Department for Environment Food & Rural Affairs

www.gov.uk/Defra

Appendix 2 – Call-Off Procedure:

for The Research, Development and Evidence Framework 1

Tender Reference: C5574

Date: 17 January 2023

1.0 Request for Proposal

1.1 The following document is to be used as a Call-Off template to be sent to all Contractors on a sub-lot by the Project Manager of the Contracting Authority for completion and return in accordance with the Call-Off procedures detailed in the Form of Agreement.

Research, Development and Evidence Framework **REQUEST FOR PROPOSAL**			
Project title:	Development of a Predictive Agricultural Land Classification Map for England		
Call off Reference:	**RDE118**		
ATAMIS project ref (if applicable):	**C5574**		
Date:	**17 January 2023**		
Contracting Authority (Defra and its arms-length bodies etc)	Defra, Natural England		
Project Manager:	[redacted]	**Phone number:**	[redacted]
Authorized by:	[redacted]	**Email:**	[redacted]
Commercial Contact (if applicable):	[redacted]		
Project Start Date	29 March 2023		
Project Completion Date	Week ending 29 March 2025		
For any projects over the direct award threshold, full competition is required (i.e. all contractors on the Sub-Lot are invited to quote).	**Direct Award**		**Mini-comp** X

Call off from Sub-Lot number (please tick)	2.4
Proposal return date: *(no less than 10 working days from current date)*	17 February 2023

Evaluation criteria:		
Contractors: Failure to meet any minimum score threshold stated will result in the bid being removed from the process with no further evaluation regardless of other quality or price scores.		
Quality	**Weighting**	**70%**
Price	**Weighting**	**30%**
Quality Sub-Criteria Weightings: (Indicative only)		
Approach & Methodology	Please detail the methodology to be adopted in order to meet the project aims and objectives. Set out in detail each element of the methodology and how this will be carried out, including the approach, design, analytical strategy for each task. Your response should demonstrate a clear, practical, achievable, and cost-effective methodology to deliver these requirements and should provide information in sufficient detail to allow a full appraisal of the suitability of the approach to deliver the project. Your response should also demonstrate the details of the final output in terms of file structure, data transfer and accessibility	**50%**
Proposed Staff (inc Pen Portraits) and Contractor's experience/accreditations.	Provide details of the proposed project team and team structure that you intend to use to deliver this project, including any sub-contractors and/or associates. Provide CVs for all staff to support your response and include a table showing the staff days expected to be spent on the project per task, this table should match the staff days in the cost proposal Please identify the individual(s) who will have overall management responsibility for the delivery of this project and nominate a representative for day-to-day contact with the Authority's Project Manager. CVs for all staff should be submitted to support the response and include a table showing the staff	**10%**

	days expected to be spent on the project per task, this table should match the staff days in the cost proposal	
Project Management (including project plan)	Provide details on project management arrangements including day to day working for the project, the proposed timetable for the project, and a Gantt chart presenting milestones, deliverables, timelines and inter-dependencies	**20%**
Risk:	Complete a risk register and identify project risks for delivering against the aims and objectives listed in the specification, as well as details of the mitigation measures to be put in place to minimize risk.	**10%**
Health & Safety	N/A	**N/A**
Sustainability – Mandatory	The Authority has set itself challenging commitments and targets to improve the environmental economic and social impacts of its estate management, operation, and procurement. These support the Government's green commitments. The policies are included in the Authority's sustainable procurement policy statement published at: https://www.gov.uk/government/publications/defra-s-sustainable-procurement-policy-statement Within this context, please briefly explain your approach to delivering the services and how you intend to reduce negative sustainability impacts. Please discuss the methods that you will employ to demonstrate and monitor the effectiveness of your organization's approach for this requirement. Please provide details on: - What your organization is doing to incorporate sustainability - What you will do to assess the environmental impact of completing this project and provide mitigations - how your organization goes about minimizing the environmental impact of transport in delivery, particularly emphasising any aspects that could be relevant to the delivery of this contract - Provide information concerning the community (socio-economic) impacts associated with the delivery of this contract	**10%**

Specification

1. Description of work required – overall purpose & scope (including reporting requirements)

Introduction and Policy context

Aim

The Government recognises that soil is one of our greatest natural assets and that healthy soil underpins a range of environmental, economic and societal benefits, including, agricultural production, as well as aspects such as biodiversity, carbon storage and flood mitigation. Protecting and improving soil is essential for supporting these benefits and preventing the negative impacts caused by its degradation through inappropriate land use and management.

The Government is committed to protecting our best and most versatile (BMV) agricultural land from inappropriate development (25 YEP). This is set out in the National Planning Policy Framework (NPPF) and associated Planning Practice Guidance (PPG) as well as in the National Policy Statements (NPS), which all set planning policy for Nationally Significant Infrastructure Projects. Natural England is a statutory consultee in the planning system providing advice to planners and others on the protection of BMV agricultural land. This relies on the Agricultural Land Classification (ALC) system for the assessment of agricultural land quality. The ALC system is jointly owned by Defra and the Welsh Government; the English component is managed on behalf of Defra by Natural England. The Welsh ALC map component has recently been updated by the Welsh Government.

Objectives

ALC surveys are undertaken at a range of scales from detailed to reconnaissance. For land use planning and the emerging Net Zero decision making requirements, a new ALC map for England is essential to replace the existing 1960's provisional ALC map. This map predates the subdivision of Grade 3 land and does not use the current ALC guidelines or the published national soil map as its basis. The new strategic scale map will need to be developed in accordance with the current ALC guidelines and criteria (MAFF, 1988[1]), with the Grade 3 land subdivided into Subgrade 3a and 3b.

Requirements

As a joint England and Wales system it is important that the ALC map for England is calibrated alongside the Welsh work using similar principles, though it is recognised that England has a bigger geographic area and complexity that will throw up potentially new and different challenges. The new strategic scale ALC map for England will also be a key contributor to Natural England's and Defra's wider work on sustainable land use and natural capital and ecosystem service assessment, and the Defra group's Natural Capital and Ecosystem Assessment (NCEA) work.

New ALC map outputs will need to be compatible for use on GIS systems. A longer-term aim will be to present this new ALC map as an interactive (and updateable) tool to sit on a public facing Natural England or Magic.gov.uk website, similar to that already available for ALC in Wales.
All component digital data attributes and coding will need to be made available for internal Defra family use under the LandIS agreement, for the new ALC map to be freely available as a shapefile for download under Open Government License and an attributed version for internal and external

1 A CONSULTATION ON A LIMITED REFRESH OF THE ALC GUIDANCE IS CURRENTLY PROPOSED.

use under LandIS or non-commercial external use. This includes but is not limited to, an assessment of ALC grade and thresholds by climate, gradient, depth, texture, stone content, wetness class, drought, exposure, rock outcrop.

Under the LandIS agreement, contractors for Defra projects can have access to the LandIS data.

Methods

The tasks envisaged in this project will form the key activities to produce a new strategic scale (minimum 1: 250,000 user scale) ALC map for England.
The methodology will use soil, topography and climate datasets based on an approach similar to that developed by the Welsh Government (see https://gov.wales/agricultural-land-classification-predictive-map), utilizing a 50m grid approach using the principles and experience gained in developing the Welsh mapping and the work on climate change using ALC data in Defra project SP1104[2]. The final map product should edge match at the England/Wales boundary.

A series of tasks is envisaged, many of which will overlap and should be harmonized:

- **Task 1** Develop Preliminary Soil and ALC Test Maps including:
  - Assessment of Soil Association Composition by Soil Surveyors
  - Preliminary ALC Base-Map for England
  - Report on likely accuracy of Preliminary ALC Base Map for England
- **Task 2** review and report on gaps, data weakness and the further refinement required
- **Task 3** refine mapping by developing, testing and incorporating additional data
- **Task 4** develop a project plan for follow up work to cover Tasks 5 to 9 described below
- **Task 5** consider improvements to mapping accuracy, for example by incorporation of detailed ALC and associated soil data held by Natural England, and any other available data
- **Task 6** using the output of Task 2 above, consider what would be required to capture data that is currently weak or has poor spatial distribution
- **Task 7** validate the relationship between modelled land quality and actual land use
- **Task 8** validate the final product by agri-specialists
- **Task 9** delivery and dissemination mechanisms

Task 1: Develop Preliminary Soil and ALC Test Maps

T**ask 1a** Prepare for the whole of England - gridded soil data already captured by Cranfield University (including as appropriate the recent additions of soil data such as digital soil series maps, new Welsh data etc – to be discussed and agreed). The aim at the end of task 1 for the soil and other ALC data to be on a 50m grid basis but recognising that for early testing a 200m grid may be less time consuming and more practical
Particular attention will need to be paid to:

i) the composition and use of soil series within each mapped soil association
ii) detail of the standard soil series profile descriptions to ensure that these are representative and complete and can provide the basis for accurate assessment according to the ALC system; and,

2 THE IMPACT OF CLIMATE CHANGE ON THE SUITABILITY OF SOILS FOR AGRICULTURE AS DEFINED BY THE AGRICULTURAL LAND CLASSIFICATION.

iii) soil phases captured within the detailed soil series mapping, such as rocky, shallow or sandy phases. In particular, the assessment of soil wetness and drought limitation which is especially sensitive to variation in soil profile characteristics and climate

When preparing the 1:250,000 soil association map (NATMAP), two products will be required for consideration:

1. Assessment of ALC criteria based on the dominant soil association by area within each 50m square selected to represent the whole 50m square.
2. Assessment of ALC criteria based on selecting the lowest class that at least 50% of the area is above.

1b) Assessment of Soil Association Composition by Soil Surveyors

Whilst the intention is for this to be a nationally consistent map, for ease of data management and analysis and to provide assessments based on more locally representative soil series and standard profiles, separate but integrated regional sub-analyses, in addition to national reporting, should be investigated. For example, some soil associations might be adjusted in series composition or use according to regional location and/ or the standard soil profiles used to reflect a more regional approach.

Review the Test Map outputs against existing survey data / surveyor knowledge to establish approach to soil association composition should be adopted. Identify anomalies with particular soil associations on a regional basis for further investigation.

Bring together Natural England ALC specialists and former Soil Survey of E&W surveyors who were involved with the original national soil mapping program in England. Using information on the distribution of soil auger bores, and soil series from detailed soil mapping for each of their associations, detailed ALC survey (post 1988) data, and using their knowledge of the soil associations and how these were expressed regionally across England, adjust the component soil series and proportions of each to more accurately represent their expert assessment of the soil association as it occurs. This could follow the approach taken in Wales as detailed in "Welsh Soil Associations", together with the results. Two new datasets are to be derived, namely:
ENGLISH_NATMAP_ASSOCIATIONS which gives the percentage of each soil series in the soil associations (regionalise by regions and create a separate association component and counties).
A Field Capacity Days (FCD) range (FCD, FCD2) to allow for the variation in soil association composition which may be necessary in particular soil associations (such as MANOD), which is known to change as the prevailing climatic conditions become wetter.

ALC_SERIES_PROPERTIES_ENGLAND which encapsulated the properties required on a series basis for the ALC classification process.

1c) Preliminary ALC Base-Map for England

Using the outputs of task 1a and 1b, plus climate data and gradient layers prepare map (as GIS shapefiles, associated attributes, and images) to assess seven of the ALC criteria: climate; wetness; drought; soil depth; stoniness; texture and slope.
The resulting map layers and the preferred NATMAP soil series composition approach will be combined to produce a preliminary new ALC base-map for England.
Reporting of the uncertainty which arises due to the scale and data limitations should be undertaken. The methodology to create each map layer will be fully documented and agreed with Natural England.

1d) Report on likely accuracy of Preliminary ALC base map for England

The Preliminary ALC base map for England should be compared with other independently derived ALC data such as the original English Provisional ALC map, ALC results from detailed site surveys (post 1988), existing estimates of the proportions of the ALC grades using NSI points (ADAS,1994) and Defra strategic scale BMV likelihood mapping and datasets (all available from Natural England). Provide a report giving a preliminary indication of accuracy of this initial strategic scale ALC map output, and to point to where further refinement is needed. Careful consideration of the weighting to be given to certain comparison datasets may be needed, such as the Provisional ALC Map due to it predating the 1988 revision. Anomalies should be reported, especially regarding differences between detailed ALC survey (post 1988) and the new ALC base map and edge-matching at the England/Wales boundary. These differences are then to be further assessed in Task 2

Task 2 Review and report in more detail on what further refinement is required, considering the reliability and representativeness of the soil data used, and explore where significant data weakness exists. It may be certain soil types, soil properties or geographic areas have better or worse data. The purpose is i) to capture knowledge on the quantity and quality of soil data in England (and Wales, where appropriate) potentially available for ALC mapping (or similar capability exercises) ii) identify how gaps may be filled. iii) Identify opportunities for other data that could help improve ALC accuracy, for example underlying geology.

This task should also identify locations where significant changes to mapped soil types may be occurring rapidly over time which would influence land capability, for example the wastage of lowland peats and erosion of shallow soils over rock, and to report on how best to factor this into the ALC mapping.

Task 3 Refine mapping by developing, testing and incorporating additional data, to include, as appropriate, the following:

- Flood risk limitation (in accordance with the ALC criteria)
- Geology (see above in task 2)
- Rock outcrops (to help denote Grade 5 land)
- Wind exposure
- Frost risk
- Urban land
- Non-agricultural
- Micro-relief
- Incorporation of detailed ALC Surveys

This should be supplemented by any additional data layers or analysis identified in task 2. The methodology to create additional data layers or enhance existing layers should be fully documented and agreed with Natural England in advance of incorporation, and the benefits in terms of improved map accuracy assessed and reported.

Task 4 Develop a project plan for follow up work to cover Tasks 5 to 9 described below.

Task 5 To further improve strategic mapping accuracy, consider the incorporation of a) existing soil data from ALC surveys and other soil data held by Natural England, from auger boring, pit and laboratory analyses; (b) other soil data in ALC surveys (e.g. wetness classes present, topsoil stone estimates, clinometer gradient records etc.) to improve accuracy; c) any other available data. Compare ALC classification with existing detailed ALC and soil mapping data.

Task 6 Based on the output of Task 2 above, consider what would be required to capture data that is currently weak / poor spatial distribution. As part of this task consider a range of novel

methodologies (e.g., predictive soil mapping models), combining field survey, transects and site investigation together with computer modelling and machine-learning techniques able to extend, geographically, soil characteristics out from areas of known detailed mapping into wider areas where only less-detailed information are available, together with assessments of data confidence.

Task 7 Prepare a historic time sequence of Basic Payment System (BPS) crop codes related to ALC grade and soil type / climate. This would give a useful validation of the relationship between modelled land quality and actual land use.

Task 8 Validation of the final product by agri-specialists.
Divide England into regions and assemble agri-specialists to visually assess the map and identify areas / soil series where the grading does not appear to reflect the land use history / farming systems present. Task 7 may help with this. Where differences are identified, assess the reasons for the grading against available soil information sources to determine the soil property information requires updating on a regional or national basis; or whether a mask may be necessary to manually change the grade – this could be where there are soil depth and/ or pattern limitations, for example. Re-run the map if necessary and assess where the modifications have updated the map to reflect the findings of this Task. Identify soil series for further investigation.

Task 9 Delivery and dissemination mechanisms.
Prepare a final report outlining work done so that the methodology at each step is fully documented and aligns with the outputs (interim and final map products). Reporting of the uncertainty that arises due to scale and data limitations should be undertaken. Agree a simple dissemination programme /communications plan. Identify likely audiences and a corresponding range of communication products, to ensure the outputs are communicated successfully.

2. Required skills / experience from the contractor and staff. Include any essential qualifications or accreditations required to undertake the work.

Your response should include details of each team member's relevant experience in meeting the requirements of this contract. Your response should demonstrate:

- The knowledge and experience to successfully deliver this specification e.g., having recognised skills in ALC survey work
- good understanding of the technical challenges of ALC surveys and grading
- that the team's skills, knowledge and experience are relevant to meeting the project requirements including relevant experience and qualifications of individuals.
- a proven track record in their respective fields of expertise; any specialist expertise and prior knowledge and experience that can add value.
- that appropriate measures are provided and justified, should key individuals become unavailable during the life of the Contract.

The following supporting documentation is required:

- Risk Assessments
- Lone working practices (attending meetings out of the office- travel/staying overnight)
- Research Methodologies
- VAT registration number
- Public Liability Insurance (meeting of past surveyors – roundtable discussion - task 1b and task 8)
- Professional Indemnity Insurance

- Licenses (LandIS agreement and other licenses for other data if required)
- CV's
- Past Work

3. Proposed program of work and payment table (Detailing specific tasks, key milestones, deliverables & completion date where appropriate)

Task	Outputs	Task owner	Format of meeting	Location of meeting	Completed week ending	Duration	Payment schedule /Fee Payable
Set up and agree timetable, including frequency/ dates of regular progress meetings	Project timetable	Defra project manager and Contractor	Video conferencing	Online (MS Teams/ Zoom)	10/04/2023	1 week	
Task 1 Agree datasets to be used for preliminary ALC test map and accuracy assessment using known ALC data		Contractor	In person	Location TBC	10/04/2023	1 week	
Task 1 Preliminary ALC test map created, and an accuracy assessment completed using known ALC data	Preliminary ALC base map Accuracy assessment Update report	Contractor	Video conferencing	Online (MS Teams/Zoom)	29/01/2024	10 months	[redacted]

Task 2 Review reliability of preliminary ALC product and report on what further refinement is required	Report summary	Contractor	Video conferencing	Online (MS Teams/Zoom)	01/04/2024	2 months	[redacted]
Task 3 Refine and improve accuracy of ALC mapping, incorporating additional datasets identified in task 2		Contractor	Video conferencing	Online (MS Teams/Zoom)	29/04/2024	1 month	
Task 4 Develop a project plan and milestones for tasks 5-9	Project plan	Contractor	Video conferencing	Online (MS Teams/Zoom)	14/05/2024	2 weeks	
Complete tasks 5-9 including a draft final report		Contractor	Video conferencing	Online (MS Teams/Zoom)	31/03/2025	11 months	
Task 5- incorporation of additional data to ALC maps	Draft report	Contractor	Video conferencing	Online (MS Teams/Zoom)	09/09/2024	4 months	

Task 6 – new data capture/development required	Draft report	Contractor	Video conferencing	Online (MS Teams/Zoom)	09/09/2024	4 months	
Task 7 – prepare historic time sequence of basic payment scheme	Time sequence of BPS (included in draft report)	Contractor	Video conferencing	Online (MS Teams/Zoom)	14/08/2024	3 months	[redacted]
Task 8 – Model validation	Workshops/meetings with agri-specialists	Contractor	In person	Location TBC	27/01/2025	4 months	
Task 9 - Final reports on mapping, datasets and metadata supplied to Defra and Natural England	Final report Dissemination programme Communications plan	Contractor	Video conferencing	Online (MS Teams/Zoom)	31/03/2025	2 months	[redacted]

4. Risk

Note: *This section is to be used to detail any risks or key elements relevant to the project i.e. Programme deliverable dates, workshops or external requirements, data, consultees, stakeholders etc that could impact the success of the project if they are not managed.*

General commercial and sustainability risks to the project include:

- [redacted]
- [redacted]

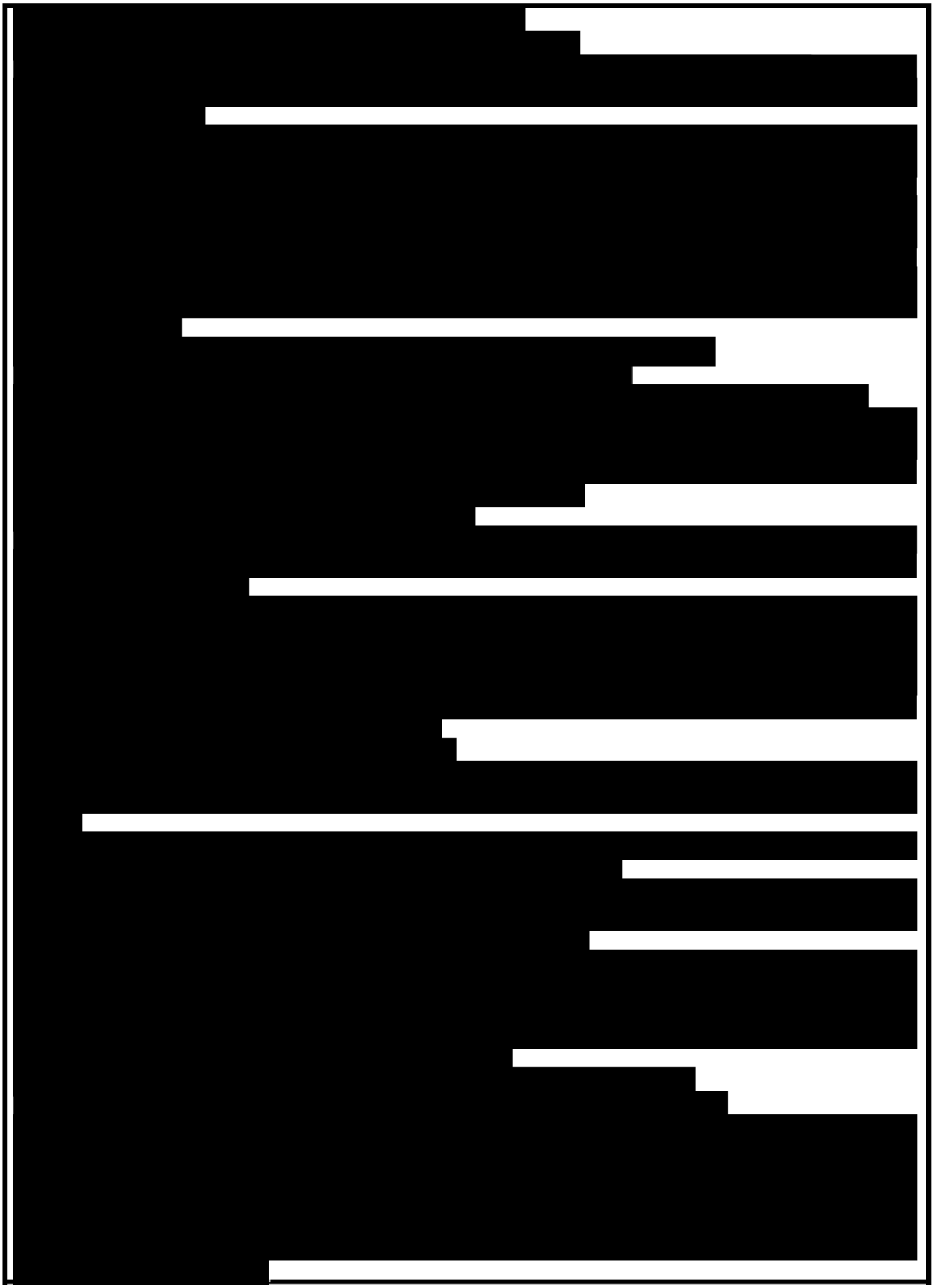
[redacted]

5. Health and Safety Requirements ***Note**: Only include if high risk activities being undertaken e.g., working at height, near or over water). Do not request RAMS or similar risk assessments are returned with submissions. These should only be requested at contract award.*
No high-risk activities are being undertaken (project is largely desk-based).
6. Further Sustainability Considerations
Not Applicable

2.0 Proposal

2.1 The following document is to be used as a Call-Off template to be sent to all Contractors on a sub-lot for completion and return in accordance with the Call-Off procedures detailed in the Form of Agreement.

Research, Development and Evidence Framework 2 **PROPOSAL**
To be completed by the Contractor
Contractor's Name: Cranfield University **Call off Reference: RDE118** **Sub-Lot Number:** **Date:17th February 2023**
Note: Your proposal must not exceed 6 sides of A4 plus the Costs Proposal in Section 7 (unless otherwise indicated in project client's specification above). Attachments must not be included unless requested except for a programme diagram and full cost schedule if you consider these would support your proposal. **Do not make or append Caveats and Assumptions in your proposal – any points of uncertainty must be raised as a clarification point prior to submitting the proposal. Where assumptions are to be made, these will be stated by the Authority's Project Manager.**
1. Approach & Methodology (1500 words)



[redacted]

[redacted]

2. Project Management (inc Project plan). A project plan may be provided as an attachment with your reply (delete if not required) (500 words)

[redacted]

3. Proposed Staff who will do the work and briefly state previous relevant qualification/experience. Contractor's experience of undertaking similar projects and accreditations (if requested). (500 words)

[redacted]

4. Risk

Note: *This section is to be used to detail any risks relevant to the project i.e. Programme deliverable dates, data, consultees etc.* **(300 words)**

[redacted]

[redacted]

5. Health & Safety (only complete if requested in defined evaluation criteria)

[redacted]

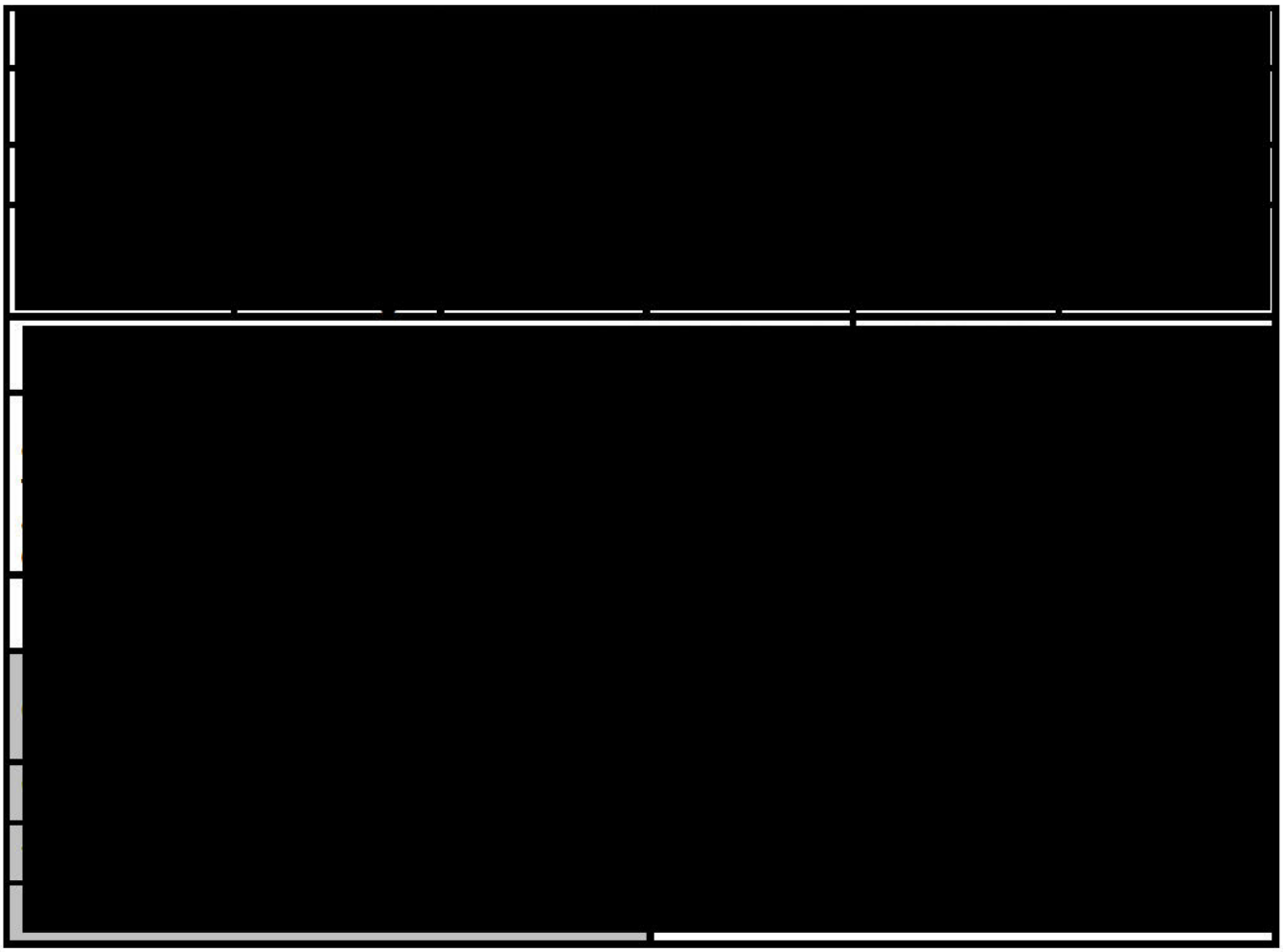
6. Sustainability (only complete if requested in defined evaluation criteria) **500 words**

[redacted]

7. Cost Proposal

Please use day rates, including any applicable discounts, as agreed under the framework contract. A full cost schedule may be attached to support the costs summarised below.

[redacted]



3.0 Order Form

3.1 The following document is to be completed by the Contracting Authority and sent to the Contractor for counter signature to form a Call-Off contract.

Research, Development and Evidence Framework 2
ORDER FORM

Project title: Development of a predictive Agricultural Land Classification map for England

Call off Reference: RDE118

Atamis ref: C5574

Date: 13/04/2023

THE Contracting Authority:	Department for Environment, Food and Rural Affairs. Seacole Building, 2 Marsham Street, London, SW1P 4DF.
THE CONTRACTOR:	Cranfield University. Ciollege Road, Cranfield, Bedfordshire, MK43 0AL.

APPLICABLE FRAMEWORK CONTRACT

This Order Form is for the provision of the Call-Off Deliverables and dated **13th April 2023**. It's issued under the Research Development & Evidence Framework Agreement reference 30210 for the provision of **Development of a predictive Agricultural Land Classification map for England.**

CALL-OFF SUB-LOT: 2.4

CALL-OFF INCORPORATED TERMS The following documents are incorporated into this Call-Off Contract. Where numbers are missing we are not using those schedules. If the documents conflict, the following order of precedence applies:

1. Defra Framework Terms and Conditions;
2. Request for Proposal;
3. Proposal;

No other Supplier terms are part of the Call-Off Contract. That includes any terms written on the back of, added to this Order Form, or presented at the time of delivery.

CALL-OFF START DATE: 13th April 2023

CALL-OFF EXPIRY DATE: 29th March 2025

CALL-OFF INITIAL PERIOD: 2 Years

Each Party hereby confirms its agreement to the terms contained in this Agreement.

Signed for and on behalf of the Supplier ***Cranfield University***	**Signed for and on behalf of the Authority** ***DEFRA***