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| --- | --- |
| Title: | Energy Innovation Needs Assessments 2.0 |
| Tender Reference Number: | prj\_1437 |
| Deadline for Responses: | 14:00 5th June 2023 |

Date: 28.04.2023

The Department for Business, Energy & Industrial Strategy (referred throughout these documents as “BEIS” or the “Department”) wishes to commission the Energy Innovation Needs Assessments 2.0 project.

Enclosed are the following sections:

* Section 1 (page 5) Instructions on tendering procedures
* Section 2 (page 10) Specification of Requirements
* Section 3 (page 59) Further information on tender procedure
* Section 4 (page 61) Declarations to be submitted by the tenderer;

Statement of non-collusion

Form of tender

Conflict of interest

Standard Selection Questionnaire

The General Data Protection Regulation Assurance Questionnaire for Contractors

Code of Practice for Research

Annexes (page 87)

* Annex A: Pricing schedule
* Annex B: Code of practice for research
* Annex C: Exclusion grounds
* Annex D: Methodology Glossary

Please register your interest in submitting a tender through the BEIS e-Tendering platform, Jaggaer. It can be accessed via your web browser at <https://beisgroup.ukp.app.jaggaer.com/>. This will ensure you receive immediate notification of updates to the ITT process or answers to questions raised by potential bidders.

Please read the instructions on the tendering procedures carefully since failure to comply with them may invalidate your tender. Your tender must be returned by the closing date of 5th June 2023 14:00, clearly displayed in the Jaggaer portal.

I look forward to receiving your response.

Yours sincerely,

Strategic Energy and Climate Analysis

**Privacy Notice**

This notice sets out how we will use your personal data, and your rights. It is made under Articles 13 and/or 14 of the General Data Protection Regulation (GDPR).

**YOUR DATA**

We will process the following personal data:

Names and contact details of employees involved in preparing and submitting the bid; names and contact details of employees proposed to be involved in delivery of the contract; names, contact details, age, qualifications and experience of employees whose CVs are submitted as part of the bid.

*Purpose*

We are processing your personal data for the purposes of the tender exercise described within the remainder of this Invitation to Tender, or in the event of legal challenge to such tender exercise.

If you intend to use the above personal data collected in the procurement exercise to evaluate the procurement exercise and obtain feedback from tenderers, you need to highlight this here and update the section on retention.

*Legal basis of processing*

The legal basis for processing your personal data is processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested in the data controller, such as the exercise of a function of the Crown, a Minister of the Crown, or a government department; the exercise of a function conferred on a person by an enactment; the exercise of a function of either House of Parliament; or the administration of justice.

*Recipients*

Your personal data will be shared by us with other Government Departments or public authorities where necessary as part of the tender exercise. We may share your data if we are required to do so by law, for example by court order or to prevent fraud or other crime.

*Retention*

All tenders will be retained for a period of 6 years from the date of contract expiry, unless the contract is entered into as a deed in which case it will be kept for a period of 12 years from the date of contract expiry.

**YOUR RIGHTS**

You have the right to request information about how your personal data are processed, and to request a copy of that personal data.

You have the right to request that any inaccuracies in your personal data are rectified without delay.

You have the right to request that any incomplete personal data are completed, including by means of a supplementary statement.

You have the right to request that your personal data are erased if there is no longer a justification for them to be processed.

You have the right in certain circumstances (for example, where accuracy is contested) to request that the processing of your personal data is restricted.

You have the right to object to the processing of your personal data where it is processed for direct marketing purposes.

You have the right to object to the processing of your personal data.

**INTERNATIONAL TRANSFERS**

Your personal data will not be processed outside the UK/EEA.

**COMPLAINTS**

If you consider that your personal data has been misused or mishandled, you may make a complaint to the Information Commissioner, who is an independent regulator. The Information Commissioner can be contacted at:

Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF

0303 123 1113

casework@ico.org.uk

Any complaint to the Information Commissioner is without prejudice to your right to seek redress through the courts.

**CONTACT DETAILS**

The data controller for your personal data is the Department for Business, Energy Industrial Strategy (BEIS).

You can contact the BEIS Data Protection Officer at: BEIS Data Protection Officer, Department for Business, Energy and Industrial Strategy, 1 Victoria Street, London SW1H 0ET.

Email: dataprotection@beis.gov.uk.

**Section 1**

**Instructions and Information on Tendering Procedures**

Invitation to tender for: Energy Innovation Needs Assessments 2.0

Tender reference number: prj\_1437

Deadline for tender responses: 14:00 5th June 2023

1. **Indicative Timetable**

The anticipated timetable for this tender exercise is as follows. The Department reserves the right to vary this timetable. Any variations will be published on contracts finder or circulated to all organisations who have registered an interest in notifications.

|  |  |
| --- | --- |
| **Tender Timeline** | **Date** |
| Advert and full invitation to tender issued | 28.04.2023 |
| Deadline for questions relating to the tender | 15.05.2023 at 14:00 |
| Responses to questions published  | 19.05.2023 |
| Deadline for receipt of tender | 05.06.2023 at 14:00 |
| All applicants informed of outcome | 16.06.2023 |
| 10-day Standstill period | 16.06.2023 - 26.06.2023 |
| Contract award on signature by both parties | 27.06.2023 |
|  |  |
| Contract start date | 28.06.2023 |

The contract is to be for a period of 15 months unless terminated or extended by the Department in accordance with the terms of the contract.

1. **Procedure for Submitting Tenders**

The maximum page limit for tenders is 46 (excluding declarations, pricing schedule and CVs). To apply for this tender please register on the following website, <https://beisgroup.ukp.app.jaggaer.com/> . For any registration queries, please contact the Jaggaer Helpdesk on 08000 698 632 or email customersupport@jaggaer.com for any registration queries.

Please upload your proposal before the deadline via <https://beisgroup.ukp.app.jaggaer.com/> .

For questions regarding the procurement process please contact us via the “Messages” tab of the ITT on Jaggaer.

Tenders will be received up to the time and date stated. Please ensure that your tender is delivered not later than the appointed time on the appointed date. The Department does not undertake to consider tenders received after that time. The Department requires tenders to remain valid for a period indicated in the specification of requirements.

The Department shall have the right to disqualify you from the procurement if you fail to fully complete your response, or do not return all of the fully completed documentation and declarations requested in this ITT. The Department shall also have the right to disqualify you if it later becomes aware of any omission or misrepresentation in your response to any question within this invitation to tender. If you require further information concerning the tender process, or the nature of the proposed contract, use the “Messages” tab of the ITT on the Jaggaer portal . All questions should be submitted by 14:00 on 15.05.2023; questions submitted after this date may not be answered. Should questions arise during the tendering period, which in our judgement are of material significance, we will publish these questions with our formal reply by the end of 19.05.2023 and circulate – unnamed - to all organisations that have expressed an interest in bidding. All contractors should then take that reply into consideration when preparing their own bids, and we will evaluate bids on the assumption that they have done so.

You will not be entitled to claim from the Department any costs or expenses that you may incur in preparing your tender whether or not your tender is successful.

1. **Conflict of Interest**

The Department’s standard terms and conditions of contract include reference to conflict of interest and require contractors to declare any potential conflict of interest to the Secretary of State.

For research and analysis, conflict of interest is defined the presence of an interest or involvement of the contractor, subcontractor (or consortium member) which could affect the actual or perceived impartiality of the research or analysis.

Where there may be a potential conflict of interest, it is suggested that the consortia or organisation designs working arrangements such that the findings cannot be influenced (or perceived to be influenced) by the organisation which is the owner of a potential conflict of interest. For example, consideration should be given to the different roles which organisations play in the research or analysis, and how these can be structured to ensue maintain an impartial approach to the project is maintained.

The process by which this is managed in the procurement process is as follows:

1. **During the bidding process, organisations may contact BEIS to discuss whether or not their proposed arrangement is likely to yield a conflict of interest.** Any responses given to individual organisations or consortia will be published on contract finder (in a form which does not reveal the questioner’s identity). Any organisation thinking of submitting a bid, should share their contact details with the staff member responsible for this procurement, to ensure they receive an update when any responses to questions are published.
2. **Contractors are asked to sign and return ‘Declaration 3’ to indicate whether or not any conflict of interest may be, or be perceived to be, an issue.** If this is the case, the contractor or consortium should give a full account of the actions or processes that it will use to ensure that conflict of interest is avoided. In any statement of mitigating actions, contractors are expected to outline how they propose to achieve a robust, impartial and credible approach to the research.
3. **When tenders are scored, this declaration will be subject to a pass/fail score**, according to whether, on the basis of the information in the proposal and declaration, there remains a conflict of interest which may affect the impartiality of the research.

Failure to declare or avoid conflict of interest at this or a later stage may result in exclusion from the procurement competition, or in the Department exercising its right to terminate any contract awarded.

1. **Evaluation of Responses**

The tender process will be conducted to ensure that bids are evaluated fairly and transparently, in accordance with agreed assessment criteria. Further details are provided in the specification.

1. **Terms and conditions applying to this Invitation to Tender**

The Department’s Standard Terms and Conditions of Contract will apply to this contract. These are available to download on <https://beisgroup.ukp.app.jaggaer.com/> .

Please read the Procurement Guidance on GDPR and Cyber-Security. If the Contractor will be a Joint Data Controller, the data protection provisions contained in the Standard Terms and Conditions will be replaced by a Data Sharing Agreement drafted by Government Legal Department. If this applies to your procurement, the change from the standard data protection provisions should be described in this section of the Invitation to Tender.

If the Contractor will transfer personal data outside of the European Economic Area or the countries highlighted in Procurement Guidance on GDPR and Cyber-Security, please inform your Procurement Business Partner, who will highlight the changes which will need to be made to the standard data protection provisions.

1. **Further Instructions to Contractors**

The Department reserves the right to amend the enclosed tender documents at any time prior to the deadline for receipt of tenders. Any such amendment will be numbered, dated and issued by 16.05.2023. Where amendments are significant, the Department may at its discretion extend the deadline for receipt of tenders.

The Department reserves the right to withdraw this contract opportunity without notice and will not be liable for any costs incurred by contractors during any stage of the process. Contractors should also note that, in the event a tender is considered to be fundamentally unacceptable on a key issue, regardless of its other merits, that tender may be rejected. By issuing this invitation the Department is not bound in any way and does not have to accept the lowest or any tender and reserves the right to accept a portion of any tender unless the tenderer expressly stipulates otherwise in their tender.

1. **Checklist of Documents to be Returned**
* Proposal based on evaluation questions (maximum 46 pages)
* Annex A: Pricing schedule
* Declaration 1: Statement of non-collusion
* Declaration 2: Form of Tender
* Declaration 3: Conflict of Interest
* Declaration 4: Standard Selection Questionnaire
* Declaration 5: The General Data Protection Regulation Assurance Questionnaire for Contractors
* Declaration 6: Code of Practice

**Section 2**

**Specification of Requirements**

Invitation to Tender for: Energy Innovation Needs Assessments 2.0

Tender Reference Number: prj\_1437

Deadline for Tender Responses: 14:00 5th June 2023

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# Introduction and summary of requirements

**1.1** **- High level summary:**

BEIS is considering a supplier to undertake a comprehensive update of the 2019 published [Energy Innovation Needs Assessments (EINAs)](https://www.gov.uk/government/publications/energy-innovation-needs-assessments). The project will be delivered in consultation with government technical and analytical experts and will allow BEIS to build a robust knowledge base to guide UK decisions for the support of innovation in net zero related technologies, systems and processes. It will be further supplemented by ongoing BEIS led expert engagement activities and relevant analysis projects (further detail under part 5 of specification). Project deliverables will provide insights into the potential of technologies, systems and processes to:

* lead to a reduction in energy and/or decarbonisation costs;
* improve UK energy security;
* generate economic benefits to the UK;
* help meet UK climate change targets;

and help contextualise UK challenges and capabilities in meeting such opportunities by identifying, exploring, and quantifying key UK net zero innovation barriers and enablers.

Compared to 2019 EINAs, additional focus is expected on: a) innovation barriers and enablers; b) energy security. The first is meant to contextualise identified innovation opportunities to UK specific circumstances, highlighting where additional intervention is necessary to unlock the potential benefits of innovation. The second is meant to identify and compare opportunities for increasing the resilience of the UK energy system. The analysis should prioritise innovations/technologies which require state support within this decade and have a realistic chance of commercialisation by 2040 to ensure tangible impacts on the 2050 net zero target. BEIS welcomes suggestions for methodological improvements on the original EINA methodology if within budget, able to address core objectives and without compromising the feasibility or robustness of key deliverables.

**1.2 - Key overarching aims:**

1. Build a robust evidence base to guide UK government net zero innovation prioritisation, investment decisions, address market failures and enhance energy security.
2. Develop a common understanding of the most significant innovation needs from a whole system perspective at UK and regional level to facilitate multi-sector coordinated planning across UK government.
3. Develop an understanding of key UK innovation barriers and enablers across identified innovation opportunities where further government action is required for unlocking potential.
4. Allow cross-comparison and prioritisation of UK innovation needs within technology families and across the energy system as a whole on the basis of cost-effective decarbonisation, economic benefits and improved energy security.
5. Provide UK government with the evidence needed to identify and communicate UK priority areas to researchers, innovators, developers and investors.
6. Provide an understanding of key international technology and policy developments and how the UK can maximise its opportunities within such context based on relevant domestic capabilities.

**1.3 - Summary of objectives**

For each selected sector, technology family and individual technology BEIS requires the analysis to:

1. Identify potential opportunities for low carbon energy innovation technologies, and the systems and processes in which they are utilised, as the UK decarbonises up to 2050. A shortlisting exercise is expected to narrow the range of technologies/systems/processes covered further in the analysis;
2. Update or provide up-to-date cost estimate ranges for identified technologies and innovations, including their potential future trajectories to at least 2050, to feed into modelling. Cost trajectories should include minimum, central and maximum cost decreases feasible, with limits set by technical feasibility rather than historical trends;
3. Provide whole system UK technology scenario trajectories based on identified innovations to model deployment and ensure consistent system wide quantitative comparability across technologies/innovations. The use of models such as UK TIMES or equivalent is expected for system modelling, with supplementary modelling to address any shortcomings;
4. Identify, assess and quantify key risks or opportunities arising from selected technologies/systems/processes for UK energy security during and after the transition to net zero.
5. Estimate the value to the UK - and ideally UK regions - from:
	* reducing energy costs through innovation, based on information on current and assumed costs and cost reduction potential for technologies and related systems and processes (“innovation value” and “opportunity costs” are examples from 2019 EINAs) – where there are high cost uncertainties, cost ranges are necessary with lower bounds representing ambitious but technically feasible limits;
	* the economic growth opportunity, both domestic and from export, through technology, system and processes innovation. This can be based on updating and improving existing job calculators (or through other more effective and consistent methods) to provide estimates for:
		1. Gross Value Added (GVA) to the UK economy;
		2. an estimate of the jobs generated within the UK;
6. Assess the need for UK public sector intervention in low carbon energy technology, system and processes innovation in the UK’s energy system, identifying existing barriers, enablers, market failures and where government could play a critical role in addressing these gaps. Where previous EINA or new GVA/job calculators can be relied on, more in depth quantitative estimates of such gaps is desirable: e.g. estimation of workforce skill requirements to meet deployment pathways or related material/component needs to highlight potential bottlenecks, integrated within EINA calculators.
7. Identify specific areas of innovation priority within and between technology families to deliver the greatest benefit to the UK and to meet the UK climate change targets. Where the underlying modelling allows, a quantification of carbon savings enabled by innovation is desirable.
8. Provide an indicative estimate of necessary support and investment from private and government sources to unlock identified innovations and related benefits, as well as benefits attributable to government R&D support. Overall investment level needs can be derived based on the system modelling stage or better recommendations.
9. Pinpoint the UK strengths in innovation including, intellectual, asset and commercial strength, and identify the economic growth opportunity where areas of innovation need align to UK strengths.

# Background

**2.1 - EINAs and need for upgrade**

The EINAs were developed over 2017-2019 and have since shaped and influenced UK energy innovation support and wider decarbonisation strategy and ambition. As the UK transitions to net zero, new technologies commercialise and the energy/net zero landscape matures, which increases the need for an up-to-date and improved evidence base. This iteration of the EINAs will need to enable HMG to plan, design and effectively prioritise innovation support decisions for the second half of the decade to ensure the UK remains on track to meet net zero by 2050 and maximises the benefits of the transition.

The 2019 EINAs were based on 80% GHG reduction targets. While additional net zero runs and analysis were conducted to align with new targets, the foundation of the analysis remains grounded in former decarbonisation objectives and is due a comprehensive review. The general principles guiding the EINAs (system impacts, economic benefits, state intervention need) remain important, as do methodologies for whole energy system modelling, capturing impacts resulting from innovation and estimating economic impacts. An update of key inputs, assumptions and policy targets based on the same or similar methodology and assets would be needed in realigning EINAs 2.0 to the net zero target and current technology information. However, the previous methodology alone would not provide sufficient insight on the next steps for government innovation support – additional key challenges facing the UK in both the viability of net zero and energy security considerations need to be accounted for.

To address such limitations, BEIS wants to integrate barriers/enablers and energy security considerations into this iteration of the EINAs methodology, in addition to bringing other data and assumptions up-to-date. Similarly, further emphasis is expected on the timeliness of intervention, to ensure near term government prioritisation is focused on areas which have a realistic chance of influencing UK’s net zero trajectory by 2040 and see the deployment of identified technologies/innovations in the following years. BEIS welcomes suggestions for changes to recommendations or general methodology if shown to better address the core aims and objectives of the project and deliver on expected outputs as outlined within the specification.

Additional detail on suggested changes and expected outputs is provided within the specification, while detail on previous EINAs methodology can be seen within [published EINA reports](https://www.gov.uk/government/publications/energy-innovation-needs-assessments).

**2.2 - Policy Context**

The BEIS £1bn Net Zero Innovation Portfolio (NZIP) invests in accelerating the commercialisation of innovative mid-TRL low-carbon technologies. Together with [wider HMG net zero R&D investment](https://www.gov.uk/government/publications/net-zero-research-and-innovation-framework), about £4.2 billion in total over 2022-25, it aims to enable scaling-up deployment of low carbon solutions in the 2030s-40s.

The EINAs were an essential part of the evidence which helped shape NZIP and wider government energy R&D and net zero activity. By highlighting system needs and innovation opportunities across energy sectors it provided a coherent framework considering both decarbonisation cost effectiveness and economic opportunity across all critical sectors/technologies. Wider government policy, such as the [Net Zero Strategy](https://www.gov.uk/government/publications/net-zero-strategy), drew significantly from the EINAs to highlight the opportunities presented from decarbonising the energy system.

In preparation for the next Spending Review period, BEIS has begun work to help decide the most effective measures for post-2025 innovation support. Given the level of spend involved, and the potential impact on developments within the net zero space, it is important that the best possible evidence and prioritisation framework is in place to set a coherent strategy and make effective decisions to deliver on it. EINAs 2.0 would aim at providing such prioritisation framework and set the stage for future innovation portfolios and wider government net zero strategy.

# Methodology Baseline Recommendations

Bids are sought that propose an approach/methodology that best meets the aims and objectives set out in part 1 of the specification above, and can be further developed and refined during the early planning phase to meet BEIS needs. Any approach should be comprehensive, consistent across different strands and technologies and make effective use of available assets, research and evidence where beneficial to project outcomes. (see part 5 of specification for further info on BEIS internal analysis and evidence).

The below outlined themes should be considered as a guiding suggestion rather than a strict methodological requirement, unless explicitly stated. Where alternative approaches are recommended by bidders, they must be shown to be equal or an improvement on the below by means of better delivery of the summary of requirements outlined above and specified expected outputs. Changes may be within the detail of each element/theme outlined below, or cross-cutting and more comprehensive. Minimum project output requirements are outlined further below under “Expected Outputs”.

* 1. - **Early-Stage Technology Shortlisting**

Early shortlisting will narrow down the technology areas undergoing further investigation, modelling and analysis in the project. This can be based on the following indicative but not exhaustive criteria, with (\*) being strictly necessary criteria in any bid:

* Need for government intervention\*: some technologies with high potential are already receiving extensive attention from private industry with significant sums dedicated in R&D. In such cases public R&D funding is not necessary. In some cases certain barriers, rather than lack of funding, may be hindering private progress (e.g. inadequate grid, market framework etc.). Such cases should be considered for the analysis as still relevant for government intervention, particularly under the “barriers and enablers” workstream.
* Critical for UK energy security\*: some technologies may not provide high levels of decarbonisation or economic benefit, but are essential in guaranteeing or improving UK energy security and resilience to international disruptions. Where relevant to innovation, such technologies should still be considered.
* Timeliness\*: technologies which have limited likelihood of being commercially viable by 2040 (e.g. nuclear fusion), even if promising in the longer term, should not be considered for this specific project.
* Critical to UK net zero\*: where a technology might not have high innovation value, be necessary for energy security considerations or align with current UK capabilities, but net zero cannot be achieved without it and still requires government intervention, the analysis should consider its inclusion.
* Innovation value: this criterion is based on the previous EINAs early shortlisting methodology. Technology level impacts of innovation are estimated through system modelling, and the lowest scoring technologies removed from further analysis unless essential due to other considerations.
* UK Relevance: some technologies/components may provide high economic and decarbonisation opportunities in principle, but may not be adequate for UK specific circumstances (e.g. require scales of production the UK cannot match to larger countries). In such cases narrower component-level opportunities may however still be considered as relevant.

Below is an illustrative example of how the shortlisting could take place on a step-by-step basis, combining whitelisting and exclusion of technologies based on some of the criteria above. Other shortlisting approaches/sequencing is welcome so long as it fulfils the same function and meets outlined mandatory criteria.

Given the UK net zero target, unabated carbon intensive technologies will automatically be excluded from EINAs 2.0 analysis. These will however still be relevant under wider system modelling in outlining the transition.

For information that can be provided from within BEIS for this purpose, please see part 5 on BEIS internal analysis. Most relevant evidence includes an ongoing expert engagement expected to be concluded by mid-July, and an international data comparative model.

* 1. - **Technology Scope**

The chosen methodology will be used for the assessment of agreed technology families and individual technologies following the early shortlisting process. The methodology will also allow cross-technology, cross-sector and cross-system assessment of innovation needs and opportunities. Table 1 provides an illustrative example of technology subdivisions used for the 2019 EINAs.

To allow for consistency across other BEIS analysis and publications, EINAs 2.0 highest categorisation group must align with sectorial groupings under [the Powering Up Britain](https://www.gov.uk/government/publications/net-zero-growth-plan-and-carbon-budget-delivery-plan-analysis-methodology) publications (Power; Fuel Supply and Hydrogen; Industry; Heat and Buildings; Transport; Natural Resources, Waste & F-Gases, Greenhouse Gas Removals), ensuring no double counting and highlighting any technologies cutting across sector groupings. Theme and sub-themes are no longer expected as classification. The [Net Zero Research and Innovation Framework](https://www.gov.uk/government/publications/net-zero-research-and-innovation-framework) and its corresponding [Delivery Plan](https://www.gov.uk/government/publications/uk-net-zero-research-and-innovation-framework-delivery-plan-2022-to-2025) provides the most up-to-date overview of UK public net zero R&D activity, and can be used as reference for innovation support activity across government.

Table 1. Illustrative example of theme and technology family subdivisions in 2019 EINAs excluding road transport.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sub-theme**  | Renewables  | Nuclear Fission\*  | Building fabric\*  | Heating and cooling\*  | Smart systems\*  | Industry\*  | Hydrogen and fuel cells (stationary)\*  | CCUS\*  | Bioenergy\*  |
| **Technology Family**  | Wind | Solar PV | Tidal | Biomass | Other | Full scale | Small modular | Construction | Materials | Operation | Heat pump | Hydrogen | Biomass | Networks | Storage | DSM | Vector coupling | Digital | Efficiency + digital | Electrification | Materials | Heating | Production | Infrastructure | Fuel Cell | Power | Industry | Conversion | New feedstocks |
| **Technology (e.g.)**  | Onshore; offshore\* | Utility scale and distributed solar | Lagoon; stream\* | Combustion | Wave; hydro, geothermal; CSP | Advanced reactor; Pressurised | SMR | Advanced retrofit | Insulation, double glazing | Building controls | ASHP, ASHP + storage, hybrid | Hydrogen boiler | Heat pumps, heat networks, heat storage…  | District heating | Utility and distributed scale | Home hubs, smart meters | Power to liquids, | Smart logistics; CAV; blockchain | Motors; insulating blast furnace | Electric arc furnaces | Light-weighting; glass recycling | Biomass; hydrogen | Electrolysis; SMR; biomass | Blending, gas grid conversion | Fuel cell | Oxy; Post-comb.; pre-comb.; BECCS | CCS by sector, | AD; SNG; Pyrolysis; gasification, fermentation | Algae; woody/grassy crops |

*Notes:* *\* These are the groupings that were shortlisted in the 2019 EINA process. Offshore wind and Tidal stream are not at the sub-theme level; however, for simplicity the reports are referred to as the “sub-theme reports”*

Depending on project technology shortlisting and outcomes, the outcome technology scope may be significantly different from the 2019 EINAs (e.g., due to addition of new technologies or removal of those which are no longer a priority). Regardless of the outcome, the overall project methodology will need to apply across sectors, technology families and technologies on a consistent whole system basis. Below technology level, component level breakdowns will be necessary to determine costs for trajectories, system modelling and economic impact estimations.

Please note: Transport will only be considered at the system modelling stage (as a source of energy demand), and not for other parts of the project.

* 1. - **System Modelling**

Given the complexity and interconnectedness of the energy system and net zero relevant technologies, a whole system approach to analysis is necessary to ensure various system interactions, substitutions and complementarities are correctly captured. Given net zero considerations, modelling must allow analysis of technology deployment up to at least 2050.

* + - 1. **Model Choice:**

Previously, EINAs captured energy system interactions through ESME (Energy System Modelling Environment). It is expected that this iteration of the EINAs will use a similar recognised energy modelling asset (UK TIMES, ESME etc.) to derive necessary scenario pathways and whole system consistent innovation relevant metrics.

BEIS has a long-standing relationship with UK TIMES – both in terms of its development as well as using the model. BEIS therefore recommends the use of UK TIMES, as the model provides significant value by allowing BEIS to internally update technology trajectories in the future and have a good understanding of input assumptions. BEIS internal UK TIMES model runs and scenarios are available to complement the project, including those used for the Net Zero Strategy or other recent internal or published scenarios. This does not exclude the use of other models, but at least equal quality and equivalent or higher value to BEIS (see evaluation section) must be shown with the alternative. This could be based on a combination of the following, other factors remaining equal:

* Ability to develop a significantly higher number of project relevant scenarios.
* A significantly more up-to-date technology landscape covering all GHGs.
* Ability to model infrastructure transformation and needs to meet given pathways.
* Ability to better model smart systems integration and demand response opportunities.

Where the above factors are not viable with the chosen model, including UK TIMES, complementary models may be employed or developed to address the core models weaknesses, so long as consistent with the wider system modelling. Offers to further develop UK TIMES for the purposes of this project are highly welcome. Unless explicitly agreed, all new model developments and outputs of this project will be under BEIS ownership.

Bidders must not expect BEIS to employ internal UK TIMES team resource for this project. However, BEIS will be able to provide some support to assess the outputs of the modelling carried out and agree assumptions where necessary. Where alternative models to UK TIMES are used, BEIS requires high model transparency to be able to carry out similar output assessment and confidently agree on input and model functioning assumptions as in the case of UK TIMES. Such model assurance should not be expected through BEIS resource time given it’s part of the quality assurance requirements.

Where bidders choose to use a model other than UK TIMES, BEIS should have access to the underlying data inputs, calculations and outputs for integrity purposes. All modelling activity, regardless of model choice, must meet BEIS Quality Assurance processes as outlined within the Quality Assurance section of the specification.

* + - 1. **Assumptions:**

BEIS will instruct bidders on the key assumptions that need to be taken for system modelling but is open to recommendations from contractors where beneficial to the project and help aid its robustness and objectivity. BEIS internal or published scenarios can be used for the purposes of initial assumption taking. However, some level of assumption change is to be expected based on project and contractor recommended methodology needs. Most recently societal change was among newly explored assumptions for modelling purposes.

* + - 1. **Scenarios:**

Given the level of uncertainty in modelling to 2050, the use of multiple pathway scenarios is expected to underly the wider analysis and technology assessments. The following scenarios (or similar) are examples that could be used for this purpose (a minimum of three scenarios is expected, more scenarios are highly desirable):

* Baseline no-intervention or no innovation scenario – counterfactual
* Central innovation scenario - exploring pathway under moderate to high intervention to address barriers to net zero innovation.
* High innovation scenario - exploring limits of innovation where most barriers are addressed and maximum feasible cost reductions in technologies are achieved.
* Alternative central scenario – similar to the central innovation scenario but with variation in chosen key assumptions (e.g., societal change, specific technology pathway).

Internal UK TIMES scenarios can be provided to aid the development of the above. The alternative scenario can be based on what contractors recommend as most insightful for the purposes of the analysis. BEIS has recently developed societal change UK TIMES scenarios which could be adapted for use as an alternative scenario for the system modelling stage of the project.

* + - 1. **Learning by doing vs learning by research**

Given the focus of this project is on innovation and its potential, an understanding of sources of innovation is important to determine the impact of different types of intervention (e.g. innovation due to R&D vs innovation from scaling up or deployment, or innovation which will likely happen internationally etc.).

Most energy system models tend to employ either an exogenous or endogenous approach in modelling innovation impacts of technology costs over time, where cost decrease assumptions are fed into the model or determined by the level of a technology’s deployment.

A desirable approach for this project would be to account for both, by integrating exogenous and endogenous approaches within the modelling. This could, for instance, be implemented by considering alternate exogenous cost decrease assumptions under an endogenous learning model run, as shown in figure 1.

Figure 1. Illustrative example of hybrid cost curve approach:

Regardless of the chosen approach, it should be possible to estimate the level of innovation impact that UK public funded R&D and development activity can have. The EINAs approached this by attaching an attribution % to overall innovation impacts, as shown in figure 2.

Figure 2. EINAs attribution steps:

The split of R&D derived cost reduction and that from learning by doing can be apportioned according to TRL levels, with decreasing R&D impact as technologies mature, as shown in figure 3.

Figure 3. Illustrative example of innovation impact at different TRL stage:

* + - 1. **Energy security**

System modelling may be used to capture the system resilience provided by particular technological innovations to shocks or variability in inputs.

* + - 1. **System modelling metrics**

Two of the main innovation related metrics developed as part the 2019 EINA system modelling stage were:

* innovation value: the measure of difference in energy system costs between a counterfactual no-innovation scenario and an innovated one (ie reduced technology costs and/or increased efficiency). This was applied at technology, sub-theme and system level for EINAs.
* opportunity costs: the impact to energy system costs resulting from removing a particular technology or removing specific innovations within a particular sub-theme. The metric was particularly useful in understanding which technologies were critical in achieving decarbonisation targets and to complement innovation value where system savings did not result from innovation per se but did occur based on technologies being made available.

BEIS expects the same or equivalent metrics to be developed as part of the system modelling exercise. Where bids do not recommend this, adequate alternative metrics should be suggested.

* 1. **- Economic Impacts**

This workstream is meant to capture the economic opportunities, defined as jobs and GVA, resulting from the deployment of this iteration of the EINAs modelled technologies. It will be dependent on the system modelling stage which determines the level of deployment for each technology based on scenarios.

2019 EINAs estimated economic impacts as the level of jobs and GVA unlocked by successfully commercialising identified technologies and meeting the targets set within the system modelling stage. This was done within Excel workbook tools referred to as job calculators (or EINA calculators). Each calculator covered a particular sub-theme of the EINAs. Deployment pathways from ESME were used by multiplying them by component costs or LCOEs at 5 year intervals.

To estimate EINAs 2.0 economic impacts, BEIS recommends where possible the update of existing calculators which were developed as part of the 2019 EINAs so as to minimise the level of resource required. This will by default require the update of the cost assumptions made for different technologies, updates to the deployment pathways modelled at the systems stage and a review and update of the UK market share capture assumptions. BEIS welcomes recommendations for job estimations or any useful additions to the calculators, so long as they are consistent across technologies and do not compromise deliverability of other workstreams. Specific requirements are outlined within the part 4 (Outputs Required).

The shortlisting process may result in some technologies or entire sectors not being further covered in this iteration of the EINAs. However, the following technology areas, given their net zero relevance to hard to abate sectors and enabling function, will be required to be included in the calculator update regardless of the outcomes of the prior shortlisting activity:

* Greenhouse gas removals: BEIS latest cost estimations and technical information on Direct Air Capture can be shared for exclusive use with this project.
* Hydrogen production
* Energy Storage
* Nuclear (SMRs, AMRs)

This may require the creation of new calculators, or the addition of new technologies to existing calculators (for existing calculators see list in table 2 below). BEIS will support the internal coordination effort for this workstream – contractors will be put in touch with relevant sector teams who have ownership of a given calculator to coordinate updates.

Some areas/technologies of interest for this workstream may not be available in the chosen energy system model feeding deployment scenarios. Where possible, other recognised analysis/modelling may be used to complement such areas. BEIS will share any relevant government internal evidence exclusively for the purposes of this project if it can address such modelling gaps.

Calculators could be used for additional elements of interest, such as skills and materials/component needs. See barriers and enablers below for further detail. An example of the calculators used in the original EINAs is included within the Jaggaer page of the project to provide a better understanding of calculator methodology and necessary update needs. All other calculators will be made available for the purposes of this project at the start of the project. Please note: up-to-date calculators will be made available within a shared area to contractors for the exclusive purpose of this project.

Table 2 and 3: 2019 EINAs sub-theme calculator technology splits and key data inputs.

|  |  |
| --- | --- |
| **Calculator** | **Technology Split** |
| **Biomass** | BioSNG |
| BioH2 |
| Anaerobic digestion |
| Fast pyro |
| LC ferm |
| Syngas ferm |
| Sugars to higher hydrocarbons |
| Fischer-Tropsch synthesis |
| Alcohol catalysis |
| **Buildings** |  |
| **CCUS** |  |
| **Hydrogen and Fuel Cell**  | Reforming |
| Bioh2 |
| Coal gasification |
| Electrolysis |
| Fuel cells |
| **Heating and Cooling**  | Low-carbon heating and cooling |
| Heat pumps |
| HVACs |
| Heat network services |
| H2 boilers |
| **Industry** | Cement, paper, chemicals, iron… and steel… |
| **Nuclear** |  |
| **Smart** | V2G |
| Battery storage |
| Transformers  |
| Hydrogen |
| **Tidal**  |  |
| **Transport** | LDV BEV |
| Low emission trucks |
| Low emission buses |
| Transport fuel cells |
| Connected autonomous vehicles |
| **Wind** | Offshore Wind |

* 1. **- Innovation barriers and enablers**

This workstream should aim to capture the level of challenge faced by identified innovation opportunities. It should not be seen as a way of shortlisting technologies, but rather to provide understanding of what needs addressing in order to unlock or maximise the chances of successful innovation, commercialisation and deployment for net zero. Whereas the 2019 EINAs focused mainly on quantifying potential benefits and opportunities from innovation, this iteration of the EINAs will provide additional depth to place such opportunities within a UK specific context.

The number of potential barriers and enablers is high and varied across technologies, so it is unlikely that every single one can be assessed in depth. Therefore, focus is expected proportional to the level of impact of the barrier/enabler and the practicality of integrating them within this iteration of the EINAs modelling, analysis and research framework. To this end, BEIS suggests dividing this workstream into a high-level qualitative overview part identifying the main barriers/enablers and their likely impacts, and a second more in depth part involving quantitative analysis of key selected areas.

The high-level overview part should be able to indicate the level of impact by given barriers/enablers to the shortlisted technologies. Where a barrier can act as point of failure for the success of a technology/innovation if unaddressed, this should be highlighted. Examples of barriers/enablers could be (but are not limited to): R&D international comparative advantage, regulatory and market frameworks, skills, access to finance, supply chain resilience, social acceptance, infrastructure, wider energy system integration etc.

Methodologies to qualitatively assess a variety of innovation barriers and enablers could include (but are not limited to): multi-criteria decision analysis (MCDA) to rank barriers/enablers against set criteria; technology innovation system (TIS) analysis to evaluate barriers/enablers against innovation functions; hybrid approaches involving multiple methodologies. A description of both MCDA and TIS can be found in **Annex D: Methodology Glossary**.

The second deep-dive part could closely align with the jobs calculators outlined in the previous section. Given the coverage of deployment, technologies and components, the calculators can act as an initial framework to build additional quantitative assessments across identified technologies. Some areas where this is possible include skills and materials/component needs, as following:

* **Skill requirements:** skills required for the deployment and operation of deployed technologies, based on the scenarios included in the calculators, could be associated with the relevant technologies or components, providing an outline of likely skills required by the UK workforce over time to ensure the given pathway is achievable. An assessment can be made of the extent of the gap between needed skills and current skill availability, quantifying the workforce skills-related barriers to identified innovation opportunities.
* **Materials/component needs:** this could act as a subset of supply chain considerations, with a focus specifically on materials/component needs (either internally produced or imported). The level of components/materials needed for given levels of deployment can be included in calculators, to get an understanding of UK demand levels implied by modelled pathways. A comparison between identified material/component needs and current levels of imports or production can quantify potential supply chain bottlenecks acting as barriers to identified innovation opportunities.

Network and infrastructure needs are another area of high interest to BEIS given increasing evidence of challenges to the transition to net zero, as covered by recent publications by the [CCC](https://www.theccc.org.uk/publication/delivering-a-reliable-decarbonised-power-system/), [NAO](https://www.nao.org.uk/reports/decarbonising-the-power-sector/) and the [Review of Net Zero](https://www.gov.uk/government/publications/review-of-net-zero). Ofgem and Innovate UK are conducting stakeholder engagement activities across their network as part of evidence gathering for the [Strategic Innovation Fund](https://www.ofgem.gov.uk/strategic-innovation-fund-sif). Such information can be used to complement qualitative evidence in this space. For further info please see part 5 of specification.

The three areas highlighted above (skills, supply chains and infrastructure needs) should be considered as highly desirable for more in-depth analysis across the technologies selected by the EINAs.

**Please note:** BEIS is conducting expert engagement activities aimed at capturing views on barriers/enablers which can aid the development of this workstream. This includes interviews on the key barriers constraining innovation within the net zero space (see Expert Engagement under part 5.1 of the specification). While this is likely to complement this section, it is unlikely to cover all EINAs 2.0 technologies and are unlikely to be easily quantifiable on a consistent basis. However, it can be considered as a starting point for the analysis. Main findings are expected by July 2023.

* 1. **- Timeline and dependencies**

BEIS expects most early analysis results to be available by around April 2024. This is to allow in depth review from BEIS and necessary QA activity to take place before moving to the reporting/synthesis stage. The last 3 months of the project are expected to be dedicated to reporting and synthesis. The precise timeline is to be agreed with contractors at project start. Bidders are expected to provide a timeline recommendation within their bids based on their suggested methodology and the above BEIS high-level timeline expectations.

Some of the workstreams outlined in the baseline methodology recommendation above have dependencies requiring sequential delivery. Shortlisting would necessarily be the first step prior to any further in-depth analysis in the following workstreams, however it may be possible to use some level of system modelling to aid the shortlisting process where deemed useful (e.g. by retaining technologies without which system models cannot achieve net zero). Economic impacts, barriers and enablers and any further qualitative work would benefit from delivery post system modelling phase, so that they can rely on developed net zero scenarios and technology specifications.

BEIS leaves the sequencing of workstreams to supplier discretion so long as key dependencies are adequately captured and ensure timely and quality delivery of project outputs.

* 1. **- Exclusions**

Social/Behavioural analysis: please note that the EINA methodology does not ***specifically*** examine the social or behavioural aspects of energy innovation. We do not therefore require the methodology to investigate social and behavioural aspects of innovation, although the contractor will need to substantiate how the proposed methodology is coherent with wider considerations. Social change, informed by internal BEIS modelling, may however still be considered as basis for an alternative energy system deployment scenario to compare to the central modelling scenarios. Similarly, social/behavioural barriers may be considered where relevant for the barriers and enablers workstream of EINAs 2.0.

Transport: except for whole energy system modelling, where transport energy demand and energy sources must be considered, this project does not require work on estimating GVA, job figures, enablers and barriers for the transport sector.

Unabated carbon intensive technologies: except for the whole system modelling stage, where some carbon intensive technologies may still be necessary over pre-net zero transition years, the project does not require analysis or consideration of unabated carbon intensive technologies.

# Outputs Required

* 1. **- Management Outputs:**
* Agreed delivery plan and governance process (see below)
* Quality assurance plan, including details of who will sign off outputs, and their role within the contractor’s organisation.
* Weekly email updates on state of project alongside early material for BEIS review
* Weekly meetings between BEIS and contractor/consortium project managers
* Monthly steering group meetings
* Dissemination of final outputs with key stakeholders

**Delivery plan:**

Prior to the main project activities, all the key methodologies and project plans must be discussed and agreed with BEIS to ensure the best possible alignment to BEIS project aims and objectives. This should be achieved within 5 weeks of project start, and should include:

1. **Delivery plan report or PowerPoint**: A report or PowerPoint setting out the proposed methodology used to deliver the project, inclusive of: planned data collection instruments, models or tools, datasets used, analysis, reference to sources (e.g. peer review publications, interviews etc. Please Note - this is not an exhaustive list but indicative of the type of sources which might be considered), and expected support/cooperation from BEIS including reliance on evidence stated in part 5 of the specification. A project delivery timeline must be agreed based on BEIS recommendation (see 3.6 timeline and dependencies) and requirements of the suggested methodology.
2. **Project milestones and dependencies**: delivery plan must clearly outline key project milestones and dependencies across workstreams and by when each is expected to be met. Key risks in milestone timely delivery and risk mitigation measures must be outlined. Milestone risk and mitigation ownership must be explicitly agreed by participating parties.
3. **Technology breakdown template:** technology, technology family, sectors and whole system map and breakdown templates in Excel[[1]](#footnote-2). Technology/component choices will necessarily change over the course of the project, therefore this will act as categorisation template rather than final technologies/themes for consideration.
4. **Technical guidance/user manuals:** necessary where non-BEIS models/datasets or other evidence sources are planned to be used, or where significant changes have been made to BEIS models (e.g. modifications to UK TIMES which will required associated guidance). These should be sufficient for a third-party analyst to be able to understand the models and methodologies that are planned to be used. Contractors should note that:
	1. Where matching between datasets will be required, contractors will be expected to provide a system of unique identification between these.
	2. Any model inputs known at early stage should be clearly noted. Without exception, all inputs requiring assumption decisions must be clearly highlighted to BEIS.
	3. Where specific models, datasets or other evidence is to be determined at a later stage of the project (e.g. post early shortlisting), technical guidance and user manuals will only be expected at that stage. Where models are developed as part of the project, technical and user manuals will need to be provided post-model competition.

The methodology and models agreed during delivery planning will be applied across all shortlisted technologies and sectors, unless any exceptions are agreed at start.

**Governance process**

This project will be developed in consultation with BEIS. This will be supported by:

* Project steering group – chaired by contractor/consortium lead Project Manager and involving BEIS SRO report and key contractor/consortium members. The steering group will determine whether project deliverables have met necessary quality as defined by the requirement to progress to sign-off.
* Multi-disciplinary cross-BEIS Working Groups. These will be set up and chaired by the BEIS Project Manager as necessary. This will include analytical, engineering, modelling, policy and delivery experts from across BEIS, and held during the relevant project delivery phases. Such working groups will provide advisory functions for feedback or raise any issues with the steering group as necessary.
* Energy Analysis Board – BEIS analyst deputy director board overseeing analysis within the energy space. The BEIS project manager will be reporting progress on key milestones to the board to confirm sign-off and provide further steers on any remaining issues to be addressed.

The BEIS EINA Project Manager will facilitate engagement with these groups. BEIS holds the final sign-off on deliverables based on EAB steers and final decision by project SRO.

Contractors must ensure deliverables are shared and discussed with the BEIS project manager and relevant working groups at early drafting or development stage to ensure any potential issues are addressed well ahead of milestone sign-off or project relevant decisions. Key Performance Indicators will be used to monitor the progress of the project (see below).

**Key Performance Indicators (KPIs)**

Information on the specific KPIs and scoring methodology can be found in the table below. The approach to performance management KPIs is outlined below.

The RAG (Red/Amber/Green) status will be used to measure progress and monitor general performance of suppliers achieving KPIs. We intend the tracking of KPIs and quality to be in partnership with BEIS and the Contractor.

KPIs will be used to align the Contractor's performance with the requirements of the Authority. KPIs will be realistic and achievable. The Authority reserves the right to amend the existing KPIs detailed below or add new KPIs throughout delivery with agreement of the Contractor. Any such changes will be confirmed in writing.

Performance against KPIs will need to be monitored by the Contractor and reported to the Authority monthly. The Authority reserves the right to request reporting of KPIs on a more frequent basis if performance levels suggest increased monitoring is required.

Performance of each KPI will be recorded against a red, amber, green “score”, as described below. Performance against each KPI should be submitted monthly along with the invoice for each invoicing period and will be discussed along with monthly progress reports at the monthly project update meetings. KPIs must maintain a green rating to demonstrate that the service is being delivered to an adequate quality.

Scoring methodology for KPI criteria:

**Green score:** If a green score has been awarded to a KPI then no further action is required from the Contractor, except for continuing activities to maintain this score for the next reporting period.

**Amber score:** If an amber score is awarded, the Contractor should examine and implement measures to prevent this KPI being scored an amber or below in subsequent reporting periods. The Authority will not expect formal improvement measures at that stage. If a single KPI is awarded amber in two consecutive invoice periods, or twice in four consecutive invoicing periods then the Contractor should create a Remediation Plan at their own cost. This should detail how they will change their practices to prevent another amber score being awarded for this KPI. The timeline for producing this Remediation Plan should be agreed between the Authority and the Contractor and should only be implemented following approval by the Authority. The Authority reserves the right to terminate the Contract if a satisfactory Remediation Plan cannot be agreed.

**Red score:** If a red score is awarded on each monthly review, formal improvement measures. If a single KPI is awarded red in an invoice period, then the Contractor should create a Remediation Plan at their own cost. If the Contractor scores a red in the same KPI in any subsequent period throughout the duration of the Contract, the Authority reserves the right to terminate the Contract. The Authority also reserves the right to terminate this Contract based on a red score without requesting a Remediation Plan (as in Amber), if it is of the Authority’s view that a material default has occurred. The Authority reserves the right to suspend, or partially terminate this Contract, while a Remediation Plan is being developed and agreed, where there is justification to do so.

The Authority will act reasonably in KPI assessments where delays occur due to circumstances which are not a result of Contractor performance. Where changes in timeline are a potential risk, this should be identified and necessary contingencies noted.

Table 4: Contract KPIs

|  |  |  |  |
| --- | --- | --- | --- |
| KPI Ref | KPI Criteria | KPI Measure | KPI Rating |
| 1 | Delivery of Milestones | Project Milestones\* delivered to the standard and timescales agreed upfront with the Authority. | 85% or less delivered to the standards and timelines agreed by the Authority  | 86-99% delivered to the standards and timelines agreed by the Authority.  | Meets expectations - Deliverables are to the standards and timelines agreed with the Authority.  |
| 2 | Social Value | To be determined based on the measures presented by the Contractor in their application and subsequently approved by the Authority. |  |  |  |

\**to be formally agreed by the Authority in consultation with the Contractor*

* 1. **- Early Shortlisting:**

As outlined under baseline recommendations, an early shortlisting exercise is expected to focus the scope of the project to maximise quality within priority areas. Key criteria for shortlisting have been listed within part 3 of specification (Methodology Baseline Recommendations), with “Need for government intervention”, “Critical for UK energy security”, “Timeliness” and “Critical to UK net zero” being strictly required. Additional criteria are welcome where considered beneficial to the project. This should however only be for the purpose of narrowing analytical effort, and not to determine overall technology priority areas for the UK.

Early stages of system modelling may be carried out ahead or alongside the early shortlisting depending on agreed methodology.

* 1. **- System Modelling:**
	2. Pilot model runs**:** where new methodologies or methodologies that are untested with a given model are suggested, a preliminary reduced scope model run should be carried prior to core system modelling to assess any potential issues and test the chosen modelling approach, as well as the adequacy of data provision approach and assumption log templates to be used for the rest of the project. This can be limited to a few technologies and a full system run. Pilot outputs as according to “Modelling data provision” below.
	3. Pathway scenarios: a minimum of 3 scenarios should be modelled to help address the inherent uncertainty of decarbonisation pathways to net zero, as described in part 3 of specification or similar considerations. Existing pathway scenarios recently used by BEIS can be adjusted/improved for this purpose where relevant and agreed with BEIS. All scenarios must use up-to-date technology specifications.
	4. Core system modelling runs: completed modelling runs to provide key agreed metrics (e.g. innovation value, opportunity costs as outlined in part 3) with associated scenarios. At a minimum, this must include: i) the complete technology pathway for the UK energy system to net zero, inclusive of all major sources of greenhouse gasses, which can be fed into the economic impacts stage (calculators); ii) datasets inclusive of all relevant technology costs and other assumptions used in runs; iii) capacity/unit deployment and demand levels associated each technology for each scenario - this must allow and understanding of where what type of energy carrier is used (e.g. supply of hydrogen must show what % is used in transport or other sectors). Iv) capital investment needs for achieving given scenarios.
	5. Sensitivity tests of key model runs; alongside cases where the decision to include or exclude outliers is arguable, where assumptions are more novel or where the quality of fit indicates this.
	6. Completed and compliant assumption logs: all data and assumptions used in calculating the data, and any intermediate modelling outputs from other models used as inputs into the system model must be provided in the relevant assumption log (see below for further detail).
	7. Modelling data provision: Excel format, with a description of how the data has been edited and coded, and derived variables produced, as well as any instructions necessary to use that dataset. All modelling outputs supplied must clearly show unit of measurement (MWh, no. of units etc.) and which modelling run (with run identifiers) and set of assumptions they were derived from. Where matching between datasets is required, contractors are expected to provide a system of unique identification. Where other forms of data provisions are necessary, this must be agreed with BEIS prior to core modelling runs.
	8. Where non-BEIS models (meaning models that are not internally used in BEIS) are used, a ‘map’ of the workings of the model identifying discrete sections of the model is expected. This should include:
	9. Presenting a high-level model map (e.g., summarising the process flow of data, from input through to methodological stages, then output);
	10. Identifying sections of the code as they relate to sections of the map;
	11. Identifying which variables are used across multiple sections of the model;
	12. Indicating what variables and procedures would be affected if any section of the model were replaced or updated, and how they would be affected (e.g. highlighting the resulting significant effects on the model and analysis).
	13. Details ofmethodology where any model parameters are derived from a collection of raw input data (this derivation may be statistical): These details must include graphical plots of the input data. Any outliers included or excluded from the input data must be documented explicitly, with reasons why they were included or excluded. Where appropriate, a description of any back-casting or linearizing historical data should also be included (excluding that inherent in the UK TIMES model).
	14. Modelling stage summaries: either a short summary report or PowerPoint outlining the key insights and findings from the modelling stages of the project.
	15. Desirable elements:
* modelling of carbon savings from innovation: Similar to how “innovation value” is estimated, it is possible to measure the impact of innovation on the level of carbon savings, by comparing an innovated scenario to a non-innovated one where total system costs are kept fixed in both.
* Delivery of more than 3 differentiated scenarios relevant for the purposes of this project.
* Modelling of infrastructure requirements within system modelling
* Recommendations from contractors which contribute towards project aims and objectives.

* 1. **- Economic Impacts:**
		+ 1. All shortlisted sectors must have their associated jobs/GVA calculators updated, or where no calculators existed new ones must be developed. If new tools are developed rather than updating existing calculators, the same outputs described below are expected. Updated or new tools must include:
		1. the new deployment scenarios developed as part of the system modelling;
		2. reviewed assumptions on multipliers and SIC codes for the technologies considered, especially where past calculators used expert judgement or proxy industries;
		3. the ability to switch between multiple deployment scenarios derived from system modelling, with corresponding ranges and comparisons on scenario outputs;
		4. comparison between system scenarios should provide the level of innovation additionality to Jobs/GVA (e.g. extra jobs created by innovation under the same total transition costs between innovated and non-innovated scenarios);
		5. updated technology and component cost information available based on the developed scenarios;
		6. updated evidence and assumptions on market capture potential both for domestic and export opportunities;
		7. runs and assumptions going up to at least 2050, with at least 5-year temporal intervals;
		8. improved clarity and usability of updated or new calculators/tools – e.g. reducing number of unnecessary tabs, providing a calculator map and high level guidance, ensuring all key elements are easily understandable for a third party analyst.
			1. The following sectors and technologies must be included in the update regardless of the outcome of the shortlisting, either incorporated in one of the main calculators, standalone or combined:
		9. Hydrogen use and supply (blue, green and H2 BECCS). Transport specific H2 technologies are not required, but supply driven by transport consumption (as determined by system modelling) should be captured
		10. Greenhouse Gas Removalss: DACs and non-H2 BECCS (unless best to include all BECCS under GGRs)
		11. Energy storage (beyond battery storage)
		12. Nuclear (SMRs, AMRs)
			1. A central spreadsheet to collate and provide an overview of the key outputs and assumptions across the updated and produced calculators.
			2. All inputs, calculations, functions and reasonings within the calculators must be clearly labelled and explained, while all data sources must be clearly stated (organisation or model, date of publication or model run ID), and where publicly accessible online linked within the spreadsheet. No unreferenced or unexplained hardcoded figures are acceptable. For more detail, please refer to the quality assurance section, which should be considered as baseline analytical quality requirement.
			3. A collection of evidence used for informing assumptions for each calculator, including those derived from expert engagement. It is not sufficient to claim that an assumption was derived from expert engagement, rather it should be explained why experts recommended/found consensus over a certain level, as well as the process that was used to capture this information.
			4. The above conditions also apply if an equivalent alternative to the jobs/GVA calculators is used for estimating economic impacts, so long as jobs and GVA outputs are included.
			5. Non-mandatory but desirable additions include:
1. Energy network infrastructure calculator (highest desirable element in this list)
2. Estimation of indirect jobs.
3. Higher granularity of technology components and cost breakdowns compared to 2019 EINAs.
4. Split of jobs into job types and associated durations.
5. Calculator sensitivity/uncertainty analysis – level of change to calculator results given changes in key assumptions. A dedicated tab to test changes to core assumptions and uncertainty bands around scenarios would be ideal.
6. Expanded Demand Side Response coverage to consider broader energy management: software/hardware, IT system/services, virtual power plants.
7. CO2 transport and storage for relevant sectors.
8. Opportunities from resource efficiency.

	* + 1. Specific considerations should be made for the following sectors depending on feasibility:
9. Power sector: consider a shift away from LCOE cost assumptions to component specific costs and learning rates.
10. GGRs: preference for a separate stand-alone calculator, rather than inclusion in any existing one. The following GGR technology splits are desirable: by type of BECCS, CCUS and Non-CCUS enabled DACCs, biomethane production with CCS.
11. Electricity networks related (if shortlisted/recommended): job breakdowns into a) planning & environmental, b) infrastructure design and build c) and manufacturing.

* 1. **- Innovation barriers and enablers:**
		+ 1. **Overview of key barriers/enablers:** a framework covering the key identified barriers and enablers impacting the successful commercialisations and up-take of shortlisted technologies. Each barrier/enabler should be linked to each of the technology families (or individual technologies where relevant). As a minimum, this should:
		1. Include a form of score/measure, comparable across technologies, determining the likely impact of the given barrier/enabler.
		2. Include a form of score/measure, comparable across technologies, determining the potential likelihood/risk of the given barrier/enabler materialising.
		3. Include a description of why the given barrier/enabler has the associated (by measure) level of impact and risk.
		4. Include a description of how innovation policy can overcome/seize barriers/enablers.
1. **Barriers/enablers deep-dives**: where a given barrier/enabler is evidenced as critical for a particular sector or technologies, a deep-dive is expected to further explore and provide evidence for it. Quantitative analysis, where feasible, is expected unless it can be justified not to be of relevance to the given technology. Skill requirements and component/material needs are key quantitative estimates which are expected to be feasible under the economic impacts calculator framework.
2. **Ad hoc barriers/enablers:** some technologies may be affected by unique barriers/enablers that are not relevant across other technologies. Such cases should be captured outside of the main barriers/enablers framework, either by inclusion in reporting or other arrangement proportional to the impact of the given barrier/enabler. Deep-dives are equally relevant if the given factor is critical for the given technology.
3. **Desirable quantitative analysis:** Infrastructure/network, skills and materials/component requirements are areas of high interest in the context of innovation barriers and enablers, given they can provide insights on the current feasibility of deployment scenarios. Skill requirements are expected to be feasible under the economic impact calculator framework through the addition of job breakdowns over forecast periods. Similarly, component/material needs are expected to be feasible under the economic impact calculator framework by estimating component/material requirement volumes over time. These factors should be used to determine the gap between where scenarios suggest the given enabler will need to be at in given years compared to current levels and trends.

* 1. **- Energy Security Analysis:**

		+ 1. **Comparative metric:** the analysis should provide an approach for comparing technology family impacts to the system based on energy security considerations. This should be based on resilience of energy provision and grid stability, including factors such as reliance on energy imports, resilience to disruption of grid infrastructure or major energy sources, extreme weather events (e.g. prolonged periods of limited renewable resource output) etc. This can be based on the system modelling stage or other approaches based on supplier recommendation and quality requirements stated within the tender.
			2. **Comparative summary:** the chosen approach should allow consistent comparison across technology families alongside other key comparative measures developed as part of the project.

* 1. **- Reporting:**
1. **Sectorial or thematic summary reports:** for each of the analysed sectors (or themes) covered by this iteration of the EINAs, a summary report with the following considerations should be provided:
	* 1. Reports summarising findings should be targeted at an informed reader, **not** at either a technical or an analytical expert reader.
		2. Technical annexes should be added to sectorial/theme reports as needed for elements which may be of interest to expert readers to supplement and reference summaries.
		3. All sources should be clearly referenced. Where assumptions have been used, they should be clearly described.
		4. Reports must be quality assured to address any mistakes, inaccurate synthesis or omission of evidence or lack of clarity in any section.
		5. Specify who in the project team will be responsible for drafting the report.
		6. Specify who will be responsible for quality assurance before versions are submitted to BEIS.
		7. Finalised reports must be of a sufficiently high standard to be published if so decided by BEIS. Where this is not met based on the quality standards set out in this ITT or due to error BEIS will request addressing relevant issues before relevant milestones can be considered as complete.
2. **Overview Reports.** Under the same quality and technical requirements for sub-theme/theme reports outlined above (a.i – a.vii), 2 additional overview reports will be necessary as following:
	* + 1. EINAs 202X overview report. This will synthesis the overall project outputs from across sectors/themes, with relevant cross-sectoral comparative material and information.

EINAs 202X methodology: an overview of the methodologies employed for the delivery of this iteration of the EINAs, detailing the analysis underlying the summary reports, targeted at technical or analytical experts. Material developed for the delivery plan can be used for this purpose if meeting quality requirements outlined above.

Contractors should expect multiple iterations for draft reports as these will be reviewed, fed back on and contributed to by BEIS Working Groups. Separate sections of reports may be produced by different members of the project team as relevant given experience and contribution to the project, however the lead will be responsible in ensuring consistency across the evidence included.

1. **BEIS analysis, models and evidence relevant to project:**

This section provides an overview of the evidence and analytical assets available to BEIS which may benefit the delivery of the project. This is not an exhaustive list. Contractors/sub-contractors are welcome to recommend other recognised work they have carried/are carrying with/for BEIS or other reputable organisation if it complements this project. Contractors are expected to show how they are making the most of readily available resources, avoiding the duplication of existing information.

Where contractors had previously budgeted for analytical activity within their bids which is already available in BEIS and possible to include in the project within timeline, the associated resource activity must be allocated to improving or expanding on other deliverables or highlighted desirable items. The below hopes to avoid, as much as possible, overlaps between supplier work and that carried by other teams in BEIS. Ultimately the aim is to complement this project as much as possible with readily available and relevant evidence.

**Please note:** Prior to BEIS providing any data, analysis, research or other forms of evidence, the supplier (or lead supplier in a consortium) will need to ensure that any party involved in the project has suitable processes in place to guarantee safe storage and transfer, according to data protection law. In all cases evidence provided will need to exclusively be used for the purposes of the EINAs 2.0 project.

* 1. **- Evidence, analysis and research:**
		+ 1. **Expert engagement**

BEIS is currently running an expert engagement exercise which aims at developing qualitative evidence on the future energy innovation needs for net zero and how they related to government intervention/policy. This is divided into 4 broad themes as following:

1. **Retrospective look:** meant to question the general performance of government innovation support over the past 5 years. This will be based on opportunity areas (defined as opportunity for cost effective decarbonisation or economic activity generation) which have not received sufficient support relative to the benefits that they would have generated, or on the basis of inadequate types of support measures in place. Overall, this theme is meant to be an impartial source of lessons learnt on UK support of energy innovation, benefitting the transition to net zero by improving near future innovation decision making/strategy.
2. **Forward look:** meant to gather diverse views on which particular technology areas, sectors or processes should be targeted by UK government so to maximise cost effective decarbonisation and economic opportunities. This does not have to be limited to technologies which are directly related to energy/net zero (such as renewable generation, CCUS etc.), but also to any enabling technologies which can significantly contribute towards speeding up decarbonisation or the uptake of new innovations (materials, industrial processes, AI, software etc.) and are relevant to the UK context.
3. **Barriers and enablers:** meant to provide a better understanding of key challenges facing the commercialisation and uptake of promising energy/net zero/enabling technologies. Significant opportunities and potential might be possible through innovation, however there is need to understand which barriers stand in the way of delivery and how realistic achieving such opportunities could be in the UK context. Similarly, the theme is meant to capture factors which can facilitate/speed up the commercialisation/update of key technologies. Examples of barriers/enablers include factors such as workforce skills, infrastructure, market frameworks, societal acceptance etc. The theme further considers which factors place the UK at an international comparative advantage.
4. **Policy:** meant to provide an understanding of policy measures or changes to current processes which can improve the effectiveness of government innovation support and speed up the commercialisation and uptake of key energy/net zero innovations. This could be relevant to addressing identified barriers or enhancing relevant innovation enablers, or specific to the needs of particular technologies. The focus of suggested measures is on the basis of cost-effective decarbonisation, economic opportunity and enhanced commercialisation/uptake of innovations. Views on potential regulatory changes, lessons learned and examples from other countries are sought under this theme.

The project is at early stage and therefore the above themes may change further. A group of 50 experts within the energy/net zero/decarbonisation space are going to be involved in this activity, which aims to produce qualitative information on the above based on thematic analysis of responses. Participating experts will be invited to take part in future engagement relating to evidence building and EINAs 2.0. Their participation however should not be taken for granted, as it is solely on voluntary basis. BEIS welcomes contractors to bring in new experts and relevant contacts from their networks as best suited to complement the project with qualitative information, steers or consensus on assumption and any other relevant stakeholder engagement activity.

The main findings from this project are expected to be available by July 2023.

* 1. **- BEIS teams**

BEIS has dedicated analyst teams covering specific net zero areas. This includes wind energy, storage and demand side flexibility, electricity networks, nuclear, CCUS, GGRs, hydrogen, industrial decarbonisation, buildings and EVs. Additional teams in DfT and Defra cover transport, land use and forestry in more detail.

Each of the EINAs jobs/GVA calculators was given ownership to the relevant sector teams who have been using and updating them where possible on need basis, excluding any changes requiring technical input (e.g. technology cost assumptions, scenario runs). Contractors will be coordinating the update of calculators with the relevant sector team covering them and the central project manager on the BEIS side. Sector teams will assist with key assumption decisions on their relevant calculators, however contractors must ensure that global assumptions (e.g. total energy demand, GDP growth etc.) are kept consistent across all calculators being updated.

Sector teams are conducting research and analysis within their respective areas, and it is possible in some instances to use information produced by these teams to supplement the work carried for EINAs 2.0. Some of such workstreams that are at an advanced stage or recently completed could be complementary to the EINAs. These include:

* + 1. Wind capacity addition constraints in the UK
		2. Regional distribution of power sector jobs
		3. Skills in power sector (limited to wind and solar)
		4. Report on nuclear power generation costs (SMRs and AMRs)
		5. Updated cost specifications and technical details for direct air capture systems
		6. Ofgem/Innovate UK engagement with network operators on grid/network barriers to net zero and wider Strategic Innovation Fund innovators engagements.

BEIS can provide further internal information and analysis where available and relevant on request, based on sole purpose of complementing this project.

* + - 1. **Net Zero Innovation Portfolio (NZIP)**

NZIP delivery has involved several feasibility studies and research into funded technologies/sectors, as well as an extensive network of innovators and firms active in net zero relevant R&D. BEIS will support contractors in the collection and use of such evidence to complement EINAS 2.0 where necessary and proportional to project benefits. Programme managers across the portfolio will be involved in the review of evidence developed as part of the EINAs 2.0 and can provide insights of innovation delivery support and views from delivery partners.

Formal evaluations of the preceding Energy Innovation Programme have been conducted and can be relied on for evidence of effectiveness of past energy innovation support measures in different sectors and technology types. This can include the level of market engagement per technology or sector, project success rates and other relevant KPIs.

* + - 1. **Disruptive innovations**

BEIS has run a disruptive innovation longlisting exercise looking at unproven or highly uncertain technologies with high potential to contribute towards net zero goals. Contractors may consider the use of some of this information for the purposes of EINAs 2.0 as and when needed or relevant to their recommended methodology.

In parallel to the EINAs 2.0 project, BEIS will be using this information to complement EINAs with additional horizon scanning evidence which may not be captured with current modelling, which focuses on generally proven/understood technologies. This will be similar in scope to the disruptive technologies EINA report published in 2019.

* 1. **- Models**
		+ 1. **UK TIMES**

Where required, the supplier (or relevant sub-contractor) will have access to BEIS’ UK TIMES model, exclusively on the basis of a) having expertise in using the model b) not employing the model for any other purpose other than the present project and c) having signed the NDA relevant to UK TIMES use. Contractors must not expect BEIS resource use in running the system modelling stage of the project. Rather, proportional advice and information can be provided where and if needed.

TIMES is an internationally recognised whole energy system modelling framework. The UK TIMES model (UKTM) is a version configured to model the United Kingdom energy system. The UKTM is a linear optimisation model for the whole UK energy system covering the period 2010 to 2060. The model’s inputs include assumptions about technology costs, availability, performance, build rates, fossil fuel prices and end-use energy demand (for example heat, light, industrial output, distance travelled). Assumptions are pre-determined for each model run, for example demand for energy services does not vary with the costs. Based on these assumptions, the model identifies the least-cost way of meeting a given greenhouse gases (GHG) reduction trajectory while also meeting assumed end-use demand for energy services.

A particular advantage of UKTM is that it identifies least-cost technology pathways for a given set of assumptions, taking account of interactions across energy carriers and economic sectors over time. The model is therefore useful for identifying which technologies could be important in the long run for achieving a low cost, low carbon system, and the appropriate sequencing for technology deployment. For further information, please see: <https://www.ucl.ac.uk/energy-models/models/uk-times>.

There are a number of limitations to the modelling. In particular:

* Not all costs and benefits are accounted for in the model, in particular many behavioural and practical (e.g. geospatial) considerations are not accounted for;
* The model takes no account of risks to costs and meeting future targets resulting from uncertainty around technological, economic, and social factors;
* The model varies in detail across different sectors, and in some areas only high level representations are provided.
* The modelled deployment rates cannot account for necessary infrastructural changes that are required in the energy transition.

BEIS welcomes recommendations on addressing these where relevant for project aims and objectives, either through improvements to UK TIMES inputs or the use of alternative modelling.

* + - 1. **International innovation comparative model - GENESIS**

BEIS has developed a prototype in-house model called Global Energy Sector Innovation Scorings (GENESIS). The model aims rank international energy innovation potential across 12 energy sectors and 32 countries. Subject to further BEIS internal development, the findings of this model could be used to aid aspects of the project by highlighting areas of UK international innovation strengths and weaknesses. Model outputs will only be shared in accordance with data providers’ terms of service, therefore no guarantees on sharing with contractors can be made at this stage.

This model can be considered complementary to the Barriers and Enablers requirement, not a substitute to new analysis. Alternatively, contractors can provide their own and better assets to model international barriers and enablers. Discussions should be held with the BEIS project team prior to use or being published as part of the final EINAs 2.0 reports.

The pilot GENESIS model sources innovation indicators from early-stage research through to commercialisation. For completeness, these can be found in the below table. Note however, these are subject to ongoing development and may change with new data and indicators.

|  |  |
| --- | --- |
| **Indicator** | **Data Source** |
| Academic Publications | *SCOPUS database* |
| Public Energy R&D Spend | [*https://www.iea.org/data-and-statistics/data-product/energy-technology-rd-and-d-budget-database-2*](https://www.iea.org/data-and-statistics/data-product/energy-technology-rd-and-d-budget-database-2) |
| Climate Tech Startups | *Bloomberg NEF – Climate Tech Startup database* |
| Energy Patents | [*https://stats.oecd.org/index.aspx?queryid=29068*](https://stats.oecd.org/index.aspx?queryid=29068) |
| Revealed Technology Advantage | *Calculations derived from (*[*https://stats.oecd.org/index.aspx?queryid=29068*](https://stats.oecd.org/index.aspx?queryid=29068)*)*  |
| Organisations | *Bloomberg NEF - Organisation Database* |
| Employees | *Bloomberg NEF – Organisation Database* |
| Energy Transition Investment | *Bloomberg NEF – Energy Transition Investment*  |
| Energy-related Exports Value | [*https://comtrade.un.org/data/*](https://comtrade.un.org/data/) *& Trade code lists* |
| Revealed Comparative Advantage | *Calculations derived from (*[*https://comtrade.un.org/data/*](https://comtrade.un.org/data/)*)*  |

* + - 1. **Dynamic Dispatch Model (DDM)**

BEIS also owns and runs the Dynamic Dispatch Model (DDM) - a comprehensive fully integrated power market model covering the GB power market over the medium to long term. The model enables analysis of electricity dispatch from GB power generators and investment decisions in generating capacity from 2020 through to 2050. It considers electricity demand and supply on a half hourly basis for sample days. Investment decisions are based on projected revenue and cash flows allowing for policy impacts and changes in the generation mix. The full lifecycle of power generation plant is modelled, from planning through to decommissioning, and also allows for risk and uncertainty involved in investment decisions. The DDM enables analysis comparing the impact of different policy decisions on generation, capacity, costs, prices, security of supply and carbon emissions, and also outputs comprehensive and consistent Cost-Benefit Analysis results.

The DDM can be relevant for the update and review of assumptions when it comes to the development of the new economic impact calculators or assumptions within the system model (e.g. build rate constraints).

Contractors must not expect BEIS resource use in running the DDM. Rather, proportional advice and information can be provided where and if needed, exclusively for the purposes of the EINAs 2.0 project. For further information please go to: <https://www.gov.uk/government/publications/dynamic-dispatch-model-ddm>

# Quality Assurance

* + - * 1. **Referencing, data sources and explanations:**

Referencing of the data sources and assumptions must abide by the following points:

* The chosen method of referencing should be consistent, and agreed in writing with BEIS beforehand.
* The referencing must allow all data to be traced back to the original source. Examples may be found in BS ISO 690:2010.
* Follow logical best-practice in variable naming, with documented and consistent conventions.
* Unless differently specified (e.g. internal use only reports), all reports must be written to a sufficiently high standard for publication, and need to be signed-off by the project steering group.
* Publication will only occur with BEIS approval, and all material should be considered confidential until publication is agreed.
* All model runs should be referenced so to be traceable to the relevant model run and relevant assumptions that were used for it.
* All analytical outputs must provide clear explanation of derivation process, assumptions and reasoning for choice of given assumption, units of measurement and any information necessary for a third party analyst to be able to interpret outputs without the need to further contact those involved in the production of said outputs.

In your bid, please specify who in the project team will be responsible for drafting the reports specified.

* + - * 1. **Assumptions Log:**

An Assumptions log completed within BEIS standard template ([available at this link](https://www.gov.uk/government/publications/assumptions-log-template)) or an agreed equivalent, which describes what assumptions have been used within the model. This should include all assumptions, including those which are implicit. All sources that provide the basis for these assumptions should also be clearly referenced.

As well as assumptions, the assumptions log should also give complete information about all inputs, containing details of all data used within the models. Frequently, data used will be a mixture of primary and constructed variables. Please ensure any links or inter-dependencies between these variables are clearly highlighted. Where any assumptions or inputs have been made based on judgement call or consensus from experts, even if by BEIS or other government body, this must also be noted and a reasoning for its choice and given level provided. Milestones and project delivery will not be considered as complete until such information is included.

Contractors are expected to note that an assumption can take a number of forms (the following list is not exhaustive):

* Quantitative input data may be assumed;
* Quantitative assumptions may be made during manipulation of the data;
* Qualitative assumptions may have informed the calculation methodology;
* Qualitative assumptions may have informed the structure of the model;
* Complete **description of the transformation**, including (not exhaustive):
	+ The transformation of each input datum into each model parameter.
	+ An example calculation (explaining how the model transforms input to outputs), provided as text with formulae.
	+ Details of how constructed variables are created, e.g. to enable the analysis to be replicated if necessary
	+ (Where spreadsheets are used): identifying the cells containing the formulae and transformed data that correspond with the equations in the written text.

		- * 1. **QA Process:**

This project must comply with the BEIS Code of Practice for Research (Annex B) or if applicable the Code of Practice for Official Statistics[[2]](#footnote-3) and bidders must set out their approach to quality assurance (QA) in their response to this ITT, with a QA plan.

Sign-off for the quality assurance must be done by someone of sufficient seniority within the contractor organisation to be able take responsibility for the work done. The name and *Curriculum vitae* of this individual should be provided. Acceptance of the work by BEIS will take this into consideration. BEIS reserves the right to refuse to sign off outputs, which do not meet the required standard specified in this invitation to tender.

To demonstrate an effective process to produce high quality reporting, the contractor/s must:

* ensure that quality assurance is done by individuals who were not directly involved in the research, analysis or model development;
* ensure that those involved in QA have sufficient knowledge and expertise in the subject areas covered; and
* specify who will be responsible for quality assurance before reports are submitted to BEIS.

All modelling outputs, models which have undergone change, inputs to models, non-BEIS models and newly developed models must be quality assured and documented. Contractors should include a quality assurance plan that they will apply to all of the research tasks and modelling.

* This QA plan should be no longer than 2 sides of A4 paper.
* The following link contains an externally accessible version of the Modelling QA guidance, and the QA log:

<https://www.gov.uk/government/collections/quality-assurance-tools-and-guidance-in-decc>

* The QA log should be filled in during the project and submitted at project completion to demonstrate the QA undertaken.
* When models are submitted to BEIS, during the project or at completion, they should be accompanied by confirmation by a senior (partner or equivalent) of the contracting organisation, that the assurance has taken place in accordance with approaches outlined in the QA plan agreed with BEIS.

**Further Information**

The successful bidder will be responsible for any work supplied by sub-contractors and should therefore provide assurance that all work in the contract is undertaken in accordance with the BEIS Code of Practice for Research. BEIS reserves the right to request an audit of projects against the BEIS Code of Practice for Research and the commitments made in the tender documents and subsequent contract.

Other useful sources of guidance and advice that will help bids and the resulting work be of the highest quality include:

* The Green Book: appraisal and evaluation in central government. <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent>
* UK Statistics Authority Code of Practice/ or an equivalent standard.

http://www.statisticsauthority.gov.uk/assessment/code-of-practice/

* The Magenta Book, Government guidance on policy evaluation and analysis.

<http://www.hm-treasury.gov.uk/data_magentabook_index.htm>

* Supplementary Guidance on Quality in Policy Impact Evaluations

[Quality in Qualitative Evaluation: A Framework for assessing research evidence](https://www.gov.uk/government/publications/government-social-research-framework-for-assessing-research-evidence) provides a Framework for appraising the quality of qualitative evaluations.

* [Rapid Evidence Assessment](https://www.gov.uk/government/collections/rapid-evidence-assessments) (REA)<http://www.civilservice.gov.uk/networks/gsr/resources-and-guidance/rapid-evidence-assessment/what-is>.
* <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>
* <http://www.lowcarboninnovation.co.uk/working_together/technology_focus_areas/overview/>

Where relevant, all bids should refer to these pieces of guidance and advice and how they will be used.

# Information Management

**Ownership & Publication**

BEIS is committed to openness and transparency. Project outputs should be accessible, non-disclosive and suitable for publication and further use. The exceptions to this are where:

1. The intellectual property rights to an output (or part of an output) are owned by someone other than the contractor. Contractors should state in their tender if this is the case and indicate whether the third party copyrighted materials can be redacted.
2. Data is commercial in confidence.
3. A non-anonymised dataset is required for the project.
4. The outputs are internal documents only for BEIS use – e.g. project updates, the delivery plan, modelling specific inputs etc.

Where there are useful insights that are deemed to be disclosive: such as outlier analysis or analysis with small numbers, BEIS would like to see outputs prior to drafting of final versions.

Where applicable, contractors can provide optional costs for obtaining rights to data or outputs. These will be agreed before BEIS lets the contract.

Unless otherwise clearly stated in your tender, all outputs from this project will be owned by BEIS. The outputs, raw data and tools developed in the research will be transferred to BEIS at times agreed with BEIS and cannot therefore be used by contractors for purposes other than this project unless agreed.

BEIS standard terms and conditions require that BEIS retain the Intellectual Property (IP) from all models and software paid for by BEIS

* Where the contractor is using or building on top of existing IP, such as modules that interface with this model, or proprietary datasets, this must be explicitly stated in the tender response, and a mechanism identified for the proprietary components not to impact utilisation, further development, publication and use of the evidence produced for this project.
* Where open source code or models are to be used within this model, please make clear under which licence this open source software is released.
* The Open Government Licence should be used wherever possible: <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/2/>

**Non-disclosure**

All outputs must be provided to BEIS in a format that is non-disclosive (i.e. no individuals or individual organisations are identifiable from the data or analysis, directly or indirectly). The contractor is responsible for ensuring that the data is supplied in this form alongside a report on the checks made. A minimum standard for checking includes cell counts within sub-groups for all outputs and analysis.

The contractor will be asked to agree their approach to checking for disclosure with BEIS during the course of the contract, before the checks are carried out. Where data or analysis is found to be disclosive during checking, the contractor will be required to suggest an approach or approaches to aggregate the analysis and to agree this with BEIS.

**Storage and Transfer**

The contractor will need to ensure that all appropriate regulations are adhered to regarding safe storage and transfer, compliant with BEIS requirements for the data processing of restricted data. All research respondents will need to be made aware of all potential uses of their data. Contractors must submit an overview of their data handling and security protocols to demonstrate compliance.

# Working Arrangements

The successful contractor will be expected to identify at least one named point of contract through whom all enquiries can be filtered. A BEIS Project Manager will be assigned to the project and will be the central point of contact for government stakeholders for the contractor. Contractors should ensure that in the event of contingencies adequate resource substitution or support can be made available to mitigate serious disruptions to the project.

We envisage the need for close interaction between the BEIS project manager, BEIS analysts and contractors throughout the process, to ensure that emerging issues are dealt with promptly and that BEIS fully understand the assumptions and approach taken. The BEIS project manager will provide the core coordination role within government, ensuring key teams are informed and involved where necessary.

BEIS welcomes the use of any secure and safe online project management tools that can facilitate communication, coordination and safe file sharing as part of this project between BEIS analysts/project manager and contractors.

 BEIS will need timely access to all the key assumptions, used in the analysis and the data and methodologies used to carry out the work. MS SharePoint can be used by BEIS for this purpose as a safe file sharing space/mechanism, to maximise project transparency and minimise time taken for contractors to provide requested information or for BEIS to access it. BEIS can set the necessary MS SharePoint areas or necessary MS Teams channels for this project. Contractors using these areas are expected to use very clear file naming and folder structuring so to ensure easy navigation by third party analysts who may need to access information in the future.

**Protection of information & security arrangements:**

The contractor and their subcontractors will be required to sign (or abide by) a non-disclosure agreement and apply BEIS information security policies to all information they access as part of this work, including ensuring that only duly authorised personnel can access marked information. The supplier and their subcontractors will need to demonstrate the availability of adequate infrastructure and a business continuity plan to deliver the work to a high level of quality at the required time, ensuring the protection of information at all times.

**Conflicts of Interest:**

It must be made clear in the tender if there are any conflicts of interest relating to the development of future net zero innovation support policy or wider decarbonisation strategy. If there are any conflicts of interest it must be made clear that there are provisions for mitigating the risk that this may affect the bidder’s ability to provide impartial advice. For more information please see part C of section 1 in this ITT.

1. **Data Protection**

The Contractor will be compliant with the Data Protection Legislation, as defined in the terms and conditions applying to this Invitation to Tender. A guide to The General Data Protection Regulation published by the Information Commissioner’s Office can be found [here.](https://ico.org.uk/for-organisations/guide-to-the-general-data-protection-regulation-gdpr/lawful-basis-for-processing/)

The only processing that the Contractor is authorised to do is listed in specification Annex 1 below by BEIS, “the Authority” and may not be determined by the Contractor.

**Annex 1: Processing, Personal Data and Data Subjects**

1. The contact details of the Authority’s Data Protection Officer are:

BEIS Data Protection Officer
Department for Business, Energy and Industrial Strategy
1 Victoria Street
London
SW1H 0ET

Email: dataprotection@beis.gov.uk

1. The contact details of the Contractor’s Data Protection Officer (or if not applicable, details of the person responsible for data protection in the organisation) are: [To be completed by the Contractor]
2. The Contractor shall comply with any further written instructions with respect to processing by the Authority.
3. Any such further instructions shall be incorporated into this Annex 1.

|  |  |
| --- | --- |
| **Description** | **Details** |
| Subject matter of the processing | The processing of names and business contact details of staff of both the Authority and the Contractor will be necessary to deliver the services exchanged during the course of the Contract, and to undertake contract and performance management. The Contract itself will include the names and business contact details of staff of both the Authority and the Contractor involved in managing the Contract. |
| Duration of the processing | Processing will take place from expected late June 2023 for the duration of the Contract or following extensions. The Contract will end on 30th September 2024 but may be extended further if deemed necessary by the authority.  |
| Nature and purposes of the processing | The nature of the processing will include collection, recording, organisation, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction of data. Processing takes place for the purposes of research and analysis relevant to the EINAs 2.0 project. The nature of processing will include the storage and use of names and business contact details of staff of both the Authority and the Contractor as necessary to deliver the services and to undertake contract and performance management. The Contract itself will include the names and business contact details of staff of both the Authority and the Contractor involved in managing the Contract. |
| Type of Personal Data  | Names, business telephone numbers and email addresses, office location and position of staff of both the Authority and the Contractor as necessary to deliver the services and to undertake contract and performance management. The Contract itself will include the names and business contact details of staff of both the Authority and the Contractor involved in managing the Contract. |
| Categories of Data Subject | Staff of the Authority and the Contractor, including where those employees are named within the Contract itself or involved within contract management.  |
| Plan for return and destruction of the data once the processing is completeUNLESS requirement under European member state law to preserve that type of data | The Contractor will provide the Authority with a complete and uncorrupted version of the Personal Data in electronic form (or such other format as reasonably required by the Authority) and erase from any computers, storage devices and storage media that are to be retained by the Contractor after the expiry of the Contract. The Contractor will certify to the Authority that it has completed such deletion. Where Personal Data is contained within the Contract documentation, this will be retained in line with the Department’s privacy notice found within the Invitation to Tender.  |

BEIS will be relying on consent as the relevant legal basis of processing. The Contractor will ensure that all communications requesting the provision on personal data allow for the data subject to provide clear, affirmative, informed, freely given and unambiguous consent, which requires a positive ‘opt-in.’ The Contractor will have mechanisms in place to ensure that consent is recorded and shown through an audit trail.

# Evaluation of Tenders

Contractors are invited to submit full tenders of no more than 46 pages, excluding declarations, pricing schedule and CVs. Tenders will be evaluated by at least three technically qualified individuals, either BEIS staff or a mixture of internal and external energy/climate mitigation professionals.

BEIS will select the bidder that scores highest against the criteria and weighting listed under part 10.2 and meets the minimum evaluation requirements specified. If two or more proposals score identically overall, the ranking will be decided based on the following criteria, in priority order:

* Methodology total score (highest assessed score first)
* Skills and Expertise (highest assessed score first)
* Management Process (highest assessed score first)
* Understanding the Requirements (highest assessed score first)
* Social Value (highest assessed score first)
	1. **-** **Evaluation Criteria**
	2. BEIS will select the applicant that provides the bid that best addresses aims and objectives of the project at the best value for money to be its preferred supplier. This will be determined based on the evaluation criteria here outlined, comprised of technical evaluation for questions 1-5 and commercial evaluation for question 6.
	3. Tenders will be evaluated by at least three qualified individuals, either BEIS staff associated with the project or a mixture of internal and external energy professionals appointed by BEIS as required.
	4. Technical evaluation scores will be on a 0-5 scale based on the following descriptors:

|  |  |
| --- | --- |
| **Score** | **Score descriptor** |
| 0 | The Question is not answered, or the response is completely unacceptable.   |
| 1 | **Not Satisfactory**: There is **very little evidence** that the question has been satisfactorily addressed and **major omissions** are evident.  |
| 2 | **Partially Satisfactory:** There is **little evidence** that the question has been satisfactorily addressed and **some omissions** are evident. **Much more clarification is needed**. |
| 3 | **Satisfactory:** There is **reasonable evidence** that the question has been satisfactorily addressed but **some omissions** are still evident and **further clarification** is needed.  |
| 4 | **Good:** The question has been well addressed with a **good evidence base**, with only **minor omissions or lack of clarity.**  |
| 5 | **Excellent:** There is **clear evidence** that the **question has been completely addressed** in all aspects, with question answered clearly.  |

* 1. For scored questions a weighting showing the relative importance of each is given. Your score for each question from each evaluator will be ascertained by multiplying the score awarded by the applicable weighting. Your total score will be the aggregate of the weighted scores awarded by all of the evaluators.
	2. Any winning bid must score at least 60/100 overall based on the score weighting below, at least 2 for evaluation questions 1, 4, 5, at least 3 for evaluation question 3 (skills and Expertise) and at least 3 within evaluation question 2 (methodology) subsections b.1, b.2 and b.3. Minimum score requirements have been outlined per relevant questions within 10.2 below.
	3. **Structure of Tenders:** Contractors are strongly advised to structure their tender submissions to cover each of the evaluation questions above with attention to provided guidance and description. It should be clear to BEIS evaluators which question is being addressed in which part of the bid.
	4. **Bid Clarification:** After reviewing and evaluating the written proposals, BEIS may decide to hold bid clarifications with contractors if necessary.
	5. **Feedback:** Feedback will be given to unsuccessful bidders through email.

* 1. - **Evaluation Questions**

Question scores will be evaluated as according to the criteria outlined in this section with reference to the provided project specification and weighted as according to the following table:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question theme** | **Page limit** | **Weight** | **Min score\*** | **Evaluation type** |
| 1 – Understanding the Requirements | 4 | 10% | 2 | Technical |
| 2 – Methodology: *– b.1 – – b.2 – – b.3 –*  *– b.4 –* | 20 | 30% Total– *10% –**– 10% –**– 5% –**– 5% –* | – *3 –* *– 3 –* *– 3 –* *– 0* – |
| 3 – Skills and Expertise | 8 | 20% | 3 |
| 4 – Management Process | 6 | 15% | 2 |
| 5 – Social Value | 8 | 10% | 2 |
| 6 – Pricing | NA | 15% | NA | Commercial  |

\*Min score refers to the minimum a bid should score within the given evaluation question or sub-question to qualify for award.

Example of score weight application:

Question 1 score = 4 –– Score weight = 10%
Question 2 scores = 4-3-4-3 –– Score weight (10% + 10% + 5% + 5%) = 30%

Question 3 score = 3 –– Score weight = 20%

Question 4 score = 4 –– Score weight = 15%

Question 5 score = 3 –– Score weight = 10%

Question 6 score = lowest price –– Score weight = 15% (see pricing score details below)

Total bid marks = 80\*0.1 + (80\*0.1 + 60\*0.1 + 80\*0.05 + 60\*0.05) + 60\*0.2 + 80\*0.15 + 60\*0.1 + 100\*0.15 = 74

Questions each state a page limit, beyond which assessors will not be considering evidence for tender evaluation. Annexes can be included for reference but will not be counted towards evaluation scores where outside the question page limits. Bidders are free to provide responses below the stated page limits so long as evaluation questions are addressed. The number of pages dedicated to each sub-section of methodology (question 2) is to the bidder’s discretion, so long as the total is within 20 pages.

* 1. **Understanding the requirements**

**Question 1*:*** Within a maximum of 4 pages, please demonstrate that you understand what BEIS requires and aims to achieve from this project. (Weighting 10%).

Responses should show a good understanding of the key aims and objectives of the project and how they relate to UK government policy and wider project environment. This includes details on:

* Bidder’s interpretation of the project aims and objectives.
* Understanding of the key project challenges and opportunities: what the key practical outcomes of project can be and what are the key issues that need to be addressed to make these feasible.
* Understanding of specification: demonstrate adequate interpretation of baseline recommendations and ability to point to relevant improvement recommendations within recommended methodology or point to issues that need further consideration.

Where necessary references can be made to the methodology section without having to repeat details of it. The key consideration here is on understanding the purpose of the project rather than detail of approaches taken.

* 1. **Methodology**

**Question 2*:*** with reference to the specification within this invitation to tender, please provide a detailed description of your recommended methodology, reasoning behind it and your related delivery plan. This should be within a maximum of 20 pages. (Total weighting 30%).

This question will be assessed based on chosen methodology delivering on stated aims, objectives and expected outputs under a feasible plan. Weighting has been split across four different methodology aspects: b.1) delivery of outputs required; b.2) energy system modelling quality and value to BEIS; b.3) robustness and feasibility of overall methodological framework; b.4) . All parts must be considered on the basis of alignment to project aims, objectives and overall value to BEIS.

**Baseline recommendations:**

Bidders will not be penalised if recommending different approaches than those outlined in the baseline recommendations, so long as expected outputs are delivered, and key aims and objectives met. The baseline recommendations section should be considered as reference to help bidders understand what type of analytical outputs different themes of this project are after, without being too prescriptive and limiting in potential methodology use. Where any recommendation is to be considered as mandatory, this is referenced within the section and re-iterated within expected outputs.

Bidders are however expected to at least address the themes within the baseline recommendation section. For instance, the project must include a shortlisting function, energy system modelling, economic impacts (jobs and GVA) and a section on barriers and enablers.

**b.1 - Delivery of outputs required (10%):**

Bidders should demonstrate how they plan to deliver each minimum requirement as outlined within outputs required (part 4 of specification). To score highly, bidders should demonstrate they can deliver on most elements at high quality and value to BEIS based on stated aims and objectives.

**b.2 - System modelling use in methodology (10%)**:

Two factors will be considered for system modelling score: a) model and system modelling quality b) system modelling output value to BEIS.

Model quality is expected to be on par to UK TIMES in terms of use and capability and must be at the very least recognised by the energy modelling community within UK academia. Factors such as expertise of model users, transparency of model and of its outputs, quality of model input assumptions and the level of technology detail included will be considered towards model quality judgement. System modelling is expected to cover all greenhouse gas emitting sectors. Model specification and details can be provided as part of an annex outside of the methodology page limit if needed for context. System modelling quality refers to the relevance of model outputs to the project as well as the robustness of the processes that provide such outputs.

Value to BEIS is determined based on ease of compatibility of outputs and assumptions with internal models (UK TIMES, DDM), their re-usability for future iterations of the project, future resource savings for BEIS, BEIS modelling capability building as well as the overall quantity of project relevant outputs/metrics generated. UK TIMES provides value to BEIS for instance based on:

* Being able to future-proof analysis – any changes to policy and or assumptions can be rapidly implemented without need for lengthy and costly procurement and need for internal approvals.
* New scenarios can be tested/developed internally.
* Analysis can be re-run as UK TIMES is updated and new technology developments and specifications are captured.
* Ease of aligning project metrics, modelling and assumptions to key BEIS analysis workstreams.
* Improvement internal modelling capability – any model updates or developments, methods and metrics would be retained by BEIS, and can subsequently used for other projects.
* High model transparency due to model openness to expert user groups and extensive use by academia, which reduces the burden of third-party feedback and internal approvals.

Overall these factors reduce future financial and resource needs, therefore constituting significant value to BEIS.

Where UK TIMES is not used in methodology, and assuming comparable quality, to score above 3 in this sub-section (b.2) it must be shown that similar or higher value can be generated by the alternative model used (or combination of models, so long as outputs are compatible and consistent from a whole system perspective). This could be based on:

* model being recognised as more adequate for the project compared to UK TIMES, in terms of technology detail, transparency, capturing innovation impacts on technologies and modelling grid/infrastructure requirements.
* A significantly higher range of useful outputs, in terms of distinct scenarios, number of net zero relevant technologies and metrics useful to the project compared to other bids. Examples of additional useful outputs have been noted as desirables within system modelling in part 4 of specifications (outputs required).
* Add-on effort (at no additional cost to BEIS) for translating scenarios for UK TIMES use to help with future-proofing deliverables and therefore compensating for the use of an external model.

Where contractors plan to contract UK TIMES use externally, they must confirm the ability of the contracted party to deliver on methodology/delivery plan stated in their bid to fulfil project contractual terms.

**b.3 - Robustness and feasibility (5%):**

Bidders must guarantee adherence to BEIS quality assurance standards as within the specification. The feasibility of methodology delivery should be demonstrated based on

time and resource constraints under the required standards.

BEIS welcomes the use of any additional research methods outside of those previously employed for the 2019 EINAs or suggested within this ITT, so long as these are academically recognised, add value to the project by addressing evidence gaps and are delivered by qualified professionals.

Industry and expert engagement activities, where suggested, should be systematic and complement those already pursued by BEIS. Repetition or vague reference to expert networks to involve for this project will not add to the value of the tender – evidence (past examples, partner institutions etc.) of qualified individuals who are highly likely to take part in engagement activities such as workshops, interviews etc. is sought as evidence of added value.

**b.4 – Methodology baseline improvements (5%):**

This evaluates the extent to which a bid methodology a) improves on baseline recommendations/provides better alternatives to them or b) goes beyond the minimum requirements outlined in required outputs.

Improvement on methodology will be evaluated based on evidence of improved alignment of recommendations to project aims and objectives. This can also be based on evidence of improved robustness or quality of new methodology compared to previously used methodologies or those recommended as baseline within this ITT. In both instances however expected outputs should still be met.

Going beyond minimum requirements will be evaluated based on the extent that desirable but non-compulsory elements are included within the bid. Examples of what may constitute a desirable have been noted in both part 3 and 4 of the specification. Bidders are welcome to suggest additional outputs other than those noted as desirable, so long as feasible and relevant to project aims and objectives. Clear commitment in addressing remaining evidence gaps relevant to aims and objectives within budget would similarly be considered as a desirable.

Examples of additional deliverables include:

* Higher number of project relevant modelling scenarios provided, where scenarios are substantially different from one another (see examples in baseline recommendations).
* More extensive range and depth of technologies covered within the economic impact calculators.
* Additional depth and breadth covered within the barriers and enablers theme.
* Number of desirable elements included within the ITT.
* Any other substantial deliverable or recognised evidence building exercise which can complement stated aims and objectives.
	1. **Skills and Expertise**

**Question 3*:*** within a maximum of 8 pages,please provide detailsof your delivery team’s suitability to provide analysis of the nature described, including details of relevant experience and skills of team members (including subcontractors) and where and to what extent these will be utilised for the performance of the contract. (weighting 20%)
This will be assessed based on relevant energy/net zero/modelling/project management skills/experience dedicated to relevant parts of the project. Detailed understanding of techno-economic modelling in the low carbon energy supply, demand and systems sector and expertise to apply methodology across shortlisted net zero sectors is expected. Each team member should have an appropriate level of relevant analytical/research expertise required to deliver their assigned tasks to meet the required standards. The following skills are considered particularly important for this work:

* Understanding of the technical aspect of the low carbon technology energy supply, demand and whole systems technology sector;
* Expertise in economics in policy making;
* Expertise in statistical analysis for policy making;
* A demonstrated understanding of, and proven expertise in, the application of good practice in building models. This needs to include:
* Applying sound quality assurance processes and procedures to minimise modelling and input errors and to ensure model outputs are robust;
* Producing clear documentation of model logic, procedures for updating and producing outputs, assumptions, data sources and quality assurance checks.

Bids should provide a profile of the key involved team members (according to time contribution to project). The experience of individuals will be evaluated proportionally to their time involvement on the project (e.g. highly experienced individuals dedicating minimal time to the project will have low impact on skills and expertise, unless significant value contribution can be demonstrated within bids).

Bids should provide an organogram showing team composition and lines of reporting. Where a consortium is formed, participating consortium member staff and their role should also be shown in this section alongside the consortium lead team, with clear indication of task allocation.

* 1. **Management Process:**

**Question 4*:*** Within a maximum of 6 pages, please provide details of the project management framework and processes you plan on relying on for the delivery of the project. (weighting 15%)

This will be assessed based on demonstration of a robust project management framework and processes relevant to the delivery needs of this project. The quality of responses will determine score and should provide the following:

* Assurance on the delivery of quality (please refer to detail within the Quality Assurance section of the Specification in Document 2).
* Relevance and breadth of management oversight processes. This should include the experience in project management by key team members overseeing the project.
* Budget control measures.
* Effective working arrangements, including close coordination and cooperation with BEIS analysts and stakeholders and any hired third party or other consortium members where a consortium is formed. Please see the “Working Arrangements” section of the specification for further detail.
* An appropriate level of input from each skillset and level of expertise required for each task.
* The provision of a detailed delivery plan with specific reference to this project, including: detailed work plan inclusive of tasks, milestones and individuals allocated to each, with their seniority and respective numbers of dedicated days with detailed breakdown of costs across all project elements down to individual tasks. The delivery plan is to be further discussed and potentially amended at early project stage to ensure best alignment to BEIS needs.
* Risk management: all relevant challenges and risks should be identified, alongside impacts, effective plans for mitigation, management and contingency.

Where relevant bidders may reference methodology or other sections of their bid without having to repeat them, so long as clear.

* 1. **Social value:**

**Question 5:** Using a maximum of 4 pages for each question, describe a) “how will you support BEIS' mission to achieve Net Zero in the UK by 2050?” and b) “how will you support BEIS' mission to drive productivity improvements across the economy?”. (Weighting 10%, equally split across both questions)

For each of the Themes & Model Award Criteria (MAC) below, describe the commitment(s) your organisation will make. You should include:

* a 'Method Statement' stating your commitments, how you will achieve them, and highlighting how your commitments meet the Award Criteria.
* a detailed project plan and process, including how you will implement your commitments and by when, how they will be monitored, measured and reported. You should include specific metrics, the tools / processes that will be used to gather data and report on it, feedback and improvement, and how the whole process will maintain transparency.
* an overview of how you will influence staff, suppliers, customers and communities to support delivery of your commitments (for example through engagement, co-design / creation, training and education, partnering / collaborating, volunteering, etc.)

Planned Metrics are provided for each Theme & Model Award Criteria. Your commitments to social value should align to one or more of these metrics. If you believe that alternative metrics would be more effective at achieving the Theme / Model Award Criteria, please outline them in your proposal with a clear explanation of the comparable benefit.

For each theme, we will be assessing the qualitative aspects and outcomes of your commitments. Priority should be given to incremental value that you will commit to as a direct result of being awarded this contract. If you are not in a position to commit to specific Social Value deliverables directly related to this contract award, you must demonstrate your corporate track record of delivering Social Value that aligns with the Themes and Model Award Criteria below.

a) **Model Award Criteria: MAC 4.1:** Deliver additional environmental benefits in the performance of the contract including working towards net zero greenhouse gas emissions.

Sub-Award Criteria: Activities that demonstrate and describe the tenderer’s existing or planned:

* Understanding of additional environmental benefits in the performance of the contract, including working towards net zero greenhouse gas emissions. Illustrative example: conducting pre-contract engagement activities with a diverse range of organisations in the market to support the delivery of additional environmental benefits in the performance of the contract.
* Collaborative way of working with the supply chain to deliver additional environmental benefits in the performance of the contract, including working towards net zero greenhouse gas emissions.
* Delivery of additional environmental benefits through the performance of the contract, including working towards net zero greenhouse gas emissions.

Planned Metrics:

* Percentage of carbon reduction (measured in metric tonnes carbon dioxide equivalents (MTCDE) across Scope 1, Scope 2 and Scope 3 by the supplier committed within the contract at a corporate level
* Supplier committed to carbon Net Zero at a corporate level by which date.
* Percentage of decarbonisation roadmap reliant upon carbon offsetting to achieve Net Zero commitments
* The establishment, implementation and tracking of an environmental scorecard which measures, inter alia:
* Creation of new carbon sinks
* Protection of carbon sinks
* Biodiversity (in relation to flora & fauna)
* Air quality
* Water quality
* Waste Management

b) **Model Award Criteria: MAC 3.3:** Support the development of scalable and future-proofed new methods to modernise delivery and increase productivity.

Sub-Award Criteria: Modernising delivery and increasing productivity:

* Understanding of scalable and future-proofed new methods to drive greater modernisation of delivery and increase productivity.
* Approach to organisational learning and continuous improvement.
* Creation of a design and tendering environment that is conducive to the development of scalable and future-proofed new methods to modernise delivery and increase productivity. Illustrative examples: outcomes-based specifications enabling alternative approaches to be offered; co-design with users and communities; approaches that invite innovative approaches to be proposed and developed; activities that promote collaboration to access new technologies/green technologies and/or approaches.

Planned Metrics:

* Percentage annual cost reduction during the term of the contract (i.e. commitment to achieve 2% savings per annum)
* The number of feasible ideas generated / proposed to improve productivity within the contract (supplier must provide sufficient detail in their proposals to demonstrate feasibility).
* The number of generated product and/or service innovations relating to Climate Mitigation & Adaptation that have been made available to the wider market / industry
* The percentage of accredited carbon literate individuals employed by the Supplier

	1. **Pricing**

**Question 6*:*** please provide a breakdown of the total budget you plan to use for this project across the following activities: project management, system modelling, economic analysis, desk research, engineering and technical consulting, reporting and stakeholder engagement as well as any other necessary costs; **(weighting 15%)**

Please provide the answer to this question through the relevant pricing schedule Excel spreadsheet shared on Jaggaer as part of this ITT. Prices (as total of budget across all project elements) will be marked proportional to the lowest price and then the 15% weighting noted above will be applied. While not evaluated, a high level of detail is welcome and will aid in early project discussions to ensure efforts are adequately distributed.

All fields must be filled in, unless no cost is expected in that given field (in which case please state so within the assumptions table). The total across all fields must be within the £480,000 maximum budget.

Payments will be linked to delivery of milestones / Deliverables as detailed in Part 4 of the Specification of Requirements. A Milestone and Deliverable Schedule will be finalised by the Supplier and agreed with the Authority at the Inception Meeting.

Proportionate Pricing scoring example

If 15% = 15 marks

|  |  |  |
| --- | --- | --- |
| Supplier | Price | Marks |
| 1 (lowest bid) | £50,000 | 15 |
| 2 | £60,000 | 50/60 \* 15 = 12.5 |
| 3 | £75,000 | 50/75 \* 15 = 10 |

# Budget

The budget for this project is £480,000 excluding VAT.

Contractors should provide a full and detailed breakdown of costs (including options where appropriate) within the provided Pricing Schedule Excel Spreadsheet on Jaggaer. This should include staff (and day rate) allocated to specific tasks across provided fields. Additional lines may be added to the spreadsheet for further detail or where necessary, so long as correctly summing to the total.

Pricing will be an assessed criterion as according to part 10 “Evaluation of Tenders”.

Payments will be linked to successful delivery of key milestones as according to quality standards outlined within the tender specifications. BEIS expects a minimum of 4 delivery milestones over the course of the project, to be adjusted and agreed with the contractor based on the tender response/details as part of the provided delivery plan. BEIS reserves the right to decline milestone payment if outlined specifications and terms are not met. Please advise in your tender response how this breakdown reflects your usual payment processes and whether any further considerations are necessary.

In submitting full tenders, contractors confirm in writing that the price offered will be held for a minimum of 60 calendar days from the date of submission. Any payment conditions applicable to the prime contractor must also be replicated with sub-contractors.

The Department aims to pay all correctly submitted invoices as soon as possible with a target of 10 days from the date of receipt and within 30 days at the latest in line with standard terms and conditions of contract.

# Consortium Bids

In the case of a consortium tender, only one submission covering all the partners is required but consortia are advised to make clear the proposed role that each partner will play in performing the contract as per the requirements of the technical specification. BEIS expects the bidder to indicate who in the consortium will be the lead contact for this project, and the organisation and governance associated with the consortia.

Contractors must provide details as to how they will manage any sub-contractors and what percentage of the tendered activity (in terms of monetary value) will be sub-contracted.

If a consortium is not proposing to form a corporate entity, full details of alternative proposed arrangements should be provided in the Annex. However, please note the Department reserves the right to require a successful consortium to form a single legal entity in accordance with Regulation 19 of the Public Contracts Regulations 2015

The Department recognises that arrangements in relation to consortia may (within limits) be subject to future change. Potential Providers should therefore respond in the light of the arrangements as currently envisaged. Potential Providers are reminded that any future proposed change in relation to consortia must be notified to the Department so that it can make a further assessment by applying the selection criteria to the new information provided.

**Section 3**

**Further Information on Tender Procedure**

Invitation to Tender for: Energy Innovation Needs Assessments 2.0

Tender Reference Number: prj\_1437

Deadline for Tender Responses: 14:00 5th June 2023

**Definitions**

Please note that references to the "Department" throughout these documents mean The Secretary of State for Business, Energy and Industrial Strategy acting through his/her representatives in the Department for Business Energy & Industrial Strategy.

The Freedom of Information Act 2000 (“FOIA”) and the Environmental Information Regulations 2004 (“EIR”) apply to the Department. You should be aware of the Department’s obligations and responsibilities under FOIA or EIR to disclose, on written request, recorded information held by the Department. Information provided in connection with this procurement exercise, or with any contract that may be awarded as a result of this exercise, may therefore have to be disclosed by the Department in response to such a request, unless the Department decides that one of the statutory exemptions under the FOIA or the exceptions in the EIR applies. If you wish to designate information supplied as part of this response as confidential, of if you believe that its disclosure would be prejudicial to any person’s commercial interests, you must provide clear and specific detail as to the precise information involved and explain (in broad terms) what harm may result from disclosure if a request is received, and the time period applicable to that sensitivity. Such designation alone may not prevent disclosure if in the Department’s reasonable opinion publication is required by applicable legislation or Government policy or where disclosure is required by the Information Commissioner or the First-tier Tribunal (Information Rights).

Additionally, the Government’s transparency agenda requires that tender documents (including ITTs such as this) are published on a designated, publicly searchable web site. The same applies to other tender documents issued by the Department (including the original advertisement and the pre-qualification questionnaire (if used)), and any contract entered into by the Department with its preferred supplier once the procurement is complete. By submitting a tender you agree that your participation in this procurement may be made public. The answers you give in this response will not be published on the transparency web site (but may fall to be disclosed under FOIA or EIR (see above)). Where tender documents issued by the Department or contracts with its contractors fall to be disclosed the Department will redact them as it thinks necessary, having regard (inter alia) to the exemptions/exceptions in the FOIA or EIR.

Where there is a reference to “specifications”, this refers to Section 2 of this ITT titled “Specification of Requirements”, unless otherwise implied by the text.

**Data security**

The successful tenderer must comply with all relevant Data Protection Legislation, as defined in the terms and conditions applying to this Invitation to Tender.

Section 4 contains a “The General Data Protection Regulation Assurance Questionnaire for Contractors” (Declaration 5) to evidence the extent of readiness. The Authority may ask the Contractor to provide evidence to support the position stated in the questionnaire. The Authority may require the successful Contractor to increase their preparedness where the Authority is not satisfied that the Contractor will be in a position to meet its obligations under the terms and conditions. If the Contractor fails to satisfy the Authority that it will be in a position to meet its obligations under the terms and conditions in the event that the Contractor is successful, the Authority reserves the right to exclude the bidder from this procurement.

**Non-Collusion**

No tender will be considered for acceptance if the contractor has indulged or attempted to indulge in any corrupt practice or canvassed the tender with an officer of the Department. Section 4 contains a "Statement of non-collusion" (declaration 1); any breach of the undertakings covered under items 1 - 3 inclusive will invalidate your tender. If a contractor has indulged or attempted to indulge in such practices and the tender is accepted, then grounds shall exist for the termination of the contract and the claiming damages from the successful contractors. You must not:

• Tell anyone else what your tender price is or will be, before the time limit for delivery of tenders.

• Try to obtain any information about anyone else's tender or proposed tender before the time limit for delivery of tenders.

• Make any arrangements with another organisation about whether or not they should tender, or about their or your tender price.

Offering an inducement of any kind in relation to obtaining this or any other contract with the Department will disqualify your tender from being considered and may constitute a criminal offence.

**Section 4**

**Declarations to be submitted by the Tenderer**

Invitation to Tender for: Energy Innovation Needs Assessments 2.0

Tender Reference Number: prj\_1437

Deadline for Tender Responses: 14:00 5th June 2023

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**Declaration 1: Statement of non-collusion**

To: The Department for Business, Energy & Industrial Strategy

1. We recognise that the essence of competitive tendering is that the Department will receive a bona fide competitive tender from all persons tendering. We therefore certify that this is a bona fide tender and that we have not fixed or adjusted the amount of the tender or our rates and prices included therein by or in accordance with any agreement or arrangement with any other person.

2. We also certify that we have not done and undertake not to do at any time before the hour and date specified for the return of this tender any of the following acts:

1. communicate to any person other than the Department the amount or approximate amount of our proposed tender, except where the disclosure, in confidence, of the approximate amount is necessary to obtain any insurance premium quotation required for the preparation of the tender;
2. enter into any agreement or arrangement with any other person that he shall refrain for submitting a tender or as to the amount included in the tender;
3. offer or pay or give or agree to pay or give any sum of money, inducement or valuable consideration directly or indirectly to any person doing or having done or causing or having caused to be done, in relation to any other actual or proposed tender for the contract any act, omission or thing of the kind described above.

3. In this certificate, the word “person” shall include any person, body or association, corporate or unincorporated; and “any agreement or arrangement” includes any such information, formal or informal, whether legally binding or not.

……………………………………………………………………………….….

Signature (duly authorised on behalf of the tenderer)

……….………………………………………………………………………….

Print name

…………………………………………………………….…………………….

On behalf of (organisation name)

…………………………………………………………………….…………….

Date

**Declaration 2: Form of Tender**

To: The Department for Business, Energy & Industrial Strategy

1. Having considered the invitation to tender and all accompanying documents

(including without limitation, the terms and conditions of contract and the Specification) we confirm that we are fully satisfied as to our experience and ability to deliver the goods/services in all respects in accordance with the requirements of this invitation to tender.

2. We hereby tender and undertake to provide and complete all the services required to be performed in accordance with the terms and conditions of contract and the Specification for the amount set out in the Pricing Schedule.

3. We agree that any insertion by us of any conditions qualifying this tender or any unauthorised alteration to any of the terms and conditions of contract made by us may result in the rejection of this tender.

4. We agree that this tender shall remain open to be accepted by the Department for 8 weeks from the date below.

5. We understand that if we are a subsidiary (within the meaning of section 1159 of (and schedule 6 to) the Companies Act 2006) if requested by the Department we may be required to secure a Deed of Guarantee in favour of the Department from our holding company or ultimate holding company, as determined by the Department in their discretion.

6. We understand that the Department is not bound to accept the lowest or any tender it may receive.

7. We certify that this is a bona fide tender.

…………………………………………………………………………........

Signature (duly authorised on behalf of the tenderer)

…………………………………………………………………………………

Print name

………………………………………………………………………….

On behalf of (organisation name)

………………………………………………………………………….

Date

**Declaration 3: Conflict of Interest**

I have nothing to declare with respect to any current or potential interest or conflict in relation to this research (or any potential providers who may be subcontracted to deliver this work, their advisers or other related parties). By conflict of interest, I mean, anything which could be reasonably perceived to affect the impartiality of this research, or to indicate a professional or personal interest in the outcomes from this research.

Signed …………………………………….

Name …………………………………….

Position …………………………………….

***OR***

I wish to declare the following with respect to personal or professional interests related to relevant organisations\*;

* X
* X

*Where a potential conflict of interest has been declared for an individual or organisation within a consortia, please clearly outline the role which this individual or organisation will play in the proposed project and how any conflict of interest has or will be mitigated.*

* X
* X

Signed …………………………………….

Name …………………………………….

Position …………………………………….

Please complete this form and return this with your ITT documentation - Nil returns **are** required.

**\*** These may include (but are not restricted to);

* A professional or personal interest in the outcome of this research
* For evaluation projects, a close working, governance, or commercial involvement in the project under evaluation
* Current or past employment with relevant organisations
* Payment (cash or other) received or likely to be received from relevant organisations for goods or services provided (Including consulting or advisory fees)
* Gifts or entertainment received from relevant organisations
* Shareholdings (excluding those within unit trusts, pension funds etc) in relevant organisations
* Close personal relationship or friendships with individuals employed by or otherwise closely associated with relevant organisations

***All of the above apply both to the individual signing this form and their close family / friends / partners etc.***

If your situation changes during the project in terms of interests or conflicts, you must notify the Department straight away.

A DECLARATION OF INTEREST WILL NOT NECESSARILY MEAN THE INDIVIDUAL OR ORGANISATION CANNOT WORK ON THE PROJECT; BUT IT IS VITAL THAT ANY INTEREST OR CONFLICT IS DECLARED SO IT CAN BE CONSIDERED OPENLY.

**Declaration 4: Standard Selection Questionnaire**

***Financial Credit Checks:***

*BEIS use Dun & Bradstreet to assist them with their financial due diligence and will request Dun and Bradstreet to provide comprehensive reports on the preferred bidder/s where the opportunity being tendered for exceeds £1M (excluding VAT).*

*BEIS will review the Dun and Bradstreet report prior to notifying bidders of the result of the competition and may need to check [with bidders] that the information within the report is correct. BEIS may also request the latest accounts and financial information from the preferred bidder/s.*

*Contractors assessed with a high financial risk status may not be awarded a contract at this stage we will revert to the bidder to discuss further.*

**Potential Supplier Information and Exclusion Grounds: Part 1 and Part 2.**

The standard Selection Questionnaire is a self-declaration, made by you (the potential supplier), that you do not meet any of the grounds for exclusion[[3]](#footnote-4). If there are grounds for exclusion, there is an opportunity to explain the background and any measures you have taken to rectify the situation (we call this self-cleaning).

A completed declaration of Part 1 and Part 2 provides a formal statement that the organisation making the declaration has not breached any of the exclusions grounds. Consequently we require all the organisations that you will rely on to meet the selection criteria to provide a completed Part 1 and Part 2. For example these could be parent companies, affiliates, associates, or essential sub-contractors, if they are relied upon to meet the selection criteria. This means that where you are joining in a group of organisations, including joint ventures and partnerships, each organisation in that group must complete one of these self-declarations. Sub-contractors that you rely on to meet the selection criteria must also complete a self-declaration (although sub-contractors that are not relied upon do not need to complete the self-declaration).

When completed, this form is to be sent back to the contact point given in the procurement documents along with the selection information requested in the procurement documentation.

*Alternatively you can submit the completed Exclusion Grounds of the* [*EU ESPD*](https://ec.europa.eu/tools/espd) *(Part III) as a downloaded XML file to the buyer contact point along with the selection information requested in the procurement documentation*.

**Supplier Selection Questions: Part 3**

The procurement document will provide instructions on the selection questions you need to respond to and how to submit those responses. If you are bidding on behalf of a group (consortium) or you intend to use sub-contractors, you should complete all of the selection questions on behalf of the consortium and/or any sub-contractors.

If the relevant documentary evidence referred to in the Selection Questionnaire is not provided upon request and without delay we reserve the right to amend the contract award decision and award to the next compliant bidder.

**Consequences of misrepresentation**

If you seriously misrepresent any factual information in filling in the Selection Questionnaire, and so induce an authority to enter into a contract, there may be significant consequences. You may be excluded from the procurement procedure, and from bidding for other contracts for three years. If a contract has been entered into you may be sued for damages and the contract may be rescinded. If fraud, or fraudulent intent, can be proved, you or your responsible officers may be prosecuted and convicted of the offence of fraud by false representation, and you must be excluded from further procurements for five years.

**Energy Innovation Needs Assessments 2.0**

**REFERENCE NUMBER: prj\_1437**

**PROCUREMENT PROCEDURE: OPEN**

**Notes for completion**

1. The “authority” means the contracting authority, or anyone acting on behalf of the contracting authority, that is seeking to invite suitable candidates to participate in this procurement process.
2. “You” / “Your” refers to the potential supplier completing this standard Selection Questionnaire i.e. the legal entity responsible for the information provided. The term “potential supplier” is intended to cover any economic operator as defined by the Public Contracts Regulations 2015 (referred to as the “regulations”) and could be a registered company; the lead contact for a group of economic operators; charitable organisation; Voluntary Community and Social Enterprise (VCSE); Special Purpose Vehicle; or other form of entity.
3. Please ensure that all questions are completed in full, and in the format requested. If the question does not apply to you, please state ‘N/A’. Should you need to provide additional information in response to the questions, please submit a clearly identified annex.
4. The authority recognises that arrangements set out in section 1.2 of the standard Selection Questionnaire, in relation to a group of economic operators (for example, a consortium) and/or use of sub-contractors, may be subject to change and will, therefore, not be finalised until a later date. The lead contact should notify the authority immediately of any change in the proposed arrangements and ensure a completed Part 1 and Part 2 is submitted for any new organisation relied on to meet the selection criteria. The authority will make a revised assessment of the submission based on the updated information.
5. For Part 1 and Part 2 every organisation that is being relied on to meet the selection must complete and submit the self-declaration.
6. **Note for Contracting Authorities: The following paragraph is optional for inclusion if a decision has been made to request a self-declaration of the exclusion grounds from sub-contractors.** *All sub-contractors are required to complete Part 1 and Part 2[[4]](#footnote-5).*
7. For answers to Part 3 -If you are bidding on behalf of a group, for example, a consortium, or you intend to use sub-contractors, you should complete all of the questions on behalf of the consortium and/ or any sub-contractors, providing one composite response and declaration.

The authority confirms that it will keep confidential and will not disclose to any third parties any information obtained from a named customer contact, other than to the Cabinet Office and/or contracting authorities defined by the regulations, or pursuant to an order of the court or demand made by any competent authority or body where the authority is under a legal or regulatory obligation to make such a disclosure.

**Part 1: Potential Supplier Information**

Please answer the following questions in full. Note that every organisation that is being relied on to meet the selection must complete and submit the Part 1 and Part 2 self-declaration.

|  |  |
| --- | --- |
| **Section 1** | **Potential supplier information** |
| **Question number** | **Question** | **Response** |
| 1.1(a) | Full name of the potential supplier submitting the information |  |
| 1.1(b) – (i) | Registered office address (if applicable) |  |
| 1.1(b) – (ii) | Registered website address (if applicable) |  |
| 1.1(c) | Trading status 1. public limited company
2. limited company
3. limited liability partnership
4. other partnership
5. sole trader
6. third sector
7. other (please specify your trading status)
 |  |
| 1.1(d) | Date of registration in country of origin |  |
| 1.1(e) | Company registration number (if applicable) |  |
| 1.1(f) | Charity registration number (if applicable) |  |
| 1.1(g) | Head office DUNS number (if applicable) |  |
| 1.1(h) | Registered VAT number  |  |
| 1.1(i) - (i) | If applicable, is your organisation registered with the appropriate professional or trade register(s) in the member state where it is established? | Yes ☐No ☐N/A ☐ |
| 1.1(i) - (ii) | If you responded yes to 1.1(i) - (i), please provide the relevant details, including the registration number(s). |  |
| 1.1(j) - (i) | Is it a legal requirement in the state where you are established for you to possess a particular authorisation, or be a member of a particular organisation in order to provide the services specified in this procurement? | Yes ☐No ☐ |
| 1.1(j) - (ii) | If you responded yes to 1.1(j) - (i), please provide additional details of what is required and confirmation that you have complied with this. |  |
| 1.1(k) | Trading name(s) that will be used if successful in this procurement |  |
| 1.1(l) | Relevant classifications (state whether you fall within one of these, and if so which one)1. Voluntary Community Social Enterprise (VCSE)
2. Sheltered Workshop
3. Public service mutual
 |  |
| 1.1(m) | Are you a Small, Medium or Micro Enterprise (SME)[[5]](#footnote-6)? | Yes ☐No ☐ |
| 1.1(n) | Details of Persons of Significant Control (PSC), where appropriate: [[6]](#footnote-7) - Name; - Date of birth; - Nationality; - Country, state or part of the UK where the PSC usually lives; - Service address; - The date he or she became a PSC in relation to the company (for existing companies the 6 April 2016 should be used); - Which conditions for being a PSC are met;  - Over 25% up to (and including) 50%,  - More than 50% and less than 75%,  - 75% or more. [[7]](#footnote-8)(Please enter N/A if not applicable) |  |
| 1.1(o) | Details of immediate parent company: - Full name of the immediate parent company- Registered office address (if applicable)- Registration number (if applicable)- Head office DUNS number (if applicable)- Head office VAT number (if applicable)(Please enter N/A if not applicable) |  |
| 1.1(p) | Details of ultimate parent company:- Full name of the ultimate parent company- Registered office address (if applicable)- Registration number (if applicable)- Head office DUNS number (if applicable)- Head office VAT number (if applicable)(Please enter N/A if not applicable) |  |

Please note: A criminal record check for relevant convictions may be undertaken for the preferred contractors and the persons of significant in control of them.

Please provide the following information about your approach to this procurement:

|  |  |
| --- | --- |
| **Section 1** | **Bidding model** |
| **Question number** | **Question** | **Response** |
| 1.2(a) - (i) | Are you bidding as the lead contact for a group of economic operators? | Yes ☐No ☐ If yes, please provide details listed in questions 1.2(a) (ii), (a) (iii) and to 1.2(b) (i), (b) (ii), 1.3, Section 2 and 3.If no, and you are a supporting bidder please provide the name of your group at 1.2(a) (ii) for reference purposes, and complete 1.3, Section 2 and 3. |
| 1.2(a) - (ii) | Name of group of economic operators (if applicable) |  |
| 1.2(a) - (iii) | Proposed legal structure if the group of economic operators intends to form a named single legal entity prior to signing a contract, if awarded. If you do not propose to form a single legal entity, please explain the legal structure. |  |
| 1.2(b) - (i) | Are you or, if applicable, the group of economic operators proposing to use sub-contractors? | Yes ☐No ☐ |
| 1.2(b) - (ii) | If you responded yes to 1.2(b)-(i) please provide additional details for each sub-contractor in the following table: we may ask them to complete this form as well.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name |  |  |  |  |  |
| Registered address |  |  |  |  |  |
| Trading status |  |  |  |  |  |
| Company registration number |  |  |  |  |  |
| Head Office DUNS number (if applicable) |  |  |  |  |  |
| Registered VAT number |  |  |  |  |  |
| Type of organisation |  |  |  |  |  |
| SME (Yes/No) |  |  |  |  |  |
| The role each sub-contractor will take in providing the works and /or supplies e.g. key deliverables |  |  |  |  |  |
| The approximate % of contractual obligations assigned to each sub-contractor |  |  |  |  |  |

 |

**Contact details and declaration**

I declare that to the best of my knowledge the answers submitted and information contained in this document are correct and accurate.

I declare that, upon request and without delay I will provide the certificates or documentary evidence referred to in this document.

I understand that the information will be used in the selection process to assess my organisation’s suitability to be invited to participate further in this procurement.

I understand that the authority may reject this submission in its entirety if there is a failure to answer all the relevant questions fully, or if false/misleading information or content is provided in any section.

I am aware of the consequences of serious misrepresentation.

|  |  |
| --- | --- |
| **Section 1** | **Contact details and declaration** |
| **Question number** | **Question** | **Response** |
| 1.3(a) | Contact name |  |
| 1.3(b) | Name of organisation |  |
| 1.3(c) | Role in organisation |  |
| 1.3(d) | Phone number |  |
| 1.3(e) | E-mail address  |  |
| 1.3(f) | Postal address |  |
| 1.3(g) | Signature (electronic is acceptable) |  |
| 1.3(h) | Date |  |

**Part 2: Exclusion Grounds**

Please answer the following questions in full. Note that every organisation that is being relied on to meet the selection must complete and submit the Part 1 and Part 2 self-declaration.

|  |  |
| --- | --- |
| **Section 2** | **Grounds for mandatory exclusion** |
| **Question number** | **Question** | **Response** |
| 2.1(a) | **Regulations 57(1) and (2)** The detailed grounds for mandatory exclusion of an organisation are set out on this [web page](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551130/List_of_Mandatory_and_Discretionary_Exclusions.pdf), which should be referred to before completing these questions. Please indicate if, within the past five years you, your organisation or any other person who has powers of representation, decision or control in the organisation been convicted anywhere in the world of any of the offences within the summary below and listed on the [webpage](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551130/List_of_Mandatory_and_Discretionary_Exclusions.pdf). |
|  | Participation in a criminal organisation.  | Yes ☐No ☐If Yes please provide details at 2.1(b) |
|  | Corruption.  | Yes ☐No ☐If Yes please provide details at 2.1(b) |
|  | Fraud.  | Yes ☐No ☐If Yes please provide details at 2.1(b) |
|  | Terrorist offences or offences linked to terrorist activities | Yes ☐No ☐If Yes please provide details at 2.1(b) |
|  | Money laundering or terrorist financing | Yes ☐No ☐If Yes please provide details at 2.1(b) |
|  | Child labour and other forms of trafficking in human beings | Yes ☐No ☐If Yes please provide details at 2.1(b)  |
| 2.1(b) | If you have answered yes to question 2.1(a), please provide further details.Date of conviction, specify which of the grounds listed the conviction was for, and the reasons for conviction,Identity of who has been convictedIf the relevant documentation is available electronically please provide the web address, issuing authority, precise reference of the documents. |  |
| 2.2 | If you have answered Yes to any of the points above have measures been taken to demonstrate the reliability of the organisation despite the existence of a relevant ground for exclusion ? (Self Cleaning) | Yes ☐No ☐ |
| 2.3(a) | **Regulation 57(3)**Has it been established, for your organisation by a judicial or administrative decision having final and binding effect in accordance with the legal provisions of any part of the United Kingdom or the legal provisions of the country in which the organisation is established (if outside the UK), that the organisation is in breach of obligations related to the payment of tax or social security contributions? | Yes ☐No ☐ |
| 2.3(b) | If you have answered yes to question 2.3(a), please provide further details. Please also confirm you have paid, or have entered into a binding arrangement with a view to paying, the outstanding sum including where applicable any accrued interest and/or fines. |  |

Please Note: The Authority reserves the right to use its discretion to exclude a potential supplier where it can demonstrate by any appropriate means that the potential supplier is in breach of its obligations relating to the non-payment of taxes or social security contributions.

|  |  |
| --- | --- |
| **Section 3** | **Grounds for discretionary exclusion**  |
|  | **Question** | **Response** |
| 3.1 | **Regulation 57 (8)**The detailed grounds for discretionary exclusion of an organisation are set out on this [web page](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551130/List_of_Mandatory_and_Discretionary_Exclusions.pdf), which should be referred to before completing these questions. Please indicate if, within the past three years, anywhere in the world any of the following situations have applied to you, your organisation or any other person who has powers of representation, decision or control in the organisation. |
| 3.1(a) | Breach of environmental obligations?  | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1 (b) | Breach of social obligations?  | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1 (c) | Breach of labour law obligations?  | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(d) | Bankrupt or is the subject of insolvency or winding-up proceedings, where the organisation’s assets are being administered by a liquidator or by the court, where it is in an arrangement with creditors, where its business activities are suspended or it is in any analogous situation arising from a similar procedure under the laws and regulations of any State? | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(e) | Guilty of grave professional misconduct? | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(f) | Entered into agreements with other economic operators aimed at distorting competition? | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(g) | Aware of any conflict of interest within the meaning of regulation 24 due to the participation in the procurement procedure? | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(h) | Been involved in the preparation of the procurement procedure? | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(i) | Shown significant or persistent deficiencies in the performance of a substantive requirement under a prior public contract, a prior contract with a contracting entity, or a prior concession contract, which led to early termination of that prior contract, damages or other comparable sanctions? | Yes ☐No ☐If yes please provide details at 3.2 |
| 3.1(j)3.1(j) - (i)3.1(j) - (ii)3.1(j) –(iii)3.1(j)-(iv) | Please answer the following statementsThe organisation is guilty of serious misrepresentation in supplying the information required for the verification of the absence of grounds for exclusion or the fulfilment of the selection criteria.The organisation has withheld such information. The organisation is not able to submit supporting documents required under regulation 59 of the Public Contracts Regulations 2015.The organisation has influenced the decision-making process of the contracting authority to obtain confidential information that may confer upon the organisation undue advantages in the procurement procedure, or to negligently provided misleading information that may have a material influence on decisions concerning exclusion, selection or award. | Yes ☐No ☐If Yes please provide details at 3.2Yes ☐No ☐If Yes please provide details at 3.2Yes ☐No ☐If Yes please provide details at 3.2Yes ☐No ☐If Yes please provide details at 3.2 |

|  |  |  |
| --- | --- | --- |
| 3.2 | If you have answered Yes to any of the above, explain what measures been taken to demonstrate the reliability of the organisation despite the existence of a relevant ground for exclusion? (Self Cleaning) |  |

**Part 3: Selection Questions**[[8]](#footnote-9)

|  |  |
| --- | --- |
| **Section 4** | **Economic and Financial Standing**  |
|  | Question | Response |
| **4.1** | Are you able to provide a copy of your audited accounts for the last two years, if requested?If no, can you provide **one** of the following: answer with Y/N in the relevant box. | Yes ☐No ☐ |
| (a) A statement of the turnover, Profit and Loss Account/Income Statement, Balance Sheet/Statement of Financial Position and Statement of Cash Flow for the most recent year of trading for this organisation. | Yes ☐No ☐ |
| (b) A statement of the cash flow forecast for the current year and a bank letter outlining the current cash and credit position. | Yes ☐No ☐ |
|  | (c) Alternative means of demonstrating financial status if any of the above are not available (e.g. forecast of turnover for the current year and a statement of funding provided by the owners and/or the bank, charity accruals accounts or an alternative means of demonstrating financial status). | Yes ☐No ☐ |
| **4.2** | Where we have specified a minimum level of economic and financial standing and/ or a minimum financial threshold within the evaluation criteria for this procurement, please self-certify by answering ‘Yes’ or ‘No’ that you meet the requirements set out. | Yes ☐No ☐ |

|  |  |
| --- | --- |
| **Section 5** | **If you have indicated in the Selection Questionnaire question 1.2 that you are part of a wider group, please provide further details below:**  |
| **Name of organisation** |  |
| **Relationship to the Supplier completing these questions** |  |

|  |  |  |
| --- | --- | --- |
| **5.1** | Are you able to provide parent company accounts if requested to at a later stage? | Yes ☐No ☐ |
| **5.2** | If yes, would the parent company be willing to provide a guarantee if necessary? | Yes ☐No ☐ |
| **5.3** | If no, would you be able to obtain a guarantee elsewhere (e.g. from a bank)?  | Yes ☐No ☐ |
| **Section 6** | **Technical and Professional Ability**  |
| **6.1** | **Relevant experience and contract examples**Please provide details of up to three contracts, in any combination from either the public or private sector; voluntary, charity or social enterprise (VCSE) that are relevant to our requirement. VCSEs may include samples of grant-funded work. Contracts for supplies or services should have been performed during the past three years. Works contracts may be from the past five years.The named contact provided should be able to provide written evidence to confirm the accuracy of the information provided below.Consortia bids should provide relevant examples of where the consortium has delivered similar requirements. If this is not possible (e.g. the consortium is newly formed or a Special Purpose Vehicle is to be created for this contract) then three separate examples should be provided between the principal member(s) of the proposed consortium or Special Purpose Vehicle (three examples are not required from each member).Where the Supplier is a Special Purpose Vehicle, or a managing agent not intending to be the main provider of the supplies or services, the information requested should be provided in respect of the main intended provider(s) or sub-contractor(s) who will deliver the contract.If you cannot provide examples see question 6.3 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Contract 1** | **Contract 2** | **Contract 3** |
| **Name of customer organisation** |  |  |  |
| **Point of contact in the organisation** |  |  |  |
| **Position in the organisation** |  |  |  |
| **E-mail address** |  |  |  |
| **Description of contract**  |  |  |  |
| **Contract Start date** |  |  |  |
| **Contract completion date** |  |  |  |
| **Estimated contract value** |  |  |  |

|  |  |
| --- | --- |
| **6.2** | Where you intend to sub-contract a proportion of the contract, please demonstrate how you have previously maintained healthy supply chains with your sub-contractor(s)Evidence should include, but is not limited to, details of your supply chain management tracking systems to ensure performance of the contract and including prompt payment or membership of the UK Prompt Payment Code (or equivalent schemes in other countries) |
|  |  |

|  |  |
| --- | --- |
| **6.3**  | If you cannot provide at least one example for questions 6.1, in no more than 500 words please provide an explanation for this e.g. your organisation is a new start-up or you have provided services in the past but not under a contract. |
|  |  |

|  |  |
| --- | --- |
| **Section 7** | **Modern Slavery Act 2015:** **Requirements under Modern Slavery Act 2015[[9]](#footnote-10)** |
| **7.1** | Are you a relevant commercial organisation as defined by section 54 ("Transparency in supply chains etc.") of the Modern Slavery Act 2015 ("the Act")? | Yes ☐N/A ☐ |
| **7.2** | If you have answered yes to question 1 are you compliant with the annual reporting requirements contained within Section 54 of the Act 2015? | Yes ☐Please provide relevant the url …No ☐Please provide an explanation |

|  |  |
| --- | --- |
| **Section 8** | **The General Data Protection Regulation (GDPR)[[10]](#footnote-11)** |
| **8.1** | Compliance with the GDPR is a mandatory requirement for all contracts or agreements that involve the transfer and processing of personal data from 25th May 2018. Will your organisation be compliant with the GDPR and all Data Protection Legislation (as defined in the terms and conditions applying to this Invitation to Tender) in regards to the processing required under this contract by the time of contract award?Contractors are also required to complete Declaration 5: The General Data Protection Regulation Assurance Questionnaire for Contractors, to evidence the extent of readiness. The Authority may ask the Contractor to provide evidence to support the position stated in the questionnaire. The Authority may require the successful Contractor to increase their preparedness where the Authority is not satisfied that the Contractor will be in a position to meet its obligations under the terms and conditions. If the Contractor fails to satisfy the Authority that it will be in a position to meet its obligations under the terms and conditions in the event that the Contractor is successful, the Authority reserves the right to exclude the bidder from this procurement.  | Yes ☐No ☐ |

**9. Additional Questions**

Contractors who self-certify that they meet the requirements to these additional questions will be required to provide evidence of this if they are successful at contract award stage.

|  |  |
| --- | --- |
| **Section 9** | **Additional Questions**  |
| **9.1** | **Insurance** |
| a. | Please self-certify whether you already have, or can commit to obtain, prior to the commencement of the contract, the levels of insurance cover indicated below: Y/N Employer’s (Compulsory) Liability Insurance = £5mPublic Liability Insurance = £5mProfessional Indemnity Insurance = £2m\*It is a legal requirement that all companies hold Employer’s (Compulsory) Liability Insurance of £5 million as a minimum. Please note this requirement is not applicable to Sole Traders. |

|  |  |
| --- | --- |
| **9.4** | **Contractors’ Past Performance[[11]](#footnote-12) - (please refer to supplier selection guidance - this question should only be included by central government contracting authorities)**  |
| **a.** | Can you supply a list of your relevant principal contracts for goods and/or services provided in the last three years? | Yes ☐No ☐ |
| **b.** | On request can you provide a certificate from those customers on the list?  | Yes ☐No ☐ |
| **c.** | If you cannot obtain a certificate from a customer can you explain the reasons why? | Yes ☐No ☐ |
| **d.** | If the certificate states that goods and/or services supplied were not satisfactory are you able to supply information which shows why this will not recur in this contract if you are awarded it?  | Yes ☐No ☐ |
| **e.** | Can you supply the information in questions a. to d. above for any sub-contractors [or consortium members] who you are relying upon to perform this contract?  | Yes ☐No ☐ |

**Declaration 5: The General Data Protection Regulation Assurance Questionnaire for Contractors**

|  |  |
| --- | --- |
| Name of Organisation: |  |
| Name:  |  |
| Position: |  |
| Email: |  |

**Declaration:**

I certify that the following questionnaire has been complete accurately on behalf of the organisation.

**Instructions:** For every statement on the left, please select which status applies to your organisation

|  |  |
| --- | --- |
| **Documentation: Information you hold** | **Will this be implemented by time of contract award.** |
| Your business has conducted an information audit to map data flows. | ☐ Yes☐ No |
| Your business has documented what personal data you hold, where it came from, who you share it with, and what you do with it. | ☐ Yes☐ No |
| NOTE: You may be required to make these records available to the Information Commissioner's Office (ICO) on request. |
|  |  |  |  |  |  |  |  |  |
| **Accountability & Governance** | **Will this be implemented by time of contract award.** |
| Your business has an appropriate data protection policy | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Data Protection Officer (DPO)** | **Will this be implemented by time of contract award.** |
| Your business has nominated a data protection lead or Data Protection Officer (DPO). | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Information Risks & Data Protection Impact Assessments** | **Will this be implemented by time of contract award.** |
| Your business manages information risks in a structured way so that management understands the business impact of personal data related risks and manages them effectively. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Data Protection by Design** | **Will this be implemented by time of contract award.** |
| Your business has implemented appropriate technical and organisational measures to show you have considered and integrated data protection into your processing activities. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Training & Awareness** | **Yes/No** |
| Your business provides data protection awareness training for all staff. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Operational Base** | **Will this be implemented by time of contract award.** |
| If your business operates outside the EU, you have appointed a representative within the EU in writing. | ☐ Yes☐ No☐ NA |
|  |  |  |  |  |  |  |  |  |
| **Breach Notification** | **Will this be implemented by time of contract award.** |
| Your business has effective processes to identify, report, manage and resolve any personal data breaches. BEIS must be notified within 48 hours about any breaches involving personal data being processed on our behalf. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Individual Rights: Right of Access** | **Will this be implemented by time of contract award.** |
| Your business has a process to respond to a data controllers request for information (following an individuals' request to access their personal data). | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Right to Rectification & Data Quality** | **Will this be implemented by time of contract award.** |
| Your business has processes to ensure that the personal data you hold remains accurate and up to date. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Right to Erasure including Retention & Disposal** | **Will this be implemented by time of contract award.** |
| Your business has a process to routinely and securely dispose of personal data that is no longer required in line with agreed timescales as stated within the terms and conditions. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Right to Restrict Processing** | **Will this be implemented by time of contract award.** |
| Your business has procedures to respond to a data controllers’ request to supress the processing of specific personal data. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Right of Data Portability** | **Will this be implemented by time of contract award.** |
| Your business will be able to respond to a request from the data controller for the supply of the personal data you process in an electronic format. | ☐ Yes☐ No |
|  |  |  |  |  |  |  |  |  |
| **Data Security: Security Policy** | **Will this be implemented by time of contract award.** |
| Your business has an information security policy supported by appropriate security measures. | ☐ Yes☐ No |

**Declaration 6: Code of Practice[[12]](#footnote-13)**

I confirm that I am aware of the requirements of the Department’s Code of Practice[[13]](#footnote-14) for Research and, in the proposed project, I will use my best efforts to ensure that the procedures used conform to those requirements under the following headings[[14]](#footnote-15):

* Responsibilities
* Competence
* Project planning
* Quality Control
* Handling of samples and materials
* Facilities and equipment
* Documentation of procedures and methods
* Research/work records

I understand that the Department has the right to inspect our procedures and practices against the requirements of the Code of Practice, and that I may be asked to provide documentary evidence of our working practices or provide access and assistance to auditors appointed by the Department.

(There is some flexibility in the application of the Code of Practice to specific research projects. Contractors are encouraged to discuss with the Department any aspects that cause them concern, in order to reach agreement on the interpretation of each requirement.)

**Annex A: Pricing Schedule**

Please see relevant Excel file within ITT Jaggaer area and outline your pricing split across: project management, system modelling, economic analysis, desk research, engineering and technical consulting, reporting and stakeholder engagement as well as any other necessary costs. Within the same Excel document, please also provide an indicative budget breakdown across milestones you wish to propose.

**Annex B: Code of Practice for Research**

**CODE OF PRACTICE FOR RESEARCH**

***Issued by the Department for Business, Energy and Industrial Strategy***

The Department has developed this Code of Practice from the Joint Code of Practice issued by BBSRC; the Department for Environment, Food and Rural Affairs (Defra); the Food Standards Agency; and the Natural Environment Research Council (NERC) which lays out a framework for the proper conduct of research. It sets out the key aspects of the research process and the importance of making judgements on the appropriate precautions needed in every research activity.

The Code applies to all research funded by The Department. It is intended to apply to all types of research, but the overriding principle is fitness of purpose and that all research must be conducted diligently by competent researchers and therefore the individual provisions must be interpreted with that in mind.

***PRINCIPLES BEHIND THE CODE OF PRACTICE***

Contractors and consortia funded by the Department are expected to be committed to the quality of the research process in addition to quality of the evidence outputs

The Code of Practice has been created in order to assist contractors to conduct research of the highest quality and to encourage good conduct in research and help prevent misconduct,.

Set out over 8 responsibilities the code of practice provides general principles and standards for good practice in research.

Most contractors will already have in place many of the measures set out in the

Code and its adoption should not require great effort.

***COMPLIANCE WITH THE CODE OF PRACTICE***

All organisations contracting to the Department (including those sub-contracting as part of a consortium) will be expected to commit to upholding these responsibilities and will be expected to indicate acceptance of the Code when submitting proposals to the Department.

Contractors are encouraged to discuss with the Department any clauses in the Code that they consider inappropriate or unnecessary in the context of the proposed research project. The Code, and records of the discussions if held, will become part of the Terms and Conditions under which the research is funded.

Additionally, The Department may conduct (or request from the Contractor as appropriate) a formal risk assessment on the project to identify where additional controls may be needed.

***MONITORING OF COMPLIANCE WITH THE CODE OF PRACTICE***

Monitoring of compliance with the Code is necessary to ensure:

* Policies and managed processes exist to support compliance with the Code
* That these are being applied in practice.

In the short term, the Department can require contractors to conduct planned internal audits although the Department reserves the right to obtain evidence that a funded project is carried out to the required standard. The Department may also conduct an audit of a Contractor’s research system if deemed necessary.

In the longer term it is expected that most research organisations will assure the quality of their research processes by means of a formal system that is audited by an impartial and competent third party against an appropriate internationally recognised standard that is fit for purpose.

A recommended checklist for researchers can be found on the UK Research Integrity Office (UKRIO) website at http://www.ukrio.org/what-we-do/code-of-practice-for-research

***SPECIFIC REQUIREMENTS IN THE CODE OF PRACTICE***

***1. Responsibilities***

All organisations contracting to the Department (including those sub-contracting as part of a consortium will be responsible for the overall quality of research they conducted. Managers, group leaders and supervisors have a responsibility to ensure a climate of good practice in the research teams, including a commitment to the development of scientific and technical skills.

The Principal Investigator or Project Leader is responsible for all the work conducted in the project including that of any subcontractors. All staff and students must have defined responsibilities in relation to the project and be aware of these responsibilities.

***2. Competence***

All personnel associated with the project must be competent to perform the technical, scientific and support tasks required of them. Personnel undergoing training must be supervised at a level such that the quality of the results is not compromised by the inexperience of the researcher.

***3. Project planning***

An appropriate level of risk assessment must be conducted to demonstrate awareness of the key factors that will influence the success of the project and the ability to meet its objectives. There must be a written project plan showing that these factors (including research design, statistical methods and others) have been addressed. Projects must be ethical and project plans must be agreed in collaboration with the Department, taking account of the requirements of ethical committees[[15]](#footnote-16) or the terms of project licences, if relevant.

Significant amendments to the plan or milestones must be recorded and approved by the Department if applicable.

***4. Quality Control***

The organisation must have planned processes in place to assure the quality of the research undertaken by its staff Projects must be subjected to formal reviews of an appropriate frequency. Final and interim outputs must always be accompanied by a statement of what quality control has been undertaken.

The authorisation of outputs and publications shall be as agreed by the Department, and subject to senior approval in the Department, where appropriate. Errors identified after publication must be notified to the Department and agreed corrective action initiated.

***5. Handling of samples and materials***

All samples and other experimental materials must be labelled (clearly, accurately, uniquely and durably), and retained for a period to be agreed by the Department. The storage and handling of the samples, materials and data must be as specified in the project plan (or proposal), and must be appropriate to their nature. If the storage conditions are critical, they must be monitored and recorded.

***6. Documentation of procedures and methods***

All the procedures and methods used in a research project must be documented, at least in the personal records of the researcher. This includes analytical and statistical procedures and the generation of a clear audit trial linking secondary processed information to primary data.

There must be a procedure for validation of research methods as fit for purpose, and modifications must be trackable through each stage of development of the method.

***7. Research/work records***

All records must be of sufficient quality to present a complete picture of the work performed, enabling it to be repeated if necessary.

The project leader is accountable for the validity of the wok and responsible for ensuring that regular reviews of the records of each researcher are conducted[[16]](#footnote-17)

The location of all project records, including critical data, must be recorded. They must be retained in a form that ensures their integrity and security, and prevents unauthorised modification, for a period to be agreed by the Department.

A recommended checklist for researchers can be found on the UK Research Integrity Office (UKRIO) website at http://www.ukrio.org/what-we-do/code-of-practice-for-research

**Annex C: Mandatory Exclusion Grounds**

**Mandatory Exclusion Grounds**

**Public Contract Regulations 2015 R57(1), (2) and (3)**

**Public Contract Directives 2014/24/EU Article 57(1)**

**Participation in a criminal organisation**

Participation offence as defined by section 45 of the Serious Crime Act 2015

Conspiracy within the meaning of

* section 1 or 1A of the Criminal Law Act 1977 or
* article 9 or 9A of the Criminal Attempts and Conspiracy (Northern Ireland) Order 1983

where that conspiracy relates to participation in a criminal organisation as defined in Article 2 of Council Framework Decision 2008/841/JHA on the fight against organised crime;

**Corruption**

Corruption within the meaning of section 1(2) of the Public Bodies Corrupt Practices Act 1889 or section 1 of the Prevention of Corruption Act 1906;

The common law offence of bribery;

Bribery within the meaning of sections 1, 2 or 6 of the Bribery Act 2010, or section 113 of the Representation of the People Act 1983;

**Fraud**

Any of the following offences, where the offence relates to fraud affecting the European Communities’ financial interests as defined by Article 1 of the convention on the protection of the financial interests of the European Communities:

* the common law offence of cheating the Revenue;
* the common law offence of conspiracy to defraud;
* fraud or theft within the meaning of the Theft Act 1968, the Theft Act (Northern Ireland) 1969, the Theft Act 1978 or the Theft (Northern Ireland) Order 1978;
* fraudulent trading within the meaning of section 458 of the Companies Act 1985, article 451 of the Companies (Northern Ireland) Order 1986 or section 993 of the Companies Act 2006;
* fraudulent evasion within the meaning of section 170 of the Customs and Excise Management Act 1979 or section 72 of the Value Added Tax Act 1994;
* an offence in connection with taxation in the European Union within the meaning of section 71 of the Criminal Justice Act 1993;
* destroying, defacing or concealing of documents or procuring the execution of a valuable security within the meaning of section 20 of the Theft Act 1968 or section 19 of the Theft Act (Northern Ireland) 1969;
* fraud within the meaning of section 2, 3 or 4 of the Fraud Act 2006;
* the possession of articles for use in frauds within the meaning of section 6 of the Fraud Act 2006, or the making, adapting, supplying or offering to supply articles for use in frauds within the meaning of section 7 of that Act;

**Terrorist offences or offences linked to terrorist activities**

Any offence:

* listed in section 41 of the Counter Terrorism Act 2008;
* listed in schedule 2 to that Act where the court has determined that there is a terrorist connection;
* under sections 44 to 46 of the Serious Crime Act 2007 which relates to an offence covered by the previous two points;

**Money laundering or terrorist financing**

Money laundering within the meaning of sections 340(11) and 415 of the Proceeds of Crime Act 2002

An offence in connection with the proceeds of criminal conduct within the meaning of section 93A, 93B or 93C of the Criminal Justice Act 1988 or article 45, 46 or 47 of the Proceeds of Crime (Northern Ireland) Order 1996

**Child labour and other forms of trafficking human beings**

An offence under section 4 of the Asylum and Immigration (Treatment of Claimants etc.) Act 2004;

An offence under section 59A of the Sexual Offences Act 2003

An offence under section 71 of the Coroners and Justice Act 2009;

An offence in connection with the proceeds of drug trafficking within the meaning of section 49, 50 or 51 of the Drug Trafficking Act 1994

An offence under section 2 or section 4 of the Modern Slavery Act 2015

**Non-payment of tax and social security contributions**

Breach of obligations relating to the payment of taxes or social security contributions that has been established by a judicial or administrative decision.

Where any tax returns submitted on or after 1 October 2012 have been found to be incorrect as a result of:

* HMRC successfully challenging the potential supplier under the General Anti – Abuse Rule (GAAR) or the “Halifax” abuse principle; or
* a tax authority in a jurisdiction in which the potential supplier is established successfully challenging it under any tax rules or legislation that have an effect equivalent or similar to the GAAR or “Halifax” abuse principle;
* a failure to notify, or failure of an avoidance scheme which the supplier is or was involved in, under the Disclosure of Tax Avoidance Scheme rules (DOTAS) or any equivalent or similar regime in a jurisdiction in which the supplier is established

**Other offences**

Any other offence within the meaning of Article 57(1) of the Directive as defined by the law of any jurisdiction outside England, Wales and Northern Ireland

Any other offence within the meaning of Article 57(1) of the Directive created after 26th February 2015 in England, Wales or Northern Ireland

**Discretionary exclusions**

**Obligations in the field of environment, social and labour law.**

Where an organisation has violated applicable obligations in the fields of environmental, social and labour law established by EU law, national law, collective agreements or by the international environmental, social and labour law provisions listed in Annex X to the Directive (see copy below) as amended from time to time; including the following:-

* Where the organisation or any of its Directors or Executive Officers has been in receipt of enforcement/remedial orders in relation to the Health and Safety Executive (or equivalent body) in the last 3 years.
* In the last three years, where the organisation has had a complaint upheld following an investigation by the Equality and Human Rights Commission or its predecessors (or a comparable body in any jurisdiction other than the UK), on grounds of alleged unlawful discrimination.
* In the last three years, where any finding of unlawful discrimination has been made against the organisation by an Employment Tribunal, an Employment Appeal Tribunal or any other court (or incomparable proceedings in any jurisdiction other than the UK).
* Where the organisation has been in breach of section 15 of the Immigration, Asylum, and Nationality Act 2006;
* Where the organisation has a conviction under section 21 of the Immigration, Asylum, and Nationality Act 2006;
* Where the organisation has been in breach of the National Minimum Wage Act 1998.

**Bankruptcy, insolvency**

Bankrupt or is the subject of insolvency or winding-up proceedings, where the organisation’s assets are being administered by a liquidator or by the court, where it is in an arrangement with creditors, where its business activities are suspended or it is in any analogous situation arising from a similar procedure under the laws and regulations of any State;

**Grave professional misconduct**

Guilty of grave professional misconduct

**Distortion of competition**

Entered into agreements with other economic operators aimed at distorting competition

**Conflict of interest**

Aware of any conflict of interest within the meaning of regulation 24 due to the participation in the procurement procedure

**Been involved in the preparation of the procurement procedure.**

**Prior performance issues**

Shown significant or persistent deficiencies in the performance of a substantive requirement under a prior public contract, a prior contract with a contracting entity, or a prior concession contract, which led to early termination of that prior contract, damages or other comparable sanctions.

**Misrepresentation and undue influence**

The organisation has influenced the decision-making process of the contracting authority to obtain confidential information that may confer upon the organisation undue advantages in the procurement procedure, or to negligently provided misleading information that may have a material influence on decisions concerning exclusion, selection or award.

Additional exclusion grounds

**Breach of obligations relating to the payment of taxes or social security contributions.**

**ANNEX X Extract from Public Procurement Directive 2014/24/EU**

**LIST OF INTERNATIONAL SOCIAL AND ENVIRONMENTAL CONVENTIONS REFERRED TO IN ARTICLE 18(2) —**

* ILO Convention 87 on Freedom of Association and the Protection of the Right to Organise;
* ILO Convention 98 on the Right to Organise and Collective Bargaining;
* ILO Convention 29 on Forced Labour;
* ILO Convention 105 on the Abolition of Forced Labour;
* ILO Convention 138 on Minimum Age;
* ILO Convention 111 on Discrimination (Employment and Occupation);
* ILO Convention 100 on Equal Remuneration;
* ILO Convention 182 on Worst Forms of Child Labour;
* Vienna Convention for the protection of the Ozone Layer and its Montreal Protocol on substances that deplete the Ozone Layer;
* Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention);
* Stockholm Convention on Persistent Organic Pollutants (Stockholm POPs Convention)
* Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (UNEP/FAO) (The PIC Convention) Rotterdam, 10 September 1998, and its 3 regional Protocols.

**Consequences of misrepresentation**

A serious misrepresentation which induces a contracting authority to enter into a contract may have the following consequences for the signatory that made the misrepresentation:-

* The potential supplier may be excluded from bidding for contracts for three years, under regulation 57(8)(h)(i) of the PCR 2015;
* The contracting authority may sue the supplier for damages and may rescind the contract under the Misrepresentation Act 1967.
* If fraud, or fraudulent intent, can be proved, the potential supplier or the responsible officers of the potential supplier may be prosecuted and convicted of the offence of fraud by false representation under s.2 of the Fraud Act 2006, which can carry a sentence of up to 10 years or a fine (or both).
* If there is a conviction, then the company must be excluded from procurement for five years under reg. 57(1) of the PCR (subject to self-cleaning).

**Annex D: Methodology Glossary**

**Multi-Criteria Decision Analysis (MCDA):**

A decision-making toolkit to consider multiple options in cases of multiple conflicting objectives. MCDA combines qualitative, subjective judgements with (where appropriate) quantitative metrics to rank options against a set of criteria. The methodology is useful for computing a hierarchical ranking of options/barriers/enablers etc consistently against stated preferences. This is typically used when data has different units, normalising into a single 0-100 scale.

A fundamental requirement of MCDA is to conduct *swing-weighting*. This is a technique to apply additional weights to criteria based on the difference between the ‘worst’ and ‘best’ criterion, overcoming the bias of simple weighting techniques.

The following represents a typical order for conducting MCDA:

1. Structure the problem – identify stakeholders, objectives, criteria.
2. Establish options and performance – identify options, check for dominance.
3. Elicit stakeholder preferences – conduct 0-100 scoring, weight criteria.
4. Review outputs – calculate overall ranking, conduct sensitivity testing.

**Technology Innovation System (TIS) Analysis:**

TIS analysis seeks to map, assess, and evaluate the *structural* and *functional* components of an innovation system at the technology or knowledge field level. The intended purpose of TIS analysis is to identify both barriers and drivers for change, establishing clear policy recommendations.

The structural TIS components include (but not limited to):

* *Actors:* firms, universities, government agencies, research bodies etc.
* *Institutions:* regulatory environment, policy frameworks, standards, cultural norms.
* *Networks:* formal/informal industry networks, NGOs etc.

The functional components typically reflect 7 areas:

1. Entrepreneurial activities
2. Knowledge development
3. Knowledge diffusion
4. Legitimisation
5. Market formation
6. Resource Mobilisation
7. Guidance

There are broadly 5 key steps to perform a TIS analysis:

1. Define Scope (technology product/knowledge field, geography, time, TRL).
2. Map structural components (Actors, Institutions, Networks).
3. Conduction Functional Analysis across 7 key areas.
4. Identify innovation barriers/enablers.
5. Summarise/policy recommendations.
1. All models should be compliant with BEIS standards <https://www.gov.uk/government/collections/quality-assurance-tools-and-guidance-in-decc>. [↑](#footnote-ref-2)
2. <http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html> [↑](#footnote-ref-3)
3. For the list of exclusion please see https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/551130/List\_of\_Mandatory\_and\_Discretionary\_Exclusions.pdf [↑](#footnote-ref-4)
4. See PCR 2015 regulations 71 (8)-(9) [↑](#footnote-ref-5)
5. See EU definition of SME: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/ [↑](#footnote-ref-6)
6. UK companies, Societates European (SEs) and limited liability partnerships (LLPs) will be required to identify and record the people who own or control their company. Companies, SEs and LLPs will need to keep a PSC register, and must file the PSC information with the central public register at Companies House. [See PSC guidance](https://www.gov.uk/government/publications/guidance-to-the-people-with-significant-control-requirements-for-companies-and-limited-liability-partnerships). [↑](#footnote-ref-7)
7. Central Government contracting authorities should use this information to have the PSC information for the preferred supplier checked before award. [↑](#footnote-ref-8)
8. [See Action Note 8/16 Updated Standard Selection Questionnaire](https://www.gov.uk/government/collections/procurement-policy-notes) [↑](#footnote-ref-9)
9. [Procurement Policy Note 9/16 Modern Slavery Act 2015](https://www.gov.uk/government/collections/procurement-policy-notes) [↑](#footnote-ref-10)
10. [Procurement Policy Note 02/18 Changes to Data Protection Legislation & General Data Protection Regulation](https://www.gov.uk/government/publications/procurement-policy-note-0218-changes-to-data-protection-legislation-general-data-protection-regulation) [↑](#footnote-ref-11)
11. [Procurement Policy Note 04/15 Taking Account of Suppliers’ Past Performance](https://www.gov.uk/government/publications/procurement-policy-note-0415-taking-account-of-suppliers-past-performance) [↑](#footnote-ref-12)
12. Please note that this declaration applies to individuals, single organisations and consortia. [↑](#footnote-ref-13)
13. The Code of Practice is attached to this ITT as Annex B [↑](#footnote-ref-14)
14. Please delete as appropriate [↑](#footnote-ref-15)
15. Please note ethical approval does not remove the responsibility of the individual for ethical behaviour. [↑](#footnote-ref-16)
16. Please note that this also applies to projects being undertaken by consortia. [↑](#footnote-ref-17)