



## **The Oxford Trust**

*Encouraging the study and application of science and technology*

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### **BY E-MAIL & BY POST**

The Energy Review Team  
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To whom it may concern

### **Submission to the Performance and Innovation Unit project on Energy Policy for the UK**

The Oxford Trust wishes to draw the attention of the PTU of the research and development activities on fusion science and technology carried out at the Culham Science Centre in Oxfordshire. Culham Science Centre is the main laboratory in the UK for fusion research and also the site for the European flagship experiment, JET. Fusion research at Culham is funded by and undertaken on behalf of the UK Department of Trade and Industry and the European Commission through Euratom.

Work at Culham is focused on the development of fusion energy, the process which occurs naturally in the sun and other stars. Scientists and engineers at Culham and in many other world research centres are seeking to harness this process to ultimately provide a competitive, safe and environmentally acceptable electricity supply source. Solving the technical issues of delivering power through fusion represents an enormous challenge, with significant benefits for the UK and mankind. The facility at Culham Science Centre is central to UK and world fusion research fusion and is vital to solving our future energy requirements. There has been substantial progress in fusion research and it is hoped that electricity production from fusion can be demonstrated within the time under consideration.

The Joint European Torus (JET) at Culham is the world's largest fusion experiment and the most successful to date. Recent experiments have demonstrated the production of 16 megawatts of fusion power. International plans for a new experimental machine capable of generating 500 MW (equivalent to a medium sized power station) are under discussion. The UK, through its involvement with the EU is playing a significant role. There is consensus among experts that the time is right to invest in fusion as part of the UK future energy portfolio.



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Fusion electricity generation, when developed, will have many environmental advantages over existing methods.

- 1 Fusion fuels are widespread throughout the world and abundant, thus negating problems of strategic availability.
- 2 Fusion fuels are naturally occurring non-radioactive elements, being deuterium (a form of hydrogen) and lithium metal.
- 3 Electricity generation by fusion power plants will not contribute to global warming, as there are no emissions of greenhouse gases such as carbon dioxide and methane.
4. Fusion power plants will not produce acid rain or ozone depleting emissions.
5. Fusion power plants will be inherently safe. Even the worst possible plant accident cannot lead to significant risk to the public, or require public evacuation.
6. Fusion power will be environmentally friendly and will produce no radioactive material waste burden for future generations. Furthermore, by careful choice of materials and recycling practices, there will be no need to use geological storage sites.

The Oxford Trust and Oxford Innovation would also like to stress the importance to the local area and economy of the Culham Science Centre and the JET facility, which is very like a future fusion power plant in size, scope and technological complexity. Over many years, Culham has attracted a highly skilled and educated workforce from across the UK and Europe, who have made many positive contributions to the region. Many small businesses serving the laboratory have thrived on the steady stream of challenging, high technology, contracts arising from the fusion programme.

We have had close collaboration with the laboratory on issues relating to education, public understanding and local community affairs. Most recently Oxford Innovation Ltd (a company founded by The Oxford Trust and in which it retains a major shareholding) has been in joint collaboration with UKAFA with the formation of a technology incubator on the site. With Oxford Innovation's management experience and access to UKABA's technical expertise, start-up businesses are encouraged to locate at Culham, thus further boosting the local economy and actively promoting technology transfer from an area of science at the cutting edge. With this initiative, it is clear that there are benefits to the UK even in the short term to add to those of energy production in the future.

Yours faithfully

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