**Research specification: To provide updated projections of flood risks for the UK**

Tender Reference Number: AR/0718

**Specification of Requirements**

Invitation to Tender for research: Identifying adaptation thresholds for the UK in the context of varying flood risk

Tender Reference Number: AR/0718

Deadline for Tender Responses: 17th September 2018

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# Introduction and summary of requirements / Preamble

The Adaptation Sub-Committee (ASC) of the Committee on Climate Change (CCC) is the government’s statutory adviser on preparing for climate change. Under the Climate Change Act (2008) the ASC has two main roles.

* To provide independent, expert advice on the UK climate change risk assessment (CCRA).
* To report to Parliament on progress with implementation of the National Adaptation Programme (England only).

To do this the ASC conducts independent analysis into climate change science, economics and policy, and engages with a wide range of organisations and individuals to share evidence and analysis. The CCC and ASC’s past reports are available at <http://www.theccc.org.uk/publications/>.

To inform the ASC’s Evidence Report for the upcoming third UK CCRA, the ASC is commissioning a range of research projects that aim to improve the science and impact of the CCRA.

This project aims to improve our understanding of future flood risks and the adaptation challenges that will face the UK because of those risks.

# Background

The [second CCRA](https://www.gov.uk/government/publications/uk-climate-change-risk-assessment-2017) (CCRA2) was published in 2017 and was supported by a comprehensive [Evidence Report](https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-climate-change-risk-assessment-2017/) from the Adaptation Sub-Committee (ASC). Defra and the devolved administrations are in the process of drafting updated national adaptation programmes in response to the risks and opportunities set out in the report.

The third CCRA will be published by the government in January 2022, and Defra have asked the ASC to produce an accompanying Evidence Report by summer 2021.To inform this Evidence Report the ASC are commissioning six research projects, funded by Defra, the devolved administrations and the research councils. The ASC has been engaging with relevant stakeholders (e.g. researchers, funders, academies) with a view of addressing key evidence gaps from the CCRA2 report on a variety of timescales. The scientific literature is also being reviewed to identify work that may already exist in these areas.

For CCRA2, the ASC commissioned a research project developing projections of future flood risk across the UK based on a small set of climate and population scenarios i.e. 2°C, 4°C and H++ scenarios for climate and low, medium and high growth scenarios for population. That project identified some significant increases in future flood risk over the 21st Century and also analysed the potential for a suite of adaptation options to mitigate those risks.

With CCRA3 there is a desire to update the projections to take into account the most recent flood risk policies in England, Scotland, Wales and Northern Ireland; to make use of new climate information in the latest UK climate projections (UKCP18); and to extend the previous analysis in the following two novel ways:

* The analysis should have a greater spatial element – flood risk should be assessed at higher spatial resolution and the results presented for different types of locations e.g. cities, coastal communities or rural locations; and
* The project should assess and present the effectiveness of place-specific adaptation strategies in these different areas, and present under what scenarios of climate, socioeconomic change and adaptation, limits to adaptation might occur.

This new work will have significant value for CCRA3 as it will not only assess risks but also how effective adaptation responses to those risks may be in different types of places around the UK.

# Aims and Objectives

The aims of this project are to:

* Quantify future flood risk over the 21st Century (and beyond if possible) for the UK as a whole, for England, Wales, Scotland and Northern Ireland, and for different places within each country (e.g. coast, cities, rural communities), for a range of climate and socioeconomic scenarios, on the basis of the current level of adaptation;
* Identify the most effective and efficient ways to manage the residual flood risks under each scenario above in different places, via a mix of adaptation options.
* Examine what level of flood risk change may result in major infrastructure, cities, coastal communities or rural locations, for example, no longer being able to cope with new flood risk levels, even with all of the adaptation options available.

# Method

**Current and future flood risk:** bids must present the method to be used for calculating future flood risk. This must start from a description of current flood risk and results should be presented in the report for flood risk for the present day. Future risk must be assessed for at least a 2°C and a 4°C global mean surface temperature rise relative to pre-industrial and should make use of the UKCP18 dataset.

Bids should specify what metrics will be used to measure and present future flood risk, what level of spatial disaggregation will be used and what adaptation responses will be investigated. More details on the requirements for these aspects are below. As a minimum, direct economic damages and numbers of people/properties at risk must be included as flood risk metrics though additional metrics will also have significant value.

**Sources of flooding:** it should be stated what type of flood risks will be modelled and how these will be disaggregated in the final dataset. We consider the analysis of river, coastal and surface water flooding as essential and other sources (e.g. groundwater) as more challenging but desirable. Results should be presented for each type of flooding as well as all types together, over a range risk bands that are consistent with those used to assess present day risk e.g. the Flood Map for Planning, Risk of Flooding from Rivers and Sea, risk bands used by the devolved administrations.

**Spatial resolution:** flooding risks should be modelled and presented at a range of spatial scales: 1) the UK as a whole; 2) England, Wales, Scotland and Northern Ireland; and 3) at higher spatial resolution to allow a regional analysis and analysis of different categories of spatial area (e.g. cities, coasts, rural areas). Bids must outline how they will approach this.

**Risk thresholds:** assessments of climate change impacts have, in the past, approached assessments of flood risk by examining the impacts from a small number of distinct climate change scenarios (e.g. the 2°C, 4°C and H++ scenarios utilised in the CCRA2 Evidence Report). However, such distinct scenarios do not allow for the identification of limits to adaptation if they lie in between these arbitrary points where particular assets or communities may face new threats that seriously question their ability to adapt to those changes. Therefore, the approach for this project will require the compilation of a more ‘continuous’ series of climate change scenarios that can be used to understand the points at which different assets or communities reach certain limits to adaptation. These climate scenarios should use the new UKCP18 dataset as a basis but additional datasets may also be used.

**Socioeconomic drivers:** the socioeconomic dimensions driving the project analysis must, in the first instance, be taken from another project commissioned by the ASC entitled “A consistent set of socioeconomic dimensions for the CCRA3 Evidence Report research projects”. The bidder should specify in their bid the list and spatial/temporal resolution of socio-economic variables that they require for future scenarios.

**Adaptation scenarios:** In assessing the ‘baseline’ level of future flood risk, there should be an assumption of a continuation of the current level of adaptation across all four countries of the UK. Bids should specify a way of defining what this is and how it would be projected into the future. After defining the flood risk, the second major step is to identify the potential of different adaptation options to mitigate those flood risks to a ‘suitable’ level in cases where the current level of action is insufficient. Bids should set out how the project intends to define ‘suitable’ risk, e.g. keeping risk at the same level as today, not allowing the risk to grow by more than x% above today’s levels, the National Infrastructure Commission proposal of minimum levels of protection, a fixed level of funding (e.g. based on LTIS) or possibly based on a theory of climate justice. Such adaptation strategies include, but are not limited to: improving flood defences, implementing managed realignment schemes, improving catchment management, delivering more sustainable drainage systems (SuDS), adapting spatial planning strategies, revising building codes, installing property level protection or influencing people’s behaviour. Comparison to a baseline scenario should be performed.

The bid should outline where the limits of the effectiveness of the chosen adaptation options lie relative to the baseline adaptation scenario. The aim of this analysis is not to prescribe an optimum adaptation pathway but to provide an assessment of the potential of the options that are available.

The identification of the effectiveness of adaptation options requires a robust method that accounts for physical and societal factors, some of which may be specific to different areas of the UK. Ideally, this would also include an analysis and presentation of cost effectiveness of the adaptation strategies – if proposed, the bid should outline a method for this analysis.

**CCRA3 context:** This project should be undertaken in close collaboration with four other projects that will be commissioned simultaneously with this one, specifically:

* Climate driven *threshold effects* in the natural environment
* To understand how *behaviour change* can influence climate change risks and opportunities
* A consistent set of *socioeconomic dimensions* for the CCRA3 Evidence Report research projects
* *Interacting risks*

The flooding project should utilise the socioeconomic dimensions provided through the socioeconomic dimensions project to ensure consistency with the other CCRA3 projects, should coordinate assumptions on behavioural adaptations with the behaviour change project and it should not overlap in scope or have conflicting assumptions with the adaptation thresholds and interacting risks project. This coordination should be done in collaboration with the ASC.

# Outputs Required

There are 3 key deliverables from this project:

* A UK-wide, spatial assessment of future flood risk for a range of climate scenarios determined by relatively small global temperature graduations (this range must include a presentation of the risks for the 2°C and 4°C scenarios, however). This should be provided as an ArcGIS compatible Geodatabase. Text and/or spreadsheet files of the lower spatial resolution data is also required;
* An assessment of the effectiveness of a range of appropriate, spatially sensitive adaptation options related to the flood risk analysis for infrastructure and communities of different sizes in different places; and
* An analysis of the combinations of adaptation options that would manage the risk in specific scenarios, and where the limits to adaptation are for different places.

The consultants should also provide editable graphical representations, such as infographics, maps or charts that describe the results, with visuals optimised for use on social media. The ASC want access to the editable versions and to the text included, for example to allow for translated versions to be prepared.

# Ownership and Publication

The results of the analysis and all outputs produced will be owned by and published at the discretion of the Adaptation Sub-Committee.

All research publications arising from the contract must include a statement on how the supporting data and any other relevant research materials can be accessed.

# Quality Assurance

All research tasks and modelling must be quality assured and documented. Contractors should:

* Include a quality assurance (QA) plan that they will apply to all of the research tasks.
* Specify who will take lead responsibility for ensuring quality assurance and ensure that this responsibility rests with an individual not directly involved in the research, analysis or model development.
* Provide a QA log to demonstrate the QA undertaken, including who undertook the QA and the scope, type and level of QA that has been undertaken (e.g. a log entry only stating ‘the data was checked’ will not be sufficient).

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 the CCC will take this into consideration. The CCC 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 supplied by sub-contractors and should therefore provide assurance that all work in the contract is undertaken in accordance with the quality assurance expectation agreed at the beginning of the project.

For primary research, contractors should be willing to facilitate CCC staff to attend interviews or listen in to telephone surveys as part of the quality assurance process.

The consultant must demonstrate their ability to produce deliverables of quality, in particular following best practice regarding economic analysis and presentation of results.

# Timetable

An indicative timeline for deliverables is presented below. The contractors can propose modifications to the timeline to better suit their analysis if appropriate, though the final submission date must remain the same. Any proposed modifications should be set out in the bid and will require approval from the ASC secretariat.

| **Phase** | **Deliverable** | **Date** |
| --- | --- | --- |
| Bidding | Bids received | 17th September 2018 |
|  | Interviews conducted | w/c 1st October 2018 |
|  | Contract awarded | 5th October 2018 |
|  | Kick-off meeting | w/c 8th October 2018 |
| Project development | Method development - Draft Method Document | w/c 29th October 2018 |
|  | Method development - Final Method Document | w/c 19th November 2018 |
|  | Analysis undertaken | November 2018 to October 2019 |
| Reporting | First draft report to ASC for comments | 26th October 2019 |
|  | Second draft report to ASC, chapter authors, steering group and peer reviewers for comments | 26th November 2019 |
|  | Final draft report for ASC final comments and sign off | 4th January 2020 |
|  | Final report submitted | 21st January 2020 |

# In order to ensure smooth and rapid progress the project plan should allow for regular interactions and meetings where necessary between the contractors and the ASC project team. We would ask bidders to set out when would be appropriate to meet during the project (after the initial kick-off meeting), given the timetable above. We would expect this to include at least five face-to face meetings between the contractor and the ASC secretariat, and at least five face-to-face meetings with CCRA authors and other project teams.

In addition, the ASC will put together a stakeholder group of representatives of the funding organisations and wider customers of the CCRA (government departments, agencies and adaptation practitioners). Bids should price in attendance of the project team and taking minutes at three meetings of this group; one to discuss the method; one to show the interim results, and one other to be agreed. The ASC will lead on chairing the meetings and putting agendas together.

# Challenges

The specific challenges that the ASC envisage with this project include:

* Future flood risk needs to be quantified. This is non-trivial and a clear description of how this will be calculated should be outlined.
* The range of climate change and socio-economic dimensions to be employed should be outlined and justified.
* Robust assumptions need to be made regarding the current and predicted resilience of major infrastructure as well as the adaptation strategies that can be implemented and their potential impact on exposure.
* The method used to identify the “limits” in terms of risk and adaptation potential is, again, non-trivial and needs to defined and justified within the bid. The basis of these “limits” should be discussed in the bid and could be based on, for example, the NIC proposal of minimum levels of protection, a fixed level of funding (e.g. based on LTIS) or possibly based on a theory of climate justice.
* This project needs to carefully managed to incorporate findings from the “Socio-economic dimensions” project and to align with the workflow of the “Adaptation thresholds” and ‘interacting risks’ projects.

Bids should also set out other risks and challenges and strategies to mitigate these in successfully undertaking this work.

# 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 is part of the tender assessment exercise and proposals will be evaluated on this as part of the ‘addressing challenges and risks’ criterion.

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

# Working Arrangements

The successful contractor will be expected to identify one named point of contract through whom all enquiries can be filtered. An ASC project manager will be assigned to the project and will be the central point of contact.

# Skills and experience

The ASC 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.

 Contractors 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.

Contractors should identify the individual(s) who will be responsible for managing the project.

# 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. However, please note CCC 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.

CCC 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 CCC so that it can make a further assessment by applying the selection criteria to the new information provided.

# Budget

The budget for this project is **up to £120,000 excluding VAT (£150,000 including VAT),**

**with 40% falling in the 18/19 financial year and 60% falling in the 19/20 financial year.**

Contractors should provide a full and detailed breakdown of costs (including options where appropriate). This must include costs allocated by staff (and day rate) and allocated by specific tasks (deliverables). Please include the number of days in the unpriced bid.

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

Payments will be linked to delivery of key milestones. The indicative milestones and phasing of payments can be adjusted and agreed with the contractor and Project Manager. Please advise in your tender response how this breakdown reflects your usual payment processes.

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

The CCC 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.

# Evaluation of Tenders

Contractors are invited to submit full tenders of no more than 30 pages, excluding declarations. Tenders will be evaluated by at least three sifters.

The ASC will select the bidder that scores highest against the criteria and weighting listed below, see the ITT for further information.

**EVALUATION CRITERIA AND SCORING METHODOLOGY**

|  |  |  |
| --- | --- | --- |
| Criterion | Description | Weighting |
| 1 | **RELEVANT EXPERIENCE / DEMONSTRATION OF CAPABILITY OF THE PROPOSED PROJECT TEAM** | 30% |
| 2 | **QUALITY ASSURING THE SERVICES YOU PROVIDE** | 5% |
| 3 | **MANAGEMENT STRUCTURE AND MANAGING RELATIONSHIP WITH THE CCC** | 10% |
| 4 | **METHOD** | 35% |
| 5 | **UNDERSTANDING OF REQUIREMENTS** | 10% |
| 6 | **RISK AND CHALLENGES** | 10% |
|  |  |  |
|  | 100% |

**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 |

**Structure of Tenders**

Contractors are strongly advised to structure their tender submissions to cover each of the criteria above and supply a price schedule specifying the daily rates (ex-VAT) you will charge for each level of your staff.

**Evaluation for Interviews, if held**

CCC 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.

Should interviews go ahead, they are provisionally expected to be held on the week commencing w/c 1st October 2018. If this date changes, the ASC will notify applicants.

The areas to be covered in the interview will be sent to the shortlisted supplier prior to interview.

Further details of interviews will be sent to successful applicants on selection.

**Feedback**

Feedback will be given by email.