Add NE Logo

**Standard Contract for Goods and/or Services - Order Form**

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| 1. **Purchase Order Number** |  | |
| 1. **Customer** |  | |
| 1. **Contractor(s)** |  | |
| 1. **Defra Group Members** | The following Defra Group members will receive the benefit of the Deliverables: | |
| 1. **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):   1. this Order; 2. the terms and conditions at Appendix 1; and 3. the remaining Appendices (if any) in equal order of precedence. | |
| 1. **Deliverables** | **Applicable Deliverables** | **Goods Only:**  **Services Only:**  **Good and Services:** |
| **Goods** | Provision of a dPCR assay and detailed report for American mink (*Neovison vison)*  The Goods are to be Delivered in accordance with the following instructions:  Delivery Address: [annie.ivison@naturalengland.org.uk](mailto:annie.ivison@naturalengland.org.uk)  Tel no. 07983871082  Date of Delivery: 28th March 2025  Packaging Instructions: N/A  Additional Delivery Instructions: N/A  Warranty Period:Usage rights in perpetuity |
| **Services** | Development of a dPCR assay for American mink *(Neovison vison)*  To be performed at TBC  Date(s) of Delivery: 28th September 2024 – 28th March 2025 |
| 1. **Start Date** | 28th September 2024 | |
| 1. **Expiry Date** | 28th March 2025 | |
| 1. **Charges** | The Charges for the Goods and/or Services shall be as set out. The Charges are fixed for the duration of the Agreement. | |
| 1. **Payment** | Payments will be made to | |
| 1. **Contractor’s Liability Cap (Clause 13.2.1)** | A sum equal to £5,000,000 | |
| 1. **Customer’s Authorised Representative(s)** | For general liaison your contact will continue to be  or, in their absence, | |
| 1. **Contractor’s Authorised Representative** | For general liaison your contact will continue to be  or, in their absence, | |
| 1. **Optional Intellectual Property Rights (“IPR”) Clauses** | The Customer has chosen Option **B(Default Option)** in respect of intellectual property rights provisions for the Agreement as set out in the terms and conditions.    ***Option A: Customer owns all New IPR with non-exclusive Contractor rights to all New IPR including for the purpose of exploitation of such New IPR.***  ***Default Option- Option B: Customer ownership of all New IPR with limited Contractor rights to all New IPR in order to deliver the Agreement.***  ***Option C: Contractor ownership of all New IPR with Customer rights for the current contract and broader public sector functions.***  ***Option A should be considered for use in situations where the Customer should retain ownership of any New IPR but where the Contractor should be able to use any New IPR developed. In this situation, the Customer will not look to publish the New IPR under Open Licence.***  ***Option B reflects a more standard position on ownership of IPRs and should be considered the default option. This should be used where the Customer should retain ownership of any New IPR and ensure that the Contractor cannot use it outside of Agreement delivery.***  ***Option C should be considered for use where (a) there is no clear benefit in the Customer owning the New IPR, or (b) where any New IPR created cannot easily be separated from the Contractor’s Existing IPR (e.g. Software As A Service (“SAAS”)) and should be used where the licence to the Customer for the IPR in question should extend to cover other government contracts and services, which may include contracts and services not yet awarded, and broader public sector functions.***  ***When publishing as open source, Customers should be mindful that the terms of any input licence (that is the open source licence for any open source intellectual property which has been used to create the New IPR) aligns with the ‘output licence’ (that is, the licence under which the Customer will publish the New IPR as open source).]*** | |
| 1. **Progress Meetings and Progress Reports** | * The Contractor shall attend progress meetings with the Customer every [   ] * The Contractor shall provide the Customer with progress reports every [ ] | |
| 1. **Address for notices** | |  |  | | --- | --- | | **Customer:** | **Contractor:** | | Natural England  Attention: Annie Ivison  Email: annie.ivison@naturalengland.org.uk | Attention:  Email: | |  | | |
| 1. **Key Personnel of the Contractor** | |  |  |  | | --- | --- | --- | | **Key Personnel Role:** | **Key Personnel Name:** | **Contact Details:** | |  |  |  | |  | | | |  |  |  | | |
| 1. **Procedures and Policies** | For the purposes of the Agreement: [The Customer’s Staff Vetting Procedures are: *.* [The Customer’s security / data security requirements are:  [The Customer’s additional sustainability requirements are:  [The Customer’s equality and diversity policy/requirements and instructions related to equality Law [and] environmental policy [is/are]  [The Customer’s health and safety policy is: | |
| 1. **Special Terms** | Special Term 1 - | |
| 1. **Additional Insurance** |  | |
| 1. **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:** | |

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| --- | --- |
| Signed for and on behalf of the **Customer** | Signed for and on behalf of the **Contractor** |
| Name: | Name: |
| Date: | Date: |
| Signature: | Signature: |

**Appendix 1: Terms and Conditions**

The Customer’s Standard Good & Services Terms and Conditions which can be located on the [Natural England Website](https://eur05.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.gov.uk%2Fgovernment%2Forganisations%2Fnatural-england%2Fabout%2Fprocurement&data=05%7C01%7Cdaniel.lavender%40dlapiper.com%7Ce61b389c5e15470f278e08dbcc060e37%7Ce855e7acc54640d299f7a100522010f9%7C1%7C0%7C638328098969691096%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=ymInFtzabvMF3T9or361i03D%2B4kyuzgt8T5CzJeS7Gc%3D&reserved=0) and which are called ‘Standard Goods & Services Terms and Conditions’

**Appendix 2: Specification/Description**

**Development and validation of a species-specific environmental DNA (eDNA) assay for American mink (*Neovison vison*)**

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

DNA-based methods have the potential to significantly change how we monitor and assess ecosystems. Natural England has been exploring the use of these methods for environmental monitoring for several years, delivering a series of reports which focus on the development of DNA-based methods with potential in a particular area. These methods are now being used more widely within Natural England, particularly the detection of single species and ecological communities using environmental DNA (eDNA) analysis.

Published research studies have demonstrated the potential of eDNA metabarcoding (i.e. the simultaneous identification of multiple taxa) for monitoring a large number of semi-aquatic and terrestrial mammal species in the UK from pond and river water, including elusive and declining species (L. R. Harper and others 2019; Sales and others 2020; Broadhurst and others 2021; Broadhurst and others 2023). This method could facilitate non-invasive mammal monitoring at a national level; however, carnivorous mammals tend to elude detection or are identified less frequently in collected samples. Suggested reasons for sporadic detection of these species include their ecology (i.e. carnivores are generally wide-ranging and solitary) and the potential for ‘species masking’, where DNA of more abundant species such as group-living herbivores could suppress the detection of less abundant species in the sample when universal metabarcoding tests or assays are being used (L. R. Harper and others 2019; Sales and others 2020; Broadhurst and others 2021; Lyet and others 2021).

Targeted single species assays, using either qPCR (quantitative PCR), ddPCR (digital droplet PCR) or dPCR (digital PCR) technology, could offer higher detection sensitivity for challenging species, e.g. rare, low-density, elusive (Wood and others 2019). qPCR technology is widespread and more commonly used for single species eDNA analysis in comparison to ddPCR and dPCR technology (Johnsen and others 2020). However, several studies have shown that ddPCR or dPCR technology has greater detection success and is less prone to inhibition due to samples being partitioned into thousands of droplets with an individual PCR reaction occurring in each droplet (Mauvisseau and others 2019; Wood and others 2019; Dimond and others 2022). Conversely, other studies have not observed differences in performance of the two technologies (Baudry and others 2023) or have found lower performance of ddPCR (Johnsen and others 2020). Furthermore, ddPCR or dPCR technology may be more time consuming and expensive to run with higher upfront costs (Doi and others 2015), although costs per sampling site may be reduced due to the lower replication required for ddPCR or dPCR (Dimond and others 2022).

Natural England recently commissioned a large-scale study of 61 rivers throughout England to detect European otter (*Lutra lutra*) eDNA using a newly developed ddPCR assay (McDevitt and others, unpublished). Otter presence was confirmed in 23 rivers and the species was potentially present in a further 10 rivers. These ddPCR results will be compared to multi-species eDNA metabarcoding data and traditional transect field sign surveys currently underway as part of the National Otter Survey.

Like otter, the American mink (*Neovison vison*) has proven equally challenging to detect with eDNA metabarcoding even when known to be present in an area (Broadhurst and others, 2021, 2023). The early detection of invasive species such as the American mink is even more critical than native carnivores given its significant impact on water vole (*Arvicola amphibius*) colonies. This work will contribute to a pilot Species Conservation Strategy for water vole. 

This project aims to develop and validate a highly sensitive, targeted single species eDNA assay for the American mink to support the long-term monitoring and local eradication efforts of this highly invasive species.

**Requirement**

The American mink assay should be validated *in silico* against reference sequences and *in vitro* against tissue samples from the target species as well as closely related and co-occurring non-target species. Natural England will assist the contractor with sourcing tissue samples. The assay should be validated using both qPCR and ddPCR or dPCR technology if the latter is available. The assay should be validated *in situ* on natural water samples collected along select UK rivers where the species is known to be present and absent. The performance of eDNA monitoring should be compared to traditional monitoring methods (e.g. mink rafts) with assistance from Natural England.

Please provide separate quotes for undertaking each requirement. Natural England reserves the right to let only one of these requirements.

1. qPCR validation
2. The successful contractor will evaluate four existing assays for American mink that target either the COI gene (Pugh 2022), cyt-b gene (Di Girolamo 2022) or ND2 gene (Takaba and others 2024) using the validation scale for single species eDNA assays (Thalinger and others 2021).
3. Areas for assay improvement should be identified, and further *in silico* and *in vitro* testing conducted using qPCR to ensure at least one assay reaches Level 3 minimum on the validation scale (Thalinger and others 2021). The assay(s) should be able to achieve a R-squared value ≥0.990 and efficiency of 90-110%.
4. If these validation criteria are not met, the successful contractor must design a new assay that does meet the validation criteria.
5. A confidence assessment should be undertaken for the best-performing assay following the requirements set out in NECR359 “A framework for assessing confidence in environmental DNA qPCR assays and results” (K.J. Harper and others 2021). This framework (also known as COASTER) requires a standardised data input, as well as user-defined settings, and can be accessed through common web browsers. The tool operates in R under the Shiny framework. A link to the tool will be made available to the successful contractor (it is planned for this to be open access in the near future).
6. ddPCR or dPCR validation
7. The successful contractor will transition the best-performing assay with qPCR technology to ddPCR or dPCR technology.
8. *In vitro* testing should be repeated to confirm assay specificity as well as redetermine the Limit of Detection (LOD) and Limit of Quantification (LOQ) due to the higher detection sensitivity of ddPCR and dPCR technology.
9. Costs of running ddPCR or dPCR vs. qPCR should be compared.
10. Field validation
11. The successful contractor will design a sampling strategy to test the assay in areas of known American mink presence and absence determined via trapping in consultation with the Natural England Project Officer. At least three sites with known mink presence and three sites with known mink absence should be sampled, and field negative controls should be included.
12. Water sampling equipment, protocols and collection forms will be provided for the agreed sampling strategy by the contractor. Consideration should be given to in-field applicability (e.g. single-use filters) by Natural England staff and the need to reduce or eliminate cross-contamination in the field. Freezing samples is not generally possible so alternative methods should be considered for sample preservation prior to shipping to the laboratory. Shipping should be arranged by the contractor and sample storage and packaging instructions provided.
13. The contractor will extract DNA from samples (including extraction negative controls) and analyse resulting DNA extracts with the best-performing assay using qPCR and ddPCR or dPCR technology to compare detection sensitivity. At least three technical replicates per sample should be performed with both technologies for DNA amplification, and PCR positive and negative controls should be included.
14. Samples that fail to amplify should be tested for inhibition. If inhibition is identified, affected samples should treated for inhibition and retested using qPCR and ddPCR or dPCR technology.
15. Positive samples should be sequenced to confirm species identity.

The results should be compiled into a final detailed report.

**Appendix 3: Charges**

**Appendix 4: Processing Personal Data**

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| **[ ]** |
| **Contract:** |
| **Date:** | **[ ]** |
| **Description of authorised processing** | **Details** |
| Identity of Controller and Processor for each category of Personal Data |  |
| Subject matter of the processing |  |
| Duration of the processing |  |
| Nature and purposes of the processing |  |
| Type of Personal Data |  |
| Categories of Data Subject |  |
| Plan for return and destruction of the data once the processing is complete UNLESS requirement under law to preserve that type of data |  |
| Locations at which the Contractor and/or its subcontractors process Personal Data under this Agreement |  |
| Protective Measures that the Contractor and, where applicable, its subcontractors have implemented to protect Personal Data processed under this Agreement against a breach of security (insofar as that breach of security relates to data) or a Personal Data Breach |  |