

Matter which the Chairman has decided is urgent by reason of the need to apprise Cabinet of the submission of an expression of interest from the Vale of Glamorgan Council regarding Aberthaw Power Station site and UK Governments STEP Power Station programme before the deadline of the end of March 2021.

Meeting of:	Cabinet
Date of Meeting:	Monday, 22 March 2021
Relevant Scrutiny Committee:	All Scrutiny Committees
Report Title:	Expression of interest regarding Aberthaw Power Station site and UK Governments STEP Power Station programme
Purpose of Report:	To seek Business Cabinet's endorsement for the expression of interest for the Aberthaw site to be considered as a site for the STEP power station
Report Owner:	Deputy Leader and Cabinet Member Education and Regeneration
Responsible Officer:	Marcus Goldsworthy, Head of Regeneration and Planning
Elected Member and Officer Consultation:	None undertaken
Policy Framework:	This report is a matter for endorsement by Cabinet
<p>Executive Summary:</p> <ul style="list-style-type: none"> • In October 2019, the Secretary of State for Business, Energy and Industrial Strategy announced £220m funding towards the conceptual design of a fusion power station – Spherical Tokamak for Energy Production (STEP). STEP is an innovative plan for a commercially viable fusion power station, offering the realistic prospect of constructing a powerplant by 2040. • In November 2020, the UK Government released an invitation for expressions of interest to identify sites in the UK that could accommodate a STEP power station. • This report is to seek Cabinet's endorsement for the expression of interest for the Aberthaw site to be considered as a site for the STEP power station. 	

Recommendations

1. That Cabinet endorses, in principle, the submission of the expression of interest for the Aberthaw site as one of two sites in Wales to the STEP programme.
2. That the Urgent Decision Procedure set out in Section 14:14 of the Council's Constitution in respect of Recommendation (1) be approved in order to meet the deadline for submission of the 31st March, 2021.
3. That a further report be brought back to Cabinet in order to provide an update when further information becomes available.

Reasons for Recommendation

1. The site chosen for STEP will have global visibility and will form the centre of a programme of activity supporting thousands of high-quality high-tech jobs. STEP will support economic growth, providing the opportunity to attract £1.5bn of inward investment, and the training of highly skilled engineers. It will also be an integral part of meeting the global net zero challenge. The expression of interest stage for the STEP programme requires relevant local authority endorsement for sites which are being submitted.
2. The reporting of the use of the Urgent Decision Procedure is a requirement of the Council's Constitution.
3. To update Cabinet on the latest information.

1. Background

- 1.1 STEP is an ambitious programme to design and build a prototype fusion power plant. It is a Government programme, currently with £222 million funding to produce a concept design by 2024. It is hoped that the STEP prototype will demonstrate the commercial viability of fusion. The learning from this will enable the future development of a fleet of commercial fusion plants.
- 1.2 The programme is being run in three phases:
 - Phase 1 – produce a concept design by 2024.
 - Phase 2 – design to be developed through detailed engineering designs, while all consents and permissions to build the plant are sought.
 - Phase 3 – construction of the prototype power plant will begin in phase 3, targeting completion around 2040.
- 1.3 The programme is still in design stage, so it is not clear yet exactly what buildings and facilities will be needed on site, this will become clearer as the design develops over the next few years. Some of the key requirements for STEP are:
 - Site footprint – this is not clear at this stage beyond a requirement for 100Ha minimum overall site area. This is required to accommodate power station infrastructure and to allow the opportunity to expand with associated future

development and additional low carbon technology. On site developments will include the reactor itself, associated turbine hall, control facilities and auxiliary plant and development, design, and construction facilities.

- Access to High Voltage Grid.
- Access to cooling water –access to a major water source is important.
- Access to a skilled workforce.
- Strong transport links to facilitate delivery of major components, workforce, and international visitors to site (road, rail, air and port access of interest).
- Site environment – several criteria will be set out during site selection to ensure STEP is not impacting on a site of particular environmental or archaeological importance.
- Office accommodation – for research programmes and power station construction and operations.

2. Key Issues for Consideration

- 2.1** Fusion is the process that takes place in the heart of stars and provides the power that drives the universe. When light nuclei fuse to form a heavier nucleus, they release bursts of energy. This is the opposite of nuclear fission – the reaction that is used in nuclear power stations today, where energy is released when a nucleus split apart. These reactions can provide a huge amount of energy from a very small amount of fuel.
- 2.2** It is an intrinsic property of the fusion process that it is inherently safe with low environmental impact. There is only a small amount of fuel in the plasma at any time, and over fuelling or overheating the plasma will lead to it being extinguished almost instantly. Extensive studies over the last two decades have shown that no plant failure or accident could result in the need to evacuate public from outside the site. A fusion reactor produces helium, which is an inert gas and no radioactive waste by-products therefore result from the process.
- 2.3** The benefits of fusion power include:
- 2.4** No carbon emissions – Fusion does not emit harmful toxins like carbon dioxide or other greenhouse gases into the atmosphere. Its major by-product is helium: an inert, non-toxic gas.
- 2.5** No other harmful environmental emissions – Fusion process does not result in NO_x, SO_x, particulate or other emissions deleterious to local air quality.
- 2.6** Abundant fuel sources – Fusion fuels are widely available and nearly inexhaustible (deuterium can be extracted from water and tritium will be produced inside the power station from lithium, an element abundant in the earth's crust and seawater).
- 2.7** Energy efficiency – 1 kg of fusion fuel could provide the same amount of energy as 10 million kg of fossil fuel.
- 2.8** Safety – a large scale nuclear accident is not possible in a fusion reactor. It is difficult to reach and maintain the precise conditions necessary for fusion – if any disturbance occurs, the plasma cools within seconds and the reaction stops. The

quantity of fuel present in the vessel at any one time is enough for a few seconds only and there is no risk of a chain reaction.

There will only be one site in the UK chosen and so it will be a very competitive process. The next stage of site selection will enable all partners to assess the additional criteria to see if the site meets the needs of Government but also of the Council and other key local stakeholders. The example application form is included at Appendix A.

- 2.9** The deadline for the submission of expressions of interest for sites is the end of March 2021. The Government will then carry out detailed site assessments to check all sites submitted against the criteria. These are: technical and operational suitability, socio-economic and community benefit implications and support for the commercial progress of the project. A recommendation will be presented to the Secretary of State with a decision expected by the end of 2022.
- 2.10** The expression of interest is being prepared with local partners including the Cardiff Capitol Region, Welsh Government and interested businesses with the support of the current landowner (RWE).
- 2.11** The proposal complements other opportunities including the St Athan and Cardiff Airport Enterprise Zone which the site sits close to Aberthaw. STEP is an additional option to be explored with potential to complement the decarbonisation and innovation objectives of the Capitol region and it is a non-binding expression of interest at this stage.

3. How do proposals evidence the Five Ways of Working and contribute to our Well-being Objectives?

- 3.1** The project accords with the Five Ways of Working and our Well-being objectives as follows:
- 3.2** a) Involvement - As and if the expression of interest leads to the site being considered as part of the STEP proposals, there will be full structured community consultation involving residents and other interested parties.
- 3.3** b) Collaboration - The submission of the expression of interest has involved the Council, the City region, privates sector organisations such as RWE and other parties directly involved in the Cardiff Capitol Region.
- 3.4** c) Integration - The submission is part of a regional integrated approach to the ultimate goal of achieving carbon neutrality.
- 3.5** d) Prevention - the expression of interest seek to prevent the loss of what is an asset to the region through its repurposing and re-tasking for a new form of carbon free and safe energy which will also ensure that jobs are created and not lost.
- 3.6** e) Long Term - The aim is it create a long terms future for the Aberthaw site, with associated jobs and green energy generation.

4. Resources and Legal Considerations

Financial

- 4.1** None at this stage

Employment

- 4.2** None directly but should the expression of interest lead to the STEP project coming to Aberthaw it could lead to the creation of many hundreds of high-quality jobs.

Legal (Including Equalities)

- 4.3** None at this stage as there is no commitment beyond the expression of interest.

5. Background Papers

None.

STEP Site Nomination Form



To enter the STEP site nomination process please complete this form in all areas, sign where appropriate, and return in PDF alongside any supporting information to siting@step.ukaea.uk. This nomination process will not close before **31 March 2021**, and could be extended further at the discretion of UKAEA.

Submitted by (name):	On behalf of (proposing entity):	Signature:	Date:

Number of pages in total:	
List of attachments:	

If you are not contacted within three working days of submitting this document, please check we've received your nomination by contacting

→ [**siting@step.ukaea.uk**](mailto:siting@step.ukaea.uk)

Foreword from UKAEA CEO, Professor Ian Chapman

I am delighted you are potentially interested in hosting STEP in your community.

STEP is a novel, challenging and game-changing programme; aiming to realise the potential of fusion energy to provide almost limitless, clean, secure, sustainable low carbon energy in the second half of this century.

We believe that the community which hosts this facility will place itself at the forefront of a global clean energy revolution – with all the benefits that entails.

We understand that putting a site forward for selection incurs a level of effort on the part of aspirant host communities - and as such we make two up-front commitments to you.

Our commitments to you

- ▶ We will be open and transparent throughout. We understand the work that goes into submissions, and we will run a clear, fair, and open process throughout.
- ▶ We will minimise wherever possible the commitment we ask of proposing entities, to make this process as accessible as possible.



The criteria outlined in this document capture our requirements from a STEP site. These are pooled into five scoring categories: the first is pass/fail showstoppers, the remaining four are assessment areas, on which the sites will be allocated scores of up to 100 points each.

We ask those nominating a site to provide answers that are as full and accurate as possible, however, at this stage, not to undertake any additional technical or site studies work in support of their application.

In many cases the consideration of what is favourable is not clear-cut. It may depend on other aspects of the assessment, or on the evolution of the STEP design. As such we urge nominating parties not to filter or present answers for optimal scoring – but for greatest accuracy and transparency.

UKAEA will then assess and validate the information provided, coming to a view which will inform our recommendations to the Secretary of State for BEIS.

I trust that you will find this process rewarding, and look forward to engaging with you in the months ahead.

Ian

Clarifying details of the nomination process

1. Who can propose a site?

UKAEA invites site nominations from almost any party. We actively encourage a range of relevant bodies (e.g.: Councils, LEPs, Regional Development Groups) to propose sites based on a strategic vision for the future of the community. These proposing entities could be pre-existing, or formed for the specific purpose of nominating a site for STEP. We recognise that landowners may not have the time or resources to proactively propose land themselves, and regard this partnership model as appropriate.

We ask that:

- ▶ The entity is capable (in personnel and funding) to work with UKAEA as we assess the proposal.
- ▶ The entity has some form of jurisdiction (council, LEP, business group, devolved Government) for the area of the site.
- ▶ That not more than one entity propose the same site.
- ▶ That the proposing entity has the agreement of the landowner to propose the site.

This proposing entity will be the primary point of engagement for UKAEA throughout the assessment process.

The proposing entity need not retain a development role in the programme beyond the final selection, though UKAEA recognises that many of the bodies likely to propose a site (councils, for example) would remain significant stakeholders and even statutory consultees in any future development.

The ability to demonstrate viable commercial access is clearly significant – so we urge nominating entities to secure significant support and interest from the landowner in order to have a meaningful chance of proceeding in the process.

2. The landowner

The landowner - the body which owns the land proposed for the construction and operation of STEP – need not be the proposing entity. However, the active support of the landowner is crucial for any site to successfully pass the showstopper assessment. The landowner will also be required to participate in the assessment phase to enable access and commercial assessment. The landowner should agree to this, before endorsing the nomination of the site.

Assessment criteria clearly prioritise a viable means to proceed the STEP programme, and as such there is an explicit expectation from any nomination that the landowner is open to a meaningful negotiation towards transfer or lease of land.

3. Interface with UKAEA throughout the nomination phase and the subsequent assessment

Throughout the nomination process, UKAEA will minute engagements with any prospective proposing entity, to ensure the process remains transparent. Where questions of factual clarification on the process are asked, UKAEA will anonymise and publish these on our siting website along with the answers, to ensure all parties can benefit from the information provided.

During nominations UKAEA would be pleased to attend and present at a range of community or regional meetings and events to provide more detail on the process. Identical materials will be used at each, and questions may be posted on the website, as outlined above – with the aim of ensuring a fair and transparent process. To discuss such a request, before or after nomination, please contact UKAEA via step.siting@ukaea.uk.

Interface through the assessment will be minuted and process-driven to ensure a fair and transparent approach. The exact details will be agreed with respondents once nominations are received.

4. Alignment to consenting and regulation

This process does not pre-determine any later planning processes. Nomination of a site in no way construes planning consent, and acceptance of a site by UKAEA in no way impacts upon the ultimate consenting process to be undertaken. An appropriate consenting process will be required for any subsequent activities on site.

The production of fusion energy is inherently safe - literally fail safe - as any change in conditions inside the machine will cause the plasma to stop. The regulatory regime for fusion power stations is still in development. STEP will, of course, be operated in line with all relevant regulations with a safe, sustainable and environmentally responsible approach at the heart of all we do.

Selection of the STEP site

The STEP site will ultimately be selected by the Secretary of State for Business, Energy and Industrial Strategy, following a recommendation made by UKAEA.

The recommendation panel will be provided with summaries of detail by the UKAEA team delivering the assessment process. This internal division provides additional scrutiny and separation between those making the recommendation and those engaging potential host communities on a daily basis. All down selection decisions will be made by the recommendation panel.

Detail of the assessment process

UKAEA (with inputs and guidance from BEIS and support from contracted technical advisors) will assess each nominated site against five assessment pools.

Each of the five pools comprises a number of elements, within which there are a number of questions.

Respondents are requested to provide as much readily available information as possible at this point as it will not be possible to accept fundamental changes to the proposal after the nomination process closes, though edits to an already submitted form will be accepted before the closure of the nomination phase (which will not be before 31 March 2021).

Pool	Area	Scoring
1	Showstoppers	Pass/Fail
2	Commercial terms	Score / 100
3	Socio-economic vision	Score / 100
4	On-site characteristics	Score / 100
5	Off-site characteristics	Score / 100

UKAEA will then work to validate the information provided and build our understanding of the site through associated studies as the assessment proceeds, including asking additional questions, as laid out below.

At this stage, respondents should not undertake additional work or incur extra costs to nominate a site at this stage. Where there is uncertainty it should simply be highlighted for clarification at a later stage.

Commercial considerations should also be as informed as possible at an early stage to prevent significant amendments during the selection process. However, we recognise some uncertainty regarding the commercial terms of access is to be expected.

The information provided by respondents will form the basis of UKAEA's recommendation to the Secretary of State however the final decision may differ from the recommendation made.

Assessment will take place in a number of stages, with each one requiring increasingly detailed information.

▶ **Showstopper assessment (Pool 1)**

Candidates not making the required threshold will be thanked for their time and discontinued from the process.

▶ **Desktop commercial assessment (Pool 2)**

Candidate scores will be noted, and assessment will proceed to the next phase with no site discounted – unless a 'discretionary showstopper' arises (see below), in which case candidates will be thanked for their time and discontinued from the process.

▶ **Full desktop assessment (Pools 3-5)**

All criteria will be considered. At the conclusion of this stage, candidates will be shortlisted, with lowest scoring nominees thanked for their time and discontinued from the process. If a case of 'overwhelming programme benefit' (see below) is identified, it will be retained in the process regardless of wider scoring.

▶ **Site assessment (Pools 3-5)**

At the conclusion of this stage, if more than three candidate sites remain, those with the lowest score will be thanked for their time and discontinued from the process. If a case of 'overwhelming programme benefit' (see below) is identified, it will be retained in the process, regardless of wider scoring.

▶ **Final report stage (Pools 2-5)**

This stage will include the submission of a final report by each of the remaining three candidate sites, with a level of resource provided by UKAEA. These reports will enable candidates to submit greater levels of detail, building on their initial submissions. UKAEA will undertake a final review of these reports before making their recommendation.

Detail of the scoring process

The STEP site will ultimately be selected by the Secretary of State for Business, Energy and Industrial Strategy, following submission of information, analysis and recommendations by UKAEA.

UKAEA wants to be as clear as possible in this area and urges potential nominating parties to submit questions of clarification at the earliest opportunity if anything is not clear.

The pool 1 showstopper criteria will have a binary score of pass or fail. Failure to pass ALL elements will prevent a candidate site progressing to later stages of assessment.

Each of the remaining four pools will be equally weighted, with a proposed scoring value of <100 points each. This reflects the equal importance of these areas to the success of the STEP programme.

Discretionary showstopper - A score of zero will apply where a feature is identified that will be detrimental to the programme. In the case of a discretionary showstopper being raised, the site will be discounted from the process regardless of wider scoring. This could be applied at any stage of the assessment.

Overwhelming programme benefit - A score of 100 will apply where a feature is identified as being of overwhelming programme benefit. If raised, this would enable a site to proceed in the process, regardless of wider scoring.

Key notes on the scoring model for pools 2-5

- ▶ The score allocated to each pool will be a weighted aggregate of each element.
- ▶ Scores out of 100 for each component are graded into 5 bands.

0:	Unsuitable, unprescribed showstopper
1-20:	Feasible, bringing significant challenges
21-40:	Acceptable, bringing some challenges
41-60:	Suitable
61-80:	Strong, with notable benefits
81-99:	Desirable, with programme enhancing benefits
100:	Overwhelming programme benefit

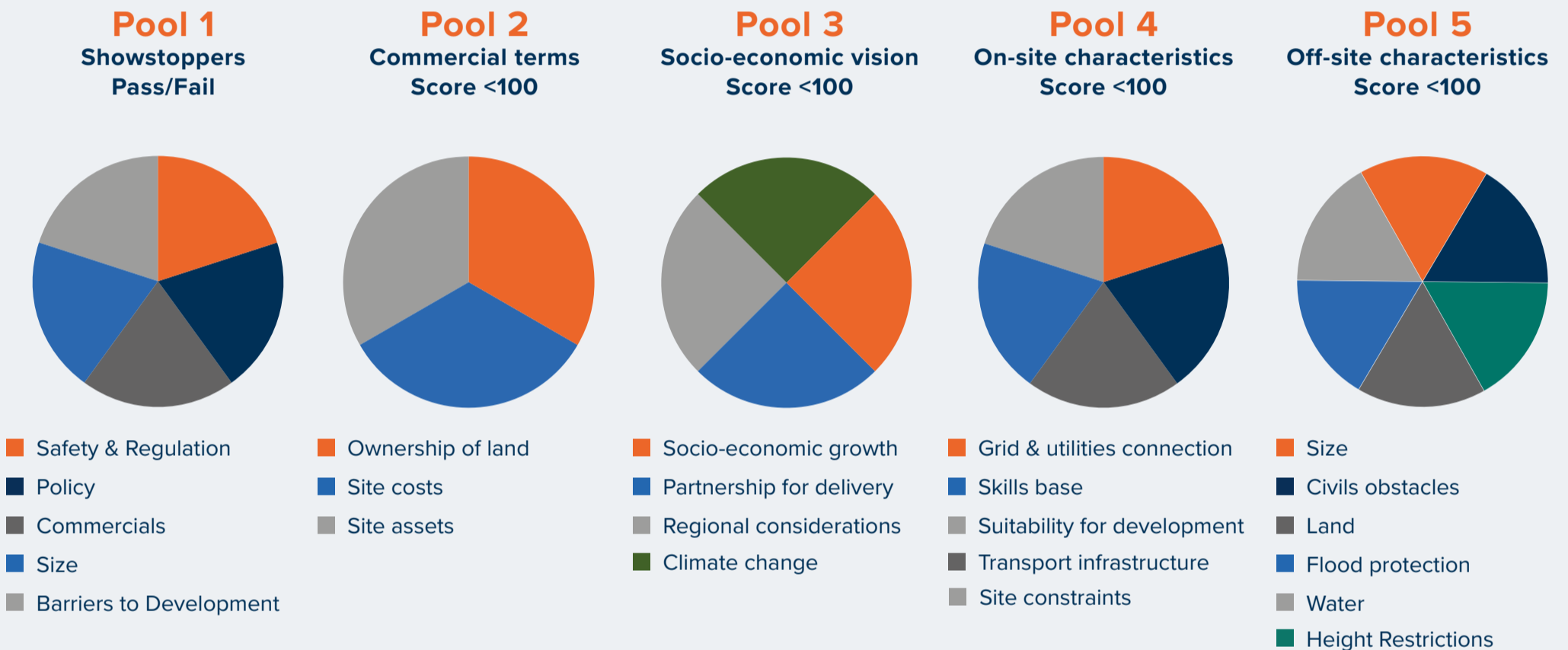
UKAEA has established this scoring process to add structure and clarity to the assessment. It enables our assessors to differentiate between candidate sites and helps those nominating to understand where the site is assessed to have strengths and weaknesses. UKAEA wants to be clear, however, that assessment will be both objective and subjective, so while the scoring process will inform our package of recommendations to the Secretary of State, subjective judgement on that scoring process will feature in the making of recommendations. UKAEA will make the recommendations believed to be best aligned to the interests of the STEP programme at that time. UKAEA also reiterates that the Secretary of State may consider other factors in his decision, and is not bound by any recommendation from UKAEA.

UKAEA wishes to recognise this up front in the spirit of transparency, and those nominating sites should only proceed on this understanding.

UKAEA does not intend to publish full detail of its scoring indicators (i.e.: what would be classified as ‘strong’ or ‘suitable’ in specific areas), as we believe it is most important at this stage for nominating entitles to provide the fullest possible level of site detail. However at the conclusion of the process, summary score sheets and full underpinning analysis will be published, to show the basis of decision making.

Detailed criteria and response form

The five STEP siting assessment pools and their component elements



Submission information

Please state which local body you represent	
Please list any local bodies who have agreed to formally endorse this nomination	
Please provide a marked map and open-source satellite imagery denoting the site you propose for the STEP development	
Please identify the landowner for the site proposed	
Please outline any discussion you have had with the landowner regarding the proposal, and state the level to which they support the application	

Pool 1 - Showstopper assessment (Pass or Fail Score)

Element	Question	Assessment notes and required evidence
Policy	<p>Please outline the stated policies of any devolved Government or Local Authority relevant to the proposed site on: Fusion Power; Energy Developments; Grid Strengthening; and Industrial Growth.</p> <p>Where policies are not known, please list all relevant governments and authorities.</p>	<p>STEP would likely not be able to proceed with any proposal within an area where a devolved Government or Local Authority meaningfully opposes any fundamental aspect of the programme. This need not include opposition to fission power developments, if fusion power was not included in that opposition.</p> <p>STEP will prefer proposals within areas where applicable Governments are proactively supportive of the nomination.</p> <p>Evidence required: Outline the stated policies of any devolved Government or Local Authority relevant to the proposed site on:</p> <ul style="list-style-type: none"> - Fusion Power; - Energy Developments; - Grid Strengthening; - Industrial Growth. <p>Where policies are not known, please list all relevant governments and authorities for the site.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Safety & Regulation	Has the site previously been declined regulatory permissions for the operation of a major industrial facility on any grounds of human or environmental safety?	<p>STEP would be likely to discount any site where fundamental barriers to the safe operation of a major industrial facility have been recognised.</p> <p>Evidence required: Statement of any pertinent facts, with associated links where suitable.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Commercials	Please confirm that the proposed site can be made available to STEP on an unfettered and enduring basis?	STEP is open to either acquisition or lease basis land access, but must be able to access site with enduring certainty, and on appropriate commercial terms. Please confirm this is the case.

Response

... continued

Element	Question	Assessment notes and required evidence
Size	Does the site comprise a minimum land footprint of 100 Hectares?	<p>100 hectares is forecast to be the minimum viable footprint for STEP. Sites not meeting this criteria cannot proceed within the process.</p> <p>Evidence required: 1:1250 scale Site plan with</p> <ul style="list-style-type: none">- red line boundary- site area in hectares.- indicate vehicular access locations- site plan should also show any other land ownership in blue

Response

... continued

Element	Question	Assessment notes and required evidence
Barriers to development	<p>Are there any designated cultural, historically significant, or archaeologically sensitive sites partially or wholly on the site?</p> <p>Are there designated between any and Natura 2000 sites partially or wholly on the site?</p>	<p>Any Natura 2000 site, or any site with a cultural, historical or archaeological designation, would be prohibitive to progression in the process.</p> <p>Evidence required: Please provide relevant evidence that the site is not designated in any of these ways.</p>

Response

Pool 2 - Commercial criteria (Total score <100)

Element	Question	Assessment notes and required evidence
Ownership of land and type of transfer	<p>Please outline whether the land proposed would be made available to STEP on an acquisition or lease basis?</p> <p>If leased, what terms would be proposed? What other programme benefits could be provided, associated with a leased site?</p>	<p>STEP is open to either sale, public-sector-transfer, or lease of land, but seeks clarity in the proposal. A leased site would require enduring terms and/or associated programme benefit.</p> <p>Evidence required:</p> <ol style="list-style-type: none"> 1. Proposed approach - leasehold or freehold? 2. If a leasehold offer - Terms proposed, stakeholders involved, length and start date and cost per hectare 3. If a freehold offer - Terms proposed, stakeholders involved, cost per hectare and availability - rights of way, covenants, easements, etc

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Ownership of land and type of transfer	Please outline who currently owns the land.	<p>STEP requires a clear understanding of whether land is in public or private ownership and by whom.</p> <p>Evidence required: Please provide written details of the land ownership for the proposed site</p>

Response

Pool 2 - Commercial criteria (Total score <100)

Element	Question	Assessment notes and required evidence
Site Costs	<p>Please give an indication of likely costs associated with selecting this site for STEP.</p> <p>Please include reference to any expectation of sale or lease price proposed by the landowner; as well as any wider arrangements they expect to raise within commercial discussions.</p>	<p>STEP must be able to access site with enduring certainty, and on appropriate commercial terms.</p> <p>Evidence required: Clarity on proposed costs for sale or lease, recognising these will be subject to negotiation and discussion. Please detail any commercial restrictions for the proposed site, rights of access, etc.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Site Assets	<p>Please list any facilities and on-site infrastructure you believe may be of value to the STEP programme, including through re-fit or re-purpose (eg: office accommodations, workshops, turbine halls, site roads etc).</p> <p>These should not entail service contracts or enduring commercial arrangements.</p> <p>Please cross-reference this to associated answers where appropriate.</p>	<p>STEP seeks to maximise use of existing facilities and infrastructure, thereby reducing the environmental and financial cost associated with prototype delivery.</p> <p>As this process is not a regulated procurement, STEP is not considering service-contract negotiations within this process.</p> <p>Evidence required: Please detail all existing facilities on the proposed site. A3 drawings with facilities clearly identified with details of use and age of structure.</p>

Response

Pool 3 - Socio-economic criteria (Total score <100)

Element	Question	Assessment notes and required evidence
Socio-economic growth	<p>STEP is expected to bring significant socio-economic opportunities to its host community and region. Naturally, STEP has a vision for this and will work to realise it, however it's essential to understand the regional growth vision of the proposing entity and the extent to which they will work with us to realise this.</p> <p>Please outline your vision for regional growth associated with the programme, in the construction, operations, and post-operations eras.</p> <p>Please outline how you envisage this would be achieved.</p> <p>Please refer to how STEP aligns to existing growth plans; funds; development goals; and industrial programmes in the area.</p>	<p>STEP seeks clarity of vision, scale of aspiration, and achievability.</p> <p>STEP would value clear evidence that the development sits naturally alongside existing growth programmes, and /or that the proposing entity and local authority is actively working to drive growth and benefit associated with programmes such as this.</p> <p>Evidence required: Please outline your vision for regional and local growth associated with the programme, in the construction, operations, and post-operations timeframes and how these will be achieved.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Partnership for delivery	<p>Please outline how relevant local bodies would work in partnership with STEP to realise the successful delivery of this programme.</p> <p>Please outline how this programme would be part of increased collaboration between local, regional and devolved institutions on science, research and innovation.</p>	<p>STEP seeks a partnership approach from local bodies.</p> <p>Notwithstanding statutory responsibilities, STEP seeks collaborative and enterprising working relationships with local bodies, based on open communication, shared vision, and a clear capability within the authority to support the development of an infrastructure programme on this scale.</p> <p>Evidence required: Information as outlined in the question, numbering not more than three sides of A4.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Regional need	<p>Please outline, using socio-economic data where appropriate, how the development of STEP at this site would maximise economic growth by:</p> <ul style="list-style-type: none">• Sustaining and boosting existing and emerging strengths• Engaging untapped potential for future growth• Developing new research and development capability• Unlocking, facilitating or acting as a catalyst for wider growth, funding or investment.	<p>STEP seeks to maximise growth associated with the programme</p> <p>Evidence required: Information as outlined in the question, numbering not more than three sides of A4.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Climate Change and Sustainability	<p>Please outline the steps the local authority and/or devolved authorities would take to ensure the construction and operation of STEP was part of a wider low-carbon strategy in the region?</p> <p>Please include reference to supporting the reduction of road traffic, the localisation of manufacture, the utilisation of existing facilities, and any other relevant matters.</p>	<p>STEP is inherently an environmentally conscious programme, and UKAEA seeks to optimise environmental performance across programme and plant design.</p> <p>Evidence required: Please provide Local and/or Regional Energy Strategies, including how STEP would integrate into them.</p> <p>State the status of Zero Carbon Plans and provide outline details where available.</p> <p>Please provide outline information about local Climate Emergency Declarations if available. Provide details on manufacturing and how this may be addressed in local, regional or LEP growth strategies.</p> <p>Please provide information on planning requirements in relation to climate change (resilience, adaptation, mitigation), including energy and carbon (operational and embodied), transport, including road traffic and water use. Please provide any other relevant or applicable details.</p>

Response

Pool 4 - Off-site characteristics (Score <100)

Element	Question	Assessment notes and required evidence
Grid Connection and access to associated utilities	<p>How far away from the site is the nearest 275kV or 400kV transmission line?</p> <p>How far away from the site is the nearest 132kV transmission line?</p> <p>What available capacity exists within these systems?</p> <p>Please indicate who the distribution network operator is in the area.</p> <p>Please also indicate nearest points of access to mains water, drainage, natural gas, and sewage facilities.</p>	<p>STEP requires notable transmission capacity - primarily inbound, though outbound should not be impractical.</p> <p>Evidence required: Please provide a National Grid report on the status and capability of these systems to accommodate increased power in either direction – including with reference to doing so on a continual or pulse basis.</p> <p>Please provide a marked map showing location of associated utilities.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Skills base	<p>Please outline the breadth and depth of local expertise in the following, including any available labour market intelligence.</p> <ul style="list-style-type: none"> • Highly-regulated industries • Design engineering • High-technology manufacture • Construction • Power station operations • Fusion R&D • High technology R&D <p>Feel free to reference relevant third party bodies such as Universities and colleges, and please provide indications of whether an active and experienced labour market is regionally operational in these areas.</p> <p>Please feel free to reference additional skills and capabilities, where relevant.</p>	<p>STEP seeks a feasibly accessible base of construction and potentially manufacturing resource; as well as a foundation on which to build deeper R&D capability in the region.</p> <p>Evidence required: Please give details of any plan or intention to develop such capabilities, with appropriate reference to formal agreements, and operational programmes.</p>

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Suitability for development	Please confirm the current land use designations for the site and for land in close proximity (up to 3 miles).	Minimal restrictive land use designations are desirable for STEP. Evidence required: Please provide a Landmark Site check Report or a Groundsure Enviro Insight Report.

Response

... continued

Element	Question	Assessment notes and required evidence
Suitability for development	How many Natura 2000 sites are within 3 miles of the site? How many Natura 2000 sites are within 20 miles of the site? Where possible, please include a map of these sites in your response.	In line with showstopper criteria, STEP seeks minimal overlap with Natura 2000 sites. Evidence required: Please provide a map of the site from the Natura 2000 website.

Response

... continued

Element	Question	Assessment notes and required evidence
Suitability for development	<p>Are there any Areas of Natural Beauty, National Parks, or SSSI partially or wholly on the site? If so, please provide a marked map indicating them.</p> <p>How many Areas of Natural Beauty or National Parks are there within 15 miles of the site?</p> <p>Within your response, where possible, please provide a description of the landscape character of the site and local surrounding area.</p>	<p>STEP seeks minimal overlap with AONB, National Parks or SSSI.</p> <p>Evidence required: Please provide a marked up map that highlights any areas of land with special designation</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Suitability for development	Are there any cultural, historically significant, or archaeologically sensitive sites within 3 miles or 10 miles of the site?	In line with showstopper criteria, STEP seeks minimal overlap with such sites. Evidence required: Please provide a marked up map that highlights any areas of land with special designation

Response

... continued

Element	Question	Assessment notes and required evidence
Transport infrastructure	<p>What upgrades to transport infrastructure/ services do you envisage could be required if your site were selected (assuming a comparable development to well-publicised large scale infrastructure development projects)?</p> <p>This applies to both construction and operational phases.</p>	<p>STEP seeks minimal change and hopes to rely as wholly as possible on existing infrastructure. This is important both for programme development and programme sustainability considerations.</p> <p>Evidence required: Please provide a marked up map that highlights current plans and potential future requirements.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Transport infrastructure	<p>Does the plant have easy access to a port or harbour which can be reached solely via Strategic Road Network (SRN) or Primary Road Network (PRN). If so – please state the distance from site fenceline.</p> <p>If not, could a marine offload facility be feasibly constructed on or adjacent to the site? Is there any natural harbouring at the site?</p>	<p>Marine access is likely to be required for large components. Strong marine access increases scope for modularisation of design, and minimises transport impact on surrounding communities and transport systems.</p> <p>Evidence required: Please provide a plan indicating location of port or harbour compared to the site and the route and distance from the port or harbour to the site.</p> <p>Please provide a plan indicating location of potential new offload facility and supporting statement.</p>

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Transport infrastructure	Does the site have easy access to an operational rail line, with sufficient available capacity (or scope to increase) to provide for a construction workforce, equipment and hardware?	<p>Rail systems could be applicable for transport of goods; as well as for transport of construction and operations workforces.</p> <p>Evidence required: Please provide a plan indicating location and type of existing or potential rail facility in relation to the site and a supporting statement including evidence of existing or planned bus services between the rail facility and the site.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Transport infrastructure	<p>Does the site have easy access to the Strategic Road Network (SRN) or Primary Road Network (PRN) or equivalent standard roads?</p> <p>If the existing vehicle access to the site does not offer convenient access to the SRN or PRN, consider if there is potential to construct a new vehicle access at an alternative point along the boundary of the site that could offer better accessibility to the SRN or PRN.</p> <p>Could the site entrance be wide enough to allow two-way traffic for cars and light goods vehicles?</p> <p>To what extent is it known whether or not the local road network and connections to the SRN or PRN currently suffer from congestion issues?</p>	<p>A significant level of road travel appears likely for both construction and operational phases. Access to an SRN or PRN brings significant commercial and programme benefits.</p> <p>Evidence required: Please provide a plan indicating the routes from the existing site vehicle accesses and any potential future site vehicle accesses to connect with the SRN or PRN and the distances to these connections. Include a statement and preliminary sketch supporting the potential feasibility of any new accesses that would improve connectivity to the SRN or PRN.</p> <p>Please provide a plan of accesses indicating the width of the existing and/or potential new accesses for a length of 25m along the site access road into the site from the junction with the public highway (based on a large scale Ordnance Survey base plan).</p> <p>High level evidence at this stage regarding the extent of any congestion issues may come from a variety of sources, for example a simple screenshot from Google Maps showing 'typical traffic' data for morning and evening weekday peak times (08:30 and 17:30) and/or local authority data and/or extracts from national statistics.</p>

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Site constraints	Please outline site boundary constraints.	<p>STEP requires a site without extensive boundary constraints.</p> <p>Evidence required: Please provide a simple line drawing of the proposed infrastructure works required to provide supplies identifying any areas requiring significant planning approvals, third party permissions or associated works to achieve the installation (e.g. road/rail/ water crossings or routes through areas of importance).</p>

Response

Pool 5 - On-site characteristics (Score <100)

Element	Question	Assessment notes and required evidence
Site size and scope for associated local growth	<p>Please define the total size of the site to the nearest half hectare.</p> <p>Does the proposed site have capacity to support further growth – including the provision of land for related but independent developments?</p> <p>This land could be either on the main site, on adjacent land, or on local land which could feasibly be available at a later date?</p> <p>Please detail your answer, with reference to land availability; similar developments in the region; land ownership; and applicable development plans.</p>	<p>Such scope for growth would enable a future expansion of the fusion industry with further on site or local developments such as additional plants, science or technology parks and associated demonstration facilities.</p> <p>Evidence required:</p> <p>Please provide a 1:1250 scale Site plan with:</p> <ul style="list-style-type: none"> - red line boundary - site plan should also show any other land ownership in blue - site area in hectares. - site minimum width and length to the nearest metre. <p>Please provide a description of capacity to support further growth with supporting plan or map showing locations of other sites and their sizes in hectares.</p> <p>Description to include:</p> <ul style="list-style-type: none"> - reference to land availability - similar developments in the region - land ownership details including freehold and leasehold details - applicable development plans.

Response

... continued

Element	Question	Assessment notes and required evidence
Height restrictions	Please indicate any height restrictions to construction or permanent operations on site, be they physical, regulatory, relating to protected views under planning considerations, or other.	<p>Within the usual constraints of planning and respect for the wider environment, STEP requires a site with minimal or no restriction to the height of operations.</p> <p>Evidence required: Detail of any restrictions in place, including drawings and maps if related to line of sight protections.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Civils obstacles	<p>Please list any major civils features which could affect site deployment (eg: buildings requiring demolition; natural features requiring redress etc).</p> <p>We note this could overlap with those items listed as site credits. Where such features exist they should be explained, enabling UKAEA to assess the respective opportunities and costs.</p>	<p>STEP seeks a site with minimal up-front civils requirements to minimise pre-construction costs.</p> <p>Evidence required: Please provide an Ordinance Survey 1:1250 scale Site plan with</p> <ul style="list-style-type: none"> - red line boundary - buildings requiring demolition - natural features - water features - any culverts or suppressions - spot high levels including highest and lowest points - direction of main gradients - sub-terrain obstacles, mines, etc - known existing foundations, etc.

Response

... continued

Element	Question	Assessment notes and required evidence
Civils obstacles	<p>Is there a level change in excess of 20m between the lowest point and highest points on site?</p> <p>Please provide a summary of the topography of the site. This should include level differences across the site, particularly from site entrance location, any significant local gradients, and any existing features.</p>	<p>Extensive level changes pose a meaningful civils challenge, and increase pre-construction costs. Please clarify topography to the following range of detail: 0 to 5m / 5-10m / 10-15m / 15-20m / 20m<.</p> <p>Evidence required: Please provide a summary of the topography of the site. This should include level differences across the site, particularly from site entrance location, any significant local gradients, and any existing features.</p> <p>Please provide a Lidar survey plan and a map that identifies suitable features.</p>

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Water	<p>From the centre of the site, how far away (in metres) is the nearest significant body of water (e.g. sea, major river, large lake)?</p> <p>Please state the type of water body.</p> <p>If you have any further information on the capacity of the body of water to provide and receive cooling water – including dispersal of water at an increased temperature - please include it in your response.</p> <p>Please indicate whether this body of water would be able to provide for large scale provision for draw-off (ie: multiple tonnes per second) at a continuous rate throughout any applicable tide cycle.</p> <p>Please indicate whether this body of water has a restricted capacity (ie: lake), or whether it has a renewed capacity (ie: tide-filled lake / sea / river / estuary).</p> <p>Please indicate in metres the height differential between the site base, and the lowest water level at the lowest point of the tide/natural cycle.</p> <p>Please provide details of any existing cooling infrastructure on site (cross referencing to the earlier question on existing site infrastructure).</p> <p>Please outline whether these water sources have current authorised water abstractions to ensure the water resource is not over depleted.</p> <p>If you have any further information on the capacity of the body of water to provide and receive cooling water – including dispersal of water at an increased temperature or any marine environmental protections - please include it in your response.</p>	<p>Proximity to suitably sized source of cooling water is an important consideration at this stage of the STEP design.</p> <p>Proximity enables economically viable access to cooling water, which may be required for the plant (design dependent).</p> <p>The ability to disperse water which is at an increased temperature, quickly and with minimal environmental implications, is a priority.</p> <p>In general, the larger and more easily accessed a body of water is, the more attractive the site will be to STEP at this point.</p> <p>Evidence required: Please provide a map identifying appropriate features.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Land	<p>Describe the geotechnical characteristics of the site (e.g. depth to bedrock, clay or sandy soils etc).</p> <ul style="list-style-type: none"> • what is the geological succession beneath the proposed site. • what depth are the bedrocks located. • are there detailed ground investigations already undertaken for the site. • are there nearby tectonic structures identified within the surface or basement rocks. <p>Please outline whether there is any known erosion affecting the site?</p>	<p>STEP requires a stable geological formation for operations.</p> <p>STEP must also consider the financial impacts of rock basis, with regard to pre-construction groundworks and potential undergrounding of some plant facilities.</p> <p>In some cases, the two are not aligned, and STEP recognises this tension. Respondents are requested to provide the most complete and accurate information available.</p> <p>Evidence required: Please provide an extract of the relevant geological maps identifying suitable features.</p>

Response

... continued

Element	Question	Assessment notes and required evidence
Land	<p>Is there any known current or historical land quality issues associated with the site (e.g. contamination)?</p> <p>Please provide evidence with your response if available (e.g. envirocheck reports, intrusive ground investigations).</p>	<p>STEP seeks a site with minimal land quality issues, to enable safe, environmentally sound, low cost and swift progression of site developments.</p> <p>Known and quantified contamination with a proven mitigation route would be considered in so far as it impacts the cost of pre-construction ground works.</p> <p>Evidence required: Please provide narrative evidence as appropriate, together with any previously commissioned ground survey reports.</p>

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Land	Is the site located in a zone of low seismic activity? If no, please detail level of seismic activity where known.	STEP requires proportionate seismic stability. Evidence required: Please provide narrative evidence as appropriate, together with any previously commissioned ground survey reports.

Response

... continued

Element	Question	Assessment notes and required evidence
Flood protection	<p>Is any or all of the site located within a designated flood zone?</p> <p>Within your response please indicate if the land has flooded previously, to your knowledge. If so, please describe the impact and source of the flooding. Indicate if the site has any existing flood defences? If so, please provide details including location, when built, what designed for.</p> <p>Is the site believed to be at risk - or have there been incidences of - flooding caused by other sources, such as groundwater or surface water?</p>	<p>STEP would not be suitable for development on an area liable to flooding. Flood zone 3 areas should be minimised, and considering climate change considerations, Flood zone 2 will be an important predictor of future flood risk.</p> <p>Evidence required: Please provide narrative evidence as appropriate, together with any previously commissioned ground survey reports.</p>

Response
Empty response area

... continued

Element	Question	Assessment notes and required evidence
Flood protection	Please list the height above sea level at lowest point. If <5 metres, please outline the nature of the coastal area (eg: bank, beach, sea wall, small cliff).	Sites close to sea level could feasibly require extensive sea defence constructions. Evidence required: Please reference any relevant reports used for evidence, such as the Strategic Flood Risk Assessment. Please indicate the water table height across the proposed site.

Response

... continued

Element	Question	Assessment notes and required evidence
Flood protection	<p>Are there any Water Framework Directive (WFD) designated features partially or wholly on the site?</p> <p>How many Water Framework Directive designated features are within 3 miles of the site?</p> <p>Within your response please indicate whether the site overlaps with or is in close proximity to rivers or other bodies of water? If so, please provide detail on this including type, size, location.</p>	<p>STEP seeks minimal proximity to WFDs.</p> <p>Evidence required: Please provide a copy of known historic flood outlines.</p>

Response

Significant points to note

1. Siting process and consenting

This process will enable us to work in partnership with the community in which STEP will be designed and built. It's critically important that the process is embarked upon as a long-term partnership, with mutual benefits.

The absolute controls which apply to the STEP development are those of legal standing, including planning, land ownership and the regulatory framework. We expect STEP to be subject to a Development Consent Order (DCO) and will undertake all necessary planning requirements and consultation in line with due process. This process does not pre-determine any later planning processes.

2. Overview of what is being selected

The site to be selected will:

1. Be the assumed location for the STEP prototype plant.
2. Be the assumed location for any at-plant demonstration facilities alongside the STEP prototype.
3. Be the assumed location for UKAEA to safely manage any and all legacy materials, and other outputs of the STEP prototype, until and unless subsequent arrangements come in to place.
4. Be the location around which UKAEA will begin immediate term (to 2024) programme development activities.
5. Be the location from which UKAEA will draw the site criteria to inform technical design assumptions.

The land selected could be:

1. A bespoke site, within a single fence line, to later be subjected to single licensing, regulatory and consenting applications.
2. OR, a 'demonstration park' site, within which UKAEA could later submit multiple licensing, regulatory and consenting applications.

The site to be selected will not:

1. Necessarily be the location for deployment of an operational generating reactor.
2. Replace the Culham campus as the centre of UKAEA activities.

UKAEA reserves the right to:

Deploy the prototype at a different site in the event the site initially selected proves technically unfeasible, or consenting applications are unsuccessful, or significant legal obstacles become apparent or the site becomes disadvantageous for wider reasons.

... continued

UKAEA's vision for the site is:

1. That the STEP prototype plant will be designed based on site criteria, and built on that site in the construction phase.
2. That the prototype will go through a period of commissioning and operation lasting many decades.
3. That the community and region will become a global and world-leading hub for the development and deployment of fusion power, alongside the Culham Campus in Oxfordshire.
4. That the region will see significant development of supply chain and associated industry – both to support the STEP prototype design and build programme, and to service the global fusion industry which we expect to flourish on the back of STEP's proof-of-concept outputs.
5. That the STEP development will enable a regional hub of STEM expertise to develop, supporting both the fusion sector and broader industry.
6. That the region would potentially play host to future operational fusion power plants, subject to commercial, regulatory and planning requirements.

Within 12 months of selecting a site, UKAEA will:

1. Establish a liaison office within the community.
2. Establish a stakeholder and community interface forum, to meet at least quarterly.
3. Outline a provisional consenting and permissioning schedule, informing the community of the intended timelines for planning consultation activities. UKAEA notes that such details are highly subject to change – but will take a “best current understanding” approach to community information sharing, as we embark on this exciting journey together.
4. Establish liaison with suitable local and regional universities, to support long term development of fusion and STEM expertise in the region.