Consolidated statement of financial position

as at 31 March 2024

	Note	Group 2024 £k	Group 2023 £k	Authority 2024 £k	Authority 2023 £k
Non-current assets					
Property, plant and equipment	10	330,622	279,974	330,622	279,974
Right-of-use assets	11	3,730	3,856	3,730	3,856
Investment property	12	62,210	59,472	62,210	59,472
Intangible assets	13	385	484	385	484
Trade and other receivables	14	724,737	763,671	724,737	763,671
Financial assets	15	102,530	99,132	18,623	18,623
Total non-current assets		1,224,214	1,206,589	1,140,307	1,126,080
Current assets					
Trade and other receivables	14	115,197	96,108	115,162	96,278
Financial assets	15	200	959	-	-
Cash and cash equivalents	16	75,507	69,328	70,327	64,819
Total current assets		190,904	166,395	185,489	161,097
Total assets		**1,415,118**	**1,372,984**	**1,325,796**	**1,287,177**
Current liabilities					
Trade and other payables	17	78,181	81,363	78,143	81,311
Lease liabilities	18	260	253	260	253
Provisions for liabilities and charges	19	58,690	37,282	58,614	37,282
Total current liabilities		137,131	118,898	137,017	118,846
Total assets minus current liabilities		**1,277,987**	**1,254,086**	**1,188,779**	**1,168,331**
Non-current liabilities					
Trade and other payables	17	1,459	1,483	1,459	1,483
Deferred income	20	13,625	13,945	13,625	13,945
Deferred income tax liabilities	21	29,984	30,284	29,984	30,284
Lease liabilities	18	3,328	3,440	3,328	3,440
Provisions for liabilities and charges	19	724,418	765,033	724,231	764,769
Total non-current liabilities		772,814	814,185	772,627	813,921
Assets less liabilities		**505,173**	**439,901**	**416,152**	**354,410**
Taxpayers' equity					
General reserve		13,658	13,658	13,658	13,658
Revaluation reserve		67,131	62,148	67,131	62,148
Capital grants reserve		231,840	182,903	231,840	182,903
Retained earnings		192,544	181,192	103,523	95,701
Total taxpayers' equity		**505,173**	**439,901**	**416,152**	**354,410**

The notes on pages 150 to 180 are an integral part of these financial statements.

Professor Sir Ian Chapman
Chief Executive and Accounting Officer
22nd July 2024

Consolidated statement of cash flows

for the year ended 31 March 2024

	Note	Group 2024 £k	Group 2023 £k	Authority 2024 £k	Authority 2023 £k
Cash flows from operating activities					
Profit/(loss) for the year		(6,567)	2,062	(1,675)	(5,161)
Adjustments for non-cash transactions:					
- Depreciation, amortisation and impairment		13,300	10,295	13,300	10,295
- Deferred income released	20	(1,013)	(1,167)	(1,013)	(1,167)
- Change in fair value of investment property	12	(2,738)	(64)	(2,738)	(64)
- Loss on disposal of property, plant and equipment		6	-	6	-
- Loss on disposal of right-of-use assets		-	-	-	-
- Net finance (income)/expense recognised	8	(1,227)	(590)	(983)	(485)
- Deferred tax charge/(credit)	9	216	2,833	216	2,833
- Share of loss/(profit) of joint venture	15.2	5,024	(7,232)	-	-
Changes in working capital:					
- (Increase)/decrease in trade and other receivables		2,212	(5,175)	2,417	(4,567)
- (Increase)/decrease in current financial assets		759	(959)	-	-
- Increase/(decrease) in trade and other payables		(2,513)	11,683	(2,499)	11,683
- Use of and change in provisions, net of the movement on reimbursement receivables		(1,676)	(4,197)	(1,675)	(4,099)
Net cash inflow/(outflow) from operating activities		**5,783**	**7,489**	**5,356**	**9,268**
Cash flows from investing activities					
Purchase of property, plant and equipment	10	(57,807)	(61,631)	(57,807)	(61,631)
Proceeds from sale of property, plant and equipment		13	-	13	-
Purchase of intangible assets	13	(36)	(450)	(36)	(450)
Net cash inflow/(outflow) from investing activities		**(57,830)**	**(62,081)**	**(57,830)**	**(62,081)**
Cash flows from financing activities					
Capital grant from sponsoring department		57,151	57,048	57,151	57,048
Interest received	8	1,398	559	1,154	454
Payments of interest on lease liabilities	8	(34)	(35)	(34)	(35)
Repayments of lease liabilities	18	(289)	(218)	(289)	(218)
Net cash inflow/(outflow) from financing activities		**58,226**	**57,354**	**57,982**	**57,249**
Net increase/(decrease) in cash and cash equivalents in the year		6,179	2,762	5,508	4,436
Cash and cash equivalents at the beginning of the year		69,328	66,566	64,819	60,383
Cash and cash equivalents at the end of the year		**75,507**	**69,328**	**70,327**	**64,819**

The notes on pages 150 to 180 are an integral part of these financial statements.

Consolidated statement of changes in taxpayers' equity

for the year ended 31 March 2024

Group	General reserve [a] £k	Revaluation reserve [b] £k	Capital grants reserve [c] £k	Retained earnings [d] £k	Total £k
Balance at 1 April 2022	**13,658**	**41,313**	**133,079**	**157,212**	**345,262**
Changes in Taxpayers' Equity 2022/23:					
Total comprehensive net income for the year	-	21,826	-	15,765	37,591
Capital grant from sponsoring department	-	-	57,048	-	57,048
Depreciation transfer	-	(991)	(7,224)	8,215	-
Balance at 31 March 2023	**13,658**	**62,148**	**182,903**	**181,192**	**439,901**
Changes in Taxpayers' Equity 2023/24:					
Total comprehensive net income for the year	-	6,231	-	1,890	8,121
Capital grant from sponsoring department	-	-	57,151	-	57,151
Depreciation transfer	-	(1,248)	(8,214)	9,462	-
Balance at 31 March 2024	**13,658**	**67,131**	**231,840**	**192,544**	**505,173**

Authority	General reserve [a] £k	Revaluation reserve [b] £k	Capital grants reserve [c] £k	Retained earnings [d] £k	Total £k
Balance at 1 April 2022	**13,658**	**41,313**	**133,079**	**92,121**	**280,171**
Changes in Taxpayers' Equity 2022/23:					
Total comprehensive net income for the year	-	21,826	-	(4,635)	17,191
Capital grant from sponsoring department	-	-	57,048	-	57,048
Depreciation transfer	-	(991)	(7,224)	8,215	-
Balance at 31 March 2023	**13,658**	**62,148**	**182,903**	**95,701**	**354,410**
Changes in Taxpayers' Equity 2023/24:					
Total comprehensive net income for the year	-	6,231	-	(1,640)	4,591
Capital grant from sponsoring department	-	-	57,151	-	57,151
Depreciation transfer	-	(1,248)	(8,214)	9,462	-
Balance at 31 March 2024	**13,658**	**67,131**	**231,840**	**103,523**	**416,152**

Notes:
(a) General reserve - This is a legacy reserve created from historical transactions, representing investment in UKAEA by the sponsoring department.
(b) Revaluation reserve - Reflects the unrealised element, net of tax, of the cumulative balance of gains/(losses) on revaluations of Land and buildings, Leasehold improvements and Plant and equipment (see Note 10).
(c) Capital grants reserve - Relates to capital grants received from UKAEA's sponsoring government department less the associated depreciation.
(d) Retained earnings - Represents total assets less liabilities, to the extent that the total is not represented by other reserves.

The notes on pages 150 to 180 are an integral part of these financial statements.

Notes to the financial statements

1 General information
UKAEA is a public sector research establishment (PSRE).
UKAEA is a non-departmental public body (NDPB) and was established by the Atomic Energy Authority Act 1954.
The address of UKAEA's registered office is Culham Campus, Abingdon, Oxfordshire, OX14 3DB.
UKAEA and its subsidiaries are referred to as 'the Group'.
UKAEA's sponsoring government department is the Department for Energy Security and Net Zero (DESNZ).

2 Basis of preparation
The financial statements comply with the provisions of the Atomic Energy Authority Act 1954 and the requirements of HM Treasury. The latter requires the financial statements to be prepared in accordance with the Government Financial Reporting Manual (FReM) issued by HM Treasury as updated annually. The accounting policies contained in the FReM apply International Financial Reporting Standards (IFRS) as adapted or interpreted for the public sector. Where the FReM 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 financial statements are presented in pounds sterling, which is UKAEA's functional currency, and have been prepared under the historical cost convention, except for land and buildings, leasehold improvements, plant and equipment and investment properties which are revalued annually (Note 3.8 and Note 3.10).

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, expenditure, 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 Material accounting policies
The principal accounting policies applied by UKAEA and its subsidiary AEA Insurance Ltd (AEAIL) 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 the activities of that entity. 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.

3.1 Consolidation continued
(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
Intra-group transactions and balances and unrealised gains and losses on transactions between Group entities are eliminated on consolidation.

3.2 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 UKAEA Board.

3.3 Revenue recognition
Revenue is recognised when a performance obligation has been met i.e. at the point when delivery of a product or service transfers control to the customer and specific criteria have been met as described below. Revenue is shown net of value added tax, returns, rebates and discounts.

Grant funding relating to revenue expenditure is recognised in the Statement of comprehensive net income in the same period as the related expenditure that it is intended to fund, in accordance with IAS 20 'Accounting for Government Grants and Disclosure of Government Assistance'.

(a) Service contracts
Revenue from customer contracts is recognised under IFRS 15 'Revenue from Contracts with Customers'. Contract milestones have been identified as the performance obligations for revenue recognition and are satisfied at a point in time. Revenue on contracts that do not separately identify milestones is recognised on completion. Most of UKAEA's contracts with customers allow for invoices to be raised once contract milestones have been completed. Revenue is measured based on the consideration set out in the customer contract.

(b) Rental income
Rental income from investment properties is recognised in the Statement of comprehensive net 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 net income in the same period as the related expenditure that it is intended to fund, in accordance with IAS 20 'Accounting for Government Grants and Disclosure of Government Assistance'. This departure from the specified treatment in the FReM has been agreed with UKAEA's sponsoring government department.

Grant in Aid relating to capital expenditure is recognised as financing and credited to taxpayers' equity in line with the FReM.

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 also has a separate liability in respect of unfunded retirement benefits relating to three individuals. 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 taxpayers' equity in the period in which they arise.

3.5 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 net income when incurred.

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 net income.

3.7 Current and deferred tax

The tax charge or credit for the period comprises current and deferred tax. Tax is recognised in the Statement of comprehensive net income, except to the extent that it relates to items recognised directly in taxpayers' equity. In this case, the tax is also recognised in taxpayers' equity.

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

Research and Development Expenditure Credits (RDEC) payable by HM Revenue and Customs are treated as tax credits in line with the provisions of IAS 12 'Income Taxes' and are included within current tax (charge)/credit in the Statement of comprehensive net income (see Note 9).

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 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 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 temporary differences can be utilised.

3.8 Property, plant and equipment

Land and buildings are occupied by the Group and are shown at fair value, based on periodic, but at least triennial, valuations by external independent valuers, less subsequent depreciation for buildings. In the intervening years any new buildings along with elements of land and buildings that have changed circumstances are independently revalued, and the remaining property portfolio is uplifted using indexation rates with the assistance of the valuers.

Fair value is based on market values for existing use, except where there are alternative uses for the land and buildings. Where basing fair value on market values is not applicable because of the specialised nature of the asset, valuations are carried out on a depreciated replacement cost basis.

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

In previous years other classes of property, plant and equipment were stated at historical cost less depreciation as a proxy for current valuations. In the year 2023/24 that valuation technique was changed to revaluing leasehold improvements and plant and equipment, excluding assets with short useful lives, using appropriate indices as published by the Office for National Statistics for each class of asset.

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 net income during the financial period in which they are incurred.

Expenditure on property, plant and equipment in respect of the Joint European Torus (JET) operations has been recognised in the Statement of comprehensive net income during the financial periods in which it was incurred.

Property, plant and equipment capitalisation thresholds are as follows:

– Land and buildings	£100k
– Plant and equipment for decommissioning	£100k
– Software	£20k
– Other	£5k

3.8 Property, plant and equipment continued
Land is not depreciated. Assets under construction are not depreciated. 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	initially up to 40 years, reassessed during the property valuation cycle
– Leasehold improvements	over the balance of the lease term
– Plant, machinery and equipment	up to 25 years

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

Property, plant and equipment may have component parts with different useful lives. In accordance with the provisions of IAS 16 'Property, Plant and Equipment', each part of any newly recognised item of property, plant and equipment with a cost that is significant in relation to the total cost of the item is depreciated separately.

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 3.12).

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 net income. When revalued assets are sold, any amounts included in the revaluation reserve are transferred to retained earnings.

3.9 Leases
Leases are accounted for in line with IFRS 16 'Leases'.

(a) The Group as lessee
The Group assesses whether a contract is or contains a lease, at inception of a contract. The Group recognises a right-of-use asset and a corresponding lease liability with respect to all lease agreements in which it is the lessee, except for short-term leases (defined as leases with a lease term of 12 months or less) and leases of low value assets. For each such lease, the Group recognises the lease payments in the Statement of comprehensive net income as an operating lease expense on a straight-line basis over the term of the lease.

The lease liability is initially measured at the present value of the lease payments that are not paid as at the commencement date, discounted by using the rate implicit in the lease. If this rate cannot be readily determined, the Group uses its incremental borrowing rate / discount rate(s) as advised by HM Treasury.

Lease payments included in the measurement of the lease liability comprise:
- fixed lease payments (including in-substance fixed payments), less any lease incentives
- variable lease payments that depend on an index or rate, initially measured using the index or rate at the commencement date
- the amount expected to be payable by the Group as lessee under residual value guarantees
- the exercise price of purchase options, if the Group as lessee is reasonably certain to exercise the options
- payments of penalties for terminating the lease, if the lease term reflects the expected exercise of an option to terminate the lease.

Under IFRS 16 tenant lease breaks available to the Group have only been included in the calculation of the lease liability where there is a high degree of certainty that the Group would exercise them. The Group currently does not anticipate exercising any available lease breaks.

Lease liabilities are presented as a separate line in the Statement of financial position.

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability (using the effective interest method) and by reducing the carrying amount to reflect the lease payments made.

The Group remeasures the lease liability (and makes a corresponding adjustment to the related right-of-use asset) whenever:
- the lease term has changed or there is a change in the assessment of the likelihood of exercising a purchase option, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate.
- the lease payments change due to changes in an index or rate or a change in expected payment under a guaranteed residual value, in which cases the lease liability is remeasured by discounting the revised lease payments using the initial discount rate (unless the lease payments change is due to a change in a floating interest rate, in which case a revised discount rate is used).
- a lease contract is modified and the lease modification is not accounted for as a separate lease, in which case the lease liability is remeasured by discounting the revised lease payments using a revised discount rate.

At the lease commencement date the costs of right-of-use assets comprise the initial measurement of the corresponding lease liability, lease payments made at or before the lease commencement date, any initial direct costs incurred, plus the amount of any provision for reinstatement (whenever the Group incurs an obligation for costs to dismantle and remove a leased asset, restore the site on which it is located or restore the underlying asset to the condition required by the terms and conditions of the lease, a provision is recognised and measured under IAS 37).

Right-of-use assets are subsequently measured at cost less accumulated depreciation and impairment losses.

Right-of-use assets are depreciated over the shorter period of lease term and estimated useful life of the underlying asset.

If a lease transfers ownership of the underlying asset or the cost of the right-of-use asset reflects that the Group expects to exercise a purchase option, the related right-of-use asset is depreciated over the estimated useful life of the underlying asset.

The depreciation starts at the lease commencement date.

Right-of-use assets are presented as a separate line in the Statement of financial position.

The Group applies IAS 36 'Impairment of Assets' to determine whether a right-of-use asset is impaired and accounts for any identified impairment loss.

Variable rents that do not depend on an index or rate are not included in the measurement of the lease liability and the right-of-use asset. The related payments are recognised as an expense in the period in which the event or condition that triggers those payments occurs and are included within other external expenses in the Statement of comprehensive net income.

As a practical expedient, IFRS 16 permits a lessee not to separate non-lease components, and instead account for any lease and associated non-lease components as a single arrangement. The Group has not used this practical expedient.

(b) The Group as lessor
The Group enters into lease agreements as a lessor with respect to some of its investment properties.

Leases for which the Group is lessor are classified as finance or operating leases. Whenever the terms of the lease transfer substantially all the risks and rewards of ownership to the lessee, the contract is classified as a finance lease. All other leases are classified as operating leases.

All of the Group's leases during 2023/24 and 2022/23 were operating leases.

Rental income from operating leases is recognised on a straight-line basis over the term of the relevant lease. When a contract includes lease and non-lease components, the Group applies IFRS 15 to allocate the consideration under the contract to each component.

3.10 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 net income.

3.11 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.

3.12 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.

3.13 Financial instruments
UKAEA measures its financial assets in accordance with IFRS 9 'Financial Instruments', whereby financial assets are classified into the following measurement categories: amortised cost, fair value through other comprehensive income (FVOCI) and fair value through profit and loss (FVTPL).

UKAEA's financial assets comprise trade and other receivables, investments and cash and cash equivalents. UKAEA's interest in its subsidiaries and joint venture (Notes 15.1 and 15.2) are exempted from the application of IFRS 9. Term deposits (Note 15.3) are solely payments of principal and interest and are therefore held at amortised cost. All other financial assets of the Group were held at amortised cost at both 31 March 2024 and 31 March 2023.

Financial assets are included in current assets, except for maturities greater than 12 months after the reporting date which are classified as non-current assets.

Under IFRS 9, financial liabilities are classified as held at amortised cost or at FVTPL.

The majority of UKAEA's financial liabilities relate to trade and other payables.
All financial liabilities of the Group were held at amortised cost at both 31 March 2024 and 31 March 2023.

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Financial liabilities are included in current liabilities, except for maturities greater than 12 months after the reporting date which are classified as non-current liabilities.

As the majority of financial instruments relate to contracts to buy non-financial items in line with UKAEA's expected purchase and usage requirements UKAEA is exposed to little credit, liquidity or market risk (see Note 26(c)).

AEAIL also measures its financial instruments in accordance with IFRS 9.

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

3.15 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 can be reliably estimated.

UKAEA's site restoration provision is the most significant area of estimation uncertainty in the financial statements. Full details are in Note 19.

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 change in the provision due to passage of time and changes in discount rate is recognised as finance expense or finance income as appropriate.

Where assurances have been received from another party that they will reimburse some or all of the expenditure required to settle a provision, and the requirements for recognition of IAS 37 'Provisions, Contingent Liabilities and Contingent Assets' section 53 are met (i.e. it is virtually certain that reimbursement will be received if the obligation is settled) 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. As the reimbursement asset is reduced in line with the utilisation of the corresponding provision there is a net neutral utilisation impact within the Statement of comprehensive net income in respect of such provisions.

3.16 IFRS issued but not yet effective

The following new standards, amendments and interpretations to existing standards are not yet effective or are not yet effective in HMT's 2023/24 FReM and have not been early adopted by the Authority:

IFRS 17 'Insurance Contracts' (replacement for IFRS 4 'Insurance Contracts' for accounting periods beginning on or after 1 January 2023). It will be applied by HM Treasury in the FReM from 1 April 2025.

The Board anticipate that the adoption of this standard in future periods will have no material impact on the financial statements of the Authority. There is also no material impact on AEAIL.

4 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 'Operating Segments' is included in these financial statements.

4.1 Reportable segments
The Group has two reportable segments, as described below, which are the Group's main business areas reported to the UKAEA 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 - operational costs, management and development of the Culham and Harwell campuses for future scientific use

None of the other segments met any of the criteria for determining reportable segments in 2023 or 2024. The results of these segments are included in the 'other' column in the segmental analyses below.

The segmental analysis for years 2023 and 2024 is as follows:

	Note	Fusion research £k	Property management £k	Other £k	Total £k
Year ended 31 March 2023					
Revenue	6	227,994	17,783	13,925	259,702
Less: Share of revenue of joint venture		-	(3,374)	-	(3,374)
Other income *	6	-	-	1,367	1,367
Expenditure		(237,466)	(17,653)	(10,386)	(265,505)
Investment property revaluation		-	64	-	64
Operating profit/(loss)		**(9,472)**	**(3,180)**	**4,906**	**(7,746)**
Finance income		-	-	559	559
Finance expense		(35)	-	66	31
Loss on disposal of assets		-	-	-	-
Share of profit/(loss) of joint venture		-	7,232	-	7,232
Profit/(loss) before tax		**(9,507)**	**4,052**	**5,531**	**76**
Year ended 31 March 2024					
Revenue	6	294,557	15,065	14,276	323,898
Less: Share of revenue of joint venture		-	(4,339)	-	(4,339)
Other income	6	-	-	1,048	1,048
Expenditure		(304,621)	(20,691)	(8,608)	(333,920)
Investment property revaluation		-	2,738	-	2,738
Operating profit/(loss)		**(10,064)**	**(7,227)**	**6,716**	**(10,575)**
Finance income		-	-	1,398	1,398
Finance expense		-	-	(171)	(171)
Loss on disposal of assets		-	-	(6)	(6)
Share of profit/(loss) of joint venture		-	(5,024)	-	(5,024)
Profit/(loss) before tax		**(10,064)**	**(12,251)**	**7,937**	**(14,378)**

* Comparative amended in respect of analysis between segments

4.1 Reportable segments continued

Reconciliation between Reportable segments and Statement of comprehensive net income

	Group 2024 £k	Group 2023 £k
Revenue		
Total revenue for reportable segments	309,622	245,777
Total revenue for other segments	14,276	13,925
Total revenue per Statement of comprehensive net income	**323,898**	**259,702**
Profit or loss		
Total profit/(loss) for reportable segments *	(22,315)	(5,455)
Profit/(loss) for other segments *	7,937	5,531
Total profit/(loss) before tax per Statement of comprehensive net income	**(14,378)**	**76**

* Comparative amended in respect of analysis between segments

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

	Group 2024 £k	Group 2023 £k
Revenue		
United Kingdom	319,205	256,508
Europe	1,875	2,148
Rest of the World	2,818	1,046
	323,898	**259,702**

5 Disaggregation of revenue under IFRS 15 'Revenue from Contracts with Customers'

UKAEA derives its customer revenue from the transfer of goods and services at a point in time. This revenue is categorised within the fusion and property segment, £30,178k (2023: £17,621k).

Contract milestones have been identified as performance obligations under IFRS 15 and are fulfilled within twelve months.

Timing of revenue recognition

Contract milestones have been identified as the performance obligations for revenue recognition at a point in time. Revenue on contracts which do not have separately identifiable milestones is recognised at a point in time, on completion.

Most customer contracts provide for invoices to be raised and paid once contract milestones have been completed.

Contract balances

The following table provides information about receivables, contract assets and contract liabilities from contracts with customers:

	Note	2024 £k	2023 £k
Trade receivables	14	4,060	937
Contract assets	14	875	1,303
Contract liabilities	17	(482)	(368)

Contract assets relate to direct costs incurred on unsatisfied performance obligations and to performance obligations satisfied but not yet invoiced.

Contract liabilities relate to invoicing and consideration received in advance.

Movement in contract assets/liabilities in the year:	2024 Contract assets £k	2023 Contract assets £k	2024 Contract liabilities £k	2023 Contract liabilities £k
Contract assets/liabilities at the beginning of the year	1,303	1,070	(368)	(34)
Contract assets for performance obligations satisfied but not yet invoiced	78	23	-	-
Contract liability for payments received in advance of the satisfaction of performance obligations	-	-	(114)	(334)
Changes in the measure of progress	(506)	210	-	-
Contract assets/liabilities at the end of the year	**875**	**1,303**	**(482)**	**(368)**

6 Operating income

	Group 2024 £k	Group 2023 £k
Grant in Aid from sponsoring department	248,333	209,256
European Commission income	-	38
Rentals, property and construction income	32,471	16,565
Revenue from contracts with customers and collaborations	22,130	14,961
Grant income	20,814	18,589
Other revenue	150	293
Total revenue	**323,898**	**259,702**
Release of deferred capital grant income	1,013	1,167
Other	35	200
Total other income	**1,048**	**1,367**
Less: Share of revenue of joint venture	(4,339)	(3,374)
Total operating income	**320,607**	**257,695**

7 Operating expenditure

7.1 Staff costs

Staff costs comprise:	2024 £k	2023 £k
Directly employed staff:		
Salaries, bonuses and allowances	106,300	86,921
Social security costs	12,447	10,604
Pension costs – defined contribution plans (see below)	18,417	15,760
	137,164	113,285
Temporary staff	42,312	38,640
Total	**179,476**	**151,925**
Costs capitalised	(6,417)	(2,451)
Expenditure	**173,059**	**149,474**

Full details of UKAEA's pension schemes are given in the Remuneration Report.
The total employer's pension contributions paid by UKAEA to the CPS during the year were £17,936k (2023: £14,453k).
The total employer's pension contributions paid by UKAEA during the year to the SPPSP were £25k (2023: £26k).

7.2 Purchase of goods and services

	Group 2024 £k	Group 2023 £k
Design and construction	57,403	36,518
Plant, equipment and spares	26,284	40,790
Professional and technical services *	23,651	17,727
Research services	22,827	6,453
Site maintenance and services *	17,023	21,071
Electricity	15,755	13,634
IT equipment	7,796	9,923
Software	5,256	4,758
Travel and subsistence	3,489	2,608
Consultancy	3,051	735
Gases	2,030	1,923
Pensions administration	1,527	1,536
Other *	12,939	11,029
Total	**199,031**	**168,705**
Costs capitalised	(51,427)	(59,631)
Expenditure	**147,604**	**109,074**

* Comparative amended for reclassification

Operating leases - lessee rentals:		
- Short term leases - plant, machinery and vehicles	68	52
- Leases of low value assets - plant, machinery and vehicles	5	5

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

Audit fees - UKAEA	172	180

2023: Includes £20k in respect of 2022.

Audit of subsidiary and joint venture
The audit fee payable to the auditors of AEAIL was £12k (2023: £11k).
The audit fee payable to the auditors of HSIC PubSP, in which UKAEA has a share of one half, was £33k (2023: £27k).
The audit fee payable to the auditors of HSIC Holdings, in which UKAEA has a share of one quarter via HSIC PubSP, was £30k (2023: £35k).

7.3 Other operating expenses

	Group 2024 £k	Group 2023 £k
Movement in provisions net of reimbursement receivables	762	(787)
Movement in contract assets	506	(211)
Expected Credit Loss	-	37
Foreign exchange differences	110	(59)
	1,378	**(1,020)**

8 Finance income and expense

	Group 2024 £k	Group 2023 £k	Authority 2024 £k	Authority 2023 £k
Finance income				
Interest receivable	1,398	559	1,154	454
Total finance income	**1,398**	**559**	**1,154**	**454**
Finance expense				
Interest on lease liabilities	(34)	(35)	(34)	(35)
Revalorisation of provisions:				
- Unwinding of discounting	(9,440)	6,952	(9,440)	6,952
- Adjustments to reimbursement receivables	9,372	(6,851)	9,372	(6,851)
Interest on unfunded retirement benefits	(69)	(35)	(69)	(35)
Total finance expense	**(171)**	**31**	**(171)**	**31**

Full details of provisions and the discount rates used are provided in Note 19.

NOTES TO THE FINANCIAL STATEMENTS

9 Tax (charge)/credit

	Group and Authority	
	2024 £k	**2023 £k**
Current tax		
Current tax credit (RDEC)	8,346	6,762
Current tax charge for year	(319)	(1,943)
	8,027	4,819
Deferred tax		
Origination and reversal of temporary timing differences	(660)	(1,072)
Recognition of deferred tax asset (Note 21)	444	(1,761)
	(216)	(2,833)
Total tax (charge)/credit	**7,811**	**1,986**

The Research and Development Expenditure Credit (RDEC) became mandatory from 1 April 2016. The RDEC is beneficial for UKAEA and offsets the tax charge on any non-trading profits from property and other activities.

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:

	2024 £k	**2023 £k**
Profit/(loss) for the year	(6,567)	2,062
Add back: Tax charge/(credit)	(7,811)	(1,986)
Profit/(loss) before tax	(14,378)	76
Tax calculated at the standard UK corporation tax rate of 25% (2023: 19%)	3,595	(14)
Tax effects of:		
- Reversal of timing differences	(2,995)	(1,720)
- Items not deductible for tax purposes	(189)	962
- Capital gains tax arising on sale of land	-	(3,059)
- R&D expenditure credit under s104A CTA 2009	(2,814)	(1,586)
- Current year profit offset against deferred tax asset	1,905	2,132
- Non-trading profits offset by RDEC credit	465	1,344
- Net RDEC claim 2022/23	-	6,762
- Net RDEC claim 2023/24	8,346	-
- Tax losses for which no deferred income tax asset was recognised	33	(2)
- Adjustments for previous periods	(318)	-
Current tax (charge)/credit for the year	**8,028**	**4,819**

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

	2024 £k	**2023 £k**
Deferred tax (charge)/credit relating to fair value gains on property, plant and equipment	516	(6,388)

10 Property, plant and equipment

Group and Authority	**Land £k**	**Buildings £k**	**Leasehold improvements £k**	**Plant and equipment £k**	**Assets under construction £k**	**Total £k**
Cost or valuation						
At 31 March 2022	**35,577**	**56,759**	**3,324**	**31,970**	**98,286**	**225,916**
Additions	-	114	-	458	61,059	61,631
Disposals	-	-	-	(110)	-	(110)
Revaluation	23,512	4,702	-	-	-	28,214
Impairment	-	-	-	-	-	-
Transfers within property, plant and equipment	-	10,099	444	17,235	(27,778)	-
Transfers (to)/from investment property	(1,720)	-	-	-	-	(1,720)
At 31 March 2023	**57,369**	**71,674**	**3,768**	**49,553**	**131,567**	**313,931**
Additions	-	-	-	433	57,374	57,807
Disposals	-	-	-	(86)	-	(86)
Revaluation	4,143	(1,704)	642	2,634	-	5,715
Impairment	-	(1,604)	-	(169)	-	(1,773)
Transfers within property, plant and equipment	-	34,255	-	11,556	(45,811)	-
Transfers (to)/from investment property	-	-	-	-	-	-
At 31 March 2024	**61,512**	**102,621**	**4,410**	**63,921**	**143,130**	**375,594**
Depreciation and impairment						
At 31 March 2022	**-**	**(10,114)**	**(249)**	**(13,841)**	**-**	**(24,204)**
Depreciation charge	-	(2,606)	(179)	(7,078)	-	(9,863)
Disposals	-	-	-	110	-	110
At 31 March 2023	**-**	**(12,720)**	**(428)**	**(20,809)**	**-**	**(33,957)**
Depreciation charge	-	(4,436)	(190)	(6,456)	-	(11,082)
Disposals	-	-	-	67	-	67
Transfers within property, plant and equipment	-	(158)	-	158	-	-
At 31 March 2024	**-**	**(17,314)**	**(618)**	**(27,040)**	**-**	**(44,972)**
Net book value						
At 31 March 2023	**57,369**	**58,954**	**3,340**	**28,744**	**131,567**	**279,974**
At 31 March 2024	**61,512**	**85,307**	**3,792**	**36,881**	**143,130**	**330,622**

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

A full valuation was carried out of all land and buildings as at 28 February 2024. The valuations were undertaken by Carter Jonas in accordance with the Valuation Standards of the Royal Institute of Chartered Surveyors, IFRS and guidelines in HM Treasury's FReM.

The Group determined that the valuations were still appropriate as at the reporting date.

The additions during the year include expenditure on the development of UKAEA's Culham campus and on progress on major programmes including STEP, H3AT and MRF. For further information on these major programmes, please see the Performance Report.

The net book value under the historical cost model as at 31 March 2024 relating to classes of property, plant and equipment subject to revaluation was as follows: Land £133k (2023: £133k), Buildings £68,077k (2023: £37,167k), Leasehold improvements £3,150k (2023: £3,340k), Plant and equipment £34,416k (2023: £28,744k).

The value of property, plant and equipment additions in year which were funded by government grant comprises £57,151k (2023: £57,048k) funded by capital grant from sponsoring department and £693k (2023: £5,034k) funded by other UK government grants.

11 Right of use assets

Group and Authority	Buildings £k	Plant, equipment and vehicles £k	Total £k
Cost or valuation			
At 31 March 2022	**4,153**	**219**	**4,372**
Additions	-	-	-
Remeasurements	-	83	83
Disposals	-	-	-
At 31 March 2023	**4,153**	**302**	**4,455**
Additions	-	184	184
Remeasurements	-	-	-
Disposals	-	-	-
At 31 March 2024	**4,153**	**486**	**4,639**
Depreciation			
At 31 March 2022	(213)	(85)	(298)
Depreciation charge	(213)	(88)	(301)
Disposals	-	-	-
At 31 March 2023	**(426)**	**(173)**	**(599)**
Depreciation charge	(213)	(97)	(310)
Disposals	-	-	-
At 31 March 2024	**(639)**	**(270)**	**(909)**
Net book value			
At 31 March 2023	**3,727**	**129**	**3,856**
At 31 March 2024	**3,514**	**216**	**3,730**

Right-of-use assets relate to leases entered into by UKAEA of industrial and office buildings, vehicles, lifting and transporting equipment and office equipment. AEAIL does not have any leases.

UKAEA only has one property lease subject to IFRS 16. As this lease is for a shorter period than the useful life of the underlying asset and the rent is open market with regular periodic reviews UKAEA has used the cost measurement model as an appropriate proxy for the current value in existing use or fair value of the right-of-use asset.

NOTES TO THE FINANCIAL STATEMENTS

12 Investment property

	Group and Authority 2024 £k	2023 £k
At 1 April	59,472	57,688
Transfers from land and buildings	-	1,720
Revaluation adjustment - transfer into joint venture[a]	-	(13,433)
Revaluation adjustment - change in fair value	2,738	13,497
At 31 March	**62,210**	**59,472**

a. The 2023 transfer value is stated at 1 April 2022, actual value in year to the joint venture was £14.6m

Investment properties were valued at fair value as at 28 February 2024 by independent valuers. The valuations were undertaken by Carter Jonas in accordance with the Valuation Standards of the Royal Institute of Chartered Surveyors, IFRS and guidelines in HM Treasury's FReM.

The net book value under the historical cost model at 31 March 2024 relating to investment property subject to revaluation was £16,465k (2023: £16,465k).

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 Statement of comprehensive net income:

	Group and Authority 2024 £k	2023 £k
Rental income	2,785	2,712
Direct operating expenses:		
- Investment properties that generated rental income	2,879	2,632
- Investment properties that did not generate rental income	231	171

13 Intangible assets

Group and Authority	Software £k	Total £k
Cost		
At 31 March 2022	**2,019**	**2,019**
Additions	450	450
At 31 March 2023	**2,469**	**2,469**
Additions	36	36
At 31 March 2024	**2,505**	**2,505**
Amortisation and impairment		
At 31 March 2022	**(1,854)**	**(1,854)**
Amortisation charge	(131)	(131)
At 31 March 2023	**(1,985)**	**(1,985)**
Amortisation charge	(135)	(135)
At 31 March 2024	**(2,120)**	**(2,120)**
Net book value		
At 31 March 2023	**484**	**484**
At 31 March 2024	**385**	**385**

14 Trade and other receivables

	Group		Authority	
	2024 £k	2023 £k	2024 £k	2023 £k
Amounts falling due after more than one year				
Reimbursement receivables:				
- Site restoration	694,392	694,392	732,130	694,392	732,130
- Restructuring	22,000	22,000	24,779	22,000	24,779
Corporation tax	8,345	8,345	6,762	8,345	6,762
	724,737	**724,737**	**763,671**	**724,737**	**763,671**
Amounts falling due within one year				
Trade receivables	8,861	2,156	8,861	2,156
Reimbursement receivables:				
- Site restoration	53,266	30,387	53,266	30,387
- Restructuring	3,134	3,129	3,134	3,129
Prepayments and accrued income - Grant in Aid from sponsoring department	15,318	26,328	15,318	26,328
Prepayments and accrued income - other	21,963	19,210	21,928	19,192
Contract assets - in respect of revenue receivable	145	67	145	67
Contract assets - direct costs (in respect of work in progress)	730	1,236	730	1,236
VAT	7,209	7,763	7,209	7,763
Corporation tax	4,501	5,707	4,501	5,707
Other receivables	70	125	70	313
	115,197	**96,108**	**115,162**	**96,278**

There are no impaired assets in any of the classes of trade and other receivables. UKAEA has calculated an Expected Credit Loss provision for its trade receivables, in accordance with the requirements of IFRS 9, in the sum of £496k (2023: £496k).

The reimbursement receivables have been discounted at the rates applicable to the provisions to which they relate.

Further details of these rates are disclosed in Note 19.

15 Financial assets

	Group		Authority	
	2024 £k	2023 £k	2024 £k	2023 £k
Non-current				
Movements during the year				
At 1 April	99,132	78,723	18,623	18,623
Revaluation and profit on joint venture	3,398	20,409	-	-
At 31 March	**102,530**	**99,132**	**18,623**	**18,623**
Total non-current assets				
Investment in subsidiary undertakings	-	-	3,000	3,000
Investment in joint venture	102,530	99,132	15,623	15,623
	102,530	**99,132**	**18,623**	**18,623**
Current				
Total current assets				
Term bank deposits	200	959	-	-
	200	**959**	**-**	**-**

15.1 Investment in subsidiary undertakings

Name		Country of incorporation	Ownership interest % 2024	Ownership interest % 2023
AEA Insurance Limited		Isle of Man	100	100
UK Industrial Fusion Solutions Ltd	(dormant subsidiary)	England and Wales	100	100
UK Fusion Solutions Ltd	(dormant subsidiary)	England and Wales	100	100
UKAEA Ltd	(dormant subsidiary)	England and Wales	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.

Registered offices:
AEA Insurance Limited: 1st Floor, Goldie House, 1-4 Goldie Terrace, Upper Church Street, Douglas, Isle of Man, IM1 1EB
Dormant subsidiaries: Culham Campus, Abingdon, Oxfordshire, OX14 3DB

15.2 Investment in joint venture

The Group has 50% control of a joint venture, Harwell Science and Innovation Campus Public Sector Limited Partnership (HSIC PubSP), the public sector partner in Harwell Science and Innovation Campus Holdings (HSIC Holdings LP) (formerly HSIC LP), which is responsible for the development of the Harwell Oxford Campus. The interest in the joint venture, which is accounted for using the equity method in the Group financial statements, is as follows:

	Group	
	2024 £k	**2023 £k**
At 1 April	99,132	78,723
Share of profit/(loss) net of tax	(5,024)	7,232
Revaluation - prior year	10,897	-
Revaluation - current year	(2,475)	13,177
At 31 March	**102,530**	**99,132**
Analysed as follows:		
Cost or valuation	60,118	51,696
Share of retained profits/(losses)	42,412	47,436
	102,530	**99,132**

The £5,024k share of loss of the joint venture (2023: profit of £7,232k) represents UKAEA's share of the operating profit of HSIC Holdings LP via HSIC PubSP and was largely due to revaluation adjustments and the cost of financing.

The following amounts represent the Group's share of the income, results, assets and liabilities of HSIC Holdings LP via HSIC PubSP. They are included in the Statement of comprehensive net income and Statement of financial position:

	Group	
	2024 £k	**2023 £k**
Profit/(loss) net of tax		
Income	4,339	3,374
Expenditure	(6,707)	(3,255)
Net revaluation gain/(loss)	(2,656)	7,113
	(5,024)	**7,232**
Assets		
Non-current assets	139,634	104,453
Current assets	30,243	25,499
	169,877	**129,952**
Liabilities		
Current liabilities	3,492	1,796
Non-current liabilities	63,855	29,024
	67,347	**30,820**
Net assets	**102,530**	**99,132**

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

15.2 Investment in joint venture continued

Within current/non-current assets there is £129.1m of investment properties (2023: £95.9m). The investment properties have been valued at market value as at 31 March 2024 using information provided by Radice Chartered Surveyors, independent chartered surveyors. The valuation was carried out in accordance with the provisions of RICS definition of market value. The market value has been determined having regard to factors such as current and future projected income levels, taking account of location, quality of the building and recent market transactions in the sector. Changes in these assumptions such as the valuation basis applied in comparable market transactions, or the income level generated by the investment property could materially impact the valuation of the investment properties.

The Group noted that the joint venture accounts are in the final stages of audit and not yet approved by the HSIC board.

Annual accounts including the full investment property disclosure note can be requested from the registered office below

Registered office:
Harwell Science and Innovation Campus Public Sector Limited Partnership
c/o Science and Technology Facilities Council
UK Astronomy Centre
Royal Observatory Edinburgh
Blackford Hill
Edinburgh
EH9 3HJ

15.3 Term bank deposits

Term bank deposits were held during the year with major UK banks. The average interest rate on the deposits held at 31 March 2024 was 5.52% (2023: 4.81%). The credit risk associated with these investments was considered to be low because of the size and status of the banks involved.

16 Cash and cash equivalents

	Group		Authority	
	2024 £k	**2023 £k**	**2024 £k**	**2023 £k**
At 1 April	69,328	66,566	64,819	60,383
Net change in cash and cash equivalent balances	6,179	2,762	5,508	4,436
At 31 March	**75,507**	**69,328**	**70,327**	**64,819**
The following balances were held at 31 March:				
Commercial banks and cash in hand	74,525	69,328	70,327	64,819
Short-term bank deposits	982	-	-	-
	75,507	**69,328**	**70,327**	**64,819**

17 Trade and other payables

	Group		Authority	
	2024 £k	2023 £k	2024 £k	2023 £k
Amounts falling due within one year				
Trade payables	11,816	10,200	11,816	10,200
Accrued costs	47,633	44,109	47,595	44,057
Payments received on account - Grant in Aid from sponsoring department*	1,734	1,318	1,734	1,318
Payments received on account - other*	11,735	15,062	11,735	15,062
Contract liabilities	482	368	482	368
Corporation tax	-	1,943	-	1,943
Social security and other taxes	2,657	4,779	2,657	4,779
Other payables	2,124	3,584	2,124	3,584
	78,181	**81,363**	**78,143**	**81,311**
Amounts falling due after more than one year				
Payments received on account	1,397	1,434	1,397	1,434
Other payables	62	49	62	49
	1,459	**1,483**	**1,459**	**1,483**

* Comparative amended for reclassification

18 Lease liabilities

Group and Authority	Buildings £k	Plant, equipment and vehicles £k	Total £k
At 31 March 2022	3,712	116	3,828
Additions	**-**	**-**	**-**
Remeasurements	-	83	83
Repayments	(187)	(66)	(253)
Unwinding of discounting	33	2	35
At 31 March 2023	**3,558**	**135**	**3,693**
Additions	**-**	**184**	**184**
Remeasurements	-	-	-
Repayments	(188)	(135)	(323)
Unwinding of discounting	32	2	34
At 31 March 2024	**3,402**	**186**	**3,588**
At 31 March 2023			
Due within one year	156	97	253
Due after one year	3,402	38	3,440
	3,558	**135**	**3,693**
At 31 March 2024			
Due within one year	158	102	260
Due after one year	3,244	84	3,328
	3,402	**186**	**3,588**

A maturity analysis of lease liabilities as at 31 March is given in the table below:

Group and Authority	2024 £k	2023 £k
Undiscounted lease payments to be made after the reporting date:		
Not later than one year	294	285
Later than one year and not later than two years	265	226
Later than two years and not later than three years	231	202
Later than three years and not later than four years	207	207
Later than four years and not later than five years	207	207
Later than five years and not later than ten years	1,116	1,094
Later than ten years and not later than twenty years	1,548	1,776
Total lease payments	**3,868**	**3,997**
Less: Interest element	(280)	(304)
Total present value of obligations	**3,588**	**3,693**

19 Provisions for liabilities and charges

Group	Site restoration £k	Restructuring £k	Other £k	Total £k
At 31 March 2022	**489,394**	**40,167**	**11,392**	**540,953**
Unwinding of discounting	(6,851)	(480)	(34)	(7,365)
Provisions utilised in the year	(10,507)	(3,187)	(3,144)	(16,838)
Provisions not required written back	(1,905)	-	-	(1,905)
Increase/(decrease) in provision in the year	419,441	(1,050)	(791)	417,600
Changes in price levels	11,614	3,271	335	15,220
Discount charge	(138,668)	(6,682)	-	(145,350)
At 31 March 2023	**762,518**	**32,039**	**7,758**	**802,315**
Unwinding of discounting	9,371	487	2	9,860
Provisions utilised in the year	(28,513)	(3,278)	(2,187)	(33,978)
Provisions not required written back	-	-	(28)	(28)
Increase/(decrease) in provision in the year	74,522	(1,013)	789	74,298
Changes in price levels	(19,138)	2,111	33	(16,994)
Discount charge	(51,103)	(1,262)	-	(52,365)
At 31 March 2024	**747,657**	**29,084**	**6,367**	**783,108**

At 31 March 2023				
Non-current	732,131	28,660	4,242	765,033
Current	30,387	3,379	3,516	37,282
	762,518	**32,039**	**7,758**	**802,315**
At 31 March 2024				
Non-current	694,391	25,683	4,344	724,418
Current	53,266	3,401	2,023	58,690
	747,657	**29,084**	**6,367**	**783,108**

19.1 Site restoration provision

The site restoration provision represents the estimated costs of decommissioning the Joint European Torus (JET) and associated facilities at UKAEA's Culham site, including the storage, processing and eventual disposal of radioactive wastes.

JET ceased scientific operations in December 2023. It is the responsibility of UKAEA to oversee the repurposing of the part of the Culham site on which JET is located. Where necessary, UKAEA work with the Nuclear Decommissioning Authority (or its authorised parties), as the body responsible for the disposal of intermediate level radioactive waste (ILW). No part of JET is expected to become high level radioactive waste (HLW).

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, considering 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 2024 is discounted to the reporting date at inflation and nominal (discount) rates advised by HM Treasury. The rates are set out below:

General provisions

			2024	2023
Nominal rates	Short-term	(up to and including 5 years)	4.26%	3.27%
	Medium-term	(between 6 and 10 years)	4.03%	3.20%
	Long-term	(between 11 and 40 years)	4.72%	3.51%
	Very long-term	(41 or more years)	4.40%	3.00%
Inflation rates	Year 1		3.60%	7.40%
	Year 2		1.80%	0.60%
	Into perpetuity		2.00%	2.00%

Cash flows which occur during the first year are assumed to be at present value and are not discounted or inflated.

The unwinding of discounting in the year of £9,371k (2023: £(6,851)k) is the change in the provision from unwinding the previous year's estimated forward cash flows at the same rate as was used the previous year but bringing all the cash flows forward by one year.
Changes in price levels of £(19,138)k (2023: £11,614k) is the change in provision arising from changes in inflation rates. This is the difference between the current year's estimated forward cash flows, discounted using last year's discount rates, inflated using this year's inflation rates and the same cash flows inflated using last year's inflation rates.
The discount charge for the year of £(51,103)k (2023: £(138,668)k) represents the effect of changes in the nominal discount rates as advised by HM Treasury in comparison to prior year rates. This is the difference between the current year's estimated, inflated, forward cash flows discounted at the current year's nominal rates and the same cash flows discounted at the previous year's nominal rates; this plus the changes in price levels gives the total change in liability due to changes in real discount rates.

The analysis of expected timing of discounted cash flows is as follows:	Group and Authority 2024 £k	2023 £k
Not later than one year	53,266	30,387
Later than one year and not later than five years	268,862	225,174
Later than five years and not later than ten years	228,441	323,268
Later than ten years and not later than twenty years	197,088	183,689
	747,657	**762,518**

19.1 Site restoration provisions continued

The real terms discount rate is sensitive to changes in inflation and nominal discount rates, as illustrated below:

	Group and Authority 2024 (£k)				
		Inflation rates		Nominal discount rates	
	Current rates £k	0.5% increase £k	0.5% decrease £k	0.5% decrease £k	0.5% increase £k
Not later than one year	53,266	53,266	53,266	53,266	53,266
Later than one year and not later than five years	268,862	272,078	265,677	272,042	265,743
Later than five years and not later than ten years	228,441	236,153	220,955	236,053	221,119
Later than ten years and not later than twenty years	197,088	209,920	185,003	209,652	185,350
	747,657	**771,417**	**724,901**	**771,013**	**725,478**

The best estimate of the undiscounted cost of dealing with the liabilities is £864,212k (2023: £800,986k). The best estimate of the discounted cost is £747,657k (2023: £762,518k).

	P50 - 50% chance of actual costs being higher or lower	P80 - 80% chance of actual costs being lower
	£k	£k
Undiscounted costs	864,212	1,032,230
Discounted costs	**747,657**	**893,016**

The best estimate (P50) value is supported by a statistical analysis of cost and estimation uncertainties, along with other discrete risks.

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 UKAEA incurs in treating and disposing of nuclear wastes and in decommissioning plant arising from:

(i) programmes carried out by UKAEA and its predecessors prior to 1 April 1986; and
(ii) programme agreement work undertaken for BEIS (the predecessor to DESNZ) and BEIS's predecessors after 1 April 1986.

These assurances were reconfirmed by DESNZ in May 2024. On the basis of these assurances a matching receivable is included in the Statement of financial position.

19.2 Restructuring provisions

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 2019. These benefits continue at least until the date at which the employee would have reached normal retirement age, and in many cases part of the benefit is payable for life. The restructuring provisions are discounted to the reporting date at the discount rate for pension liabilities advised by HMT, which is 2.45% in 2023/24 (2023: 1.70%). The undiscounted cost of the group provisions is £33,617k (2023: £35,660k) and the benefits are estimated to be payable over a period up to 28 years.

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

	Group and Authority	
	2024 £k	2023 £k
Not later than one year	3,401	3,379
Later than one year and not later than five years	11,017	11,477
Later than five years and not later than ten years	8,553	9,516
Later than ten years and not later than twenty years	5,846	7,212
Later than twenty years	267	455
	29,084	**32,039**

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 reconfirmed by DESNZ in May 2024, and expenditure related to these provisions is reimbursed by DESNZ.

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

19.3 Other provisions

UKAEA has made provision of £1,757k (2023: £1,694k) for the eventual decommissioning of the MRF at its Culham site.

The remaining provisions mainly comprise unfunded retirement benefit obligations and claims relating to industrial-related injuries.

20 Deferred income

	Group and Authority	
	2024 £k	2023 £k
At 1 April	13,945	10,152
Deferred income received	693	4,960
Released to Statement of comprehensive net income	(1,013)	(1,167)
At 31 March	**13,625**	**13,945**

The majority of UKAEA's deferred income relates to capital grants for the RACE building and for the purchase of equipment for RACE, Fusion Technology, and the Materials Research Facility.

21 Deferred income tax

Group and Authority

	Investment property £k	Land and buildings £k	Total £k
Deferred tax liability			
At 31 March 2022	**10,619**	**12,205**	**22,824**
Movements during 2022/23:			
Charged/(credited) to Statement of comprehensive net income:			
- Revaluation	1,072	-	1,072
- Change in tax rate	-	-	-
Charged/(credited) directly to taxpayers' equity:			
- Revaluation	-	6,388	6,388
- Change in tax rate	-	-	-
At 31 March 2023	**11,691**	**18,593**	**30,284**
Movements during 2023/24:			
Charged/(credited) to Statement of comprehensive net income:			
- Revaluation	660	-	660
- Change in tax rate	-	-	-
Charged/(credited) directly to taxpayers' equity:			
- Revaluation	-	(516)	(516)
- Change in tax rate	-	-	-
At 31 March 2024	**12,351**	**18,077**	**30,428**

Deferred tax asset	
At 31 March 2023	**-**
Increase/(decrease) in deferred tax asset	444
At 31 March 2024	**444**

Net deferred tax liability	
At 31 March 2023	**30,284**
At 31 March 2024	**29,984**

Deferred tax liability

During 2020/21, the Government announced that the corporation tax rate would increase from 19% to 25% from 1 April 2023. This change was substantively enacted on 24 May 2022. UKAEA's deferred tax provision has therefore been calculated at 25%.

Movements in the deferred tax provision relating to investment property are charged or credited to the Statement of comprehensive net income in arriving at the profit or loss for the year. Movements in the deferred tax provision relating to revaluation of land and buildings are charged or credited to the revaluation reserve.

Deferred tax asset

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.

UKAEA has recognised a deferred income tax asset of £444k (2023: £Nil) in respect of RDEC set-off amounts that can be carried forward against future taxable income.

The deferred tax asset has been netted off UKAEA's deferred tax liability in the Accounts as it fulfils the conditions for offsetting within IAS 12.

22 Related party transactions

UKAEA is an NDPB sponsored by DESNZ (formerly by BEIS). DESNZ is regarded as a related party.

During the year UKAEA had various transactions which were collectively material with DESNZ and with UKRI (an entity for which DSIT is regarded as the responsible department). UKRI (STFC) is UKAEA's partner in the Harwell Science and Innovation Campus Public Sector Limited Partnership (Note 15).

No Board member, key manager or other related party has undertaken any material transactions with the Group during the year, except for remuneration as disclosed in the Remuneration and staff report.

23 Events after the reporting date

In accordance with the requirements of IAS10 'Events After the Reporting Period', post Statement of financial position events are considered up to the date on which the Accounts are authorised for issue. This is interpreted as the same date as the date of the Certificate Report of the Comptroller and Auditor General.

24 Commitments

Expenditure contracted for at the reporting date but not recognised in the financial statements comprised capital commitments £40.1m (2023: £47.8m), which related mainly to assets in course of construction. There were no further financial commitments under non-cancellable contracts.

25 Operating leases - lessor rentals

UKAEA leases its investment property with lease terms of between 1.4 and 99 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. UKAEA has classified these leases as operating leases because they do not "transfer substantially all of the risks and rewards incidental to the ownership of the assets.

AEAIL is not a lessor.

Operating leases:

Undiscounted lease payments to be received after the reporting date are as follows:

	2024 £k	2023 £k
Not later than one year	2,458	2,643
Later than one year and not later than two years	1,891	2,215
Later than two years and not later than three years	1,332	1,653
Later than three years and not later than four years	904	1,204
Later than four years and not later than five years	712	855
Later than five years and not later than ten years	2,759	2,927
Later than ten years and not later than twenty years	5,193	5,193
Later than twenty years and not later than forty years	9,720	9,789
Later than forty years and not later than sixty years	9,000	9,000
Later than sixty years and not later than eighty years	7,883	8,333
	41,852	**43,812**

NOTES TO THE FINANCIAL STATEMENTS

26 Financial risk management

Due to the nature of its activities, the Group is not exposed to the same degree of financial risk as that 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 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 minor foreign exchange risk arising from various currency exposures, primarily with respect to the Euro.

(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 the exposure to credit risk is therefore considered to be low.

(d) Liquidity risk

The Group is primarily financed by income from public sector bodies in the UK. The Group has a facility to request temporary working capital funding from DESNZ should the need arise.

During 2023/24, 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 UKAEA during the current or previous year.

LIST OF ABBREVIATIONS

AEAIL	AEA Insurance Ltd
AI	Artificial Intelligence
AO	Accounting Officer
ARAC	Audit and Risk Committee
AVC	Additional Voluntary Contribution
BEIS	Former Department for Business, Energy and Industrial Strategy
CDM	Construction Design and Management
CDO	Chief Development Officer
CEO	Chief Executive Officer
CETV	Cash Equivalent Transfer Value
CFO	Chief Financial Officer
CFS	Commonwealth Fusion Systems, spun out from MIT
CHIMERA	Combined Heating and Magnetic Research Apparatus
COO	Chief Operating Officer
CPS	Combined Pension Scheme
CRC	Carbon Reduction Commitment Energy Efficiency Scheme
DEMO	Demonstration fusion power station
DESNZ	Department for Energy Security and Net Zero
DT	Deuterium-Tritium campaigns/fuel mix
EDI	Equality, Diversity, and Inclusion
EDI&W	Equality, Diversity, Inclusion, and Welfare
EPSRC	Engineering and Physical Sciences Research Council
ERM	Enterprise Risk Management
ESS	European Spallation Source
ExCo	Executive Committee
F4E	Fusion for Energy
FIP	Fusion Industry Programme
FOI	Freedom Of Information
FReM	Government Financial Reporting Manual
FSA	Fusion Safety Advisory group
FTE	Full Time Equivalent
FTF	Fusion Technology Facilities
H3AT	Hydrogen-3 (tritium) Advanced Technology facility
HM	His Majesty's
HPC	High Performance Computing
HSIC	Harwell Science and Innovation Campus Ltd partnership
HSIC PubSP/LP	Public/private sector partnership for the Harwell joint venture
IAEA	International Atomic Energy Authority
IAS	International Accounting Standards
IFRS	International Financial Reporting Standards
ILW	Intermediate Level Waste
IO	ITER Organisation
ITER	Next generation international experimental fusion reactor
JET	Joint European Torus
JV	Harwell Joint Venture
LIBRTI	Lithium Breeding Tritium Innovation Programme
MAST-U	Mega Amp Spherical Tokamak Upgrade
MRF	Material Research Facility
NAO	National Audit Office
NDA	Nuclear Decommissioning Authority
NDPB	Non-Departmental Public Body
OAS	Oxfordshire Advanced Skills apprentice training centre
ONS	Office of National Statistics
OSR	Radioactive and Out of Scope of Regulations
PAO	Principal Accounting Officer
PNISS	Principal Non-Industrial Superannuation Scheme
PPMO	Programme and Project Management Office
PPSS	Protected Persons Superannuation Scheme
PSRE	Public Sector Research Establishment
QSHE	Quality, Safety, Health, and Environment
R&D	Research and Development
R&T	Research and Training
RACE	Remote Applications in Challenging Environments facility
RAICo	Robotics and Artificial Intelligence Collaboration
RDEC	Research and Development Expenditure Credit
SPPSP	Shift Pay Pension Savings Plan
SRO	Senior Responsible Officer
STEM	Science, Technology, Engineering, and Mathematics
STEP	Spherical Tokamak for Energy Production
STFC	Science and Technology Facilities Council
UKAEA	UK Atomic Energy Authority
UKIFS	UK Industrial Fusion Solutions Ltd
UKRI	UK Research and Innovation
WB	West Burton

The UK Atomic Energy Authority's mission is to lead the delivery of sustainable fusion energy and maximise scientific and economic benefit

UK Atomic Energy Authority

Find out more
www.gov.uk/ukaea

United Kingdom Atomic Energy Authority
Culham Campus
Abingdon
Oxfordshire
OX14 3DB

t: +44 (0)1235 528822

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