Programme Area: Nuclear

Project: Natural Hazards Review

Title: Request for proposals

Context:

The Natural Hazards Review project will develop a framework and best practice approach to characterise natural hazards and seek to improve methodologies where current approaches are inefficient. This is to improve energy system infrastructure design and the project is intended to share knowledge of natural hazards across sectors. The project will be completed in three stages. Phase one will focus on a gap analysis. Phase two will look at developing a series of improved methodologies from the gaps identified in phase one, and phase three will demonstrate how to apply these methodologies. Finally, phase 3 will develop a “how to” guide for use by project engineers.

Title of Services for which Proposals are Requested

Low Carbon Electricity Generation Technologies

Review Of Natural Hazards Project Phase 1

Request Issue Date

30th January 2014

Deadline for Notification of Intention to Submit a Proposal

14th February 2014

Closing Date

Proposals must be received before 12:00 noon on the 14th March 2014

Contact for Enquiries

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SUMMARY OF KEY PROJECT INFORMATION

Over the next three decades, the UK will be investing in a wide range of high value assets, such as power generation, CO_2 transport and storage systems etc. The detailed designs of these are likely to be some combination of new to the world and new to the UK. In addition, the best scientific advice is that extreme weather events are likely to become more frequent. The design and operation of these high value assets will require levels of robustness which satisfy scheme developers, financiers and industry specific standards and regulation.

The ETI therefore proposes to launch a project to understand the full range of natural hazards to be considered in the design of high value energy infrastructure assets in the UK, review best practices for design and identify limitations and gaps. The Project will also address the potential for coincidence of hazardous states, both natural and man-made.

The benefits from this Project include:

- cross fertilisation between communities of practice around different technologies;
- efficiencies of scale in developing a shared knowledge base of natural hazards; and
- potentially greater quality of design and regulation of high value energy assets.

The Project will not directly assess the systemic impacts of the residual risks of failure of major assets. The capability to address this is being developed in other ETI work-streams.

The Project will be split into three phases. This RfP covers the commissioning of the first phase of the Project ("Phase 1").

A glossary of terms is provided at Appendix H.

Phase 1 - Financing	Anticipated Value
ETI Investment	Full cost of Phase 1 (to be proposed by Respondent within Proposal).

Phase 1 - Request for Proposal and Selection	Dates
Issue of RfP	30th January 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)	14th February 2014
Closing date for submission of Proposals	14th March 2014
Preferred Respondent(s) notified	04th April 2014 (Anticipated Date)

Phase 1 - Timescales	Anticipated Dates
Phase 1 Contract signature target date	25th April 2014
Phase 1 target start date	28th April 2014
Phase 1 target finish date	22nd August 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 Phase 1 Contract.

CONTENTS

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 ETIs 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.

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 the Review of Natural Hazards Project

Investment in a wide range of technologies with limited previous UK experience of specific designs and operating methods will be required to meet UK energy policy targets out to 2050. The rate of new capital asset formation will be much higher than in recent decades and provides opportunities for economies of scale in sharing knowledge and techniques. There will also be risks if natural hazards are not effectively taken into account at the concept and detailed design stages, including operations design. Given the scale and pace of the required investments, it would be unfortunate if unresolved issues with natural hazards only emerged at a late stage of project development or during construction.

This is relevant to the extent that natural hazards are foreseeable and inevitable. This means that although natural hazards cannot be avoided, there is an opportunity to mitigate the consequences at the plant or system design stage. Relevant and recent examples of natural hazard events and their consequences are included in Appendix A to this RfP.

The impact and value of the ETI's Review of Natural Hazards Project is dependent upon on wide dissemination of its outputs. The Project will complete with the ETI publishing a "how to" guide for use by project engineers in the development of specifications for high value energy infrastructure projects in the UK.

2.2. Project Objectives

There are currently different approaches to the protection of energy assets within different sectors. This is expected because of the differences in mitigation of safety and investment risk between industries. However the different approaches lead to a lack of a common understanding of:

- the range of natural hazards and their frequency of occurrence;
- the differing approaches used to quantify the magnitude of natural hazards across the range of industries;
- the combinations of natural hazards that will inevitably occur together rather than independently;
- the effect of climate change on the magnitude and frequency of natural hazards; and
- the spatial extent of natural extreme events.

Whilst it is inevitable and logical that different sectors will protect themselves against different hazard levels, depending on their own vulnerability and that they adopt different approaches to the mitigation of risk from natural hazards, the consequences of a lack of knowledge on the natural hazard characterisation and inconsistent understanding may lead to energy assets which:

- are over or under engineered to withstand a given level of hazard;
- require expensive mid-life modifications to address hazards which could be reasonably foreseen and more cost effectively addressed at the design stage; and
- are shutdown as a result of damage or potential damage from operating conditions which are outside an approved operating licence.

The output from this Project will be an understanding of the full range of natural hazards to be considered in the design and assessment of high value energy infrastructure assets in the UK. Appendix B is a list of some of the current relevant natural hazards identified for the nuclear industry. The output should include:

- a list and description of the approaches and methodologies to defining event levels and their probabilities of occurrence;
- a gap analysis of the limitations of existing approaches;

- a clear definition of current uncertainties; and
- the establishment of a uniform approach across the UK.

These methodologies will also consider the spatial extent and duration of extreme events. This will permit the analysis of the impact of natural hazards through a nationwide approach which is broad and consistent.

Finally, experience and practice from combining hazards needs to be reviewed, so that approaches can be understood and deployed to combine natural hazards with other potential external hazards. (See Appendix C for more details on the "Combination and Spatial Extent of Natural Hazards").

Recognising that the design lives of some high value energy assets will be up to 120 years (for example some infrastructure), these methodologies need to incorporate the impact of climate change into revised event levels and return frequencies. The Project will build on existing work and extend it (for example ARIES[1], previous work by the electricity distributors).

In addition to the physical consequences of events, the potential operational, corporate and reputational consequences will also be identified. Loss of licence to operate can be an important potential consequence of a natural hazard event, even when the physical impact may be modest. Also high impact photographs, such as the onshore wind turbines which caught fire during high winds, are likely to be widely reported with corporate and reputational consequences.

This Project is technology independent. The aim is to provide a generic framework, a list of natural hazards, a methodology to combine hazards where relevant and two or more worked examples to demonstrate how the methodology is applied. It is anticipated that individual technologies may deploy individual approaches and risk mitigation strategies which are consistent with expectation of scheme developers and financiers, together with industry specific regulation.

Specific objectives of the Project from completion of all 3 phases are:

- an understanding of the full range of natural hazards to be considered in the design of high value energy infrastructure assets in the UK;
- a review of current best practice and the identification of significant gaps and uncertainties;
- an improved understanding of the application of natural hazards data to the robust and cost effective engineering of assets and the avoidance of resource mis-allocation (i.e. adding costs while leaving the asset under-engineered) due to ambiguity and pessimism; and
- practical guidance on the incorporation of natural hazards in asset design, through the provision of two or more examples.

The expected benefits from this Project are:

- a review of current available methodologies for natural hazard assessment, and combination of natural hazards, including their limitation and the sources of uncertainty;
- cross fertilisation between industries on current methodologies;
- establishment of best practice in quantifying risk from natural hazards;
- improved cost efficiency within existing and future industry projects by enabling all natural hazards to be identified and quantified consistently;
- improved cost efficiency within existing and future industry projects through reduction of inappropriate conservatism and over design;

[1] http://www.exeter.ac.uk/energysecurity/documents/Gareth_Harrison.pdf

- ensure informed decision making regarding the protection of assets against the impact of climate change on the level and frequency of natural hazard events; and
- an improved understanding of the resilience of the present and future energy systems.

Practical illustrations of the potential benefits realisation from this Project are summarised in Appendix D including:

- exposure of the potential for back-flooding around coastal installations;
- a systematic approach to marine bio-fouling;
- a systematic approach to extreme sea levels; and
- potential pessimisms in surface drainage to address extreme local rainfall.

This output from this Project is also an enabler for understanding the resilience of proposed future energy systems against the impact of natural hazards, which will be part of further systems design by ETI. For the full benefit to be realised in future resilience studies, some work should be considered to identify the full range of man-made external hazards. Such work is outside the scope of this Project.

2.3. Project Structure

The ETI anticipates that this Project will be commissioned and delivered in 3 successive phases:

i. Phase 1 - Knowledge building by reviewing UK and international work.

ii. Phase 2 – Methodologies for natural hazards prediction.

iii. Phase 3 - Consequences for industrial design and operation.

The approach is to minimise ETI's self-performance of the work to that of intelligent customer to specify, procure, manage and accept the deliverables from this Project.

This RfP is for the commissioning of Phase 1 only.

The decision to proceed (or not) with either Phase 2 or Phase 3 and the commissioning of each further Phase is in the ETI's sole discretion. By way of example only, in the event that the ETI decides to proceed with Phase 2 and subsequently with Phase 3, the ETI may choose to enter into direct negotiations with the Phase 1 Participant(s), to competitively commission the next Phase by way of issuing further RfP(s), or to separately commission Phases 2 and/or 3 with other interested parties.

Organisations interested in delivering Phase 2 and/or Phase 3 are requested to send a notification of their interest(s) to the ETI, whether or not they intend to submit a Proposal for Phase 1 in response to this RfP.

2.4. Project Delivery - 3 Phase Approach

The three intended phases are summarised below.

Phase 1 - Introduction

Phase 1 is expected to comprise approximately 10% of the Project by value. Phase 1 will focus on what information is already available in the form of current academic research, industry studies and meteorological / environmental studies, records and experience. This will consist of a literature search, discussions with the relevant research and industry experts plus contacting appropriate international experts. The output from this Phase 1 will be a report listing out availability of information which can be used to establish consistency / or not and identify key gaps for knowledge enhancement in the form of formal research project(s).

Phase 1 is described in more detail at Section 3 of this RfP.

Phase 2 - Scope, Schedule and Budget

Phase 2 is expected to comprise approximately 60% of the Project by value. It will address the gaps in available methodologies identified in Phase 1. It will involve prioritising the scopes of work to address the gaps through access to consultancy, access to current to research work, and commissioning of new research work. This will involve project management integration to ensure that all the agreed sub-elements are delivered to scope, schedule and budget. The scope, schedule and budget for Phase 2 will be informed by the deliverables from Phase 1.

Introduction To Phase 3

Phase 3 is expected to comprise approximately 30% of the Project by value. It will deliver worked examples for nuclear and offshore wind through the application of the data and methodologies to the design and operation of these technologies in the UK. Other industrial applications may be used for specific natural hazards if these provide a more obvious and relevant example of how to apply the methodology.

Phase 3 Scope, Schedule and Budget

The scope of Phase 3 is expected to be largely delivered through a series of workshops to capture current practices and the application of new practices from the output of Phase 2. The workshop outputs will be collated into a single consistent report.

These workshops will also specifically identify:

- additional hazards addressed as a result of the Phase 1 gap analysis;
- the benefits associated with new or revised methodologies captured in Phase 2 compared with previous practices;
- other benefits realised; and
- any recommendations for further work.

The Phase 3 report will capture and report these benefits and recommendations. The scope, schedule and budget for Phase 3 will be informed by the deliverables from Phase 2.

The supplier for Phase 3 will also prepare a “how to” guide intended for use by project engineers to assist in the development of specifications for high value energy infrastructure assets.

The following table outlines the intended timeline and the segregation of scope between the three phases. Phase 1 is about gap analysis, scoping of work, and planning and prioritising scope to extract maximum value from the level of investment made in the Project. Phase 2 will be the majority of Project scope and will be about delivering prioritised work to close gaps and address ambiguity. Phase 3 will be about the practical communication and dissemination of the Project outcomes to deliver and realise benefits for ETI Members and the wider energy industry. The ETI’s view of how the estimated Project cost is likely to be profiled across the 3 phases is included in the table below. This table has informed the ETI’s selection criteria regarding the cost and value for money assessment within the evaluation criteria described in Section 5.1.4.

Phase	Item	Estimated cost £k	Anticipated Timeline
Phase 1	Gap analysis and review of literature and current research	Approx 10%	Q2 & Q3 2014
Phase 2	Delivery of a programme of small research and consultancy projects to address prioritised gaps and uncertainties identified from Phase 1. Development and delivery of a consistent approach and methodology for the assessment of natural hazards and the design of solutions.	Approx 60%	Q1 to Q4 2015
Phase 3	Delivery of worked examples for nuclear and offshore wind, and other examples where relevant, through identification of a complete range of natural hazards, derivation of design target level against which candidate plant is to be designed for a specific location, and the design approach to meeting this target. Preparation of a "how to" guide for project engineers to assist in the development of specifications for high value energy infrastructure assets. Guide to be published by ETI.	Approx 30%	Q3 & Q4 2016

2.5. Qualification Of Respondents For All 3 Phases

This procurement is for consultancy work which may subsequently involve small research projects. There is no scope related to field work, manufacturing, trials, or the operation of prototype technology.

Respondents submitting Proposals for Phase 1 should provide simple evidence of their qualification, experience and capability to deliver Phases 1, 2 and 3. The ETI considers that organisations without the capability to deliver Phases 2 and 3 will have insufficient experience to deliver Phase 1. This evidence must be provided within the Proposal, but should be limited to no more than 10 pages setting out relevant experience, in the UK and elsewhere, in the last 5 years of:

- natural hazard analysis for both new and existing power plant;
- regional and localised natural hazard analysis;
- quantifying effects of climate change on natural hazards;
- hazard combinations of natural hazards, and combinations between natural hazards and relevant internal/external hazards;
- demonstrated relationships with researchers/developers of methodologies for quantifying natural hazards; and
- successfully procuring and delivering a portfolio of research projects.

The Proposal must also include an indication of the number of people employed by the Respondent with experience in natural hazard quantification and prediction.

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

2.6. 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).

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:

- 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 Technologist (or Senior Technical Specialist):
  - specification of scope necessary to deliver contract requirements;
  - selection of technical specialists engaged in delivering the project;
  - technical review and acceptance of work performed by others; and
  - technical review of contract deliverables.
- Technical specialists as required.

Respondents are required in their Proposals to nominate individuals for each role (and, in the event that a Respondent is interested in delivering Phase 2 and/or Phase 3 as well as Phase 1, the Respondent should confirm whether or not the proposed individuals will be nominated in the same role(s) for each of the phases). The ETI will assess the qualifications, experience, competence and authority of these individuals as critical to the success of the Project (Phase 1 and, where appropriate, Phases 2 and 3).

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 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 Phase 1 Contract (and, where appropriate, Project Contracts for Phases 2 and 3) within the ETI's required timescales (see Section 5.3) and to manage any issues that may arise during the performance of the relevant phase(s) of the Project.

3. REVIEW OF NATURAL HAZARDS PROJECT - PHASE 1

3.1. Phase 1 Introduction

Phase 1 will focus on what information is already available in the form of current academic research, industry studies and meteorological / environmental studies, records and experience. This will consist of a literature search, discussions with the relevant research and industry experts plus contacting appropriate international experts.

3.2. Phase 1 Timeline

It is anticipated that the contract for Phase 1 (the "Phase 1 Contract" - see Section 4.2) will be awarded in April 2014 with final deliverables (see Section 3.4) due by the end of August 2014.

3.3. Phase 1 Objectives

The objectives of Phase 1 of the Project are to scope, prioritise and plan the delivery of Phase 2. This phase is to identify what should be done, why it should be done, and deliver a costed and resourced plan for delivery of it.

3.4. Phase 1 Output and Deliverables

The required output from Phase 1 will include a report listing available information which can be used to establish consistency / or not and identify key gaps for knowledge enhancement in the form of formal research project(s).

The required deliverables from Phase 1 are:

- a Phase 1 report on completion which excludes specific proposals for Phase 2. The Phase 1 Report should describe what has been done in Phase 1, and identify recommendations including the proposed scope for Phase 2 with a full explanation of how the scope has been prioritised and optimised to deliver maximum value from this Project;
- a separate proposal for delivering in Phase 2 the recommendations from Phase 1, including a costed execution plan for Phase 2 addressing scope, schedule, budget, and resource description, organisation and profile; and
- a two hour presentation to the ETI and ETI Members after delivery of the Phase 1 Report with the following presentations content:
  - Phase 1 outcome and recommendations (40 minutes);
  - proposal for a Phase 2 execution plan (40 minutes); and
  - questions (40 minutes).

In addition, the Phase 1 Participant will provide a one page monthly Phase 1 project report, including:

- progress since previous report;
- progress planned by end of next period;
- Phase 1 completion to date (%);
- opportunities, risks and mitigation; and
- forecast date of completion of Phase 1.

3.5. Phase 1 Scope of Work

The required Phase 1 scope of work is as follows:

- Literature search to identify relevant design guides, industry specifications and research for the development of an exhaustive list of natural hazards relevant to high hazard or high value

energy infrastructure assets in the UK. This is expected to identify national or international guidelines such as:

- IAEA NS-G-1.5 External Events Excluding Earthquakes In The Design Of Nuclear Power Plants. November 2003;
- HSE/NII Technical Assessment Guide – External Hazards. T/AST/013 – Issue 4 dated 26 July 2011; and
- the documentation of previous analyses of external hazards including natural hazards which have now become a benchmark reference for future studies.

- Identification of natural hazards relevant to the design and operation of a high value energy infrastructure asset in the UK. For each of these natural hazards:
  - establish whether one or more mature methodologies are already applied to derive design levels associated with each natural hazard. Make and explain a judgement on whether theses methodologies are suitable and sufficient;
  - identify industrial applications (sectors) where these methodologies have been applied to derive design levels;
  - identify the spatial extent of the hazard; is it regionalised or can its characteristics and consequences be localised;
  - identify the potential combination of natural hazards from a literature review or previous operational experience;
  - make and explain a judgement as to whether this natural hazard is likely to be significantly affected by climate change in terms of severity or frequency of recurrence, and justify this judgement;
  - where climate change is judged to have a significant impact, establish whether one or more mature methodologies are already available to derive design levels associated with the impact of climate change on this natural hazard. Make and explain a judgement on whether these methodologies are suitable and sufficient;
  - identify industrial applications (sectors) where these methodologies have been applied to derive changes to design levels based upon the impact of climate change; and
  - through discussions with experts in the relevant fields, identify recent or current work likely to generate significant benefit from adding to the list of natural hazards or improving the understanding of the impact of climate change on these hazards.
- Literature search to identify relevant design guides or industry specifications for the combining of hazards, so that approaches can be understood to combine natural hazards with other potential external hazards.
- Through the above scope create a table to summarise the hazards and methodologies.
- Within the table identify gaps and significant uncertainties in natural hazard analysis and prediction.
- Develop a prioritised list of the gaps to be addressed with justification for why the gap should be filled.
- Develop a proposed scope, schedule, budget and resource profile for Phase 2 to:
  - address gaps and uncertainties through research projects where necessary;
  - develop the table in the Phase 1 Report to a full report; and
  - incorporate the outcomes from the research projects as they complete.

- Deliver a report to capture the scope undertaken and the outcome of the Phase 1 work to:
  - describe the context and relevance of existing design guides, industry specifications or reference studies;
  - summarise in tabular form in a systematic approach consistent with the format of a relevant design guide for each natural hazard:
    - Mature methodologies for regional and localised natural hazards; suitable and sufficient methodologies available?
    - Example of industry applications?
    - Climate change impact on natural hazard?
    - Suitable and sufficient methodologies available to quantify the impact of climate change?
    - Example of industrial applications?
  - Identify the gaps in natural hazard analysis and prediction.
  - Prioritise the gaps to be addressed with justification for why the gap should be filled.
  - Describe the context and relevance of existing approaches to the combining of natural hazards with other external hazards, including:
    - identification of methodologies;
    - examples of industry applications of these methodologies; and
    - perceived benefits from the application of these methodologies.
- Development of an execution plan for Phase 2 addressing scope, schedule, budget and exclusions. This will include development of recommendations for Phase 3 and a proposal based on an execution plan to deliver it.

4. PHASE 1 COMMERCIAL AND LEGAL REQUIREMENTS

4.1. Phase 1 - ETI Investment

The ETI is an investor in technology, not a grant awarding body. In commissioning the Project (including Phase 1), the ETI anticipates that it will be the sole or predominant source of investment funding.

For Phase 1, 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. Phase 1 Contract

Following selection, the preferred Respondent will be invited to enter into a contract with the ETI for delivery of Phase 1 of the Project.

The Phase 1 Contract will be substantially in the terms of the ETI's standard Consultancy Agreement template, subject to the inclusion of provisions specific to the delivery by the preferred Respondent of Phase 1 (including typically the agreed ETI Investment, identification of the Project Team personnel and, in an Annex, details of the specific Tasks and activities to be undertaken by the Prime Contractor in delivering Phase 1).

A draft of the Phase 1 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 Phase 1 Contract will be finalised following selection of the preferred Respondent(s) (Sections 5.1.3, 5.1.4 and 5.1.5), during the Phase 1 Detailing and Contract Finalisation Stage of the Phase 1 Commissioning Process (Section 5.2).

Any issues that any Respondent has with the terms of the Phase 1 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 Phase 1 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 or Prime Contractor, such that only the selected Respondent will enter into the Phase 1 Contract with the ETI and undertake Phase 1 either as:

i. Sole Contractor, where the Respondent has satisfied the ETI that it has the skills, capability and capacity to undertake Phase 1 entirely within its organisation; or

ii. Prime Contractor, with specified parts of Phase 1 being performed by Subcontractors (including, as appropriate, companies within the same group as the Prime Contractor). 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 Phase 1 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 (only) will enter into the Phase 1 Contract with the ETI and act as primary interface with the ETI.

Each Respondent should also indicate whether it intends to undertake Phases 2 and/or 3 (if commissioned/selected) on a Sole or Prime Contractor basis.

4.4. Phase 1 Payment Structure

The ETI will invest in Phase 1 on a fixed price basis (see Section 4.1) up to the amount of the ETI Investment agreed with the successful Respondent.

A single lump-sum payment will be made by the ETI at the end of Phase 1 against successful completion and delivery of the agreed deliverables. Payment will be subject to (for example) the deliverables meeting agreed acceptance criteria and to the Sole/Prime Contractor complying with the ETI's reporting requirements.

Details of the Phase 1 payment structure and related requirements will be agreed during finalisation of the Phase 1 Contract (Section 5.2, Phase 1 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 Phase 1 Commissioning Process to support any specific state aid requirements of the Project;

b) Participant(s) are required to provide full transparency of costs throughout Phase 1 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 Phase 1 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 Respondents 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 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.

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

Generally, if requested, the ETI will 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 Phase 1 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 results, 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 Phase 1 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 (and each phase of 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 Schedule 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 Phase 1 Commissioning Process: (i) as part of a Proposal and (ii) during the Phase 1 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 Phase 1 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 Phase 1 Commissioning Process.

5. PHASE 1 COMMISSIONING PROCESS AND ESTIMATED TIME SCALES

The ETI is using a two-stage approach to commission Phase 1 of the Project:

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

Stage 2 – Phase 1 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 full draft Phase 1 Contract (and Respondents are required to confirm acceptance of the detailed terms therein and/or provide specific comments on them in their Proposals).

Organisations interested in delivering Phase 2 and/or Phase 3 are requested to send a notification of their interest(s) to the ETI, whether or not they intend to submit a Proposal for Phase 1 in response to this RfP.

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 Phase 1 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 once 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 Phase 1 of 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 Phase 1 and potential subsequent phases of the Project.
- Value for money.
- Compliance with ETI's draft Phase 1 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 (Section 2.2) over all 3 phases of the Project (as detailed in Section 2.4), including in relation to the following;

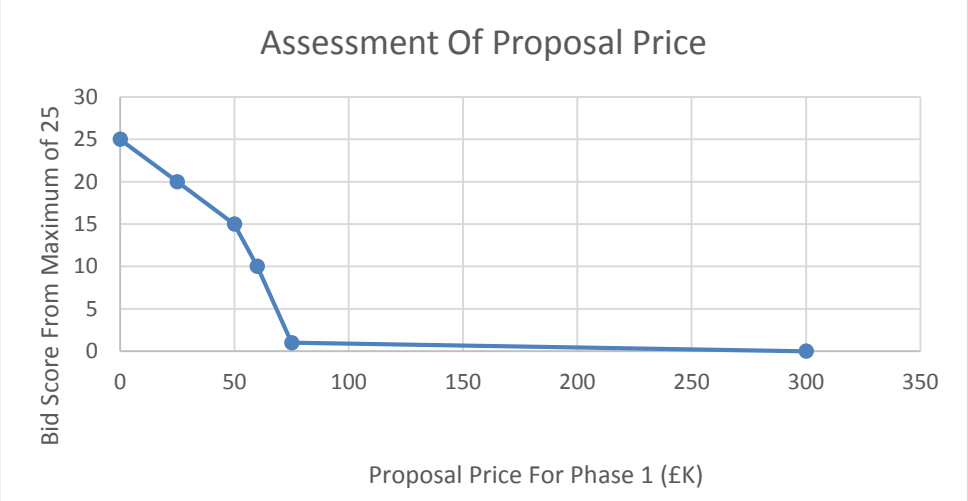
- natural hazard analysis for new and existing power plant;
- regional and localised natural hazard analysis;
- quantifying effects of climate change on natural hazards;
- hazard combinations of natural hazards, and combinations between natural hazards and relevant internal/external hazards;
- demonstrated relationships with researchers/developers of methodologies for quantifying natural hazards;
- successfully procuring and delivering a portfolio of research projects; and
- availability of resource measured by comparing the resource requirements for this project against the number of similarly qualified and experienced persons employed by the organisation within and outside the UK.

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

- clarity of proposed scope for delivering Phase 1 and breadth of proposed evaluation of mature and emerging natural hazard quantification methodologies including the impact of climate change. Clarity of proposed deliverables in satisfying the requirements of the RfP (25/100);

- lack of technical exclusions and assumptions which materially weaken technical delivery at the proposed price (5/100);
- clarity and comprehensiveness of proposed structure of the Phase 1 Report (10/100);
- clarity and breadth of delivery organisation (5/100);
- indicative organisations for Project Phases 2 and 3 (zero score/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);
- indicative project management plans for Phases 2 and 3 (zero score/100); and
- experience of the Technical Specialists with a significant delivery role in Phase 1, as recorded against the activities shown in the Phase 1 project management plan (15/100).

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 (single lump sum payment on completion), excluding VAT, through the scoring mechanism below noting that a lower proposal price attracts a higher score and a higher proposal price attract a lower score:



Indicative proposed budget for each of Phases 2 and 3 (zero score/100)

Willingness to comply with the terms and conditions of the proposed Phase 1 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 being exploited; including:

- confirmation of lack of exceptions, deviations and other variations from the draft Phase 1 Contract, IP requirements, and terms and conditions identified by ETI in the RfP (10/100).

5.1.5. Proposal Assessment

The Respondents' Proposals will first be examined to evaluate evidence of Respondents' relevant experience and capability necessary to deliver the Project at all 3 phases. 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 in 5.1.4 above and using the following overall weighting:

Area	Score From 100
Experience & capability description	Pass or fail
Technical and delivery	65
Price	25
Exceptions, deviation and other variations from the terms of the ETI's draft Phase 1 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 Phase 1 Contract may be excluded without further assessment.

5.2. Stage 2: Phase 1 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 Phase 1 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 Phase 1 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 Phase 1 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 (e.g. 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 Phase 1 Contract execution date shown in Section 5.3. The ETI reserves the right to re-open discussions with other parties and/or cancel the commissioning of Phase 1 (or any phase of the Project) should it become apparent that this date may not be achieved.

5.3. Estimated Phase 1 Commissioning Timeframes

The following tables outline the anticipated schedule for the Phase 1 Commissioning Process. They also include anticipated dates when the preferred Respondent will be required to commit the required resources to attend Phase 1 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.

Request for Proposal and Selection	Dates
Issue of RfP	30th January 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	14th February 2014
Closing date for submission of Proposals	14th March 2014
Selection Panel	24th March to 2nd April 2014 (anticipated)
Preferred Respondent(s) notified	4th April 2014 (anticipated)

Contract Finalisation	Anticipated Dates
Contract Finalisation meetings (to finalise commercial and legal aspects, , any remaining due diligence, etc.)	4th April to 25th April 2014

Project Start and Finish	Anticipated Dates
Phase 1 Contract execution target date	25th April 2014
Phase 1 start	28th April 2014
Phase 1 finish (based on anticipated 4 month duration)	22nd August 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 50 pages (excluding the required appendices to the Proposal explicitly excluded from the word count by Appendix E to this RfP).

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 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 Phase 1 Contract (Section 4.2 above), Respondents are required to confirm in the Statement of Compliance the extent to which the provisions of the draft Phase 1 Contract will be accepted by the Respondents.

The extent of compliance with the RfP and the draft Phase 1 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 terminate the Project Commissioning Process and/or the Phase 1 Commissioning Process, (ii) change the basis, timetable and/or requirements of, and/or the procedures for, the Project Commissioning Process and/or the Phase 1 Commissioning Process, including the timetable or closing date for receipt by the ETI of Proposals, (iii) make modifications to, or alter any of the information within, the RfP, (iv) reject any or all of the Proposals received, and (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 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 in connection with its participation in the Project Commissioning Process, including any costs or expenses incurred up to and including the execution of the Phase 1 Contract.

i) The ETI may, at its discretion, shortlist Respondents for the next stage of the Phase 1 Commissioning Process (Phase 1 Detailing and Contract Finalisation Stage) and/or 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. 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 – RECENT AND RELEVANT EXAMPLES OF THE IMPACT OF NATURAL HAZARDS

Storm-Surge

The North Sea Flood of 31 January 1953 caused extensive damage to coastal homes and infrastructure. In the UK there were 326 fatalities and a further 224 deaths at sea. The flood triggered a number of coastal protection schemes to reduce flood risk. The modern natural hazard science based on extreme value statistics started developing in Europe after this event.

Storm-Flood

The Great Storm of 15 October 1987 affected densely populated areas of London and the Home Counties. 15 million trees were felled in England and there were 22 deaths in England and France. Clashing grid cables created risks associated with shorting and overheating; National Grid chose to shutdown the power system in the south east to protect the rest of the generation and distribution system. Storms of such severity are claimed to have a return period of every 30 to 40 years; this storm was unusual in that peak severity occurred over south east England.

Lothar and Martin are the names of two low-pressure areas which resulted in violent extra-tropical cyclones sweeping across Central Europe on December 26, 1999, causing major damage in France, southern Germany, Switzerland, and Italy. Throughout the affected region, 140 people were killed and damage was estimated at US$11.3 billion. Lothar and Martin together left 3.4 million customers in France without electricity. The Storm caused the partial flooding of the Blayais Nuclear Power Station in the South West of France.

Xynthia was a violent European windstorm which crossed Western Europe between 27 February and 1 March 2010. In France—where it was described by the civil defence as the most violent since Lothar and Martin in December 1999—at least 51 people were killed, with 12 more said to be missing. A further six people were killed in Germany, three in Spain, one in Portugal, one in Belgium and one in England.

Rainfall

On 15 and 16 August 1952, a storm of tropical intensity broke over south-west England, depositing 229 millimetres (9.0 in) of rain within 24 hours. Debris-laden floodwaters cascaded down the northern escarpment of the moor, converging upon the village of Lynmouth. In total, 34 people died, with a further 420 made homeless.

Heat Wave

The 2003 European heat wave was the hottest period on record since at least 1540. There were health crises, drought, crop failures, and impact on river based power plants with a shortage of cooling water.

The 2006 European heat wave delivered temperatures exceeding 36^{o}C in the UK. Drought was an issue following a dry winter. There were some power cuts and some were attributable to lightning strikes and others associated with the peak power demand attributed to air conditioning systems. On 27 July 2006 a series of power cuts hit Piccadilly Circus, Regent Street and Oxford Circus. The system was vulnerable because of pre-existing faults combined with heavy demand. In Germany the biggest problem was precipitation, which mostly fell in localised intense thunderstorms.

Combined Hazards

Shipwreck

The Braer disaster is an example of the relevance of combined hazards from an internal fault together with a natural hazard. An engineering failure led to a tanker with 85,000 tonnes of crude oil being powerless and adrift near Shetland on 5th January 1993. A storm then drove the tanker ashore, which was designated a dangerous wreck because of the volume of oil on board. The oil was released and dispersed into the environment.

Nuclear Plant Release

The Great East Japan Earthquake of 11 March 2011 illustrates the combined consequences of earthquake, tsunami and flood, together with plant design shortfalls and current plant operating conditions. The inherent weaknesses of design and operation were revealed by the tsunami.

Combined Cycle Gas & Oil Power Plant

Vulnerability to hazards is also demonstrated in the Connecticut Power Plant Explosion on 7 Feb 2010. The plant is a Siemens 620 MW combined cycle gas and oil fired power plant. There were 6 fatalities and 50 people injured; the plant was heavily damaged. Subsequently the US Occupational Safety and health Administration announced their plan to fine 17 firms involved in the construction of the plant a total of $16.6M. There were 371 safety violations during construction of the plant, of which 225 were considered deliberate. Although the explosion was caused by a mistake during commissioning, a plant with this level of internal weaknesses would be very vulnerable to minor external events, for example severe rainfall.

APPENDIX B - RANGE OF EXTREME WEATHER EVENTS CONSIDERED BY THE UK NUCLEAR INDUSTRY

High Winds

In the UK most high wind events will occur without tornadoes being present. However, the active depressions that cause high winds also contain the latent temperature structures that can cause tornadoes and other temperature related hazards.

Sustained high wind speeds and maximum gust speeds may require separate consideration in assessments of structural integrity. The effects of climate change are likely to require consideration for long term safety cases.

Tornados

For a given return frequency tornado wind speeds may be bounded by those of high winds. However, additional considerations for tornados may be appropriate e.g. pressure drop effects and the potential generation of airborne missiles. Tornados may result in a narrow path of damage which may support a safety case approach based on demonstrating sufficient plant remains available in unaffected areas.

It is judged reasonable that assessments of the consequences of a tornado should assume coincident loss of grid or grid instability. Effects on communication links are expected to be limited. Tornados are short-lived hazards which are unlikely to prevent access to site. The hazard may threaten the feasibility of short-term manual actions outdoors on site or persons moving around site.

Sea Spray

Super-cooled water, if transferred as spray, may aggregate on external surfaces, forming a matrix of crystals with an accelerated rate of spread – similar to the localised ice accumulation which may occur on submerged structures in frazil ice conditions.

Snow and Snow Drifting

The main safety case consideration arising from snow is in respect of roof loadings on buildings. This hazard is likely to be associated with low temperatures (but not necessarily extremes). Also of potential significance may be snow ingress, snow blockage of critical apertures and the potential inhibition of movement around site.

Under appropriate weather conditions there is the potential for very small, powdery snow grains to agglomerate across ventilation intakes/grilles causing blockage within a short period. Power lines can be damaged by the sticky snow. In some conditions (mix of water and snow) snow could stick on grid cables and eventually freeze turning upside down the cables and breaking them. The snow hazard may threaten the feasibility of manual actions outdoors on site or persons moving around site whilst the hazard persists. It is judged reasonable that assessments of the consequences of severe snow should assume coincident loss of grid or grid instability. This hazard may affect the ability to provide external support to site.

Low Extreme Ambient Temperature

The Low Extreme Ambient Temperature (EAT) safety cases may make claims on the building integrity (and closure of vents if required) to maintain plant within its operable regime. In some cases operator actions are required (in advance if possible) to close doors and vents, check trace heating and to operate plant to provide self-heating. The other significant considerations are freezing of systems, waxing of fuel oil, difficulty starting prime movers or firing boilers. The extent of protection from trace heating and from anti-freeze must be considered. Consideration may also need to be given to the effects from frazil ice and freezing sea spray caused by low ambient and sea temperatures. It may be noted that consideration of issues such as freezing may be required at temperatures well above the low temperature extreme. Low EAT safety cases normally assume loss of grid supplies. Whilst the absolute limiting temperatures are only expected for a few hours in a 24 hour period, hazardous conditions may exist for more than 24 hours. It may be appropriate to consider latent effects of extreme low temperatures. An analogy may be made with domestic burst pipes; systems prone to freezing may give rise to a flooding hazard following the subsequent thaw. The effects of climate change are likely to require consideration for long term safety cases.

High Extreme Ambient Temperature

High EAT is expected to have limited effects on plant. Some claims may be appropriate for operator actions to enhance cooling where practicable by opening doors/windows where permissible although there may be a need to check if such actions are consistent with site security requirements. Note that high EAT may also result in a reduction of output of prime movers and efficiency of air coolers (including diesel radiators, transformer coolers and air cooled safety systems. High EAT may result in a threat to grid from sagging grid lines or transformer trips. Whilst the absolute limiting temperatures are only expected for a few hours in a 24 hour period, hazardous conditions may exist for more than 24 hours. The effects of climate change are likely to require consideration for long term safety cases. When considering the potential effects of temperature extremes, it may also be appropriate to consider the rate of change of ambient temperature.

External Seawater Flooding

As external seawater flooding also is likely to be associated with high winds, loss of grid or grid instability should be assumed. Severe sea states may also give rise to an increase in mobile marine debris or vegetation. Consequential unavailability of some or all of a station's seawater cooling systems may be an appropriate assumption. External seawater flooding may affect the ability to provide external support to site (for a prolonged period). The effects of climate change are likely to require consideration for long term safety cases. Due to high wind accompanying the seawater flooding high levels of sea spray can be expected can The conductivity of the salt can lead to flash-overs from high voltage lines and complete loss of grid supplies.

Extreme Rainfall

Extreme rainfall is generally addressed as part of an external flooding hazard safety case. The site safety cases are generally based on natural site drainage (and protection offered by buildings to prevent effects of rainwater ingress within the buildings). In particular the intensity of rainfall has the potential to overwhelm drainage systems within a very short period of time leading to consequential flooding and water ingress into buildings. Since extreme rain may also be associated with high winds loss of grid should be assumed. This may affect the ability to provide external support to site. The effects of climate change are likely to require consideration for long term safety cases.

Lightning

Protection is normally based upon the provision of adequate lightning protection on appropriate buildings and structures, taking into account the construction of the buildings (steel frames, re-bar in concrete supports) to provide adequate current paths to earth. Limited loss of cladding from buildings (which may be assumed to occur from a lightning strike) is considered unlikely to undermine the case. As lighting strikes are also likely to be associated with high winds or storm conditions, loss of grid should be assumed. This hazard is not expected to prevent access to site; it may however affect communications. Lighting protection may be affected by prolonged drought due to dry out of the ground and loss of conductivity of the earthing plates.

Bio Fouling

There are two main aspects; blockage of the seawater cooling systems from marine debris or vegetation and biological growth (affecting stagnant water stocks and diesel fuels). The latter may be regarded as an internal hazard since it originates within the site boundary and may be successfully controlled as part of normal site operating procedures. Several sea states may give rise to an increase in mobile marine debris or vegetation. Consequential unavailability of a station's seawater cooling systems may be an appropriate assumption. Since high winds are likely to be positively correlated with severe sea states, loss of grid should be assumed. Bio-fouling in itself is not expected to affect services (including grid supplies), site access or operator actions on site. These may however be affected by coincident hazards such as high wind.

Drought

In the UK there is no plant qualification against drought; the main considerations being ground shrinkage (potentially affecting buried services and building integrity) and assumed loss of external towns water supplies. There is also the potential for drying out of the station earthing mats. The extended duration

of the hazard increases the possibility of coincidence of non-causally linked hazards. In the light of the slowly developing nature of this hazard it is considered that measures can be put in place to prevent significant plant effects (including ground watering if required). The hazard will not (by itself) result in loss of grid, site access or hinder activities on site.

Frazil Ice

Frazil Ice is formed as a consequence of subsurface supercooling, leading to subsurface crystals which have the potential to progressively block coarse screens. The crystals form a crystal matrix without the need to attach to an inanimate object and many other crystals agglomerate which accelerate the rate of spread of the ice. The consequences of frazil ice formation may therefore be similar to those of bio-fouling. Since frazil ice formation is likely to be associated with generally freezing conditions, site access and plant operations may be adversely affected, although not directly as a result of the frazil ice hazard.

High Seawater Temperature

This hazard is not expected to have any effect on plant operation from a safety perspective (but may require a load reduction). The pre-trip heat loads to the seawater systems will bound those post-trip and hence it is expected that full post-trip functionality will be maintained. The hazard will not (by itself) result in loss of grid, present site access problems or hinder activities on site.

Low Seawater Temperatures

This hazard is linked to the frazil ice hazard and normally, the safety case generally discounts freezing of (flowing) seawater systems; and the hazard on its own is not expected to have any adverse effect on plant or structures. However, if this hazard were to combine with other weather conditions, for example low ambient temperature, then there would be the potential for loss of grid, site access difficulties, blocking of intakes (frazil ice) etc.

Mist and Fog

Extreme precipitation will be considered in the form of rainfall and snow respectively. In general, mist conditions are expected to have a limited effect on plant but could, for example, affect the movement of personnel or vehicles around site. Freezing fog has the potential to cause performance degradation or blockage of some designs of air filters. Freezing fog (or fog which can freeze when cooled due to plant operation) is a hazard which therefore should be considered as part of the hazard assessment. However, these conditions are only expected to be credible over a relatively limited range of temperatures (starting a few degrees above zero). It is considered unlikely that such conditions would be concurrent with extreme low temperatures. Such conditions are usually associated with very dry air. Similarly such conditions are normally associated with relatively still air and therefore would not be expected to be coincident with extreme winds. Mist and fog hazards individually should not cause any substantial effects to plant but could hinder site access and movement around site. The consequences of the hazard may become more significant in combination with other weather hazards e.g. low ambient temperature.

Electromagnetic Interference

This has the potential to impact the whole of a facility and cause damage to computer and electronic systems.

Solar Storms or Volcanic Ash Clouds

The requirement to consider these naturally occurring phenomena, and associated coincident and consequential issues, which may include weather related aspects, will be addressed in due course with Meteorological Office input.

APPENDIX C - COMBINATION AND SPATIAL EXTENT OF NATURAL HAZARDS

With a wide range of individual meteorological hazards which may require consideration, it is also possible that many of these hazards may be present in combinations of two or more hazards. For example, winter storms at the coast can bring a combination of high wind, extreme local precipitation, surface flooding, exceptional high tide and exceptional low tide. Note that a recent report from the previous Chief Nuclear Inspector in the UK (Mike Weightman) has highlighted the need to consider and address hazard combination.

An assessment of causal linkages between pairs of weather hazards is required to identify the combinations which are considered to be credible . Some work on this has been carried out by the Meteorological Office and industry groups for combined extreme weather hazards. Reference Weather hazards may be causally linked e.g. external flooding from wave overtopping is likely to be strongly associated with high winds. Moreover, some natural events can give rise to multiple hazards. They are called multi-hazard events.

For multi-hazard events the combination is more than credible, since the observed hazards have the same originating cause. The Fukushima event is a tragic example of multi-hazard event, where earthquake generated a tsunami wave. Other pairs of hazards may have no causal connection i.e. the likelihood of their occurrence in combination is simply that of chance. Since a selected hazard may be positively correlated with a second hazard, and the second hazard may be positively correlated with a third hazard etc. – it follows that it is reasonable to form groups of hazards where positive correlations exist. It is recognised that such groups of hazards are likely to be conservative in respect of the likelihood of all hazards occurring together at the same time. After defining plausible combinations of coincident external weather hazards, it will be necessary to assign return frequencies to these combinations in any subsequent hazard and risk assessments. There are clearly significant numbers of potential combinations of the above identified individual external hazards. In particular, the return frequency of natural hazard may have been defined locally and for a given variable in the past. In the framework of multi-hazard events and the spatial extension of these events, the definition of the Return frequency is not clear. This gap should be investigated in order to have an effective probabilistic appreciation of these events.

The multi-hazard events and the hazard combination identify the importance of the spatial extension of the hazard impact. When looking at the consequences of a natural hazard in a global-system perspective (such as the electricity system including network, generation and distribution) the spatial extent of the natural extreme phenomenon becomes very important. The previous approach was to characterize the probability of occurrence of a given phenomenon at a single location. With the benefit of the development of new observation technologies such as satellites and radars and the availability of wide spatial datasets (i.e. global model simulations and re analysis), the characterization of the spatial extension of natural extreme phenomena should be considered further. However, a probability framework and common definitions are yet to be derived for an effective description and analysis.

APPENDIX D - PRACTICAL INDUSTRY EXAMPLES ILLUSTRATING THE BENEFITS OF CONSISTENT METHODOLOGIES, HAZARD COMBINATION AND THE INCLUSION OF THE IMPACT OF CLIMATE CHANGE

The purpose of this Appendix is to illustrate practical examples where there could be, or could have been, benefits from the completion of the scope of this project. Each ETI Member will have examples where benefits may be realised from the scope of this proposed project. Examples were only available from EDF at the time of preparing this paper.

Thames Flood Barrier

The Environment Agency is interested in the work EDF Energy Nuclear Generation has completed in re-visiting the flood defence strategy for Dungeness B Power Station. EDF's original calculations had underestimated the potential of "back-flooding" around existing coastal defences. With the benefit of EDF's most recent work, EA are beginning to consider the flooding potential from a combination of storm surge up the Thames, with the run-off from hard-standing from a torrential downpour across an area as large as the greater London area. Greater knowledge of combined effects of individual natural hazards would help in design assessment and on-going design review of wider UK infrastructure.

Marine Fouling At Torness Power Station

In recent years, generation operations at Torness have been impacted by the marine environment. Influx of seaweed and jellyfish have led either to complete plant shutdown or significant reduction in output. The complete plant shutdown presented operators with extreme challenges in maintaining cooling to the reactor cores. Better intelligence on the initiators to these types of events could provide operators with advance warning and the opportunity to take appropriate action to minimise the impact on plant safety and operations. It will also help better inform engineering strategies to mitigate these risks. Such threats from the marine environment are common to all industries that are sited in marine environments.

ASN Periodic Safety Review On Extreme Sea Level In France

During periodic safety review of extreme sea levels in France, the French Nuclear Safety Regulator (ASN) pointed out the presence of high water level observations on some marine sites which are not satisfactorily taken into account by the previous studies. ASN stated that an increase of 1m high in the protective embankments defending the sites would be imposed unless the operator proposed a new methodology which could satisfactorily take into account and explain these observations. The cost of raising the embankments could potentially be avoided by the development of new scientific knowledge if this demonstrates that the current protection is sufficient.

The Vajont Dam Accident, Italy, 1963

A landslide occurring on the site of the Vajont dam in Italy in 1963 caused the overflow of the dam and the flooding of the downstream villages in the valley. 2000 people died in the accident. A better understanding of the landslide hazard could have avoided the accident.

EPR and Nuclear New Build

Even though the UK EPR design against natural hazard has been defined in the project conception phase, a Periodic Safety Review will be carried out by the operator every 10 years in accordance with the site licence requirements and will be assessed by the Office for Nuclear Regulation. The operator must be ready to demonstrate that the design levels are up to date and that new available data and new scientific advances has been taken into account in this Safety Review. Without the methodologies to address new science or the latest data there is a risk of regulatory imposed design changes to modify the engineered design and protection. Design changes which add cost should be based on established science and a demonstrated need.

As a specific example for the UK EPR, the extreme rainfall estimation for the design of drainage systems is subject to high uncertainty due to the lack of sufficiently high resolution data (required interval of every 15 minutes) combined with the unknown impact of climate change on extreme local rainfall. In order to avoid the potential for over engineering, the operator should be better prepared for the next Period Safety Review

Environmental Assessment Of Exposed Structures, Pipeworks In The Petrochemical Industry

A petroleum distribution facility consists of storage tanks, transfer facilities, pumping equipment plus integral piping. These are normally assessed during the design stage against a number of natural hazards including earthquakes, snow loading, flooding, extreme ambient temperatures etc. The design of such facilities would benefit for a consistent approach in assessing the impact and magnitude of these natural hazards.

Grid Failure in Canada Caused By Radiation From Solar Flares

On the evening of Monday, March 12, 1989 a vast cloud of solar plasma (a gas of electrically charged particles) resulting from solar flares struck the Earth's magnetic field. The magnetic disturbance was sufficiently intense to create electrical currents in the ground beneath much of North America. Just after 2:44 a.m. on March 13, the currents exposed a weakness in the electrical power grid of Quebec. In less than 2 minutes, the entire Quebec power grid failed with a subsequent 12-hour blackout period.

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 [50] 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 Phase 1 comprising the following components:-

1. EXECUTIVE SUMMARY [1 page]

A summary of the Proposal for Phase 1, describing briefly:

- the overall Phase 1 objectives, deliverables and outputs (as specified in Sections 3.3 and 3.4 of this RfP);
- the organisation(s) undertaking the work and the Project organisation structure (including identification of the Sole / Prime Contractor and proposed Subcontractors);
- summary of the proposed approach to Phase 1 and the work to be undertaken (and, where appropriate, by which organisation);
- summary of the Phase 1 deliverables;
- the proposed duration of Phase 1;
- Confirmation of compliance with the RfP and brief summary of any key exceptions/deviations; and
- the proposed ETI Investment for Phase 1.

2. PROJECT TEAM MEMBERS AND STRUCTURE [approximately 5 - 10 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, and (ii) the proposed role of each organisation within the Project Team.

2.2. Project Team Organisational Structure [approximately 1 page]

This should provide on organisational diagram showing all 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 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 and Chief Technologist (or Senior Technical Specialist). See Section 2.6 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 as Sole Contractor or 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 third party organisations. Each Respondent should include confirmation that all other organisations identified as proposed Subcontractors will be subcontracted directly by the Respondent (as Sole / Prime Contractor).

An organisation diagram showing the organisations and their roles should be included. The positions of the key individuals identified as required by Section 2.2 of this Appendix E (including the proposed Project Manager and Chief Technologist – see Section 2.6 of the RfP body) should be indicated.

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

Each Respondent should also indicate whether it intends to undertake Phases 2 and/or 3 (if commissioned/selected) on a Sole or Prime Contractor basis.

3. PROJECT TEAM CAPABILITY AND EXPERIENCE [5 - 10 pages; no appendices]

Objective evidence of experience within companies included within the Project Team, including as required by Sections 2.5 and 5.1.4 of the RfP and including the following:

- natural hazard analysis for new and existing power plant;
- regional and localised natural hazard analysis;
- quantifying effects of climate change on natural hazards;
- hazard combinations of natural hazards, and combinations between natural hazards and relevant internal/external hazards;
- demonstrated relationships with researchers/developers of methodologies for quantifying natural hazards; and
- successfully procuring and delivering a portfolio of research projects.

Demonstration of resource availability required to deliver Phases 1, 2 and 3 of this Project:

- availability of resource measured by comparing the resource requirements for this project against the number of similarly qualified and experienced persons employed by the Project Team within and outside the UK.

4. PROJECT APPROACH AND PROGRAMME OF WORK [approximately 10 - 15 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 Phase 1 objectives (See Section 3.3 of the body of the RfP)

4.2. Programme of Work [approximately 10 pages]

The programme of work to be undertaken in Phase 1 should be described and be consistent with the scope of work specified in Section 3.5 of the body of RfP. A one page 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 where it is incorporated into the proposal for Phase 2
- dependencies, constraints and assumptions.

4.3. Framework For The Phase 1 Report [approximately 2 pages]

This will identify the structure of the Phase 1 Report including the main sections of the report and their purpose.

4.4. Framework For The Phase 2 Execution Proposal [approximately 1 page]

This will identify the structure of the proposal for delivering Phase 2 including a costed execution plan for Phase 2 addressing scope, schedule, budget, and resource description, organisation and profile.

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

This will identify the structure of the presentation to be delivered at ETI's premises describing the Phase 1 outcome and recommendations and the proposal for the Phase 2 execution plan.

4.6. Format Of The Monthly Phase 1 Project Report [approximately 1 page]

This will identify the template of the monthly Phase 1 project report (see Section 3.4 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 or assumptions relevant to the delivery of the scope of work for Phase 1 (see Section 3.5 of the RfP body).

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 [< 1 page]

Following the detailed specifications of each deliverable in Section 3.4 of the RfP body, a summary table should be provided here detailing the proposed delivery dates for each deliverable.

See also Section 8 of this Appendix E (Phase 1 Finances).

6.3. Risk Management [typically <1 page, plus Risk Register as an appendix]

Respondents should describe their proposed risk management strategy (i.e. how risks to the successful delivery of Phase 1 will be identified and managed throughout the Phase 1). 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 Phase 1 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 Phase 1, and should summarise their approach to managing and coordinating HSE in Phase 1. Specifically:

a) Respondents should advise whether any work to be undertaken during Phase 1 is not desk based (e.g. site visits, field trials, experimental or laboratory work).

b) If Phase 1 involves any activity which is not desk based then the Respondents are required to provide evidence throughout Phase 1 that HSE is being managed, that planned and proactive assurance activities are undertaken throughout Phase 1, 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.

c) Respondents should identify any specific HSE issues related to specific facilities or sites to be used in Phase 1. To the extent that parts of Phase 1 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.

d) Respondents should demonstrate their experience of identifying and managing HSE issues in projects of equivalent complexity and scale, including incorporation of safety into design.

e) 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. PHASE 1 CONTEXT AGAINST PHASES 2 AND 3 [approximately 3 - 6 pages]

To aid the ETI's understanding of each Respondent's Proposal for the scope, schedule and price of Phase 1, it is useful to understand the balance of activities in Phases 2 and 3. Respondents are required to identify for each of Phases 2 and 3:

- indicative organisational structures;
- indicative project management plans or schedules; and
- indicative budget.

This information is to provide context for Proposals for Phase 1 and is outside the scope of the Phase 1 selection criteria and assessment process.

8. PHASE 1 FINANCES [approximately 1 - 2 pages]

Respondents should provide:

- a figure for the proposed Total Phase 1 Cost;
- a figure for the proposed (fixed price) ETI Investment; and
- figures for any proposed Participant Funding and/or Third Party Funding (where appropriate).

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 Phase 1 Cost as specified in the table below. Please refer to the notes beneath the table before completing it.

Total Phase 1 Cost Breakdown by Category	Sole/Prime Contractor	Subcontractor 1	Subcontractor 2	Subcontractor 3	Total
Number of Person-days					
Base Labour					
Materials					
Subcontractors (major)					
Subcontractors (minor)					
Travel & Subsistence					
Overheads					
Profit					
Other					
TOTAL PHASE 1 COST					
ETI Investment					
ETI Investment (% of Total Phase 1 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 Phase 1 Cost or which is critical to the success of Phase 1 / the Project).

iii. The selected Respondent(s) will be required to provide justification of overhead calculations during the Phase 1 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 Phase 1 Detailing and Contract Finalisation Stage (prior to Phase 1 Contract execution) the ETI will require a more detailed cost breakdown. Whilst not compulsory; it is strongly recommended that the relevant 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 Phase 1;
- 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 such 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 before completing this section.

9.1. ARISING IP

Respondents should provide a brief overview of the nature of any anticipated Arising IP from Phase 1, 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 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
- 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 outputs of the Project 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 PHASE 1 CONTRACT FINALISATION [approximately 1 page]

Respondents should, in this section, provide a plan for contract identifing key issues to resolve during the Phase 1 Detailing and Contract Finalisation Stage, before Phase 1 Contract execution, for example:

- Phase 1 Contract – key provisions to resolve (based on draft Phase 1 Contract; see Section 4.2 of the RfP main body);
- timing sequences for the setting up of the Project organisational structure (e.g. Subcontracts), including any dependencies or other factors which could impact or delay Phase 1 / the Project;
- internal approvals – confirm what internal approvals will be required for the proposed Sole/Prime Contractor and Subcontractors in order to enter into the Phase 1 Contract.
- securing finance – identify any further actions required to ensure that all relevant funding arrangements are in place.

The plan for contract 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 Phase 1 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 Phase 1 Detailing and Contract Finalisation. This should include, for the Respondent (proposed Sole / Prime Contractor) and each proposed key 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 Phase 1 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 word 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 Phase 1 Commissioning Process:

- Submission of the Proposal. Certain information is required with the Proposal as part of the first stage of the Phase 1 Commissioning Process; and
- Phase 1 Detailing and Contract Finalisation. Further information will be required if any Proposal is selected to proceed to the Phase 1 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 Phase 1 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 Phase 1 (and/or the Project) or which may provide an input which is critical to success of Phase 1 (and/or 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 Phase 1 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 Phase 1 / 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 Phase 1 / 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 Phase 1 / 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 Phase 1 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. PHASE 1 DETAILING AND CONTRACT FINALISATION STAGE – FURTHER DUE DILIGENCE REQUIREMENTS

These are only required if a Proposal is selected to proceed to the Phase1 Detailing and Contract Finalisation Stage, and will include:

a) in the event that any Phase 1 (Project) work is not entirely desk based, a competency assessment will be carried out on the preferred Respondent at the Phase 1 Detailing and Contract Finalisation Stage, to assess the Respondent organisation's health & safety management systems and specific technical competence to manage the risks in Phase 1 (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 Phase 1 and (where appropriate) the Project. Respondents and Subcontractors (if any) may be asked to provide evidence of ownership or rights to use the relevant IP for Phase 1 / the Project and/or for exploitation of the results of Phase 1 / the Project;

c) financial due diligence on the breakdown of costs for Phase 1 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 Phase 1 (and/or the 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: ☐ Sole Trader ☐ Limited Company ☐ Partnership ☐ 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? ☐ Yes ☐ No
Have any directors, partners or associates of the organisation been convicted of a criminal offence relevant to the business or profession? ☐ Yes ☐ 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 Phase 1 Contract (Section 4.2), or shall state clearly any exceptions, deviations, alternative approaches or additions to the requirements of the RfP and/or draft Phase 1 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 Phase 1 Contract, each Respondent must either:-

- expressly confirm that the Proposal is made on the basis of the terms and conditions of the draft Phase 1 Contract; or
- expressly confirm that the Proposal is made on the basis of the terms and conditions of the draft Phase 1 Contract subject to clarifications and exceptions. In these circumstances, the Respondent must include in its Proposal:
  - a copy of the draft Phase 1 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 Phase 1 Contract) is identified by a Respondent at any stage during the Phase 1 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[2] to assist the ETI in assessing and considering each Respondent's compliance with the RfP and the draft Phase 1 Contract.

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

[2] 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.

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 30th January 2014, entitled "Low Carbon Electricity Generation Technologies: Review of Natural Hazards Project - Phase 1".

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 Phase 1 Commissioning Process. For the successful Respondent(s), the confidentiality provisions in the Phase 1 Contract (when executed) will supersede this NDA for the purposes of Phase 1.

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 (http://www.eti.co.uk/request_for_proposals) 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.

On 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.

File Ref No: **GAT/NH/RFP/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 any 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;

"Phase 1" means the first phase of the Project, as defined in the RfP;

"**Phase 1 Commissioning Process**" means the ETI's commissioning process for Phase 1 as defined in the RfP or as later may be notified or published by the ETI;

Phase 1 Contract" means a Phase 1 Contract as such term is defined in the RfP

"Project" means the ETI's proposed project entitled "Low Carbon Electricity Generation Technologies: Review of Natural Hazards Project"

"**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 Phase 1 Commissioning Process and/or the Project Commissioning Process;

c any activities related to the assessment of any Proposals for Phase 1; 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, the Phase 1 Commissioning Process, the Phase 1 Contract, any Project Contract(s), Phase 1 and/or the Project;

"Receiving Party" means any Party that receives Information pursuant to this Agreement; and

"**RFP**" means the request for proposals relating to the Project, issued by the ETI on 30th January, 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:

APPENDIX H - GLOSSARY

Term	Definition
Arising IP	Any IP which is created by or for any Participant during the Project (any phase thereof) or for the purposes of the Project (any phase thereof).
Background IP	Any IP which is owned or controlled by, or licensed to, the Participant and/or any Subcontractor, other than Arising IP.
Chief Technologist	The individual as described in Section 2.6.
ETI	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.
ETI Investment	The amount to be made available by the ETI on a fixed price basis for Phase 1.
ETI Members	The ETI's industry members (as identified on the ETI's website from time to time - http://www.eti.co.uk/about/current_members), 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).
Her Majesty's Government / UK Government	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.
HSE	Health, Safety and Environment.
IP	Intellectual property / intellectual property rights.
Non-Disclosure Agreement (or NDA)	A non-disclosure agreement in the form provided at Appendix G.
Participant	An organisation which enters into a contract with the ETI to deliver the Project or a phase of the Project (as appropriate); in Phase 1 either a Prime Contractor or a Sole Contractor, as the case may be (see Section 4.3).
Participant Funding	Funding to be provided by a Participant from its own resources and not dependent in any way on Third Party Funding.
Phase 1	The first phase of the Project, including as described in Sections 2.3, 2.4 and 3 of the RfP
Phase 2	The second phase of the Project, including as described in Sections 2.3 and 2.4 of the RfP
Phase 3	The third phase of the Project, including as described in Sections 2.3 and 2.4 of the RfP
Phase 1 Commissioning Process	The ETI's process for commissioning Phase 1, including as described at Section 5.
Phase 1 Contract	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 Phase 1.

Term	Definition
Phase 1 Detailing and Contract Finalisation Stage	The Phase 1 Contract negotiation stage of the Phase 1 Commissioning Process, as described at Section 5.2.
Phase 1 Report	The report that is a required output / deliverable of Phase 1 (see Section 3.4 of the body of the RfP)
Prime Contractor	A single organisation which contracts with the ETI to perform the Project, together with (subject to ETI approval) Subcontractors.
Private Funding	Third Party Funding other than Public Funding.
Project	The ETI project entitled the "Low Carbon Electricity Generation Technologies: Review of Natural Hazards Project", including the proposed phases: Phase 1 (for which the purpose, scope of work and other details are described in this Request for Proposals), Phase 2 and Phase 3.
Project Commissioning Process	The ETI's process for commissioning the Project, including the Phase 1 Commissioning Process and (if the ETI proceeds) the commissioning processes for Phases 2 and 3.
Project Contract	A contract to be entered into between the ETI and another person, organisation or entity to deliver any phase or part of the Project (and for the avoidance of doubt the Phase 1 Contract shall be a Project Contract).
Project Manager	The individual as described in Section 2.6.
Project Objectives	The outputs, benefits and objectives of the Project, including as set out in Section 2.2
Project Team	The Sole/Prime Contractor and its Subcontractors (if any).
Proposal	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.
Public Funding	Third Party Funding provided by a public authority or agency.
Respondent	An organisation submitting a Proposal to the ETI (i.e. a proposed Sole/Prime Contractor).
RfP / Request for Proposals	This Request for Proposals.
Risk Register	See Section 6.3 (Risk Management) of Appendix E.
Selection Criteria	Criteria against which Proposals are evaluated (including as set out in Section 5.1.4)
Selection Panel	The selection panel described at Section 5.1.3.
Sole Contractor	A sole organisation which contracts with the ETI to perform the Project on its own (without Subcontractors).
Statement of Compliance	The statement of compliance required by the ETI, as described at Section 7 and at Appendix E, Annex E3.

Term	Definition
Subcontract	A contractual arrangement between a Participant and another organisation to which work for the Project has been subcontracted.
Subcontractor	An organisation which has a Subcontract.
Task	A significant activity or group of activities (often within a Work Package).
Third Party Funding	Funding provided to or for the purposes of Phase 1/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.
Total Phase 1 Cost	The amount proposed by a Respondent as the total cost of Phase 1 (proposed ETI Investment + Participant Funding + Third Party Funding, as appropriate).
Value Return	Value to be delivered (including to the ETI, the ETI Members and/or the UK economy) in return for the ETI's investment in the Project (or any part thereof).
Work Package (WP)	A major section of the Phase 1 / 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.