



**Programme Area:** Nuclear

**Project:** System Requirements for Alternative Nuclear Technologies

**Title:** Request for Proposals

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**Context:**

The purpose of the System Requirements for Alternative Nuclear Technologies project was to capture the high level technical performance characteristics and business-case parameters of small thermal plants, which will be of value to the potential future of the UK's energy system. The project included small nuclear reactors, enabling comparison with other small-scale plants, such as those powered by bio-mass. The project outputs will help enable the subsequent contrast of a range of specific technologies.

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**Title of Services for which Proposals are Requested**

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# Low Carbon Electricity Generation Technologies

## System Requirements For Alternative Nuclear Technologies Project

**Request Issue Date**

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27th May 2014

**Deadline for Notification of Intention to Submit a Proposal**

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06th June 2014

**Closing Date**

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Proposals must be received before 12:00 noon on the 27th June 2014

**Contact for Enquiries**

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**Address for Notifications, NDA and Submission of Proposals**

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## SUMMARY OF KEY PROJECT INFORMATION

New nuclear power is assumed to play a role in reducing the UK's carbon emissions with potential for expansion from an initial 16 GW at 2030 up to 40 GW or potentially 75 GW by 2050 for some scenarios. There are potential technical, economic and policy constraints associated with the expanded deployment of the types of large nuclear power stations; these include the identification of suitable and sufficient nuclear power station sites in England and Wales and managing the impact on the transmission system of an increasing capacity of a type which is traditionally "inflexible base-load". At the same time, the challenges in optimising the pathway towards the UK's 2050 energy system include:

- identifying other proven low carbon technologies should large nuclear be constrained;
- energising future heat networks with proven and reliable sources of low carbon heat;
- low carbon electricity system balancing to address short term load variations associated with a more diverse connected load, and an increased installed capacity of renewables.

The purpose of this Project is to determine from a future energy system perspective:

- the functional requirements for a generic energy generating source which is expected to be complementary to other technologies and address the key challenges identified above;
- the likely indications for unit cost and unit revenue which will need to be satisfied if this generic capability is to be valuable to the energy system and of interest to developers and investors.

The Project will support the assessment of Small Modular Reactors under development for comparison with other technologies such as bio-fuelled thermal plant. A glossary of terms used in this RfP is provided at Appendix H.

Project - Financing	Anticipated Value
ETI Investment	Full cost of the Project (to be proposed by the Respondent in its Proposal).

Request for Proposal and Selection	Dates
Issue of RfP	27th May 2014
Deadline for (i) notifying the ETI of an intention to submit a Proposal (Appendix F); and (ii) return of a signed Non-Disclosure Agreement (Appendix G). (See Section 5.1.1)	06th June 2014
Closing date for submission of Proposals	27th June 2014 (12.00 noon)
Preferred Respondent(s) notified (on or before)	11th July 2014 (Anticipated Date)

Timescales	Anticipated Dates
Project Contract execution target date	01st August 2014
Project start target date	04th August 2014
Project finish target date (submission of final report)	28th November 2014

Respondents shall be wholly responsible for the costs they incur in the preparation and submission of their Proposals in response to the RfP. The ETI shall not be responsible for, and shall not pay, any costs and expenses which may be incurred by Respondents in connection with participation in the project Commissioning Process, including any costs or expenses incurred up to and including the execution of the Project Contract.

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## **1. ETI INTRODUCTION**

### **1.1. Introduction to the Energy Technologies Institute**

The Energy Technologies Institute (ETI) is a public-private partnership between global energy and engineering companies – BP, Caterpillar, EDF, E.ON, Rolls-Royce and Shell – and the UK Government.

Public sector representation is through the administration of the Department for Business, Innovation and Skills, with funding channelled through the Technology Strategy Board and the Engineering and Physical Sciences Research Council. The Department of Energy and Climate Change are observers on the ETI Board.

The ETI's role is to bring together and invest in engineering projects that accelerate the development, demonstration and eventual commercial deployment of a focussed portfolio of affordable, secure and sustainable energy technologies that helps the UK address its long term emissions reductions targets as well as delivering nearer term benefits.

The ETI is not a grant-giving body. The ETI is a commercial organisation and makes targeted commercial investments in technology projects, which can involve the ETI funding entire projects or working with third parties to co-fund project activity.

Further information can be found on our web-site at [www.eti.co.uk](http://www.eti.co.uk).

### **1.2. ETI Approach to Health, Safety and Environment (HSE)**

The health and safety of those who may be affected by ETI projects and the protection of the environment that may be impacted by ETI projects are of paramount importance to the ETI and the ETI Members. The ETI therefore expects those who receive ETI funding to demonstrate a commitment to delivering excellence in health, safety and environmental management as well as demonstrating that all applicable legal requirements are met.

The ETI requires certain HSE-related information as part of a Proposal. See Section 4.7 and Appendix E (Section 6.4) of this RfP.

## 2. THE PROJECT

### 2.1. Background to System Requirements For Alternative Nuclear Technologies Project

This project is intended to frame energy system requirements and an expected cost envelope for a generic type of energy plant which could be of commercial interest to developers and investors. This approach will enable the subsequent evaluation of a range of individual technologies currently under development by vendors. The energy system requirements are informed by ETI's scenario analysis.

### 2.2. Project Purpose

This project purpose is to create a high level functional requirements specification for a small generic nuclear plant with an output of up to 300 MWe. This specification will be between 25 and 35 pages long and will be split equally between functional requirements and business case requirements with the following structure:

- outline requirements specification:
  - energy system offering (baseload, system balancing, heat);
  - technical requirements;
  - siting criteria;
  - target locations and deployment schedule;
  - technical development;
  - UK infrastructure requirements.
- business case:
  - development costs;
  - target unit costs;
  - target unit revenue;
  - economic appraisal;
  - risks and opportunities;
  - market analysis (UK content, adjacent markets, and export potential).

### 2.3. Project Structure

The ETI anticipates that this Project will be commissioned and delivered in a single phase with sequenced outputs and deliverables through the course of the Project execution.

The Project is intended to incorporate ETI knowledge and scenarios regarding future electricity and heat networks in order to inform the delivery of this Project. These inputs are identified and listed in this RfP; they will be made available to the preferred Respondent after selection to progress to the Project Detailing and Contract Finalisation Stage (Section 5.2).

The ETI is also commissioning a parallel ETI project known as the "Power Plant Siting Study Project," which is currently being procured through a separate request for proposals (issued on 17<sup>th</sup> March, 2014). For reasons of efficiency and economy, there are some outputs from the Power Plant Siting Study Project that will be used as inputs to this System Requirements for Alternative Nuclear Technologies Project.

## 2.4. Qualification of Respondents for the System Requirements For Alternative Nuclear Technologies Project

This procurement is for engineering and business case consultancy work. There is no scope related to field work, manufacturing, trials, or the operation of prototype technology.

The ETI considers that the key experience necessary to deliver this Project includes;

- project delivery knowledge gained from power generation projects of national significance through undertaking the role of EPC Contractor, Architect Engineer or Owner's Engineer;
- power technology knowledge including nuclear and applied through engineering design or engineering services activities;
- knowledge and experience of the energy (heat) and power supply markets through independent economic appraisal and advice to investors or governments.

The qualification requirements are detailed at section 5.1.4.

## 2.5. Project Team – Critical Roles

The ETI places great emphasis, in particular, on two critical roles in the delivery of its projects – the Project Manager and the Chief Technologist – who together lead the relevant project on behalf of the project participant organisation(s). This Project also integrates the business case requirements and so for this Project a third key role has been identified of Chief Financial Analyst (or Senior Economist).

In this Project, a Respondent's proposed Project Team is expected to include, but not be limited to, individuals with the qualifications, experience and capability to perform the following roles on behalf of the preferred Respondent/Participant:

- Project Manager:
  - resource and activity co-ordination;
  - risk management and co-ordination;
  - Project delivery to the requirements of the relevant Project Contract(s); and
  - Project reporting;
- Chief Financial Analyst (or Senior Economist):
  - specification of scope necessary to deliver contract requirements;
  - selection of financial, economic or contract specialists engaged in delivering the Project;
  - commercial and financial review and acceptance of work performed by others; and
  - financial review of contract deliverables;
- financial, economic or contract specialists as required;
- Chief Technologist (or Senior Technical Specialist):
  - specification of scope necessary to deliver Project requirements;
  - selection of technical specialists engaged in delivering the Project;
  - technical review and acceptance of work performed by others; and
  - technical review of Project deliverables; and
- technical specialists as required.



Respondents are required in their Proposals to nominate individuals for each role. The ETI will assess the qualifications, experience, competence and authority of these individuals as critical to the success of the Project.

Whilst each Respondent's Project Team is expected to include each of these roles, the ETI's expectation is that certainly the Project Manager and (unless there is a compelling case to the contrary) the Chief Technologist and Chief Financial Analyst (or Senior Economist) should each be an employee of the Respondent; it is, however, likely to be acceptable for a Respondent to appoint a suitably qualified, experienced and capable individual within the Respondent's organisation to more than one role.

Additionally, Respondents are expected to provide the necessary, and appropriately authorised, commercial and legal resources to negotiate the Project Contract within the ETI's required timescales (see Section 5.3) and to manage any issues that may arise during the performance of the Project.

### **3. SYSTEM REQUIREMENTS FOR ALTERNATIVE NUCLEAR TECHNOLOGIES PROJECT**

#### **3.1. Project Introduction**

New nuclear power is assumed to play a role in reducing the UK's carbon emissions with potential for expansion from an initial 16 GW at 2030 up to 40 GW or potentially 75 GW by 2050 for some scenarios. There are potential technical, economic and policy constraints associated with the expanded deployment of the types of large nuclear power stations; these include the identification of suitable and sufficient nuclear power station sites in England and Wales and managing the impact on the transmission system of an increasing capacity of a type which is traditionally "inflexible base-load". At the same time, the challenges in optimising the pathway towards the UK's 2050 energy system include:

- identifying other proven low carbon technologies should large nuclear be constrained;
- energising future heat networks with proven and reliable sources of low carbon heat;
- low carbon electricity system balancing to address short term load variations associated with a more diverse connected load, and an increased installed capacity of renewables.

This Project intended to determine from a future energy system perspective:

- the functional requirements for a generic energy generating source which is expected to be complementary to other technologies and address the key challenges identified above;
- the likely indications for unit cost and unit revenue which will need to be satisfied if this generic capability is to be valuable to the energy system and of interest to developers and investors.

The Project will support the assessment of Small Modular Reactors under development for comparison with other technologies such as bio-fuelled thermal plant.

#### **3.2. Project Timeline**

The ETI's target date for execution of the Project Contract (see Section 4.2) is 1<sup>st</sup> August 2014, with final deliverables (see Section 3.4) due by late November 2014 (see Section 5.3).

#### **3.3. Project Objectives**

There are 4 objectives defined in Sections 3.3.1, 3.3.2, 3.3.3 and 3.3.4 below.

Delivery of these Project objectives will enable such technologies to be tested in future ESME scenarios for the further optimisation of the lowest cost 2050 pathway. Delivery of these objectives can also be used to compare and select individual technologies for further evaluation.

##### **3.3.1 Sufficient Low Carbon Electricity Generation Delivered Closer To The Source Of Demand**

ETI's scenario analyses, described in more detail in Appendix A "ETI Input – ESME Scenarios and Nuclear Assumptions", suggest a future shift of generating capacity further away from sources of demand to the coast and areas rich in renewable energy sources. The migration of power generation away from inland sites brings a range of impacts. This Project objective is to define the requirements of technologies including small nuclear which can be located closer to sources of demand.

##### **3.3.2 Energising future heat networks with proven and reliable sources of low carbon heat**

Parallel activity by the ETI in its Smart Systems & Heat Programme informed by recent ESME modelling and scenarios has demonstrated the importance of abating CO<sub>2</sub> emissions associated with space heating and hot water production in domestic and light commercial premises. Decarbonising this part of the UK economy will be challenging technically, economically and socially. A range of technical solutions is envisaged including some electrification in sparsely populated areas and the use of heat pumps in energy efficient buildings which are new or have been refurbished. An important solution within this area of study is expected to be district heating systems for selected domestic, commercial and light industrial developments where solution is likely to make most economic sense. The scale of the CO<sub>2</sub> abatement challenge is such that the deployment of such systems will not necessarily be limited

to new construction premises. There are many challenges associated with the realisation of district heating systems and their anticipated benefits. These challenges are outside the scope of this Project with the exception of the consideration of waste heat recovered from the cooling systems of small nuclear plant to power these networks.

A summary of some of the ETI's scenario analysis will be provided to inform the development of this Project and the requirement and constraints of heat networks. This input is described in more detail in Appendix C "ETI Input – Future Heat Networks Modelled in ESME".

This Project objective is to define the requirements of technologies including small nuclear that will contribute solutions towards cost competitive sources of energising future heat networks.

### **3.3.3 System Balancing And Further Non-KWh Electricity Generation Related Services**

This Project objective is to define the requirements of technologies including small nuclear that will contribute solutions towards cost competitive generation system balancing. The inputs regarding system balancing are described in more detail in Appendix B "ETI Input – Future Electricity Generation Models".

### **3.3.4 Cost And Revenue Parameters For Technologies To Be Of Interest To Developers And Investors**

For technologies to be of interest to developers and investors, there must be sufficient gap between cost and revenue to create a viable operator and investor proposition when considered against risks associated with such projects and alternative investment opportunities.

For technologies including small nuclear which can contribute to one or more of the technical objectives above, this Project objective is to define the related boundaries of costs and revenues necessary for such investment opportunities to be of interest to both developers and investors.

## **3.4. Project Inputs, Outputs and Deliverables**

The ETI will provide certain inputs to the Project, as described at Section 3.4.1, below.

The Project outputs and Project deliverables will be used to:

- test alternative nuclear technologies in future ESME scenarios to evaluate further optimisation of the lowest cost 2050 pathway; and
- compare and select individual technologies for further evaluation.

### **3.4.1. Description Of ETI Project Inputs**

The Project inputs provided by ETI will include:

- a description of potential 2050 energy systems through a range of ESME Scenarios which are provided for context and information but will not require detailed analysis (see Appendix A);
- a description of potential 2050 electricity generation mixes through a range of ESME scenario outputs combined with potential variations in system load due to seasonal or diurnal variations (see Appendix B). These will require simple analysis to characterise and quantify system balancing requirements;
- a description of the location of and requirements for heat networks required by 2050 with potential to be energised by alternative nuclear technologies (see Appendix C);
- siting details on technical, safety and ecological factors and associated potential deployment locations for small reactors consistent with the cooling requirements of a 300 MWe PWR (see Appendix D); and
- access to an expert "siting" team via a workshop to consider the optimisation between power plant design and characteristics, and the characteristics of a generic site specified and developed for such a plant.

Figure 1 details the intended relationship between ETI inputs, the key capability and experience required of the Project Team to develop the Project Outputs, and how these will be subsequently deployed by ETI.

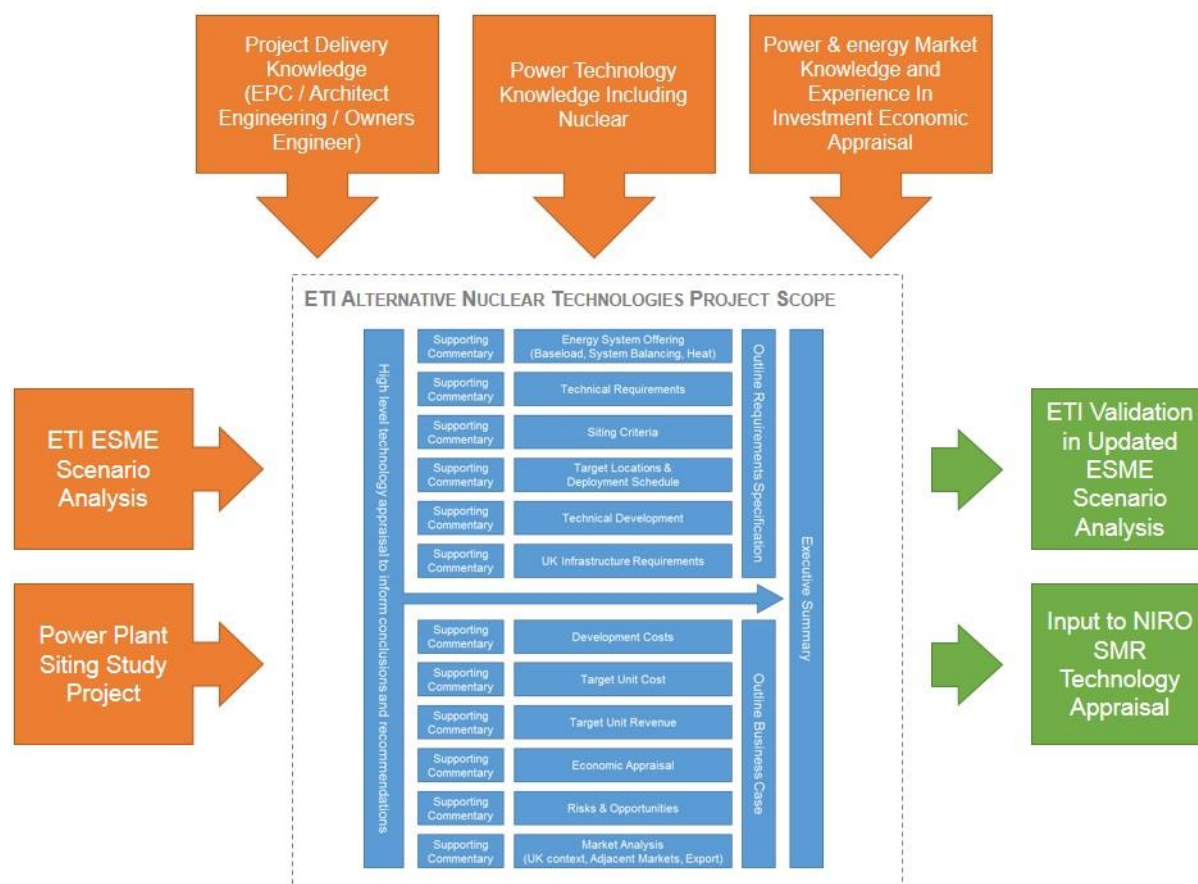


Figure 1 - Inputs, Outputs, and Subsequent Use By ETI.

### 3.4.2. Description Of Project Outputs

The structure of the Project outputs is shown in more detail in Figure 2; the Project outputs are described in more detail below.

#### 3.4.2.1. Main Body Of Report or “Project Summary Report”

This is the Project output that will be most widely disseminated by ETI to describe the functional requirements specification of the generic energy plant and the expectations regarding costs and revenues if such a plant is to be of interest to developers and investors. This is expected to be around 25 to 35 pages long and be split equally between the Outline Requirements Specification and Outline Business Case (as shown/described below). It is to be prepared as a standalone document without reference to a summary or supporting appendices.

- Outline requirements specification (summary section; guide length 2 pages):
  - energy system offering such as baseload, system balancing, heat (guide length 1 page);
  - technical requirements (guide length 2 pages);
  - siting criteria (guide length 2 pages);
  - target locations and deployment schedule (guide length 2 pages);
  - technical development (guide length 2 pages);

- UK nuclear infrastructure requirements (guide length 2 pages);
- Outline business case summary (summary section; guide length 2 pages):
  - development costs (guide length 1 page);
  - target unit costs (guide length 3 pages);
  - target unit revenue (guide length 2 pages);
  - economic appraisal (guide length 3 pages);
  - risks and opportunities (guide length 2 pages);
  - market analysis (UK content, adjacent markets, export potential) (guide length 2 pages).

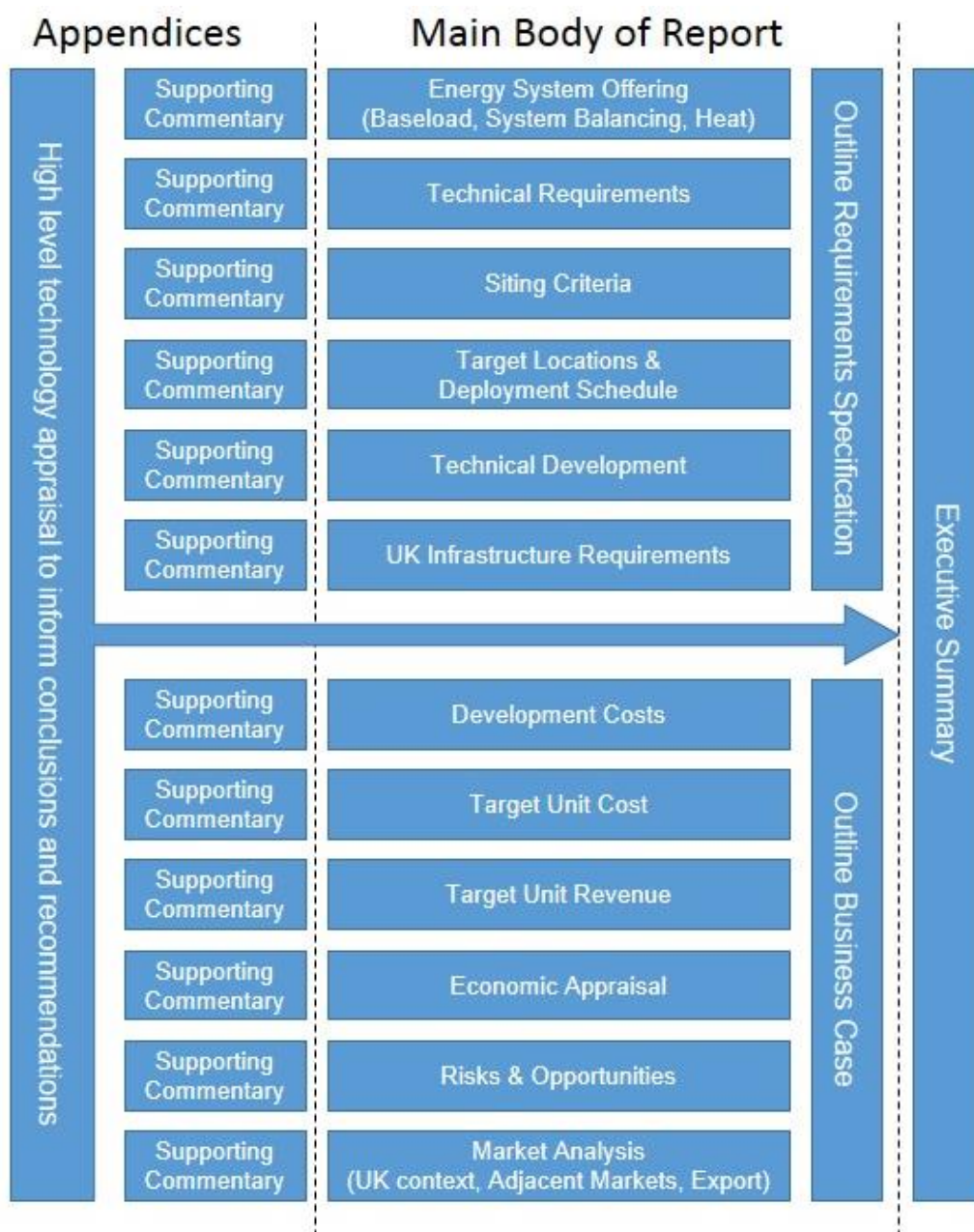


Figure 2 – Structure Of The Project Outputs.



### **3.4.2.2. “Project Full Report” - With Supporting Commentary, Supporting High Level Technical Appraisal And Executive Summary And Overview**

This report will not necessarily be widely disseminated and is intended to inform the ETI and its member organisations. As shown in figure 2, it will incorporate the Sections of the Project Summary Report but be expanded to include the following additional elements:

#### **3.4.2.2.1. Supporting Commentaries**

Each of the 12 sections in the Outline Requirements Specification and Outline Business Case shall be provided with a supporting commentary which explains the supporting reasoning, logic or analysis behind the content and statements in each of the 12 sections. The delivery of this Project is expected to involve interactions between elements of the technical requirements and elements of the business case; these interactions and optimisation shall also be captured in the supporting commentaries. The supporting commentaries shall also capture supporting assumptions or conclusions where these have been relied upon to develop and deliver the Project Summary Report.

#### **3.4.2.2.2. Technical Appraisal Report**

Towards the end of the Project, the selected Respondent (the Participant) shall “test” the outputs of the Project by using them to appraise and compare at a high level 5 technologies with the selection of these technologies to be approved by ETI. This is regarded as a minor output to help inform next steps after completion of this Project and is not intended to deliver a formal evaluation of technologies. This comparison and conclusions will be captured in a stand-alone report at the hierarchical level of the section commentaries.

#### **3.4.2.2.3. Executive Summary And Overview**

This shall:

- summarise the scope of work performed and identify the suite and hierarchy of documents produced;
- identify the “major drivers” from the technical requirements scope which are likely to determine the most effective and cost competitive technologies;
- identify the “major drivers” from the business case scope which are likely to determine the most effective and cost competitive technologies;
- summarise the learning from the high level technology appraisal;
- present a reasoned judgement, on the basis of work delivered through this Project, on the expected merits of SMRs expected to be validated through inclusion as a discrete nuclear technology identifiable in further ESME modelling analysis. If the judgement favours inclusion, then the summary is to include as a minimum the parameters for the ESME input file in the format described in Appendix A and expanded where appropriate; and
- make high level recommendations for subsequent scope to further enhance the value of the Project and its outputs.

### **3.4.3. Schedule Of Deliverables**

The Project Outputs will include a collection of deliverables which together address the Project Objectives and which satisfy the requirements identified in this Request for Proposals. The timing of the following deliverables is measured from the date of execution of the Project Contract:

#### **Month 1**

- Identification of target locations for heat networks; for ETI to note.
- Process, agenda, inputs and outputs for workshop with Power Plant Siting Study Project; for ETI to approve.
- First drafts of the following sections of the Report and supporting commentaries, for ETI to note:

- Technical Requirements.
- Deployment Schedule.
- Energy System Offering.
- Development Cost Model
- Unit Cost Model.
- Unit Revenue Model.

## **Month 2**

- Completion of workshop with record of inputs, outputs and completed action list. For ETI approval.
- Proposal for the selection of 5 technologies to be used to test and validate the outputs of the project at the end of Month 3.
- First drafts of the following sections of the Report and supporting commentaries, for ETI to note:
  - Target Locations.
  - Technical Development.
  - UK Nuclear Infrastructure Requirements.
  - Market Analysis.

## **Month 3**

- First drafts of the following sections of the Report and supporting commentaries, for ETI to note:
  - Siting Criteria.
  - Risks and Opportunities.
  - Economic Appraisal.

## **Month 3.5**

- First draft of the following section of the Report and supporting commentary, for ETI to Note:
  - Technical Appraisal Report.
- Draft Full Report for ETI to review and comment.

## **Month 4**

- Submission of final Project Full Report and Project Summary Report; for ETI acceptance.

In addition, the following will be required:

- Submission of a fortnightly two page Project progress report, including:
  - progress since previous report;
  - progress planned by end of next period;
  - Project completion to date (%);
  - opportunities, risks and mitigation; and

- schedule adherence for the Project critical path and forecast date of Project completion.
- A presentation (to the ETI and, at the ETI's discretion, ETI Member representatives and/or third parties, ie the “**Project Presentation**”) after delivery of the Project Full Report and Project Summary Report, with the following presentation content:
  - approach to and conduct of the Project including key assumptions (40 minutes);
  - Project outcomes and conclusions (40 minutes); and
  - questions (40 minutes).

### **3.5. Project Scope of Work**

The following sections describe the required Project scope of work.

#### **3.5.1. Assimilate Initial Inputs**

The Project inputs include this RfP and the project inputs from the ETI described at Section 3.4.1 (Appendices A, B, C and D which will be available at the start of the Project; there is a further input from a joint workshop with team members of the Power Plant Siting Study Project).

#### **3.5.2. Build The Team**

The Project Team should be led by the Chief Financial Analyst with support from the Chief Technologist and Project Manager. Consideration should be given to including in the Project Team organisations and personnel with experience including but not limited to the following areas; economic appraisal, energy market financial analysts with understanding of regulatory structures and policy drivers enabled by interventions, thermal power plant project delivery, and power reactor technologies. Governance of deliverables by the Chief Financial Analyst and Chief Technologist will be important. The overall co-ordination of the compilation of deliverables and reports is expected to be a significant task within and between the outline technical requirement and business case elements of the project.

#### **3.5.3. Literature Review**

The literature review should review previous specifications or functional requirements for SMRs. It shall explore typical development and deployment costs, deployment schedules and operating costs claimed by vendors of SMRs currently under development. It shall explore information in the public domain on UK Strike Price contracts in terms of contracts agreed or contracts under discussion.

#### **3.5.4. Planning For Joint Workshop With Power Plant Siting Study Project**

One of the opportunities at the proposed workshop is to explore the optimisation between site development and site criteria, and technology development and technology criteria, based on likely deployment locations and project economics.

#### **3.5.5. Development Of First Draft Of Report Section On Deployment Schedule**

The deployment schedule is the sequence of construction start dates and commercial operates dates from the first to the last plant within the fleet. This can be expressed as a start date and completion date for the first plant, a drumbeat (i.e. interval between starting construction each new plant), and a start date and completion date for the last plant. It shall also be visually presented on a chart.

This schedule is originally derived from ETI inputs available at the start of the Project. Based on this schedule, the Participant can build the timetable for preceding activities including regulatory review, achievement of technology readiness levels, and agreement of long term output contracts.

#### **3.5.6. Identify Plant Location Target Areas For Energising Heat Networks**

Using the input information provided by ETI described at Appendix C, the Participant shall capture the areas where heat networks are more likely to be deployed and develop the associated regions in which the heat sources to energise the networks are to be located for the purpose of minimising the heat loss, pumping load, capital cost and O&M burden of the connecting pipeline



### **3.5.7. Development Of First Draft Of Report Section On Energy System Offering**

This Section is to describe the functional performance offered by the technology towards meeting the overall requirements of the 2050 energy system, expressed both per unit and as a cumulative contribution from a projected fleet, the size of which is informed by the ETI inputs. Using the input information provided by ETI described at Appendices A, B and C, the Participant shall establish an initial estimate of the potential energy system contribution from a generic plant in the supply of electricity, the supply of heat, a flexible electricity output to match diurnal demand, and system balancing capabilities including short term operating reserve.

### **3.5.8. Development Of First Draft Of Report Section On Technical Requirements**

This Section is to describe the functional capability and constraints for each unit in the periods of construction, operation, outage or maintenance and decommissioning. It is expected that interaction with other elements of this project will strongly influence and optimise this section. The successful Respondent shall use the initial Project scope including 3.5.1, 3.5.3, 3.5.5 and 3.5.7 to develop the first draft of this section.

### **3.5.9. Development Of First Draft Report Section On Development Cost Model**

This is to describe the scope of potential technology and project pre-development and development costs up to the point of Final Investment Decision of project for the construction of the First Of A Kind (FOAK) generic plant. Another way of considering this is:

Development Cost = (Total cost of FOAK including technology development) – (Total cost of NOAK)

### **3.5.10. Development Of First Draft Report Section On Cost Model**

This section describes the scope of Target Unit Cost and defines how it is to be expressed. The Participant will describe the structure of the overall cost model, and define the costs and groups of costs which it contains. This is to include the segregation of unit costs associated with (1) baseload electricity production, (2) heat production to energise heat networks (3) costs associated with providing a flexible power output such that the plant can deliver diurnal variation and access the STOR market. A total target unit cost shall be shown on a chart for 3 technical solutions (1) baseload electricity production alone, (2) baseload electricity plus heat network energisation, (3) baseload electricity, heat network energisation, and output flexibility to supply peak time electricity and the STOR market.

This task does not include the full population of data within the cost model, but may include some indicative higher level data to demonstrate operation of the cost model sufficient to make reasoned observations and conclusions.

### **3.5.11. Development Of First Draft Report Section On Revenue Model**

This section describes the scope of Target Unit Revenue and defines how it is to be expressed. The Participant will describe the structure of the overall revenue model, and define the revenues and groups of revenues which it contains. This is to include the segregation of unit revenues associated with (1) baseload electricity production, (2) heat production to energise heat networks (3) delivering peak time electricity and delivering STOR market contracts. A total target unit revenue shall be shown on a chart for 3 technical solutions (1) baseload electricity production, (2) heat production to energise heat networks (3) delivering peak time electricity and delivering STOR market contracts.

This task does not include the full population of data within the revenue model, but may include some indicative data to demonstrate operation of the revenue model sufficient to make reasoned observations and conclusions.

To support this task and to be recorded in the supporting Revenue Model Commentary as described in section 3.4.2.2.1, the Participant shall consider a range of revenue structures including direct or wholesale customer revenues, market intervention revenues from sources such as the proposed Capacity Market and Contracts for Difference, and revenues from the system operator for system balancing services. The Participant shall examine the effectiveness of these multiple sources of revenue in funding high value multi-role low carbon technologies and make suggestions for change or improvement where appropriate.

### **3.5.12. Participate In Joint Workshop With Power Plant Siting Study Project**

More detail on the ETI Power Plant Siting Study Project is given at Appendix D. The ETI will provide the results from the Power Plant Siting Study Project regarding siting criteria and potential locations for plant up to an output of 300 MWe. The Power Plant Siting Project will host, manage and fund a 1 day workshop involving technical specialists from that Project and up to 6 representatives from this Alternative Nuclear Technologies Project.

The purpose of this workshop is twofold. Firstly it allows the Project Team for the Alternative Nuclear Technologies Project to extract knowledge and understanding from a site appraisal and selection perspective on how to optimise plant construction project execution from the consideration of cost, schedule and risk. Secondly it allows the Project Team to feed back to the Project Team for the Power Plant Siting Study Project any additional features or constraints for potential development sites which will help optimise project execution. The workshop will be jointly planned by the Chief or Technologists on each project. Costs associated with travel and time for attendance will fall to the respective projects. The Alternative Nuclear Technologies Project will be responsible for capturing and assimilating the product and outputs of the workshop. Allowance should be made for the attendance of up to 3 additional observers from the ETI, ETI Members and/or other organisations (at the ETI's discretion).

### 3.5.13. Development Of First Draft Of Report Section On Target Locations

Care is required in presenting information in this section of the Project Summary Report. Regarding target locations, this section will describe issues, trends, limits and options without specifically identifying the potential locations for alternative nuclear power plant. It is to be assumed that sites deemed suitable for large Gen III+ nuclear will be preferentially allocated to such plants and not made available for SMRs. The Power Plant Siting Study Project will provide key input information to inform potential locations for deploying small nuclear and the ETI will provide key input information on the expected location of heat networks. The successful Respondent will combine these 2 inputs to derive target locations and then present the information in the following format or alternative format otherwise approved by the ETI. Indicative capacity reflects the total electrical generating capacity available from all potential sites; the target locations reflect the preferred distribution of plants which cumulatively generates the specified electricity output and energises the accessible heat networks:

Indicative Capacity:

- the total potential electrical generating capacity deployable from the sites potentially suitable for small nuclear in England and Wales;
- the total capacity to be visually presented using 4 histograms each divided into sub-groups:
  - location; coastal, lake, river, manmade reservoir/canal/other water body;
  - category of site; existing nuclear sites not suitable for large Gen III+, brownfield power sites, brownfield industrial sites, greenfield sites;
  - cooling solution; direct, hybrid, indirect with cooling towers; and
  - distance from primary heat network; 1 to 10 km, 10 to 30 km, more than 30 km.

Target Locations:

- the electrical generating capacity deployable from the target sites most suitable for small nuclear in England and Wales deployed for combined heat and power solutions;
- the target capacity to be visually presented using 4 histograms each divided into sub-groups:
  - location; (1) coast or estuary, (2) lake, (2) river, (3) manmade reservoir/canal/other water body;
  - category of site; (1) existing nuclear sites not suitable for large Gen III+, (2) brownfield power sites, (3) brownfield industrial sites, (4) greenfield sites;
  - cooling solution; (1) direct, (2) hybrid, (3) indirect with cooling towers, (4) alternative ultimate heat sink potentially required to assure plant cool down if the volume of water for normal plant operations cannot be guaranteed at all times; and

- distance from primary heat network; 1 to 10 km, 10 to 30 km, more than 30 km.

The Indicative Capacity and Target Locations are to be categorised in this way to share the learning and associated choices identified by this Project without specifically identifying any locations that may be suitable for such a type of plant.

The deployment schedule is the sequence of construction start dates and commercial operates dates from the first to the last plant within the fleet. This can be expressed as a start date and completion date for the first plant, a drumbeat (i.e. interval between starting construction each new plant), and a start date and completion date for the last plant. It shall also be visually presented on a chart.

#### **3.5.14. Development Of First Draft Report Section On Technical Development**

This section is to define the “readiness” levels that must be successively achieved to deliver the required technical and project confidence into the Final Investment Decision. This can include the achievement of regulatory assents or approvals as well as delivery of Technology Readiness Levels (TRLs). This section will describe the gateway for maturing technologies to enter the deployment schedule. The Supporting Commentary to this section will address the link to the Section on Risks and Opportunities, which addresses the balance between established low risk technologies and higher risk programmes involving less mature technologies but with potentially greater commercial value.

#### **3.5.15. Development Of First Draft Report Section On UK Infrastructure Requirements**

This section is to address any national infrastructure required to support the operating fleet as a whole. This is to ensure that during technology evaluation or selection, the full impact of introducing new technologies is understood. Across of range of infrastructure the impacts could be categorised as (1) new capability and new capacity, (2) existing capability but additional capacity (3) no new capability or capacity required. Five examples of such nuclear infrastructure include:

- fuel manufacture and supply;
- post irradiation examination of fuel;
- spent fuel storage;
- spent fuel disposal; and
- waste disposal.

This will be used in the future evaluation and comparison of competing technologies by identifying future requirements for additional capability or capacity of infrastructure. The Supporting Commentary is expected to address the associated links with Technical Development and Deployment schedule.

#### **3.5.16. Market Review To Support Population Of Cost And Revenue Models**

This activity provides preparation for the Economic Appraisal by capturing data from the Literature Review and ETI provided inputs, as well as expert knowledge already held by the Participant (Project Team). As well as open source information from the literature review, this is expected to include:

- First Benchmark. Information in the public domain on Strike Price Agreements which have been concluded or under discussion. Early Strike Price contracts may be considered an upper boundary for cost and revenue; subsequent agreements may involve lower project costs and with lower revenues and a reduction in Strike Price.
- Second Benchmark. Through the information described in Appendices A, B and C. ETI will provide the summarised cost data for nuclear as used in ESME scenario analysis.
- Third Benchmark. The Participant will have an independent view of the long term market for electricity supply, and the expected cost competitiveness of differing technologies expected to compete in this market.

These benchmarks shall be included and described in the Supporting Commentary to the Section on Economic Appraisal.

There are two final features to be summarised as part of market analysis. The first is the potential for UK economic growth from the creation of new jobs associated with manufacturing content and UK construction, installation and commissioning.

The second feature is where there is similarity behind the policy drivers and market requirements between the UK energy market and other energy markets identified overseas. The identification of such similar markets creates opportunity for export potential should the UK take the lead in such technology deployment.

### 3.5.17. Optimisation

This scope concerns optimisation between elements of system requirements and the business case including but not limited to the following:

Business Case	System Requirements
Risks and opportunities	Site Criteria
Cost Driver Analysis	Technical Requirements
Revenue Driver Analysis	Technical Development

The description of the approach and content of this scope is expected to be a significant discriminator between Respondents.

### 3.5.18. Development Of First Draft Of Report Section On Siting Criteria

This is to describe the criteria and constraints to be used in identifying and selecting development sites for the deployment of units.

### 3.5.19. Development Of First Draft Of Report Section On Risks And Opportunities

The apparent precision of the business case will be set against the register of risks and opportunities with associated probabilities, consequences and funded action plans. The purpose of this section is to provide a framework for the identification of expected risks and opportunities attributable to each of the individual technologies.

### 3.5.20. Build Economic Appraisal

This section summarises the structure and content of each of the economic appraisals from the 3 technical solutions of (1) baseload electricity production alone, (2) baseload electricity plus heat network energisation, (3) baseload electricity, heat network energisation, and output flexibility to supply peak time electricity and the STOR market. A summary of one approach to building this appraisal is as follows:

- the Market Review establishes a range of expected future prices for electricity supply;
- from a range of benchmarks regarding rate of return and profitability for developers and investors, the cost of deployment and operation of current technologies can be deduced;
- to the future price or revenue from electricity can be added revenues from the supply of heat, the additional revenue from peak load electricity supply, and the additional revenue from Short Term Operating Reserve contracts; and
- by applying comparable rates of return and profitability for developers and investors, a benchmark can be established for deployment and operating costs of the alternative generic plant.

### **3.5.21. High Level Technology Appraisal**

The requirements of this report section are described further in Section 3.4.2.2.2. It is important to note that this scope is not intended to provide a formal evaluation of technologies, but to “test” the outputs of the Project and inform the conclusions and recommendations prepared by the Participant at the end of the Project.

### **3.5.22. Prepare Final Reports**

The requirements of the reports are described further in Sections 3.4.2.2 and 3.4.2.1. These are required as drafts and then final versions.

### **3.5.23. Presentation To ETI**

After submission of the detailed Project Full Report and the Project Summary Report, the Participant shall prepare and deliver the final Project Presentation at the ETI’s premises, in 3 parts:

- approach to and conduct of the Project (40 minutes);
- Project outcomes and conclusions (40 minutes); and
- questions (40 minutes).

The purpose of this presentation is not for ETI to evaluate the technical delivery of the Project scope. The purpose is to communicate to a broader non-nuclear ETI and ETI Member representation how the Project scope has been approached and the outcomes and conclusions that have been learned. Sufficient attendance is required from amongst Project Team key personnel involved in the delivery of the Project to provide a good prospect of satisfactorily addressing each question during the presentation session.

## 4. COMMERCIAL AND LEGAL REQUIREMENTS

### 4.1 ETI Investment

The ETI is an investor in technology, not a grant awarding body. In commissioning the Project, the ETI anticipates that it will be the sole or predominant source of investment funding.

For this Project, the ETI's investment will be on a fixed price basis (see definition of ETI Investment at Appendix H – Glossary).

Each Respondent must in its Proposal clearly identify the proposed ETI Investment and (where relevant) the source and amounts of any additional funding (whether from the Respondent and/or third parties) proposed to be made available by the Respondent.

Respondents may wish to include an element of financial profit in their proposed costs, noting that it is not anticipated that the selected Respondent(s) will be granted rights to Arising IP.

### 4.2 Project Contract

Following selection, the preferred Respondent will be invited to enter into a contract with the ETI for delivery of the Project.

The Project Contract will be based on the terms of the ETI's standard Consultancy Agreement template, subject to the inclusion of specific provisions relevant to the Project and its delivery by the preferred Respondent (including, typically, the agreed ETI Investment, identification of the Project Team personnel, appropriate further provisions (eg in relation to IP and State aid) and, in an Annex, details of the specific Tasks and activities to be undertaken by the Participant (as Prime Contractor; see Section 4.3, below) in delivering the Project). The ETI reserves the right to amend the form and content of the draft Project Contract (to be negotiated with the preferred Respondent(s)) in the event that any element(s) of the preferred Proposal(s), including (without limitation) the proposed ETI Investment and Participant contracting structure (see Section 4.3, below), differ materially from the ETI's expectations.

A draft of the Project Contract will be made available to Respondents following receipt by the ETI of a signed Non-Disclosure Agreement in accordance with Section 5.1.1 and Appendix G.

The Project Contract will be finalised following selection of the preferred Respondent(s) (Sections 5.1.3, 5.1.4 and 5.1.5), during the Project Detailing and Contract Finalisation Stage of the Project Commissioning Process (Section 5.2).

**Any issues that a Respondent has with the terms of the Project Contract must be set out in the Statement of Compliance to be provided as part of the Proposal (see Section 7 (Statement of Compliance) and Annex E3). Respondents are also required to provide a compliance table (see Annex E4).**

**Please note that the extent to which a Respondent accepts the terms of the ETI's draft Project Contract is one of the Selection Criteria against which that Respondent's Proposal will be evaluated (Section 5.1.4).**

### 4.3 Participant Contracting Structure

The ETI requires Respondents to make a Proposal as either a Sole Contractor or Prime Contractor, such that only the selected Respondent will enter into the Project Contract with the ETI and undertake the Project either as:

- i. Sole Contractor, where the Respondent has satisfied the ETI that it has the skills, capability and capacity to undertake the Project entirely within its organisation (ie the contracting legal entity); or
- ii. Prime Contractor, with specified parts of the Project being performed by Subcontractors. The ETI will require that there are Subcontracts in place between the Prime Contractor and its Subcontractors that are consistent in all material respects with the Project Contract. The appointment and use of Subcontractors by the Prime Contractor will be subject to prior ETI approval and the ETI reserves the right to require its approval of the terms of Subcontracts.



In either case, the Sole/Prime Contractor legal entity (only) will enter into the Project Contract with the ETI and act as primary interface with the ETI.

#### **4.4 Project Payment Structure**

The ETI will invest in the Project on a fixed price basis (see Section 4.1) up to the amount of the ETI Investment agreed with the successful Respondent.

Payments will be made by the ETI against agreed Milestones. Payment for a Milestone will be subject to (for example) the constituent deliverables for that Milestone meeting agreed acceptance criteria and to the Sole/Prime Contractor complying with the ETI's reporting requirements in relation to that Milestone. (See also Appendix E, Section 6.2.)

Details of the Project payment structure and related requirements will be agreed during finalisation of the Project Contract (Section 5.2, Project Detailing and Contract Finalisation Stage).

#### **4.5 State Aid**

A proportion of the ETI Investment may constitute State aid. The ETI has a specific State aid clearance from the European Commission. A copy is available on request. Respondents should note:

- a) Respondents may be required to provide further information during the Project Commissioning Process to support any specific State aid requirements of the Project;
- b) Participant(s) are required to provide full transparency of costs throughout the Project to ensure both the Participant(s) and the ETI comply with EU State aid law;
- c) Participant(s) are required to agree to certain obligations in the Project Contract related to the State aid requirements including the duration of the retention of records, and obligations to return ETI Investment monies in certain exceptional circumstances (including in the event the European Commission adopts a decision that there has been a grant of illegal State aid or misuse of State aid); and
- d) each Respondent is required to confirm in its Proposal that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received by that Respondent (Appendix E, Annex E1, Section 1.1).

#### **4.6 Intellectual Property**

##### **4.6.1 Arising IP – Ownership**

For this Project, the ETI will own all Arising IP and may use, exploit (including by licensing ETI Members and other third parties) and publish the results and other Project Outputs as it thinks fit.

##### **4.6.2 Arising IP – Sole/Prime Contractor's Rights**

The ETI does not anticipate granting rights to the Sole/Prime Contractor (whether by licence or sub-licence) to use or exploit Arising IP or other results/Project Outputs.

In the event that a Respondent proposes to request a licence of the (or any) Arising IP, this should be discussed with the ETI prior to submission of a Proposal. Any licence for commercial use would not be expected to be royalty free.

The ETI does not generally grant Arising IP rights to Subcontractors.

##### **4.6.3 Academic Organisations**

If requested, the ETI may grant rights to Sole/Prime Contractors who are academic institutions for the purposes of academic teaching and academic research only. Academic publication of appropriate parts of the Project results will generally be permitted subject to an approval process. Any Respondent requesting such rights should set out the relevant details in its Proposal.

#### 4.6.4 Background IP

Where a licence of Background IP is required to carry out the Project and/or for the subsequent exploitation of any Arising IP / Project Outputs, the Sole/Prime Contractor (and Subcontractor(s), where appropriate) are expected to make this Background IP available on a non-exclusive, royalty-free basis.

If Respondents (or their proposed Subcontractors) fail to meet this expectation, the attractiveness to the ETI of the relevant Proposal may be adversely affected.

The proposed terms for Background IP required to enable the ETI, the ETI Members and other licensees of the ETI to use and exploit the outputs of the Project must be identified in any Proposal, agreed and included in the Project Contract.

#### 4.7 Project Health, Safety and Environmental (HSE) Management

The ETI's approach to the management of HSE in projects is based on three key elements:

- competency assessment;
- performance assurance; and
- the ETI's Project Incident Protocol.

How the ETI applies this approach to a specific project depends upon the nature and content of the project. For this Project, this will depend upon whether any work to be undertaken is not entirely desk-based (eg site visits, field trials, experimental or laboratory work). The ETI's requirements for Respondents' Proposals are set out in Appendix E, Section 6.4.

#### 4.8 Due Diligence (General, State aid, Insurance, IP and HSE)

The ETI requires Respondents to provide due diligence information at two stages of the Project Commissioning Process: (i) as part of a Proposal and (ii) during the Project Detailing and Contract Finalisation Stage (Section 5.2).

The ETI's requirements for IP due diligence as part of a Proposal are set out in Section 9 of Appendix E. The ETI's requirements for IP due diligence during the Project Detailing and Contract Finalisation Stage are set out in Appendix E, Annex E1, Section 2b.

Further details of the ETI's wider due diligence requirements are set out in Section 10 of Appendix E and at Annex E1.

Please note that successful completion of all elements of the required due diligence is a pre-requisite for selection of a Proposal. Failure to meet due diligence requirements at any stage may result in exclusion of a Proposal from the ETI's Project Commissioning Process.



## **5 PROJECT COMMISSIONING PROCESS AND ESTIMATED TIME SCALES**

The ETI is using a two-stage approach to commission the Project:

Stage 1 – RfP Issue, Response to RfP and Selection of Preferred Respondent(s); and

Stage 2 – Project Detailing and Contract Finalisation.

### **5.1 Stage 1: Response to RfP and Selection of Preferred Respondent(s)**

#### **5.1.1 Non-Disclosure Agreement and Notification of Intention to Submit a Proposal**

Prior to submitting a Proposal in response to this RfP, Respondents are required to provide to the ETI (i) a formal notification of their intention to submit a Proposal, in the form set out at Appendix F, and (ii) a Non-Disclosure Agreement (NDA), in the form provided at Appendix G, signed and returned to the ETI in accordance with the instructions at Appendix G. Respondents should take care to follow these instructions precisely, in order to avoid unnecessary delays.

Both documents must be received by the ETI no later than the deadline specified on the front page and at Section 5.3 of the RfP (electronic copies of each document are available on the ETI website). Respondents are encouraged to return both the notification form and the NDA as soon as possible (rather than waiting until the deadline) as, following return of the properly executed NDA, the ETI will send out the draft Project Contract (and Respondents are required to confirm acceptance of the detailed terms therein and/or provide specific comments on them in their Proposals).

#### **5.1.2 Submission of Proposals**

Respondents are required to submit Proposals to the ETI no later than the closing date specified on the front page and at Section 5.3 of the RfP. To ensure that all Proposals are treated equitably, extensions to this closing date will not normally be granted.

The required form and contents of Proposals are set out in Section 6 of the RfP and in Appendix E.

#### **5.1.3 Selection Process**

Following the closing date for Proposals, the ETI will convene a Selection Panel as part of its evaluation process to recommend which Respondent(s) should proceed to the Project Detailing and Contract Finalisation Stage. In addition to ETI staff, this panel may include experts selected by the ETI (typically including individuals drawn from ETI Member organisations and third parties) to provide the necessary expertise to consider the technical, commercial, legal and financial aspects of each Proposal.

It is intended that Proposals should provide all necessary information to enable the Selection Panel to select a preferred Respondent. However, the Selection Panel may request further clarifications from Respondents following the meeting.

In the event that the ETI receives a large number of Proposals, the ETI may make an assessment to select a manageable shortlist of Respondents / Proposals for consideration by the Selection Panel.

In any event, the ETI may in its discretion decide to negotiate with more than one Respondent or group of Respondents (as appropriate) to ensure that all key issues are resolved fully and promptly, before making a final selection decision.

Recommendations of the Selection Panel are made to the ETI's executive management team for consideration and ratification. All Respondents will be notified of the final ETI decision after it is confirmed. Prior to this notification, no information will normally be provided to Respondents concerning the Selection Panel recommendations, (except to the extent that further information may be requested by the ETI to clarify certain aspects of some or all of the Proposals, as outlined above).

#### **5.1.4 Selection Criteria**

The following principal high level drivers in selecting the preferred Respondent for this Project will be evaluated from Respondents' Proposals:

- Demonstrated relevant capability and experience.
- Technical excellence in the Proposal and those engaged in its delivery.
- Credibility in delivery of the full scope of the Project to schedule.
- Value for money.
- Compliance with ETI's draft Project Contract and requirements regarding IP.

Proposals will be reviewed and judged primarily against the criteria listed below and the supporting evidence supplied. Failure to meet minimum standards in any criterion may result in the ETI rejecting a Proposal.

The ETI expects that the capabilities and experience listed below will be critical to the successful delivery of the Project. Respondents are free to identify additional capabilities and experience which they consider to be critical or important to success provided that these are delivered within the allocated page count. The ETI's experience evaluating Proposals has shown that specific and objective evidence of capabilities and experience is more convincing than general statements about previous projects executed by the organisation.

Evidence should be provided of capability and experience to deliver the Project Objectives through Project execution. Respondents submitting Proposals for this Project should provide simple evidence demonstrating their qualification, experience and capability to deliver the required scope of the Project. This evidence must be provided within the Proposal, but should be limited to no more than 5 pages setting out the relevant experience, in the UK and elsewhere, in the last 5 years in relation to the following;

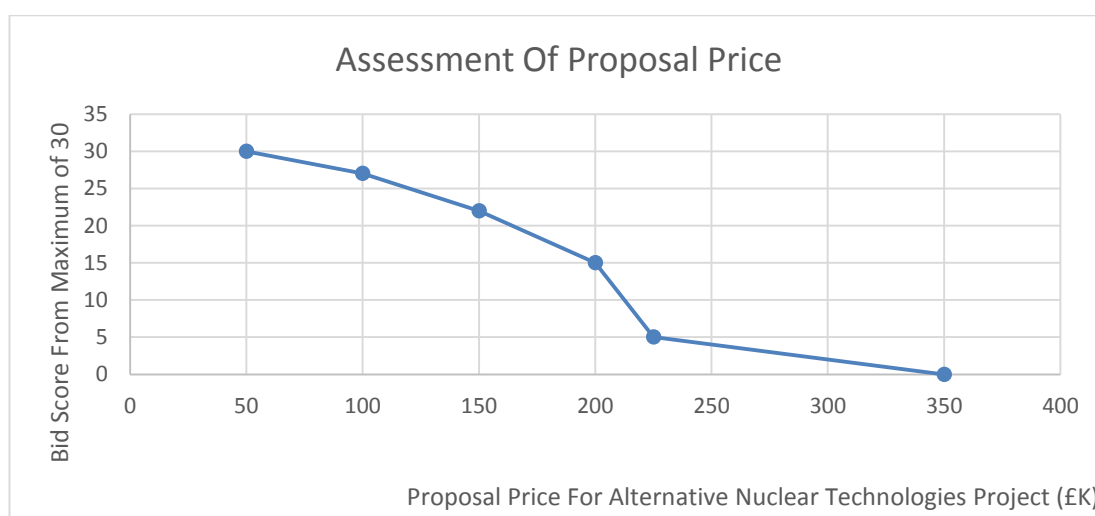
- project delivery experience involving the major modification, refurbishment or life extension of thermal (including nuclear) plants in the role of EPC or EPCM Contractor, Architect Engineer or Owners Engineer. Evidence of one or more of these roles from 3 examples, including 1 in the UK;
- project delivery experience of the new construction of one or more thermal plant of 400 MWe or greater in the role of EPC or EPCM Contractor, Architect Engineer or Owners' Engineer. Evidence of one or more of these roles from 3 examples including one in the UK;
- thermal power technology capability and experience through original design or in-service design support for non-nuclear plant. Evidence of 3 examples, including one in the UK;
- nuclear power technology capability and experience through original design or in-service design support for nuclear power plant. Evidence of 3 examples, including one in the UK; and
- new build project financial appraisal of cost, risk and revenues, including impact of market interventions, to advise investors or Governments. Evidence of 3 examples of proposals and associated contracts which have reached closure, including one in the UK.

The Proposal must also include an indication of the number of people employed by the Respondent against the experience areas described above of project delivery, power technology, and market and economic appraisal. These numbers are to be compared against the numbers required to deliver this Project.

Completeness of information content, structure and quality of the Proposal (against the areas listed in Appendix E); compliance with Section 3, including the scope and technical requirements of the Project; Project approach, structure and plan, (including methodologies for generating innovative potential solutions). These will be assessed by relevance to:

- experience gained from previous technical appraisal of SMRs and how this will be applied in the elements of scope described at Appendix E Section 4.2.1 (5/100);
- experience gained from power station engineering and project delivery and how this will be applied in the elements of scope described at Appendix E Section 4.2.4 (5/100);

- understanding of the issues related to system balancing and the value of non-KWh system services and how this will be applied to the elements of scope described at Appendix E Section 4.2.6 (5/100);
- experience gained in the cost appraisal and forecasting across a range of power generating technologies and how this will be applied to the elements of scope described at Appendix E Section 4.2.2 (5/100);
- experience gained in electricity and energy market appraisal and how this will be applied to the elements of scope described at Appendix E Section 4.2.5 (5/100);
- the approach to optimisation of the Requirements Specification and Business Case in the element of scope described at Appendix E Section 4.2.3 (10/100);
- clarity and breadth of delivery organisation in terms of identification of roles, accountabilities and interfaces together with inclusion of sufficient capabilities necessary to deliver the Project (5/100);
- clarity of the project management plan describing activities, durations, and the identity of individuals delivering significant activities. Experience and capability of the Project Manager against the requirements of the role (5/100);
- experience of the Chief Technologist, Chief Financial Analyst (or Senior Economist), and other technical specialists and financial analysts with a significant delivery role in the Project, as recorded against the activities shown in the project management plan (10/100); and
- proposed approach to the workshop to be supported by the organisation engaged to deliver the Power Plant Siting Study Project (5/100).



Value for money. The scope and quality of work proposed by the Respondent will be balanced, against the proposed fixed price of the ETI Investment, excluding VAT, through the scoring mechanism above noting that a lower proposal price attracts a higher score and a higher proposal price attract a lower score.

Willingness to comply with the terms and conditions of the proposed Project Contract (see Section 4.2); willingness to support the contracting process (including as set out in Section 5.2) and the contracting timeline (as set out in Section 5.3); the extent to which there may be Background IP which would prevent the Project proceeding or the Arising IP / Project Outputs being exploited; including:

- confirmation of lack of exceptions, deviations and other variations from the draft Project Contract, IP requirements, and terms and conditions identified by ETI in the RfP (10/100).

### 5.1.5 Proposal Assessment

Each Respondent's Proposal will first be examined to evaluate evidence of the Respondent's relevant experience and capability necessary to deliver the Project. This is a pass or fail criterion.

Where Proposals have demonstrated the required capability and experience, these Proposals will then be assessed by the Selection Panel. The Selection Panel members' advice will be informed by application of the Selection Criteria (Section 5.1.4, above) and using the following overall weighting:

Area	Score From 100
Experience & capability description	Pass or fail
Technical and delivery	60
Price	30
Lack of exceptions, deviation and other variations from the terms of the ETI's draft Project Contract, including requirements regarding IP	10

Proposals which are incomplete, fail to comply with the requirements of this RfP, and/or indicate significant deviation from the terms of the draft Project Contract, may be excluded without further assessment.

### 5.2 Stage 2: Project Detailing and Contract Finalisation Stage

Following selection, the ETI will invite the preferred Respondent(s) to enter into negotiations with the ETI to finalise the details of the Project and the terms of the Project Contract. See Section 5.3 for further details relating to anticipated dates.

**The ETI may decide to negotiate with more than one Respondent or group of Respondents (as appropriate) to ensure that all key issues are resolved fully and promptly, before making a final selection decision.**

The Project Detailing and Contract Finalisation Stage will include the following activities (as required and dependent on the level of detail provided in the selected Respondent's Proposal):

- a) finalisation and agreement of the Project Contract;
- b) further due diligence activities as required (see Annex E1 Section 2);
- c) agreement (and approval as required by the ETI) to terms of other key contractual arrangements (eg Subcontracts) as identified in Respondent's Proposal; and
- d) any further information or assessment that may be necessary to meet State aid requirements.

Respondents are required to commit to provide legal, technical, commercial and managerial resources (including where appropriate in face to face meetings) as required to achieve the target Project Contract execution date shown in Section 5.3. The ETI reserves the right to re-open discussions with other parties, cancel the commissioning of the Project, and/or take such other steps as the ETI (in its discretion) thinks fit should it become apparent that this date may not be achieved.

### 5.3 Estimated Project Commissioning Timeframes

The following tables outline the anticipated schedule for the Project Commissioning Process. They also include anticipated dates when the preferred Respondent(s) will be required to commit the required resources to attend Project Detailing and Contract Finalisation Stage meetings with the ETI.

The timing and the sequence of events resulting from this RfP may vary and shall ultimately be determined by the ETI.

<b>Request for Proposal and Selection</b>	<b>Dates</b>
Issue of RfP	27th May 2014
Deadline for: (i) notifying the ETI of an intention to submit a Proposal (Appendix F); and (ii) return of signed Non-Disclosure Agreement (Appendix G).  See Section 5.1.1	06 <sup>th</sup> June 2014
Closing date for submission of Proposals	27 <sup>th</sup> June 2014 (12.00 noon)
Selection Panel	30 <sup>th</sup> June to 11 <sup>th</sup> July 2014 (anticipated)
Preferred Respondent(s) notified (on or before)	11 <sup>th</sup> July 2014 (anticipated)

<b>Project Contract Finalisation</b>	<b>Anticipated Dates</b>
Project Contract finalisation meetings (to finalise commercial and legal aspects, any remaining due diligence, etc.)	14 <sup>th</sup> July to 01 <sup>st</sup> August 2014

<b>Project Start and Finish</b>	<b>Anticipated Dates</b>
Project Contract execution target date	01 <sup>st</sup> August 2014
Project start target date	04 <sup>th</sup> August 2014
Project finish target date (submission of final report)	28 <sup>th</sup> November 2014

## 6 PROPOSAL CONTENT AND FORMAT

The Proposal shall be arranged according to the structure detailed in Appendix E and shall include all required supporting information and appendices detailed therein.

The Proposal must be written in a succinct manner and must not include imprecise statements, generalities or repeated information. It must be easily readable with appropriate font sizes, margins, etc.

**The Proposal should not exceed a maximum of 55 pages** (excluding the required appendices to the Proposal explicitly excluded from the page count by Appendix E to this RfP - see Section 13 Appendix E).

Proposals which exceed the stated page count regarding relevance experience or capability, or which include other extraneous case studies or marketing literature, may be considered non-compliant by ETI and excluded from further examination.

The Proposal shall consist of one (1) bound hard copy and one (1) electronic copy. The latter shall be provided in both PDF and Microsoft Word formats. The postal and email addresses for submission of hard copies and electronic copies, respectively, are set out on the front page of this RfP.

## **7 STATEMENT OF COMPLIANCE**

The ETI's full requirements for the Statement of Compliance are set out in Appendix E, Annex E3.

Respondents are required to provide a statement confirming that the Proposal is fully compliant with the Request for Proposals, or stating clearly any exceptions, deviations, alternative approaches or additions, with justification.

Additional comments and clarifications should also be listed where appropriate (for example to clarify interpretation of requirements), but these must be differentiated from any deviations / exceptions above.

In relation to the draft Project Contract (Section 4.2 above), Respondents are required to confirm in the Statement of Compliance the extent to which the provisions of the draft Project Contract provided by the ETI will be accepted by the Respondents.

The extent of compliance with the RfP and the draft Project Contract is one of the key Selection Criteria against which a Proposal will be assessed (Section 5.1.4).



## 8 IMPORTANT NOTICES

- a) The ETI at its discretion may request clarification of a Proposal and may reject any Proposal which is unclear.
- b) Neither the issue of any documentation in the Project Commissioning Process nor any of the information presented in it should be regarded as a commitment or representation on the part of the ETI or any other person to enter into a contractual arrangement. The issue of the RfP is not an agreement or offer to purchase goods or services, and the ETI is not bound to enter into any contract with any Respondent. By responding to this Request for Proposals, a Respondent does not commit itself to entering into a contract with the ETI.
- c) All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final.
- d) All documents, including Proposals, submitted to the ETI become the property of the ETI. They will be received and held in confidence by the ETI under the terms of the Non-Disclosure Agreement (Appendix G). No part of a Proposal, or other documents provided by Respondents, shall be returned.
- e) The ETI reserves the right at any time to (i) withdraw the RfP and/or terminate the Project Commissioning Process (and/or any Respondent's involvement in the Project Commissioning Process), (ii) change the basis, timetable and/or requirements of, and/or the procedures for, the Project Commissioning Process, including the timetable or closing date for receipt by the ETI of Proposals, (iii) make modifications to, or alter any of the provisions/ information within, the RfP and/or (prior to its execution) the draft Project Contract, (iv) reject any or all of the Proposals received, and/or (v) not invite any Respondent(s) to proceed further.
- f) Neither the ETI nor any of its agents or advisers accepts any liability or responsibility for the accuracy, adequacy or completeness of any of the information provided or any opinions contained in this RfP or of any other information made available during the Project Commissioning Process. No representation or warranty, express or implied, is or will be given by the ETI or any of its agents or advisers with respect to such information provided or opinion given therein. Any liability is thereby expressly disclaimed.
- g) Respondents must assess the information and terms contained in this RfP independently, having taken professional advice if necessary. Each Respondent will be deemed to have examined all the documents enclosed with or provided pursuant to this Request for Proposals and by its own independent observations and enquiries will be held to have fully informed itself as to the nature and extent of the requirements of the RfP. Each Respondent must rely on its own enquiries and on the terms and conditions contained in any agreement, when and if finally executed, subject to such limitations and restrictions as may be specified therein.
- h) Respondents shall be wholly responsible for the costs they incur in the preparation and submission of their responses to the RfP. The ETI shall not be responsible for, and shall not pay, any costs and expenses which may be incurred by the Respondent (or by any third party, including proposed subcontractors) in connection with its participation in the Project Commissioning Process, including any costs or expenses incurred up to and including the execution of the Project Contract.
- i) The ETI may, at its discretion, shortlist Respondents for the next stage of the Project Commissioning Process. The ETI does not undertake to accept the lowest bid or to accept part or all of any Proposal and the acknowledgement of receipt of any Proposal (and/or any invitation to any Respondent(s) to proceed to the next stage) shall not constitute any actual or implied agreement between the ETI and the Respondent.
- j) The copyright in the documentation and any other materials supplied by the ETI and/or its advisers in the Project Commissioning Process, in whatever format, belongs to the ETI or its appointed advisers (or such other persons from whom the ETI derives its rights in relation to such documentation/materials), as appropriate. Such documentation and materials may not, either in whole or in part, be copied, reproduced, distributed or otherwise made available to any other third party or used without the prior written consent of the ETI, except in relation to the



preparation of the Proposal in the course of the Project Commissioning Process. All documentation supplied by the ETI in relation to the Project Commissioning Process must be returned on demand, without any copies being retained by the Respondent.

- k) In this RfP, any phrase introduced by the term “include”, “including”, “in particular”, “for example”, “such as” or similar expression shall be construed as illustrative and shall not limit the sense of the words preceding that term.
- l) This RfP, and any dispute or claim arising out of or in connection with it (including any dispute or claim relating to non-contractual obligations), shall be governed by and construed in all respects in accordance with the laws of England and Wales and the Respondent agrees that the Courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim arising out of or in connection with this document (including any non-contractual disputes or claims).
- m) The submission of a Proposal will confirm acceptance of the foregoing provisions by the Respondent without qualification. Any attempt to qualify any of the foregoing provisions in this Section 8 (Important Notices), either expressly or impliedly, may result in a Respondent being disqualified.

## APPENDIX A – ETI INPUT – ESME SCENARIOS AND NUCLEAR ASSUMPTIONS

### Information Made Available At Project Kick Off

For ETI to obtain maximum value from this Project, it shall be necessary for the preferred Respondent(s) to be aware of the ETI's strategy, approach and current conclusions regarding the optimum pathway for reducing the UK CO<sub>2</sub> emissions consistent with the 2050 target. This information is to provide context and develop understanding but will not require detailed analysis as part of the Project scope.

Following execution of the Project Contract, the ETI will provide to the Participant the following confidential information, largely in the form of Power Point presentations:

- overview of energy systems which ESME selects as the “optimised” least cost designs to 2050;
- a description of the modelling approach taken in ESME and ETI's processes for maintaining and updating the model and the assumption set;
- cost estimates for the energy system to meet security and sustainability targets to 2050;
- the different abatement levels required for different energy sectors (e.g. power, transport, industry) in the ESME scenarios and the drivers of these differences;
- variations in the energy system design in response to uncertainty over future technology costs and future fuel prices, as captured in the ESME Monte Carlo analysis;
- the effect on the system design of key sensitivities: variations in emissions target, variations in energy demand levels;
- opportunity cost of key technologies in future energy system designs such as CCS and nuclear;
- transition pathways for the electricity sector: capacity mix, generation mix, electricity sector emissions (gCO<sub>2</sub>/kWh), load factors for different technologies and the drivers of these results;
- transition pathways in the heat sector, in particular: the implied electricity demand for heating, the potential roll-out of district heat networks, the potential sources of low-carbon heat for those heat networks and the drivers of these results.

### Format Of Project Data Output For Assessment And Validation ESME

One of the Project Objectives is to be able to test and validate the Project Outputs in ESME by running additional scenarios and model runs. The Project Output shall include the plant characteristics expressed in the following parameters to enable the creation of a technology line in ESME:

- technical life (years);
- length of construction period (years);
- maximum deployment rate through to 2050 (kW per year), if applicable;
- capital cost estimate through to 2050 (£/kW). This should exclude financing cost;
- fixed cost estimate through to 2050 (£/kW/year). This excludes fuel costs;
- variable cost estimate through to 2050 (£/kWh). This excludes fuel costs;
- information on plant flexibility, ie indication of ability to ramp generation up and down and the timescales for this;
- maximum annual load factor (%);
- plant thermal efficiency through to 2050; and
- estimates of uncertainty in the 2050 cost estimates.

## APPENDIX B – ETI INPUT – FUTURE ELECTRICITY GENERATION MODELS

### Introduction

The Project requires that the Participant deduce indications of:

- potential required baseload generating capacity from SMRs that could be additive to large baseload nuclear (should large nuclear be constrained);
- potential capacity requirements for long term energy storage for inter-seasonal variations to be addressed by energy storage technologies;
- potential capacity requirements for flexible generation to meet diurnal variations in load demand; and
- potential capacity for low carbon short term spinning reserve.

These requirements will be balanced against the thermal capacity required to energise heat networks (further details are given in Appendix C). When taken together they will provide an indication of the geographic spread, overall capacity and level of flexibility from distributed SMRs that will be of overall benefit to the energy system. This will inform individual plant size (electricity and thermal output) and overall numbers of plant. To this end, the ETI will provide the following information:

### Power Generating Systems

For a range of scenarios modelled in ESME, the ETI will provide details on potential 2050 power generating systems as outlined in Appendix A.

### Normal Variations in Electricity Demand and Generating Capacity

As a scenario for the period 2020 to 2035, the ETI will provide charts of diurnal variations of electricity demand, electricity generation and wholesale electricity price in hourly intervals for six normal operating days:

- a high demand weekday (a typical winter weekday);
- a high demand weekend day;
- a low demand weekday (a typical summer weekday);
- a low demand weekend day;
- a medium demand weekday (a typical spring/autumn weekday); and
- a medium demand weekend day.

The ETI will give guidance on the environmental conditions on each of these six normal operating days which will influence both levels of demand and constraints on generation.

### Variations in Electricity Demand and Generating Capacity Driven By Low Frequency Events

To provide further context on the consequences of a short-term mismatch between supply and demand, the ETI will provide historical diurnal variations of electricity demand, electricity generation and wholesale electricity price in hourly intervals for days in which low frequency events have caused unusual levels of variation, including:

- a spike in resource costs (e.g. a spike in gas price);
- a low wind and/or solar PV supply event; and
- an engineering failure on the system.

## System Balancing Requirements

The ETI will characterise the level and nature of system balancing (e.g. short term operating reserve) requirements in which SMRs may reasonably be expected to participate:

- historic levels of system balancing requirements;
- current levels of system balancing requirements; and
- the ETI view of system balancing requirements for potential 2050 electricity systems.

## APPENDIX C – ETI INPUT – FUTURE HEAT NETWORKS MODELLED IN ESME

### Context

The ESME approach is to integrate elements of energy generation, distribution and consumption to consider the lowest cost pathway for meeting the 2050 emission reduction targets consistent with overall system risk and resilience. The elements include:

- electricity generation;
- process heat used in chemical and manufacturing plant and processes;
- heat for space heating and hot water production in domestic and light commercial premises; and
- transport.

### The Decarbonisation Of Energy For Domestic And Light Commercial Heating

This is a more complex challenge technically, financially and socially when compared with electricity decarbonisation. The driver for leading this change is that, against the baseline for the 2050 emission reduction, around 20% of CO<sub>2</sub> emissions were associated with domestic and light commercial building heating. If the emissions associated with this source of consumption are not abated then either the legal targets will not be achieved, or the overall cost of compliance will escalate due to the higher cost of CO<sub>2</sub> reductions elsewhere in the UK energy system.

### Financial And Social Challenges

The solutions to these aspects are outside the scope of this Project, but the following challenges are acknowledged:

- the financing and delivery of national and local infrastructure to create alternatives for consumers to move away from fossil fuels for heating and hot water production; and
- the creation of choices and compelling alternatives to motivate consumers to switch away from established fossil fuels for heating purposes.

### Technical Solutions

Current work indicates that there are no simple single solutions, and that progress is likely to involve all of the following:

- energy conservation by continued implementation of energy efficiency measures in the construction of new buildings and the improved insulation and efficiency in the existing UK building stock;
- for regions of low building density, solutions could involve electrification and heat pumps; and
- for areas with high building density, heat networks or district heating systems are likely to be a more cost effective alternative than electrification or heat pumps.

To enable the consideration of alternative technologies for energising heat networks, the ETI will make the following information available as an input to support the delivery of this Project.

### Locations For Deployment

The ETI will provide heat demand maps for England, Scotland and Wales to indicate where heat networks may be expected to deliver the most appropriate solution.

### Quantity Of Heat Required To Energise Networks

This is available in two forms. The estimates of overall demand of heat will be made available from a range of ESME scenarios, including summaries of seasonal and diurnal variations.

The regional distribution of heat demand will be possible by summing the demand from the annotated maps.

### **Timescale For Deployment**

The ETI will provide a statement on the assumed timing of the deployment of heat networks for large scale heat distribution, which is expected to be 2020 to 2035. This will balance the deployment challenge against the required schedule to put the UK emission reduction on a realistic glide path for the 2050 target. The scope of this Project does not include the technical, financial and social challenges for implementing the localised distribution and use of heat networks, and the associated risks of overcoming these challenges in the required timeframe. The scope of this Project regarding heat networks is limited to the energising of such networks.

### **Heat Transport And Temperature of Supply**

A heat network may be described as one or more distribution nodes from which heat is transferred and distributed to more localised networks before being distributed to individual buildings or dwellings. One or more heat sources can be used to energise the network and the energy sources are connected to the nodes.

The ETI will provide statements regarding the following:

- the assumed minimum end user hot water supply temperature to be useful for heating and hot water production;
- the assumed minimum temperature for supply from the energy source to the distribution node. This assumes that the heat is recovered from sources of thermal power generation and is transported as hot water. Due to system efficiencies influenced by pumping loads and heat losses, the ETI will specify an assumed maximum distance for distribution of hot water from the energy source to the distribution node; and
- for heat transport over longer distances it is assumed that the heat will be delivered by high pressure steam with some superheat to improve the distribution efficiency of the heat network. It is recognised that this will further erode the electrical generating capacity and efficiency of the heat source, which is expected to be reflected in the increased cost of the supply of heat.

### **Long Term Value Of Heat For Energising Future Heat Networks**

The ETI will provide a qualitative statement on the perceived long term price for heat.

### **Other Options For Energising Heat Networks**

Price in an open market is strongly influenced by supply and demand. As previously mentioned, the installation of heat networks and their energisation by low carbon sources will be influenced by economic and social challenges in implementation. The availability of viable alternatives for heat networks or their energisation will affect potential supply and price for heat. The ETI will provide a qualitative statement on the alternatives which should be considered qualitatively for completeness but without in-depth analysis as this is outside the scope of this Project.

## APPENDIX D – ETI INPUT – POWER PLANT SITING STUDY PROJECT

### Introduction

The ETI is procuring a Power Plant Siting Study Project which involves the conduct of sensitivity studies to inform the likely availability of future deployment sites. A key constraint is the availability of sufficient cooling water required by large thermal plants and this is explored early in the Power Plant Siting Study Project through Sensitivity Analysis (1) described below.

An opportunity to ease the cooling water constraint lies in the deployment of smaller scale technologies with a lower cooling water demand. This is explored in Sensitivity Analysis (2) described below.

The logic for linking the two projects in this way comes from the anticipated speed and efficiency gained in the delivery of both projects. Beyond the handover of a simple deliverable, there is the opportunity to use the knowledge and experience supporting both project teams to explore;

- potential development and optimisation of site criteria for small plants based on likely locations and technologies to lead towards a more positive business case; and
- potential development and optimisation of technical requirements for small plants based on likely locations and site criteria to lead towards a more positive business case.

The ETI Project Manager is responsible for the management of the interface between the two projects. The interface is intended to allow the ETI to procure access to a single source of expert knowledge on issues related to site identification, selection and development and make this available as an early and informed input to the Alternative Nuclear Technologies Project. This avoids the need for the ETI to procure access to a duplicate capability in site selection to support the Alternative Nuclear Technologies Project.

The requirements from the Power Plant Siting Study RfP relevant to the Alternative Nuclear Technologies Project are summarised below. The full RfP for the Power Plant Siting Study will be provided on request to organisations which have submitted (by the relevant deadline) a Notification of Intention to Submit a Proposal (Appendix F) for the Alternative Nuclear Technologies Project and which have properly executed a Non-Disclosure Agreement (Appendix G).

### Sensitivity Analysis (1) – Cooling Water

This first sensitivity is an important early input to the Alternative Nuclear Technologies Project. Some previous reviews used a standardised power output of 1650 MWe per reactor; the sensitivity study should identify potential additional sites which may provide sufficient cooling water for reactor outputs of between 1650Mwe and 1150 MWe. Evaporative cooling is a proven solution for power plant including nuclear; the sensitivity study should identify potential additional sites which may provide sufficient evaporative cooling for reactor outputs of between 1650 MWe and 1150 Mwe. Previous studies have assumed that new nuclear power plants will be located on the coast or larger estuaries; cooling from inland water bodies is a solution proven elsewhere and the sensitivity study should identify potential additional sites using cooling water from rivers, lakes, reservoirs, ship canals and other inland water bodies.

### Sensitivity Analysis (2) – Additional Site Capacity From Introducing Alternative Smaller Plants

A step change reduction in reactor output to 300 MWe is to be considered. Assuming typical thermal efficiencies of modern PWRs, this 75% reduction in electrical power output compared with the smaller Gen III+ plant is also associated with a 75% reduction in requirement for cooling water. Whilst remaining silent on the specific technologies which could each provide a delivery solution, the remainder of the site evaluation and selection criteria are to be reviewed to consider whether they should remain unchanged or should be varied as a result of the reduced power output. One example of a new discretionary criterion could be the proximity of the site within a specified distance to areas of conurbation, commercial premises and light industrial premises which could benefit from access to a distributed heat network supported by a low carbon energy source. The application of these criteria, together with the results from Sensitivity Analysis (1), is expected to result in a range of additional sites which will form an addendum to the Long List [which is the list of potential sites to be evaluated against

a range of criteria]. These additional sites represent potential sites not accessible to current Gen III+ reactor designs delivering 1150 MWe and above.

### **Workshop**

The successful Respondent for the Power Plant Siting Study Project is responsible for the early completion of Sensitivity Analysis (2) to the satisfaction of the ETI; this part of the Power Plant Siting Study Project scope of work is an important input to the parallel system requirements for the Alternative Nuclear Technologies Project. After issue of the results of Sensitivity Analysis (2) to the parallel project by the ETI, the successful Respondent for this Alternative Nuclear Technologies Project will host, manage and fund a 1 day workshop involving technical specialists from this Project and up to 6 representatives from the parallel project. The purpose of this workshop is twofold. Firstly it allows the system requirements team to extract knowledge and understanding from a site appraisal and selection perspective on how to optimise project execution from the consideration of cost, schedule and risk. Secondly it allows the Project Team for the Alternative Nuclear Technologies Project to feed back to the Project Team for the Power Plant Siting Study any additional features or constraints for potential development sites which will help optimise project execution. The workshop will be jointly planned by the Chief Technologist or senior technologists on each project. Costs associated with travel and time for attendance will fall to the respective projects. The Alternative Nuclear Technologies Project will be responsible for capturing and assimilating the product and outputs of the workshop. Allowance should be made for the attendance of up to 3 additional observers from the ETI, ETI Members and/or other organisations (at the ETI's discretion).



## APPENDIX E – PROPOSAL CONTENT AND FORMAT

In addition to the requirements in Section 6 of the RfP, the Proposal shall be arranged according to the structure defined below and shall explicitly include all the information listed.

**The Proposal shall not exceed a maximum of 55 pages** (excluding the required appendices to the Proposal which are explicitly excluded from the overall page count). The sections within Appendix E below include a suggested page count for guidance, but it is for Respondents to choose where to include most detail. The ETI may exclude Proposals which exceed the page count, or which are unreadable when printed on A4 hardcopy. Schedules or organisational diagrams within the Proposal may be formatted by Respondents for printing in A3 format to aid ETI assessment, but these will be counted as 2 pages within the page count.

The Proposal (and supporting documentation) shall be in electronic form in both PDF and Microsoft Word formats.

Respondents are required to make a Proposal for the Project comprising the following components:-

### 1. EXECUTIVE SUMMARY [1 page]

A summary of the Proposal, describing briefly:

- the overall Project Objectives, deliverables and outputs (as specified in Sections 2.2, and 3.4 of this RfP);
- the organisation undertaking the work and the Project organisation structure (including identification of the Sole Contractor or Prime Contractor and proposed Subcontractors (and Respondents are reminded of the ETI's preference that any Subcontractors (and their employees) are solely from entities in the same group as the Respondent – See Section 4.3 (Participant Contracting Structure) of the RfP body);
- summary of the proposed approach to the Project and the work to be undertaken (and, where appropriate, by which legal entity);
- summary of the Project deliverables;
- the proposed duration of the Project;
- confirmation of compliance with the RfP and brief summary of any key exceptions/deviations; and
- the proposed ETI Investment for the Project and (if different) the proposed Total Project Cost.

### 2. PROJECT TEAM MEMBERS AND STRUCTURE [approximately 5 – 8 pages, plus appendices]

#### 2.1. Organisations Comprising The Project Team [approximately 1 page]

This section should briefly describe (i) the Sole / Prime Contractor organisation and, where appropriate, each of the proposed Subcontractors (with confirmation of whether or not each proposed Subcontractor is a legal entity within the same group as the Respondent, and (ii) the proposed role of each legal entity within the Project Team in delivering the Project scope.

**The ETI reserves the right to require further clarification in relation to the group structure relevant to the Respondent and proposed Subcontractors.**

#### 2.2. Project Team Organisational Structure [approximately 1 page]

This should provide an organisational diagram showing all legal entities and their respective roles within the Project Team and identifying internal and external interfaces with ETI and any third parties.

#### 2.3. Key Individuals and Critical Roles [approximately 3 to 5 pages]

This section should describe all key roles and all associated key individuals (including deputies and alternates where appropriate). As well as key technical and other specialists, this should specifically include the Project Manager, the Chief Technologist (or Senior Technical Specialist) and the Chief Financial Analyst (or Senior Economist). See Section 2.5 of the RfP main body.

The proportion of each individual's time dedicated to the Project should be identified and their expertise briefly summarised; (CVs, of no more than 2 pages each, should be included in an appendix).

This section should include a statement regarding the ETI's prior agreement to the proposed substitution of Project Team staff, noting the expectation of a timely response and that agreement would not be unreasonably withheld if a demonstration has been made that the proposed substitute has at least equivalent experience to the originally proposed technical specialist.

#### **2.4. Project Team Contracting Structure** [approximately 1 page]

The ETI intends that a single Respondent will contract with the ETI, either as Sole Contractor or as Prime Contractor with agreed parts of the Project being subcontracted (where appropriate and as agreed with the ETI) by the Prime Contractor to one or more other legal entities. Each Respondent (where it proposes to contract with the ETI as a Prime Contractor) should:

- include confirmation that all other companies/entities identified as proposed Subcontractors will be subcontracted directly by the Respondent; and
- identify any of the proposed Subcontractors that are not in the same group of companies as the Respondent.

An organisation diagram showing all relevant organisations and their roles should be included. The positions of the key individuals identified as required by Section 2.3 of this Appendix E (including the proposed Project Manager and Chief Technologist – see Section 2.5 of the RfP body) should be indicated.

Respondents should identify in their Proposal any foreseen issues or difficulties in executing Subcontracts.

### **3. PROJECT TEAM CAPABILITY AND EXPERIENCE** [3 - 5 pages; no appendices]

Objective evidence of experience within organisations included within the Project Team, including as required by Sections 2.5 and 5.1.4 of the RfP and including (but not limited to) the following in the last 5 years in the UK and elsewhere:

- project delivery experience involving the major modification, refurbishment or life extension of thermal (including nuclear) plants in the role of EPC or EPCM Contractor, Architect Engineer or Owners Engineer. Evidence of one or more of these roles from 3 examples, including 1 in the UK;
- project delivery experience of the new construction of one or more thermal plant of 400 MWe or greater in the role of EPC or EPCM Contractor, Architect Engineer or Owners' Engineer. Evidence of one or more of these roles from 3 examples including 1 in the UK;
- thermal power technology capability and experience through original design or in-service design support for non-nuclear plant. Evidence of 3 examples, including one in the UK;
- nuclear power technology capability and experience through original design or in-service design support for nuclear power plant. Evidence of 3 examples, including one in the UK; and
- new build project financial appraisal of cost, risk and revenues, including impact of market interventions, to advise investors or Governments. Evidence of 3 examples of proposals and associated contracts which have reached closure, including one in the UK.

The Proposal must also include an indication of the number of people employed by the Respondent against the experience areas described above of project delivery, power technology, and market and economic appraisal. These numbers are to be compared against the numbers required to deliver this Project.

## **4. PROJECT APPROACH AND PROGRAMME OF WORK** [approximately 20 – 25 pages]

### **4.1. Project Approach** [approximately 2 pages]

Respondents should provide a summary of the overall approach to the Project.

This should include a summary work flow diagram which clearly identifies the key elements of scope, their interdependencies and how they contribute to the overall Project Objectives (See Section 3.3 of the body of the RfP)

### **4.2. Programme of Work** [approximately 15 to 20 pages]

The programme of work to be undertaken during the Project should be described and be consistent with the scope of work specified in Section 3.5 of the body of RfP. A one page (A4 or A3 and preferably landscape format) summary Project schedule (Gantt chart) should be included in this section of the Proposal.

Each scope of work should be broken down into Tasks and a Task-by-Task description of the proposed scope provided, identifying for each Task:

- the Task leader and other Project Team members involved;
- the Task objectives;
- the scope and nature of the Task, and the technical approach to it (e.g. methodologies, tools, techniques);
- the outcome from the Task; and
- the dependencies, constraints and assumptions.

For 6 elements of scope detailed below, the description of the scope should be developed in more detail with around 3 pages of description for each element. These areas align with the evaluation criteria described in the RfP Main Body at Section 5.1.4 which detail Selection Criteria expected to create potential for discrimination between Respondents.

#### **4.2.1 Application Of SMR Appraisal Experience** [3 pages]

The Respondent shall describe how previous experience in SMR technology appraisal is deployed in the approach to Technical Development and the gateway into technology readiness, as described on Section 3.5.14 in the RfP main body.

#### **4.2.2 Application Of Technology Cost Appraisal And Forecasting Experience** [3 pages]

The Respondent shall describe how previous experience in technology cost forecasting is deployed in the approach to the Market Review To Support Population Of Cost And Revenue Models as described at Section 3.5.16 of the RfP main body.

#### **4.2.3 Optimisation** [3 pages]

The Respondent shall describe the approach to requirements optimisation described at Section 3.5.17 in the RfP main body.

#### **4.2.4 Risks And Opportunities** [3 pages]

In describing the nature and technical approach to the scope described at Section 3.5.19 in the RfP main body, the Respondent shall describe how previous experience in gained in power station engineering, construction and modification is deployed in the approach to the structured identification of Risks and Opportunities.

#### **4.2.5 Economic Appraisal** [3 pages]

In describing the nature and technical approach to the scope described at Section 3.5.22 in the RfP

main body, the Respondent shall describe how previous experience in gained in electricity and energy market appraisal is deployed in the approach to Economic Appraisal.

#### **4.2.6 System Balancing** [3 pages]

In describing the nature and technical approach to the scope described at Section 3.5.7 in the RfP main body, the Respondent shall describe how previous experience in gained in System Balancing and non-KWh system services is deployed in the approach to Energy System Offering including system balancing capabilities.

#### **4.3. Framework For The Project Full Report** [approximately 4 pages]

This will identify the structure of the Project Full Report including sections of the report and their purpose (see Sections 3.4 and 3.5.22 of the RfP body). The framework is to identify proposed sub-section headings in each of the 14 sections described in the RfP Main Body Section 3.4.2.1, plus the section headings in the Technical Appraisal Report described at Section 3.4.2.2.2

#### **4.4. Framework For The Executive Summary And Overview** [approximately 1 page]

This will identify the structure of the Executive Summary and Overview as described in Section 3.4.2.2.3.

#### **4.5. Structure Of The 2 Hour Project Presentation For ETI** [approximately 1 page]

This will identify the structure of the Project Presentation (see Sections 3.4.3 and 3.5.23 of the RfP body) to be delivered at ETI's premises describing the Project approach and Project outcomes, conclusions and recommendations.

#### **4.6. Format Of The Fortnightly Project Progress Report** [approximately 1 page]

This will identify the template of the fortnightly Project Progress Report (see Section 3.4.3 of the RfP body) including the main sections of the report and their purpose.

### **5. TECHNICAL EXCLUSIONS AND ASSUMPTIONS** [approximately 1 page]

Provide a table describing any technical exclusions relevant to the delivery of the scope of work for this Project (see Section 3.5 of the RfP body), and assumptions provided by the ETI or additionally selected by the Respondent to bound and define the scope of the response to this RfP.

### **6. PROJECT MANAGEMENT** [approximately 3 pages, plus appendices]

#### **6.1. Project Management Activities** [< 1 page]

Respondents should describe how the Project will be managed (e.g. management, coordination, quality assurance; reporting).

#### **6.2. Deliverables and Milestones** [< 1 page]

ETI policy is that payments from the ETI Investment are made only following successful completion of agreed Milestones (being points in the Project where significant value has been delivered to the ETI, typically by submission of deliverables representing the completion of major Project Tasks / Work Packages / reports). Payment of ETI Investment monies in respect of a Milestone is subject to acceptance by the ETI of the Milestone's constituent deliverables against agreed acceptance criteria (terms and conditions of payment shall be included in the Project Contract).

Following the detailed specifications of each deliverable in Section 3.4.3 of the RfP body, a summary table should be provided here detailing the proposed Milestones and their constituent deliverables together with the proposed costs and delivery dates for each Milestone and constituent deliverable.

See also Section 8 of this Appendix E (Project Finances).

### **6.3. Risk Management** [ <2 page, plus Risk Register as an appendix]

Respondents should describe their proposed risk management strategy (i.e. how risks to the successful delivery of the Project will be identified and managed throughout the Project duration). They should also separately provide a Risk Register as an appendix, identifying the key challenges, risks (including any assumptions or dependencies identified earlier), issues and opportunities which may affect the successful delivery of the Project outcomes and identifying planned activities to address / mitigate each item.

### **6.4. Health, Safety and Environment Management (HSE)** [typically < 1 page unless work is not desk based – in which case typically 2 -3 pages]

Respondents should confirm that all work during the Project will be entirely desk-based, or clearly state the nature of any exceptions to this (e.g. site visits, field trials, experimental or laboratory work). In the event that any work is not entirely desk-based, then Respondents should provide evidence of the competence of the Prime Contractor and relevant Subcontractors to undertake the Project, and should summarise their approach to managing and coordinating HSE in the Project. Specifically:

- Respondents should advise whether any work to be undertaken during the Project is not desk based (e.g. site visits, field trials, experimental or laboratory work).
- If the Project involves any activity which is not desk based then the Respondents are required to provide evidence throughout the Project that HSE is being managed, that planned and proactive assurance activities are undertaken throughout the Project, and that such arrangements are adequate. Respondents are required to set out in their Proposal how their management arrangements will enable such evidence to be provided.
- Respondents should identify any specific HSE issues related to specific facilities or sites to be used during the Project. To the extent that parts of the Project may take place outside of the UK, the Respondents should deal with the corresponding issues as they apply in the local laws of the relevant country.
- Respondents should demonstrate their experience of identifying and managing HSE issues in projects of equivalent complexity and scale, including incorporation of safety into design.
- Respondents should set out their approach to managing Subcontractors.

The Respondents should also set out any key HSE risks or issues in the Risk Register referred to in Section 6.3 above.

## **7. PROJECT INTERFACE WITH THE PARALLEL POWER PLANT SITING STUDY PROJECT** [approximately 1 – 2 pages]

This interface is key to enabling this Project to proceed. Respondents are required to describe the preparations and interfaces to underpin a workshop which is successful for both projects. The Chief Technologist for this Alternative Nuclear Technologies Project is responsible for capturing the output from the workshop.

## **8. PROJECT FINANCES** [approximately 1 – 2 pages]

Respondents should provide:

- a figure for the proposed Total Project Cost;
- a figure for the proposed (fixed price) ETI Investment;
- figures for any proposed Participant Funding and/or Third Party Funding (where appropriate); and
- a breakdown of the Total Project Cost between Milestones.

If there are any assumptions or limitations to these costs, these should be clearly stated.

Respondents should also provide a breakdown of the proposed Total Project Cost as specified in the table below. Please refer to the notes beneath the table before completing it.

Total Project Cost Breakdown by Category	Sole/Prime Contractor	Subcontractor 1	Subcontractor 2	Subcontractor 3 <sup>1</sup>	Total
Number of Person-days					
Base Labour					
Materials					
Subcontractors (major)					
Subcontractors (minor)					
Travel & Subsistence					
Overheads					
Profit					
Other					
<b>TOTAL PROJECT COST</b>					
ETI Investment					
ETI Investment (% of Total Project Cost)					
Own Funds (Participant Funding)					
Third Party Funding (Private Funding)					
Third Party Funding (Public Funding)					

Notes on Category Breakdown table:

- i. Base Labour should include direct add-ons (e.g. NI, pension etc).
- ii. The total cost of all proposed Subcontractors should be included in the Respondent's total cost figures, and a breakdown of each major Subcontractor's costs should be included in subsequent columns in the table. (In this context a major Subcontractor is one whose contribution is budgeted at more than 20% of the total Project Cost or which is critical to the

<sup>1</sup> Further columns to be added as required.



success of the Project).

- iii. The selected Respondent(s) will be required to provide justification of overhead calculations during the Project Detailing and Contract Finalisation Stage. The ETI can provide a spreadsheet to calculate overheads on request.
- iv. Respondents should note that under State aid rules, profit cannot be paid if they wish to receive a licence for Arising IP.
- v. Academic Respondents should determine their costs using the JeS system. Note that ETI funds academic Participants at 100% Full Economic Cost.
- vi. Please note that during the Project Detailing and Contract Finalisation Stage (prior to Project Contract execution) the ETI will require a more detailed cost breakdown, including a schedule of payments against Milestones. This will require completion of the ETI's financial monitoring forms. Whilst not compulsory, it is strongly recommended that Respondents use the ETI's standard budget form for fixed price contracts.

For all sources of funding or resource to be provided in addition to the ETI Investment, the Respondents should provide full details of such funding, including:

- evidence of the availability of those funds for the Project;
- details of the sources of any Third Party Funding, (including identifying where any such funding is Public Funding), and the terms and status of such funding; and
- any other commercial impacts associated with any proposed reliance on Participant Funding and/or Third Party Funding.

## **9. INTELLECTUAL PROPERTY** [approximately 1 – 3 pages]

Respondents should read Section 4.6 (Intellectual Property) of the RfP body before completing this section.

### **9.1. Arising IP**

Respondents should provide a brief overview of the nature of any anticipated Arising IP from the Project, including the areas of technology in which the IP will arise and the forms of the anticipated IP rights arising. This should expressly include reference to development of any existing technology, any innovations, any results and any know-how.

In this Project, the ETI will own all Arising IP. It is not anticipated that licences of Arising IP will be granted to the Participant(s) (Sole / Prime Contractor) or any Subcontractor.

### **9.2. Academic Institutions**

Academic Respondents should include details of any proposed requirements in relation to academic research, teaching and publication in their Proposal (see Section 4.6.3 of the body of the RfP).

### **9.3. Background IP**

Respondents should describe any Background IP (e.g. patents, proprietary data, computer algorithms, know how or other IP) only to the extent that there is Background IP:

- which is or may be needed (whether by the ETI, or to be licensed from the Sole/Prime Contractor to a Subcontractor, or to be licensed by a Subcontractor to the Sole/Prime Contractor or to another Subcontractor, or otherwise) to carry out the Project or which may be used during the Project; or
- which may be needed by the ETI, an ETI Member or other third party to exploit Arising IP.



The description of any such Background IP should detail:

- the nature of the IP (including the legal nature of the IP right);
- the rights to that IP that are or may be required and by whom;
- ownership and control, whether this is by the relevant Respondent, any of the other Project Team members or by any other third parties;
- whether there is any reason that such Background IP will not be made available as and to the extent needed to carry out the Project and/or exploit Arising IP and Project Outputs; and
- proposed terms for such Background IP to the extent needed to carry out the Project and/or to enable the ETI, the ETI Members and other licensees of the ETI to use and exploit the Project Outputs must be identified.

#### **10. DUE DILIGENCE REQUIREMENTS** [typically 2 – 3 pages, plus appendices]

The ETI's due diligence requirements in relation to the submission of a Proposal are set out at Annex E1, Section 1 (Submission of the Proposal) and Annex E2 (General Due Diligence Requirements).

#### **11. PLAN FOR PROJECT CONTRACT FINALISATION** [approximately 1 page]

Respondents should, in this section, provide a schedule for contract identifying key issues to resolve during the Project Detailing and Contract Finalisation Stage, before Project Contract execution, for example:

- Project Contract – key provisions to resolve (based on draft Project Contract provided by the ETI; see Section 4.2 of the RfP main body);
- timing sequences for the setting up of the Project organisational structure (eg Subcontracts) including any dependencies or other factors which could impact or delay the Project;
- internal approvals – confirm what internal approvals will be required for the proposed Sole/Prime Contractor and any Subcontractors in order to enter into the Project Contract; and
- securing finance – identify any further actions required to ensure that all relevant funding arrangements are in place.

The schedule for contract finalisation should be structured and link clearly back to the previous sections set out in this RfP.

Respondents should explicitly confirm that all key technical, commercial and legal resources, across the Project Team members, required to meet the Project Contract execution target date (see Section 5.3 of the RfP), will be available to achieve a signed contract by that date. A table should be included providing names and contact details (phone and email addresses) of key contacts for the Project Detailing and Contract Finalisation Stage. This should include, for the Respondent (proposed Sole / Prime Contractor) and each proposed Subcontractor, the main Project management and technical contacts. Additionally, the Respondent should include names and contact details of its relevant legal, commercial and finance representatives.

Any key risks or issues which may impact on meeting the Project Contract execution target date should be identified.

#### **12. STATEMENT OF COMPLIANCE** [less than 1 page]

Respondents are required to provide a Statement of Compliance in accordance with Annex E3 (see also Section 7 of the main body of the RfP).

Respondents are also required to provide, in a separate appendix to the Proposal, a compliance table in the format set out in Annex E4 (not included in Proposal page count – see Section 13 of this Appendix E, below).

### 13. APPENDICES TO PROPOSAL [5 to 15 pages for elements within the page count]

The following appendices are expressly required to be included in the Proposal. They are included within the maximum page count limit [5 to 15 pages]:

- CVs of key individuals (see Section 2.3 of Appendix E); and
- Risk Register (see Section 6.3 of Appendix E).

The following appendices are expressly required to be included in the Proposal and are excluded from the maximum page count limit:

- due diligence information, as required at Section 10 of this Appendix E, Section 1 of Annex E1, and Annex E2; and
- the compliance table in the format described in Annex E4.

## APPENDIX E

### ANNEX E1 – DUE DILIGENCE INFORMATION REQUIREMENTS

The ETI requires due diligence information during two stages of the Project Commissioning Process:

- Submission of the Proposal. Certain information is required with the Proposal as part of the first Stage of the Project Commissioning Process; and
- Project Detailing and Contract Finalisation. Further information will be required if any Proposal is selected to proceed to the Project Detailing and Contract Finalisation Stage.

Please note that successful completion of all elements of the ETI's required due diligence is a pre-requisite to any contract award: failure to meet any due diligence requirements may result in the exclusion of the Respondent(s) and/or the Proposal from the Project Commissioning Process.

#### 1. SUBMISSION OF THE PROPOSAL

##### 1.1. State Aid

Each Respondent shall confirm that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received by that Respondent (all proposed Participants).

##### 1.2. General Due Diligence

All Respondents and proposed Subcontractors, (except ETI Members, universities / higher education institutions and UK/EU government laboratories / agencies), which may provide more than 20% of the resources for the Project or which may provide an input which is critical to success of the Project, shall provide due diligence Information to the ETI according to the table in Annex E2.

##### 1.3. Insurance

Each Respondent should confirm that insurance cover for the following risks is held by that Respondent, and should confirm levels of cover and expiry date for each. The ETI will require evidence of these during the Project Detailing and Contract Finalisation Stage (see Section 2d) of this Annex E1).

- Property damage (both any property occupied by the Respondent and any third party properties);
- business interruption;
- employer's liability;
- public liability;
- product liability (or justify its exclusion if not appropriate); and
- professional indemnity.

Additionally, each Respondent should identify:

- if it self-insures or intends to self-insure for any of these risks;
- if it is intending to take out any project-specific insurance for the Project and the scope and intended beneficiaries of such insurance; and
- how (to the extent not already identified) it intends to insure against risks in the Project.

In relation to professional indemnity insurance, Respondents should note that the ETI has the following requirements:

- each Participant is required to have in place at the start of the Project a professional indemnity insurance policy (with at least a 6 month unexpired term);
- each policy should have a limit of indemnity of not less than £1,000,000 each and every loss;
- each policy should provide an indemnity at least as extensive as the ETI's policy (the ETI will make this assessment). For example, the cover needs to include cover for negligent acts or omissions, and dishonest or fraudulent acts or omissions by the insured);
- each Participant will need to agree to maintain a professional indemnity insurance policy in force for 6 years from the date of completion of the Project;
- the ETI will require sight of the insurance policy provided by the Participant or a copy of a letter of confirmation from the Participant's insurance company or broker summarising the policy.

#### **1.4. Health Safety and the Environment**

The ETI's HSE requirements in relation to the Proposal are set out at Section 6.4 of Appendix E and should be dealt with in the corresponding section of the Proposal.

Respondents should also note Section 2a) of this Annex E1, below relating to HSE requirements in the Project Detailing and Contract Finalisation Stage.

#### **1.5. Intellectual Property**

The ETI's IP due diligence requirements are set out at Section 9 (Intellectual Property) of Appendix E and should be dealt with in the corresponding section of the Proposal.

## **2. PROJECT DETAILING AND CONTRACT FINALISATION STAGE – FURTHER DUE DILIGENCE REQUIREMENTS**

These are only required if a Proposal is selected to proceed to the Project Detailing and Contract Finalisation Stage, and will include:

- a) in the event that any Project work is not entirely desk based, a competency assessment will be carried out on the preferred Respondent at the Project Detailing and Contract Finalisation Stage, to assess the Respondent organisation's health & safety management systems and specific technical competence to manage the risks in the Project. The ETI competency assessment process requires the Respondent to complete a detailed questionnaire, the contents of which follow closely the competency assessment guidance set out in the Health and Safety Executive's Approved Code of Practice – managing health and safety in construction – Construction (Design and Management) Regulations 2007;
- b) further IP due diligence. This will include a detailed Background IP questionnaire which will be issued by the ETI for completion to identify Background IP and third party IP relevant to the Project. Respondents and Subcontractors (if any) may be asked to provide evidence of ownership or rights to use the relevant IP for the Project and/or for exploitation of the results of the Project;
- c) financial due diligence on the breakdown of costs for the Project to enable the ETI to assess value for money and ensure that it meets State aid requirements;
- d) copies of insurance policies; and
- e) any other information that the ETI reasonably requires in order to invest in the proposed Project, including any information necessary to meet State aid requirements.

## APPENDIX E

### ANNEX E2 – GENERAL DUE DILIGENCE REQUIREMENTS

A stand-alone copy of this form is available to download from the ETI website.

Details of Organisation	
Full name:	
Registered Office:	
Type of Business: <input type="checkbox"/> Sole Trader <input type="checkbox"/> Limited Company <input type="checkbox"/> Partnership <input type="checkbox"/> Other – please describe:	
Names of Directors/Partners/Owner:	
VAT Number:	
Details of Directors, Partners or Associates	
Have any directors, partners or associates of the organisation been involved in any organisation which has been liquidated or gone into receivership? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Have any directors, partners or associates of the organisation been convicted of a criminal offence relevant to the business or profession? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Please give (and attach if necessary) full details if you have answered 'Yes' to either of the two previous questions.	
Audited Financial Accounts	
Please supply Audited Financial Accounts for the last 3 years for the organisation, or relevant part thereof.	
Claims of Litigation	
Please provide (and attach if necessary) details of any claims or litigation against the organisation in the last 3 years (including any which are outstanding) and/or any anticipated claims.	

## APPENDIX E

### ANNEX E3 – STATEMENT OF COMPLIANCE

Each Respondent shall provide a Statement of Compliance which confirms:

- that the Respondent has full authority to submit a Proposal on the basis of this Request for Proposals;
- that the Proposal has been appropriately reviewed by the Respondent's technical, commercial, financial and legal representatives; and
- the level of internal approval obtained by the proposed Subcontractors in order to make the Proposal (letters of support from each proposed Subcontractor should be included).

Each Respondent shall provide a statement that the Proposal is fully compliant with all aspects of the RfP and also the terms and conditions of the draft Project Contract provided by the ETI (Section 4.2), or shall state clearly any exceptions, deviations, alternative approaches or additions to the requirements of the RfP and/or draft Project Contract (as appropriate), with justification. Additional comments and clarifications should also be listed where appropriate (for example to clarify interpretation of requirements), but these must be differentiated from any deviations, exceptions (etc.) above.

With respect to the terms and conditions of the draft Project Contract, each Respondent must either:-

- expressly confirm that the Proposal is made on the basis of the terms and conditions of the draft Project Contract; or
- expressly confirm that the Proposal is made on the basis of the terms and conditions of the draft Project Contract subject to clarifications and exceptions. In these circumstances, the Respondent must include in its Proposal:
  - a copy of the draft Project Contract, marked up with the Respondent's proposed clarifications and exceptions; and
  - a separate commentary against the clarifications and exceptions setting out the reason for those clarifications and exceptions.

Please note that the ETI may reject a Proposal if a material issue (including a non-compliance with the terms and conditions of the draft Project Contract) is identified by a Respondent at any stage during the Project Commissioning Process.

## APPENDIX E

### ANNEX E4 – COMPLIANCE TABLE

In addition to a detailed Statement of Compliance, the ETI requires that each Respondent compiles and completes a table in the format below<sup>2</sup> to assist the ETI in assessing and considering each Respondent's compliance with the RfP and the draft Project Contract.

RfP Ref.	ETI Requirement	Response Reference	Fully Compliant With Requirement Yes/No	Deviation Description

<sup>2</sup> Further rows to be added as required.



## APPENDIX F – NOTIFICATION OF INTENTION TO SUBMIT A PROPOSAL

The following form is to be completed and received at the address (postal or email) on the front cover of this RfP no later than the date defined on the front cover and in Section 5.3 of this RfP. A standalone copy of this form is available to download from the ETI website.

### NOTIFICATION OF INTENTION TO SUBMIT A PROPOSAL

Respondent Name: [Legal Name]

Address: [Registered Office Address]

Contact:

Email/telephone:

The above named Respondent hereby notifies the ETI of its intention to submit a Proposal in response to the ETI's Request for Proposals issued on 23<sup>rd</sup> May 2014, for the Low Carbon Electricity Generation Technologies: System Requirements for Alternative Nuclear Technologies Project.

The Respondent submits this notification on its own behalf and on behalf of its proposed Subcontractors:

[Please list below the legal names of the organisations / entities proposed to deliver the Project].

1. [Enter Name]
2. [Enter Name]
3. [Enter Name]
4. [Enter Name]
5. [Enter Name]
6. [Enter Name]
7. [Enter Name]
8. [Enter Name]

Signed: \_\_\_\_\_  
For and on behalf of the Respondent.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## APPENDIX G – NON DISCLOSURE AGREEMENT

The Non-Disclosure Agreement (NDA) protects the confidential information of the Respondent(s) and the ETI during the period of the Project Commissioning Process. For the successful Respondent(s), the confidentiality provisions in the Project Contract (when executed) will supersede this NDA for the purposes of the Project.

### NOTES

In order to ensure parity between different Respondents, the ETI will not enter into negotiations on the terms of this NDA.

### NDA EXECUTION PROCESS / INSTRUCTIONS

**A separate electronic version of the NDA is available on the ETI Website for completion and signature by Respondents** in accordance with the following instructions:

Each Respondent (as proposed Sole / Prime Contractor) should:

- complete Schedule 1 of a single electronic NDA with its company (legal) details and a postal address for return by the ETI of a fully executed NDA;
- print and sign **TWO** paper copies of the NDA. **The NDA must not be dated on the front page;**
- scan a copy of a signed and undated NDA and email it to the ETI at the email address on the front of the RfP; and
- post both original signed and undated NDAs to the ETI at the postal address on the front of the RfP.

Following receipt, the ETI will countersign and date the two original copies of the NDA. The ETI will retain one of these copies and post the other to the Respondent at the address provided by the Respondent at Schedule 1 of the completed NDA.

# CONFIDENTIALITY AGREEMENT

**THIS AGREEMENT** is made on \_\_\_\_\_ of \_\_\_\_\_ 2014

## **BETWEEN:**

- (1) **ENERGY TECHNOLOGIES INSTITUTE LLP**, a limited liability partnership (company no. OC333553) whose registered office is at Holywell Building, Holywell Way, Loughborough, Leicestershire, LE11 3UZ (the “**ETI**”); and
- (2) **The party named in Schedule 1 of this Agreement** (the “**Respondent**”),  
  
(collectively the “**Parties**” and individually a “**Party**”)

## **BACKGROUND:**

The Parties intend to exchange certain Information on or after the Effective Date for or in relation to the Purpose. The Parties agree to receive such Information, and to treat it as confidential information, on the following terms and conditions.

## **IT IS AGREED:**

In consideration of the above and for other good and valuable consideration the receipt and sufficiency of which is hereby acknowledged, and intending to be legally bound, the Parties agree as follows:

- 1 In this Agreement, unless the context requires otherwise, the following words shall have the following meanings:

“**Disclosing Party**” means a Party that discloses Information pursuant to this Agreement;

“**Effective Date**” means the date of execution of this Agreement;

“**ETI Affiliates**” means the Secretary of State for Business, Innovation and Skills (and any successor governmental department or agency from time to time) and any other entity which is entitled to appoint the directors or otherwise having the ability to direct management policies of the ETI (together with any affiliates of those entities), together with their respective officers, employees, agents and consultants;

“**Information**” means any and all confidential information or data exchanged, submitted or otherwise disclosed in respect of or further to the Purpose or prepared for or in relation to the Purpose, including but not limited to written proposal documentation, due diligence materials, contractual documentation, reports, and the fact that the Parties have entered into this Agreement and are discussing and considering a business relationship;

“**Project**” means the ETI’s proposed project, known as “Low Carbon Electricity Generation Technologies: System Requirements for Alternative Nuclear Technologies Project”, that is the subject of the RfP;

“**Project Commissioning Process**” means the ETI’s commissioning process for the Project as defined in the RfP or as later may be notified or published by the ETI;

“**Project Contract**” means a Project Contract as such term is defined in the RfP;

“**Proposal**” means a Proposal as such term is defined in the RfP;

**“Purpose”** means:

- a the preparation and/or submission of any Proposals and related documents in response to the RfP;
- b the Project Commissioning Process;
- c any activities related to the assessment of any Proposals for the Project; and/or
- d any related exchanges of Information, clarifications, clearances, discussions, due diligence, meetings, and/or negotiations in respect of the RfP, the Project Commissioning Process, any Project Contract(s), and/or the Project;

**“Receiving Party”** means a Party that receives Information pursuant to this Agreement; and

**“RfP”** means the request for proposals relating to the Project, issued by the ETI on 27th May, 2014.

2 The Receiving Party shall with regard to any Information disclosed pursuant to this Agreement by or on behalf of a Disclosing Party on or after the Effective Date:

- a hold the Information in confidence and, except as is otherwise stated herein or agreed in writing by the Disclosing Party, shall not disclose or make available the Information by publication or otherwise to any third party (including for the avoidance of doubt, disclosure in any patent application or to any patent office) and shall use any Information disclosed to it pursuant to this Agreement only for carrying out the Purpose;
- b make copies of the Information (or any further information derived from the Information) in whatever form or medium only to the extent that the copies are reasonably necessary for the Purpose and clearly mark all such copies as confidential;
- c take all necessary and proper security precautions (and at least as great as those it takes to safeguard its own information) to safeguard every part of the Information to prevent it from being disclosed or otherwise made available to any third party except as permitted by this Agreement; and
- d at the request and direction of the Disclosing Party, and without delay, return or destroy any Information provided to it pursuant to this Agreement and any copies of such Information, except that one copy may be kept by the Receiving Party for archival purposes and for the purpose of defending itself against any claims arising in connection with this Agreement.

3 The obligations set out in clause 2 shall not apply to Information that:

- a the Receiving Party can prove (using written or electronic records), was lawfully known to the Receiving Party or in its possession prior to its communication by or at the direction of the Disclosing Party and was not communicated to the Receiving Party subject to any restrictions on disclosure or use; or
- b is or becomes a part of the public domain through no wrongful act of the Receiving Party or any person on its behalf, provided that this clause 3(b) shall only apply from the date that the relevant Information so enters the public domain; or
- c the Receiving Party receives from a third party without similar obligations of confidence in circumstances where the third party did not obtain that Information as a result of a breach of an obligation of confidence; or
- d subject to clause 4, is required to be disclosed or made available by the Receiving Party pursuant to any applicable law, governmental regulation, or decision of any court or tribunal of competent jurisdiction or any government body, agency or regulatory body.

4 If a Receiving Party believes it is required by law to disclose any Information under clause 3(d) above, the Receiving Party shall (in each case and to the extent not prohibited in law):

- a provide the Disclosing Party with prompt written notice of such requirement or obligation (together with a copy of any relevant access request, court order or other evidence giving rise to such belief) in advance of the required disclosure, to enable the Disclosing Party to seek appropriate protective relief and/or to take other steps to resist or narrow the scope of any required disclosure;
  - b where it is not permitted in law to notify the requirement for disclosure in advance of the required disclosure, notify the Disclosing Party as soon as reasonably practicable after the disclosure confirming the nature of and extent of the disclosure; and
  - c co-operate with the Disclosing Party with respect to such matters,
- and in any event disclose only such Information as it has ascertained, after taking legal advice, it is legally compelled to disclose.
- 5 The ETI shall be entitled to disclose or make available any Information it receives from the Respondent to:
- a such of the ETI Affiliates, and either the ETI's or the ETI Affiliates' employees, officers, secondees, agents, consultants, subcontractors, proposed subcontractors, professional advisers and proposed professional advisers where such disclosure is necessary for the Purpose, provided that all such aforementioned persons to whom any Information is disclosed by the ETI are bound by obligations of confidentiality and the ETI shall be responsible for breaches of the obligations by such persons. Each ETI Affiliate may enforce this clause in accordance with the Contracts (Rights of Third Parties) Act 1999; and
  - b the Department of Business, Innovation and Skills (or other relevant government department), the European Commission and such other bodies and/or individuals (including without limitation professional advisers) as may reasonably be required for the notification of, to seek advice in relation to, as part of an assessment of, or otherwise in relation to, State aid.
- 6 The Respondent shall be entitled to disclose or make available any Information it receives from the ETI to such of its employees, officers, consultants, subcontractors, proposed subcontractors and professional advisers where such disclosure is necessary for the Purpose provided that all such persons to whom any Information is disclosed are bound by obligations that are no less restrictive than those in this Agreement. The Respondent shall be responsible for breaches of the obligations by such persons.
- 7 Each Party as Receiving Party expressly agrees and accepts that, except in the case of fraud, no representation or warranty, express or implied, is made by the Disclosing Party as to the accuracy, completeness, reasonableness or otherwise in respect of the use of the Information, and that neither the Disclosing Party or any of its affiliates nor any of its or their respective employees, officers, secondees, agents, consultants, subcontractors and professional advisers (as applicable) shall have any liability to the Receiving Party as a result of the Receiving Party's possession or use of the Information.
- 8 The Parties agree that money damages would not be a sufficient remedy for any breach of this Agreement and that the Disclosing Party shall be entitled to specific performance and injunctive or other equitable relief as a remedy for any such breach. Such remedy shall not be deemed to be the exclusive remedy for breach of this Agreement, but shall be in addition to all other remedies available at law or equity.
- 9 No rights or obligations other than those expressly set out in this Agreement are to be implied and nothing contained in this Agreement:
- a constitutes an offer by or on behalf of the Disclosing Party; or
  - b confers upon the Receiving Party a licence or other transfer of rights in respect of any Party's interest in any Information or in any present or future patent or patent application; or
  - c affects the present or prospective rights of the Disclosing Party under the patent laws of

any country or precludes the filing or prosecution of any patent applications by the Disclosing Party.

- 10 This Agreement represents the entire agreement between the Parties in relation to the subject matter contained herein and supersedes all other agreements and representations, whether oral or written, between the Parties relating to such subject matter. This Agreement may only be modified if such modification is in writing and signed by a duly authorised representative of each Party. Each Party also agrees that it shall have no remedies or claims under this Agreement for any innocent or negligent misrepresentation based on statements made prior to the Effective Date.
- 11 The Parties agree that the ETI may disclose that the Respondent is involved in discussions with the ETI and the subject matter of the discussions provided that the ETI will provide a copy of any press release or other announcement to the Respondent and seek the approval of the Respondent prior to its publication or release. Other than as set out in this clause, neither of the Parties will make any public announcements, statements or otherwise publicise the subject matter of this Agreement (or its existence) without the prior written consent of the other Party and neither Party will use the business names or trade marks of the other Party in any way without that Party's prior written consent.
- 12 This Agreement shall come into force on the Effective Date and shall continue in full force and effect, notwithstanding the completion of the Purpose, for a period of seven years from the Effective Date unless extended, superseded or otherwise varied by a subsequent written agreement between the Parties.
- 13 It is not intended that a third party (other than an ETI Affiliate) should have the right to enforce a provision of this Agreement pursuant to the Contracts (Rights of Third Parties) Act 1999.
- 14 The rights of the Disclosing Party under this Agreement are in addition to and not exclusive of rights under the general law and may be waived only in writing and specifically. Delay in exercising or non-exercise of any right under this Agreement is not a waiver of that or any other right, partial exercise of any right under this Agreement shall not preclude any further or other exercise of that right or any other right under this Agreement and waiver of a breach of any term of this Agreement shall not operate as a waiver of breach of any other term or any subsequent breach of that term.
- 15 If any provision of this Agreement is or becomes illegal, invalid or unenforceable in any jurisdiction, that shall not affect:
  - a the legality, validity or enforceability in that jurisdiction of any other provision of this Agreement; or
  - b the legality, validity or enforceability in any other jurisdiction of that or any other provision of this Agreement.
- 16 Nothing in this Agreement is intended to or shall operate to create a partnership or joint venture of any kind between the Parties or to authorise one Party to act as agent for the other, and neither Party shall have authority to act in the name or on behalf of or otherwise to bind the other in any way.
- 17 Except as provided otherwise, no person may assign any of its rights under this Agreement or any document referred to in it.
- 18 This Agreement may be executed in any number of counterparts, each of which when executed and delivered shall constitute an original of this Agreement, but all the counterparts shall together constitute the same agreement. No counterpart shall be effective until each Party has executed at least one counterpart.
- 19 This Agreement shall be construed in accordance with and governed by English law and the Parties hereby submit to the non-exclusive jurisdiction of the English Courts.

The Parties have caused this Agreement to be executed by their duly authorised representatives.

**ENERGY TECHNOLOGIES INSTITUTE LLP**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



## SCHEDULE 1

Respondent	Signature
Company Name: Company No: Address of Company:	By:  Name:  Title:

The ETI will return a copy of the executed Non-Disclosure Agreement to the Respondent. Please provide the relevant name and address for this correspondence below.

Contact for return of executed Non-Disclosure Agreement	Send to [name]:  At postal address:
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## APPENDIX H – GLOSSARY

Term	Definition
<b>Architect Engineer</b>	A project development and delivery integration role in a large complex project involving the engineering design, procurement, construction oversight and integration across interfaces.
<b>Arising IP</b>	Any IP which is created by or for any Participant during the Project and/or for the purposes of the Project.
<b>Background IP</b>	Any IP which is owned or controlled by, or licensed to, the Participant and/or any Subcontractor, other than Arising IP.
<b>Capacity Market</b>	Market under creation by UK Government as part of Energy Market Reform to contractually deliver standby electricity generating capacity.
<b>Chief Technologist</b>	The individual/role as described in Section 2.5.
<b>Chief Financial Analyst (or Senior Economist)</b>	The individual/role as described in Section 2.5.
<b>Contracts for Difference</b>	Long term contract mechanism being introduced by UK Government as part of Energy Market Reform to deliver stability in long term revenues where sought by project developers.
<b>EPC</b>	Engineer, Procure and Construct; a project role undertaken by a prime contractor.
<b>EPCM</b>	Engineer, Procure and Construction Management; a project integration role undertaken by an engineering services contractor on behalf of an owner or developer.
<b>ESME</b>	The ETI's proprietary "Energy System Modelling Environment".
<b>ETI</b>	The Energy Technologies Institute LLP, a limited liability partnership (Company no. OC333553) whose registered office is at Holywell Building, Holywell Way, Loughborough, Leicestershire LE11 3UZ.
<b>ETI Investment</b>	The amount to be made available by the ETI on a fixed price basis for the Project.
<b>ETI Members</b>	The ETI's industry members (as identified on the ETI's website from time to time), including affiliates of such members, and Her Majesty's Government (including those public sector members identified on the ETI's website from time to time).
<b>Final Investment Decision</b>	The Final Investment Decision in a power plant context is the decision at the end of project development phase before commitment to the main construction phase.
<b>Her Majesty's Government / UK Government</b>	Her Majesty's Government, including but not limited to all of its departments and executive agencies and the devolved administrations of Scotland, Wales and Northern Ireland.
<b>HSE</b>	Health, Safety and Environment.
<b>IP</b>	Intellectual property / intellectual property rights.

<b>Term</b>	<b>Definition</b>
<b>Milestone</b>	A Project milestone with defined constituent deliverables, associated deliverable acceptance criteria and milestone value (all to be proposed in the Respondent's Proposal and subsequently negotiated/agreed in the Project Contract) which should be completed in order to reach the said Project milestone, and upon successful completion of which, subject to acceptance by the ETI that the milestone has in fact been reached, payment may be claimed from the ETI in accordance with the Project Contract.
<b>Non-Disclosure Agreement (or NDA)</b>	A non-disclosure agreement in the form provided at Appendix G.
<b>Outline Business Case</b>	The collection of business case related information that forms one half of the functional requirements specification to be presented in the Project Summary Report.
<b>Outline Requirements Specification</b>	The collection of technical related information that forms one half of the functional requirements specification to be presented in the Project Summary Report.
<b>Owners Engineer</b>	A project delivery role on behalf of a client to assist in delivering client services and obligations when the client also engages an Architect Engineer or EPC contractor for the delivery of a large complex project.
<b>Participant</b>	An organisation which enters into the Project Contract with the ETI to deliver the Project (alone or with other organisations); for the avoidance of doubt, (i) each organisation entering into the Project Contract with the ETI is a "Participant"; and references to "Participant" in the RfP do not include any Subcontractor(s)).
<b>Participant Funding</b>	Funding to be provided by a Participant from its own resources and not dependent in any way on Third Party Funding.
<b>Prime Contractor</b>	A single Participant which alone contracts with the ETI to deliver the Project, using Subcontractors (as and to the extent agreed with the ETI).
<b>Private Funding</b>	Third Party Funding other than Public Funding.
<b>Project</b>	The ETI project entitled "System Requirements for Alternative Nuclear Technologies," that is the subject of this RfP; the Project is also known (and referred to in this RfP) as the "Low Carbon Electricity Generation Technologies: System Requirements for Alternative Nuclear Technologies Project" and the "Alternative Nuclear Technologies Project".
<b>Project Commissioning Process</b>	The ETI's process for commissioning the Project, including as described at Section 5.
<b>Project Contract</b>	The contract, as described in Section 4.2, to be entered into between the ETI and the selected Respondent (as Sole / Prime Contractor, as appropriate) for delivering the Project.
<b>Project Detailing and Contract Finalisation Stage</b>	The second Stage of the Project Commissioning Process, as described at Section 5.2.
<b>Project Inputs</b>	Inputs to be provided by the ETI to the Project, including this RfP and the further Project inputs described at Section 3.4.1.

<b>Term</b>	<b>Definition</b>
<b>Project Manager</b>	The individual/role as described in Section 2.5.
<b>Project Objectives</b>	The objectives of the Project, including as set out in Section 2.2
<b>Project Outputs</b>	The deliverables, results and other outputs of the Project, including the outputs described at Section 3.4.2 and deliverables described in Section 3.4.3.
<b>Project Presentation</b>	The final project presentation, described at Sections 3.4 and 3.5.22 of the body of the RfP (see also Appendix E, Section 4.5).
<b>Project Progress Report</b>	The fortnightly Project progress report described at Section 3.4 of the body of the RfP (see also Appendix E, Section 4.6).
<b>Project Purpose</b>	The purpose of the Project, including as described in Section 3.1.
<b>Project Summary Report</b>	The final Project summary report that is a required output / deliverable of the Project (see Sections 3.4 and 3.5.21 of the body of the RfP and Appendix E, Section 4.4).
<b>Project Full Report</b>	The final Project technical report that is a required output / deliverable of the Project (see Sections 3.4.2.2 and 3.5.20 of the body of the RfP and Appendix E, Section 4.3)
<b>Project Team</b>	The Participant(s) (Sole/Prime Contractor) and Subcontractors (if any), and (where required by context) the relevant personnel.
<b>Proposal</b>	The proposal to be submitted to the ETI in response to this Request for Proposals, including all information in the main body of the proposal, appendices and supporting documentation.
<b>Public Funding</b>	Third Party Funding provided by a public authority or agency.
<b>Respondent</b>	An organisation submitting a Proposal to the ETI (i.e. a proposed Sole/Prime Contractor); for the avoidance of doubt, references to "Respondent" in the RfP do not include any (proposed) Subcontractor(s)
<b>RfP / Request for Proposals</b>	This Request for Proposals.
<b>Risk Register</b>	See Section 6.3 (Risk Management) of Appendix E.
<b>Selection Criteria</b>	Criteria against which Proposals are evaluated (including as set out in Section 5.1.4)
<b>Selection Panel</b>	The selection panel described at Section 5.1.3.
<b>Small Modular Reactor / SMR</b>	An alternative nuclear technology to the large Gen III+ pressurised water and boiling water technologies with output of 1150 MWe and greater. The scope of the Project shall be applicable to SMRs as described at Section 2.2.
<b>Sole Contractor</b>	A sole Participant which alone contracts with the ETI to deliver the Project on its own (without Subcontractors).
<b>Stage</b>	A stage of the Project Commissioning Process, as described at Section 5.

Term	Definition
<b>Statement of Compliance</b>	The statement of compliance required by the ETI, as described at Section 7 and at Appendix E, Annex E3.
<b>Strike Price</b>	Price relating to the long term supply of electricity through Contracts for Difference in the context of Electricity Market Reform by the UK Government
<b>Subcontract</b>	A contractual arrangement between a Participant and another organisation to which work for the Project has been subcontracted.
<b>Subcontractor</b>	An organisation which has a Subcontract.
<b>Task</b>	A significant activity or group of activities (often within a Work Package).
<b>Third Party Funding</b>	Funding provided to or for the purposes of the Project directly or indirectly by an organisation, person or entity other than the ETI or a Participant; for the avoidance of doubt, such third party person, organisation or entity shall include (i) any third party lending to a Participant, (ii) a Subcontractor, and (iii) any company or organisation in the same group to which the relevant Participant belongs.
<b>Total Project Cost</b>	The amount proposed by a Respondent as the total cost of the Project (proposed ETI Investment + Participant Funding + Third Party Funding, as appropriate).
<b>Work Package (WP)</b>	A major section of the Project scope of work, which may be identified in order to break up the scope of work into separate manageable parts. A Work Package will usually consist of a number of Tasks.