

IET response DESNZ's Draft National Policy Statement for fusion energy generation (EN-8)

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Executive summary

The IET welcomes the Draft National Policy Statement for Fusion Energy Generation (EN-8) and considers that EN-8 represents a positive step towards enabling future fusion deployment. The IET supports the Government's decision to establish a dedicated planning framework for fusion energy infrastructure. The draft provides a generally clear, coherent and accessible framework that complements EN-1 and reflects the growing importance of fusion energy as a potential contributor to the UK's future energy system, industrial strategy and economic growth.

However, there are areas that require further development to ensure the framework remains robust as fusion technologies mature. EN-8 should provide stronger guidance on safety, security, waste management and grid integration, and the policy should be supported by up-to-date evidence on fusion hazards, ensure independent scrutiny of safety assessments, and avoid creating any perception that fusion facilities warrant reduced regulatory oversight because of their comparatively lower radiological risks.

The IET recommends:

1. **Strengthen the fusion-specific nature of EN-8:** DESNZ should distinguish fusion-specific planning considerations from matters already covered by EN-1 and other regulatory frameworks.
2. **Enhance safety provisions:** DESNZ should update references to fusion safety evidence and reinforce the application of established risk-reduction principles and transparent assessment of residual risks.
3. **Strengthen security and non-proliferation requirements:** EN-8 should include more detailed consideration of nuclear security, non-proliferation and strategic material management. Government should mandate early consideration of cyber security risks and mitigations as part of project design and planning.
4. **Improve waste management expectations:** Waste management arrangements must be appropriately scrutinised by relevant regulators and stakeholders, and radioactive waste generation should be minimised as far as reasonably achievable.
5. **Provide greater clarity on grid integration:** EN-8 should set out clear expectations on fusion plant scale, deployment patterns and operational characteristics. As well as

considering the role of fusion in supporting system flexibility, energy security and the integration of renewable generation.

6. **Strengthen environmental and climate resilience considerations:** EN-8 should place greater emphasis on climate adaptation, flood risk, water resources, biodiversity and cumulative environmental impacts.
7. **Support public confidence and transparency:** EN-8 should support public engagement, transparency and long-term stewardship commitments. DESNZ should also commit to a periodic policy review.

Questions

1. Does draft EN-8, when read alongside EN-1 (and other relevant National Policy Statements), provide a clear, coherent and appropriate planning framework for fusion energy infrastructure?

Response options:

- **Yes**
- Partially
- No
- Not sure

Please explain your answer, focusing on the overall clarity, coherence and appropriateness of the framework. Detailed feedback on specific sections of draft EN-8 should be provided in response to subsequent questions.

Answer

Draft EN-8, when read alongside EN-1, does provide a clear, straightforward and coherent planning framework. It fits well with EN-1, and provides clarity where nuclear fusion is concerned. The coherent, clear and appropriate document is encouraging for future frameworks and outputs in this sector.

The IET welcomes the creation of a fusion-specific National Policy Statement because it recognises that fusion is moving from research and demonstration towards nationally significant infrastructure, with implications for energy security, industrial capability, skills, investment, communities and the electricity system.

EN-8 should clearly connect planning decisions to the UK's long-term objectives for clean power, energy resilience, sovereign industrial capability, regional economic growth, supply chain development and international leadership. Fusion facility policy frameworks should be robust enough to support timely consent while maintaining public confidence, safety, security, and environmental considerations, whether this be through the planning stages, or added to EN-1.

EN-8 would be strengthened by including a clear statement that fusion energy requires unique considerations that differentiate it from existing technologies.

Question

2. Do Sections 1 and 2 of draft EN-8 provide sufficient clarity on the role, scope and assessment principles of the fusion energy National Policy Statement?

Response options:

- **Yes**

- Partially
- No
- Not sure

If you chose 'No' or 'Partially', please explain what changes would be beneficial, referencing specific sections where possible. 10 Consultation on the draft National Policy Statement for fusion energy (EN-8)

Answer

EN-8 does provide sufficient clarity on the role, scope and assessment principles of the fusion energy National Policy Statement. It is shorter and clearer as to what the document is hoping to achieve. This makes it easier to follow for readers, and again, bodes well for future outputs and frameworks.

The IET also considers that EN-8 should be explicit about the relationship between planning consent and other regulatory regimes, and the planning process should not duplicate technical regulatory approval.

Question

3. Are the approaches set out for each consideration adequate and appropriate for all fusion energy infrastructure, making clear what, if anything, is required beyond the requirements of EN-1?

Response options:

- Yes
- Partially
- No
- Not sure

If you chose 'No' or 'Partially', please provide details, identifying any considerations where the approach may be inadequate or inappropriate and what changes you would suggest.

Answer

The IET notices that the majority of items in EN-8 are not in addition to EN-1, this leads to uncertainty and detracts from the clarity of messaging that this document began with. DESNZ needs to streamline this document so as to keep the messaging clear and succinct.

For EN-8 to support a credible national policy for fusion energy generation, the policy should be clearer about what is genuinely fusion-specific and what is already dealt with in EN-1 or other regimes. Repetition of general EN-1 requirements risks weakening the document.

The following areas require particular strengthening in EN-8: safety, security, waste management and grid integration.

Safety

A robust approach to independent safety assessment will be essential. Where an organisation involved in fusion research, development or delivery is also a source of safety evidence, EN-8 should ensure that safety risks are subject to sufficient independent scrutiny.

DESNZ states that it is a low radiological hazard and refers to work undertaken in 2021 by the United Kingdom Atomic Energy Authority (UKAEA). However, the UK is now five years on from that work and there should be an update on this work considering how the international regulatory landscape for fusion facilities has evolved quickly in the past few years and more

up to date safety assessments are available, such as from the International Atomic Energy Agency. This will ensure that any early applications under EN-8 are assessed considering up-to-date understanding of the hazards from fusion facilities.

The policy should make clear that fusion's comparatively lower radiological hazard should not lead to complacency. National infrastructure should include robust evidence that hazards have been identified, assessed and reduced as far as reasonably practicable, that residual risks are understood, and that emergency planning, off-site impacts and cumulative infrastructure risks have been considered transparently. This is particularly important while fusion designs remain innovative and may change materially during development.

Much of the work in the UK on health and safety hazards from fusion facilities has been undertaken by the fusion safety authority (FSA) within the UKAEA. UK Fusion Energy, also part of UKAEA group, may be an early applicant under EN-8 for the STEP project¹. The IET wants to highlight the importance of government ensuring a sufficiently independent assessment of the safety risks from STEP to avoid potential conflicts of interest where the UKAEA may "mark its own homework". Take a critical perspective on this and look at what other safety assessment work has been done by other organisations, beyond the UKAEA.

When considering 3.3 Seismic activity; the approach written, in particular, at 3.3.2 and 3.3.3 seem to veer away from the 'as low as reasonably practicable' (ALARP) approach at typical nuclear facilities. The transition from a research reactor under the HSE and UKAEA to a more comprehensive nuclear regulatory approach is not defined. The ONR have within their remit, safety, security, waste, transportation of waste. There is a risk of divergence from understood norms in nuclear safety.

EN-8 should focus on the additional considerations that arise because fusion facilities may combine high-energy plasma systems, high neutron fluxes, large magnets, tritium handling, activated materials, remote maintenance, complex digital control systems, high-voltage infrastructure, grid interfaces and substantial construction programmes.

Security²

This section of EN-8 should be strengthened. As with any nuclear frameworks or regulation, security must be at the forefront of any adaptations or inclusions. Non-proliferation has a huge part to play in the security of nuclear fusion and fission, it is imperative that DESNZ ensures that people cannot divert certain materials suitable for nuclear weaponry, use a fusion facility to breed special nuclear material, or develop an understanding that may be transferred to fusion weapons.

It is integral that the actual materials that will get used in fusion facilities, such as Lithium 6, associated enrichment technology, and tritium, are themselves under stringent controls. Whilst this is already addressed in other legislation, the application of those controls to a specific project should be considered as part of the development consent process.

It is imperative that prevention of someone subverting the planning process, with a view to making it easier to obtain special materials once the facility is operational, be a priority consideration for DESNZ. These controls must be considered during the planning and design phases to ensure that proper physical and organisation controls are implemented during construction to ensure the risks are not realised during operation.

¹ STEP fusion. [STEP Fusion - Spherical Tokamak for Energy Production](#)

² IAEA DEMO Special Topic Discussion (2025), Fusion and non-proliferation: assessing misuse of neutrons and associated signatures in fusion systems. [DEMO Special Topic Non Prol 2025 LWP.pdf](#)

Placing stringent controls on the materials used in fusion facilities should be a priority based on what EN-8 currently says. It is a concern that EN-8 states that we should follow what is written in EN-1 and follow the advice of the National Cyber Security Centre (NCSC) and the National Protective Security Authority (NPSA). Whilst the IET encourages referring to the NCSC and NPSA advice, EN-8 should address the special considerations for nuclear facilities properly, not just follow the EN-1 line and generically refer to guidance.

Global fusion development also highlights tritium as a strategic policy issue. EN-8 should not treat tritium only as an operational matter to be resolved later. Applicants should explain that tritium management is proportionate to the specific technology, scale and operating regime of the proposed facility.

Planning applications for fusion facilities should include explicit consideration of cyber security risks and mitigations. This should include operational technology, control systems, digital twins, data integrity, remote operations and interfaces with external infrastructure, demonstrating that cyber security has been incorporated into the design rather than treated as a later operational matter.

Transport of waste

EN-8 should also look to address discrepancies with transport of waste. Whilst it does address waste, and that it would be no more hazardous than intermediate level waste (ILW), the appropriate regulators and other stakeholders such as the NDA must be properly consulted and approve the application before it can be granted development consent. Irradiated material will be generated throughout the operational life of a fusion facility. EN-8 should avoid creating an impression that waste management requirements are materially reduced simply because the facility is fusion-based.

DESNZ needs to ensure that throughout the planning process for fusion facilities, the mentality towards waste should be to generate as little as reasonably achievable (ALARA).

Integration to the grid

Integration into the grid ultimately comes down to 3 factors:

1. The scale and output of the fusion plants;
2. The extent to which plants could be distributed across the grid; and
3. How fusion generation could contribute to system flexibility, security of supply and balancing of intermittent renewable generation.

EN-8 should provide clearer expectations on these factors because they will influence grid connection strategy, system planning, associated infrastructure and the assessment of national need. Fusion has the potential to support a more resilient low-carbon electricity system, but this will depend on plant scale, location, dispatchability, auxiliary demand and operational characteristics.

EN-8 has potential to insight a useful facility or a positive paradigm shift for the grid. This further highlights how extensive, thorough and meticulous this planning process must be, however it is a process that remains highly uncertain in terms of characteristics and feasibility.

DESNZ must also answer how do you size and commit to new harbours, pipelines, alongside other key factors before understanding the scale of the recoverable resources. Ultimately questioning how EN-8 can set the UK up for success, in a way that can scale fast enough once uncertainty is reduced, whilst mitigating the risk of stranded assets.

Question

4. Are the environmental assessments (Appraisal of Sustainability and Habitats Regulations Assessment) for draft EN-8 reasonable and appropriate?

Response options:

- Yes
- Partially
- No
- Not sure

If you chose 'No' or 'Partially', please provide details, referencing the specific section(s) you are referring to in your response.

Answer

The environmental assessments are a reasonable starting point, but EN-8 should place stronger emphasis on climate resilience, water availability, flood risk, biodiversity, cumulative effects and long-term environmental stewardship. When viewing the environmental assessments through a water and flood mitigation lens, we have seen storm events passing the 1:100 years plus 40% for climate change. Fusion facilities may be long-lived, infrastructure-intensive assets, and their environmental assessment should therefore test whether they remain safe, operable and economically viable under credible future climate scenarios.

Heatwaves and higher ambient temperatures should also be factored into design and planning assumptions, as proven with the 30 degree temperatures throughout June with regards to the operation of the asset in a warming world.

Question

5. Do you have any other comments on draft EN-8?

Response options:

- Yes
- No
- If you chose 'Yes', please provide further comments, referencing specific section(s) where relevant.

Answer

Clarity of language and public confidence

EN-8 should use clear and unambiguous language, particularly in areas concerning safety, security, waste, regulatory responsibility and long-term environmental obligations. More definitive wording would improve consistency of interpretation by applicants, regulators, industry, local authorities and the public.

EN-8 should recognise the importance of community consent and public confidence. Fusion facilities should be accompanied by clear commitments to transparent engagement, local economic benefit, social value, education, emergency information, community liaison and long-term stewardship.

Commitment to reviews

EN-8 should include a firm commitment to periodic review. Given the pace of fusion technology, regulation and international deployment, the policy should be reviewed at defined

intervals and earlier if material developments arise in technology, safety evidence, waste strategy, security expectations or energy system planning.