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Request for Quotation

Living England Analytical Projects

Natural Capital and Ecosystem Assessment (NCEA): Project 1.1 Living England

You are invited to submit a quotation for the requirement described in the specification below.

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

Email: Anne.Stefaniak@naturalengland.org.uk

Date: 17/11/2022

Time: 17:30

Ensure you state the reference number and 'Final Submission' in the subject field to make it clear that it is your response.

Contact Details and Timeline

Anne Stefaniak will be your contact for any questions linked to the content of the quote pack or the process. Please submit any questions by email and note that, unless commercially sensitive, both the question and the response will be published on Contracts Finder.

Action	Date
Date of issue of RFQ	20/10/2022
Deadline for clarifications questions	27/10/2022 at 17:30 BST
Deadline for receipt of Quotation	17/11/2022 at 17:30 BST
Intended date of Contract Award	28/11/2022
Intended Contract Start Date	05/12/2022

Intended Delivery Date / Contract Duration	31/03/2023
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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
"RFQ"	Means this Request for Quotation and all related documents published by the Authority and made available to suppliers
"Contract"	Means the contract to be entered into by the Authority and the successful supplier.

Conditions applying to the RFQ

You should examine your response to the RFQ and related documents ensuring it is complete prior to submitting your completed quotation.

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

The supplier by submitting a quotation is deemed to accept the terms and conditions in the RFQ. Failure to comply with the instructions set out in the RTQ may result in the supplier's exclusion from this procurement.

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.

Clarifications

The Authority reserves the right to discuss, confidentially, any aspect of your quotation with you prior to any award of Contract to clarify matters.

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 in writing and may extend the deadline for receipt in order to give you a reasonable time in which to take the amendment into account.

Conditions of Contract

The terms and conditions attached will be included in any contract awarded as a result of this RFQ process. The Authority will not accept any material changes to these terms and conditions proposed by a supplier.

Specification

The Authority is Natural England. The Authority's priorities are to secure a healthy natural environment; a sustainable, low-carbon economy; a thriving farming sector and a sustainable, healthy and secure food supply. Further information about the Authority can be found at: [Defra](#). [Natural England](#) [MMO](#)

Background to Natural England

Natural England is the government's advisor on the natural environment. We provide practical advice, grounded in science, on how best to safeguard England's natural wealth for the benefit of everyone. Our remit is to ensure sustainable stewardship of the land and sea so that people and nature can thrive. It is our responsibility to see that England's rich natural environment can adapt and survive intact for future generations to enjoy.

Background to the specific Natural England work area relevant to this purchase

The NCEA (Natural Capital & Ecosystem Assessment) Programme

UK Government has set world-leading ambition on protecting our natural assets, internationally through the Convention of Biodiversity and domestically via the ground-breaking 25 Year Environment Plan. Intrinsically linked to the successful delivery of Net Zero, protecting our environmental services has never been more vital.

Achieving these goals is underpinned by the provision of systematic and robust evidence. For the first-time, Defra are developing a programme to deliver up-to-date, UK-wide environmental data to allow for agile policy making grounded in the best available evidence – to truly understand where we are and where we need to get to.

NCEA is a transformative programme to understand the extent, condition and change over time of environmental assets across England's land and water

environments, supporting the government's ambition to improve the environment within a generation.

The Living England Project

Natural England leads on both the development of the Living England model (NCEA Project 1.1) and 25 YEP indicator D1 on habitat quantity, quality, and connectivity (which it is proposed will be the basis for the Environment Bill wider habitats target). The use of remote sensing satellite data to measure and monitor the location and change in habitats is a developing area of work. Developing its capacity to detect change is critical for assessing ecosystem extent over time and change in natural capital ecosystem assets.

Living England produces a map of broad habitat classifications for the whole of England based on up-to date satellite imagery and a collection of ancillary data layers including elevation (and derivatives such as slope, height above nearest drainage), proximity to various features (e.g., woodland, moorland, surface water, roads) and climatic variables. This is carried out by first splitting up England into 14 Biogeographic Zones, based on National Character Areas, which are distinctive areas each with unique environmental conditions. Recent satellite imagery is then identified for each biogeographic zone, which aims to use as cloud-free imagery as possible to create spring and autumn mosaics. A segmentation process is then applied to identify parcels of land with similar appearances in the imagery – forming a series of polygons using an object-based image analysis framework (OBIA). The polygons are then classified using a random forest, machine learning algorithm to identify the likely broad habitat present, informed by the field collected habitat records, satellite imagery and the ancillary datasets. The resulting map is a habitat probability map showing the likely broad habitat class for each polygon, creating a national picture of our natural capital assets. Living England Phase IV was published under an Open Government Licence in 2022 and can be accessed here [Living England Habitat Map \(Phase 4\) | Natural England Open Data Geoportal \(arcgis.com\)](#).

Living England maps broad habitat classes to a modified version of the UK BAP broad habitat classification framework, due to difficulties in assessing all habitats at this resolution using satellite imagery captured at 10 m spatial resolution. The aim of this project is to explore habitats in greater detail and assess their current spectral and environmental characteristics. This will inform improvements to the current Living England methodology and explore if further environmental datasets or rulesets can help to improve the accuracy in which these habitats are mapped.

Requirement

Mapping broad-scale grassland habitat types

This contract will explore how individual grassland habitat types (Acid, Calcareous and Neutral Grasslands and Improved Grassland) may be distinguished from each other using satellite imagery and how this can inform national-scale habitat mapping

across England. This will use field collected habitat records and satellite imagery to explore differences in spectral signatures between the four broad grassland types, and how other environmental datasets or differences in seasonality may be used to distinguish these classes reliably. This work will inform the continued development of the Living England methodology and usability for Agri-environment and landscape scale applications.

Building on previous analyses, the project will analyse ground truth data for the different types of grassland, collected by Natural England's field teams, and explore if there are significant differences in their spectral and environmental conditions to distinguish where these occur. This will need to consider temporal and spatial variations across England, with the view to this being applied on a national scale. The project will explore these differences within one biogeographic zone (Living England's subdivisions of England), to see which factors are important in reliably determining these habitats. It will then develop methodologies for classifying these areas in the object-based framework, exploring the use of indices algorithms and/or machine learning algorithms to assess the best method for reliably determining grassland habitat types. This may be within the main LE random forest classification model or post-processing after initial classifications of 'Acid, Calcareous and Neutral Grassland' and 'Improved Grassland' have been separated out. The project will then produce a technical report to document key decisions and limitations of the chosen approach in comparison to other methodologies trialled, evaluate how reliable the approach is and key considerations when scaling nationally.

The project will then compare the habitat classifications to species-level data records, to scope how these data can be used to validate predictions of grassland habitats. This will include species-level data, such as data records from the National Plant Monitoring Scheme (NPMS) on plant occurrence. This methodology can help inform future validation undertaken by the team and help better understand the reliability of predicted habitat classes using satellite derived imagery.

The data sets required to deliver the work will be provided by Natural England. A data licence will be required between the contractor and Natural England before this data can be released. Contractors will be expected to abide by the contract terms and conditions in relation to all data handling.

Resources required	<p>Data clipped to one biogeographic zone will include but are not limited to:</p> <ul style="list-style-type: none"> • Living England ground truth data • Sentinel-1 and Sentinel-2 Spring and Autumn mosaics 2020/21 • EA Integrated Height Model 10 m • Met office HadUK climate variables 1 km data, 2 yr (2020-21) and 10 yr (2011-21) averages. • BGS soil parent material 1 km • BGS solid geology 1:50000 • NATMAP soils data • National Plant Monitoring Scheme (NPMS) plot species data • Living England Phase IV habitat probability map 2021/22
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	<ul style="list-style-type: none"> • Living England Technical User Guide
Skills required	<ul style="list-style-type: none"> • Earth observation knowledge • R or Python scripting (R Preferred) • Data analysis and Machine Learning • Technical report writing
Outputs	<ul style="list-style-type: none"> • Technical Report documenting the statistical analysis undertaken, methodological steps, key findings, limitations and recommendations • Shapefile of classified grassland types for 1 BGZ • Workflow scripts – annotated reproducible analytical pathways of workflow undertaken
Why is this of benefit to Living England?	<p>A review of whether grassland habitat types can reliably be split out and the feasibility of this on a national scale would be highly valuable for future developments of LE and its applications in supporting Natural England's wider work. This has been explored previously, however has not yet produced a reliable methodology for splitting out the broad classes of grassland. The ability to reliably determine grassland type would improve the usability of the LE habitat map for landscape and Agri-environment teams in determining options for land management and align the LE habitat classification closer to UKBAP broad habitats (and NCEA classification). This would help to provide a more useful product for environmental practitioners for land planning, natural capital assessments and informing biodiversity.</p> <p>Exploring and developing a workflow for validating habitat classes with species level data would be beneficial both to the Living England and Change Detection processes and help to inform how we conduct our quality assurance processes on the final maps and flag areas for targeting further ground data.</p>
Measurable outputs	<ul style="list-style-type: none"> • Spatial dataset of broad grassland types (Acid, Calcareous and Neutral Grasslands and Improved Grassland) and their associated accuracy statistics • List of recommendations • Well documented analytical steps for reproducibility

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

Scope of the specification

This is a one-off requirement; however, there may be scope in future to extend the project where further analysis has been identified or to further explore their incorporation in the Living England standardised methodology. All analyses and justification for decisions taken should be well-documented in technical reports, as well as analytical steps provided in well-annotated programming scripts for reproducibility.

Outputs and Contract Management

Natural England will nominate a Project Officer who will manage the project and serve as the principle point of contact from Natural England. They will be responsible for the day-to-day management of this contract and will coordinate regular meetings to review the work and ensure it meets the projects aims and objectives. As outlined below, meetings will be incorporated into the programme of works to discuss progress and facilitate feedback provision. Meetings will be organised by the successful Tenderer.

The contractor will be expected to appoint a Project Manager who will act as the principle point of contact and will be responsible for the day-to-day management of the project. The contractor will be required to regularly update the Natural England Project Officer on project progress via meetings (held on MS Teams) arranged by the contractor, and when there are any significant issues.

Specific outputs will be required from the contractor during the course of this project. All reports must be produced in accordance with the Authority's templates for publications. The deliverables are to be provided as MS Word (in draft) and PDF documents (once finalised), MS Excel spreadsheets and MS PowerPoint presentations.

Timeline and Deadlines

W/C 5 th December 2022	Inception meeting between project officer and suppliers	Online – MS Teams
Ongoing	Weekly catch-up meetings to discuss any issues	Online – MS Teams
W/C 27 th February 2023	Draft report to project officer	Digital format (MS Word) via email

W/C 13 th March 2023	Final reports and outputs to project officer	Report in a digital format (Pdf) via email. Outputs via email provided as spatial data files (csv, shp, gdb), and programming scripts.
W/C 20 th March 2023	Final meetings with project officer and suppliers	Online – MS Teams
31 st March 2023	Contract completion	

It is anticipated that this contract will be awarded for a period of 4 months, to end no later than 31/03/2023. Prices will remain fixed for the duration of the contract award period.

Quotation Submission

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

Price – 40%

Quality – 60%

Evaluation Criteria

Prices

Prices must be submitted in £ sterling, inclusive of VAT. Please indicate if VAT will apply to your services and at what rate.

Cost Allocation	Year 1			
	Staff / Grade	Day rate	No. of days	Year 1 total
Spectral and environmental analysis				
Classification modelling and workflow scripts				
Species data validation				

Technical report				
Sub-contracts				
Overheads				
Other				
Total (excluding VAT)				
VAT				
Total (including VAT)				

Quality criteria

Criteria	Weighting	Details
Experience and Expertise	40%	Please provide details of your teams' member's expertise, previous experience and, if applicable, examples of similar projects worked on, relevant to this requirement. Please include abridged CVs of proposed members of team.
Methodology	40%	Please outline your proposed methodology for delivering the 'Mapping broad-scale grassland habitat types' project.
Project Management	20%	<p>Please detail how you intend to manage this contract, including any consortium or sub-contracting arrangements, to ensure that project tasks and timescales are achieved. Your response should:</p> <ul style="list-style-type: none"> • Include Gantt chart, including the deliverables, critical pathways, and project dependencies, demonstrating how you will deliver the scope of services stated within the Specification of Requirements. • Provide details of how you intend to quality assure work undertaken as part of this contract and outputs, so that deliverables are provided efficiently, to a high standard, and on time

Scoring criteria

Score	Justification
For a score of hundred (100):	Excellent - Response is completely relevant and excellent overall. The response is comprehensive, unambiguous and demonstrates a thorough understanding of the requirement and provides details of how the requirement will be met in full.
For a score of seventy (70):	Good - Response is relevant and good. The response demonstrates a good understanding and provides details on how the requirements will be fulfilled.
For a score of fifty (50):	Acceptable - Response is relevant and acceptable. The response provides sufficient evidence to fulfil basic requirements.
For a score of twenty (20):	Poor - Response is partially relevant and/or poor. The response addresses some elements of the requirements but contains insufficient / limited detail or explanation to demonstrate how the requirement will be fulfilled.
For a score of zero (0):	Unacceptable - Nil or inadequate response. Fails to demonstrate an ability to meet the requirement.

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.

By submitting a quotation 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 contractor 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.