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Food & Rural Affairs

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James Hutton Institute
Craigiebuckler
Aberdeen
AB15 8QH

Your ref: ITT_5994
Our ref: Proj_27044
Date: 23 Aug 2019

Dear Sirs

Award of contract for the supply of Long Term Monitoring Network - Soils Analysis 2019

Following your tender for the supply of Long Term Monitoring Network - Soils Analysis 2019 to Natural England we are pleased to award this contract to you.

This letter (Award Letter) and its Annexes set out the terms of the contract Natural England as the Customer and James Hutton Institute as the Contractor for the provision of the Services. Unless the context otherwise requires, capitalised expressions used in this Award Letter have the same meanings as in the terms and conditions of contract set out in Annex 1 to this Award Letter (the “**Conditions**”). In the event of any conflict between this Award Letter and the Conditions, this Award Letter shall prevail. Please do not attach any Contractor terms and conditions to this Award Letter as they will not be accepted by the Customer and may delay the conclusion of the Agreement.

For the purposes of the Agreement, the Customer and the Contractor agree as follows:

- 1) The Services shall be performed at the James Hutton Institute, Craigiebuckler, Aberdeen, AB15 8QH, the Contractor's premises.
- 2) The charges for the Services shall be as set out in Annex 2.
- 3) The specification of the Services to be supplied is as set out in Annex 3.
- 4) The Term shall commence on 02 September 2019 and the Expiry Date shall be 31 March 2020.

- 5) The address for notices of the Parties are:

Customer

Natural England
Horizon House
Deanery Road
Bristol
BS1 5AH

Attention: [REDACTED]

Email: [REDACTED]

Contractor

James Hutton Institute
Craigiebuckler
Aberdeen
AB15 8QH

Attention: [REDACTED]

Email: [REDACTED]

- 6) The following persons are Key Personnel for the purposes of the Agreement:

Name: [REDACTED]

Title: [REDACTED]
[REDACTED]

- 7) The Customer may require the Contractor to ensure that any person employed in the provision of the Services has undertaken a Disclosure and Barring Service check. The Contractor shall ensure that no person who discloses that he/she has a conviction that is relevant to the nature of the Services, relevant to the work of the Customer, or is of a type otherwise advised by the Customer (each such conviction a "**Relevant Conviction**"), or is found by the Contractor to have a Relevant Conviction (whether as a result of a police check, a Disclosure and Barring Service check or otherwise) is employed or engaged in the provision of any part of the Services.

Payment

All invoices should be sent, quoting a valid purchase order number (PO Number), to: Accounts-Payable.neg@sscl.gov.uk or Shared Services Connected Limited, PO Box 790, Phoenix House, Celtic Springs Business Park, Newport, Gwent, NP10 8FZ. Within 10 Working Days of receipt of your acceptance of this letter via Bravo, we will send you a unique PO Number. You must be in receipt of a valid PO Number before submitting an invoice.

To avoid delay in payment it is important that the invoice is compliant and that it includes a valid PO Number, PO Number item number (if applicable) and the details (name and telephone number) of your Customer contact (i.e. Contract Manager). Non-compliant invoices will be sent back to you, which may lead to a delay in payment. If you have a query regarding an outstanding payment please contact our Accounts Payable section either by email to Accounts-Payable.neg@sscl.gov.uk or by telephone 0845 603 7262 between 09:00-17:00 Monday to Friday.

Liaison

For general liaison your contact will continue to be [REDACTED] [REDACTED]
[REDACTED] or, in their absence, [REDACTED]
[REDACTED]

We thank you for your co-operation to date, and look forward to forging a successful working relationship resulting in a smooth and successful supply of the Goods. Acceptance of the award of this contract will be made by electronic signature carried out in accordance with the 1999 EU Directive 99/93 (Community framework for electronic signatures) and the UK Electronic Communications Act 2000. Acceptance of the offer comprised in this Agreement must be made within 7 days from the date of this Award Letter and the Agreement is formed on the date on which the Contractor communicates acceptance on the Customer's electronic contract management system ("Bravo"). No other form of acknowledgement will be accepted. Please remember to quote the reference number above in any future communications relating to this contract.

Yours sincerely

[REDACTED]
Category Manager
Defra Group Commercial

[REDACTED]
[REDACTED]
[REDACTED]



Department
for Environment
Food & Rural Affairs

Short Form Contract

Contract for Long Term Monitoring Network – Soils Analysis 2019

Contract Reference ECM_56142

August 2018

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1. Interpretation

1.1 In these terms and conditions:

Term	Description
“Agreement”	means the contract between (i) the Customer acting as part of the Crown and (ii) the Contractor constituted by the Contractor’s acceptance of the Award Letter via Bravo;
“Award Letter”	means the letter from the Customer to the Contractor printed above these terms and conditions;
“Bravo”	means the Customer’s electronic contract management system
“Central Government Body”	<p>means a body listed in one of the following sub-categories of the Central Government classification of the Public Sector Classification Guide, as published and amended from time to time by the Office for National Statistics:</p> <p>Government Department;</p> <p>Non-Departmental Public Body or Assembly Sponsored Public Body (advisory, executive, or tribunal);</p> <p>Non-Ministerial Department; or</p> <p>Executive Agency;</p>
“Charges”	means the charges for the Services as specified in the Award Letter;
“Confidential Information”	means all information, whether written or oral (however recorded), provided by the disclosing Party to the receiving Party and which (i) is known by the receiving Party to be confidential; (ii) is marked as or stated to be confidential; or (iii) ought reasonably to be

	considered by the receiving Party to be confidential;
“Contractor”	means the person named as Contractor in the Award Letter;
“Controller”	has the meaning given in the GDPR;
“Customer”	means the person identified in the letterhead of the Award Letter;
“Data Loss Event”	means any event that results, or may result, in unauthorised access to Personal Data held by the Contractor under this Agreement, and/or actual or potential loss and/or destruction of Personal Data in breach of this Agreement, including any Personal Data Breach;
“Data Protection Impact Assessment”	means an assessment by the Controller of the impact of the envisaged processing on the protection of Personal Data;
“Data Protection Legislation”	means (i) the GDPR, the LED and any applicable national implementing Laws as amended from time to time (ii) the DPA 2018 to the extent that it relates to processing of personal data and privacy; and (iii) all applicable Law about the processing of personal data and privacy;
“Data Protection Officer”	has the meaning given in the GDPR;
“Data Subject”	has the meaning given in the GDPR;
“Data Subject Request”	means a request made by, or on behalf of, a Data Subject in accordance with rights granted pursuant to the Data Protection Legislation to access their Personal Data;
“DPA 2018”	means the Data Protection Act 2018;
“Expiry Date”	means the date for expiry of the Agreement as set out in the Award Letter;
“FOIA”	means the Freedom of Information Act 2000;
“GDPR”	means the General Data Protection Regulation (Regulation (EU) 2016/679);

“Information”	has the meaning given under section 84 of the FOIA;
“Key Personnel”	means any persons specified as such in the Award Letter or otherwise notified as such by the Customer to the Contractor in writing;
“Law”	means any law, statute, subordinate legislation within the meaning of section 21(1) of the Interpretation Act 1978, bye-law, enforceable right within the meaning of section 2 of the European Communities Act 1972, regulation, order, regulatory policy, mandatory guidance or code of practice, judgment of a relevant court of law, or directives or requirements of any regulatory body with which the relevant Party is bound to comply;
“LED”	means Law Enforcement Directive (Directive (EU) 2016/680);
“Party”	the Contractor or the Customer (as appropriate) and “Parties” shall mean both of them;
“Personal Data”	has the meaning given in the GDPR;
“Personal Data Breach”	has the meaning given in the GDPR;
“Processor”	has the meaning given in the GDPR;
“Protective Measures”	means appropriate technical and organisational measures which may include: pseudonymising and encrypting Personal Data, ensuring confidentiality, integrity, availability and resilience of systems and services, ensuring that availability of and access to Personal Data can be restored in a timely manner after an incident, and regularly assessing and evaluating the effectiveness of the such measures adopted by it;
“Purchase Order Number”	means the Customer’s unique number relating to the order for Goods to be supplied by the Contractor to the Customer in accordance with the terms of the Agreement;
“Request for Information”	has the meaning set out in the FOIA or the Environmental Information Regulations 2004 as relevant (where the meaning set out for the term “request” shall apply);

“Services”	means the services to be supplied by the Contractor to the Customer under the Agreement;
“Specification”	means the specification for the Services (including as to quantity, description and quality) as specified in the Award Letter;
“Staff”	means all directors, officers, employees, agents, consultants and contractors of the Contractor and/or of any sub-contractor of the Contractor engaged in the performance of the Contractor’s obligations under the Agreement;
“Staff Vetting Procedures”	means vetting procedures that accord with good industry practice or, where applicable, the Customer’s procedures for the vetting of personnel as provided to the Contractor from time to time;
“Sub-processor”	means any third party appointed to process Personal Data on behalf of the Contractor related to this Agreement;
“Term”	means the period from the start date of the Agreement set out in the Award Letter to the Expiry Date as such period may be extended in accordance with Clause 4.2 or terminated in accordance with the terms and conditions of the Agreement;
“VAT”	means value added tax in accordance with the provisions of the Value Added Tax Act 1994; and
“Working Day”	means a day (other than a Saturday or Sunday) on which banks are open for business in the City of London.

1.2 In these terms and conditions, unless the context otherwise requires:

1.2.1 references to numbered clauses are references to the relevant clause in these terms and conditions;

1.2.2 any obligation on any Party not to do or omit to do anything shall include an obligation not to allow that thing to be done or omitted to be done;

1.2.3 the headings to the clauses of these terms and conditions are for information only and do not affect the interpretation of the Agreement;

- 1.2.4 any reference to an enactment includes reference to that enactment as amended or replaced from time to time and to any subordinate legislation or byelaw made under that enactment; and
- 1.2.5 the word 'including' shall be understood as meaning 'including without limitation'.

2. Basis of Agreement

- 2.1 The Award Letter constitutes an offer by the Customer to purchase the Services subject to and in accordance with the terms and conditions of the Agreement.
- 2.2 The offer comprised in the Award Letter shall be deemed to be accepted by the Contractor on receipt by the Customer of the Contractor's notification of acceptance via Bravo within [7] days of the date of the Award Letter.

3. Supply of Services

- 3.1 In consideration of the Customer's agreement to pay the Charges, the Contractor shall supply the Services to the Customer for the Term subject to and in accordance with the terms and conditions of the Agreement.
- 3.2 In supplying the Services, the Contractor shall:
 - 3.2.1 co-operate with the Customer in all matters relating to the Services and comply with all the Customer's instructions;
 - 3.2.2 perform the Services with all reasonable care, skill and diligence in accordance with good industry practice in the Contractor's industry, profession or trade;
 - 3.2.3 use Staff who are suitably skilled and experienced to perform tasks assigned to them, and in sufficient number to ensure that the Contractor's obligations are fulfilled in accordance with the Agreement;
 - 3.2.4 ensure that the Services shall conform with all descriptions and specifications set out in the Specification;
 - 3.2.5 comply with all applicable laws; and
 - 3.2.6 provide all equipment, tools and vehicles and other items as are required to provide the Services.

- 3.3 The Customer may by written notice to the Contractor at any time request a variation to the scope of the Services. In the event that the Contractor agrees to any variation to the scope of the Services, the Charges shall be subject to fair and reasonable adjustment to be agreed in writing between the Customer and the Contractor.

4. Term

- 4.1 The Agreement shall take effect on the date specified in Award Letter and shall expire on the Expiry Date, unless it is otherwise extended in accordance with clause 4.2 or terminated in accordance with the terms and conditions of the Agreement.
- 4.2 The Customer may extend the Agreement for a period of up to 6 months by giving not less than 10 Working Days' notice in writing to the Contractor prior to the Expiry Date. The terms and conditions of the Agreement shall apply throughout any such extended period.

5. Charges, Payment and Recovery of Sums Due

- 5.1 The Charges for the Services shall be as set out in the Award Letter and shall be the full and exclusive remuneration of the Contractor in respect of the supply of the Services. Unless otherwise agreed in writing by the Customer, the Charges shall include every cost and expense of the Contractor directly or indirectly incurred in connection with the performance of the Services.
- 5.2 All amounts stated are exclusive of VAT which shall be charged at the prevailing rate. The Customer shall, following the receipt of a valid VAT invoice, pay to the Contractor a sum equal to the VAT chargeable in respect of the Services.
- 5.3 The Contractor shall invoice the Customer as specified in the Agreement. Each invoice shall include such supporting information required by the Customer to verify the accuracy of the invoice, including the relevant Purchase Order Number and a breakdown of the Services supplied in the invoice period.
- 5.4 In consideration of the supply of the Services by the Contractor, the Customer shall pay the Contractor the invoiced amounts no later than 30 days after verifying that the invoice is valid and undisputed and includes a valid Purchase Order Number. The Customer may, without prejudice to any other rights and remedies under the Agreement, withhold or reduce payments in the event of unsatisfactory performance.

- 5.5 If there is a dispute between the Parties as to the amount invoiced, the Customer shall pay the undisputed amount. The Contractor shall not suspend the supply of the Services unless the Contractor is entitled to terminate the Agreement for a failure to pay undisputed sums in accordance with clause 16.4. Any disputed amounts shall be resolved through the dispute resolution procedure detailed in clause 19.
- 5.6 If a payment of an undisputed amount is not made by the Customer by the due date, then the Customer shall pay the Contractor interest at the interest rate specified in the Late Payment of Commercial Debts (Interest) Act 1998.
- 5.7 Where the Contractor enters into a sub-contract, the Contractor shall include in that sub-contract:
- 5.7.1 provisions having the same effects as clauses 5.3 to 5.6 of this Agreement; and
- 5.7.2 a provision requiring the counterparty to that sub-contract to include in any sub-contract which it awards provisions having the same effect as 5.3 to 5.7 of this Agreement.
- 5.8 In this clause 5.8, “sub-contract” means a contract between two or more Contractors, at any stage of remoteness from the Authority in a subcontracting chain, made wholly or substantially for the purpose of performing (or contributing to the performance of) the whole or any part of this Agreement.
- 5.9 If any sum of money is recoverable from or payable by the Contractor under the Agreement (including any sum which the Contractor is liable to pay to the Customer in respect of any breach of the Agreement), that sum may be deducted unilaterally by the Customer from any sum then due, or which may come due, to the Contractor under the Agreement or under any other agreement or contract with the Customer. The Contractor shall not be entitled to assert any credit, set-off or counterclaim against the Customer in order to justify withholding payment of any such amount in whole or in part.

6. Premises and equipment

- 6.1 If necessary, the Customer shall provide the Contractor with reasonable access at reasonable times to its premises for the purpose of supplying the Services. All equipment, tools and vehicles brought onto the Customer’s premises by the Contractor or the Staff shall be at the Contractor’s risk.
- 6.2 If the Contractor supplies all or any of the Services at or from the Customer’s premises, on completion of the Services or termination or expiry of the Agreement

(whichever is the earlier) the Contractor shall vacate the Customer's premises, remove the Contractor's plant, equipment and unused materials and all rubbish arising out of the provision of the Services and leave the Customer's premises in a clean, safe and tidy condition. The Contractor shall be solely responsible for making good any damage to the Customer's premises or any objects contained on the Customer's premises which is caused by the Contractor or any Staff, other than fair wear and tear.

- 6.3 If the Contractor supplies all or any of the Services at or from its premises or the premises of a third party, the Customer may, during normal business hours and on reasonable notice, inspect and examine the manner in which the relevant Services are supplied at or from the relevant premises.
- 6.4 The Customer shall be responsible for maintaining the security of its premises in accordance with its standard security requirements. While on the Customer's premises the Contractor shall, and shall procure that all Staff shall, comply with all the Customer's security requirements.
- 6.5 Where all or any of the Services are supplied from the Contractor's premises, the Contractor shall, at its own cost, comply with all security requirements specified by the Customer in writing.
- 6.6 Without prejudice to clause 3.2.6, any equipment provided by the Customer for the purposes of the Agreement shall remain the property of the Customer and shall be used by the Contractor and the Staff only for the purpose of carrying out the Agreement. Such equipment shall be returned promptly to the Customer on expiry or termination of the Agreement.
- 6.7 The Contractor shall reimburse the Customer for any loss or damage to the equipment (other than deterioration resulting from normal and proper use) caused by the Contractor or any Staff. Equipment supplied by the Customer shall be deemed to be in a good condition when received by the Contractor or relevant Staff unless the Customer is notified otherwise in writing within 5 Working Days.

7. Staff and Key Personnel

- 7.1 If the Customer reasonably believes that any of the Staff are unsuitable to undertake work in respect of the Agreement, it may, by giving written notice to the Contractor:
 - 7.1.1 refuse admission to the relevant person(s) to the Customer's premises;

- 7.1.2 direct the Contractor to end the involvement in the provision of the Services of the relevant person(s); and/or
- 7.1.3 require that the Contractor replace any person removed under this clause with another suitably qualified person and procure that any security pass issued by the Customer to the person removed is surrendered,

and the Contractor shall comply with any such notice.
- 7.2 The Contractor shall:
 - 7.2.1 ensure that all Staff are vetted in accordance with the Staff Vetting Procedures;
 - 7.2.2 if requested, provide the Customer with a list of the names and addresses (and any other relevant information) of all persons who may require admission to the Customer's premises in connection with the Agreement; and
 - 7.2.3 procure that all Staff comply with any rules, regulations and requirements reasonably specified by the Customer.
- 7.3 Any Key Personnel shall not be released from supplying the Services without the agreement of the Customer, except by reason of long-term sickness, maternity leave, paternity leave, termination of employment or other extenuating circumstances.
- 7.4 Any replacements to the Key Personnel shall be subject to the prior written agreement of the Customer (not to be unreasonably withheld). Such replacements shall be of at least equal status or of equivalent experience and skills to the Key Personnel being replaced and be suitable for the responsibilities of that person in relation to the Services.

8. Assignment and sub-contracting

- 8.1 The Contractor shall not without the written consent of the Customer assign, sub-contract, novate or in any way dispose of the benefit and/ or the burden of the Agreement or any part of the Agreement. The Customer may, in the granting of such consent, provide for additional terms and conditions relating to such assignment, sub-contract, novation or disposal. The Contractor shall be responsible for the acts and omissions of its sub-contractors as though those acts and omissions were its own.

- 8.2 Where the Customer has consented to the placing of sub-contracts, the Contractor shall, at the request of the Customer, send copies of each sub-contract, to the Customer as soon as is reasonably practicable.
- 8.3 The Customer may assign, novate, or otherwise dispose of its rights and obligations under the Agreement without the consent of the Contractor provided that such assignment, novation or disposal shall not increase the burden of the Contractor's obligations under the Agreement.

9. Intellectual Property Rights

- 9.1 All intellectual property rights in any materials provided by the Customer to the Contractor for the purposes of this Agreement shall remain the property of the Customer but the Customer hereby grants the Contractor a royalty-free, non-exclusive and non-transferable licence to use such materials as required until termination or expiry of the Agreement for the sole purpose of enabling the Contractor to perform its obligations under the Agreement.
- 9.2 All intellectual property rights in any materials created or developed by the Contractor pursuant to the Agreement or arising as a result of the provision of the Services shall vest in the Contractor. If, and to the extent, that any intellectual property rights in such materials vest in the Customer by operation of law, the Customer hereby assigns to the Contractor by way of a present assignment of future rights that shall take place immediately on the coming into existence of any such intellectual property rights all its intellectual property rights in such materials (with full title guarantee and free from all third party rights).
- 9.3 The Contractor hereby grants the Customer:
- 9.3.1 a perpetual, royalty-free, irrevocable, non-exclusive licence (with a right to sub-license) to use all intellectual property rights in the materials created or developed pursuant to the Agreement and any intellectual property rights arising as a result of the provision of the Services; and
- 9.3.2 a perpetual, royalty-free, irrevocable and non-exclusive licence (with a right to sub-license) to use:
- a. any intellectual property rights vested in or licensed to the Contractor on the date of the Agreement; and
 - b. any intellectual property rights created during the Term but which are neither created or developed pursuant to the Agreement nor arise as a result of the provision of the Services,

including any modifications to or derivative versions of any such intellectual property rights, which the Customer reasonably requires in order to exercise its rights and take the benefit of the Agreement including the Services provided.

- 9.4 The Contractor shall indemnify, and keep indemnified, the Customer in full against all costs, expenses, damages and losses (whether direct or indirect), including any interest, penalties, and reasonable legal and other professional fees awarded against or incurred or paid by the Customer as a result of or in connection with any claim made against the Customer for actual or alleged infringement of a third party's intellectual property arising out of, or in connection with, the supply or use of the Services, to the extent that the claim is attributable to the acts or omission of the Contractor or any Staff.

10. Governance and Records

- 10.1. The Contractor shall:

10.1.1. attend progress meetings with the Customer at the frequency and times specified by the Customer and shall ensure that its representatives are suitably qualified to attend such meetings; and

10.1.2. submit progress reports to the Customer at the times and in the format specified by the Customer.

- 10.2. The Contractor shall keep and maintain until 6 years after the end of the Agreement, or as long a period as may be agreed between the Parties, full and accurate records of the Agreement including the Services supplied under it and all payments made by the Customer. The Contractor shall on request afford the Customer or the Customer's representatives such access to those records as may be reasonably requested by the Customer in connection with the Agreement.

11. Confidentiality, Transparency and Publicity

- 11.1. Subject to clause 11.2, each Party shall:

11.1.1. treat all Confidential Information it receives as confidential, safeguard it accordingly and not disclose it to any other person without the prior written permission of the disclosing Party; and

11.1.2. not use or exploit the disclosing Party's Confidential Information in any way except for the purposes anticipated under the Agreement.

- 11.2. Notwithstanding clause 11.1, a Party may disclose Confidential Information which it receives from the other Party:
- 11.2.1. where disclosure is required by applicable law or by a court of competent jurisdiction;
 - 11.2.2. to its auditors or for the purposes of regulatory requirements;
 - 11.2.3. on a confidential basis, to its professional advisers;
 - 11.2.4. to the Serious Fraud Office where the Party has reasonable grounds to believe that the other Party is involved in activity that may constitute a criminal offence under the Bribery Act 2010;
 - 11.2.5. where the receiving Party is the Contractor, to the Staff on a need to know basis to enable performance of the Contractor's obligations under the Agreement provided that the Contractor shall procure that any Staff to whom it discloses Confidential Information pursuant to this clause 11.2.5 shall observe the Contractor's confidentiality obligations under the Agreement; and
 - 11.2.6. where the receiving Party is the Customer:
 - a) on a confidential basis to the employees, agents, consultants and contractors of the Customer;
 - b) on a confidential basis to any other Central Government Body, any successor body to a Central Government Body or any company to which the Customer transfers or proposes to transfer all or any part of its business;
 - c) to the extent that the Customer (acting reasonably) deems disclosure necessary or appropriate in the course of carrying out its public functions; or
 - d) in accordance with clause 12.

and for the purposes of the foregoing, references to disclosure on a confidential basis shall mean disclosure subject to a confidentiality agreement or arrangement containing terms no less stringent than those placed on the Customer under this clause 11.

- 11.3. The Parties acknowledge that, except for any information which is exempt from disclosure in accordance with the provisions of the FOIA, the content of the Agreement is not Confidential Information and the Contractor hereby gives its consent for the Customer to publish this Agreement in its entirety to the general

public (but with any information that is exempt from disclosure in accordance with the FOIA redacted) including any changes to the Agreement agreed from time to time. The Customer may consult with the Contractor to inform its decision regarding any redactions but shall have the final decision in its absolute discretion whether any of the content of the Agreement is exempt from disclosure in accordance with the provisions of the FOIA.

- 11.4. The Contractor shall not, and shall take reasonable steps to ensure that the Staff shall not, make any press announcement or publicise the Agreement or any part of the Agreement in any way, except with the prior written consent of the Customer.

12. Freedom of Information

- 12.1 The Contractor acknowledges that the Customer is subject to the requirements of the FOIA and the Environmental Information Regulations 2004 and shall:
- 12.1.1 provide all necessary assistance and cooperation as reasonably requested by the Customer to enable the Customer to comply with its obligations under the FOIA and the Environmental Information Regulations 2004;
 - 12.1.2 transfer to the Customer all Requests for Information relating to this Agreement that it receives as soon as practicable and in any event within 2 Working Days of receipt;
 - 12.1.3 provide the Customer with a copy of all Information belonging to the Customer requested in the Request for Information which is in its possession or control in the form that the Customer requires within 5 Working Days (or such other period as the Customer may reasonably specify) of the Customer's request for such Information; and
 - 12.1.4 not respond directly to a Request for Information unless authorised in writing to do so by the Customer.
- 12.2 The Contractor acknowledges that the Customer may be required under the FOIA and the Environmental Information Regulations 2004 to disclose Information concerning the Contractor or the Services (including commercially sensitive information) without consulting or obtaining consent from the Contractor. In these circumstances the Customer shall, in accordance with any relevant guidance issued under the FOIA, take reasonable steps, where appropriate, to give the Contractor advance notice, or failing that, to draw the disclosure to the Contractor's attention after any such disclosure.

- 12.3 Notwithstanding any other provision in the Agreement, the Customer shall be responsible for determining in its absolute discretion whether any Information relating to the Contractor or the Services is exempt from disclosure in accordance with the FOIA and/or the Environmental Information Regulations 2004.

13. Protection of Personal Data and Security of Data

- 13.1. The Parties acknowledge that for the purposes of the Data Protection Legislation, the Customer is the Controller and the Contractor is the Processor unless otherwise specified in Schedule 1. The only processing that the Contractor is authorised to do is listed in Schedule 1 by the Customer and may not be determined by the Contractor.
- 13.2. The Contractor shall notify the Customer immediately if it considers that any of the Customer's instructions infringe the Data Protection Legislation.
- 13.3. The Contractor shall provide all reasonable assistance to the Customer in the preparation of any Data Protection Impact Assessment prior to commencing any processing. Such assistance may, at the discretion of the Customer, include:
- a. a systematic description of the envisaged processing operations and the purpose of the processing;
 - b. an assessment of the necessity and proportionality of the processing operations in relation to the Services;
 - c. an assessment of the risks to the rights and freedoms of Data Subjects; and
 - d. the measures envisaged to address the risks, including safeguards, security measures and mechanisms to ensure the protection of Personal Data.
- 13.4. The Contractor shall, in relation to any Personal Data processed in connection with its obligations under this Agreement:
- a. process that Personal Data only in accordance with Schedule 1 unless the Contractor is required to do otherwise by Law. If it is so required the Contractor shall promptly notify the Customer before processing the Personal Data unless prohibited by Law;
 - b. ensure that it has in place Protective Measures which are appropriate to protect against a Data Loss Event, which the Customer may reasonably reject (but failure to reject shall not amount to approval by the Customer of the adequacy of the Protective Measures), having taken account of the:

- i. nature of the data to be protected;
 - ii. harm that might result from a Data Loss Event;
 - iii. state of technological development; and
 - iv. cost of implementing any measures;
- c. ensure that :
 - i. the Staff do not process Personal Data except in accordance with this Agreement (and in particular Schedule 1);
 - ii. it takes all reasonable steps to ensure the reliability and integrity of any Staff who have access to the Personal Data and ensure that they:
 - 1. are aware of and comply with the Contractor's duties under this clause;
 - 2. are subject to appropriate confidentiality undertakings with the Contractor or any Sub-processor;
 - 3. are informed of the confidential nature of the Personal Data and do not publish, disclose or divulge any of the Personal Data to any third party unless directed in writing to do so by the Customer or as otherwise permitted by this Agreement; and
 - 4. have undergone adequate training in the use, care, protection and handling of Personal Data; and
- d. not transfer Personal Data outside of the European Union unless the prior written consent of the Customer has been obtained and the following conditions are fulfilled:
 - i. the Customer or the Contractor has provided appropriate safeguards in relation to the transfer (whether in accordance with the GDPR Article 46 or LED Article 37) as determined by the Customer;
 - ii. the Data Subject has enforceable rights and effective legal remedies;
 - iii. the Contractor complies with its obligations under the Data Protection Legislation by providing an adequate level of protection to any Personal

Data that is transferred (or, if it is not so bound, uses its best endeavours to assist the Customer in meeting its obligations); and

- iv. the Contractor complies with any reasonable instructions notified to it in advance by the Customer with respect to the processing of the Personal Data;
 - e. at the written direction of the Customer, delete or return Personal Data (and any copies of it) to the Customer on termination of the Agreement unless the Contractor is required by Law to retain the Personal Data.
- 13.5. Subject to clause 13.6 the Contractor shall notify the Customer immediately if, in relation to any Personal Data processed in connection with its obligations under this Agreement, it:
- a. receives a Data Subject Request (or purported Data Subject Request);
 - b. receives a request to rectify, block or erase any Personal Data;
 - c. receives any other request, complaint or communication relating to either Party's obligations under the Data Protection Legislation;
 - d. receives any communication from the Information Commissioner or any other regulatory authority;
 - e. receives a request from any third party for disclosure of Personal Data where compliance with such request is required or purported to be required by Law; or
 - f. becomes aware of a Data Loss Event.
- 13.6. The Contractor's obligation to notify under clause 13.5 shall include the provision of further information to the Customer in phases, as details become available.
- 13.7. Taking into account the nature of the processing, the Contractor shall provide the Customer with full assistance in relation to either Party's obligations under Data Protection Legislation in relation to any Personal Data processed in connection with its obligations under this Agreement and any complaint, communication or request made under Clause 13.5 (and insofar as possible within the timescales reasonably required by the Customer) including by promptly providing:
- a. the Customer with full details and copies of the complaint, communication or request;

- b. such assistance as is reasonably requested by the Customer to enable the Customer to comply with a Data Subject Request within the relevant timescales set out in the Data Protection Legislation;
- c. the Customer, at its request, with any Personal Data it holds in relation to a Data Subject;
- d. assistance as requested by the Customer following any Data Loss Event;
- e. assistance as requested by the Customer with respect to any request from the Information Commissioner's Office, or any consultation by the Customer with the Information Commissioner's Office.

13.8. The Contractor shall maintain complete and accurate records and information to demonstrate its compliance with this clause 13. This requirement does not apply where the Contractor employs fewer than 250 staff, unless:

- a. the Customer determines that the processing is not occasional;
- b. the Customer determines the processing includes special categories of data as referred to in Article 9(1) of the GDPR or Personal Data relating to criminal convictions and offences referred to in Article 10 of the GDPR; or
- c. the Customer determines that the processing is likely to result in a risk to the rights and freedoms of Data Subjects.

13.9. The Contractor shall allow for audits of its Personal Data processing activity by the Customer or the Customer's designated auditor.

13.10. Each Party shall designate its own Data Protection Officer if required by the Data Protection Legislation.

13.11. Before allowing any Sub-processor to process any Personal Data related to this Agreement, the Contractor must:

- a. notify the Customer in writing of the intended Sub-processor and processing;
- b. obtain the written consent of the Customer;
- c. enter into a written agreement with the Sub-processor which give effect to the terms set out in this clause 13 such that they apply to the Sub-processor; and

- d. provide the Customer with such information regarding the Sub-processor as the Customer may reasonably require.
- 13.12. The Contractor shall remain fully liable for all acts or omissions of any of its Sub-processors.
- 13.13. The Customer may, at any time on not less than 30 Working Days' notice, revise this clause by replacing it with any applicable controller to processor standard clauses or similar terms forming part of an applicable certification scheme (which shall apply when incorporated by attachment to this Agreement).
- 13.14. The Parties agree to take account of any non-mandatory guidance issued by the Information Commissioner's Office. The Customer may on not less than 30 Working Days' notice to the Contractor amend this Agreement to ensure that it complies with any guidance issued by the Information Commissioner's Officer.
- 13.15. When handling Customer data (whether or not Personal Data), the Contractor shall ensure the security of the data is maintained in line with the security requirements of the Customer as notified to the Contractor from time to time.
- 13.16. This clause 13 shall apply during the Term and indefinitely after its expiry.

14. Liability

- 14.1 The Contractor shall not be responsible for any injury, loss, damage, cost or expense suffered by the Customer if and to the extent that it is caused by the negligence or wilful misconduct of the Customer or by breach by the Customer of its obligations under the Agreement.
- 14.2 Subject always to clauses 14.3 and 14.4:
 - 14.2.1 the aggregate liability of the Contractor in respect of all defaults, claims, losses or damages howsoever caused, whether arising from breach of the Agreement, the supply or failure to supply of the Services, misrepresentation (whether tortious or statutory), tort (including negligence), breach of statutory duty or otherwise shall in no event exceed a sum equal to 125% of the Charges paid or payable to the Contractor; and
 - 14.2.2 except in the case of claims arising under clauses 9.4 and 18.3, in no event shall the Contractor be liable to the Customer for any:
 - a) loss of profits;

- b) loss of business;
- c) loss of revenue;
- d) loss of or damage to goodwill;
- e) loss of savings (whether anticipated or otherwise); and/or
- f) any indirect, special or consequential loss or damage.

14.3 Nothing in the Agreement shall be construed to limit or exclude either Party's liability for:

14.3.1 death or personal injury caused by its negligence or that of its Staff;

14.3.2 fraud or fraudulent misrepresentation by it or that of its Staff; or

14.3.3 any other matter which, by law, may not be excluded or limited.

14.4 The Contractor's liability under the indemnity in clause 9.4 and 18.3 shall be unlimited.

15. Force Majeure

15.1 Neither Party shall have any liability under or be deemed to be in breach of the Agreement for any delays or failures in performance of the Agreement which result from circumstances beyond the reasonable control of the Party affected. Each Party shall promptly notify the other Party in writing when such circumstances cause a delay or failure in performance and when they cease to do so. If such circumstances continue for a continuous period of more than two months, either Party may terminate the Agreement by written notice to the other Party.

16. Termination

16.1 The Customer may terminate the Agreement at any time by notice in writing to the Contractor to take effect on any date falling at least 1 month (or, if the Agreement is less than 3 months in duration, at least 10 Working Days) later than the date of service of the relevant notice.

- 16.2 Without prejudice to any other right or remedy it might have, the Customer may terminate the Agreement by written notice to the Contractor with immediate effect if the Contractor:
- 16.2.1 (without prejudice to clause 16.2.5), is in material breach of any obligation under the Agreement which is not capable of remedy;
 - 16.2.2 repeatedly breaches any of the terms and conditions of the Agreement in such a manner as to reasonably justify the opinion that its conduct is inconsistent with it having the intention or ability to give effect to the terms and conditions of the Agreement;
 - 16.2.3 is in material breach of any obligation which is capable of remedy, and that breach is not remedied within 30 days of the Contractor receiving notice specifying the breach and requiring it to be remedied;
 - 16.2.4 undergoes a change of control within the meaning of section 416 of the Income and Corporation Taxes Act 1988;
 - 16.2.5 breaches any of the provisions of clauses 7.2, 11, 12, 13 and 17;
 - 16.2.6 becomes insolvent, or if an order is made or a resolution is passed for the winding up of the Contractor (other than voluntarily for the purpose of solvent amalgamation or reconstruction), or if an administrator or administrative receiver is appointed in respect of the whole or any part of the Contractor's assets or business, or if the Contractor makes any composition with its creditors or takes or suffers any similar or analogous action (to any of the actions detailed in this clause 16.2.6) in consequence of debt in any jurisdiction; or
 - 16.2.7 fails to comply with legal obligations in the fields of environmental, social or labour law.
- 16.3 The Contractor shall notify the Customer as soon as practicable of any change of control as referred to in clause 16.2.4 or any potential such change of control.
- 16.4 The Contractor may terminate the Agreement by written notice to the Customer if the Customer has not paid any undisputed amounts within 90 days of them falling due.
- 16.5 Termination or expiry of the Agreement shall be without prejudice to the rights of either Party accrued prior to termination or expiry and shall not affect the continuing rights of the Parties under this clause and clauses 2, 3.2, 6.1, 6.2, 6.6, 6.7, 7, 9, 10.2, 11, 12, 13, 14, 16.6, 17.4, 18.3, 19 and 20.7 or any other provision

of the Agreement that either expressly or by implication has effect after termination.

16.6 Upon termination or expiry of the Agreement, the Contractor shall:

16.6.1 give all reasonable assistance to the Customer and any incoming Contractor of the Services; and

16.6.2 return all requested documents, information and data to the Customer as soon as reasonably practicable.

17. Compliance

17.1 The Contractor shall promptly notify the Customer of any health and safety hazards which may arise in connection with the performance of its obligations under the Agreement. The Customer shall promptly notify the Contractor of any health and safety hazards which may exist or arise at the Customer's premises and which may affect the Contractor in the performance of its obligations under the Agreement.

17.2 The Contractor shall:

17.2.1 comply with all the Customer's health and safety measures while on the Customer's premises; and

17.2.2 notify the Customer immediately in the event of any incident occurring in the performance of its obligations under the Agreement on the Customer's premises where that incident causes any personal injury or damage to property which could give rise to personal injury.

17.3 The Contractor shall:

17.3.1 perform its obligations under the Agreement in accordance with all applicable equality Law and the Customer's equality and diversity policy as provided to the Contractor from time to time; and

17.3.2 take all reasonable steps to secure the observance of clause 17.3.1 by all Staff.

17.4 The Contractor shall supply the Services in accordance with the Customer's environmental policy as provided to the Contractor from time to time.

- 17.5 The Contractor shall comply with, and shall ensure that its Staff shall comply with, the provisions of:
- 17.5.1 the Official Secrets Acts 1911 to 1989; and
- 17.5.2 section 182 of the Finance Act 1989.

18. Prevention of Fraud and Corruption

- 18.1 The Contractor shall not offer, give, or agree to give anything, to any person an inducement or reward for doing, refraining from doing, or for having done or refrained from doing, any act in relation to the obtaining or execution of the Agreement or for showing or refraining from showing favour or disfavour to any person in relation to the Agreement.
- 18.2 The Contractor shall take all reasonable steps, in accordance with good industry practice, to prevent fraud by the Staff and the Contractor (including its shareholders, members and directors) in connection with the Agreement and shall notify the Customer immediately if it has reason to suspect that any fraud has occurred or is occurring or is likely to occur.
- 18.3 If the Contractor or the Staff engages in conduct prohibited by clause 18.1 or commits fraud in relation to the Agreement or any other contract with the Crown (including the Customer) the Customer may:
- 18.3.1 terminate the Agreement and recover from the Contractor the amount of any loss suffered by the Customer resulting from the termination, including the cost reasonably incurred by the Customer of making other arrangements for the supply of the Services and any additional expenditure incurred by the Customer throughout the remainder of the Agreement; or
- 18.3.2 recover in full from the Contractor any other loss sustained by the Customer in consequence of any breach of this clause.

19. Dispute Resolution

- 19.1 The Parties shall attempt in good faith to negotiate a settlement to any dispute between them arising out of or in connection with the Agreement and such efforts shall involve the escalation of the dispute to an appropriately senior representative of each Party.

- 19.2 If the dispute cannot be resolved by the Parties within one month of being escalated as referred to in clause 19.1, the dispute may by agreement between the Parties be referred to a neutral adviser or mediator (the “Mediator”) chosen by agreement between the Parties. All negotiations connected with the dispute shall be conducted in confidence and without prejudice to the rights of the Parties in any further proceedings.
- 19.3 If the Parties fail to appoint a Mediator within one month, or fail to enter into a written agreement resolving the dispute within one month of the Mediator being appointed, either Party may exercise any remedy it has under applicable law.

20. General

- 20.1 Each of the Parties represents and warrants to the other that it has full capacity and authority, and all necessary consents, licences and permissions to enter into and perform its obligations under the Agreement, and that the Agreement is executed by its duly authorised representative.
- 20.2 A person who is not a party to the Agreement shall have no right to enforce any of its provisions which, expressly or by implication, confer a benefit on him, without the prior written agreement of the Parties.
- 20.3 The Agreement cannot be varied except in writing signed by a duly authorised representative of both the Parties.
- 20.4 The Agreement contains the whole agreement between the Parties and supersedes and replaces any prior written or oral agreements, representations or understandings between them. The Parties confirm that they have not entered into the Agreement on the basis of any representation that is not expressly incorporated into the Agreement. Nothing in this clause shall exclude liability for fraud or fraudulent misrepresentation.
- 20.5 Any waiver or relaxation either partly, or wholly of any of the terms and conditions of the Agreement shall be valid only if it is communicated to the other Party in writing and expressly stated to be a waiver. A waiver of any right or remedy arising from a breach of contract shall not constitute a waiver of any right or remedy arising from any other breach of the Agreement.
- 20.6 The Agreement shall not constitute or imply any partnership, joint venture, agency, fiduciary relationship or other relationship between the Parties other than the contractual relationship expressly provided for in the Agreement. Neither Party shall have, nor represent that it has, any authority to make any commitments on the other Party's behalf.

- 20.7 Except as otherwise expressly provided by the Agreement, all remedies available to either Party for breach of the Agreement (whether under the Agreement, statute or common law) are cumulative and may be exercised concurrently or separately, and the exercise of one remedy shall not be deemed an election of such remedy to the exclusion of other remedies.
- 20.8 If any provision of the Agreement is prohibited by law or judged by a court to be unlawful, void or unenforceable, the provision shall, to the extent required, be severed from the Agreement and rendered ineffective as far as possible without modifying the remaining provisions of the Agreement, and shall not in any way affect any other circumstances of or the validity or enforcement of the Agreement.

21. Notices

- 21.1 Any notice to be given under the Agreement shall be in writing and may be served by personal delivery, first class recorded or, subject to clause 21.3, e-mail to the address of the relevant Party set out in the Award Letter, or such other address as that Party may from time to time notify to the other Party in accordance with this clause:
- 21.2 Notices served as above shall be deemed served on the Working Day of delivery provided delivery is before 5.00pm on a Working Day. Otherwise delivery shall be deemed to occur on the next Working Day. An email shall be deemed delivered when sent unless an error message is received.
- 21.3 Notices under clauses 15 (Force Majeure) and 16 (Termination) may be served by email only if the original notice is then sent to the recipient by personal delivery or recorded delivery in the manner set out in clause 21.1.

22. Governing Law and Jurisdiction

- 22.1 The validity, construction and performance of the Agreement, and all contractual and non contractual matters arising out of it, shall be governed by English law and shall be subject to the exclusive jurisdiction of the English courts to which the Parties submit.

SCHEDULE 1 - PROCESSING, PERSONAL DATA AND DATA SUBJECTS

1. This Schedule shall be completed by the Customer, who may take account of the view of the Contractor, however the final decision as to the content of this Schedule shall be with the Customer at its absolute discretion.
2. The contact details of the Customer Data Protection Officer are:

DGC.GDPR@defra.gsi.gov.uk
3. The contact details of the Contractor Data Protection Officer are:

[REDACTED]
[REDACTED]
4. The Contractor shall comply with any further written instructions with respect to processing by the Customer.
5. Any such further instructions shall be incorporated into this Schedule.

Data Processing descriptor	Narrative
Identity of the Controller and Processor	The Parties acknowledge that for the purposes of the Data Protection Legislation, the Customer is the Controller and the Contractor is the Processor in accordance with Clause 13.1.
Subject matter of the processing	For the purposes of this Contract this is any personal data controlled by the Authority or, as the case may be, the relevant Customer, for the purposes of carrying out its duties and enforcing its rights under this Contract.
Duration of the processing	For the duration of the Contract.
Nature and purposes of the processing	The nature of the processing means any operation such as collection, recording, organisation, structuring, storage, adaptation or alteration, retrieval, consultation, use, disclosure by transmission, dissemination or otherwise making available, alignment or combination, restriction, erasure or destruction of data (whether or not by automated means) etc. Storage and use of Personal details of Contacts of the Provider, and third parties working to the specification for purposes of providing services in accordance with the Contract.
Type of Personal Data	Name, address, date of birth, NI number, telephone number, pay, images, biometric data etc.
Categories of Data Subject	Staff (including volunteers, agents, and temporary workers), customers/ clients, suppliers, patients, students / pupils, members of the public.

<p>Plan for return and destruction of the data once the processing is complete</p> <p>UNLESS requirement under union or member state law to preserve that type of data</p>	<p>The Provider will store relevant personal data in an electronic file, specific to the programme, in its central document management system which is stored, backed up and supported within the UK. Some hard copy documentation may also be stored in a physical matter file in the UK. Relevant personal data will be retained in accordance with the Provider's Physical Records Retention Policy, which specifies a standard retention period for 6 years after termination or expiry of the Contract.</p>
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ANNEX 3: Specification

Project background

The Long-term Monitoring Network (LTMN) comprises 37 sites, mainly on National Nature Reserves, in England, where a wide range of environmental parameters are being monitored with the aim of detecting long-term changes in biodiversity and ecosystem function associated with climate change, pollution and land management. A suite of soil parameters are included in this monitoring to enable interpretation of above and below-ground environmental changes and to indicate long-term changes in soil characteristics, functions and biodiversity.

This document provides a specification to undertake processing and analysis of soils samples collected as part of this monitoring programme.

The suite of parameters measured and the methods to collect samples in the field have been selected both for their ability to detect environmental changes, and to provide compatibility with sites previously monitored by this project and with other soil monitoring and assessment schemes and such as the Countryside Survey (Emmett, 2008). They have also been selected in the light of and to respond to recommendations from UK Soil Indicators Consortium (Merrington, 2006; Black et al, 2008). Suggestions from contractors on how best to achieve these aims will be welcomed.

Soil sampling and field assessments

This contract requires no fieldwork, and relates to sample processing, analysis and reporting of results only. Currently all sites where soils monitoring is required will have their fieldwork and sampling carried out by Natural England staff and volunteers.

This time, we need processing, analysis and reporting for soils samples collected during **two years of sampling**: 2018 and 2019. This is because in 2018 samples were collected, but not analysed, and have been stored frozen at -20°. These samples can be made available shortly after the contract is awarded, to enable early processing and analysis. For 2019 samples, the fieldwork and sampling will be completed in September/October and the samples will be made available for processing from late September to mid October 2019.

2018 sites.

A total of 4 sites were sampled between 19th September and 9th October 2018. Sites and habitats surveyed and sampled are listed in Table 1 below.

Table 1 Sites and habitats sampled for soil analysis in 2018

Site No.	Site	Habitat to be sampled
1	Ingleborough ¹	Upland blanket bog
2	Martin Down	Calcareous grassland
5	Lullington Heath	Dwarf shrub heath
8	Thursley	Lowland heath

¹ Based on the data in the baseline survey this site should yield approximately 12 (up to 20) peat samples in total, with 2 -3 samples being generated from each of the 5 sampling plots.

Soil samples were collected from five 20m by 20m sampling plots in each reserve, with these five representing examples of similar vegetation and soil types. Thus, samples were collected from a total of twenty sampling plots during 2018.

In each sampling plot, four 2m by 2m subplots were selected randomly, from which the following series of soil cores and samples were collected.

Core A = Four PVC-C plastic tubes 51mm internal diameter and 150mm long, wrapped in clingfilm and containing intact soil from 15-30 cm below the soil surface. All four soil samples from a single 20m by 20m plot are to be bulked for analysis.

Core C = Four PVC-C plastic tubes 51mm internal diameter and 150mm long, wrapped in clingfilm and containing intact soil from 0-15 cm below the soil surface. All four soil samples from a single 20m by 20m plot are to be bulked for analysis.

Core D = a bag of approximately 500g wet weight of soil collected from 0-15cm below the soil surface, bulked from 12 locations.

Core P = At Ingleborough, where the soil from 0-30 cm depth was entirely organic (peaty) in texture, a Russian corer was used to extract sequential peat samples down the profile in one subplot only, each representing 50cm of peat, until the entire depth of the peat deposit was sampled. The last core extracted will be likely to contain some mineral material, and the length of the core sample occupied by peaty material was measured and noted, and the mineral material discarded. Each 50cm peat core was placed in separate labelled bags marked P1 (for surface peat 0-50cm), P2, P3, P4 etc. For 2018 the one peaty site (Ingleborough) generated 9 x 50cm peat samples in total.

From 2018 there will therefore be a total of 20 C core samples, 20 A core samples, 20 D samples, and 9 P samples, which are currently frozen and will be available for analysis in the early part of the contract.

2019 sites.

A total of 4 sites will be sampled between 16th September and 7th October 2019. Within each site, soil sampling and field assessments will be undertaken in areas representing one of the dominant semi-natural vegetation types. Sites and habitats to be surveyed and sampled are listed in Table 1 below.

Table 1 Sites and habitats to be sampled for soil analysis in 2019

Site No.	Site	Habitat to be sampled
1	Derbyshire Dales	Calcareous grassland
2	North Solent	Neutral grassland
5	Bure Marshes	Lowland mires and fens
8	Dersingham Bog	Lowland mires and fens

Soil samples will be collected from five 20m by 20m sampling plots in each reserve, with these five representing examples of similar vegetation and soil types. Thus, samples will be collected from a total of twenty sampling plots during 2018.

In each sampling plot, four 2m by 2m subplots have been selected randomly, from which the following series of soil cores and samples will be collected.

Core A = Four PVC-C plastic tubes 51mm internal diameter and 150mm long, wrapped in clingfilm and containing intact soil from 15-30 cm below the soil surface. All four soil samples from a single 20m by 20m plot are to be bulked for analysis.

Core B = Four PVC-c plastic tubes 40mm internal diameter and 80mm long, wrapped in clingfilm, capped with gauze, and containing intact soil from 0-8cm below the soil surface. All four soil samples from a single 20m by 20m plot are to be bulked for analysis.

Core C = Four PVC-C plastic tubes 51mm internal diameter and 150mm long, wrapped in clingfilm and containing intact soil from 0-15 cm below the soil surface. All four soil samples from a single 20m by 20m plot are to be bulked for analysis.

Core D = a bag of approximately 500g wet weight of soil collected from 0-15cm below the soil surface, bulked from 12 locations.

Core E = a bag of approximately 500g wet weight of soil collected from 0-15cm below the soil surface, bulked from 12 locations

Core F = a single core 40mm in diameter and 150mm long wrapped in clingfilm and containing intact soil from 0-15 cm below the soil surface

Core P = At Dersingham Bog and Bure Marshes where the soil from 0-30 cm depth is entirely organic (peaty) in texture, a Russian corer will be used to extract sequential peat samples down the profile in one subplot only in each sampling plot, each core extracted representing 50cm depth of peat, until the entire depth of the peat deposit has been sampled. The last core extracted will be likely to contain some mineral material, and the length of the core sample occupied by peaty material will be measured and noted, and the mineral material discarded. Each 50cm peat core will be placed in separate labelled bags marked P1 (for surface peat), P2, P3, P4 etc. Please note, the number of peat samples that the sites will yield has been estimated on the basis of the baseline peat depth data available, but exact numbers of samples will not be known until the survey is complete. For the purposes of planning, for 2018 it has been estimated that Bure Marshes will generate approximately 30 peat samples, and Dersingham Bog will generate 7 peat samples, so that there will be approximately 37 ≤50cm peat samples in total.

From the 2019 fieldwork there will therefore be a total of 20 A core samples, 20 B core samples, 20 C core samples, 20 D samples, 20 E samples, 20 F cores and approximately 37 P samples.

Labelling of soil samples

All samples will be supplied in bags labelled using the following system

Site number X Plot number X (Subplot Number X) Sample Type Letter

Note that only cores F and P will be labelled at the subplot level, with the remainder being bulked from 4 subplots in a single bag for analysis.

Thus an A core from of sampling plot 14 at Roudsea Moss will carry the label

32X14XA

And an F core from Subplot 2 in Sampling plot 56 at Ingleborough will carry the label

1X46X2XF

All sample bags will also be labelled with the **date** and the **initials** of the surveyor, this information should be transferred to a spreadsheet and used to link analysis results to field data.

Field information relating to the samples taken will be supplied to the contractor, to enable them to carry out, interpret and report on the soil analysis required.

Sample storage and transport

- **Samples from 2018 will be supplied to the contractor by 24 hour delivery (if possible) in frozen form in insulated boxes. It is the aim that the samples will arrive substantially frozen.**
- **On receipt of 2018 samples, they should be placed immediately in frozen storage, at -20°C pending subsequent processing.**
- For samples collected in 2019, these will be delivered chilled to the contractor in insulated boxes containing frozen freeze blocks.
- On receipt of the 2019 samples they must be placed immediately into cold storage at 4°C.
- The contractor must discuss arrangements for receiving the samples with Natural England staff, to ensure that that laboratory staff know that they are arriving and can act to store and preserve them appropriately on arrival.
- Samples from 2019 should be stored for a minimum of time before analysis. This is of particular importance for samples B, D, E and F.
- Air dried, sieved soils representing A and C samples from the sites surveyed this year are to be sent to Natural England's office in Exeter, Devon, for storage and possible further analysis.

Soil Sample Analysis

Analysis of Physico-chemical attributes

The following analyses should be applied to the following soil samples collected above. In all cases analyses should as closely as possible conform to those used by the James Hutton Institute for previous monitoring analysis. The JHI method codes for each analysis are provided in brackets below and referred to here:

<http://www.ukas.org/testing/schedules/actual/7541Testing%20Single.pdf>

If the contractor is able to suggest an improved method of analysis, which would allow valid comparison with previous analyses, these must be discussed and agreed with the Natural England project manager before implementing.

2018 samples should be thawed and then processed, as soon as thawing is complete, in the same way as 2019 fresh samples.

2018 and 2019 Core A and Core C – 15cm by 5cm diameter – bulked samples from 0-15 and 15-30cm

80 analyses in total (2 depths x 4 sites x 5 sampling plots x 2 years)

For each set of bulked samples, entire sample collected should each be assessed using, where possible, UKAS approved method for:

- % gravimetric water content following drying at 30°C and after further drying at 105°C
- % stone volume (volume of mineral particles >2mm diameter)
- dry bulk density g cm³
- fine earth bulk density (dry bulk density of non-stone material)

to give five measurements per site for A cores and five measurements per site for C cores.

For each sample, and for each core, aliquots of sieved soil should be measured out and analysed for the following parameters using UKAS approved methods:

- pH in water and in CaCl₂ (Method DM006)
- % weight loss on ignition at 375°C¹ (Method DM007)
- % weight total C and total N (Dumas combustion on air-dried and milled sample, dried at 105°C)
- Cation Exchange Capacity and exchangeable cations, comprising Mg, Ca, Na, Mn, K, Fe, Al (Ammonium acetate extraction at pH7, and analysis of cations using ICP-OES) and exchangeable acidity (barium acetate extraction, at pH 7, and titration with barium hydroxide).
- Particle size distribution: gravimetric % sand, silt and clay, using both BSTC and international definitions for silt and sand (laser diffraction)

2018 and 2019 CORES Pn – 50cm length cores taken down peat profile to full depth of peat.

~52 analyses in total (30 samples from Bure 2019, 7 samples from Dersingham 2019, approximately 15 from Ingleborough 2018)

The 50 cm peat samples of known volume must be weighed wet, dried at 105°C, and reweighed to estimate bulk density following, where possible, a UKAS approved procedure. Dried cores will be subsampled by cutting lengthways and ground in a hammer mill or other suitable machine before being analysed for soil organic matter content by loss on ignition at 375°C¹.

All analyses should be subject to adequate QC procedures, and documentation on the methods used should be available on request.

Analysis of soil biological parameters and functions

The following analyses and procedures should be undertaken for cores B, D and E.

2019 Sample B – four 8cm by 8cm diameter cores for soil arthropods by Tullgren extraction

20 extractions in total (4 sites X 5 sampling plots x 1 year)

This sample should be stored at 4°C pending processing, for as little time as possible. Cores B should have their fine gauze carefully removed (to avoid loss of specimens), each bulked set of cores carefully ejected, to avoid core damage (ideally by cutting through the core pipes), and mounted in a single Tullgren funnel with their original surface facing downward, or lying on their sides. Each funnel should be gently heated using a low-wattage incandescent bulb, for an appropriate extraction period (until the soil is no longer losing water), while collecting soil fauna in ethanol following the protocols followed by Emmett et al 2008. Samples should be Collected and stored in at least 90% ethanol or other suitable preservative to enable later genetic/metagenetic analysis and morphological identification of the specimens. This contract does not extend to the counting or identification of animals extracted. Extracts should be carefully packed in protective material and sent to Natural England for identification or further processing, using a suitable courier or transport process.

2019 Sample E – 8-12 bulked trowel samples and 2018 Sample (labelled “D”)

40 analyses in total (4 sites X 5 sampling plots x 2 years)

¹ or optimum temperature for complete combustion of organic matter, while avoiding liberation of carbonate C.

This sample must be stored at 4°C pending analysis, and will be homogenized, and sub-sampled before analysis using UKAS-approved methods where possible, for

- Soil microbial PFLAs (S.O.P. CP001; see Zogg et al, 1997; Frostegård et al, 1996, as adapted by Black et al, 2008; 2011). These would be extracted from an appropriate amount of homogenised soil (50-500g depending on organic matter content, Method SEP0000) and analysed by GC-FID or other suitable method (Method CM001) to indicate both total biomass PLFAs, and identification of a range of taxon-specific and unidentified PLFAs (see Appendix 1) following the methods used in the Black et al (2011). Data for individual PLFA species should be reported as $\mu\text{g g}^{-1}$, nmol g^{-1} and % total mol.
- A further subsample will be subject to microbial DNA analysis by terminal restriction fragment length polymorphism (tRFLP) on ITS, 16S_AR and archaea genes, following the protocol described in Black (2008; 2011). The data will be reported on by relative abundance of all resulting fragment lengths. An internal size standard should be used which will allow for the reasonable calibration of size fragments between 30 and 550 base pairs.

2019 Sample D – 8-12 bulked trowel samples

20 extractions/analyses in total (4 sites X 5 sampling plots x 1 year)

The bulked sample should be subject to a modified Baermann extraction (following the protocols previously used by the James Hutton Institute. This is similar to the method established by Black *et al* (2008, 2011), for the SQID programme, which is based on a modified version of Brown and Boag (1988) for collection of soil nematodes, but uses 200g of soil, instead of 100g. Nematode extracts should be archived following the method outlined in Donn et al. (2006, 2008, 2012), following the methods used in previous analysis contracts for the LTMN.

2019 Sample F – Indicator of N mineralisation

20 analyses in total (4 sites X 5 sampling plots)

Core F should be analysed for N mineralisation following the method described by Emmett (2008) which removes soluble N from an intact core by washing through with artificial rainwater, before incubating, and analysis for all KCl-extractable N. This does not produce true N mineralisation rates, but should provide a comparative index of N mineralisation.

The intact core should be removed from its plastic case. The core should be laid on its side on a rack and brought to field capacity and flushed through with “artificial rain” (“UK rain minus N”, Emmett, 2008) equivalent in volume to 4 times the pore volume of the core to remove remaining mineral N (as described in Emmett 2008).

The core should then be subjected to standard suction to standardise soil water tension before N mineralisation. Soil cores should then be incubated for 28 days at 10 degrees C and extracted with 1M KCl as described in Emmett et al (2008) and soil ammonium-N and nitrate-N analysed and reported in terms of total ammonium-nitrogen and total nitrate-nitrogen mineralised per mass of soil.

Sample archiving

Sieved (<2mm), dried (30°C) samples from cores A and C from all sites analysed this year for the soils monitoring project should be supplied in labelled bags/containers to Natural England for storage and possible future analysis.

The samples would be contained in labelled plastic bags, and we recognise that these samples will be of various sizes depending on the water content etc. of the original sample.

Data analysis and reporting

Raw data should be provided to Natural England, and be processed where this is required to provide biologically meaningful results (eg. profiling of PLFAs against soil organism groups, tRFLP, identification of nematode families and feeding strategies). Data format should be provided to be as compatible as possible with other soil monitoring data sets.

- Content of clay, silt, sand, water, organic matter, carbon, nitrogen should be expressed in % weight values.
- Cations and CEC should be expressed as millequivalents 100g⁻¹ dry soil
- Bulk density should be expressed in g cm⁻³
- pH should be expressed in standard units
- Extractable ammonium and nitrate should be expressed as mg kg⁻¹
- Ammonium and Nitrate mineralisation should be expressed in mg kg⁻¹ dry soil day⁻¹.
- PLFAs should be reported in the units described above
- tRFLP should be reported in units described above, and integrated with results from previous years to enable valid comparison between sites (data from previous years will be provided as necessary), and between sampling periods for those sites with repeated samples.

All results should be supplied to Natural England in the form of Excel spreadsheets. Advice will be given on the format, units or analysis required. Time required to for both sample analysis and data collation should be identified and costed as part of the tender.

There is no requirement for producing a final report, or to conduct any statistical analysis of the data saving that required for identifying PLFAs, tRFs or for calculating the units above.

Details of the analytical protocols used in the analyses described above are to be supplied to NE to enable us to describe the protocols accurately in future publications and specifications.

Contractors are encouraged to work with Natural England in disseminating and interpreting the results and in publicising the work. The publication of collaborative scientific papers based on this data will be encouraged, and contractors will be invited to participate and present at online seminars about this work.

Project management and co-ordination

It is expected that the contractor or contractors will liaise with Natural England by e-mail, and in telephone/webinar meetings to:

- Agree and finalise the project timetable
- Agree any minor amendments to the range of analyses to be undertaken.
- Coordinate the transport and delivery of samples
- Provide updates on the progress of sample analysis
- Share experiences on the processing and analysis of the samples and provide any recommendations to improve it.
- Finalise the project.

All progress meetings required will be held during the course of the contract by teleconference/webinar/videoconference.

Timetable

This contract is to run until 15th March 2020.

The contractor is required to show that they can deliver results and invoices by the dates given in the Table 2 below.

Table 2 Milestone dates

The following project milestones are envisaged, but will be subject to final agreement between the successful contractors and Natural England. It has been assumed that the contractor may wish to carry out analysis of the 2018 samples earlier in the contract, to spread the workload. However, if it is more efficient to analyse all samples during a single period, we would be happy to wait until 2019 samples are available for analysis before receiving analysis results from the 2018 samples.

Milestone	Date	Payment Associated
Project initiation teleconference - and project plan agreed	Week commencing 19 August	
2018 Sample A, C and P analyses complete	31 st August 2019	
2018 PLFA and tRFLP analyses complete	30 th September 2019	
2019 sample Tullgren and Baermann extracts completed	25 th October 2019	
2019 Mineralisable N assay completed	25 th November 2019	
All soil physico-chemical measurements completed	4 th January 2020	Payment of 60% of contract value
All PLFA and tRFLP data complete	1 st February 2020	
All data collation and analysis completed	1 st March 2020	

All data supplied and samples supplied to Natural England and final project meeting completed	8 th March 2020	
Final invoice submitted	15 th March 2020	Payment of 40% of the contract value.

References

Black, H.I.J. Ritz, K. Campbell, C.D. Harris, J.A. Wood, C. Chamberlain, P.M. Parekh, N. Towers, W. and Scott, A. (2008). SQID: Prioritising biological indicators of soil quality for deployment in a national-scale soil monitoring scheme. Summary report. NERC/Centre for Ecology & Hydrology, 22pp. (CEH Project Number: C03061, Defra Project No. SP0529)

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Emmett et al (2008) CS Technical Report No. 3/07 Soils Manual. Centre for Ecology and Hydrology (Natural Environment Research Council).

Merrington G. (2006) The development and use of soil quality indicators for assessing the role of soil in environmental interactions. Science Report SC030265, Environment Agency.

Gregory P. Zogg, G.P., Zak, D. R., Ringelberg, D.B., White, D. C., MacDonald, N. W, Pregitzer K. S. (1997). Compositional and Functional Shifts in Microbial Communities Due to Soil Warming. Soil Science Society of America Journal, 61:475-481

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APPENDIX 1 PLFA MOIETIES AND COMBINED TOTALS TO BE REPORTED

<i>Variable name</i>	<i>Description</i>
PLFA _{tot}	Total PLFA community
PLFA _{bac}	Bacterial community

PLFAfun	Fungal community
PLFAact	Actinobacteria
FB ratio	fungus:bacteria ratio
Gpos	Gram positive bacteria
Gneg	Gram negative bacteria
pn ratio	Gram positive: Gram negative ratio
12:0	Unclassified
13:0	Unclassified
14:0i	Unclassified
14:0	Unclassified
14:1ω9c	Unclassified
14:1ω9t	Unclassified
15:0i	Bacterial, Gram positive
15:0ai	Bacterial, Gram positive
15:0	Bacterial
16:0br	Unclassified
16:1i	Unclassified
16:1ω11c	Unclassified
16:0i	Bacterial, Gram positive
16:1ω11t	Unclassified
16:1ω7c	Bacterial, Gram negative
16:1ω7t	Bacterial, Gram negative
16:1ω5c	Bacterial, Gram negative
16:0	Unclassified
17:0br	Unclassified
C16:0(10Me)	Bacterial, Gram positive, Actinobacteria
17:0i	Bacterial, Gram positive

17:0ai	Bacterial, Gram positive
16:0(12 Me)	Unclassified
17:1ω8c	Unclassified
17:0cy	Bacterial, Gram negative
17:1ω7	Unclassified
17:0	Bacterial
17:0(12Me)	Unclassified
17:0(10Me)	Bacterial, Gram positive, Actinobacteria
18:3ω6,8,13	Unclassified
18:2ω8,12	Unclassified
18:2ω6,9	Fungi
18:1ω9	Unclassified
18:1ω7	Bacterial, Gram negative
18:1ω13/18:1ω10 or 11	Unclassified
18:0	Unclassified
19:1ω6	Unclassified
18:0(10Me)	Bacterial, Gram positive, Actinobacteria
19:1ω8	Unclassified
19:0cy	Bacterial, Gram negative
20:4ω6,9,12,15	Unclassified
20:5ω3	Unclassified
20:4ω2,6,10,14/20:4ω3,6,9,12	Unclassified
20:1ω9	Unclassified
20:1	Unclassified
20:0	Unclassified

