Programme Area: Carbon Capture and Storage

Project: Storage Appraisal

Title: United Kingdom CO2 Storage Capacity Appraisal – Request for Proposal

Context:

This £4m project produced the UK's first carbon dioxide storage appraisal database enabling more informed decisions on the economics of CO2 storage opportunities. It was delivered by a consortium of partners from across academia and industry - LR Senergy Limited, BGS, the Scottish Centre for Carbon Storage (University of Edinburgh, Heriot-Watt University), Durham University, GeoPressure Technology Ltd, Geospatial Research Ltd, Imperial College London, RPS Energy and Element Energy Ltd. The outputs were licensed to The Crown Estate and the British Geological Survey (BGS) who have hosted and further developed an online database of mapped UK offshore carbon dioxide storage capacity. This is publically available under the name CO2 Stored. It can be accessed via www.co2stored.co.uk.

Request for Proposals (RfP)

Title of Services for which Proposals are Requested:

United Kingdom CO_2 Storage Capacity Appraisal

Request Issue Date:

31st March 2009

Closing Date:

Full Proposals must be received before 5pm on **21st April 2009**

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1. Introduction and Overview of the Services Required

1.1. Introduction to the Energy Technologies Institute

The Energy Technologies Institute LLP (the ETI) is a private organisation formed as an innovative Limited Liability Partnership between international industrial energy companies and the UK government.

Our mission is to accelerate the development, demonstration and eventual commercial deployment of a focused portfolio of energy technologies, which will increase energy efficiency, reduce greenhouse gas emissions and help achieve energy and climate change goals.

We will do this by leveraging the skills, capabilities and market access routes of our members, working with other organisations worldwide, to take the most challenging large-scale energy projects to full system demonstration, thus bridging the gulf between laboratory proven technologies and full scale commercially tested systems. Our projects will also develop knowledge, skills and supply-chains, and will inform the development of regulation, standards and policy. Hence we aim to overcome major barriers, de-risk the future development and shorten the lead times to market for secure, affordable, low-carbon energy systems for power, heat and transport.

Our portfolio includes programmes in areas such as Wind, Marine, Distributed Energy, Transport, Energy Networks and Carbon Capture & Storage.

Further information can be found on our web-site at www.eti.co.uk

1.2. Background to the Project

The ETI estimates that Carbon Capture and Storage (CCS) technology has the potential to contribute around 20% of the global reduction in emissions to atmosphere required to stabilise greenhouse gases over the next 50 years. The ETI commissioned a Strategy Advisory Group (SAG) to investigate the CCS landscape. Its analysis identified that deployment of CCS could potentially result in a reduction in emissions greater than any other single energy technology, including nuclear and renewables.

The availability of sufficient high-integrity CO_2 storage capacity is critical to large-scale roll out of CCS within the UK. The ETI has developed a roadmap for the development and implementation of CCS within the UK, which suggests that storage for at least 30 Gtonne CO_2 would need to be available to meet the long term needs (100 years plus) of fossil-fuel power generation and major industrial CO_2 emitters.

The UK is potentially well-served with CO_2 storage capacity in offshore depleted oil and gas reservoirs and saline aquifers. Various estimates have been made of UK storage capacity, which vary widely. At one extreme, there would be insufficient capacity: at the other the UK would have ample capacity and a business opportunity to store CO_2 from other parts of Europe. Hence the ETI wishes to commission a comprehensive, desk-based project with the objectives of appraising and improving confidence in estimates of overall UK offshore geological storage capacity. The project will take a play-by-play approach, building on previous and current studies. It will cover both depleted oil & gas reservoirs and saline aquifers. Much of the focus will be on the latter, as reasonable estimates of oil & gas reservoirs already exist, but the largest potential capacity is in saline aquifers.

1.3. Outline Scope of the Project

Based on consultation with ETI Members, potential users of the project results, industrial and academic experts in the area of storage appraisal, it anticipated that the project will be split into eight, interlinked Tasks (refer to Section 3 for further details).

Task 1: Mapping of Potential UK Storage Plays. This Task will map out potential plays in the agreed priority areas in UK offshore waters.
Task 2: Static Estimate of Capacity. In this Task a range of techniques will be used to make an initial estimate of UK capacity using static techniques.

Task 3: Economics & Availability. Running in parallel with the capacity estimation tasks, this Task will make semi-quantitative estimates of the economics of different plays and assess future availability.
Task 4: Risk Rating of Plays. This Task will consider risk factors affecting plays such as cap rock integrity.
Task 5: Dynamic Modelling of Representative Structures. This Task will use dynamic injection simulation of simplified, representative structures to gain an estimate of dynamic capacity. These results will be extrapolated to all potential plays.
Task 6: Detailed Analysis of Exemplars. In this Task, a small number of plays will be analysed in more detail using all the methods in Tasks 3 – 5, as a means of testing and calibrating the generic results.
Task 7: Database Building & Deliverables. This integrating Task will define the database structure (expected to be GIS-enabled) and populate it with input and output data from Tasks 1 – 6.
Task 8: Project Management.

1.4. Anticipated Outcomes and Critical Success Factors for the Project

The key deliverables from the project to the ETI will be:

1. A technical report incorporating a probabilistic estimate of overall UK Storage capacity, curves of availability of storage as a function of time, and cost of storage as a function of capacity. The report will fully describe the sources of data and methodologies used to reach the estimate. It should also make clear recommendations about what additional data, analytical & modelling methods etc should be developed to improve the precision of estimates.
2. A fully-populated GIS database including input and output data on a play by play basis (note – future support and delivery of the database to third parties will be covered by a follow-on project).

In addition, the project should produce an interim estimate of UK storage capacity after a period of 6 months (expected to be based on static estimates – Task 2).

A key test of quality of results will be their defensibility, in terms of both input data and methodology.

Producing estimates which are accurate and meaningful to potential users will require bringing together the best available industrial and academic capabilities in storage appraisal, using relevant, high quality data. Strong communication lines must be maintained during the project with ETI Members.

As a Critical Success Factor, the project should represent a step change in the credibility of the methods used for Storage Appraisal amongst industry stakeholders and accuracy of the storage estimates, providing the UK with a worldwide lead in this area. In the proposal, respondents should clearly indicate how the work will add value compared to previous studies.

1.5. Anticipated Project Organisation Structure

Successful completion of the project and delivery of the outcomes described in Section 1.4 will require a consortium of Participant organisations / entities to work together in order to provide all the necessary knowledge, skills, experience and inputs. These organisations will be required to form a Consortium, contracted with the ETI, governed by its own Consortium Agreement and led by a 'Lead Coordinator' to manage the Project and act as primary interface with the ETI. The ETI has, subject to delivery of an acceptable proposal and agreement of contractual terms, selected Senergy Alternative Energy as Lead Coordinator for this project.

2. Request for Proposals Process and Terms

2.1. Content and Format of Proposals

Interested organisations are requested to submit a collective Proposal through their nominated Respondent as described in Section 1.5 above. The Proposal shall be arranged according to the structure detailed in Appendix A and shall include all the information listed therein.

The Proposal must be written in a succinct manner and must not include imprecise statements, generalities or repeated information. The Proposal must be easily readable with appropriate font sizes, margins, etc, and **shall not exceed a maximum of 25 pages** (excluding key staff CVs and the due-diligence information required under Section 12 of Appendix A).

The Proposal shall consist of **three (3) complete hard copies and one (1) electronic copy**. The latter shall be provided in both PDF and Microsoft Word formats.

In addition the Respondent is required to submit a Status Report (expected length 4 – 5 pages) by the date listed on Page 1. This Status Report shall contain the following:

- Overall structure of the project, including a brief description of each task and how tasks relate to each other and the final deliverables. Any departures from the provisional work flow set out in Section 3 of this Request for Proposals should be highlighted, with reasoning behind the change;
- Identification of the expected key partners, and how the project work will be split amongst them;
- A description of the final deliverables of the project, including the database. If appropriate, options can be presented with relative benefits and costs to the ETI;
- Key technical and commercial issues to be addressed before submitting;
- An initial estimate of the total project funding required.

The ETI shall provide feedback on the Summary Proposal to the Respondent within 8 working days.

2.2. Acceptance, Review and Selection of Proposals

Proposals will be reviewed and judged primarily against the criteria listed below.

- Completeness of information content, structure and quality of Proposal (against areas listed in Appendix A)
- Compliance with specification
- Value for money
- Project Organisation including Consortium or Subcontract Participants engaged
- Knowledge, skills and experience, of the Participants and key staff. The Respondent should provide a table in the proposal which lists what it considers to be the key requirements to deliver the project and identifies which Participants (and key staff) provide these.
- Level of commitment to make these resources and key skills available to the project

- Project approach and plan, including Gantt chart, suitable stage gates, and proposed management of specific risks and issues
- Ability to make proprietary data available to the project with a demonstrable and significant contribution to the desired outcomes, under terms agreeable to the ETI and its Members.
- Existence of any IP issues which may affect the ability to carry out the Project and exploit the results

The ETI at its discretion may request further information in order to assess a Proposal, and may reject any Proposal which does not provide sufficient information.

This RfP is not an agreement to purchase goods or services, and the ETI is not bound to enter into a Contract with any Respondent. All decisions made by the ETI relating to the acceptance, review and selection or otherwise of Proposals are final. The ETI will be under no obligation to explain or justify any such decisions at any time.

The following timetable outlines the anticipated schedule for the contract process. The timing and the sequence of events resulting from this Request for Proposals may vary and shall ultimately be determined by the ETI.

Event	Anticipated Date(s)
Deadline for submission of Status Report	31 March 2009
Deadline for Full Proposal Submission	21 April 2009
Project Detailing and Contract Agreement	1 – 22 May 2009
Contract Signature	Late May 2009
Project Start	June 2009
Project Completion	August 2010

2.3. Ownership of Proposals and Confidentiality of Information

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, subject to the ETI reserving the right to provide such documents to third parties engaged by the ETI in its assessment of them. Organisations selected by the ETI to be taken forward to the Project Detailing Stage will be required to sign non-disclosure agreements.

3. Specification of Scope of Work and Deliverables

It is expected that the project will be split into 8 Tasks, with an indicative work-flow and timings as illustrated in Figure 3.1. These Tasks are summarised as follows.

Task 1 Mapping of Potential Storage Plays

The appraisal will cover potential offshore geological storage plays (depleted oil & gas reservoirs; deep saline aquifers) in the following areas:

- North Sea (UK Sector) – Southern, Central and Northern;
- Eastern Irish Sea;
- Western English Channel (including Wytch Farm area).

The level of analysis of each sector may vary, depending on the availability of data. Other areas around the UK will not be covered (apart from possibly very brief consideration) due to lack of potential storage sites (eg Bristol Channel), lack of data (eg St Georges Channel) or impracticality/poor economics (eg West of Shetland).

The first task (Task 1.1) will define a database structure (eg to be used in a GIS web-enabled system such as ArcView) and determine what information to collate for each play. This is likely to include:

- Position, dimensions (eg length, width, depth), structural features (eg domes) etc;
- Net/gross storage volume
- Porosity
- Permeability
- Sealing – top
- Sealing – side
- Effective stress
- Compartmentalisation (within plays)
- Salinity
- Temperature
- Pressure
- Existing infrastructure - pipes, etc
- Well penetrations
- Close of Production dates

It is anticipated that initial data will be obtained from publicly available and published sources (eg Millennium Atlas), although additional well, seismic and other data (eg from operators or commercial providers inside or outside the consortium) should be used to improve quality and extend coverage as required. As the overall aim is to determine a probabilistic estimate of storage capacity, the approach to be followed will need to be confirmed at the start of the project, to ensure all data is treated appropriately in building up the results.

Initially, potential UK storage plays should be mapped out (Task 1.2) then data should be collated (Tasks 1.3, 1.4) to allow static capacity estimates to be made (see Task 2). Data collation will continue through the programme (Tasks 1.5, 1.6) to support dynamic, economic & risk analyses (Tasks 3, 4, 5, 6). It is anticipated that these later stages of data collection will increasingly require use of commercial databases (possibly including operators' data).

Although detailed consideration of monitoring, measurement and verification (MMV) will not be included in the study, general issues over ease (or difficulty) of monitoring of sites will be considered, to help inform future UK MMV requirements.

Task 2 Static Estimation of Capacity

Based on generic E factors (eg according to the USA DoE methodology, Task 2.1), results from previous studies will be collated and any gaps filled in to obtain consistent estimates of UK capacity in the basins identified in Task 1. Current results for oil and gas reservoirs are believed to be reasonably accurate, although some further consideration should be given to factors which may limit *practical* capacity (eg water flooding into abandoned gas reservoirs). The methodology for condensate reservoirs should be reviewed and if necessary revised. Potential plays should also be assessed for pressure capacity (Task 2.2).

The output from Task 2 (consistent static capacity estimates across the selected areas), combined with initial economic/availability and risk analyses (Tasks 3.1 & 4.1) should be used to provide an interim assessment of overall capacity (see Task 7.5).

Task 3 Economics & Availability

Basic, semi-quantitative assessments of the economics of different plays will be made. This will include generic costs of new infrastructure building, and estimates of the availability of existing oil & gas assets. The analysis should include offshore transport costs (ie pipelines from shore terminals or shipping). The impact of other uses for potential sites (eg gas storage) will be considered. Initial estimates (Task 3.1) will be made in parallel with Task 2 to inform the initial capacity assessment. These will be refined later (Task 3.2) as improved information becomes available. Curves of capacity vs cost and capacity vs time will be constructed for different geographic regions, and built up to portray all UK storage assets.

The analysis should assume that there will not be significant use of CO2 for Enhanced Oil Recovery (EOR), although reasonable assumptions should be made on use of alternative EOR techniques when assessing the likely availability of oil reservoirs for CO2 storage.

Task 4 Risk Rating of Sites

This will cover containment risks and other technical risks which may affect usage of sites. Information on the cap rock parameters (eg thickness, porosity, faulting) collated in Task 1 will be used to make assessments of containment risk at a play level (Task 4.1). These assessments will be refined later (Task 4.2) as improved information becomes available (from Tasks 1.5 & 1.6). As well as risks from cap rock faulting, other risks will be analysed, eg integrity risks due to permeability of the cap rock or existing penetrations (such as integrity of seals/plugs, cracking). Results from Tasks 4.1 and 4.2 will be used to provide an overall risk rating factor for each identified play (saline aquifers and oil & gas reservoirs).

Task 5 Dynamic Modelling of Representative Structures

A set of representative, simplified geometries will be defined which broadly cover the range of sites available (Task 5.1). It is anticipated that these will initially be simple conceptual, generic shapes appropriate to the potential storage sites within each play. For each geometry, multiple dynamic simulations will be carried out using established, state of the art simulation techniques for a matrix of number of wells, well geometry, injection rate, porosity, boundary properties etc (Tasks 5.2, 5.3). Buoyancy trapping, residual saturation and CO_2 dissolution should be considered. The simulations will provide CO_2 and pressure distributions, with the primary aims of estimating a ***practical*** capacity for the simulated cases and pressure distributions to feed into the integrity analysis (Task 4). From the capacity estimates, effective values of storage efficiency (E) will be determined as a function of the simulated parameters (Task 5.4). The bidders should justify how the matrix will cost-effectively provide E factors which will cover most UK sites. Most of the simulations will cover conventional injection techniques, but a limited number may be used to illustrate opportunities to increase practical capacity (eg intermittent water/gas injection; pressure relief wells that would enable saline water removal).

Task 6 Detailed Analysis of Exemplars

In order to provide improved confidence in, and 'calibration' for, the dynamic estimates, economic and risk analyses, one or two actual saline aquifer geometries will be selected in consultation with the ETI (Task 6.1) for more detailed analysis.

If possible these will be selected such that they are directly comparable to one of the Representative Geometries in Task 5 (ie similar geometry, parameters and number of wells). Effective E factors will be calculated (Task 6.2) and compared with those calculated from the Representative Geometries. Detailed risk and economic analyses will be carried out (Tasks 6.3, 6.4). Results will be compared to equivalent representative/generic geometries (Task 6.5).

Task 7 Database Building & Deliverables

The database structure defined at the start of the project (Task 1.1) will be populated and regularly updated as the project proceeds, ensuring a consistent approach between different areas and plays.

The major deliverables of the project will be:

1. Report providing an initial estimate of overall UK capacity (based on static analyses), including description of the methodologies used to reach that estimate (Month 6);
2. Fully-populated and documented, ArcView-compatible GIS database including input and output data on a play by play basis (end of project);
3. Final report incorporating a probabilistic estimate of overall UK Storage capacity, curves of availability of storage as a function of time, and cost of storage as a function of capacity. The report should fully describe the sources of data and methodologies used to reach the estimate. It should also make clear recommendations about what additional data, analytical & modelling methods etc should be developed to improve the precision of estimates (end of project).

The Respondent should provide suggestions on how the database should be maintained post-project. The costs associated with such maintenance should not be included in the project costs.

Task 8 Project Management

In addition to regular (monthly) reporting to the ETI, the project will include several key review points and Stage Gate Reviews:

Review Point 1: After Task 1.1 (database definition)
Review Point 2: After Task 1.3 (initial population of the database)
Stage Gate 1 (*): After Task 7.5 (Initial Estimate of UK capacity).

The full project plan will identify at least one further review point (after ~ 9 – 12 months).

(*) A Stage Gate Review is a comprehensive review carried out by ETI on completion of a stage identified in the Project Plan, including an assessment of whether the Project continues to deliver against the ETI and Programme outcomes (specified in the application form for the detailed Project proposal) and to carry out a validation exercise against the business case for the Project. Following such a review, decisions will be taken by the ETI and variations sought, which may include:

- Stopping the project
- Making significant changes to the remaining work programme
- Reassigning work packages between Participants
- Replacing participant or bringing in new participants to the Project.

Respondents should consider whether addition Stage Gate Reviews should be included in the Project Plan.

ID	Task Name
1	
2	**Task 1: Data Collation**
3	1.1 Define Database Structure & Format of Final Deliverables
4	1.2 Map Potential Storage Plays
5	1.3 Initial Population of input data for static analyses
6	1.4 Complete population of input data for static analysis
7	1.5 Initial Population of input data for dynamic analysis
8	1.6 Complete population of input data for dynamic analysis
9	
10	**Task 2: Static Capacity Estimation**
11	2.1 Apply Generic E factors
12	2.2 Undertake Pressure Capacity Estimation
13	
14	**Task 3: Economics & Availability Analysis**
15	3.1 Initial Cost & Availability Analysis
16	3.2 Further Cost & Availability Analysis
17	
18	**Task 4: Risk Analysis**
19	4.1 Initial Play Risking Analysis
20	4.2 Further Play Risking Analysis
21	
22	**Task 7: Database Building, Deliverables and Project Management**
23	7.1 Kick Off Meeting
24	7.2 Review Point 1
25	7.3 Review Point 2
26	7.4 Initial Population of Database (static capacities, E factors, initial economics, initial play riskin
27	7.5 Produce Initial Estimate of UK capacity & Report
28	**7.6 STAGEGATE 1**
29	7.7 Full Population of Database (dynamic capacities, effective E factors, economics, play riskin
30	7.8 Produce final probabilistic estimate of capacity (incl risks, economics & availability curves)
31	7.9 Produce Final Report
32	
33	**Task 5: Dynamic Capacity Estimation**
34	5.1 Define Representative Structures
35	5.2 Initial Simulations
36	5.3 Further Simulations
37	5.4 Determine Effective E factors
38	5.5 Extrapolate Effective E factors to all Plays
39	
40	**Task 6: Detailed Analysis of Exemplar(s)**
41	6.1 Identify Exemplar & derive detailed information on structure
42	6.2 Perform 3-D simulation of exemplar(s)
43	6.3 Carry out detailed risk analysis of exemplar(s)
44	6.4 Perform economic analysis on exemplar(s)
45	6.5 Review results from exemplar(s) against generic analyses

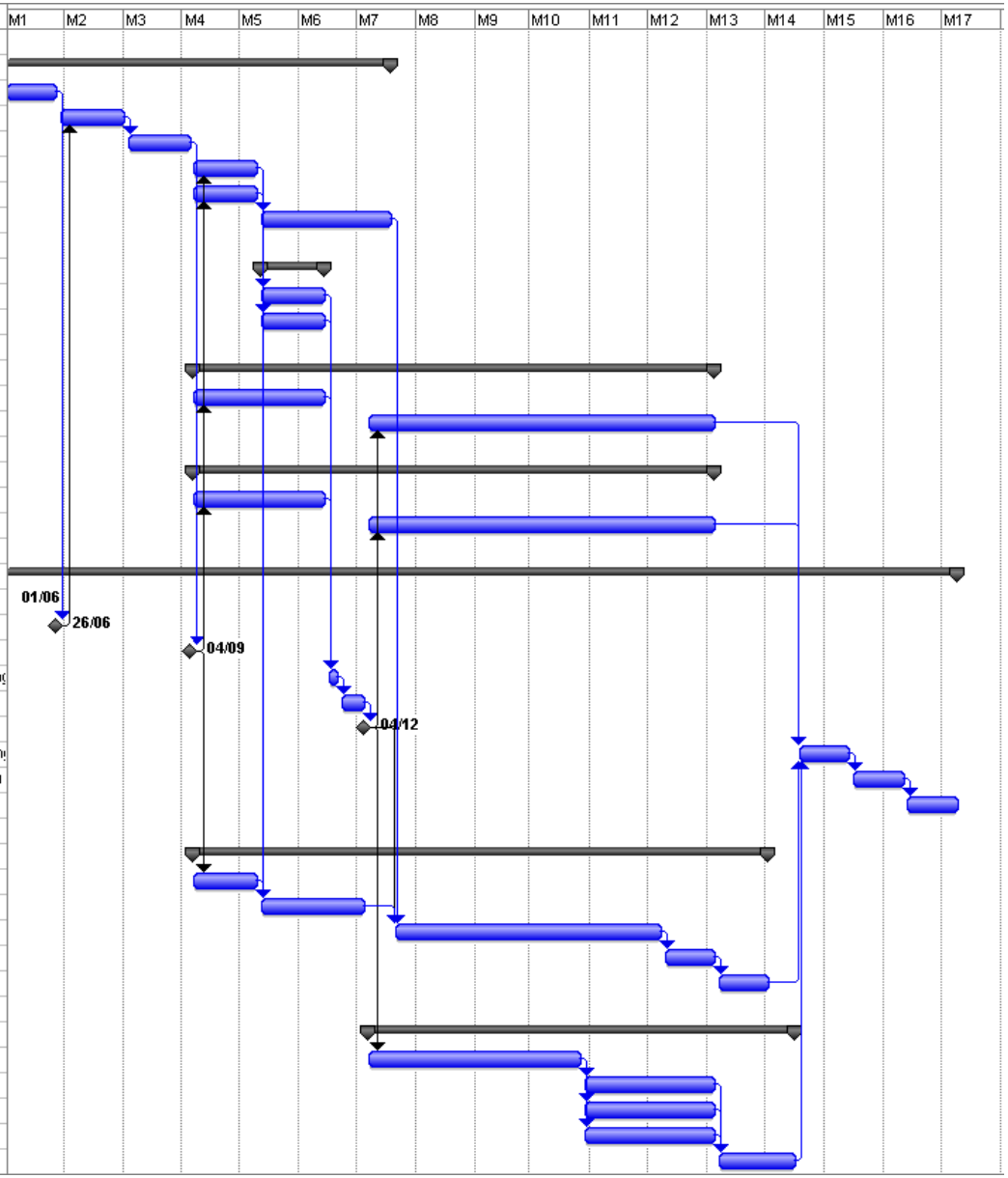

Figure 3.1 Indicative Work Flow and Timings

4. Price and Payment

This Project will be paid on a ***"capped cost plus" basis***. The Project Contract will include defined deliverables, with acceptance criteria, and defined Payment Milestones by which one or more deliverables will have been completed. Payments will be made against each defined Payment Milestone according to actual costs incurred by the Participants (plus an agreed profit margin), up to the agreed maximum for each Payment Milestone, subject to ETI acceptance of the Milestone Completion Report. Unless otherwise agreed as part of a formal contract variation process, the ETI shall not be liable for any payments above the maximum stated in the Project Contract. Academic participants will be funded at 100% Full Economic Cost.

Further information is contained in the Summary of Terms contained in Appendix B.

An Accountant's report shall be required to support selected financial reports and invoiced amounts, dependent upon the total contract value to be paid to each Participant. Details of these requirements will be agreed during the Project Detailing phase.

5. Terms and Conditions for Project Contract

During the Project Detailing phase, a Project Contract will be drawn up by the ETI based on its standard contracts for such work and incorporating appropriate information from the ETI's RfP and the Respondent's Proposal. Full terms and conditions will be agreed at that time, but a Summary of Terms is included in Appendix B.

Intellectual Property (IP) arising from the project will become the property of the ETI, and participants will not be granted rights to utilise results from the project in commercial applications.

The Consortium members will be required to execute a Consortium Agreement between themselves prior to signature of the Project Contract with the ETI. The ETI may request a copy this Agreement for review / approval, and a Model Consortium Agreement is available from the ETI.

Appendix A – Content and Format of Proposals

The Proposal shall be arranged according to the structure defined below and shall explicitly include all the information listed.

1. Executive Summary *[maximum 1 page]*

A summary of the Proposal, describing briefly:

- The organisation / Consortium undertaking the work
- Summary of the technical approach and ***key*** deliverables
- Confirmation of compliance with the Specification detailed in the Request for Proposals and/or brief summary of ***key*** exceptions/deviations
- Total Project cost and duration.

2. Project Objectives *[typically ≤ ½ page]*

The overall Project objectives will be as specified in the Request for Proposals. The Respondent may provide subsidiary objectives if they think this is appropriate. The Respondent should also describe any Critical Success Factors which either characterise a successful Project outcome or which are required to facilitate a successful Project outcome.

3. Background to Proposed Participants

The Respondent should provide a brief description of each of the proposed Participant organisations, including any major Subcontractors, ***[maximum 1 page per Participant]***, including:

- Key skills, knowledge, experience and previous track record in the area (technical, commercial and project management, including any UK-specific issues such as technology applicability to UK systems, UK industry practice, UK market/industry knowledge, etc)
- Key staff members involved (including a designated Project Manager), with the amount of each individual's time which will be dedicated to the Project, and detailing their experience – with CVs included in an Appendix (maximum 2 pages per individual)
- Alternate resources available to be deployed in the event that the above key members become unavailable
- Relevant quality, health, safety and environment management systems.

If the Project is to be undertaken by a group of organisations (whether as a Consortium or as Subcontractors), a table ***[typically ½ page]*** should also be provided to identify which Participant(s) is/are proposed to satisfy each of the specific criteria (skills, experience, etc) listed in the 'Criteria for Review and Selection of Proposals' section of the Request for Proposals.

Also if the Project is to be undertaken by a group of organisations (whether as a Consortium or as Subcontractors), evidence of previous collaborative working (or subcontract management as appropriate) should be provided, both within and outside the Participant group ***[typically ½ page]***.

4. Project Organisation *[typically 2 pages]*

The Respondent should provide Project organisational, governance and control structures and processes (particularly for Consortia).

The Respondent should indicate in the structure each Participant (including the ETI) and the position of the key individuals identified in Section 3 (including the Respondent's Project Manager).

The Respondent should identify in their Proposal any foreseen issues or difficulties in respect of the details of such an Agreement or of the process of executing one.

5. Programme of Work *[typically 5 – 10 pages]*

The Respondent should provide a summary of the overall approach to delivery of the Project, and a Task-by-Task breakdown of the proposed work, identifying for each Task:

- the Task leader
- other Participants involved
- key dependencies

- the technical approach (including use of any specific methodologies, techniques or tools)
- Task objectives
- deliverables, including for each deliverable a specification (e.g. quality, appearance, scope, function and purpose as appropriate) and proposed Acceptance Criteria

The Respondent should be specific about the activities within the Task, e.g. including test/simulation matrices or stating a number of tests/simulations.

Any issues or assumptions in defining the programme or schedule (e.g. inputs required from the ETI or other projects) should be explicitly stated.

A specific project management Task (or Tasks) should be identified describing all the activities in this area (e.g. regular meetings, reporting, Stage Gates etc). ***Note that throughout Project delivery the ETI will require reports of monthly progress with supporting financial data, reports to substantiate completion of each milestone, etc.***

If appropriate, a work flow diagram should be provided to illustrate the relationships between Tasks.

Any relevant activities related to but not included within this Project, and the relationships with these activities, should also be described.

6. Deliverables & Payment Milestones *[typically 1 page]*

Following the detailed specifications of each deliverable in the previous section, a summary table should be provided here listing all the Project Payment Milestones (i.e. key points in the Project where one or more Deliverables will have been provided and payment is requested from the ETI), and their constituent deliverables, with due dates for each deliverable and Payment Milestone.

Refer also to Section 11.

7. Project Schedule *[typically 1 page]*

The Respondent should provide a time schedule for the Project (e.g. in the form of a Gantt chart) showing the main Work Packages, Project stages and main Tasks within each Work Package and stage. This should clearly identify:

- Task durations and dependencies (including any inputs required from the ETI or other parties and any other external dependencies)
- Project Deliverables
- Payment Milestones and other relevant milestones
- Project Stage Gates, if appropriate (i.e. major review point(s) in the Project).

8. Risk and Health, Safety & Environment (HSE) Management *[typically 3 pages]*

The Respondent should describe the proposed Risk Management Strategy (i.e. how risks to the successful delivery of the Project will be identified and managed throughout the Project). They should also provide a Risk Register, 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.

The Respondent should state the extent of any exposure to fluctuations in foreign exchange rates or commodity prices, and their strategies for mitigating any such exposure. Respondents should also state the extent of any credit required throughout the Project, the sources of such credit (whether financed directly by the Participants or by their parent organisations or from other sources), and their strategies for mitigating any emergent shortfall in this credit supply.

Further to the summaries of each Participant's HSE management systems provided in Section 3 of the Proposal, the Respondent should provide here a register summarising the main anticipated HSE issues potentially affecting the Project and proposed systems, processes and strategies to address / mitigate each item.

9. Statement of Compliance *[typically 1 page or less]*

The Respondent shall provide a statement that the Proposal is fully compliant with the Specification and all other aspects of the Request for Proposals, or shall state clearly any exceptions, deviations,

alternative approaches or additions to the required Specification, with justification. ***Note that in the absence of any specifically-stated deviation in this section of the Proposal, in the case of any subsequent dispute, the ETI's specification will take precedence over the Proposal.*** 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.

10. Intellectual Property (IP) *[typically 1 – 2 pages]*

Any Project commissioned by the ETI will be subject to the appropriate ETI terms and conditions, (a summary of which is included in Appendix B), which state that all Arising IP will belong to the ETI. The Respondent should provide a brief overview of the nature of any anticipated IP Arising from the Project.

The Respondent should describe any Background IP (e.g. patents, proprietary data, computer algorithms, knowhow or other IP):

- which is needed to carry out the Project or which may be used during the Project; or
- which may be needed by the ETI to exploit the Arising IP.

The description of any such Background IP should detail:

- the nature of the IP,
- rights to that IP, and
- ownership and control, whether this is by any of the Project Participants or by any third parties.

ETI reserves the right to carry out further due diligence, requiring them to provide further information. Depending on the nature of the anticipated Arising IP and relevant Background IP, the ETI reserves the right to request participants to provide a Patent Study, completed by an agreed, independent and appropriately licensed patent agent.

11. Project Payment *[typically 1 – 2 pages]*

(a) The Respondent should provide:

- a figure for the ***maximum (capped) total contract value***, and
- a ***breakdown*** between Tasks and (for consortia or other Participant groups) ***between Participants against each Task***.

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

(b) The Respondent should also provide a ***breakdown of the total contract value (only) by category***, as specified in the Table below.

(c)

	Participant 1 (Lead Coordinator)	Participant 2	Participant 3	Participant 4	Participant 5 etc	Total
Number of Person-days						
Base Labour						
Materials						
Capital						
Subcontractors						
Travel & Subsistence						
Overheads						
Other						
Profit						
TOTALS						
Profit Margin, %						

Notes on Category Breakdown table:

1. Base Labour should include direct add-ons (eg NI, pension etc)
2. Capital costs should be based on depreciation during the Project x % usage on Project
3. Participants will be required to provide justification of overhead calculations during the Project detailing stage. ETI can provide a spreadsheet to calculate overheads on request
4. Participants are required to declare their profit margins
5. Each Industrial Participants should complete Section 1 of the ETI's 'D1 Form' and submit this with the proposal.
6. Academic Participants should determine their costs using the JeS system. The ETI will use this information to fill in Section 1 of its D1 form. Note that ETI funds Academic Participants at 100% Full Economic Cost.

Please note that during Project Detailing (prior to contract signature) the ETI will require more detailed cost breakdowns, including a schedule of payments against the Payment Milestones identified in Section 5 above.

12. Due Diligence Information *[this is excluded from the page limit]*

A. ALL Participants shall confirm that there are no potential, threatened, pending or outstanding recovery orders by the European Commission in respect of any funding received by any Participant.

B. All Participants (except ETI Members, universities / higher education institutions and UK/EU government laboratories / agencies) which provide more than 20% of the resources for the Project or which provide an input which is critical to the Project's success, shall provide Due Diligence Information to the ETI according to the table below.

Details of organisation
Full name:
Registered Office:
Type of Business (sole trader, limited company, partnership etc):
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 or litigation
Please provide (and attach if necessary) details of any claims or litigation against the organisation, outstanding and/or anticipated.
Insurance
Please confirm that you have insurance cover for the following risks, and confirm levels of cover and expiry for each. ETI will require evidence of these during the Project Detailing phase. • Property damage • Business interruption • Employer's liability • Public liability • Product liability (or justify its exclusion if not appropriate) • Professional Indemnity

Appendix B – Summary of Terms and Conditions for Project Contract

Introduction

The following represents a summary of the key contractual terms which the ETI would expect to be included in the Project Contract for a project under which the ETI owns all arising IP. This summary assumes that any projects will be carried out by a multi-party consortium with one of the consortium members acting as a lead co-ordinator.

Structure

1. The project participants shall be represented in dealings with the ETI by a lead co-ordinator, who shall, in the majority of instances, be the intermediary for any communication between the ETI and the project participants. This role includes providing notices of meetings and other activities to the ETI, reviewing and commenting on project reports (as required under the project) and administering payment of invoices for all project participants.

Project Management

2. The project participants will be required to appoint a project manager for the day-to-day management of the project. The ETI will appoint a programme manager to act on behalf of the ETI with regards to the project.
3. The project participants shall form a steering committee to make decisions on day-to-day matters (excluding decisions affecting the overall scope, structure and timing of the project). The frequency of meetings of the steering committee will be agreed. The ETI and its members shall be entitled to attend any meetings of the steering committee.
4. The project participants must fulfil various reporting obligations. The requirements for reports will depend upon the nature of the project, the deliverables under it and the duration of the project but are likely to include monthly reports, milestone reports, annual reports and a final report. Each report must address a specified list of topics required by the ETI.
5. The ETI will require the right to carry out a stage gate review on completion of a “stage” (or at least once a year) in order to assess whether the project continues to deliver against ETI outcomes and also in order to carry out a validation exercise against the business case. The ETI may carry out stage gate reviews more frequently if the project is in jeopardy. The need for stage gate reviews and the definition of a stage will depend upon the nature of the project.

Finance

6. ETI will pay against milestones and only in respect of actual costs incurred (or at pre agreed profit margin, if appropriate) for the work done under the project. Only eligible costs will be payable. Ineligible costs include interest charges, bad debts, advertising costs and legal costs incurred in finalising contracts and carrying on the project. Acceptance of milestones will be determined by the ETI, where appropriate, against agreed acceptance criteria. Any increase in costs in carrying out the project over and above the agreed contractual amounts will only be payable by the ETI when such charges are agreed in accordance with the contractual variation control procedure.
7. Costs are payable in Sterling and ETI will pay valid invoices within 30 days of receipt of invoice following acceptance of a milestone. An accountant's report will be required to support selected financial reports and invoices, in accordance with a standard ETI matrix.
8. The ETI reserves the right to require the return of funding in certain circumstances (such as in the event of corruption or fraud, overpayment, costs incurred in respect of unapproved project changes and failure to comply with State Aid obligations).

Confidentiality

9. Restrictions on disclosure of any other party's confidential information will apply. Any publication of results (if appropriate) will be subject to the confidentiality provisions in the agreement.

Audits and Records

10. ETI will require the right to audit the project and project participants during the project and, in certain circumstances, up to 7 years from the end of the project on financial or technical grounds.
11. The parties will be required to maintain the majority of project records for a minimum of 10 years from the project end date and for potentially more than 20 years where the records relate to registered intellectual property rights.

Sub-contracting

12. Sub-contracting is not permitted without consent. However, details of known subcontractors (and therefore the requisite consent) can be given in the agreement at signing.

Variation

13. Any variations to the project must be made via the variation control procedure.

Liability

14. The liability provisions relating to project participants will be tailored on a case-by-case basis but are likely to be several and capped at (or at a multiple of) the amounts payable or received under the project (except in the case of IP infringement claims, certain third party claims or other liabilities which cannot be limited or excluded by law. For these claims, no cap will apply). Recovery of indirect, consequential etc. damages will usually be excluded.

Withdrawal

15. Withdrawal from the project is only possible with the unanimous consent of all other contracting parties. Withdrawing participants cannot recover outstanding costs, unless otherwise agreed.

Termination and Suspension

16. The ETI reserves the right to terminate the agreement in certain circumstances (such as breach by a participant, withdrawal of a participant, insolvency, change of control of a participant etc.). The ETI also reserves the right to terminate the agreement unilaterally upon giving a (to be agreed) period of notice to the project participants. Upon termination, the ETI will pay the eligible costs incurred by the project participants up to the date of termination.
17. The ETI will reserve the right to suspend the project in certain defined circumstances.

Intellectual Property

18. All arising IP from the project will be owned by the ETI. The project participants will, to the extent required, be required to assign all relevant arising IP to the ETI.
19. The project participants will be required to licence their background IP: (i) to the other project participants on a royalty free basis where required for the purposes of the project; (ii) to the ETI or sub-licensees of the ETI, where required for the use or exploitation of the arising IP.

Appendix C – Glossary

Term	Definition
Consortium	The group of organisations described in Section 1.5 which may decide together to submit a Proposal to carry out the Project and be governed by a Consortium Agreement between themselves. This will not include the ETI itself.
Consortium Agreement	The agreement to be entered into between the organisations together forming a Consortium, as described in Section 1.5, which governs the execution of the Project within the Consortium.
Lead Coordinator	The organisation which is a member of the Consortium, and which manages and coordinates the activities of all the Consortium members, and which acts as the primary interface between the Consortium and the ETI, as described in Section 1.5.
Participant	An organisation which is responsible for the delivery of part of the Project scope and which is therefore the Prime Contractor, or is Subcontracted to the Prime Contractor, or is a member of the Consortium, or is a subcontractor to any of these organisations, as appropriate, as described in Section 1.5.
Payment Milestone	A contract milestone with defined constituent deliverables, associated deliverable acceptance criteria, and milestone value (all to be detailed in the Respondent's Proposal and agreed in the Project Contract) which should be completed in order to reach the said milestone, and at which, subject to acceptance by the ETI that the milestone has in fact been reached, payment may be claimed from the ETI on the basis described in Section 4 and on the Terms in Appendix B,
Prime Contractor	The organisation which manages and coordinates the activities of all the Subcontract Participants, as described in Section 1.5.
Programme Manager	The individual appointed by the ETI to manage the overall ETI programme to which this Project is affiliated, and to whom the Project Manager is accountable.
Project	The project for which the purpose, scope of work and other details are described in this Request for Proposals.
Project Contract	The contract, as described in Section 5, to be entered into between the ETI and the Participants (whether as a Consortium, Prime Contractor or single contractor)
Project Detailing Stage	The stage of Project commissioning carried out by the ETI if and after it has decided to take forward a Proposal, during which full and final Project details are established and a Project Contract is agreed.
Project Manager	The individual who is appointed by the Lead Coordinator or Prime Contractor, or is otherwise agreed by the Project Participants, to carry out its responsibilities.
Project Organisation	The entity or group of entities / organisations, and the contracting and management structure which they adopt, as described in Section 1.5, which together will carry out the Project if commissioned by the ETI.
Proposal	The proposal for the Project submitted to the ETI, as described in Section 2.1, in response to this Request for Proposals.
Respondent	The organisation submitting a Proposal to the ETI, as described in Section 2.1, on behalf of themselves and of any Consortium or Subcontract Participants.
Subcontract	A contractual arrangement between the Prime Contractor (described in Section 1.5) and another Participant organisation to which work has been subcontracted. This includes Participant organisations subcontracted in turn by other Participant organisations, but the Prime Contractor is not defined as a Subcontractor to the ETI.
Task	A significant activity or group of activities (within a Work Package) which results in completion of a deliverable or a significant part of one, or which represents a significant step in the process towards one.
Work Package (WP)	A major section of the Project scope of work, which may be identified in this RfP or in the Respondent's Proposal, in order to break up the scope of work into separate manageable parts. A Work Package will usually consist of a number of Tasks.