Standard Contract for Goods and/or Services - Order Form

1. Purchase Order Number	Not known	
2. Customer	Natural England	
3. Contractor(s)	Nottingham Trent University	
4. Defra Group Members	The following Defra Group members will receive the benefit of the Deliverables: Natural England, Defra, Environment Agency	
5. The Agreement	This Order is part of the Agreement and is subject to the terms and conditions referenced at Appendix 1 and shall come into effect on the Start Date. Unless the context otherwise requires, capitalised expressions used in this Order have the same meanings as in the terms and conditions. The following documents are incorporated into the Agreement. If there is any conflict, the following order of precedence applies (in descending order): a) this Order; b) the terms and conditions at Appendix 1; and c) the remaining Appendices (if any) in equal order of precedence.	
6. Deliverables	**Applicable Deliverables**	**Goods Only:** ☐ **Services Only:** ☒ **Good and Services:** ☐
	Goods	*NA*
	Services	Description: To carry out the services as set out in Appendix 2 – Specification / Description To be performed at ***the Contractor's premises*** Date(s) of Delivery: ***The period of 17 weeks: commencing 02/12/2024 to 31/03/2024.*** Work activities to be performed subject to contractor's discretion.
7. Start Date	*02/12/2024*	

8. Expiry Date	*31/03/2024*
9. Charges	The Charges for the Goods and/or Services shall be as set out in Appendix 3 – Charges. The Charges are fixed for the duration of the Agreement.
10. Payment	Payments will be made to the successful contractor, with payments being made in pounds by BACS transfer using the details provided by the supplier on submission of a compliant invoice.
11. Contractor's Liability Cap (Clause 13.2.1)	A sum equal to £500,000
12. Customer's Authorised Representative(s)	Redacted under FOIA Section 40 Personal Information
13. Contractor's Authorised Representative	
14. Optional Intellectual Property Rights ("IPR") Clauses	The Customer has chosen **Option B** in respect of intellectual property rights provisions for the Agreement, as set out in the terms and conditions, which can be downloaded from the link in Appendix 1 – Terms and Conditions.
15. Progress Meetings and Progress Reports	• The Contractor shall attend progress meetings with the Customer every month from December 2024 to March 2025.
16. Address for notices	Redacted under FOIA Section 40 Personal Information
17. Key Personnel of the Contractor	

18. Procedures and Policies	The customer's policy relating to sustainability is outlined in the specification below in Appendix 2
19. Special Terms	***NA***
20. Additional Insurance	**NA**
21. Further Data Protection Provisions	The further data protection provisions contained within Annex 4 of the terms and conditions are applicable to this Agreement where indicated below: **Yes:** ☐ **No:** ☒

Redacted under FOIA Section 40 Personal Information

Appendix 1: Terms and Conditions

The Customer's Standard Good & Services Terms and Conditions which can be located on the Natural England Website and which are called 'Standard goods and services terms and conditions (£10,000 to £50,000)' and can be downloaded using this link.

Requirement

Rationale and Background

Soil health refers to an integrated measure of how well soils function to deliver the services best suited to them. One area where there is an evidence gap is in understanding the extent to which soils are exposed to agricultural pesticides and other biologically active contaminants, and the impact that such chemicals have on soil ecosystem processes. As part of the government's Natural Capital and Ecosystems Assessment programme, Natural England is an extensive soil sample collection programme under the England Ecosystem Survey. The ambition is to, every 5 years, collect 4-6 bulked samples from 16m by 16m soil plots, and analyse these for a range of physical, chemical and biological properties.

One of the biological assessments applied in the programme is metabarcoding of 16SrRNA and ITS genes to provide a profile of the microbial community at each of these plots. There is much evidence that soil microbial communities change in response to exposure to pesticides, either disadvantaging certain taxa, or promoting the abundance of others which benefit from using the chemical as a substrate, or from elimination of competitor taxa. Indeed, some studies show that certain taxa are almost exclusively indicative of application of particular pesticides.
Furthermore, the microbial community has the capacity to integrate, over time, the impacts of regular applications of one or more pesticides (as is becoming increasingly common practice), resulting in a longer-term detectable signal of the applications. Finally, if we can link application of pesticides to changes in the abundance of microbial taxa, we may be able to identify the functional roles of these taxa in delivering specific ecosystem services (e.g. nitrogen fixation, ammonia oxidation, methanotrophy etc.), and thereby begin to model the impacts of pesticides on these important ecosystem function across the wider environment.

Specification

To progress this idea, we are commissioning a project with the following objectives:

To agree a limited range of ~5 commonly applied pesticides to investigate, probably based on the FERA pesticide usage survey. These are likely to include the following pesticides, but priority should be given based on likely usage in England and consider the extent to which microbial responses have already been well characterised for English soils.

- a fungicide (Tebuconazole, Folpet, Prothioconazole)
- A herbicide (Glyphosate, diflufenican/flufenacet, fluroxypyr)
- An insecticide (Lambda-cyhalothrin: 70% of total treated area; Esfenvalerate:14% of total treated area; Tau-fluvalinate, Pirimicarb:
- A growth regulator (Chlormequat)

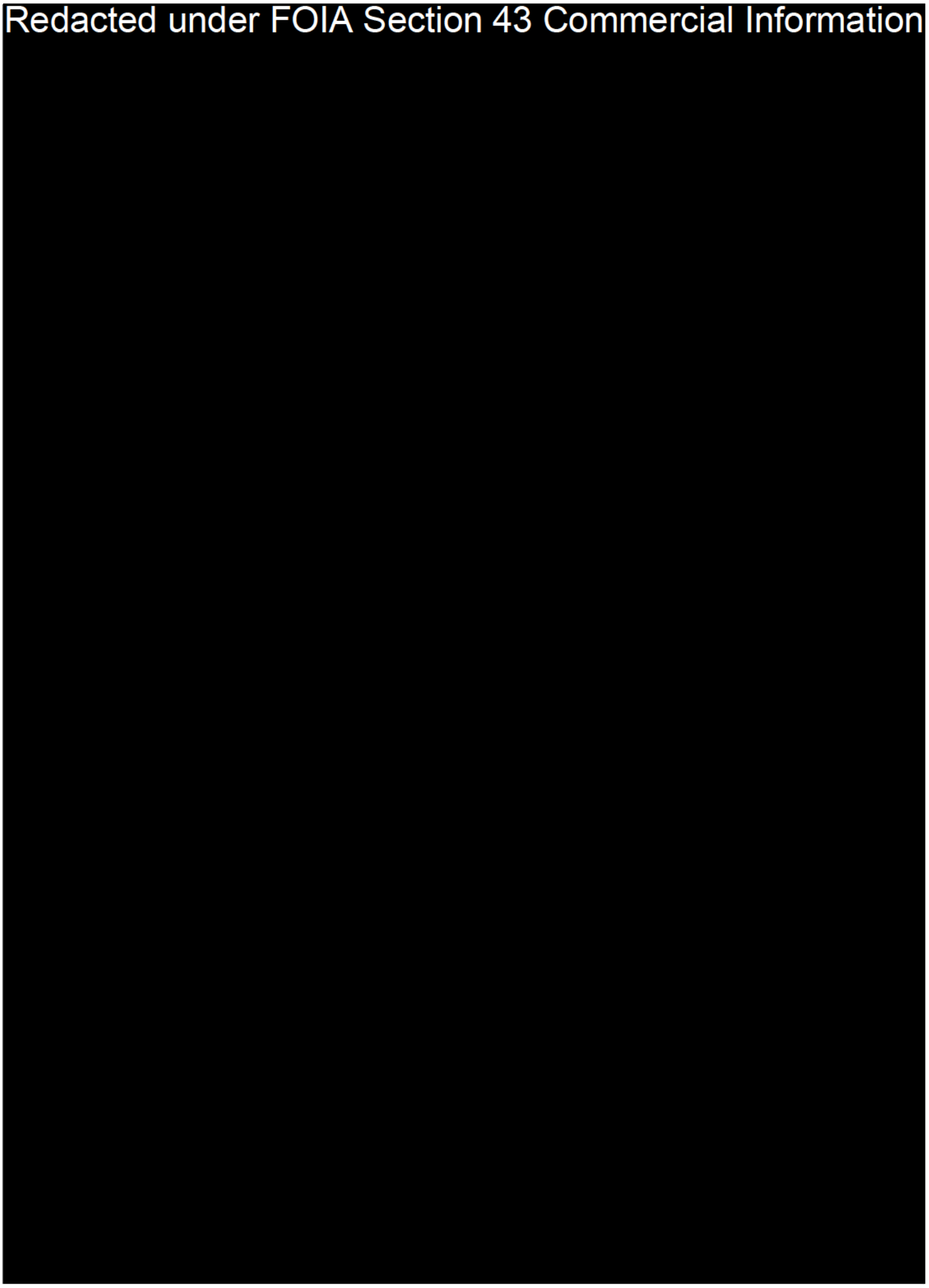
To carry out a rapid literature review of international publications to evaluate and characterise likely microbial community responses to application of these pesticides.
To carry out a microcosm experiment to evaluate the response of selected English soils to this range of pesticides, in terms of their microbial community as assessed by metabarcoding. Specifically to:

collect arable soils from ~3 of different soil types (texture, natural pH, geographical location) from well-established organic farms, which would represent communities most unaffected by past pesticide applications – ideally these would have low organic matter contents (eg. Following recent tillage) to avoid the known community change-buffering response that this typically provides.
To homogenise soils, and add aliquots to micocosms, at this point also sampling the soil test material (5 replicate samples) to enable genetic characterisation of the initial microbial communities in these soils.
To apply a range of pesticides, or control treatments of no application, to these soils, with ~5 replicates of each treatment including the control of no pesticide application. Consideration should be given to the rate of application to the microcosms to reflect likely levels of field exposure, management of the soil in the pots – for example by growing a single winter wheat plant in each to mimic field conditions.
To sample these microcosms after 1 month (early February 2025) and 2 months (early March 2025) following application.
To assess the impacts of these treatments on microbial community using 16SrRNA and ITS metabarcoding approaches, at various time stages following (or during) application of treatments.
To carry out bioinformatics analysis of the resulting data, to identify communities based on assemblages of OTUs and of their taxonomic identifications following BLAST.
To analyse the impacts on the whole community (using dimension reduction approaches) but also to identify taxa with strong and consistent responses, that might be used as indicators for specific pesticides or groups of pesticides.
To briefly write up the literature review, and the methods and results of the experiment in a brief technical report. We will aim to develop this into a fuller Natural England research report, and/or a paper for publication in a peer reviewed journal, potentially by combining the results of the experiment with microbial community data from the EES.
To prepare a presentation on the project suitable for delivery at a future Natural England Soil Health Conference
To share all data generated with Natural England, including the FASTA and other raw data files.

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 25yr 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 the Contracting Authority is not contracting with a supplier whose operational outputs run contrary to the Contracting Authority's objectives. The successful contractor will need to approach the project with a focus on the entire life cycle of the project


Redacted under FOIA Section 43 Commercial Information

Appendix 3: Charges

Descriptions of Tasks and / or Products	Cost per product / or Cost per Hour / Day (i.e. rate)	No of products / Hours / Days	Total Cost per Task
Redacted under FOIA Section 43 Commercial Information			
Total Overall Cost (Excluding VAT)			£44,965.98