Department for Business, Energy & Industrial Strategy

Hydrogen Ancillary System Components and Alarm Development (Hy4Heat Work Package 4b)

Invitation to Tender

Tender Reference Number: TRN: 2212/01/2020

Deadline for Tender Responses: 11 March 2020 2:00 p.m. (UK time)

Revision A 17th February 2020
(extended tender deadline – see new timeline on page 6)
Revision B 27th February 2020
(second table page 82 updated from H_2 to NG)

Department for Business, Energy & Industrial Strategy

Date:17th February 2020 (revised)

The Department for Business, Energy & Industrial Strategy ("BEIS") wishes to appoint contractors to develop ancillary equipment to operate with hydrogen under an OJEU procurement.

Enclosed are the following sections:

- Section 1 (page 5) Instructions and Information on Tendering Procedures
- Section 2 (page 10) Specification of Requirements
- Section 3 (page 37) Further Information on Tender Procedure
- Section 4 (page 40) Declarations to be submitted by the Tenderer;
    - Statement of Non-Collusion
    - Form of Tender
    - Conflict of Interest
    - Standard Selection Questionnaire
    - Safe Use of Hydrogen
    - The General Data Protection Regulation Assurance Questionnaire for Contractors
    - Code of Practice for Research
- Annex A: Pricing Schedules for Lots 1, 2 and 3 *(separate document)*
- Annex B: Code of Practice for Research
- Annex C: Exclusion Grounds
- Annex D: Recommended Scope of Products
- Annex E: Product Specification

Tenderers should apply by registering on the following website www.delta-esourcing.com. This will ensure you receive immediate notification of updates to the ITT process and answers to questions raised by potential bidders which will be published on the Delta portal.

Please read the instructions on the tendering procedures carefully since failure to comply with them may invalidate your tender. Your tender must be received by uploading to the Delta portal by **2.00 p.m. (UK time) on Wednesday 11th March 2020** clearly marked as "TENDER".

I look forward to receiving your response.

Yours sincerely,

Steve Loades

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.

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 European Union.

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 Hydrogen Ancillary System Components and Alarm Development (Work Package 4b)

Tender Reference Number: 2212/01/2020

Deadline for Tender Responses: 11th March 2020 (2:00 p.m.)

Contents

A. 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 (Contract Notice) and full Invitation to Tender issued	27th January 2020 (revised ITT 17th February 2020)
Deadline for questions relating to the tender	24th February 2020
Responses to questions published	28th February 2020
Deadline for receipt of tender	**Wednesday 11th March 2020 at 2:00 p.m. (UK time)**
Invite suppliers for bid clarification (if needed)	18th – 20th March 2020
All suppliers alerted of outcome	25th March 2020
10-day standstill period	26th – 6th April 2020
Contract award on signature by both parties	7th – 9th April 2020
Contract start date	14th April 2020
Contract completion date	31st March 2021

The contract is to be for a maximum period of 11.5 months unless terminated or extended by the Department in accordance with the terms of the contract.

B. Procedure for Submitting Tenders

The maximum page limit for tenders is 15 A4 pages for each Lot, Arial font minimum size 12pt with single spacing and minimum 2.5cm margins (excluding declarations, pricing schedule and CVs).

To apply for this tender please register on the following website www.delta-esourcing.com. Please contact the Delta Helpdesk on 0845 270 7050 for any

registration queries. Please upload your proposal before the deadline via BIP Solutions Delta Website. No hard copies of your submission are required.

For questions regarding the procurement process please upload these to the Delta portal.

Tenders will be received up to the time and date stated. Please ensure that your tender is uploaded not later than the appointed time on the appointed date and allow plenty of time for the uploading process. 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, these should be uploaded onto the Delta portal. All questions should be submitted by 15:00 on 24th February 2020; 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 on the portal with our formal reply by the end of 28th February 2020. This information will be available – unnamed - to all organisations that have expressed an interest in bidding. All contractors should then take the replies 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.

C. Conflict of Interest

The Department's standard terms and conditions of contract include reference to conflict of interest and require contractors and bidders to declare any potential conflict of interest to the Secretary of State. All conflicts must be declared via the Declaration form; these should also include conflicts for any research elements.

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 ensure that 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, via the Delta portal, 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 the portal (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 (page 43) 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.

BEIS has appointed Arup+ as the programme management contractor (PMC), who are responsible for delivering work packages 1 and 9 as part of their contract. Arup+ will also be managing the delivery of Work Packages 2 – 8 & 10 and, as part of the conditions for the PMC role, have agreed not to bid for the remaining work packages. These work packages will be delivered by other suppliers.

The Arup+ team is a group of the following companies: Arup, Kiwa Gastec, Progressive Energy, Embers and YoEnergy.

D. 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.

E. 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 BiP Solutions Delta website.

F. 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 the end of 28th February 2020. 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 that 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.

G. Checklist of Documents to be Returned

- Proposal (maximum 15 pages per Lot, Arial font minimum size 12 pt with single spacing and minimum 2.5 cm margins. Bidders will need to submit 1 application for each Lot they are bidding for)
- Annex A: Pricing Schedule for each relevant lot *(separate document)*
- Declaration 1: Statement of Non-collusion
- Declaration 2: Form of Tender
- Declaration 3: Conflict of Interest
- Declaration 4: Standard Selection Questionnaire
  - Part 1 – Potential Supplier Information
  - Part 2 – Exclusion Grounds
  - Part 3 – Selection Questions
- Declaration 5: Safe Use of Hydrogen
- Declaration 6: The General Data Protection Regulation Assurance Questionnaire for Contractors
- Declaration 7: Code of Practice for Research

Section 2

Specification of Requirements

Invitation to Tender for Hydrogen Ancillary System Components and Alarm Development (Work Package 4b)

Tender Reference Number: 2212/01/2020

Deadline for Tender Responses: 11th March 2020 (2:00 p.m.)

Contents

1. Introduction and Summary of Requirements

This Invitation to Tender (ITT) document sets out the context, scope, application process and assessment criteria for the OJEU Hydrogen Ancillary System Components & Hydrogen Alarm Development Competition (Hy4Heat - Work Package 4b).

It focuses on the development of ancillary system components (including an emergency control valve (ECV)), an excess flow valve (EFV) & a domestic hydrogen alarm that are compatible and safe for use with hydrogen, as key components to complete the safe installation of hydrogen appliances in any future potential demonstration and community trials. Some of these components, that exist for natural gas, either do not exist for hydrogen or have not been declared as hydrogen suitable by their OEMs (original equipment manufacturer). This competition focuses on the development of these ancillary system components to prove and demonstrate the safe use of hydrogen as a fuel in providing heating to buildings. Specifically, it is interested in the provision of technical files by the contractor relating to the components which declare them as 'hydrogen safe'. For each Lot, this will include at a minimum one example component; tenderers should price for one example component (for Lot 1 this will mean 1 example of each item within the Lot, i.e. 5 examples). There is a possibility that further samples may be required as part of this contract and tenderers should indicate their pricing for these in the Pricing Schedule (Annex A), but this will not form part of the evaluation criteria.

Many of these items are important for the safe installation of hydrogen appliances connected to a low-pressure hydrogen distribution network (downstream of the ECV). Demonstration that these pieces of equipment can be used with hydrogen will close one of the evidence gaps for safe use of hydrogen downstream of the ECV.

The items identified relate to the availability of hydrogen suitable versions of:

- Fittings
- Excess flow valves (EFV)
- Domestic hydrogen detection alarms

The key concept is that any new hydrogen ancillary equipment developed shall essentially be a variant on an existing and widely sold Natural Gas (NG) item. This base natural gas product shall be called the 'reference product', and the hydrogen version should ideally be of similar size, efficiency, aesthetics and comfort. It is appreciated that due to the combustion characteristics of hydrogen this may not be fully achievable, but the essence is a 'like for like' replacement.

Within the Hy4Heat programme a small unoccupied demonstration trial will take place. The items procured under this Work Package may be used for this trial.

The total potential value of the Competition is up to £720,000 (ex VAT) although BEIS may allocate less than this depending on the quality of the equipment items received and does not commit itself to expending the full amount of the potential value. The competition is split into lots defined by functionality to meet different requirements of the Hy4Heat remit in the commercial sector:

Lot 1:

- Piping (including connecting hoses and metal pipe)
- Pipe fittings (for connecting pipes)

- Gas valves
- Gas pressure regulators
- Emergency control valves (ECV)

Lot 2:

- Excess flow valve (EFV) fit for use in low pressure hydrogen supply pipes (downstream of ECV)

Lot 3:

- Domestic Hydrogen Alarm

The contracts will run until March 2021 and are aiming to deliver:

- Appropriate ancillary equipment and fittings which would enable safe use of hydrogen as a fuel in providing heating requirements supported by self-declarations in this regard based on product technical files;
- Development of ancillary system components which will support the safety assessment in demonstrating the use of hydrogen in buildings; and,
- Understanding of the challenges and risks associated with progressing these components to a volume manufacturing stage, and where feasible addressing these.

Bids will be submitted into lots and assessed against the relevant evaluation criteria. It is anticipated that either one or two contractors per lot will be selected, being those receiving the highest scores against the criteria within the relevant lot. The number of suppliers will be dependent on the quality of applications and the funding available within the value of the competition.
The table below gives example funding for each lot:

Lot	**1 supplier**	**2 suppliers**
Lot 1 – Ancillary System Components	£170,000	£340,000
Lot 2 - EFV	£ 90,000	£180,000
Lot 3 - Alarm	£100,000	£200,000
Total:	£360,000	£720,000

Note: All applications must be received electronically by BEIS by Wednesday 11th March 2020 at 2:00 p.m. (UK time).

2. Background

Heating is essential to our lives – it is the biggest reason we consume energy in our society and is responsible for over a third of our emissions. Meeting our 2050 net-zero target means that heat in buildings will need to be almost completely decarbonised and heat in industry will need to be reduced close to zero emissions.

There is no clear consensus on the best approach to decarbonising heat at scale.

However, there are a number of options with potential to play an important role. One of these is to utilise low carbon gases such as hydrogen. Over 80% of homes and business are currently supplied by gas and the UK has one of the most comprehensive gas networks in the world with 282,000km of gas pipes feeding 22.7 million buildings. In December 2018 the Department for Business, Energy and Industrial Strategy (BEIS) published Clean Growth: Transforming Heating which provides an overview of the key issues arising from a review of the evidence base on approaches to achieve heat decarbonisation. It sets out where BEIS believe efforts should be focused across industry, academia and the public sector over the next 2-5 years to inform development of a long-term policy framework. The Government is leading a number of innovation and practical demonstration projects to help address some of the key uncertainties.

The Hydrogen Approach

To be able to inform any future assessment of the feasibility of the costs and benefits of undertaking a hydrogen conversion, a full understanding of issues from end-to-end (production to use) of the gas chain will be required.
The hydrogen gas chain can be split into the following stages:

- Production (including plant and CO_2 off-take, CO_2 sequestration and hydrogen storage).
- Transmission network (involving the pipework that transports the gas under a pressure of between 7 and 85 bar).
- Distribution network down to the end user's gas meter (involving pipework that transports the gas under a pressure of 7 bar).
- End-use (i.e. downstream of the Emergency Control Valve (ECV)).

The innovation programme, Hy4Heat, seeks to prove the safety case for the use of hydrogen for heating in GB homes and businesses, downstream of the Emergency Control Valve.

Hy4Heat Programme

The Department for Business, Energy and Industrial Strategy (BEIS) has appointed Arup+, a group of companies led by Arup, as the Programme Management Contractor (PMC) to manage and successfully deliver Hy4Heat, a programme to demonstrate and prove the safety case for the use of hydrogen for heating in GB homes and businesses.

The Hy4Heat programme's aim is:

- To establish if it is technically possible and safe to replace methane with hydrogen in commercial and residential buildings and gas appliances. This will enable the Government to determine whether to proceed to a community trial.

The Hy4Heat programme's overall objective is:

- To provide the technical, performance, usability and safety evidence to de-risk the use of hydrogen for heat in buildings whilst working with others to prepare for a potential future occupied trial.

The programme's focus is on researching, developing, testing and demonstrating within the end-use stage of the gas supply chain. This will involve the gas appliance and equipment sectors as well as consumer research. The programme is aiming to

demonstrate:

- That safe, reliable, efficient and affordable end-use appliances and equipment can be developed for the lower pressure, below seven bar domestic and commercial sectors.
- That hydrogen can be safely distributed to the end user appliances in existing buildings' pipework, downstream of the ECV.
- Initial findings of what the consumer experience of a hydrogen fuelled home will be. This includes demonstrating through unoccupied trials appliance suitability, as well as developing requirements and options for progressing to a potential community trial.

The Hy4Heat programme will be completed by the end of March 2021. It is envisaged that it will consist of ten Work Packages:

1. Programme management
2. Definition of a hydrogen quality standard
3. Establishing an appliance and equipment testing capability
4. Development of domestic hydrogen appliances
   b. Development of hydrogen ancillary system components & hydrogen alarms (this Invitation to Tender (ITT))
5. Understanding commercial appliances
   b. Development of commercial hydrogen appliances and boiler cascade
6. Understanding industrial appliances
7. Assessment of suitability of hydrogen in existing buildings
8. Hydrogen demonstration trials in unoccupied building
9. Preparations for a potential occupied consumer community trial
10. Development of smart hydrogen meters

Arup+, as the PMC, are responsible for delivering Work Packages 1 and 9 as part of their contract. Arup+ will manage the delivery of Work Packages 2 – 8 and 10 and, as part of the conditions for the PMC role, have agreed not to bid for the remaining Work Packages that will be delivered by other suppliers.

This ITT directly supports the delivery of Work Package 4b, Development of Hydrogen Ancillary System Components & Hydrogen Alarms.

3. Aims and Objectives

The aim of this work package (WP4b) is to develop ancillary system components & hydrogen alarms that are compatible and safe for use with hydrogen and declared as hydrogen suitable by their OEMs (original equipment manufacturer).

The objectives of this work package are to deliver appropriate ancillary equipment and fittings which:

- Demonstrate safe use of hydrogen as a fuel in providing heating requirements;
- Understand, and where feasible address, the challenges and risks associated with progressing the components to a volume manufacturing stage;

- Target prototype development of ancillary system components which will support the safety assessment in demonstrating the use of hydrogen in buildings;
- Include the provision of a self-declaration procedure for the ancillary equipment, as would be carried out for a natural gas product.

4. Methodology

In order to produce a more complete portfolio of products at the end of the Hy4Heat programme, which fully demonstrate the safe use of hydrogen for heating in commercial and domestic buildings; Hy4Heat is supporting the development of ancillary system components that will be necessary for the safe installation of hydrogen appliances. This ITT seeks to make available the ancillary system components that are used by installers to complete the gas supply chain from the appliance isolation valve, up to and including the ECV to create overall a safe installation:

Lot 1 – Ancillary System Components (including, but not limited to):
- Piping (including connecting hoses and metal pipe)
- Pipe fittings (for connecting pipes)
- Gas valves
- Gas pressure regulators
- The emergency control valve

Lot 2 – Excess flow valves:
- The excess flow valve Type B as defined in Annex E

Lot 3 – Domestic hydrogen alarm:
- The domestic hydrogen alarm Type B as defined in BS EN 50194-1:2009

Lot Details

Lot 1 – Ancillary System Components:

The scope of ancillary system components is detailed in Annex D and a product specification is provided in Annex E, Lot 1.

Components demonstrated as suitable for use with hydrogen for installation of domestic and commercial scale appliances are not currently available. Suppliers are encouraged to develop hydrogen approved ancillary system components which are comparable on cost, to the natural gas approved components currently in use.

It is unlikely that individual manufacturers would produce the full range of components needed. It is expected that gas component wholesalers/merchants will be more suitably positioned with regards to overall reach within the gas component supply chain to identify the range of ancillary system components and to engage with suppliers to deliver components demonstrated to be suitable for use with hydrogen. This does not preclude any manufacturer with a sufficiently broad product range from tendering for this project.

As part of their response to this ITT, suppliers are requested to review which

components from existing catalogues of components for natural gas and LPG, will be required for hydrogen appliance installation. Indicative scenarios are summarised in Annex E for this lot.

The ITT will be focused on the provision of the technical files by the contractor relating to the components which declare them as hydrogen safe. For Lot 1 this will mean 1 example of each of the five items within the Lot.

Lot 2 – Excess Flow Valves

The scope of excess flow valves (EFVs) is detailed in Annex D and a product specification is provided in Annex E, Lot 2.

For this ITT EFVs proposed must be designed to be installed only by screwed connection.

EFVs need to be demonstrated as suitable for use with hydrogen for leak minimisation. Suppliers are encouraged to develop hydrogen approved valves which are comparable on cost, to the natural gas approved components currently in use.

Physical characteristics of hydrogen differ significantly from those of natural gas. It is expected that changes to existing EFV design will be needed to enable them to operate correctly with hydrogen.

The ITT will be focused on the provision of the technical files by the contractor relating to the components which declare them as hydrogen safe. For Lot 2 this will include at a minimum one example component.

Lot 3 – Domestic Hydrogen Alarm

The scope of domestic hydrogen alarms is detailed in Annex D and a product specification is provided in Annex E, Lot 3.

Alarms need to be developed and demonstrated as suitable for use with hydrogen for detection of escaped hydrogen. The detection level needs to be similar to the level at which detection by odour occurs. Existing devices for use with natural gas could form the basis for development of domestic hydrogen alarms. Suppliers are encouraged to develop hydrogen capable alarms which are comparable on cost and function to those of natural gas approved devices currently in use.

The devices will need to meet the general requirements of relevant standards, primarily BS EN 50194-1:2009. Testing involving levels of fuel gas in air will need to be reviewed and appropriate approaches taken for testing with hydrogen.

Technical files including design information, testing reports, instruction documents and other relevant information will need to be created. Agreed numbers of example EFVs will need to be made and demonstrated to be safe and to function correctly and reliably.

The mechanism by which safety and functionality will be demonstrated should be outlined in any tender submitted against this lot.

The ITT will be focused on the provision of the technical files by the contractor relating

to the components which declare them as hydrogen safe. For Lot 3 this will include at a minimum one example component.

5. Outputs Required

Deliverables for each Milestone of each Lot are described in this section. Outputs of each project will also include:

- Short monthly reports - Contractor should monitor progress including by any sub-contractors and report progress in the period including as a minimum; product development, safety & functionality tests completed, receipt of components and supporting documentation.

All deliverables are required by March 2021 as specified in Clause 8 Timetable / Work Plan later in this Section. Within this timescale, specific delivery dates for the outputs detailed in Clause 8 below, should be provided by the supplier (we have included indicative months but the supplier should specify and justify, where necessary).

5.1 Lot 1 - Ancillary System Components

Detailing of the component list – Milestone 1
Contractor provides a report describing the necessary steps required to procure a set of hydrogen ready components. It should include:

- Agreed scope of components, including the numbers of example items to be delivered in each case. This should be outlined in the proposal and will be further refined through discussion with the Hy4Heat programme team.
- Detail of the intended procurement route taken for each component (where appropriate).
- Description of how achievement of the GS(I&U)R requirements for “appropriate fittings” will be demonstrated for each component including any certification routes (e.g. CPR) and any planned testing considered to be appropriate.

Demonstration of component suitability – Milestone 2 (potentially a significant number of items must be dealt with and the Contractor may propose sub-Milestones for delivery over a period within the overall timescales set in this ITT for delivery.)

- Evidence of component suitability will be through provision of product technical files to the Hy4Heat programme. Technical files should demonstrate compliance with the requirements set out in this ITT for Components. Technical files should comprise at least; product technical specifications, image of baseline/reference product, evidence of manufacturer assessment (including of appropriateness of materials), any product testing, any product certification achieved, declaration that the product meets minimum performance characteristics described in this tender, Installation instructions, User Instructions.
- Where testing is necessary to demonstrate functionality or compatibility with hydrogen, 3rd party testing is preferred although other routes may be used provided that they can be demonstrated to be reliable.
- Where an existing relevant certification route is available it should be utilised.

Delivery of product examples – Milestone 3

- Contractor supplies the agreed number of components (i.e. 5, one of each type) with supporting information including certification and installation instructions
- Contractor supplies final summary report summarising the work undertaken.

5.2 Lot 2 - Excess Flow Valves

Scoping and specification report – Milestone 1
Contractor provides a report identifying a reference product and describing the necessary steps required to provide EFVs with the required performance characteristics suitable for use with hydrogen. This will include any experimental investigations, and consequent product development and performance testing activities. The range of product capacities will be defined as part of the detailed proposed EFV specifications

Provision of evidence of performance - Milestone 2
Contractor provides details of design adjustments made to the reference product to accommodate hydrogen and evidence from testing that the hydrogen EFVs perform as required.

Delivery of example products according to the specification – Milestone 3
Contractor supplies the agreed number of units (one) of each type with supporting information including certification and installation manuals.

5.2 Lot 3 – Domestic Hydrogen Alarm

Scoping and specification report – Milestone 1
Contractor provides a report describing a proposed type B hydrogen alarm product specification, with reference to BS EN 50194-1:2009 and EN 50244:2016 and describing the necessary steps to develop a hydrogen alarm with the required performance characteristics. This will include any experimental investigations, and consequential product development and performance testing activities. The proposed device(s) may be the result of the development of an existing product.

Provision of evidence of performance – Milestone 2
Contractor provides details of design adjustments made to accommodate hydrogen and evidence from 3rd party testing (by a suitably competent independent laboratory) that the alarm performs as required.

Delivery of example products according to the specification – Milestone 3
Contractor supplies the agreed number of units (one) of each type with supporting information including certification (where relevant) and installation/usage instructions.

6. Ownership and Publication

BEIS is committed to openness and transparency. All outputs listed in Clause 5, above (with the exception of project updates and reports) 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. Tenderers 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; and
3) a non-anonymised dataset is required for the project.

If these exceptions apply to any part of the outputs, tenderers should indicate this in their proposal alongside any approaches to resolving these.

If any Arising Intellectual Property (IP) from any models and software paid for by BEIS has not been commercially exploited by the contractor within a period of three years BEIS may require the contractor to licence this IP to third parties nominated by the BEIS - see BEIS terms and conditions of contract, clauses 27 and 28, issued with this ITT.

Where the contractor is using or building on top of existing IP, such as modules that interface with the model, or proprietary datasets, this must be explicitly stated in the tender response.

- 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), unless the specification states otherwise or the individual / organisation has given their permission. 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 and storage of restricted data.

7. Quality Assurance

This project must comply with the BEIS Code of Practice for Research (Annex B) and bidders must set out their approach to quality assurance in their response to this ITT. Tenderers should include a quality assurance plan that they will apply to all of the Work Packages.

To demonstrate relevant experience in producing high quality reporting, the tenderer

must:

- Specify who will be responsible for quality assurance. This must be undertaken before information is issued to Hy4Heat for review and onward circulation to BEIS. More information can be found in the working arrangements in Clause 11 below.
- Specify the specific responsibilities of the contractor's project manager / director.

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. 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.

The successful bidder will be responsible for any work they or their sub-contractors supply and should therefore provide assurance that all work in the contract is undertaken in accordance with the Code of Practice.
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. Your response could be automatically rejected if the project will not be performed under quality assurance measures that fully meet the Code's requirements.

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

- The Government Social Research Code, in particular those that relate to GSR Products: http://www.civilservice.gov.uk/networks/gsr/gsr-code
- The Green Book: appraisal and evaluation in central government. https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent
- Quality in Qualitative Evaluation: A Framework for assessing research evidence provides a Framework for appraising the quality of qualitative evaluations.
- Rapid Evidence Assessment (REA): http://www.civilservice.gov.uk/networks/gsr/resources-and-guidance/rapid-evidence-assessment/what-is. This toolkit will help researchers to identify whether a Rapid Evidence Assessment is best for their needs, and help with the process of planning and carrying out a review

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

The Contractor will be expected to produce high quality reports that meet the following criteria:

General:

- They answer the research questions clearly, in plain English

- They are clearly structured so that information presented in each section of each report is clear
- Connections between sections are clear
- Executive summaries are no more than two sides and set out the findings clearly and their relevance to BEIS policies
- All sections have clear introductions and conclusions (including findings being written concisely upfront)

Use of good quality English:

- They are thoroughly peer reviewed for writing quality
- No jargon is used, and all terms are defined and referenced clearly
- All acronyms are written out in full the first time that they are mentioned in each section of each report
- No grammar and phrasing errors are present
- No typos / typographical errors are present
- They contain concise and non-wordy sentences and paragraphs
- They are concise reports that are not too long and do not have vast annexes

Visualisations:

- All visualisations are labelled
- All axes are labelled, including with appropriate units
- Clear and appropriate use of visualisations (large enough size, data can be read clearly without reference to the raw data, and there are not too many visualisations presented at once)
- All visualisations are clearly explained and discussed
- A range of different types of visualisations are used to provide more interesting and innovative ways of presenting the results

Data quality:

Any limitations in the research approach need to be clearly stated and justified

- Further research should be stated to build upon the limitations that cannot be addressed in the research
- Where the findings are stronger and more robust and where they are not needs to be stated clearly
- They must use appropriate and consistent units
- All numerical units should include the range of uncertainty / error margin

8. Timetable / Work Plan

As part of the submission, the tenderer is expected to submit a delivery plan including, as a minimum:

- An organisation chart and list of key people within the successful tenderer's delivery team with an outline description of how they will be managed in order to ensure that delivery will be completed on time.
- A detailed schedule of works showing when the scope will be delivered and key milestones.
- The methodology that will be used to produce the deliverables and to ensure the quality of the deliverables.
- An outline description of the risks to delivery and your proposed mitigation measures.

Aligned with the deliverables and milestones presented in Clause 5, above an indicative outline time schedule is presented below. BEIS reserves the right to vary this timetable. Any variations will be circulated by email to all organisations who have registered an interest in tendering.

Reporting points/deliverables	**Proposed date**
Contract commences	14th April 2020
Project Inception Meeting	w/c 20th April 2020
Milestone 1 – to be followed by Interim Project Meeting / Presentation	May 2020*
Milestone 2 – to be followed by Interim Project Meeting / Presentation	August 2020*
Milestone 3 – to be followed by Interim Project Meeting / Presentation	November 2020*
Submission of Draft Report	22nd February 2021
Submission of Final Report	8th March 2021
BEIS sign-off	End March 2021

*these are indicative dates for delivery of the milestones (and associated meeting/presentations). The exact dates are to be determined and specified by the tenderer within their submission.

The contract duration will be 11.5 months.

9. Challenges

Tenderers are expected to demonstrate through their applications that they are able to overcome/mitigate the key technical challenges of working with hydrogen and developing the particular items described within this ITT.

Working with Hydrogen

Hydrogen presents a different set of risks to natural gas (NG) and liquid petroleum gas (LPG). Similarly to NG and LPG, there are flammability related risks but risk conditions for hydrogen differ significantly from hydrocarbon fuel gases. Hydrogen is non-toxic and does not present a risk of carbon monoxide (CO) poisoning.

As part of this tender document manufacturers are required to declare that their R&D staff are safe and competent in the handling of hydrogen and as a minimum have read and understood relevant publicly available literature on this. The knowledge so gained (which could be supplemented by training and or working with appropriate consultants) will then be applied. A specific example relating to this ITT could be the use of compressed hydrogen gas in a development laboratory context.

Bidders must sign and return Declaration 7 – Safe Use of Hydrogen (Section 4). Key elements to consider regarding challenges associated with developing the different equipment items include:

- **Functionality** – Manufacturers should demonstrate how they intend to meet the challenge of producing a functional components and devices.

- **Safety** – The primary hazards when considering the use of a flammable gas are fires and explosive gas/air mixtures. These usually result from a leak or unexpected event which causes a release of gas that is subsequently ignited. Manufacturers should provide evidence of how their appliance(s) will meet the challenge of reducing the likelihood and scale of such events.

Product challenges

The specific product challenges tenderers will need to address for each lot are:

Lot 1
Ensuring that all aspects of each component is demonstrated to be appropriate for use with hydrogen including the materials employed and any seals that they are designed to have or create.

Lot 2
Modifying the design of existing natural gas EFVs to operate at appropriate flow rates for hydrogen.

Lot 3
Modifying the design of existing natural gas domestic gas alarms to operate at appropriate levels of hydrogen concentration in air.

10. Ethics

All applicants will need to identify and propose arrangements for initial scrutiny and on-going monitoring of ethical issues. The appropriate handling of ethical issues will be taken into consideration within the evaluation of applicants' proposals.

We expect contractors to adhere to the following GSR Principals:

1. Sound application and conduct of social research methods and appropriate dissemination and utilisation of findings

2. Participation based on valid consent
3. Enabling participation
4. Avoidance of personal harm
5. Non-disclosure of identity and personal information

11. Working Arrangements

Introduction

This section sets out the matters related to working arrangements and management of this project which form part of the Hy4Heat Programme. Notwithstanding the high-level requirements defined in this section, the successful tenderer will be required to comply with BEIS' representative's overall project management processes and procedures, which will be communicated at the start of the commission.

Note: The management of the contract and the delivery of the work will be conducted through the Programme Management Contractor for Hy4Heat acting on behalf of BEIS.

The successful tenderer will be expected to prepare an organisation chart, identifying one named point of contact through whom all enquiries can be filtered.

An Arup+ Work Package Manager, reporting to a BEIS Project Manager will be assigned to the project and will be the central point of contact for all contractor's enquiries.

The Arup+ Work Package Manager will perform the role of contract manager on behalf of BEIS.

A. Project Control

The successful tenderers will be required to comply with the project control system in place for the Hy4Heat programme, with particular reference to the following elements:

I. Risk

The successful tenderer shall be expected to prepare and maintain a risk register and to contribute as appropriate to the risk management activities carried out by the Hy4Heat Programme. The Delivery Plan shall include an outline description of how risks will be identified and managed by the successful tenderer, and mitigation actions implemented.
Risks and issues should be communicated to the Work Package Manager as soon as reasonably practicable (and included in the monthly/weekly progress report and/or meeting), together with mitigation actions/plans.

The successful tenderer will be deemed to have included in the contract price an allowance for implementing all mitigation measures in connection with all risks for which they are responsible. Those mitigation measures are to be such as will ensure that the risks do not become realities.

II. Change Control

The successful tenderer will comply with the change control process in use in the

Hy4Heat Programme (which shall be communicated by the Work Package Manager upon award of the contract), and with the contract variation procedures described in the contract.

Request for change will be submitted to the Work Package Manager as soon as possible, using the relevant change request template and uploading this on the Project Team Site as appropriate. Change requests shall include an assessment of impact on time, resources and cost, as well as description of proposed action/plan for implementation.

All change requests raised will be subjected to review by the Work Package Manager and decision by the relevant governance body (e.g. Project Board). This will depend on the level of authority required for the change. Approval or rejection of change will be officially communicated to the contractor by the Work Package Manager and recorded in the programme change log.

B. Communication and Document Management

I. Communication

Ways, methods and frequency of communication between the successful tenderer and the Work Package Manager, shall be agreed at the contract kick off meeting.

All communication with BEIS and all external communications (press release, interviews, hands-out and similar), related to this contract or any part of the works shall be submitted to the Programme for acceptance (via the Work Package Manager) prior to issue or release.

All documents and correspondence produced in connection with this contact or any part of the work shall be subjected to the requirements of the Freedom of Information (FOI – Freedom of Information Act 2000), as well as the General Data Protection Regulation (GDPR).

English shall be used for all correspondence, plans, reports, and notes. All documents, plans, and technical reports must express their quantities using the International System of Units (SI).

The successful tenderer shall comply with the communication protocol in use on the Hy4Heat Programme, which shall be communicated by the Work Package Manager upon award of contract.

II. Document Management

The successful tenderer shall use the Hy4Heat Project Team Site (Office 365 SharePoint), for the submittal, circulation, filing and storage of all project documentation. The responsibility for security, access control, availability of this platform lies with the Employer. All correspondence between the successful tenderer and the Work Package Manager shall be filed by the latter using the Arup Mail Manager system (system access is restricted to Arup employees only).

In addition, the successful tenderer shall use the Arup document numbering tool and process in use: all documents uploaded on the Project Team Site must have an assigned unique document number.

The Work Package Manager, via the Hy4Heat Project Management Office (PMO), shall organise access to both the Hy4Heat team site and document numbering tool for all relevant parties, as well as provide guidance on use of the platform and technical assistance as required.

The successful tenderer shall comply with the document quality management procedures in use in the Programme, which shall be communicated by the Work Package Manager upon award of the contract.

The Employer uses Microsoft Office suite. All Microsoft files submitted by the Contractor shall be readable by Office 2016 or earlier version.

III. Protection of Information

The successful tenderer shall be expected to confirm that they understand BEIS' information security requirements and shall be responsible for complying with them. These include compliance **with** the Data Protection Act (DPA) 2018 and General Data Protection Regulation (GDPR) 2018, requiring that any information collected, processed and transferred as part of the Hy4Heat Programme, and in particular personal information, must be held and transferred securely. Tenderers must provide assurances of compliance with the DPA and set out in their proposals details of the practices and systems they have in place for handling data securely including transmission between the field and head office and then to BEIS. Contractors will have responsibility for ensuring that they and any subcontractor who processes or handles information on behalf of BEIS is conducted securely. The sorts of issues which must be addressed satisfactorily and described in contractors' submissions include:

- Procedures for storing both physical and system data
- Data back-up procedures
- Procedures for the destruction of physical and system data;
- How data is protected
- Data encryption software used;
- Use of laptops and electronic removable media; details of person/s responsible for data security
- Policies for unauthorised staff access or misuse of confidential/personal data
- Policies for staff awareness and training of DPA
- Physical security of premises
- How research respondents will be made aware of all potential uses of their data.

The successful tenderer shall be expected to agree to be subjected to audits at the Employer's request for the duration of the contract.

C. Commercial management and invoicing

Notwithstanding the specific contractual requirements in terms of commercial management, the successful **tenderer** will be required to submit on a monthly basis (or at different frequency as agreed with the Work Package Manager), an updated cost report including, as a minimum, the following information:

Baseline budget (i.e. contract sum)

- Total estimated planned spent in period
- Total spent to date
- Any variance

- Estimate of cost at completion
- Summary in invoiced in period total
- invoiced to date.

Invoicing shall be linked to an invoicing schedule to be agreed with the Work Package Manager upon appointment. Invoicing will be based on the time and material costs incurred by the contractor for the month in arears. Deviations to the forecasted invoicing schedules (20+%) will need to be agreed with the work package manager in advance of the expected variance in the month in question.

Payment of invoices shall be subjected to:

- the Work Package Manager's review and approval of the payment application (including weekly time sheets) submitted by the contractor
- the Work Package Manager's recommendation of payment to the BEIS Project Manager
- The BEIS Project Manager's approval of payment recommendation.

12. Data Protection

The only processing that the Contractor is authorised to do is listed in Annex 1 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

(2) 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]

(3) The Contractor shall comply with any further written instructions with respect to processing by the Authority.

(4) 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 14th April 2020 for the duration of the Contract. The Contract will be for 11.5 months ending on 31st March 2021.
Nature and purposes of the processing	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 complete UNLESS requirement under European Union or 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 (include if applicable) [and the Contractor retention period]. 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.

13. Skills and Experience

BEIS would like you to demonstrate that you have the experience and capabilities to undertake the project. Your tender response should include a summary of each proposed team member's experience and capabilities. It should also demonstrate an awareness of the key challenges outlined in Item 9 above, capacity to manage the full process of product development including quality assurance and quality management.

Tenderers should propose named members of the project team and include the tasks and responsibilities of each team member. This should be clearly linked to the work programme, indicating the grade/seniority of staff and number of days allocated to specific tasks.

Tenderers should identify the individual(s) who will be responsible for managing the project and those who will carry out quality assurance.

The appropriateness of the skills and expertise of the team should match the proposed tasks being undertaken. For instance, this may include a team with expertise in the fields of mechanical or chemical engineering with specific knowledge of natural gas and hydrogen applications, as well as expertise in conducting research and report writing.

The following skills are considered particularly important for this work:

- Experience and capability of working with and developing the types of products within the Lot being tendered for.
- Experience of carrying out self-declaration process in line with the relevant standards outlined within Technical Scope – Annex E.
- Experience in managing product development, including quality assurance and quality management processes.

14. Consortium Bids

In the case of a consortium tender, only one submission covering all of 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. We expect 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 28 of the Public Contracts Regulations 2006.

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.

15. Budget

The overall budget for this project is **£720,000** (excluding VAT). The target budget range for each of the suppliers will be between £90,000 - £360,000, depending on which Lots they aim to fulfil.

It is anticipated that either one or two contractors per lot will be selected. However, the number of suppliers appointed will be dependent on the quality of applications and the funding available within the value of the competition.

This budget is in line with the below:

Lot	**1 supplier**	**2 suppliers**
Lot 1 – Ancillary System Components	£170,000	£340,000
Lot 2 - EFV	£ 90,000	£180,000
Lot 3 - Alarm	£100,000	£200,000
Total:	£360,000	£720,000

Contractors should provide a full and detailed breakdown of costs. This should include staff (and day rate) allocated to specific tasks.

Cost will be a criterion against which bids which will be assessed.

Payments will be linked to delivery of key milestones as indicated in Clause 5, above. This can be adjusted and agreed with the contractor based on the tender response/details. Please advise in your tender response how this breakdown reflects your usual payment processes:

In submitting full tenders, tenderers confirm in writing that the price offered will be held for a minimum of 13 weeks 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.

BEIS will retain 10% of the total budget for final payment upon completion and sign-

off to the programme board's satisfaction of the final programme report.

16. Evaluation of Tenders

Contractors are invited to submit full tenders of no more than 15 pages, excluding declarations. The tender process will be conducted to ensure that bids are evaluated fairly and transparently, in accordance with agreed assessment criteria. Each Lot requires a separate complete submission – bidders are allowed to tender for multiple Lots.

It is anticipated that either one or two contractors per lot will be selected, being those receiving the highest scores against the criteria within the relevant lot. However, the number of suppliers appointed will be dependent on the quality of applications and the funding available within the value of the competition.

In their responses, tenderers should demonstrate their ability to cover the entire development and delivery contract, e.g. All milestones detailed in Clause 5, above**.**

The tender response should show that the hardware is achievable in theory by describing the reference natural gas device and planned design approach to adapt/prove it appropriately. For Lots 1 – 3, this should describe the engineering principles that underpin the concept and how they will be applied in practice. Sufficient detail should be included to show your technical capabilities to complete the full development of the proposed component(s).

Each application will be assessed by three assessors, including Hy4Heat team representation. The cost criterion will be marked by BEIS staff only. Proposals will be assessed against each of the criteria in the table below. A total of five points is available against each sub-criterion and the weighting to be applied to each sub-criterion is given in brackets.

Proposals must:

- Be led by a single organisation acting as prime contractor with evidence of strong collaboration across consortia (if a consortium bid is proposed)

1. Skills and Expertise (all Lots) Total Score 20
a. Evidence that the team has relevant skills and expertise to undertake the project, including demonstrating capability of working with hydrogen and/or town gas *(weighting x 2);*
b. Details of project team including organisational structure. If your bid is a consortium, this should clearly state the consortium lead and details of each consortium member and their role *(weighting x 1);*
c. Evidence of appropriate facilities (either existing or planned) that are required to undertake the project *(weighting x 1).*
2. Technical Approach Total score 35

2i. Ancillary Systems Components Development (Lot 1)

a. Provide a clear and comprehensive list of the ancillary components which are required for the installation of hydrogen appliances that the supplier can deliver. This should include:
   - Lists of base line components
   - Technical specifications
   - Installation instructions
   - User Instructions
   - Recommended retail price

   (weighting x 1);

b. Justify development of the proposed set of components. The justification needs to include the tenderer's expectation of the usefulness' of the components in a conversion to hydrogen including installations in the scenarios outlined in Annex E under Lot 1, Background. *(weighting x 3);*

c. Describe the approach and methodologies that will be applied to address the challenges defined in the ITT, specifically Sections 2, 3, and 4 and Annex E, and any others which may be considered relevant. *(weighting x 2);*

d. Include evidence that you understand the risks/challenges associated with hydrogen use and, in comparison to natural gas include reference to challenges outlined in Clause 9, above. *(weighting x 1).*

2ii. Excess Flow Valve Development (Lot 2)

a. Provide a clear description of the proposed hydrogen device. Describe the approach and methodologies that will be applied to address the challenges defined in the ITT and any others which may be considered relevant *(weighting x 2);*

b. Provide justification for the development of the proposed device and how this meets the requirements set out in the ITT, in Sections 2, 3 and 4 and the Annexes D and E. Where a reference component or device is applicable this should identified/selected based on sales, market share and future market trends. This should include:
   1. Photo/picture of base line reference valve(s)
   2. Technical specification
   3. Installation instructions
   4. User instructions

   (Installation and user instructions may be provided as appendices)
   (weighting x 2);

c. Describe the approach and methodologies that will be applied to address the challenges defined in the ITT, specifically Sections 2, 3, and 4 and Annex E, and any others which may be considered relevant. *(weighting x 2);*

d. Include evidence that you understand the risks associated with hydrogen use and, in comparison to natural gas include reference to risks outlined in Clause 9, above. *(weighting x 1).*

2iii. Domestic Hydrogen Alarm (Lot 3)

a. Provide a clear description of the proposed hydrogen device. Describe this in the response to the ITT and any others which may be considered relevant *(weighting x 2);*

b. Provide justification for the development of the proposed device and how this meets the requirements set out in the ITT, in Sections 2, 3 and 4 and Annexes D and E. Where a reference component or device is applicable this should identified/selected based on sales, market share and future market trends This should include:
   2. Photo/picture of base line reference alarm(s)
   3. Technical specification
   4. Installation instructions
   5. User instructions

   (Installation and user instructions may be provided as appendices) (weighting x 2);

c. Describe the approach and methodologies that will be applied to address the challenges defined in the ITT, specifically Sections 2, 3, and 4 and Annex E, and any others which may be considered relevant. *(weighting x 2);*

d. Include evidence that you understand the risks associated with hydrogen use and, in comparison to natural gas include reference to risks outlined in Clause 9, above *(weighting x 1).*

3. Management of delivery / Project Plan (all Lots) Total score 20

a. Detailed description of work and associated timelines to complete all milestones (include a Gantt chart with dates for the 3 interim project meetings outlined in Clause 8, above). *(weighting x 1)*;

b. Description of management plans to demonstrate how the project will be delivered alongside existing commitments. Include detail of your quality assurance procedures. *(weighting x 1)*;

c. Key risks relating to the delivery and dependencies of the project, including mitigation plans. Risks should be presented in the table provided in the application form and may include technical, user-related and safety aspects *(weighting x 2)*.

4. Cost (all Lots) Total score 25

Bid cost *(weighting x 5).*

Cost of projects should be provided for either:

Lot 1 - Milestones 1 to 3 for ancillary system component development.
OR
Lot 2 - Milestones 1 to 3 for excess flow valve development.
OR
Lots 3 - Milestones 1 to 3 for domestic hydrogen alarm development.

Price will be marked proportionately to the lowest bid within each lot. The lowest bid will receive maximum marks for the price element and then all other bids' prices will be marked proportionately to that bid, see example below.

Bidders can apply for more than one lot; a separate full bid is required for each lot, including the declarations.

Evaluation Scoring Method

Tenders will be scored against each of the criteria above, according to the extent to which they meet the requirements of the tender. The meaning of each score is outlined in the table below.

The total score will be calculated by applying the weighting set against each criterion, outlined above; the maximum number of marks possible will be 100. Should any contractor score 1 in any of the criteria, they will be excluded from the tender competition.

Score	**Description**	
1	Not Satisfactory	Proposal contains significant shortcomings and does not meet the required standard.
2	Partially Satisfactory	Proposal partially meets the required standard, with one or more moderate weaknesses or gaps.
3	Satisfactory	Proposal mostly meets the required standard, with one or more minor weaknesses or gaps.
4	Good	Proposal meets the required standard, with moderate levels of assurance.
5	Excellent	Proposal fully meets the required standard with high levels of assurance.

Scoring for Pricing Evaluation

Price will be scored as set out below.

There will be a maximum of 25 marks for the "Price" evaluation.
The lowest priced bid will receive the full 25 marks, all other bids will then be marked as set out below.

Proportionate Pricing scoring example

Price will be marked proportionately to the lowest bid within each lot. The lowest bid will receive maximum marks for the price element and then all other bids' prices will be marked proportionately to that bid.

For example, if 25 marks are available and the cheapest bid (for a particular lot) is £120,000, then:

Supplier	Price	Marks
1 (lowest bid)	£120,000	25
2	£136,000	120/136 * 25 = 22.1
3	£155,000	120/155 * 25 = 19.4

Structure of Tenders

Tenderers are strongly advised to structure their tender submissions to cover each of the criteria above. Complete the price schedule attached at Annex A (separate document) for each lot for which you are applying, specifying the daily rates (ex-VAT) you will charge for each level of your staff.

Tenderers should also state the cost saving that their tender price achieves compared to an exclusive development contract where the public purchaser retains all the Intellectual Property Rights for their own use.

Where tenderers are bidding for more than one lot, they should indicate the discount they are prepared to offer on their pricing if they were to be awarded more than one project to take account of any duplicated work in their multiple proposals. Any discount will not form part of the assessment of the cost but will be applied to the signed contracts.

Tenderers should ensure that a breakdown of tasks is provided and identify which team members will be working on each task.

Tenders to be submitted in an electronic format:

- 1 full proposal
- ≤ 15 pages, excluding declarations and CVs
- A4, minimum margins 2.5 cm, minimum single line spacing
- Arial font, minimum 12 pt

Bid Clarification

The Department reserves the right to award the contract based on applicants' written evaluation only if one candidate emerges from the evaluation stage as significantly stronger than the others.

BEIS may invite all suppliers for bid clarification if they feel bid clarification should be carried out.

Feedback

Feedback will be given in the unsuccessful letters or emails. This will be followed by a 10-day standstill period as detailed in the Indicative Timetable (Section 1.A).

Section 3

Further Information on Tender Procedure

Invitation to Tender for Hydrogen Ancillary System Components and Alarm Development of (Work Package 4b)

Tender Reference Number: 2212/01/2020

Deadline for Tender Responses: 11th March 2020 (2:00 p.m.)

Contents:

D. 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 suppliers 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.

E. 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.

F. 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 Hydrogen Ancillary System Components and Alarm Development (Work Package 4b)

Tender Reference Number: 2212/01/2020

Deadline for Tender Responses: 11th March 2020 (2:00 p.m.)

Contents

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:

(a) 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;

(b) 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;

(c) 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

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[1]. 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 (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.

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[1] 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

Hydrogen Ancillary System Components and Alarm Development

TRN: 2212/01/2020

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. All sub-contractors are required to complete Part 1 and Part 2[2].

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

[2] See PCR 2015 regulations 71 (8)-(9)

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 a) public limited company b) limited company c) limited liability partnership d) other partnership e) sole trader f) third sector g) 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) a) Voluntary Community Social Enterprise (VCSE) b) Sheltered Workshop c) Public service mutual	

1.1(m)	Are you a Small, Medium or Micro Enterprise (SME)[3]?	Yes ☐ No ☐
1.1(n)	Details of Persons of Significant Control (PSC), where appropriate: [4] - 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. [5] (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 suppliers and the persons of significant in control of them.

[3] See EU definition of SME: http://ec.europa.eu/enterprise/policies/sme/facts-figures-analysis/sme-definition/

[4] 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.

[5] Central Government contracting authorities should use this information to have the PSC information for the preferred supplier checked before award.

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, which should be referred to before completing these questions. These are also included under Annex C. 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 have been convicted anywhere in the world of any of the offences within the summary below and listed on the webpage.	
	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 convicted If 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)**	Yes ☐ No ☐

	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?	
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 number	**Question**	**Response**
3.1	**Regulation 57 (8)** The detailed grounds for discretionary exclusion of an organisation are set out on this web page, which should be referred to before completing these questions. These are also included under Annex C. 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)	Please answer the following statements	
3.1(j) - (i)	The 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.	Yes ☐ No ☐ If Yes please provide details at 3.2
3.1(j) - (ii)	The organisation has withheld such information.	Yes ☐ No ☐ If Yes please provide details at 3.2
3.1(j) –(iii)	The organisation is not able to submit supporting documents required under regulation 59 of the Public Contracts Regulations 2015.	Yes ☐ No ☐ If Yes please provide details at 3.2
3.1(j)-(iv)	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 3.2

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[6]

Section 4	Economic and Financial Standing	
Question number	**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	Yes ☐

[6] See Action Note 8/16 Updated Standard Selection Questionnaire

	elsewhere (e.g. from a bank)?	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**[7]	
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)**[8]

[7] Procurement Policy Note 9/16 Modern Slavery Act 2015
[8] Procurement Policy Note 02/18 Changes to Data Protection Legislation & General Data Protection Regulation

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

Suppliers 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 = £5m Liability Insurance = £4m Product Liability Insurance = not required *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.

9.2	Suppliers' Past Performance[9] - (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

[9] Procurement Policy Note 04/15 Taking Account of Suppliers' Past Performance

Questionnaire for Contractors

Declaration%205%2
0-%20GDPR%20Assu

Declaration 6: Code of Practice for Research[10]

I confirm that I am aware of the requirements of the Department's Code of Practice[11] 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[12]:

- □□ 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.)

Declaration 7: Safe Use of Hydrogen

[10] Please note that this declaration applies to individuals, single organisations and consortia.
[11] The Code of Practice is attached to this ITT as Annex B
[12] Please delete as appropriate

By responding to this ITT, the tenderer must provide assurance that its staff are competent to work with hydrogen in the declaration below and evidence must be provided to support the declaration.

I declare that the staff that will be working on this project (who are already qualified and extensively experienced in the use of natural gas) have given appropriate consideration to the safety considerations of hydrogen and will put in place procedures to ensure these are followed to provide a safe working environment to complete the tendered work.

Signed …….....

Name …….....

Position …….

Date …….....

Annex A: Pricing Schedule

Work Package 4b

See separate document

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 theDepartment, taking account of the requirements of ethical committees[13] 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.

[13] Please note ethical approval does not remove the responsibility of the individual for ethical behaviour.

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[14]

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: Exclusion Grounds

Mandatory Exclusion Grounds

[14] Please note that this also applies to projects being undertaken by consortia.

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: Recommended Scope of Products Developed

For the Ancillary System Components, Lot 1, the range of specific components is expected to be significant. Organisations with detailed knowledge of the gas components supply chains will need to be involved in this procurement such as trade wholesalers and merchants.

All development of ancillary system components supported by this work package of the Hy4Heat programme shall be undertaken within the following context:

- The hydrogen supply shall be assumed to be as defined in Annex E
- Products must provide one or more of the specified functionalities
- Product design should aim to ensure installation convenience e.g. by using similar dimensions and connectivity to those for natural gas components delivering the same functionality
- Product design should aim to ensure user acceptability e.g. by maintaining aesthetic appeal, usability and having functionality at least as good as the reference natural gas product
- Product design should include consideration of and specification of servicing requirements which should be no more onerous than those for equivalent natural gas product

Function	Item Scope	Examples (not an exhaustive list)
Lot 1 Ancillary System Components (see Annex E for details)	Components necessary for the safe installation of hydrogen fuelled appliances	Demonstration of a catalogue of components such as pipes, fittings, regulators, valves, etc.
Lot 2 Excess Flow Valves (see Annex E for details)	Automatic valves to prevent excessive flows of hydrogen through an emergency control valve	Demonstration of an excess flow valve for a specified gas supply size
Lot 3 Hydrogen Alarms (see Annex E for details)	Automatic audible and visual alarm indicating the presence in a space of hydrogen at concentrations that might otherwise be detected by the presence of gas odorant	Demonstration of a hydrogen alarm suitable for installation in a domestic environment

Annex E: Product Specifications

Information for All Products

Technical Scope Information for All Products

It is expected that any product developed under the Hy4Heat programme has comparable performance to its natural gas reference item. Within the Hy4Heat programme a small unoccupied demonstration trial will take place. The items procured under this Work Package may be used for this trial. Specifically, it is interested in the provision of technical files by the contractor relating to the components which declare them as 'hydrogen safe'. For each Lot, this will include at a minimum one example component; tenderers should price for one example component (for Lot 1 this will mean 1 example of each item within the Lot, i.e. 5 examples). There is a possibility that further samples may be required as part of this contract and tenderers should indicate their pricing for these in the Pricing Schedule (Annex A), but this will not form part of the evaluation criteria.

Gas Quality

Proposed minimum quality of the hydrogen shall be from Hy4Heat Work Package 2 and referenced in the draft PAS 4444, as defined in Figure 1 (ref Hy4heat WP2), below. The highest quality can effectively be pure hydrogen.

Odorant

Leak detection is a fundamental safety requisite under the Health and Safety Gas Safety (Management) Regulations 1996. In natural gas, this is likely to be achieved using the addition of an odorant consisting of t-butyl mercaptan (TBM) and dimethyl sulphide (Odorant NB), at a concentration of 6 to 7 mg/m3 gas.

The same odorant is assumed for use with hydrogen in the unoccupied demonstration trial.

Supply Pressure

The hydrogen supply pressure to the property Emergency Control Valve (ECV) will be comparable to the current supply of natural gas in the low-pressure network, at 0.07 to 0.025 barg. The internal carcass hydrogen pressure is expected to be nominally 20mbar i.e. similar to natural gas.

Certification/Compliance

Delivered products will need to meet legal requirements for the UK with regards to safety and functionality. It is expected that the same self-declaration procedure as would be carried out for a natural gas product will be completed for the hydrogen product.

Depending on the product type and function other legislation may also apply including:

- Construction Products Regulation
  Standards for some gas connection components are harmonised under this regulation

Figure 1: Draft recommendation for a UK hydrogen quality standard for heat applications based on existing standards and documents

Content or characteristic	Value	Rationale
Hydrogen fuel index (minimum mole fraction)	98% (cmol mol^{-1})	This value is a good compromise between hydrogen cost and effects on boiler
Carbon monoxide	20ppm (µmol mol^{-1})	A practical engineering limit based on achievable production limits and to meet long term exposure limits HSE EH/40)
Hydrogen sulphide content	≤5 mg m^{-3} 3.5 ppm (µmol mol^{-1})	These values are taken from GSMR: 1996 as any detrimental effects would be similar for hydrogen and natural gas
Total sulphur content (including H_2S and odorant)	≤50 mg m^{-3} 35 ppm (µmol mol^{-1})	
Oxygen content	≤0.2% (cmol mol^{-1})	
Hydrocarbon dewpoint	-2°C	Complies with GSMR: 199 and EASEE- gas
Water dewpoint	-10°C	
Sum of methane, carbon dioxide and total hydrocarbons	≤ 1% (cmol mol^{-1})	No detrimental effects to boiler, this limit is to reduce carbon content of the exhaust
Sum of argon, nitrogen and helium	≤ 2% (cmol mol^{-1})	To avoid transporting inert gases with no calorific value in the hydrogen gas (in agreement with ISO/FDIS 14687) and to limit the impact on Wobbe Number (see below)
Wobbe Number range	42-46 MJ m^{-3}	Range and percentage variation based on natural gas range in GSMR: 1996 Wobbe Number is calculated at UK metric standard conditions of 15°C and 101.325 kPa
Other impurities	The gas shall not contain solid, liquid or gaseous material that might interfere with the integrity or operation of pipes or any gas appliance, within the meaning of regulation 2(1) of the Gas Safety (Installation and Use) Regulation 1998, that a consumer could reasonably be expected to operate	

Specification Lot 1 – Ancillary System Components

Background

The Gas Safety (Installation and Use) Regulations 1998 (GS(I&U)R), Regulation 2(1) defines “gas fittings” as meaning gas pipework, valves, regulators, meters, fittings, apparatus and appliances designed for use by consumers of gas for heating, lighting, cooking or other purposes for which gas can be used.

Further it defines an “appropriate fitting” as a fitting which:

a) has been designed for the purpose of effecting a gas tight seal in a pipe or other gasway;
b) achieves that purpose when fitted; and
c) is secure, so far as is reasonably practicable, against unauthorised opening or removal;

To avoid confusion, these are not fittings as might be classified under the GAR.

The GS(I&U)R imposes on an installer of a gas fitting a duty to ensure that the fitting is suitable for the purpose for which it is to be used. It states that “*no person shall install a gas fitting unless every part of it is of a good construction and sound material, of adequate strength and size to secure safety and of a type appropriate for the gas with which it is to be used*.”

To enable gas installers to fulfil their duty they need access to fittings which manufacturers have demonstrated and declared to be fit for purpose.

A wide range of competitively priced fittings are currently available for 1st, 2nd and 3rd family gases. Such fittings, whose suitability for use with hydrogen has been confirmed, are not currently available. This procurement provides the first stage of establishing a supply chain of fittings necessary for the installation of hydrogen appliances and connection to a distributed hydrogen supply. The evidence to support a declaration of suitability for use with a particular gas is usually assembled via a product file.

NOTE: An opportunity for suppliers of fittings to bid to provide examples of the range of items required for installations was given in the ITT for Hy4Heat WP5b Lot5. No responses were received for that Lot. Subsequent investigations have revealed that there are companies that would have been prepared to bid for that Lot but they were not aware of the opportunity as they do not usually monitor for BEIS invitations to tender.

This tender process is designed to procure a range of components such as to enable installation of hydrogen appliances for the following scenarios:

- a dwelling relying on gas for; heating of spaces, provision of sanitary hot water and cooking of food

- a commercial premises using a range of gas appliances of the types within the scope of Hy4Heat Work 5b (SBRI Competition: TRN: 1996/07/2019).

These components must enable safe connections to be made from the appliance isolation valve, up to and including the emergency control valve (ECV) (and that fall within the definition provided in the GS(I&U)R 1998, Regulation 2(1)).

The scope of fittings to be addressed includes:

- Piping (including connecting hoses and metal pipe)
- Pipe fittings (for connecting pipes)
- Gas valves
- Gas pressure regulators
- Emergency control valves (ECV)

Note: Specific requirements for ECVs:

- Emergency control valves currently used in the GB LP gas networks will have been confirmed to be suitable for use with natural gas. For this tender specific confirmation is required of performance with gas comprising mainly hydrogen, i.e. 98% or more.

Essentially tenders are sought for the selection of gas fittings that might be found in the catalogue of any good quality plumbers and heating supplies merchant, although to reduce costs, within any particular bid excessive duplication should be avoided.

NOTE: Volumetric meters for hydrogen are excluded from the scope. These are being addressed through Hy4Heat WP10.

Requirements and deliverables

It is a requirement that any fitting in a hydrogen system will be accompanied by a declaration that states that the component offered will be suitable for use with hydrogen gas.

The specific requirement is confirmation of safety and performance with gas comprising mainly hydrogen, as per the above specification, i.e. 98% or more hydrogen.

The fittings delivered will require evidence of suitability. Each will need to be covered by a technical file. For the purposes of this procurement, test work undertaken will need to be detailed in verifiable test reports, which could be from third party test laboratories. For Lot 1 the deliverables will include, as well as the technical files, 1 example of each item within the Lot, i.e. 5 examples). There is a possibility that further samples may be required as part of this contract and tenderers should indicate their pricing for these in the Pricing Schedule (Annex A), but this will not form part of the evaluation criteria.

NOTE: This should not be interpreted as establishing a general requirement for third party testing for demonstration of suitability of fittings for use with hydrogen.

The detailed evidence required in product files to support claims of such performance is not prescribed in this ITT.

Where components fall within the scope of the Construction Products Regulation (CPR) the procedures for demonstrating CPR compliance should be followed but with adjustments for hydrogen.

For reference the standards harmonised under the CPR which explicitly relate to gas components are:

- EN 331:1998/A1:2010 - EN 331:1998/A1:2010 Manually operated ball valves and closed bottom taper plug valves for gas installations for buildings
- EN 682:2002/A1:2005 - EN 682:2002/A1:2005 Elastomeric Seals - Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids
- EN 969:2009 - Ductile iron pipes, fittings, accessories and their joints for gas pipelines - Requirements and test methods
- EN 1057:2006+A1:2010 - Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications
- EN 14800:2007 - EN 14800:2007 - Corrugated safety metal hose assemblies for the connection of domestic appliances using gaseous fuels
- EN 15069:2008 - Safety gas connection valves for metal hose assemblies used for the connection of domestic appliances using gaseous fuel

Other components need to be demonstrated to conform to the requirements of the appropriate British, European or International standard with suitable adjustments for hydrogen as necessary.

The ENA publish a range of Gas Industry Standards. Mainly these relate to components used in networks but some of them may be useful reference points for components being procured through this ITT.

It is required that declarations of suitability and supporting technical files should originate from the OEM. However, to avoid excessive administration the provision of the declarations and evidence files could be managed by parties such as wholesalers or trade bodies. Bids from fitting manufacturers are not excluded.

Lot 2 – Provision of Excess Flow Valves fit for use in low pressure hydrogen supply pipes

Background

If the integrity of a gas system is compromised e.g. gas control valve opened without appliance ignition or damage to pipework, there is the potential for a gas escape. The worst case would be an escape restricted only by the local supply pressure and the pressure drop between the Emergency Control Valve (ECV) and the point of escape. Potential leak points include:

- pipework
- services PE
- Emergency Control Valve (ECV)
- upstream regulator
- meter
- internal gas carcass and appliances

Excess Flow Valves (EFV) are increasingly used within the gas industry to limit the amount of gas released from an otherwise uncontrolled escape from large leaks. This reduces the risk of a large gas release occurring and hence the risks associated with such releases.

Such devices may play a key role in the safe provision of grid hydrogen to users.

Existing EFV designs behave differently with hydrogen than with natural gas. This is as expected as the physical characteristics of these gases differ significantly.

Currently the permissible pressure drop across an EFV is limited to a maximum of 0.5mbar at its rated throughput which is set in the relevant standards referenced below. The drivers for this limit are complex and associated with the properties of natural gas. However, preliminary discussions with GDNOs suggest that there may be scope for the limit to be 1.0mbar. EFVs for natural gas have a unit trip capacity in the range 130-145% of the rated throughput. This may be a consequence of designing EFVs to achieve a 0.5mbar pressure drop. Ideally, for hydrogen, the trip level would be reduced and be between 110 and 125% of the rated throughput.

Some adjustment to the design and construction of EFVs will be needed to ensure that those designated for use with hydrogen function appropriately.

For the prospective hydrogen distribution sector two approaches to excess flow prevention are being considered:

- Within the gas meter: Modern gas meters often contain gas valves primarily for fiscal use; these will have their use extended to stopping all flow if a certain prescribed gas flow is exceeded.
- Mechanical excess flow valves: This is the approach currently taken for natural gas systems.

This tender will only consider the latter.

EFVs to be procured through this tender shall be only for connection downstream of the the ECV outlet and the connection shall be a screw connection as defined by BS746. NOTE: Placing an EFV upstream of the pressure regulator means that it would be operating in a slightly higher-pressure regime than if positioned after the regulator. This device will mitigate only leaks down-steam of the ECV.

This tender seeks to facilitate the design and supply of such valves with characteristics appropriate to the expected hydrogen supply arrangements.

Requirements and deliverables

A standard currently exists for EFVs for use with natural gas[15]:

- DVGW VP 305-1:2007-12[16], "Gasströmungswächter für die Gasinstallation" (Gas flow monitor for gas installation). This is applicable for EFV's downstream of the ECV

This provides the starting point for consideration of the adjustments to EFV design to produce units suitable for use with hydrogen.

EFVs for hydrogen supplies will need to allow sufficient flow rates to enable potential user supply requirements to be met without triggering an excess flow response.

Usage rates for typical domestic gas appliances are summarised in the following table:

Appliance types	**Gas Rate, kW**	**Flow Rate, Nm^3 H_2/h**
Combi boiler	35	10.5
System boiler	24	7.2
Gas fire	7	2.1
Cooker	8	2.4
Combi boiler + Gas fire	42	12.6
System boiler + Gas fire	31	9.3
Combi boiler + Gas fire + Cooker	50	15
System boiler + Gas fire + Cooker	39	11.7

Considering these, and the capacities of the existing population of natural gas meters, the following hydrogen demand rates are suggested:

[15] A UK standard, (Gas Industry Standard GIS/EFV/1:2006, "Specification for Flow limiters for polyethylene services operating at pressures above 75 mbar and not exceeding 2.0 bar and for gas flows not exceeding 6 m3h-1") is available but applicable only to to service pipe EFVs. A Canadian/USA standard also exists CSA ANSI Z21.93-2017/CSA 6.30-2017:2017-04-01
Excess flow valves for natural and propane gas with pressures up to 5 psig, but this is not thought to be appropriate to the UK gas supply system. Other standards (ISO) exist for high pressure hydrogen uses associated with vehicles. Again these are not appropriate in the current context.

[16] A draft German standard is also available DIN 30652-1:2018-04 – Draft Excess flow valves - Part 1: Excess flow valves for gas installation

User types	Gas Rate, kW	Flow Rate, Nm^3 H_2/h
Small domestic	27	8
Standard Domestic	40	12
Large Domestic	67	20
Standard Commercial	107	32
Large Commercial	167	50

A range of EFVs with rated throughputs appropriate to the various scales of supply will be needed. The rates set out for various user types could be appropriate, but the contractor will need to review and confirm these with the contract manager. It is unlikely that EFVs with rated throughputs of greater than 50Nm^3/h (about 160kW) will be needed. Above this level of throughput e.g. in boiler houses or other commercial premises, flammable gas detection systems interlocked to the gas supply shut-off are often installed. These capacities are consistent with the energy flows supplied by standard meters. An additional size between 12 and 20 m^3/h could allow finer control.

It is expected that EFVs for use in hydrogen supply systems would be in the same pressure range 17 – 75mbarg as those for natural gas (specified in DVGW VP 305-1:2007-12: 15-100mbarg).

Colour coding is likely to be required for ease of identification and this should be agreed with the contract manager. A system exists for EFVs for natural gas (defined in DVGW VP 305-1:2007-12 and reproduced in the table below:

Colour code	Flow Rate, Nm^3 NG/h
Yellow	2.5
Light brown	4.0
Green	6.0
Red	10.0
Orange	16.0

Any system defined for hydrogen EFVs should be consistent with this but such as to avoid confusion with regards to the gas for which a valve is designed to be used.

This will need to be discussed and agreed with the contract manager. Other parties such as the GDNOs and the HSE may have views on the coding scheme defined.

EFVs to be procured through this tender shall be only for connection downstream of the the ECV outlet and the connection should be as defined by BS746. For Lot 2 the deliverables will include, as well as any relevant technical files, 1 example EFV, in line with this specification. Tenderers should price for one example component. There is a possibility that further samples may be required as part of this contract and tenderers should indicate their pricing for these in the Pricing Schedule (Annex A), but this will not form part of the evaluation criteria.

Lot 3 – Provision of a domestic hydrogen alarm

Hazards from fuel gases used in domestic and commercial settings are limited by the use of gas odourisation. As a supplementary protection to address the possibility of people with restricted olefactory capability (i.e. unable to detect the odorants at the concentrations used in distributed gases) gas alarms are available.

Those currently on the market are designed for use with towns gases (mixtures of carbon monoxide, hydrogen and hydrocarbons) or hydrocarbon gases (natural gas and LPG).

Standard BS EN 50194-1:2009[17], sets out the requirements and test methods for these devices and BS EN 50244:2016[18], provides guidance on selection, installation, use and maintenance of such devices.

Note: For devices designed for use in non-domestic settings other standards (e.g. EN 60079-29-1 2007 Explosive atmospheres - Part 29-1: Gas detectors – Performance requirements of detectors for flammable gases) may apply.

Two types of apparatus are defined in BS EN 50194-1:2009:

- Type A apparatus - to provide a visual and audible alarm and an executive action in the form of an output signal that may actuate directly or indirectly a shut-off device and/or other ancillary device;
- Type B apparatus - to provide a visual and audible alarm only.

For the purposes of this procurement Type B apparatus **ONLY** are in scope.

Considerations for testing to BS EN 50194-1:2009

Clauses that define specific requirements relating to the gases used in testing of these apparatus will need to be reviewed and some may need to be adjusted for use for hydrogen alarms:

- *Clause 4.3.5 Visual indicators and audible alarms, shall operate at a volume ratio above 3 % LEL and below 20 % LEL of the gas to be monitored. The alarms shall remain in operation at gas volume ratios above that alarm set point.*

  NOTE A latching alarm may be used to accomplish the requirements of this clause.

  The manufacturer shall declare the alarm set point of the apparatus. When measured as specified in 5.3.4.2, the alarm shall operate within ± 2,5 % LEL of the declared value. For all tests thereafter, the alarm set point shall be within ±

[17] BS EN 50194-1:2009, 'Electrical apparatus for the detection of combustible gases in domestic premises — Part 1: Test methods and performance requirements'
[18] BS EN 50244:2016, Electrical apparatus for the detection of combustible gases in domestic premises. Guide on the selection, installation, use and maintenance

5 % LEL of the declared value but within the overall band of above 3 % LEL and not exceeding 20 % LEL.

This band is likely applicable for hydrogen and is equivalent to concentration range of about 4,000 to 8,000 ppm v/v hydrogen. However, consideration should be given to this and any impact on the requirement described in *Clause 5.2.3 Test gas volume ratios*

- *Clause 5.2.2 Test gases for alarm testing*

  Test gas are defined in BS EN 437:1993. This does not include gases for testing equipment where the fuel is hydrogen. Some consideration will need to be given to selection of appropriate gas for undertaking testing described in BS EN 50194-1:2009 specifies testing using gases defined in BS EN 437. Hydrogen 'test gases' are not defined in this standard. Test methods applied will need to use gases containing hydrogen.

  Consideration should be given to whether the is appropriate for Hydrogen alarms.

- *Clause 5.3.5 Alarm test during warm-up time AND 5.3.6 Response time*

  Tests under both these headings use *'test gas mixture at a volume ratio of 25 % LEL.'*

  Consideration should be given to whether this is appropriate for Hydrogen alarms.

- *Clause 5.3.12 Slow increase of gas volume ratio*

  Tests are use conditions progressing from '*0,1 % LEL up to the final volume of 6 % LEL*'.

  Consideration should be given to whether this is appropriate for Hydrogen alarms.

- *Clause 5.3.13 Effects of other gases*

  Tests cover various gases and vapours. In particular consideration should be given to the ethanol concentration used.

For Lot 3 the deliverables will include, as well as any relevant technical files, 1 example domestic hydrogen alarm in line with this specification. Tenderers should price for one example component.There is a possibility that further samples may be required as part of this contract and tenderers should indicate their pricing for these in the Pricing Schedule (Annex A), but this will not form part of the evaluation criteria.