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Request for Quotation

# Developing a risk register for a State of Natural Capital Report

June 2023

## Request for Quotation

Developing a Risk Register for a State of Natural Capital Report

You are invited to submit a quotation for the requirement described in the specification, Section 2.

Please confirm by email, receipt of these documents and whether you intend to submit a quote or not.

Your response should be returned to the following email address by:

Email: angharad.morgan@naturalengland.org.uk

Date: 10/07/2023

Time: 17:00

Ensure you include the name of the quotation and ‘Final Submission’ in the subject field to make it clear that it is your response.

### Contact Details and Timetable

Angharad Morgan will be your contact for any questions linked to the content of the quote or the process. Please submit any clarification questions via email and note that, unless commercially sensitive, both the question and the response will be circulated to all tenderers.

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| --- | --- |
| Action | Date |
| Date of issue of RFQ | 15-06-23at17:00 BST  |
| Deadline for clarifications questions | 03-07-2023 at 17:00 BST |
| Deadline for receipt of Quotation | 10-07-2023at 17:00 BST |
| Intended date of Contract Award | 14-07-2023 |
| Intended Contract Start Date | 17-07-2023 |
| Intended Delivery Date / Contract Duration  | 18-12-2023 |

# Section 1: General Information

### Glossary

Unless the context otherwise requires, the following words and expressions used within this Request for Quotation shall have the following meanings (to be interpreted in the singular or plural as the context requires):

|  |  |
| --- | --- |
|  |  |
| “Authority” | means Natural England who is the Contracting Authority.  |
| “Contract” | means the contract to be entered into by the Authority and the successful supplier. |
| “Response” | means the information submitted by a supplier in response to the RFQ. |
| “RFQ” | means this Request for Quotation and all related documents published by the Authority and made available to suppliers. |

### Conditions applying to the RFQ

You should examine your Response and related documents ensuring it is complete and in accordance with the stated instructions prior to submission.

Your Response must contain sufficient information to enable the Authority to evaluate it fairly and effectively. You should ensure that you have prepared your Response fully and accurately and that prices quoted are arithmetically correct for the units stated.

By submitting a Response, you, the supplier, are deemed to accept the terms and conditions provided in the RFQ. Confirmation of this is required in Annex 2.

Failure to comply with the instructions set out in the RFQ may result in the supplier’s exclusion from this quotation process.

### Acceptance of Quotations

By issuing this RFQ the Authority does not bind itself to accept any quotation and reserves the right not to award a contract to any supplier who submits a quotation.

### Costs

The Authority will not reimburse you for any costs and expenses which you incur preparing and submitting your quotation, even if the Authority amends or terminates the procurement process.

### Self-Declaration and Mandatory Requirements

The RFQ includes a self-declaration response (Annex 1) which covers basic information about the supplier, as well as any grounds for exclusion. If you do not comply with them, your quotation will not be evaluated.

Any mandatory requirements will be set out in Section 2, Specification of Requirements and, if you do not comply with them, your quotation will not be evaluated.

### Clarifications

Any request for clarification regarding the RFQ and supporting documentation must be submitted via email no later than the deadline for clarifications set out in the Timetable. The Authority shall be under no obligation to respond to queries raised after the clarification deadline.

The Authority will respond to all reasonable clarifications as soon as possible but

cannot guarantee a minimum response time. The Authority will publish all clarifications and its responses to all suppliers via email unless deemed commercially sensitive.

If a supplier believes that a request for clarification is commercially sensitive, it should clearly state this when submitting the clarification request. However, if the Authority considers either that:

* the clarification and response are not commercially sensitive; and
* all suppliers may benefit from its disclosure,

then the Authority will notify the supplier (via email), and the supplier will have an opportunity to withdraw the request for clarification by sending a further message requesting the withdrawal of the clarification request. If not withdrawn by the supplier within 2 working days of the Authority’s notification, the Authority may publish the clarification request and its response to all suppliers and the Authority shall not be liable to the supplier for any consequences of such publication.

The Authority reserves the right to seek clarification of any aspect of a quotation and/or provide additional information during the evaluation phase to carry out a fair evaluation. Where the Authority seeks clarification on any aspect of the quotation, the supplier must respond within the timeframe requested by the Authority.

### Amendments

The Authority may amend the RFQ at any time prior to the deadline for receipt. If it amends the RFQ the Authority will notify you via email.

Suppliers may modify their quotation prior to the deadline for Responses. No Responses may be modified after the deadline for Responses. Suppliers may withdraw their quotations at any time by submitting a notice via the email to the named contact.

### Conditions of Contract

The Authority’s standard condensed terms and conditions (Annex 3 attached)provided as part of the RFQ will be included in any contract awarded as a result of this quotation process. The Authority will not accept any changes to these terms and conditions proposed by a supplier.

Suppliers should note that the quotation provided by the successful bidder will form part of the Contract.

### Prices

Prices must be submitted in £ sterling, inclusive of VAT.

### Disclosure

All Central Government Departments, their Executive Agencies and Non Departmental Public Bodies are subject to control and reporting within Government. In particular, they report to the Cabinet Office and HM Treasury for all expenditure. Further the Cabinet Office has a cross-Government role delivering overall Government policy on public procurement, including ensuring value for money and related aspects of good procurement practice. For these purposes, the Authority may disclose within Government any details contained in your quotation. The information will not be disclosed outside Government during the procurement.

In addition, the Authority is subject to the Freedom of Information Act 2000 and the Environmental Information Regulations 2004, which provide a public right of access to information held by public bodies. In accordance with these two statutes, the Authority may be required to disclose information contained in your quotation to any person who submits a request for information pursuant to those statutes.

Further to the Government’s transparency agenda, all UK Government organisations must advertise on Contract Finder in accordance with the following publication thresholds:

* Central Contracting Authority’s: £12,000
* Sub Central Contracting Authority’s and NHS Trusts: £30,000

For the purpose of this RFQ the Authority is classified as a Central Contracting Authority with a publication threshold of £12,000 inclusive of VAT.

If this opportunity is advertised via Contracts Finder, we are obliged to publish details of the awarded contract including who has won the contract, the contract value, and indicate whether the winning supplier is a small and medium-sized enterprise (“SMEs”) or voluntary organisation or charity. A copy of the contract must also be published with confidential information redacted.

By submitting a Response, you consent to these terms as part of the procurement.

### Disclaimers

Whilst the information in this RFQ and any supporting information referred to herein or provided to you by the Authority have been prepared in good faith the Authority does not warrant that this information is comprehensive or that it has been independently verified.

The Authority does not:

* make any representation or warranty (express or implied) as to the accuracy, reasonableness or completeness of the RFQ;
* accept any liability for the information contained in the RFQ or for the fairness, accuracy or completeness of that information; or
* accept any liability for any loss or damage (other than in respect of fraudulent misrepresentation or any other liability which cannot lawfully be excluded) arising as a result of reliance on such information or any subsequent communication.

Any supplier considering entering into contractual relationships with the Authority following receipt of the RFQ should make its own investigations and independent assessment of the Authority and its requirements for the goods and/or services and should seek its own professional financial and legal advice.

### Protection of Personal Data

In order to comply with the General Data Protection Regulations 2018, the supplier must agree to the following:

* You must only process any personal data in strict accordance with instructions from the Authority.
* You must ensure that all the personal data that we disclose to you or you collect on our behalf under this agreement are kept confidential.
* You must take reasonable steps to ensure the reliability of employees who have access to personal data.
* Only employees who may be required to assist in meeting the obligations under this agreement may have access to the personal data.
* Any disclosure of personal data must be made in confidence and extend only so far as that which is specifically necessary for the purposes of this agreement.
* You must ensure that there are appropriate security measures in place to safeguard against any unauthorised access or unlawful processing or accidental loss, destruction or damage or disclosure of the personal data.
* On termination of this agreement, for whatever reason, the personal data must be returned to us promptly and safely, together with all copies in your possession or control.

### General Data Protection Regulations 2018

For the purposes of the Regulations the Authority is the data processor.

The personal information that we have asked you provide on individuals (data subjects) that will be working for you on this contract will be used in compiling the tender list and in assessing your offer. If you are unsuccessful the information will be held and destroyed within two years of the award of contracts. If you are awarded a contract it will be retained for the duration of the contract and destroyed within seven years of the contract’s expiry.

We may monitor the performance of the individuals during the execution of the contract, and the results of our monitoring, together with the information that you have provided, will be used in determining what work is allocated under the contract, and in any renewal of the contract or in the award of future contracts of a similar nature. The information will not be disclosed to anyone outside the Authority without the consent of the data subject unless the Authority is required by law to make such disclosures.

### Equality, Diversity & Inclusion (EDI)

The Client is striving to create a diverse and inclusive working environment where every individual has equality of opportunity to progress and to apply their unique insights to making the UK a great place for living. The Service Provider is expected to respect this commitment in all dealings with Natural England staff and service users.

Suppliers are expected to;

* support Defra group to achieve its Public Sector Equality Duty as defined by the Equality Act 2010, and to support delivery of [Defra group’s Equality & Diversity Strategy](https://www.gov.uk/government/publications/defra-group-equality-diversity-and-inclusion-strategy-2020-to-2024/defra-group-equality-diversity-and-inclusion-strategy-2020-to-2024).
* meet the standards set out in the [Government’s Supplier Code of Conduct](https://www.gov.uk/government/publications/supplier-code-of-conduct)
* work with Defra group to ensure equality, diversity and inclusion impacts are addressed (positive and negative) in the goods, services and works we procure, barriers are removed and opportunities realised.

### Sustainable Procurement

Addressing global sustainability impacts and realising additional community benefits within commercial activity is core to Defra group’s approach, working with its supply chain is key to achieving sustainable outcomes. In addition to supporting Defra group to meet its outcomes we look to understand and reduce negative sustainability impacts associated with our commercial activity and realise benefits.

The Client encourages its suppliers to share these values, work to address negative impacts and realise opportunities, measure performance and success.

Suppliers are expected to have an understanding of the Sustainable Development Goals, the interconnections between them and the relevance to the Goods, Services and works procured on the Client’s behalf.

### Conflicts of Interest

The concept of a conflict of interest includes but is not limited to any situation where an Involved Person or Relevant Body has directly or indirectly, a financial, economic or other personal interest which might be perceived to compromise their impartiality and independence in the context of the procurement procedure and/or affect the integrity of the contract award.

We expect suppliers to mitigate appropriately against any real or perceived conflict of interest through their work with government. A supplier with a position of influence gained through a contract should not use that position to unfairly disadvantage any other supplier or reduce the potential for future competition.

Where the supplier is aware of any circumstances giving rise to a conflict of interest or has any indication that a conflict of interest exists or may arise you should inform the Authority of this as soon as possible (whether before or after they have submitted a quotation). Tenderers should remain alert to the possibility of conflicts of interest arising at all stages of the procurement and should update the Authority if any new circumstances or information arises, or there are any changes to information already provided to the Authority. Failure to do so, and/or to properly manage any conflicts of interest may result in a quotation being rejected.

Provided that it has been carried out in an open, fair and transparent manner, routine pre-market engagement carried out by the Authority should not represent a conflict of interest for the supplier.

# Section 2: The Invitation

## Specification of Requirements

### Background to Natural England

Natural England is the Government’s statutory advisor for the natural environment, playing a vital role in delivering the Government’s 25 Year Environment Plan. This describes an ambitious vision, bringing new opportunities to protect and enhance, and to achieve real outcomes for the environment.

Natural England is a delivery partner on the ‘[Natural Capital & Ecosystem Assessment’](https://www.gov.uk/government/publications/natural-capital-and-ecosystem-assessment-programme/natural-capital-and-ecosystem-assessment-programme) (NCEA) Programme. NCEA is a new Defra Group evidence programme which aims to deliver high quality national and local evidence to assess the state and condition of biodiversity, ecosystems, and natural capital assets across our terrestrial, freshwater, and marine environments.

### Background to the specific work area relevant to this purchase

A State of Natural Capital Report (henceforth referred to as ‘SONC’) will be produced by Natural England in 2023/2024. This report will utilise nationally consistent data sources to report on the State of England’s Natural Capital. In future iterations, this will include new data produced by the NCEA, but for this version we aim to use the best currently available data. A SONC report will consist of:

* A State of the Ecosystem Assets section, including reporting on the quantity and quality of broad ecosystems.
* A policy-focused section, the importance of ecosystems for the delivery of key policy areas will be outlined, with the links to key ecosystem attributes for each policy area highlighted.
* A **risk register**, to demonstrate how at risk our ecosystems are for the provision of key ecosystem services that contribute to mitigating selected risks to UK security and prosperity identified by the 2020 National Risk Register, and the Third UK Climate Change Risk Assessment.

This contract is for production of the risk register section, which will assess risk to asset-service relationships, and link to the State of the Ecosystem Assets section of the SONC. Ecosystem assets are the stock of nature which provides ecosystem services and benefits to people, and in this work are based on the 8 broad habitats of the UK National Ecosystem Assessment (henceforth referred to as ‘UKNEA’). Indicators for the state of natural capital assets can act as an early warning system for action, since there is often a time lag between changes in the state of the assets, and subsequent changes in ecosystem services and benefits. Building on [Natural England’s Natural Capital Indicators](https://publications.naturalengland.org.uk/publication/6742480364240896) (Lusardi et al., 2018), the State of the Ecosystem Assets section of the SONC will report on various indicators of quantity and quality.

Previous attempts at developing risk registers for natural capital (e.g., [Mace et al., 2015](https://besjournals.onlinelibrary.wiley.com/doi/abs/10.1111/1365-2664.12431); [Rees, Ashley & Cameron, 2019](https://pearl.plymouth.ac.uk/bitstream/handle/10026.1/14927/North%20Devon%20Marine%20Pioneer%20Report%202_FINAL_formatted.pdf?sequence=1)) have focused on assets meeting policy targets. However, this approach works better for marine and freshwater assets than terrestrial ones, and in many cases statutory targets for assets are not relevant to the provision of ecosystem services. As this is our first SONC report, we do not yet have comprehensive trends information for individual indicators for ecosystem assets. Instead, we propose to combine existing evidence on the state of indicators and their progress against relevant targets, where this is available, with evidence on drivers of change, interpreted through expert opinion to produce a risk register for natural capital. We are aiming to communicate the risk of a declining natural environment to various policy areas and initiatives.

### Requirements

This contract will produce the technical risk register, which will be an annex of the main SONC report.

Our proposed approach to producing a risk register for natural capital includes drawing on existing evidence and methods, and expert opinion, to report information on drivers of change, risk to ecosystem assets providing key ecosystem services (linked to nationally recognised threats), and natural capital opportunities to mitigate the risks to ecosystem assets.

The purpose of the contract is to provide a technical risk register, which will be used by Natural England to produce summary sheets for 8 ecosystem services that have been identified as ‘key’ to mitigating selected risks to UK security and prosperity. The work in this contract will include:

1. Analysis of the interactions of drivers of change affecting natural capital assets
2. Analysis of changes in natural capital assets
3. Assignment of risk status to assets providing key ecosystem services
4. Linking natural capital opportunities to the mitigation of asset risks
5. Production of natural capital risk user questions
6. Production of technical report

Outputs for the technical risk register should be clear, and understandable, for a specialist within Natural England to utilise to produce visual summary sheets which will form the risk register section of the main SONC report.

### Outputs summary table (more detail on each task is provided in the section below)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Output** | **Task** | **Format** | **Description** | **Timescale** |
| 1. **Analysis of the interactions of drivers of change affecting natural capital assets**
 | 1. Produce agreed list of indirect drivers of change affecting natural capital
 | List | Produce list of 10-15 key global (indirect) drivers of change that are altering the pressures exerted on ecosystems | **First draft of output to be delivered by 29/09/23** |
| 1. Map interactions between direct and global drivers of change
 | Excel spreadsheet | Investigate strength of interactions between the 10-15 global drivers (above) and direct drivers of change affecting ecosystem functions and services |
| 1. Summarise the interactions between direct and global drivers of change
 | Written narrative – 1-2 sides of A4 per direct driver | For each direct driver, cover the indirect drivers having a dominant influence on it in the current UK context, and the interactions between these |
| 1. **Analysis of changes in natural capital assets**
 | 1. Record status, trends, and targets associated with natural capital indicators
 | Excel spreadsheet | Where data exists, record information on current status, trend, policy targets (and progress) for each natural capital indicator | **First draft of output to be delivered by 29/09/23** |
| 1. Summarise impacts of drivers of change on ecosystem assets
 | Table | Update UKNEA table showing impacts of drivers of change on ecosystem assets |
| 1. **Assignment of risk status to assets providing key ecosystem services**
 | 1. Develop asset-service risk scoring framework
 | Flow diagram/decision tree | Develop a framework to assign a risk status to each asset for the provision of a key ecosystem service | **First draft of output to be delivered by 20/10/23** |
| 1. Report asset-service risk status
 | Table  | Utilise the asset risk scoring framework to assign asset risk to key asset-ecosystem service pairs, and develop a method for assigning confidence ratings |
| 1. **Linking natural capital opportunities to the mitigation of asset-service risks**
 | 1. Review natural capital opportunities framework
 | Excel spreadsheet | Research natural capital opportunities and group into an opportunity framework | **First draft of output to be delivered by 10/11/23** |
| 1. Summarise key opportunities to mitigate asset-service risks
 | Written narrative – 1-2 sides of A4 per broad opportunity category | Highlight key natural capital opportunities from this framework that should be prioritised |
| 1. **Production of natural capital risk user questions**
 | 1. Produce user questions for government departments and delivery bodies
 | Question list | Produce user questions to challenge approaches to natural capital risk management | **First draft of output to be delivered by 10/11/23** |
| 1. **Production of technical report**
 | 1. Produce technical report for SONC annex
 | Written technical report | Produce technical report to be published as an annex to the SONC | **First draft of output to be delivered by 10/11/23** |

### Outputs and associated tasks

**OUTPUT 1: ANALYSIS OF THE INTERACTIONS OF DRIVERS OF CHANGE AFFECTING NATURAL CAPITAL ASSETS**

1. **Produce agreed list of global drivers of change affecting natural capital**

This task will produce a list of key global drivers of change which can alter the pressures exerted on ecosystems and their functions and services, validated by a group of experts on resilience and drivers of change. In some reports, these are referred to as indirect drivers of change.

* Produce a longlist of global drivers of change affecting natural capital based on the following sources: [*the UKNEA*](http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx)*,* [*the European Environment Agency work on trends and drivers of change*](https://www.eea.europa.eu/en/topics/in-depth/sustainability-challenges/drivers-of-change-challenges-and-opportunities-for-sustainability-in-europe-1)*, the GO-Science Trend deck (annex 9), and any other sources deemed relevant.* Ensure list of global drivers of change covers the PESTLE framework.
* Organise global drivers into clusters or themes where there are duplicates.
* Produce a shortlist of 10-15 key global drivers of change that cover the PESTLE framework and have the greatest influence on pressures exerted on natural capital assets in England.
* Validate the global drivers of change list through review by 3 or more experts in drivers of change.
1. **Map interactions between direct and global drivers of change**

This task will investigate the strength of interactions between the agreed list of global drivers of change (above), and the 5 direct drivers of change classified in the [IPBES 2019 Global Assessment Report](https://zenodo.org/record/6417333) (*UKNEA equivalents in brackets*): **land-/sea-use change** (*habitat change*); **direct exploitation of organisms** (*overexploitation*); **climate change** (*climate change*); **pollution** (*pollution and nutrient enrichment*); **invasive and alien species** (*invasive species*).

* Adapt the GO-Science Futures Impact Mapping Matrix to investigate interactions between global **and** direct drivers of change.
	+ A clean copy of the current matrix can be found in Annex 5 – this matrix is currently set up to investigate interactions between global drivers of change only. A colleague at Natural England is familiar with the matrix and will be available to answer specific questions on its use and adaptation.
	+ The matrix assesses impacts of ROW # on COLUMN # - write the global drivers in the rows (column C), and the 5 direct drivers in the columns (columns D-H).
* Consult with 5 or more subject and resilience experts through participatory workshop exercises to assign impact scores from 0-5, following the method written in the Futures Impact Mapping Matrix spreadsheet – 0 is no/negligible impact, and 5 is fundamental/extremely high impact.
	+ Note the type of impact in each case e.g., whether the impact is reinforcing or disruptive/mitigating.
1. **Summarise the interactions between direct and global drivers of change**

This task will interpret the findings of tasks 1a and 1b, producing an evidence-led written narrative on the key interactions between global and direct drivers of change.

* Use the Futures Impact Mapping Matrix (task 1b) to identify the global drivers and their interactions having a significant impact on each direct driver.
* Produce an evidence-led written narrative on each direct driver (around 1-page of A4 on each direct driver), based on the likely influence of global drivers and the recent direction of travel of each direct driver in the current UK context. Influence will be assessed by looking at the interactions between global drivers and direct drivers in the short and long-term. The exact timeframes to be represented by ‘short-term’ and ‘long-term’ will be decided in discussion with the project team.
	+ For each narrative, identify policy or legislative interventions or high impact events (e.g., new technology, pandemic) which may significantly shift the direction of travel of the direct driver.
	+ Include discussion of any key interactive effects of global drivers on the direct driver.
	+ Draw on peer-reviewed literature to include examples of how global drivers are altering the pressures exerted on ecosystems in England/the UK.

**OUTPUT 2: ANALYSIS OF CHANGES IN NATURAL CAPITAL ASSETS**

1. **Record status, trends, and targets associated with natural capital indicators**

This task will record information on the natural capital indicators developed by Natural England (full copy of SONC indicators and metrics can be found in annex 6. This is a provisional list and is subject to change – the final indicators list to be used should be confirmed with the project team prior to commencement of this task).

* Produce a spreadsheet to record information on the natural capital indicators. Include the following columns (example below): indicator name, metric, ecosystem asset, current status of indicator, trend of indicator, data/evidence source, policy target, progress towards policy target, comments.
* Clear criteria should be set out to assign ‘trend’ of indicator (positive or not discernible; negative; strongly negative) and ‘progress towards policy target’ (above, at, or just below; below; substantially below).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Indicator name | Metric | Ecosy-stem asset | Current status of indicator | Trend of indicator | Data or evidence source | Policy target | Progress towards policy target | Comments |
| To be copied from annex 6 | To be copied from annex 6 | To be copied from annex 6 | Figure pulled from data or evidence source. e.g., if metric is ‘% of rivers at good ecological status’, current status would be [14%](https://www.gov.uk/government/publications/state-of-the-water-environment-indicator-b3-supporting-evidence/state-of-the-water-environment-indicator-b3-supporting-evidence) |  | Where the status information is reported, & the year(s) the data is from | Is there a policy target? Where is this target reported? e.g., Environmental Improvement Plan |  | To note any additional context or caveats |

* Not all indicators will have policy targets associated with them, and since this is our first SONC report, trends data will be limited. Where the information exists, populate the spreadsheet with information on status, trend, policy target, and progress towards the policy target. If the information does not exist, leave the cell blank and add any relevant context in the comments column. Use indicator data and other available evidence (including UKNEA, 25 Year Environment Plan, Environmental Improvement Plan, and other recent sources) to fill in this spreadsheet.
1. **Summarise impacts of drivers of change on ecosystem assets**

This task involves updating Figure 3.1 from the UKNEA to show how the impact and trend of direct drivers of change on 8 broad habitat types has changed since 2011.

 

UKNEA Figure 3.1

* Update the direct drivers so that they match those listed in the IPBES 2019 Global Assessment Report: *land-/sea-use change, direct exploitation of organisms, climate change, pollution, and invasive and alien species.*
* Develop an approach to elicit responses by experts (including from Natural England) on the **impact** and **trend** of each direct driver of change on the extent and condition of each broad habitat. The experts should include those covering a wide range of different habitat types, and specialists on drivers and pressures who have more cross-habitat viewpoints.
	+ Each impact and trend assessment should be informed by at least 6 experts.
* Get each expert to provide updated scores for impact since 2011 (very high, high, moderate, low), and trend since 2011 (decreasing impact, continuing impact, increasing impact, very rapid increase of the impact).
	+ They should be informed by the indicator spreadsheet (task 2a), their expert knowledge, and any other relevant evidence. This may include reports (UKNEA, IPBES Global Assessment Report, [NECR478: Re-evaluating the sensitivity of habitats to climate change](https://publications.naturalengland.org.uk/publication/6095916432621568) etc.) and primary literature.
	+ Ask experts to briefly justify their scoring for impact and trend, and provide any key pieces of evidence they were relying on.
* Collate the expert scores to generate final impact and trend scores, and update UKNEA Figure 3.1 based on this information.
* Clearly set out the method used to elicit expert responses, and collate/consolidate expert opinion to update trend arrows and impact scores. This must be comprehensible and unambiguous, allowing updated trend arrows and impact scores to be assigned in a consistent way in future SONCs.
* Develop a method to assign a confidence/uncertainty rating to each impact and trend assessment – for example, using completeness of the indicator information for each broad habitat type/ecosystem asset, agreement of expert opinion, and/or expertise of experts consulted.
* Include the confidence rating for impact and trend assessments in the updated table.

**OUTPUT 3: ASSIGNMENT OF RISK STATUS TO ASSETS PROVIDING KEY ECOSYSTEM SERVICES**

1. **Develop asset-service risk scoring framework**

This task will involve developing a method/framework to assign a risk status of ‘low’, ‘medium’, or ‘high’ (as in [Mace et al., 2015](https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.12431)) to **each asset for the provision of a key ecosystem service**. The ecosystem services we have identified as key (based on UK and global risk registers and reports) can be found in annex 4.

* Identify any additional ecosystem services which are key for mitigating risks to UK security and prosperity (maximum 3) which emerge from the drivers of change analysis, and are not covered by the list in annex 4.
	+ Additionally, consult the updated UK National Risk Register (due to be published ‘mid-2023’) to review the list of key ecosystem services contributing to mitigation of risks to UK security and prosperity, and update if necessary.
* Agree list of final key ecosystem services in a meeting with the project team.
* Produce a decision tree and scoring criteria/scoring matrix to assign **asset-service risk ratings**. Following Mace et al., 2015, these should be risk ratings of ‘low’, ‘medium’, or ‘high’ for each asset-service relationship – is the extent/condition of the asset putting the provision of the ecosystem service at risk, and what is the level of this risk?
	+ The ‘low’, ‘medium’, and ‘high’ categories should include a traceable description of what they mean. It may not be possible to quantify the level of risk precisely (in terms of probability and impact, for example), so it is important that as much information as possible is provided to allow readers of the assessment to understand and clearly trace what judgments were made to arrive at the different levels of risk.
	+ An example of a similar decision tree can be found in the [Third UK Climate Change Risk Assessment](https://www.ukclimaterisk.org/wp-content/uploads/2021/06/CCRA3-Chapter-2-FINAL.pdf) (Figure 2.2, Urgency Scoring Framework).
	+ Other reports/documents that might prove useful include [Mace et al. (2015)](https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.12431), [WWF’s Climate and Nature Sovereign Index White Paper](https://www.wwf.org.uk/sites/default/files/2020-07/Climate_%26_Nature_Sovereign_White_Paper.pdf), and the Cranfield University risk assessment method for horizon scanning outputs (annex 7).
* Consider the following factors during the development of this framework:
	+ Natural capital indicators: status, trends, and progress towards targets (task 2a)
	+ Which indicators are linked to which key ecosystem services (annex 6)
	+ Impacts of drivers of change on ecosystem assets (task 2b)
	+ Importance of the asset for the provision of the key ecosystem services (annex 6)

The decision tree and scoring framework must be clear enough to be followed by specialists at Natural England during future updates to the SONC. The decision tree and scoring framework must be comprehensible and unambiguous, allowing updated risk ratings for each asset-service relationship to be generated, in case of changes to the drivers of change impact/trend assessments, or updated indicator information.

1. **Report asset-service risk status**

This task involves using the decision/tree scoring framework developed in task 3a to assign risk ratings to each asset-service relationship: this will be the **asset-service risk rating**.

* Produce a table, with columns representing the 8 key ecosystem services (plus any agreed extras), and rows representing ecosystem assets (to match the 8 broad habitat types from the UKNEA table).
* Assign a risk rating (‘low’, ‘medium’, or ‘high’) to each asset-service relationship, following the decision tree/scoring framework developed in task 3a.
* Develop a method to assign a confidence/uncertainty rating of ‘low’, ‘medium’, or ‘high’ to each asset-service risk.
* Populate the table with both the risk rating and confidence rating for each asset-service risk.

**OUTPUT 4: LINKING NATURAL CAPITAL OPPORTUNITIES TO THE MITIGATION OF ASSET-SERVICE RISKS**

1. **Review natural capital opportunities framework**

This task involves reviewing and updating our natural capital opportunities framework (annex 8) based on insights from the previous tasks.

* Review our framework (annex 8) and identify any additional opportunities needed to fill gaps e.g., targeting specific ecosystem assets, or asset-service relationships that have been assigned high risk ratings.
	+ Any additional opportunities will fit into one of the broad opportunity categories: ecosystem creation and restoration; sustainable management of ecosystems; reducing pressures; natural capital as infrastructure; evidence; finance and investment; other. They will be high-level, general opportunities to mitigate asset-service risks, and be in line with the existing opportunities in our framework.
* Add a row to the spreadsheet (annex 8) for each additional opportunity identified, populating the ‘main opportunities’, ‘specific opportunities’, and ‘type of opportunity’ columns, and assigning the opportunity to ecosystem assets as appropriate.
* Record (in an Excel spreadsheet or Word document) the evidence behind any decisions made – for example, literature used and justifications for assigning opportunities to categories and ecosystem assets.
1. **Summarise key opportunities to mitigate asset-service risk**

This task involves producing a written narrative to highlight key opportunities to mitigate the asset-service risks.

* Produce a written narrative organised by broad opportunity category. For each category, summarise the key natural capital opportunities that can mitigate the asset-service risks.
* For each broad opportunity category section, highlight ‘priority opportunities’ - pull out examples of opportunities which would address the most severe asset-service risks, and/or opportunities which would simultaneously address several asset-service risks.

**OUTPUT 5: PRODUCTION OF NATURAL CAPITAL RISK USER QUESTIONS**

1. **Produce user questions for government departments and delivery bodies**

This task involves producing a list of questions to help users challenge their approaches to managing natural capital-related risk.

* Adapt the user questions from the National Audit Office’s [2021 guidance for climate change risk](https://www.nao.org.uk/insights/climate-change-risk-a-good-practice-guide-for-audit-and-risk-assurance-committees/). These questions are aimed at Audit and Risk Assurance Committees (ARACs), and are limited to climate change risk.
	+ Adapt the questions for use by government departments and delivery bodies rather than ARACs, and to address natural capital-related risk rather than climate change risk.
* Organise the questions under the same headings as in the NAO report: governance and leadership, integration, collaboration, risk identification and assessment, risk treatment, risk monitoring, risk reporting, and continual improvement.

**OUTPUT 6: PRODUCTION OF TECHNICAL REPORT**

1. **Produce technical report for SONC annex**

This task involves production of a full technical report summarising the work carried out throughout this contract. The report will be published as an annex to the SONC report, and should follow the format:

* + 1. Executive Summary
		2. Aim
		3. Methods
		4. Results
		5. Discussion of Issues
		6. Conclusions and Recommendations
		7. References

The supplier must comply with [Natural England publishing standards for commissioned reports (NECR000)](http://nepubprod.appspot.com/publication/5790636781600768) and use the report template provided on the page, following the guidance within it.

The supplier must not make any changes to the templates, including to heading styles and font sizes. The supplier must include a clear section on any third-party data replicated or used to derive the output from, and how, within the report.

### Data Ownership and Intellectual Property Rights

The Intellectual Property Rights resulting from the work shall belong to Natural England. The cover of all reports or drawings will include a statement © Natural England and the date of creation.

When using existing data the supplier should own, or be licensed to use, all Intellectual Property Rights that are necessary to provide the Services. You should seek advice from Natural England on responsibilities for obtaining a data licence for third party data. Note that Natural England requires to know the lineage of your output (i.e., all the datasets that went into the work) and be able to identify what the licence terms for each of the inputs is in order to be able to license the output for use.

The Supplier shall indemnify and keep indemnified Natural England against all actions, claims, demands, losses, damages, costs and expenses and other liabilities Natural England may suffer or incur arising from any infringement or alleged infringement of any third party Intellectual Property Rights except to the extent that they have been caused by or contributed to by Natural England’s acts or omissions.

### Sustainability

Natural England protects and improves the environment and is committed to reducing the sustainability impacts of its activities directly and through its supply chains. We expect the Contractor to share this commitment and adopt a sound, proactive sustainable approach in keeping with the 25 yr environmental plan/our commitments compliant with all applicable legislation. This includes understanding and reducing direct and indirect sustainability impacts and realising opportunities, including but not restricted to; resilience to climate change, reducing greenhouse gas emissions, water use and quality, biosecurity, resource efficiency and waste, reducing the risk of pollution, biodiversity, modern slavery and equality, diversity & inclusion, negative community impacts.

As a delivery partner, the successful contractor is expected to pursue sustainability in their operations, thereby ensuring Natural England is not contracting with a supplier whose operational outputs run contrary to Natural England’s objectives.

**Please** **provide a copy of your environmental policy and any environmental accreditation schemes such as ISO 14001 or EMAS which you have been awarded or are working towards. Please explain what your organisation is doing to incorporate sustainability within its operations.** This may include any details you are able to provide in relation to steps you may be taking to reduce your carbon footprint.

### Contract Management

This contract shall be managed on behalf of the Authority by **Angharad Morgan** angharad.morgan@naturalengland.org.uk **(07435 655449).**

This contract will run from 17th July 2023 to 18th December 2023. The final outputs should be received by 18th December 2023.

Draft outputs should be sent to the project team by the dates indicated for each task in the specification. These will be reviewed by the project team and returned for any changes needed in the final versions.

Once the contract has been awarded, a project initiation call will be arranged to discuss the project with the contract managers, followed by an initial steering group meeting to discuss the proposed method and timeframe for deliverables and tasks. This will be via Microsoft Teams and will take place between 18th-20th July 2023 (date and time tbc).

Following the initial meeting, fortnightly meetings will be established to maintain contact throughout the contract to discuss progress and any issues, these will be held virtually. Before each meeting, the Supplier should provide an agenda, and a bulleted update on progress on the 6 outputs, highlighting any issues with progress in relation to the key tasks and milestones.

We will raise purchase orders to cover the cost of the services and will issue to the awarded supplier following contract award.

### Payment

The Authority will raise purchase orders to cover the cost of the services and will issue to the awarded supplier following contract award.

The Authority’s preference is for all invoices to be sent electronically, quoting a valid Purchase Order number. 50% of the payment will be made when drafts of outputs 1-3 are submitted to Natural England, and the remaining 50% will be made when the final outputs are provided at the end of the contract.

It is anticipated that this contract will be awarded for a period of 5 months to end no later than 18/12/2023. Prices will remain fixed for the duration of the contract award period. We may at our sole discretion extend this contract to include related or further work. Any extension shall be agreed in advance of any work commencing and may be subject to further competition.

### Evaluation Methodology

We will award this contract in line with the most economically advantageous tender (MEAT) as set out in the following award criteria:

Technical – 60%

Commercial – 40%

Evaluation Criteria

Evaluation weightings are 60% technical and 40% commercial, the winning tenderer will be the highest scoring combined score.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Award Criteria | Weighting (%) | Evaluation Topic & Weighting | Sub-Criteria | Weighted Question |
| Technical | 60% | Service / Product Proposal | Quality | 1 QuestionQ1 (27% of technical score available) |
| Experience and knowledge of key staff | 1 QuestionQ2 (27% of technical score available) |
| Methodology and quotation response | 1 QuestionQ3 (27% of technical score available) |
| Capability and resource | 1 Question Q4 (19% of technical score available) |
| Commercial | 40% | Whole life cost of the proposed Contract | Commercial Model | 1 Question **Q5 Include detailed breakdown of costs to deliver the project in the Commercial Response Form.** (100% of commercial score available) |

Technical (60%)

Technical evaluations will be based on responses to specific questions covering key criteria which are outlined below. Scores for questions will be based on the following:

|  |  |  |
| --- | --- | --- |
| Description | Score  | Definition |
| Very good  | 100 | Addresses all the Authority’s requirements with all the relevant supporting information set out in the RFQ. There are no weaknesses and therefore the tender response gives the Authority complete confidence that all the requirements will be met to a high standard.  |
| Good | 70 | Addresses all the Authority’s requirements with all the relevant supporting information set out in the RFQ. The response contains minor weaknesses and therefore the tender response gives the Authority confidence that all the requirements will be met to a good standard.  |
| Moderate | 50 | Addresses most of the requirements with most of the relevant supporting information set out in the RFQ. The response contains moderate weaknesses and therefore the tender response gives the Authority confidence that most of the requirements will be met to a suitable standard.  |
| Weak  | 20 | Substantially addresses the requirements but not all and provides supporting information that is of limited or no relevance or a methodology containing significant weaknesses and therefore raises concerns for the Authority that the requirements may not all be met. |
| Unacceptable | 0 | No response or provides a response that gives the Authority no confidence that the requirement will be met.  |

Technical evaluation is assessed using the evaluation topics and sub-criteria stated in the Evaluation Criteria section above.

Separate submissions for each technical question should be provided and will be evaluated in isolation. Tenderers should provide answers that meet the criteria of each technical question.

|  |  |
| --- | --- |
| Quality | Detailed Evaluation Criteria |
| Q1 Provide details on the measures that will be put in place to ensure quality is maintained throughout the contract. Responses must be a maximum of 4 sides of A4, font size 10.100 points available, minimum score of 50 required. | Key quality requirements include:* Appointment of a named contract manager authorised to act on behalf of the supplier
* Key outputs are delivered on time and to the project officer’s satisfaction
* Methods routinely adopted for quality assurance of data and contract outputs
* Keeping the project officer regularly informed of progress and consulting them when opportunities for innovation arise, or deviations from the project specification may be required
* Contractors keeping in regular contact with the project officer – at least fortnightly updates by email, telephone, or Teams call
* Clear systems and procedures to ensure quality control is maintained throughout the contract
 |

|  |  |
| --- | --- |
| Experience and knowledge of key staff | Detailed Evaluation Criteria |
| Q2 Provide details on the experience and knowledge of key staff identified to work on the contract. Please provide a link to, or excerpt of, a written report produced by key staff. Responses must be a maximum of 4 sides of A4, font size 10, excluding the example.100 points available, minimum score of 50 required. | Key staff must: * Demonstrate a clear understanding of the requirements in the specification and the outputs that we are seeking
* Demonstrate previous experience of creating clear, concise reports
* Experience of developing methods or frameworks
* Experience of using natural capital indicators, evidence, or approaches to assess the state of ecosystem assets
* Experience of working with subject experts and organising participatory workshops (or similar)
* (Desirable) experience of working on risk, risk management, and/or global change
* Demonstrate delivery of previous, relevant good quality products, to time and on budget
* Demonstrate good project planning and management skills
 |

|  |  |
| --- | --- |
| Methodology and quotation response | Detailed Evaluation Criteria |
| Q3 Provide details on how you propose to deliver the project, how this meets our specification, and the main risks and areas of uncertainty. Responses must be a maximum of 4 sides of A4, font size 10.100 points available, minimum score of 50 required. | Responses must include: * An outline proposal of how you propose to deliver the project, which is clear, practical, achievable, and cost-effective.
* Confirmation that your quotation proposal meets our specification. Please ensure your response is clear and well presented. Clearly state any modifications that you propose to our methodology and specification.
* A clear proposed methodology for the main components of the work where we have asked for a method to be developed: **tasks 2b, 3a, 3b**.
* A summary of what you believe to be the main risks and areas of uncertainty, their potential impact on the project and how significant they are, and how you would act to minimise and manage them. This should include contingency plans to cover the unexpected availability of staff.
 |

|  |  |
| --- | --- |
| Capability and resource | Detailed Evaluation Criteria |
| Q4 Provide details on staff capability and resource, and CVs of named staff who will work on the project. Responses must be a maximum of 4 sides of A4, font size 10, excluding the CVs. Each CV must be a maximum of 2 sides of A4, font size 10.100 points available, minimum score of 50 required. | Responses should provide detail of: * Adequate staff resources devoted to the project and with appropriate expertise
* Which key staff will be assigned to each of the tasks and outputs of the project and the number of days each will provide. The project will require knowledge and experience of change in ecosystem assets, natural capital, and methodological report writing. Knowledge and experience of risks, resilience, global trends and drivers of change is also required.
* CVs of named staff who will work on the project.
 |

Commercial (40%)

The Contract is to be awarded as a fixed price which will be paid according to the completion of the deliverables stated in the Specification of Requirements.

Suppliers are required to submit a total cost to provide the deliverables stated in the Specification of Requirements. In addition to this the Commercial Response template must be completed to provide a breakdown of the whole life costs against each deliverable used in the delivery of this requirement.

Calculation Method

The method for calculating the weighted scores is as follows:

* Commercial

Score = (Lowest Quotation Price / Supplier’s Quotation Price ) x 40% (Maximum available marks)

* Technical

Score = (Bidder’s Total Technical Score / Highest Technical Score) x 60% (Maximum available marks)

The total score (weighted) (TWS) is then calculated by adding the total weighted commercial score (WC) to the total weighted technical score (WT): WC + WT = TWS.

### Information to be returned

Please note, the following information requested must be provided. Incomplete tender submissions may be discounted.

Please complete and return the following information:

* Completed Commercial Response template
* Separate response submission for each technical question (in accordance with the response instructions outlined in pages 22-25)
* Sustainability documentation (as outlined on page 20)
* Completed Mandatory Requirements (Annex 1)
* Completed Acceptance of Terms and Conditions (Annex 2)

### Award

Once the evaluation of the Response(s) is complete all suppliers will be notified of the outcome via email.

The successful supplier will be issued the contract, incorporating their Response, for signature. The Authority will then counter sign.

# Annexes

Annex 1. Mandatory Requirements

Annex 2. Acceptance of Terms & Conditions

Annex 3. Standard condensed terms and conditions (attached)

Annex 4. Selected risks to UK security and prosperity, and linked key ecosystem services

Annex 5. GO-Science Futures Impact Mapping Matrix, clean copy & example (attached)

Annex 6. Natural capital indicators for SONC (attached)

Annex 7. Cranfield University (CERF) risk assessment method for horizon scanning outputs (attached)

Annex 8. Natural capital opportunities framework (attached)

Annex 9. GO-Science Resilience Trend Cards (attached)

## Annex 1 Mandatory Requirements

Part 1 Potential Supplier Information

Please answer the following self-declaration questions in full and include this Annex in your quotation response.

Part 1.1 Potential Supplier Information:

|  |  |  |
| --- | --- | --- |
| Question no. | Question | Response |
| 1.1(a) | Full name of the potential supplier submitting the information |  |
| 1.1(b)  | Registered office address (if applicable) |  |
| 1.1(c) | Company registration number (if applicable) |  |
| 1.1(d) | Charity registration number (if applicable) |  |
| 1.1(e) | Head office DUNS number (if applicable) |  |
| 1.1(f) | Registered VAT number  |  |
| 1.1(g) | Are you a Small, Medium or Micro Enterprise (SME)? | (Yes / No) |

Note: See EU definition of SME <https://ec.europa.eu/growth/smes/business-friendly-environment/sme-definition_en>

Part 1.2 Contact details and declaration

By submitting a quotation to this RFQ 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 you 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.

|  |  |  |
| --- | --- | --- |
| Question no.  | Question | Response |
| 1.2(a) | Contact name |  |
| 1.2(b) | Name of organisation |  |
| 1.2(c) | Role in organisation |  |
| 1.2(d) | Phone number |  |
| 1.2(e) | E-mail address  |  |
| 1.2(f) | Postal address |  |
| 1.2(g) | Signature (electronic is acceptable) |  |
| 1.2(h) | Date |  |

Part 2 Exclusion Grounds

Part 2.1 Grounds for mandatory exclusion

|  |  |  |
| --- | --- | --- |
| Question no.  | Question | Response |
| 2.1(a) | Please indicate if, within the past five years you, your organisation or any other person who has powers of representation, decision or control in the organisation been convicted anywhere in the world of any of the offences within the summary below. |
|  | Participation in a criminal organisation.  | (Yes / No)If yes please provide details at 2.1 (b) |
|  | Corruption.  | ((Yes / No)If yes please provide details at 2.1 (b) |
|  | Fraud.  | (Yes / No)If yes please provide details at 2.1 (b) |
|  | Terrorist offences or offences linked to terrorist activities | (Yes / No)If yes please provide details at 2.1 (b) |
|  | Money laundering or terrorist financing | (Yes / No)If yes please provide details at 2.1 (b) |
|  | Child labour and other forms of trafficking in human beings | (Yes / No)If yes please provide details at 2.1 (b) |
| 2.1(b) | If you have answered yes to question 2.1(a), please provide further details.Date of conviction, specify which of the grounds listed the conviction was for, and the reasons for conviction.Identity of who has been convictedIf the relevant documentation is available electronically please provide the web address, issuing authority, precise reference of the documents. |  |
| 2.1 (c) | 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? (i.e. Self-Cleaning) | (Yes / No) |
| 2.1(d) | Has it been established, for your organisation by a judicial or administrative decision having final and binding effect in accordance with the legal provisions of any part of the United Kingdom or the legal provisions of the country in which the organisation is established (if outside the UK), that the organisation is in breach of obligations related to the payment of tax or social security contributions? | (Yes / No) |
| 2.1(e) | 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. |  |

Part 2.2 Grounds for discretionary exclusion

|  |  |  |
| --- | --- | --- |
| Question no.  | Question | Response |
| 2.2(a) | The detailed grounds for discretionary exclusion of an organisation are set out on this [webpage](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/551130/List_of_Mandatory_and_Discretionary_Exclusions.pdf), which should be referred to before completing these questions. Please indicate if, within the past three years, anywhere in the world any of the following situations have applied to you, your organisation or any other person who has powers of representation, decision or control in the organisation |
| 2.2(b) | Breach of environmental obligations?  | (Yes / No)If yes please provide details at 2.2 (f) |
| 2.2(c) | Breach of social obligations?  | (Yes / No)If yes please provide details at 2.2 (f) |
| 2.2(d) | Breach of labour law obligations?  | (Yes / No)If yes please provide details at 2.2 (f) |
| 2.2(e) | 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 2.2 (f) |
| 2.2 (f) | 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) |  |

## Annex 2 Acceptance of Terms and Conditions

I/We accept in full the terms and conditions appended to this Request for Quote document.

Company \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Print Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Position \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Annex 4 – Selected risks to UK security and prosperity, and linked key ecosystem services

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk** | **Linked ecosystem service(s)** | **Source(s)** | **Notes** |
| Risks to habitats and species | Thriving plants and wildlife | Third UK Climate Change Risk Assessment (CCRA3) (Risk N1, N2, N11, N12, N14, N16, N17)World Economic Forum (WEF) Global Risks report – biodiversity loss and ecosystem collapse |  |
| Flooding (coastal, river, surface water)  | Flood protection | CCRA3 (Risk I2, I3, H3, B1)National Risk Register 2020 – environmental hazardWEF Global Risks report – natural disasters and extreme weather events |  |
| Droughts | Plentiful water | CCRA3 (Risk I8, H10, B3)National Risk Register 2020 – environmental hazard |  |
| Heat waves  | Local climate regulation (urban cooling) | CCRA3 (Risk H1, B5)National Risk Register 2020 – environmental hazardWEF global risks report – natural disasters and extreme weather events |  |
| Risks to natural carbon stores, sequestration, and greenhouse gas emissions  | Climate regulation | CCRA3 (Risk N5)WEF Global Risks report – failure to mitigate climate change; biodiversity loss and ecosystem collapse | The risks to nature-based solutions to carbon storage & sequestration |
| Poor air quality  | Clean air | CCRA3 (Risk H7)National Risk Register 2020 - environmental hazard |  |
| Risks to crops, livestock, and commercial trees | Cultivated cropsReared animals and outputsTimber and other wood productsPest and disease controlErosion control | CCRA3 (Risks N6, N7, N8) | Encompasses risks to all provisioning ecosystem services. Linked to food security. |
| Damage to cultural heritage assets | Cultural ecosystem services - heritage | CCRA3 (Risk H11) |  |

*Third UK Climate Change Risk Assessment – CCRA3:* [*Technical Report - UK Climate Risk*](https://www.ukclimaterisk.org/independent-assessment-ccra3/technical-report/)

*World Economic Forum (WEF) Global Risks Report:* [*Global Risks Report 2023 | World Economic Forum | World Economic Forum (weforum.org)*](https://www.weforum.org/reports/global-risks-report-2023)

*National Risk Register 2020: National Risk Register 2020 - GOV.UK (www.gov.uk)*