DARTMOOR NATIONAL PARK AUTHORITY

Excavation at Sittaford Stone Circle

CONTRACT

THIS CONTRACT is made this 26th day of AUGUST 2016

BETWEEN:

(1) **Dartmoor National Park Authority** of Parke, Bovey Tracey, Newton Abbot, Devon TQ13 9JQ ("DNPA"); **and**

(2) **AC Archaeology Ltd** (Co Regn No. 06577828) of Manor Farm Stables, Old Stables, Chicklade Hindon, Salisbury SP3 5SU ("the Contractor")

WHEREAS:

A. DNPA wishes to enter into a contract with the Contractor to carry out targeted excavation at Sittaford stone circle ("the Works").

B. The description of the Works is set out in the Invitation to submit a Quotation issued in July 2016 ("the Specification") (Appendix 1).

C. The Contractor has by written quotation Ref E16.106 dated July 2016 undertaken to carry out the Works in accordance with the Specification.

D. The Contractor has confirmed its availability to carry out field work in the week 12 – 16 September 2016 and to complete the Works on or before 15 April 2017

NOW IT IS HEREBY AGREED that:

1. The Contractor will upon and subject to: -
   - this contract
   - the Specification (Appendix 1)
   - the Contractor's written quotation (Appendix 2)

carry out the Works and the Authority will pay to the Contractor the sums as shall become due in accordance with this contract.

2 **Provision of the Services**

The Contractor shall perform the Works in accordance with the Specification together with such written or oral instructions as may from time to time be given by or on behalf of DNPA. The Contractor warrants that the Works will be performed with all due skill, care and diligence, and in accordance with good industry practice and legal requirements.

3 **Quality and Description**

The Works shall conform as to the quantity, quality and description with the particulars stated in the Specification.

DNPA reserves the right to amend the Specification, including the substitution, deletion and/or addition of conditions and requirements, **PROVIDED ALWAYS** that no amendment shall be made without the Contractor first being afforded the right to make representations to the Lead Officer **AND** also given the opportunity to indicate whether there will be a supplemental charge in respect of any additional work consequent upon the proposed amendment which the Contractor believes was not in the contemplation of the parties at the date of signing the contract

4 **Term**

The contract shall be for a period starting on the date hereof and ending on 15 April 2017 and shall be capable of extension or renewal on the same or varied terms provided that any such decision to extend or renew is made before the date upon which the contract would otherwise expire.

5 **Milestones**

The following Milestones will be used to monitor and confirm progress with the Works under the contract:

Milestone 1	field work completed	30 September 2016
Milestone 2	draft report submitted	24 March 2017
Milestone 3	final report submitted and accepted	15 April 2017

6 **Invoicing & Payment**

DNPA will pay to the Contractor the sum of £5,750 + VAT (five thousand seven hundred and fifty pounds) in respect of proper performance of the Works as specified in the contract. Payment will be made as follows:

Milestone 1	£4,000 + VAT
Milestone 3	£1,750 + VAT

Progress and performance under the contract shall be deemed satisfactory unless DNPA has stated reasoned dissatisfaction within 15 days of the matter causing concern arising.

If it becomes necessary to dig additional trenches or commission any specialist scientific artefact analysis or publication, the additional costs must be agreed between the parties in writing before any expenditure or financial commitment is incurred

7 **Discrepancies**
In the event of any conflict or discrepancy between the contract, the Contractor's written quotation and the Specification, the provisions shall apply in the following order of precedence:

1 the Contract;
2 the Contractor's written quotation
3 the Specification

8 **Assignment or Sub-Contracting**
The Contractor shall not assign, sub-rogate or transfer the Works or any part or parts of the contract to any other person, firm or company, except with the prior written consent of DNPA

9 **Health & Safety at Work**
The attention of the Contractor is directed particularly to the responsibilities of employers under the Health and Safety at Work Act 1974 (as amended) and Codes of Practice issued by the Health and Safety Executive. The Contractor shall at all times be responsible for ensuring safe systems of work, suitable and safe equipment and a safe working environment for the Works and all activities coming under the scope of the contract.

10 **No contract of employment**
The parties agree and declare that they enter into this contract as independent contracting parties and that there is no intention to create any contract of employment or mutuality of obligation as employer and employee.

11 **Variation of Contract**
The contract and its provisions shall only be capable of amendment by a document in writing signed by the parties

12 **Bankruptcy/Liquidation etc.**
In the event of the Contractor becoming bankrupt or making a composition or arrangement with creditors or having a proposal for a voluntary arrangement for a composition of debts, scheme, or arrangement approved in accordance with the Insolvency Act 1986, DNPA shall be at liberty to cancel the contract by notice in writing without compensation to the Contractor.

13 **Corruption**
DNPA shall be entitled to cancel the contract and to recover from the Contractor the amount of any loss resulting from such cancellation if the Contractor (whether personally or through any person acting on his/her behalf) shall have:

- offered or given or agreed to give any person any payment, gift or inducement in relation to the obtaining or execution of the contract
- offered or given or agreed to give any person any reward or consideration of any kind for doing or forbearing to do, or for having done or forborne to do any action in connection with the contract
- or for showing or forbearing to show favour or disfavour to any person in relation to the contract
- committed any offence under the Bribery Act 2010, Prevention of Corruption Acts 1889 & 1916 or shall have given any fee or reward the receipt of which is an offence under Section 117(2) Local Government Act 1972

14 Force Majeure

Neither party shall be liable to the other for any delay or failure by either party to perform its obligations under the contract if any such delay or failure arises from any cause or causes beyond the reasonable control of either party, including, but not limited to lightning, earthquakes, riots, acts of terrorism, regulations or orders of any Government, agency or subdivision thereof

15 Adverse Weather or Ground Conditions

In the event of adverse weather or ground conditions which make it inappropriate to carry out the field work as planned, the parties agree to use reasonable endeavours to reschedule the field work as soon as reasonably practicable thereafter.

16 Termination

DNPA reserves the right to terminate the contract forthwith if at any time it considers that the Contractor is in material or serious breach of obligations under the contract or that the Works or any terms and conditions of the contract are not being performed in a proper and business-like manner or to the true intent and meaning of the same.

AS WITNESS the hands of the said parties:

For	Dartmoor National Park Authority		AC ARCHAEOLOGY
Signed	L. S. Bray	**Signed**	Simon Hughes
Name	L. S. BRAY		SIMON HUGHES
Position	ARCHAEOLOGIST		PROJECT MANAGER

Dartmoor National Park Authority

Excavation at Sittaford Stone Circle

INVITATION TO SUBMIT A QUOTATION

1. Background

1.1 Sittaford stone circle (SX 63014 82811) (Appendix 1) was discovered in 2008 as a result of a moorland fire which revealed a circle of 30 recumbent granite slabs which had remained hidden by vegetation and partially buried in the peat since it was abandoned. Subsequent investigation has included peat depth geophysical survey (Appendix 2), the latter identifying a number of anomalies, possibly caused by archaeological features, in and around the circle. The peat depth survey indicated that the stones on the eastern side of the circle appear to be resting on the mineral substrate; while those on the western side are resting on peat up to *c*.0.7m thick suggesting the circle may have been abandoned due to peat encroachment. The recumbent position of the stones, combined with their structured orientation implies a deliberate act of decommissioned which took place, according to radiocarbon dates taken from charcoal contained in peat samples from beneath the stones, around 2,000BC. The well preserved nature of the monument, which appears to have remained undisturbed, except by peat cutting which uncovered part of it, suggests it to be of national importance with the potential to make a significant contribution to the wider investigation of stone circles.

1.2 In order provide a firm foundation for future research, targeted excavation is planned to take place in September 2016 with the following aims:

1: To improve understanding of the chronology and development of the stone circle.

2: To improve our understanding of the changing landscape and environmental context of the stone circle.

1.3 This brief invites the submission of a quotation, including a fully costed methodological statement, to undertake this work in conjunction with the Dartmoor National Park Authority (DNPA) archaeology team and in accordance with the project design contained in Appendix 2.

2. Excavation Parameters

2.1 Appendix 2 contains the project design for the excavation of the stone circle.

2.2 You are invited to submit a fixed price quotation for undertaking the excavation in conjunction with the DNPA archaeological team.

2.3 The excavation is planned to commence on 12th September 2016 and continue until 16rd September, although this may vary depending on weather conditions and findings.

2.4 The Sittaford stone circle is located in a remote moorland location approximately 4km from the nearest fully metalled road (at SX 65932 83915). From this point, the access route is confined to forestry tracks through Fernworthy Forest and open moorland. Accordingly, rugged four wheel drive vehicles are required to transport personnel and equipment. This difficulty of access should be accounted for in quotations.

2.5 The appointed contractor will be responsible for overall on-site direction of the excavation in liaison with the DNPA Archaeologist who will be available on-site for the majority of the work.

2.6 The excavation will be undertaken largely using a team consisting of suitably qualified personnel supplied by the appointed contractor. However, a member of the DNPA Archaeology team will attempt to be on-site the majority of the tme and it is anticipated that up to three experienced volunteers may also be available.

2.7 In undertaking the project, Dartmoor National Park Authority will be responsible for the following:

a) Recruitment of suitable volunteers and organisation of and liaison with them. On-site training of volunteers will be undertaken by the DNPA Archaeologist in association with the appointed contractor.

b) The transport of volunteers to and from site, although the contractor may also be asked to assist, depending on the vehicles available.

c) Obtaining relevant permissions from land owners and local Commoners.

d) Obtaining consents from the relevant bodies to undertake excavation within the Dartmoor Site of Special Scientific Interest (SSSI) and SAC (Special Area of Conservation).

2.8 In undertaking the project, the appointed contractor will be responsible for the following:

a) Arranging their own transport to and from site. NB the nature of the access route to the site will necessitate the use of a suitably rugged four-wheeled drive vehicle.

b) Possibly assist with the transportation of any volunteer on some days, as requested and if necessary.

c) On-site direction of excavations in liaison with the DNPA Archaeologist.

d) Production of a suitably detailed and illustrated project report.

e) In consultation with DNPA, commissioning and managing specialist post-excavation analysis and investigation, as required.

f) Acquisition of an OASIS number and uploading of the final report to the OASIS database.

g) Acquisition of relevant museum accession numbers for the project.

2.9 A basic methodology for achieving the project aims and objectives is described in the project design document (Appendix 2). However, reasoned variations, amendments and additions to this will be welcomed in any quotation, especially with respect to the approach taken to the analysis of peat and palaeosol sequences.

2.10 Please note that the site is covered by shallow peat and that ground conditions could be wet depending on weather over the summer. Accordingly, contractors should be prepared and equipped to undertake excavations in such conditions and also for the possibility of encountering preserved organic remains.

2.11 Quotations should also include a breakdown of resource and budget allocation and details of the anticipated timescale for the work. This should take into account potential delays in the schedule and, as far as possible, post excavation work and reporting.

2.12 The DNPA Archaeologist will be available to offer advice and assistance before, during and following completion of fieldwork.

2.13 Conditions on northern Dartmoor can be unpredictable and extreme. Accordingly, contractors are expected to be appropriately equipped and have access to a mobile telephone with reasonable coverage. It will also be advantageous for personnel to be experienced in working under upland conditions.

2.14 The Contractor must be able to guarantee continuity of staff during both the excavation and throughout the project.

2.15 Quotations should include brief CVs for personnel who will be assigned to the project.

2.16 Before the appointed contractor commences work on site a full risk assessment must be prepared and submitted to the DNPA Archaeologist for approval.

2.17 Work must be carried out at all times strictly in accordance with the approved risk assessment. No variation may be made without the prior written approval of the DNPA Archaeologist.

2.18 The contractor will be required to provide evidence of Public Liability insurance for not less than £5 million and may be required to provide evidence of

Employers Liability Insurance. Additionally, the contractor must acknowledge compliance with DNPA's Safe Code of Practice for Contractors (Appendix 3).

4. Timings and delivery

Task	Date
Submit quotation	12 noon, 29th July 2016
Successful contractor notified	5th August, 2016
Fieldwork commences	12th September, 2016
Anticipated fieldwork completion	16th September, 2016
Draft report submitted	24th March, 2017
Final report submitted	Within 15 working days of receipt of DNPA comments on draft report

4.1 Quotations must be submitted together with supporting information to: lbray@dartmoor.gov.uk to arrive no later than **12 noon on 29th July 2016**

4.2 It is anticipated that DNPA will be in a position to make an appointment of preferred contractor by 5th August.

4.3 The preferred contractor will be invited to enter into a written contract, to be completed before commencing work on site.

4.4 The contractor will be required to submit a draft report following completion of post-excavation work. Our initial view is that the draft report should be ready for submission by 24th March 2017, however we fully understand the need for some flexibility, particularly if results are awaited from external specialists.

4.5 The report must be appropriately detailed and illustrated and include an executive summary of the results in addition to a description of the methodology and a full discussion of the results.

4.6 The DNPA Archaeologist will comment on the draft report within 15 working days of receipt and set out any revisions requested.

4.7 The contractor will make any necessary revisions and submit the final report in MS Word and pdf formats within 15 working days of receipt of the DNPA comments on the draft report.

4.8 The surveyor will complete an online OASIS form describing the survey, including a digital copy of the report before completion of this contract. The report will also contain the appropriate OASIS number.

4.9 Payment will not be made until a final report has been submitted and the online OASIS form has been completed.

5. Quotations

5.1 Your quotation should provide a single fixed price for all work under the contract, including but not limited to preparation, fieldwork, transport, post-excavation work and report writing.

5.2 Although the difficulty of costings for post-excavation work in advance of excavation are acknowledged, estimates are required in submitted quotations in order to provide an indication. The precise nature, content and costing of a programme of post-excavation work will be determined in liaison with the DNPA Archaeologist according to the results of fieldwork. During the post-excavation phase of the project planning meetings between the contractor and the DNPA Archaeologist may be necessary. Quotations should include provision for such meetings which will be most likely to take place at the DNPA headquarters at Parke, Bovey Tracey.

5.3 Your quotation should include:

- Proposed methodology
- Timeline
- A full breakdown of the costs associated with each stage of the contract (eg preparation, fieldwork, transport, report writing, OASIS & museum)
- An hourly rate or day rate for a post excavation review meeting at DNPA headquarters, Parke, Bovey Tracey should this prove necessary.

5.4 You should also include:

- Brief CVs of the personnel who would be involved in the project.
- A list of specialists who it is proposed to approach, as required, for expert analysis, investigation, opinion and assistance during post-excavation work.
- A proposed contingency plan for delays due to poor weather.

6. Submission of Quotations

6.1 Quotations must be submitted together with supporting information to: lbray@dartmoor.gov.uk to arrive no later than **12 noon on 29th July 2016**

6.2 Please note we are unable to receive emails that exceed 6MB in size. If this cannot be achieved, responses should be split into separate emails (entitled 'part 1' and 'part 2' etc.).

6.3 Quotations received after the deadline, sent to any other email address or otherwise not complying with the instructions in this Invitation to Quote are likely to be disqualified.

7. Selection of Contractor

7.1 The contract will be awarded on the basis of confidence in the Contractor's ability to undertake archaeological excavation in an upland environment to an appropriate standard in a timely fashion and providing good value for money.

7.2 Selection criteria will include:

- methodology – approach to task; data/output analysis and reporting
- evidence of successful delivery of similar projects
- ability to provide all of the required expertise
- resilience – ability to deliver in the event of unplanned unavailability of key staff
- value for money.

7.3 Criteria will be scored in line with the following:

Criteria	Score	Weighting	Max Score
Methodology	1-5	x2	10
Evidence of successful delivery of comparable work	1-5	x4	20
Resilience – ability to deliver in the event of unplanned unavailability of key staff etc	1-5	x1	5
Value for money	1-5	x3	15
TOTAL			**50**

8. Contract Award

Please note the following:

- any costs incurred in preparing your quotation are entirely at your own risk
- DNPA reserves the right not to make any appointment and not to accept the lowest quotation
- DNPA reserves the right to contract some or all of the elements quoted for
- The details and timings of payments will be discussed with the selected contractor and specified in the contract
- The selected contractor will be invited to enter into a formal contract in the terms of this invitation to quote, the submitted quotation and the Authority's standard conditions of contract (Appendix 3)

9. Intellectual Property Rights

It is DNPA's intention that all raw elevation and derived data, text, illustrations, information, correspondence and all documents acquired, created or otherwise obtained in any work under the contract shall be the sole property of DNPA and that DNPA shall be free to use such material or any part thereof as it sees fit.

10. Freedom of Information

You are advised that information relating to any contract or procurement exercise to which DNPA is party, including information about price and performance, is covered by the Freedom of Information Act 2000 (the Act). DNPA is under a legal obligation to disclose such information if requested unless an exemption under the Act applies.

Any person submitting a quotation or entering into a contract with DNPA should, as part of the contract process, inform DNPA of any information which it regards as being

eligible for a claim for exemption from disclosure by DNPA under the Act. The final decision as to what information can be disclosed rests with DNPA .

11. Clarification and Queries

If clarification is required on any issue within this Invitation to Quote, questions should be directed to the authorised persons for the purpose of this contract:

1. Lee Bray, Archaeology
   lbray@dartmoor.gov.uk (01626) 831035
2. Christopher Walledge, Head of Legal & Democratic Services
   cwalledge@dartmoor.gov.uk (01626) 831068

12. Appendices

Appendix 1 Location map

Appendix 2 Project design

Appendix 3 Terms and conditions

Appendix 1

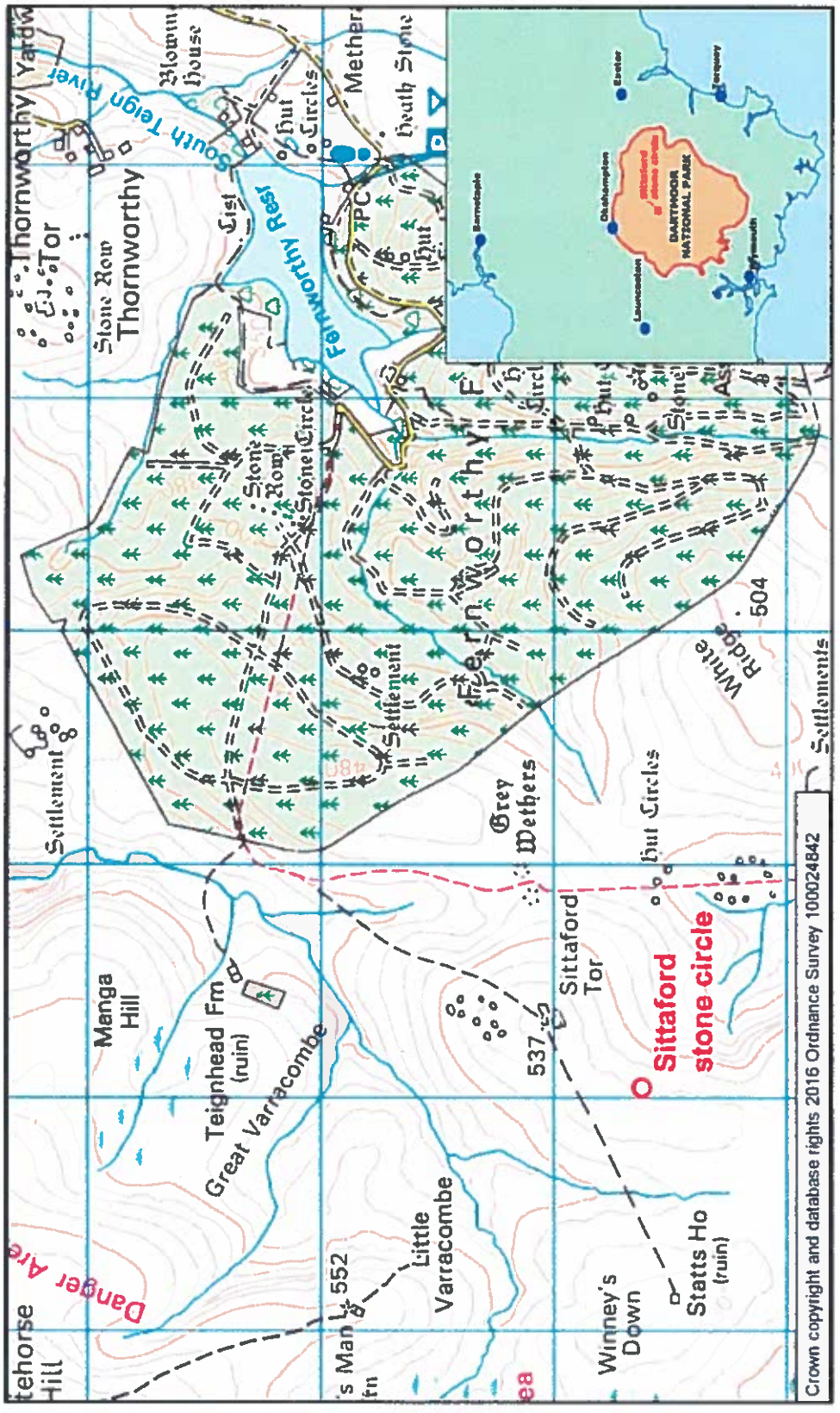


Figure 1: Location Map for Sittaford stone circle

Appendix 2

Sittaford Stone Circle Excavation

Project Design

1.0: Summary

Sittaford stone circle was discovered in 2008 and appears to have remained undisturbed, concealed by peat accumulation, since its abandonment around 2,000 BC. This document provides a summary of the state of knowledge concerning the monument as a result of work undertaken since its discovery and details a proposed programme of targeted excavation intended to answer some of the outstanding questions concerning its development and environmental context.

2.0: Archaeological Background

Sittaford stone circle (SX 63014 82811) (Figure 1) was unknown before its identification by Alan Endacott, a local amateur archaeologist, *c.* 2008 following a moorland fire. Other stone circles on Dartmoor have been subject to progressive damage and disruption over the millennia since their abandonment and, in several cases, excavation and restoration lacking the rigour of modern archaeology and conservation. In contrast, the Sittaford stone circle, which appears to have been largely engulfed in peat following its abandonment, has remained undisturbed. It is thus of potentially great significance, not only to the archaeology of Dartmoor, but to the study of stone circles at a national level.

Since its discovery, a programme of investigation has focussed on the stone circle as part of the *Unveiling the Bronze Age of the High Moors and Forests Project* which is itself part of the HLF-funded *Moor Than Meets the Eye Landscape Partnership Scheme (MTME)*. Two radiocarbon dates have been obtained from peat associated with two of the stones and geophysical survey, employing gradiometer and earth resistance techniques, has been undertaken in 2015 (Appendix 1) In addition, a peat depth survey was carried out in April 2016.

3: Project Aims

The Sittaford stone circle excavation has the following aims:

1: To improve understanding of the chronology and development of the stone circle.

2: To improve our understanding of the changing landscape and environmental context of the stone circle.

In terms of the South West Archaeological Research Framework (SWARF) (Webster, 2008), the *Hangingstone Cairns Project* will contribute to Research Aims: 18 and 54.

4: Site Description

The Sittaford stone circle is situated at an elevation of 525m OD, on the crest of a ridge of high ground which extends south-west from Sittaford Tor and forms part of the watershed separating the Teign and the East Dart river catchments (Figure 1). The location commands panoramic views in all directions except the north-east which is dominated by Sittaford Tor *c.* 300m distant. The site is located in an area of blanket peat which has been heavily cut in the past but now falls within both the North Dartmoor Site of Special Scientific Interest (SSSI) and the Dartmoor Special Area of Conservation (SAC).

The stone circle itself consists of 30 granite slabs (Figure 2), averaging between 1.5 and 2.0m in length, many of which were concealed by peat when they were discovered. All the stones are

recumbent making the precise diameter of the circle difficult to gauge, but their current distribution suggests a diameter in excess of 30m, making Sittaford one of the largest circles on Dartmoor. Interestingly, the pattern of the stones' distribution is not random as their long axes are predominantly oriented towards the centre of the circle.

Given the recumbent position of all thirty stones, there is a question regarding whether they were ever erect, or whether the monument represents a stone circle that was planned but never completed. If so, their structured positioning may represent part of a ritualised process of construction. However, the presence of possible trigger stones associated with several of the stones probably indicates they were originally standing. In this case the orientation of the stones suggests they were pushed over together in a single event, probably as part of a deliberate decommissioning of the monument. Again, the stones' orientation implies this was undertaken in a structured, ritualised way.

A possible reason for the abandonment of the stone circle lies with the blanket peat on which it was situated. Peat depth survey across the monument (Figure 3) indicates that the peat is very shallow on the eastern side of the monument and the recumbent stones here are probably resting directly on the mineral substrate, suggesting an absence of peat over this part of the site when the stones were pushed over. However, on the circle's western side, the stones rest on peat reaching over 0.7m in depth in some cases, implying the bog had already encroached significantly in this area by the time the decommissioning occurred. The evidence therefore suggests that the stones were originally erected in the mineral substrate and that nearby raised bog subsequently encroached across part of the monument in the period following its construction. This resulted in the decommissioning of the monument followed by growth of the peat over it. Subsequent peat cutting has removed the overlying peat to reveal the stones at the surface.

Geophysical survey (Appendix 1), undertaken in spring 2015, has added to this picture, identifying two groups anomalies which may be the signatures of buried archaeological features associated with the stone circle (Figure 4). The first is a linear distribution of positive magnetic anomalies running tangentially along the eastern and south-eastern edge of the circle. These are interpreted by the surveyor as a possible alignment of pits and coincide, on the edge of the monument, with a high resistance anomaly. The second group are concentrated around the southern and western quadrants of the circle and comprise two arcs of resistance anomalies; an inner of low resistance and an outer of higher resistance. A possible interpretation of these is that they are the signature of a ditch and bank, although there is no sign they encircle the whole monument.

The peat depth survey which has also been undertaken across the circle has, as already discussed, revealed a general increase in peat depth from east to west. Measurements were taken at intervals of 2m and also indicate the presence of anomalously deep areas of peat within the circle and also outside in to the north-east on the edge of the area covered. These may simply be the result of a highly irregular substrate, perhaps containing protruding granite boulders or outcrops for example. Alternatively, these features may be archaeological in origin, for example the sockets left by removed stones or timber uprights that have filled with peat.

Finally, in advance of the production of a measured plan of the site, samples of peat were taken from above and below two of the stones and submitted for radiocarbon dating. Of the two dates from above the stones, one failed and the other returned a modern date. Those below the stones were more productive, returning overlapping date ranges in the Early Bronze Age /Late Neolithic: 2205-2021 cal BC and 2133-1905 cal BC. These results indicate that these two stones were recumbent by the end of the third millennium BC and provide a *terminus ante quem* for the construction of the circle if the stones are assumed to have originally been upright.

5: Project Objectives

The objectives of the project are as follows:

1 – To determine whether the stones were originally upright (Aim 1).

2 – To improve the known chronology of the circle through the acquisition of further dateable material (Aim 1).

3 – To improve understanding of the development of peat across the site (Aim 2)

4 – To identify and understand the development of any palaeosols which may be present on the site (Aim 2).

5 – To understand the origins of the anomalies identified by the geophysical and peat depth surveys (Aim 1).

6: Method Statement

The project objectives will be achieved through the excavation of four, or possibly five, trenches on the site as follows (Figure ????):

Trench 1: This trench will target stone 4 with the objectives of locating and investigating any socket which may be present and characterising any archaeological features which may be responsible for the resistance anomaly r4 and gradiometer anomaly g6. (Project objectives: 1, 2 and 5) In addition, the trench will identify any palaeosols or peat sequences suitable for sampling (Project objectives: 3, 4) which may be present.

The maximum dimensions of Trench 1 are anticipated to be *c.*3.5m x 2.5m, with an area of *c.*8m^2. Available information suggests a peat depth of 0.2-0.3m.

Trench 2: Trench 2, with maximum anticipated dimensions of *c.* 1.5m x 7m and an area of *c.*11m^2 will examine stone 11 with the objective of investigating any associated socket (Project objective 1 and 2). In addition it will explore any archaeological features which may have generated resistance anomaly r10 (Project objective: 5) as well as identify any palaeosol or peat sequence suitable for sampling (Project objectives: 3 and 4).

Peat depth is likely to be 0.4-0.6m.

Trench 3: Trench 3 will investigate any archaeological features which may be responsible for geophysical anomaly r9 (Project objective: 5). In addition, it will also identify any palaeosols or peat sequences suitable for sampling (Project objectives: 3, 4) which may be present.

The maximum dimensions of the trench are anticipated to be *c.* 1.5m x 6m and it will cover an area of *c.* 9m^2. Peat depth in this area is unknown although it is likely to be *c.*0.5m.

Trench 4: The main purpose of Trench 4 is to investigate the small area of deep peat detected in this area during peat depth survey (Project objective 5), but it will also identify any palaeosol or peat sequence suitable for sampling (Project objectives: 3 and 4).

Its maximum dimensions are anticipated to be *c.* 2m x 2m with an area of *c.* 4m^2. Maximum peat depths in this area are known to reach 0.7m although the surroundings are *c.*0.4m.

If suitable deposits to fulfil project objects 3 and 4 are not identified in Trench 1 to 4, it will be necessary to excavate a further trench, Trench 5, in order to achieve this. This is likely to be located

in the area of deepest peat on the western edge of the circle, but its precise location will be decided during excavation depending on results. The maximum dimensions of Trench 5 are anticipated to be 1m x 1m with an area of $1m^2$.

All archaeological features encountered will be excavated, recorded and, if deemed suitable, sampled according to the relevant Historic England guidelines, for processing and palaeoenvironmental analysis. All excavations will be undertaken by hand and according to the guidelines laid out by *Cifa* in the *Standard and Guidance for Archaeological Excavation 2014*.

Trenches will be tied to the British National Grid to an accuracy of +/- 3m.

At the end of fieldwork, both cairns will be reinstated to a morphology as close to their pre-excavation state as is possible.

Both cairns are located within the North Dartmoor SSSI. Accordingly, during excavation turf and topsoil will be kept separately and reinstated at the end of the excavation.

7: Project Team

The excavation will be undertaken by a suitably qualified archaeological contractor commissioned by the DNPA and in conjunction with the National Park Archaeologist. A small number of suitably experienced volunteers may also participate in the work.

8: Archiving

The project archive and any finds will be offered to Plymouth City Museum under an accession number obtained by the Dartmoor National Park Archaeologist.

9: Health and Safety

Excavation will be undertaken according to the appropriate *Cifa* guidelines and DNPA's *Safe Code of Conduct for Contractors.*

Volunteers and DNPA will operate under the relevant DNPA insurance while contractors should have Employer's Liability Insurance and Public Liability Insurance with a minimum of £5,000,000 cover.

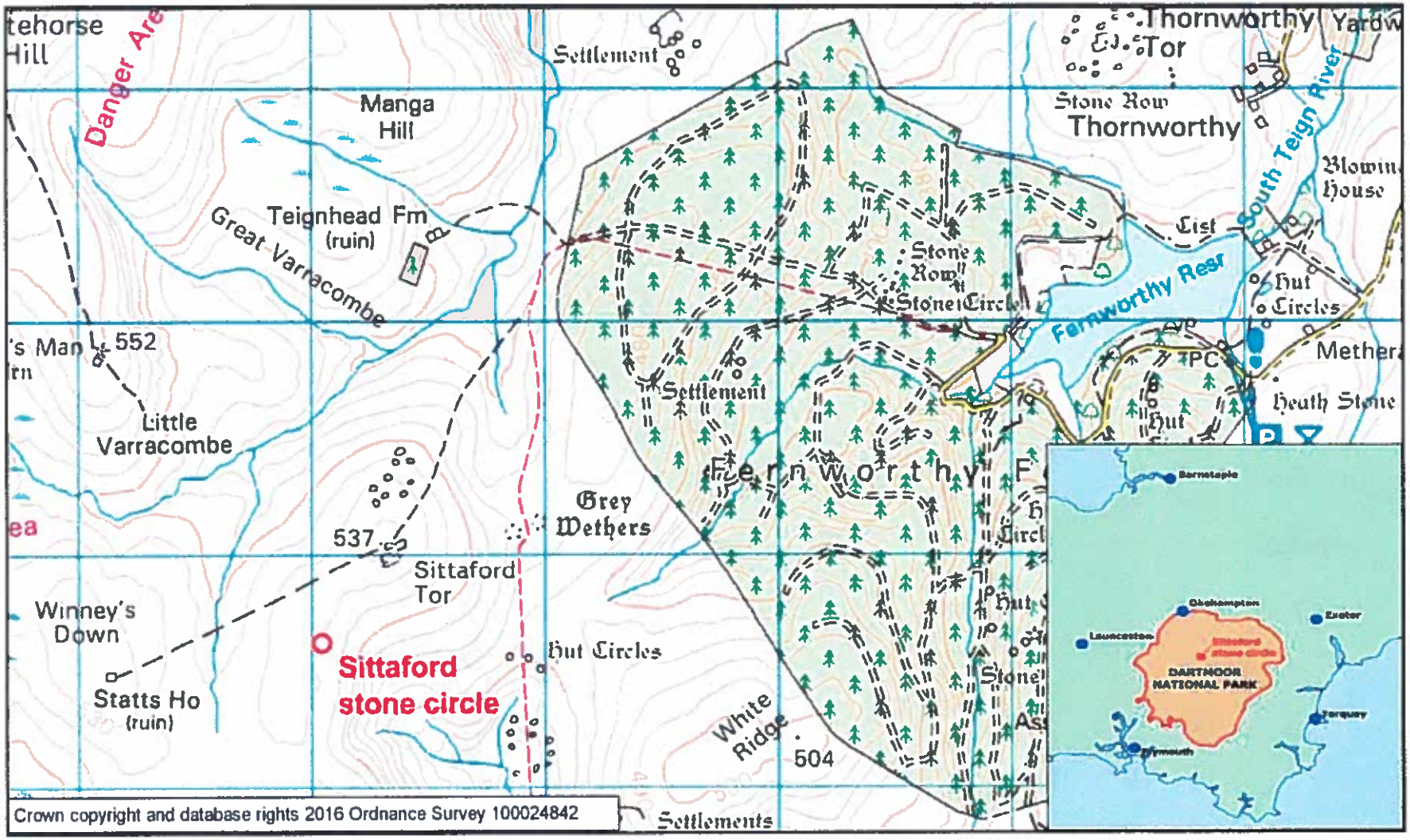


Figure 1: Location Map for Sittaford stone circle

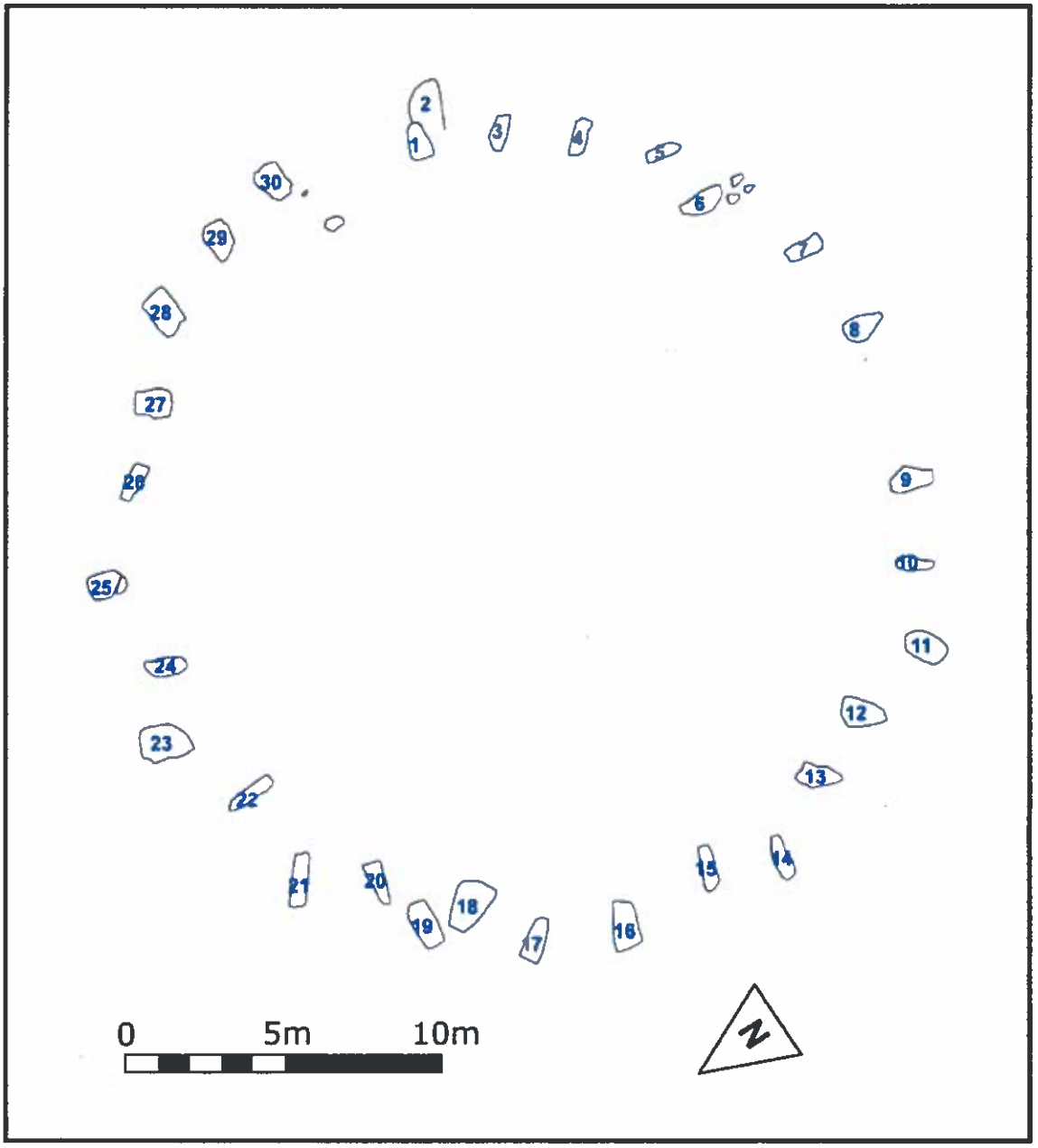


Figure 2: Measured plan of Sittaford stone circle.

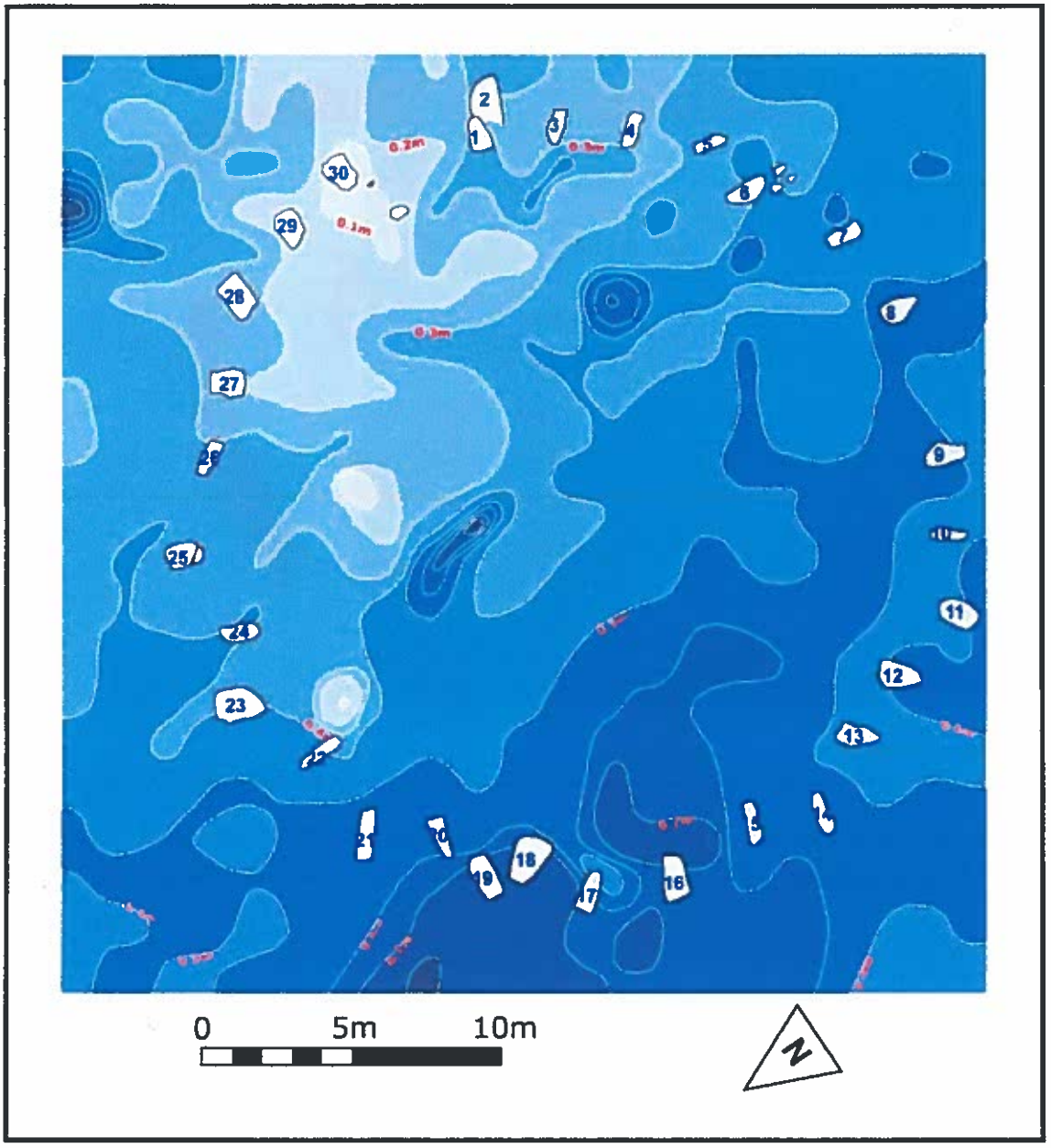


Figure 3: Plan showing the results of a peat depth survey across Sittaford stone circle.

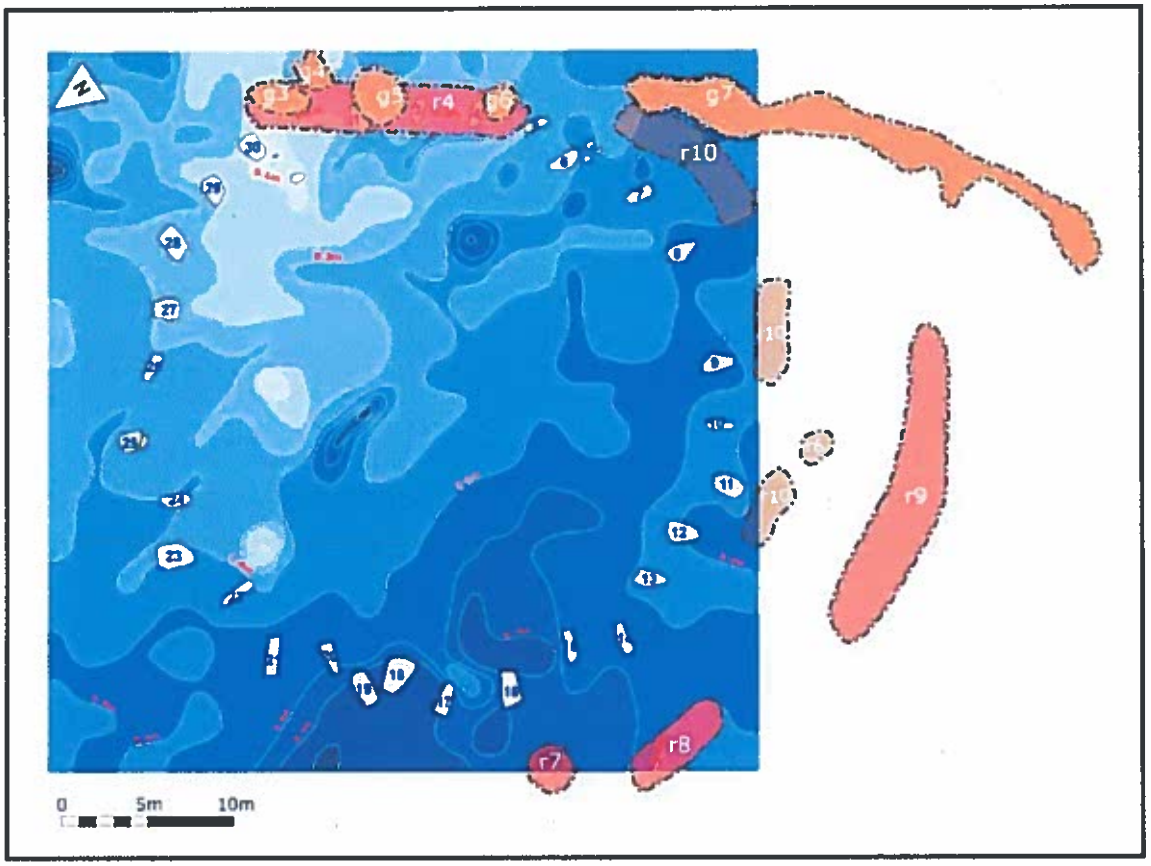


Figure 4: Plan showing combined peat depth and summary of geophysical survey results. Brown = low resistance anomalies, Pink = high resistance anomalies, Orange = positive magnetic anomalies.

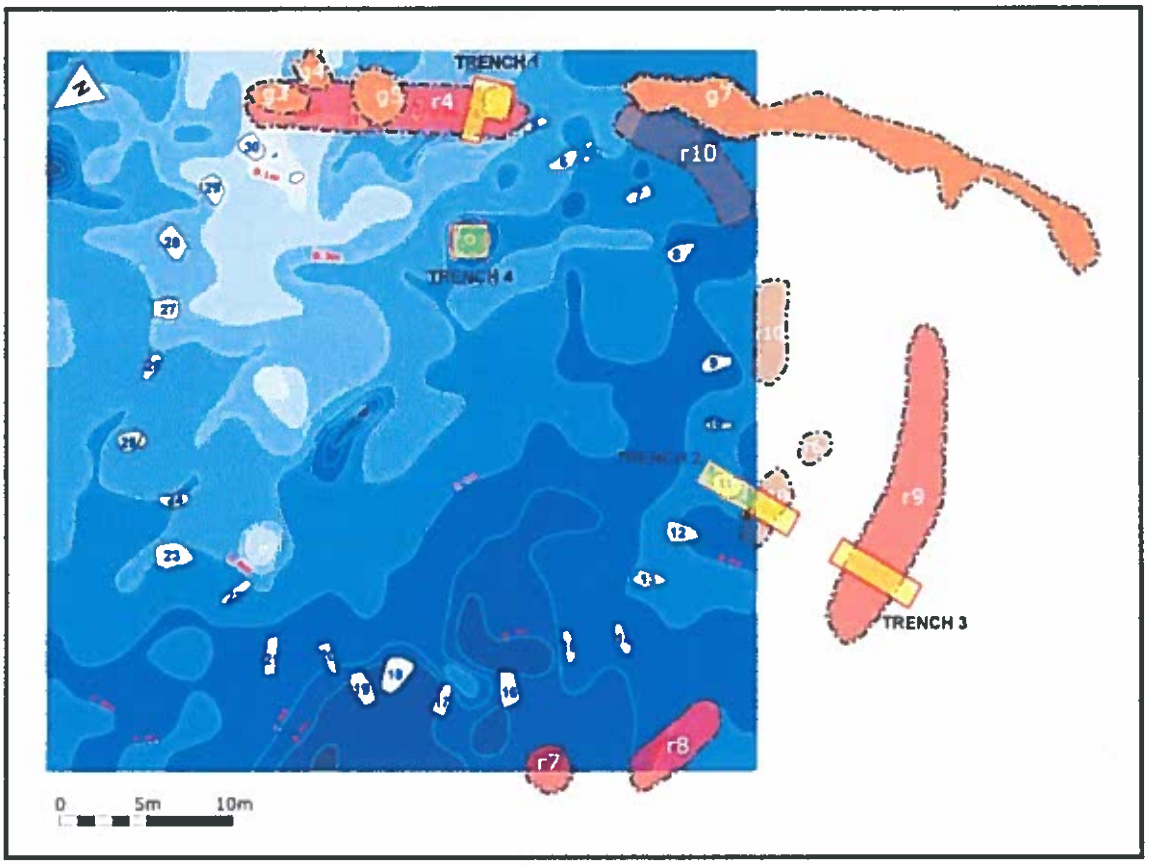


Figure 5: Plan showing the locations of the planned trenches.

Project Design Appendix 1: Geophysical Survey Results

Substrata
Archaeological Geophysical Surveyors

An archaeological gradiometer and earth-resistance survey

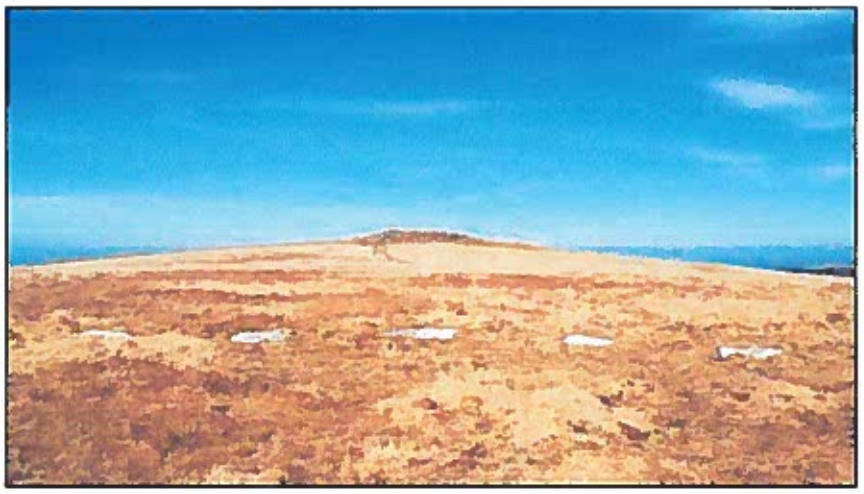
Sittaford stone circle
Dartmoor Forest, Dartmoor
Devon

Ordnance Survey (E/N): 263014,82808

Report: 150615-2

Ross Dean BSc MSc MA MCIfA

04 September 2015



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Client:
Dartmoor National Park Authority
Parke
Bovey Tracey
Newton Abbot
Devon

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Website: substrata.co.uk

For an overview of Substrata, our archaeological geophysical surveying techniques and the results we obtain.

1 Survey description and summary

1.1 Survey

Type:	twin-sensor fluxgate gradiometer twin probe earth resistance
Date:	between 13 and 29 April 2015
Area:	gradiometer survey 0.72ha earth resistance survey 0.45ha
Author:	Ross Dean BSc MSc MA MIfA
Lead surveyor:	Mark Edwards BA

1.2 Client

Dartmoor National Park Authority, Parke, Bovey Tracey, Newton Abbot, Devon TQ13 9JQ

1.3 Location

Site:	Sittaford stone circle
Civil Parish:	Dartmoor Forest
District:	West Devon
County:	Devon
Planning Authority and Curator:	Dartmoor National Park Authority
NGR:	SX 630 828 (point)
NGR E/N:	263014,82808 (point)

1.4 Historic Environment Records

Historic Environment Record number: MDV110432

1.5 Archive

OASIS entry: 222606

At the time of writing, the archive of this survey will be held by Substrata and will be deposited with the ADS in due course. The Dartmoor National Park Authority hold the GIS shape files for the survey and a PDF copy of the report.

1.6 Introduction

This report was commissioned by the Dartmoor National Park Authority. The survey was designed to prospect the recently recorded Early Bronze Age stone circle at the above site to contribute to the understanding of the site and to inform its future management as specified in Section 2 below.

The survey area covers just over 0.72ha of moorland as shown in Figures 1 and 2. The stone circle was mapped for the Dartmoor National Park Authority in 2014 (Newman 2014).

1.7 Summary

Both the magnetic and earth resistance responses were sufficient to be able to differentiate anomalies representing possible archaeological features.

Twelve magnetic anomaly groups and ten earth resistance anomaly groups were identified as possibly representing archaeological deposits or features. The magnetic anomaly patterns indicate that a linear feature, or possibly an interlinked set of pits, trending northeast-southwest glances the south-eastern edge of Sittaford stone circle. There is also some evidence to support the view that the gap at that point in the circle may have had stones present in the past. The resistance data seems to indicate the presence of a linear feature trending west-north -west to east-south-east through north-eastern side of the stone circle although further archaeological investigations would be necessary to determine whether this feature was of natural or archaeological origin. The resistance data also shows what could be a curvilinear sequence of earthen deposits and stony deposits on the south and west of the stone circle and mirroring the circles curvature. Anomalies possibly representing a pit and a stone or stony deposit were identified on the western side of the circle.

2 Survey aims and objectives

2.1 Aims

1. Define and characterise any detectable archaeological remains on the site.
2. Inform any future heritage management and archaeological investigation of the area.

2.2 Objectives

1. A gradiometer and earth resistance survey will be completed across the agreed survey area
2. In addition to aim (1) above, the gradiometer survey will be specifically designed to locate and spatially define areas with in-situ burning.
3. In addition to the aim (1) above, the resistance survey will be designed to locate and spatially define areas of potential stone settings.
4. Any magnetic and earth resistance anomalies that may be related to archaeological deposits, structures or artefacts will be identified and accurately mapped.
5. Within the limits of the techniques and dataset, any such anomalies or patterns of anomalies will be archaeologically characterised.
6. A report based on the survey will be produced that is sufficiently detailed to inform any subsequent archaeological investigation and/or asset management process

3 Standards

The standards used to complete this survey are defined by the Chartered Institute for Archaeologists (2014a) and English Heritage (2010). The codes of approved practice that were followed are those of the Chartered Institute for Archaeologists (2014b) and Archaeology Data Service/Digital Antiquity Guides (undated). The document text was written using the house style of the Chartered Institute for Archaeologists (Chartered Institute for Archaeologists, undated).

4 Site description

4.1 Landscape and land use

Sittaford stone circle lies slightly to the west of a ridge of high ground, about 300 metres to the southwest of Sittaford Tor, at 525 metres above sea level, which is the highest altitude for any stone circle in southern England. The situation affords panoramic views in all directions apart from the north-east where Sittaford Tor sits prominently against the skyline (Plate 1). The Sittaford circle appears to form part of an arc of similar monuments around the north-eastern perimeter of Dartmoor (Marchand, 2015).

The survey area covers approximately 0.7ha of moorland on Dartmoor, Devon as shown in Figures 1 and 2.

4.2 Geology

The geology across the survey area and surrounds comprises a solid geology of granite of the Permian and Carboniferous Dartmoor Intrusion and a superficial geology of Quaternary Peat (British Geological Society undated).

5 Archaeological background

Dartmoor is the largest expanse of open moorland in southern Britain and, because of exceptional conditions of preservation, it is also one of the most complete examples of an upland relict landscape in the whole country. The great wealth and diversity of archaeological remains provide direct evidence for human exploitation of the Moor from the early prehistoric period onwards. The well-preserved and often visible relationship between settlement sites, major land boundaries, trackways, ceremonial and funerary monuments as well as later industrial remains, gives significant insights into successive changes in the pattern of land use through time (Historic England, undated b)

5.1 Historic landscape characterisation

Rough ground: rough grazing ground, heathland or moorland (Devon County Council, undated)

5.2 Known Heritage Assets

The following is a short summary of information obtained from the Devon and Dartmoor Historic Environment Record (DDHER) within approximately 1000m of the survey area and relevant to the understanding of the geophysical survey. Except where specifically cited, this information was obtained using the Heritage Gateway (Historic England, undated a).

5.2.1 Heritage Assets within the survey area

Sittaford stone circle (HER number MDV110432, NGR SX630828) is a recently recorded Early Bronze Age large stone circle. It lies slightly to the west of a ridge of high ground, about 300 metres to the southwest of Sittaford Tor, at 525 metres above sea level, which is the highest altitude for any stone circle in southern England. The situation affords panoramic views in all directions apart from the north-east where Sittaford Tor sits prominently against the skyline, perhaps marking the midsummer sunrise. The 34 metre diameter circle consists of 30 recumbent stones plus one other currently lying across a gap on the eastern side a couple of metres inside the perimeter. The stones, apparently undressed and gathered from the immediate vicinity (possibly from the tor itself), are of fairly uniform size, suggesting they were carefully chosen, and range from about 1.4 metres to 2.2 metres by 0.7 to 1.0 metres. When standing the circle would have been very impressive, dominating the surrounding landscape. It would have been similar in appearance to the twin stone circles of Grey Wethers that lie about 1 kilometre to the east-northeast.

A possible outlier stands about 15 metres to the east of the gap on the eastern side but has been incorporated into an enclosure wall with the apparent intention of being used as a gatepost.

The Sittaford circle appears to form part of an arc of similar monuments around the north-eastern perimeter of Dartmoor, suggesting planning and cooperation between communities in the late Neolithic to Early Bronze Age.

5.3.2 Heritage Assets within 1000m of the Application Area

A pair of restored Early Neolithic to Late Bronze Age (between 4000BC and 701 BC) stone circles known collectively as The Grey Wethers (HER MDV6758 and MDV6759) lie to the northeast of the site in a shallow valley between Sittaford Tor to the west and rising ground to the north-east (Figure 1). The area, under moorland pasture, has been disturbed by desultory amorphous diggings and shallow, natural erosion gullies. The northern circle measures 31.5 meters in diameter and is denoted by 20 upright granite slabs with an average height of 1.1 meters. The diameter of the southern circle is 33 meters and includes 29 standing stones varying in height between 1.0 and 1.4 meters. Excavations carried out by the Dartmoor Exploration Committee towards the end of the 19th century revealed a layer of charcoal covering the original ground surface.

About 320m south east of The Grey Wethers and east of the survey area is a small circular Bronze Age (between 2200 BC and 701 BC) enclosure (Figure 1). The bank forming the enclosure is composed of small stones and earth. The entrance is on the west side with one door jamb still standing (MDV6754).

A group of at least 20 freestanding Bronze Age hut circles (MDV6777) occupy both the broad shelf and lower south-eastern slopes of the valley of the Lade Hill Brook below Sittaford Tor (Figure 1). Six huts are fairly substantial however the majority are small and rather ragged. A short length of a wall links four huts otherwise no associated walling or field plots are visible in the area. The surrounding hillside is covered by a thick layer of peat which may hide archaeological features. The group probably represents the remains of a permanent unenclosed prehistoric settlement; it is similar to other hut groups in the vicinity of the broad sided valley, which forms a major topographical feature of the open moorland. Other monuments associated with the site include three cairns (MDV54672 and MDV59463) and a barrow with a diameter

of 4.9m and a height of 0.2m which lies amongst the hut circles (MDV6792). Excavations of the barrow in 1897/8 exposed a pit containing a little charcoal.

A collection of granite rocks by Ledehill stream (MDV13032, NGR SX639821) may be the remains of a Bronze Age chambered tomb bisected by a reave which extends down the hillslope before being lost in the deep peat and silt deposit on the broad valley immediately to the west.

A Bronze Age kerbed cairn and cist (MDV21894) some 5 metres in diameter and 0.75 metres high is surrounded by two rings of kerb stones up to 0.75 metres high lies 635 metres south-west of The Grey Wethers at NGR SX634826, southeast of the survey area. Many stones forming the outer ring are recumbent. The inner kerb is 2.8 metres diameter and the outer is 5 metres diameter. A slab in the centre may be an intact cist.

To the southeast of the survey area at NGR SX635820 lies a Post-prehistoric (after 42AD) structure overlying a curving Prehistoric (pre 42 AD) wall. A hut circle lies on the hillslope a few metres above the building (MDV55728 and MDV455729).

To the southwest of the survey area on Winneys Down (Figure 1) lies the Modern (1751 AD to 2009 AD) 'Stat's House' ruined hut (MDV7756). A few metres to the south is a Post-medieval (between 1540 AD to 1750 AD) shelter constructed over the remains of a Prehistoric cairn (MDV6776).

A number of Early Medieval to Post-medieval (between 1066AD and 1750AD) structures and sites in the area are associated with mining. These include a leat at Great Varracombe (MDV27287), the Whitehorse Leat at Sittaford (MDV27295), a leat on Winney's Down (MDV272277) and the Birch Tor and Vitifer Mine Leat (MDV6576).

West of the survey area at NGR SX626828 lies a rectangular ruined hut, not dated closer than Early Medieval to Post-medieval, with some evidence of tin streaming downstream (MDV7757). There is also evidence for tin streaming to the southeast of the survey area at NGR SX639818 (MDV27289).

6 Results, discussion and conclusions

This survey was designed to record magnetic anomalies. The anomalies themselves cannot be regarded as actual archaeological features and the dimensions of the anomalies shown do not represent the dimensions of any associated archaeological features. The analysis presented below identifies and characterises anomalies and anomaly groups that may relate to archaeological deposits and structures.

The terms 'archaeological features' and 'archaeological deposits' refer to any artefacts, material deposits or disturbance of natural deposits thought to be the result of human activity and not undertaken as recent land maintenance or farming.

The reader is referred to section 7.

6.1 Results

Results Figure 2 shows the interpretation of the gradiometer and earth resistance survey data. It includes the anomaly groups identified as relating to archaeological deposits along with their numbers. Table 1 is an extract of the detailed analysis of the survey data which is provided in the attribute tables of the GIS project on the accompanying CD-ROM and in the project archive.

Figure 2 and Table 1 comprise the analysis of the survey data.

Plots of the gradiometer and earth resistance interpretations are provided separately in Figures 3 and 4.

Various plots of the processed data are provided in Figures 5 to 8.

6.2 Discussion

6.2.1 General points

Not all anomalies or anomaly groups identified in Table 1 are necessarily discussed below. All identified anomaly groups are recorded in the GIS project on the accompanying CD-ROM.

Anomalies thought to relate to natural features were not mapped.

Anomalies relating to relatively recent man-made features such as peat cutting and extant tracks were not mapped.

There are numerous magnetic anomaly groups that could be interpreted as relating to large postholes or pits although most will have natural origins. Anomalies of this sort are only mapped as potential archaeology if they are clustered in groups or otherwise form recognisable patterns.

Figures 5 and 6 display numerous 'spikes' in the magnetic data set which are likely to relate to near-surface granitic bedrock and related natural deposits. Figure 6 provides a clear view of the more contrasting 'spikes'. No clear pattern of these 'spikes' could be assigned to the extant stones or to other potential groups of stones.

6.2.2 Data relating to historical maps and other records

Magnetic anomaly group **g12** coincides with an extant linear boundary. Whilst the coincidence is not exact as shown in Figures 2 and 3, this may be because of relatively minor positional errors occasionally found in Ordnance Survey maps of remote regions. On the other hand, it maybe that group g12 reflects a different feature.

Resistance anomaly group **r5** corresponds with sections of the boundary and is likely to be the resistance signal for parts of that boundary.

6.2.3 Data with no previous archaeological provenance

Referring to Figure 3, groups **g1** and **g9 to g11** may be natural deposits or archaeological deposits.

A clear linear anomaly group, **g7**, trends northeast-southwest to the south of the stone circle. Group **g8** is probably an extension of g7 and group **g2** may also be a part of the anomaly sequence. The shape of g7 is suggestive either of a linear feature disrupted by later actions such as peat cutting or a series of inter-linked pits.

Groups **g3, g4, g5 and g6** may be extensions of g7 but may also, or alternatively, be the result of erosion of pits. The latter explanation is likely for g5 and is an interesting possibility for g3 and g4 which lie in a gap between the extant stones.

Referring to Figure 4, resistance groups **r1 to r3** are interpreted as a sequence of relatively broad, parallel areas of low, high, low resistance. While this may represent a natural sequence of rock and sediment resulting from drainage there is a possibility that it represents a stony linear track or similar feature possibly flanked by ditches.

Group **r4** aligns with the magnetic anomaly sequence g2 to g8 and may reflect a different aspect of the same feature.

Group **r6** stands out in the dataset and has been enhanced during the data processing but is clear in the unprocessed data set. It may represent a pit or large posthole which may be archaeologically significant, given its position relative to the stone circle.

Group **r7** also stands out and may represent a stone or stony deposit.

Resistance groups **r8, r9 and r10** may represent natural deposits but are suggestive of a curvilinear sequence of earthen deposits (r10) and stony deposits (r8 and r9).

6.3 Conclusions

Both the magnetic and earth resistance responses were sufficient to be able to differentiate anomalies representing possible archaeological features.

Twelve magnetic anomaly groups and ten earth resistance anomaly groups were identified as possibly representing archaeological deposits or features. The magnetic anomaly patterns indicate that a linear feature, or possibly an interlinked set of pits, trending northeast-southwest glances the south-eastern edge of Sittaford stone circle. There is also some evidence to support the view that the gap at that point in the circle may have had stones present in the past. The resistance data seems to indicate the presence of a linear feature trending west-north-west to east-south-east through north-eastern side of the stone circle although further archaeological investigations would be necessary to determine whether this feature was of natural or archaeological origin. The resistance data also shows what could be a curvilinear sequence of earthen deposits and stony deposits on the south and west of the stone circle and mirroring the circles curvature. Anomalies possibly representing a pit and a stone or stony deposit were identified on the western side of the circle.

7 Disclaimer and copyright

The description and discussion of the results presented in this report are the authors, based on his interpretation of the survey data. Every effort has been made to provide accurate descriptions and interpretations of the geophysical data set. The nature of archaeological geophysical surveying is such that interpretations based on geophysical data, while informative, can only be provisional. Geophysical surveys are a cost-effective early step in the multi-phase process that is archaeology. The evaluation programme of which this survey is part may also be informed by other archaeological assessment work and analysis. It must be presumed that more archaeological features will be evaluated than those specified in this report.

8 Acknowledgements

Substrata would like to thank Jane Marchand, Senior Archaeologist, Dartmoor National Park Authority, for commissioning us to complete this survey.

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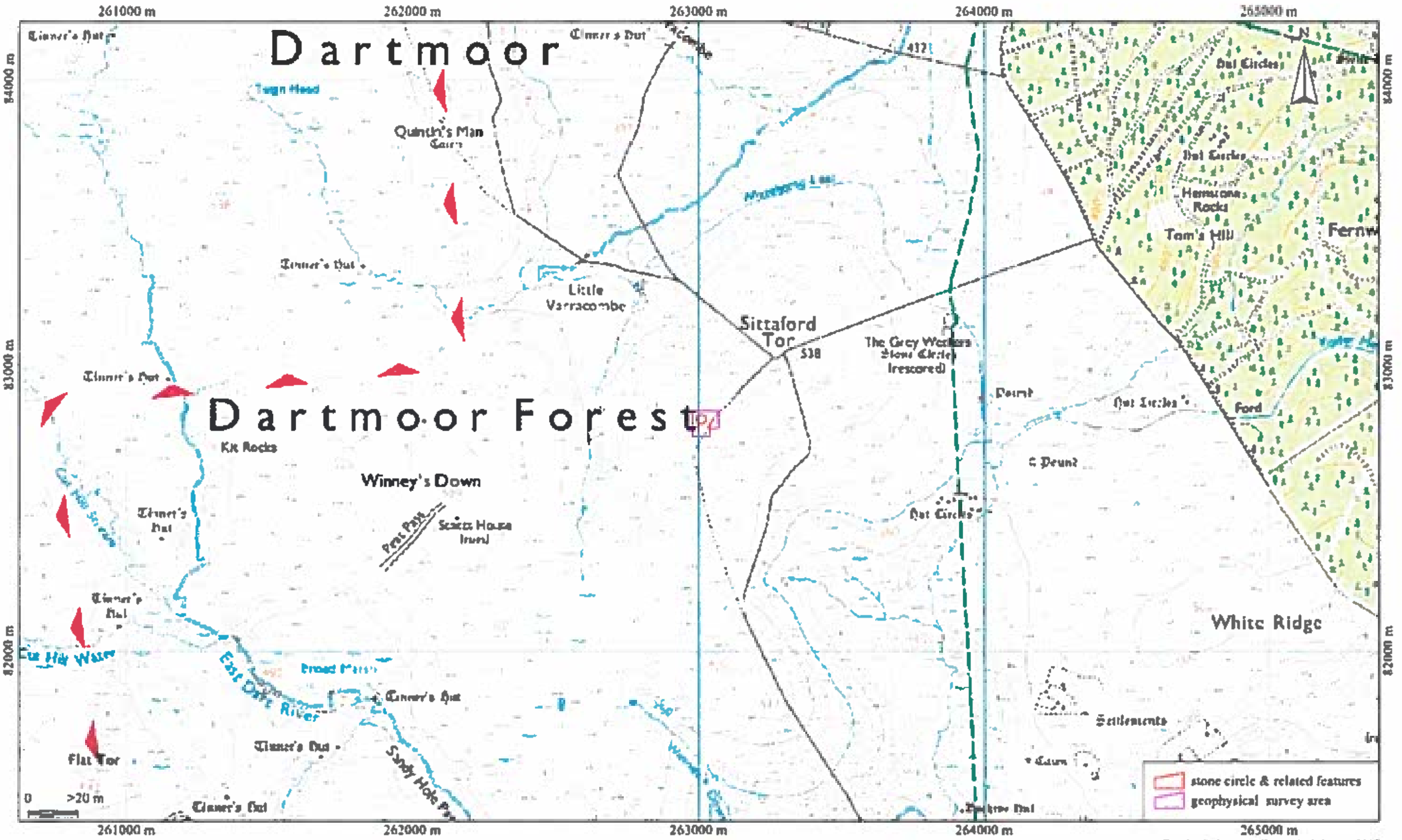
Appendix 1 Analysis table and supporting plots

General Guidance

The anomalies represented in the survey plots provided in this appendix are magnetic anomalies. The apparent size of such anomalies and anomaly patterns are unlikely to correspond exactly with the dimensions of any associated archaeological features.

A rough rule for interpreting magnetic anomalies is that the width of an anomaly at half its maximum reading is equal to the width of the buried feature, or its depth if this is greater (Clark, 2000: 83). Caution must be applied when using this rule as it depends on the anomalies being clearly identifiable and distinct from adjacent anomalies. In northern latitudes the position of the maximum of a magnetic anomaly will be displaced slightly to the south of any associated physical feature.



British Grid
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Scale: 1:12000 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological gradiometer and earth resistance survey
Sittaford stone circle
Ordnance Survey (E/N): 263014,82808 (point)
Report: 150615-2

Figure 1: location map

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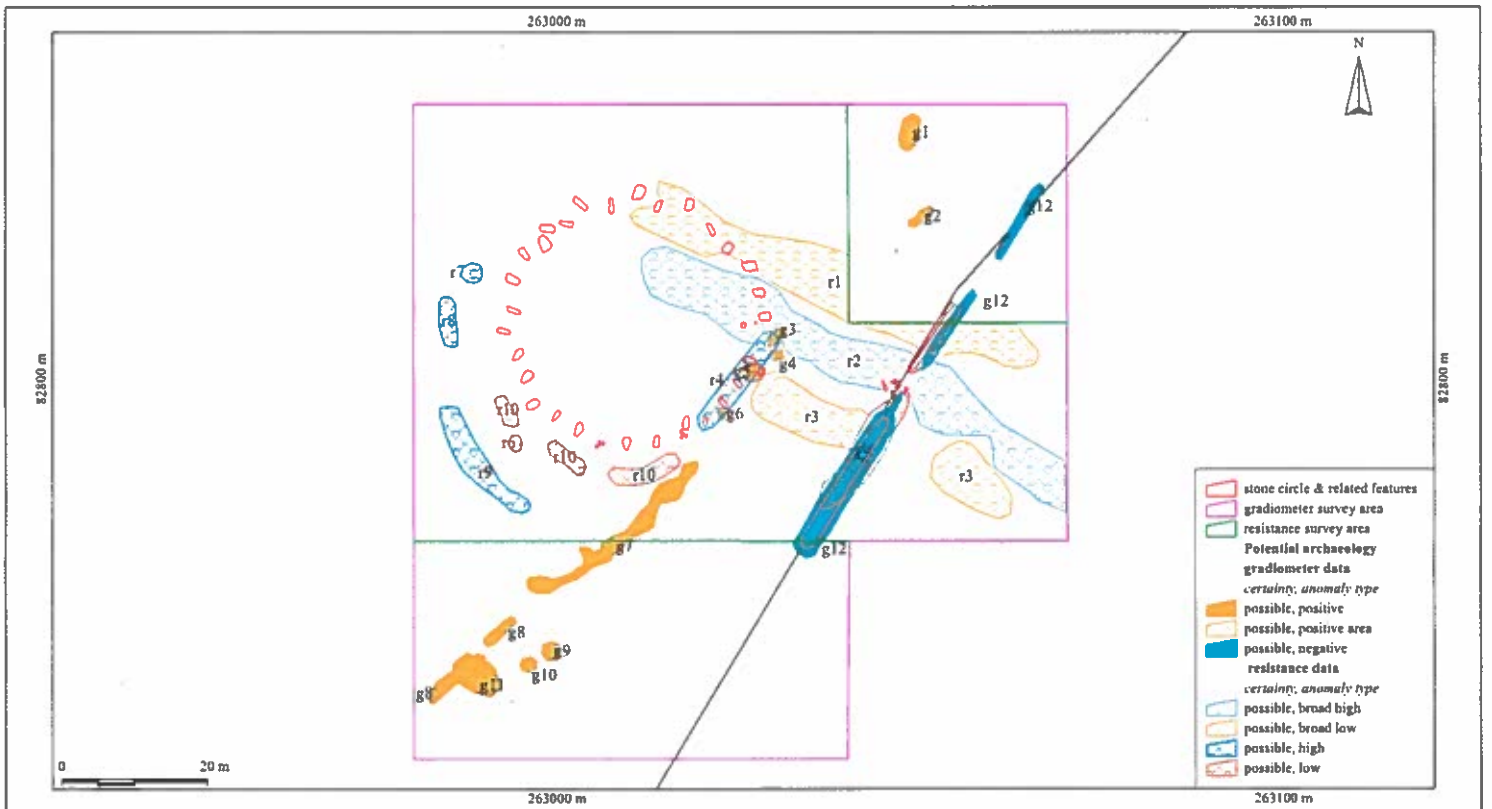

British Grid
centre X: 263025.74 m, centre Y: 82795.56 m

Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

Notes:
1. All interpretations are provisional and represent potential archaeological deposits.
2. Anomalies designated "likely archaeology" have supporting evidence e.g. historical maps and or visible earthworks.
3. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

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Figure 2: combined gradiometer and resistance data interpretation

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Site: An archaeological gradiometer and earth resistance survey
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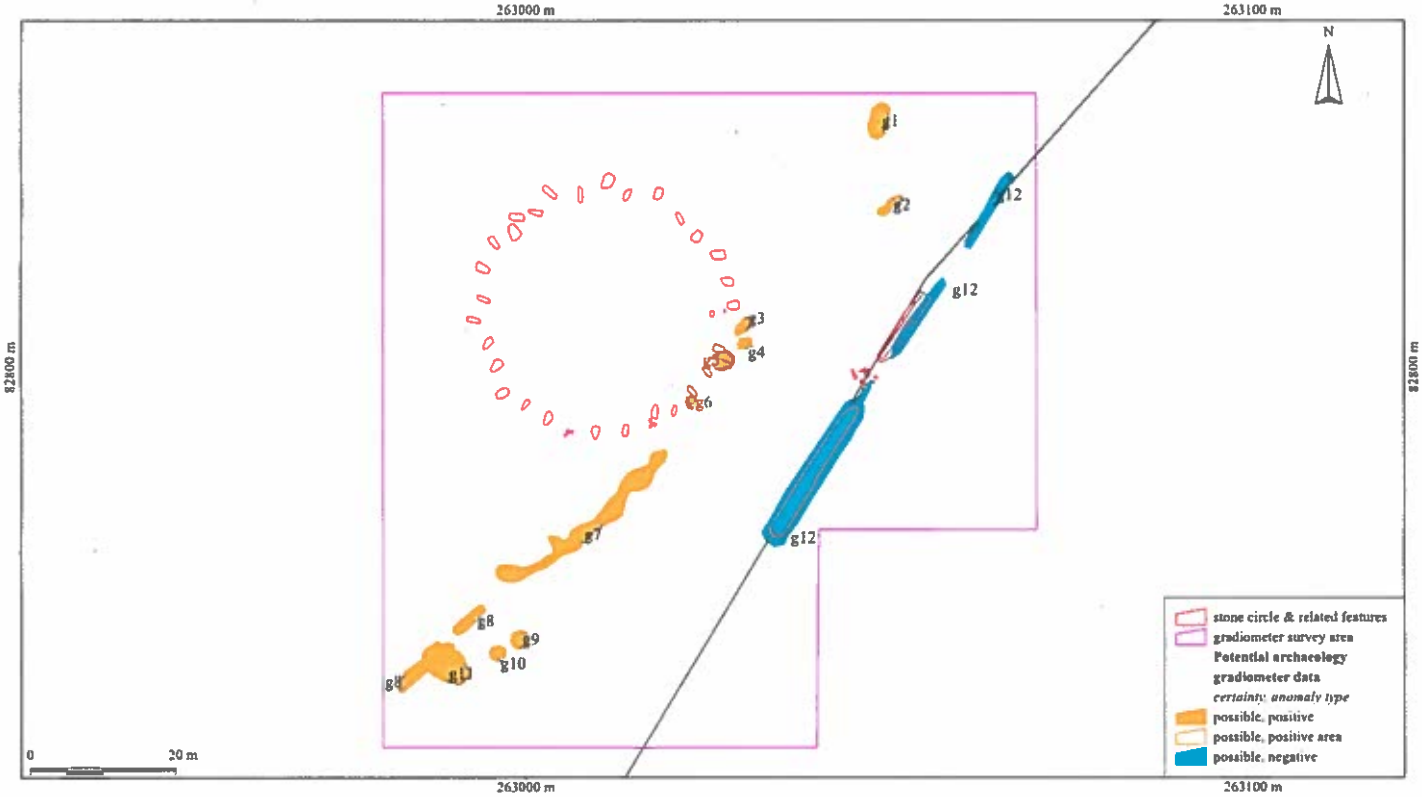
survey	anomaly group	anomaly characterisation certainty & class	anomaly form	additional archaeological characterisation	comments
magnetometer (gradiometer)	g1	possible, positive	broad linear	archaeological deposit or natural boggy feature	
	g2	possible, positive	linear		
	g3	possible, positive	oval	filled hollow	
	g4	possible, positive	oval	filled hollow	anomaly group may represent a hollow not associated with any extant stone
	g5	possible, positive	oval	filled hollow	anomaly group may represent a hollow associated with a nearby stone
	g6	possible, positive	oval	filled hollow	anomaly group may represent a hollow associated with a nearby stone
	g7	possible, positive	linear	ditch or joined pits	
	g8	possible, positive	disrupted linear		
	g9	possible, positive	oval	filled hollow	anomaly group may represent a hollow not associated with any extant stone
	g10	possible, positive	oval	filled hollow	anomaly group may represent a hollow not associated with any extant stone
	g11	possible, positive area	oval	archaeological deposit or natural boggy feature	
	g12	likely, negative	disrupted linear	extant bank	
earth resistance	r1	possible, broad low	linear	earthen linear	anomaly groups may represent archaeological or natural deposits with an archaeological origin more likely
	r2	possible, broad high	linear	stony linear	anomaly groups may represent archaeological or natural deposits with an archaeological origin more likely
	r3	possible, broad low	disrupted linear	earthen linear	anomaly groups may represent archaeological or natural deposits with an archaeological origin more likely
	r4	possible, high	linear	stony deposit	
	r5	possible, low	linear	ditch associated with extant linear	
	r6	possible, low	oval	pit	
	r7	possible, high	oval	stony deposit or stone	
	r8	possible, high	linear	stony deposit	
	r9	possible, high	linear	stony deposit	
	r10	possible, low	curvilinear	earthen deposit	

Table 1 data analysis



British Grid
centre X: 263025.74 m, centre Y: 82795.56 m

Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

Notes:
1. All interpretations are provisional and represent potential archaeological deposits.
2. Anomalies designated "likely archaeology" have supporting evidence e.g. historical maps and or visible earthworks.
3. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

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Figure 3: gradiometer data interpretation

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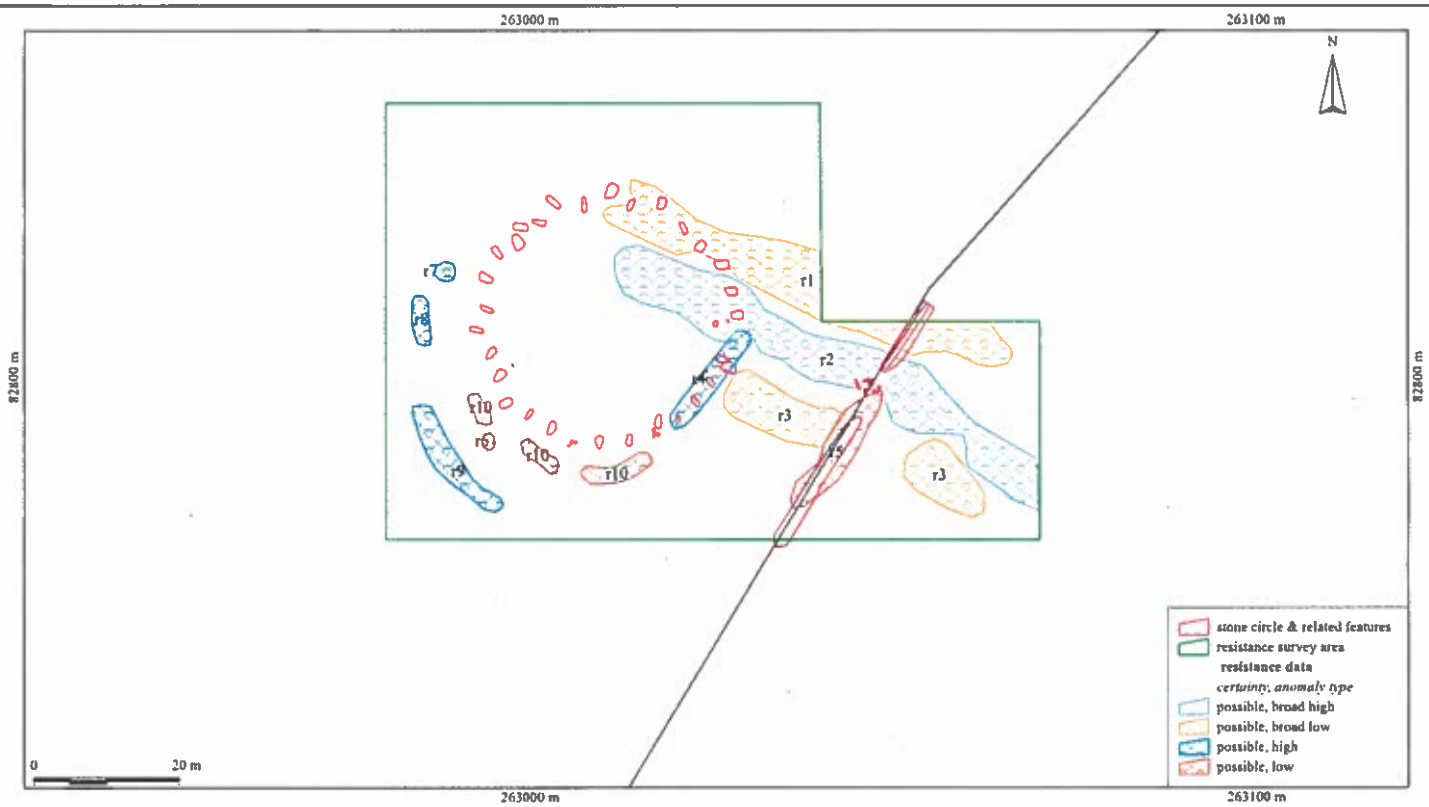

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Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Figure 4: resistance data interpretation

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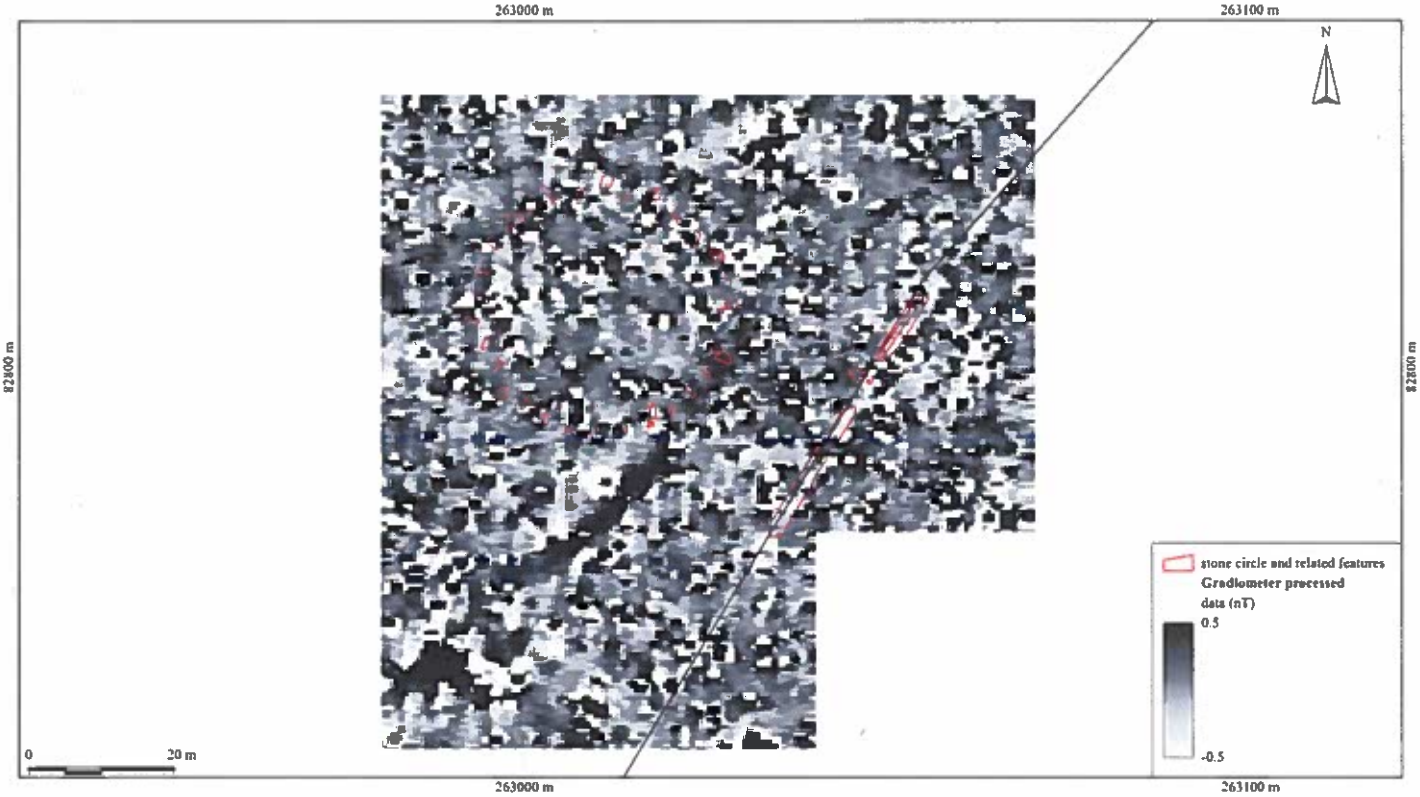

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Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

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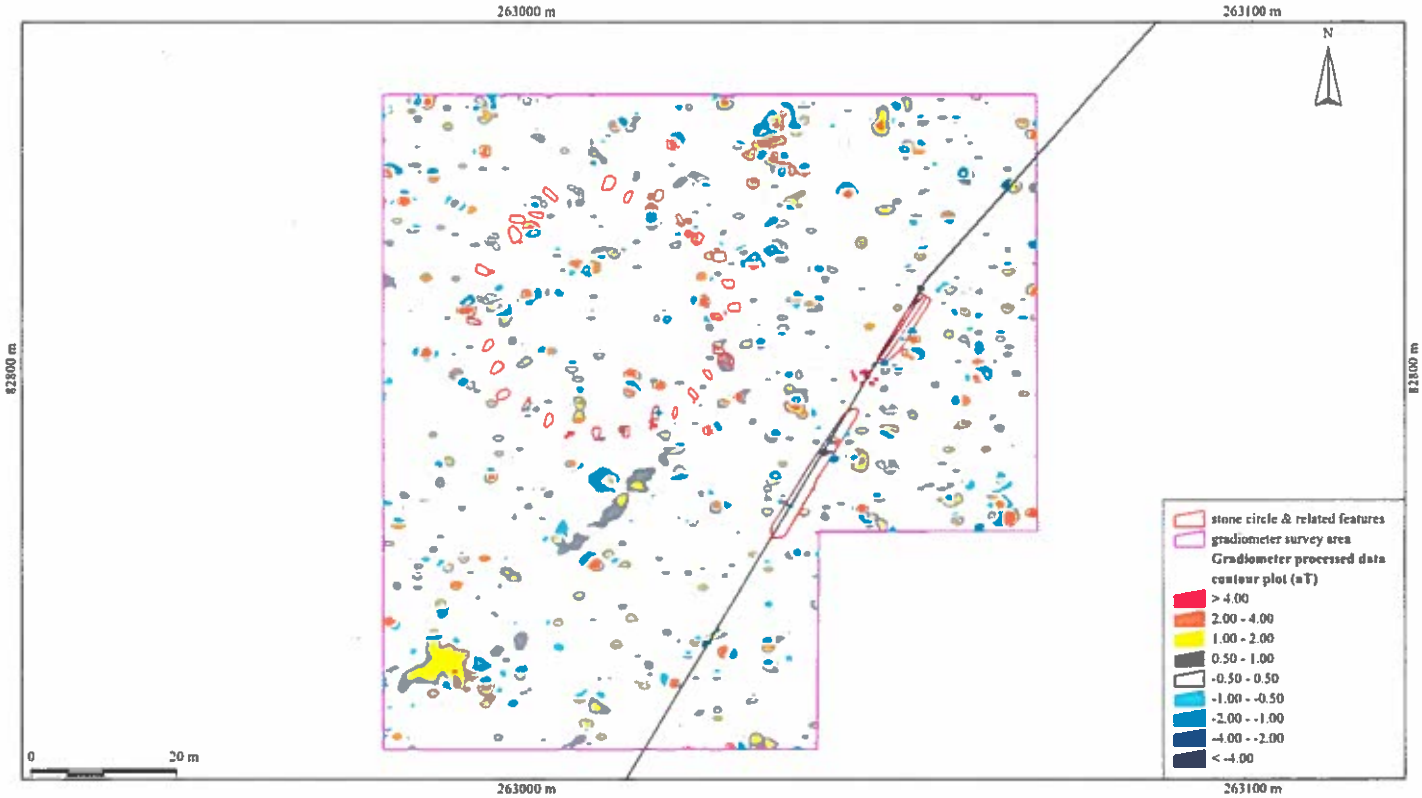
Figure 5: shade plot of processed gradiometer data

Substrata
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk



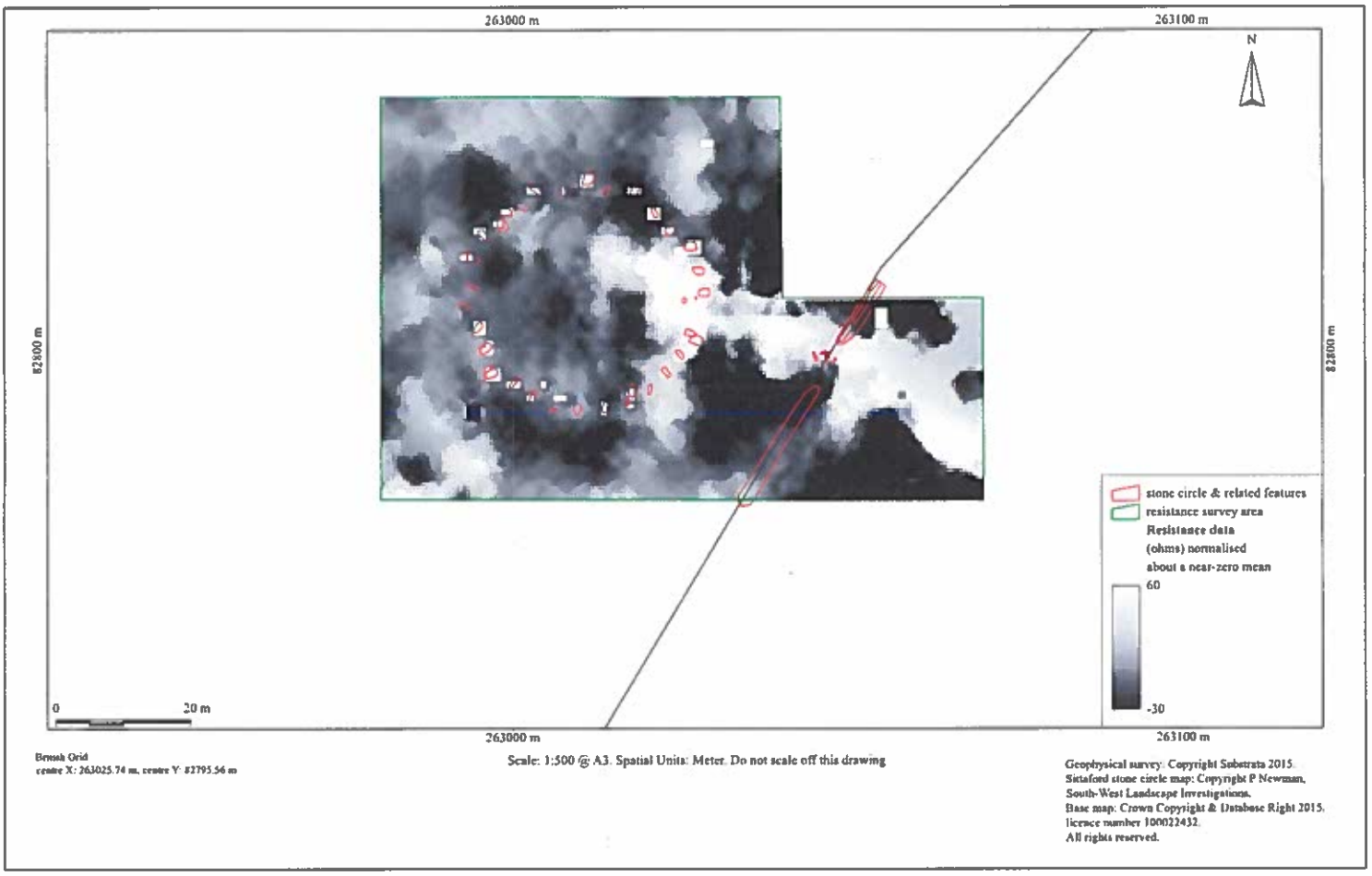
British Grid
centre X: 263025.74 m, centre Y: 82795.56 m

Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological gradiometer and earth resistance survey
Sittaford stone circle
Ordnance Survey (E/N): 263014,82808 (point)
Report: 150615-2

Figure 6: contour plot of processed gradiometer data

Substrata
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk



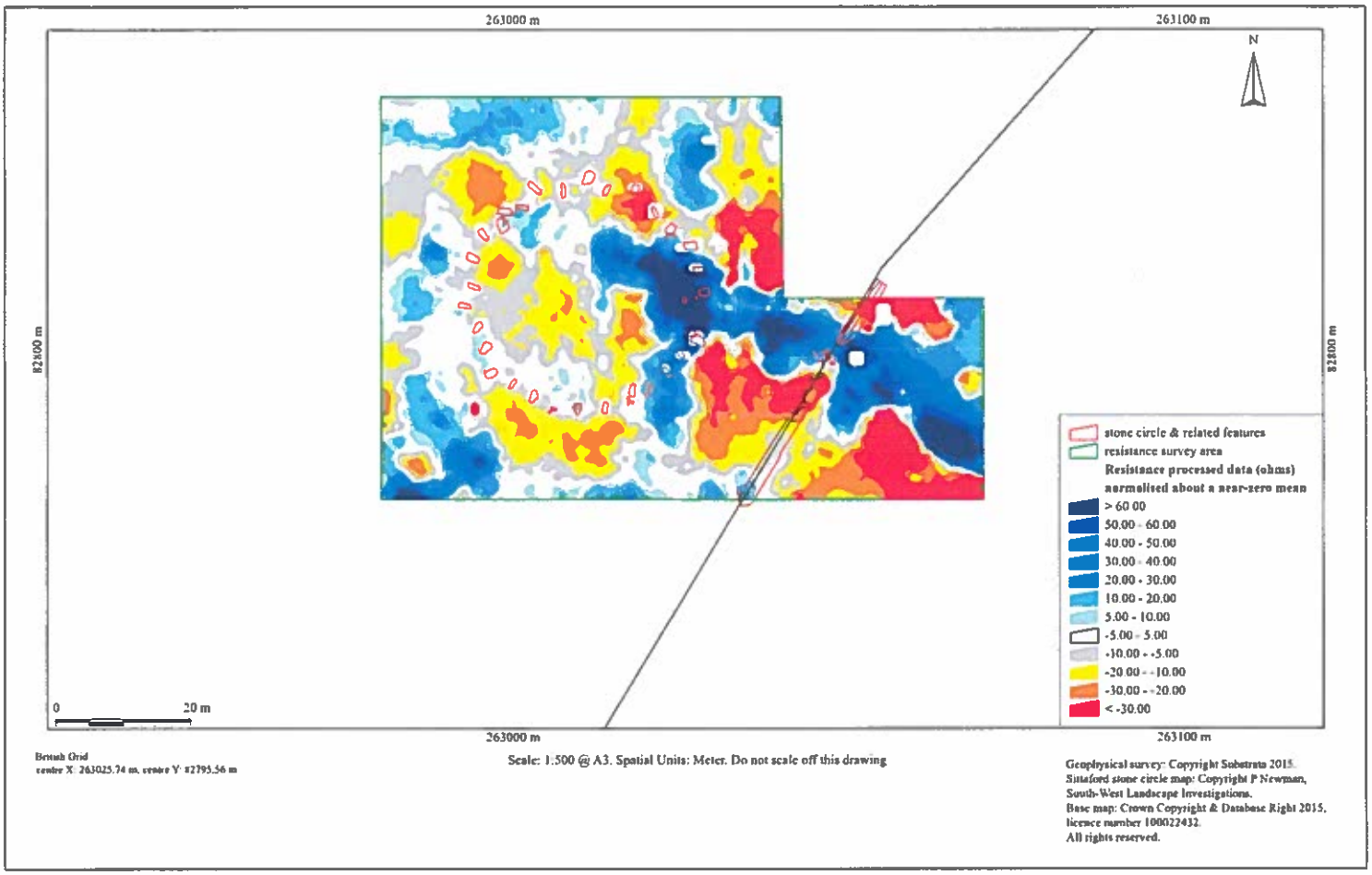
British Grid
centre X: 263025.74 m, centre Y: 82795.56 m

Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological gradiometer and earth resistance survey
Sittaford stone circle
Ordnance Survey (E/N): 263014,82808 (point)
Report: 150615-2

Figure 7: shade plot of processed resistance data

Substrata
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk



British Grid
centre X: 263025.74 m, centre Y: 82795.56 m

Scale: 1:500 @ A3. Spatial Units: Meter. Do not scale off this drawing

An archaeological gradiometer and earth resistance survey
Sittaford stone circle
Ordnance Survey (E/N): 263014,82808 (point)
Report: 150615-2

Figure 8: contour plot of processed resistance data

Substrata
Office 1, 5 Mill Street
Bideford, Devon EX39 2JT
Tel: 01237 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

Appendix 2 Methodology Summary

Table 2: methodology summary

Documents
Survey method statement: Dean (2014)

Methodology
1. The work was undertaken in accordance with the survey methodology statement. The geophysical (gradiometer) survey was undertaken with reference to standard guidance provided by the Chartered Institute for Archaeologists (2014) and Archaeology Data Service/ Digital Antiquity Guides (undated).
2. The survey grid location information and grid plan was recorded as part of the project in a suitable GIS system.
3. Data processing was undertaken using appropriate software, with all anomalies being digitised and geo-referenced. The final report included a graphical and textual account of the techniques undertaken, the data obtained and an archaeological interpretation of that data and conclusions about any likely archaeology.

Grid
Method of Fixing: DGPS set-out using pre-planned survey grids and Ordnance Survey coordinates.
Composition: 30m by 30m grids
Recording: Geo-referenced and recorded using digital map tiles.
DGPS used: Spectra Precision PM5V2 GPS with external antenna and survey pole and DigiTerra Explorer 7 as the survey control program.

Magnetometer Equipment *Instrument:* Bartington Instruments grad601-2 *Firmware:* version 6.1	**Magnetometer Data Capture** *Sample Interval:* 0.5-metres *Traverse Interval:* 1 metre *Data capture:* single short recording *Traverse Method:* zigzag *Traverse Orientation:* GN
Magnetometer Equipment *Instrument:* Geoscan Research RM15 multi-probe resistance meter *Configuration*: twin probe *Mobile probe spacing*: 1 metre	**Magnetometer Data Capture** *Sample Interval:* 0.5-metres *Traverse Interval:* 1 metre *Data capture:* automatic data logger *Traverse Method:* zigzag *Traverse Orientation:* GN

Data Processing, Analysis and Presentation Software
IntelliCAD Technology Consortium IntelliCAD 7.2
DW Consulting TerraSurveyor3
Manifold System 8 GIS
Microsoft Corp. Office Excel 2013
Microsoft Corp. Office Publisher 2013
Adobe Systems Inc Adobe Acrobat 9 Pro Extended

Appendix 3 Data processing

Table 3: gradiometer survey - processed data metadata	
SITE	
Instrument Type:	Bartington Grad 601
Units:	nT
Direction of 1st Traverse:	0 deg
Collection Method:	ZigZag
Sensors:	2 @ 1.00 m spacing.
Dummy Value:	32702
PROGRAM	
Name:	TerraSurveyor
Version:	3.0.25.0
Max:	4.52
Min:	-3.06
Std Dev:	0.47
Mean:	0.03
Median:	0.00
Surveyed Area:	0.72 ha

Processes: 4
1 Base Layer
2 Clip at 3.00 SD
3 DeStripe Median Traverse: Grids: All
4 Interpolate: Match X & Y Doubled.

Table 4: earth resistance survey - processed data metadata	
SITE	
Instrument Type:	Geoscan Research RM15
Units:	resistance data (ohms) normalised about a near-zero mean
Direction of 1st Traverse:	0 deg
Collection Method:	ZigZag
Sensors:	2 @ 1.00 m spacing.
Dummy Value:	32702
PROGRAM	
Name:	TerraSurveyor
Version:	3.0.25.0
Max:	107.48
Min:	-96.13
Std Dev:	25.22
Mean:	-0.16
Median:	-3.53
Surveyed Area:	0.4428 ha

Processes: 10
1 Base Layer
2 Add/Subtract -15 (Area: Top 24, Left 0, Bottom 29, Right 59)
3 Add/Subtract 15 (Area: Top 54, Left 0, Bottom 59, Right 29)
4 Add/Subtract -15 (Area: Top 54, Left 30, Bottom 59, Right 59)
5 Despike Threshold: 1 Window size: 3x3
6 Despike Threshold: 1 Window size: 3x3
7 Clip at 2.00 SD
8 High pass Uniform (mean) filter: Window: 21 x 21
9 Periphery Match ALL grids in the survey.
10 Interpolate: X & Y Doubled.

Appendix 3

1 Definitions

In these General Conditions of Contract the following terms shall have the following meanings:

"Authority" Dartmoor National Park Authority

"Contractor" .....

"Contract" The contract for the provision by the Contractor of .....

"Specification" The Invitation to Quote issued by the Authority dated .....

2 Provision of the Services

The Contractor shall perform work under the contract in accordance with the Specification together with such written or oral instructions as may from time to time be given by or on behalf of the Authority.

The Contractor warrants that the Contract will be performed with all due skill, care and diligence, and in accordance with good industry practice and legal requirements.

Any failure to provide correctly formatted, accessible copies of reports, text, drawings, illustrations, plans and other documents in a Microsoft Office compatible electronic format capable of further editing (not read only) shall be taken to be a failure to deliver proper performance under this contract.

Where any conflict arises between these General Conditions of contract, the provisions of the contract, the Specification, or the Contractor's quotation, the provisions shall apply in the order of precedence specified in the contract

3 Quality and Description

The Contractor's work shall conform as to the quantity, quality and description with the particulars stated in the Specification. The Authority reserves the right to amend the Specification, including the substitution, deletion and/or addition of conditions and requirements, **PROVIDED ALWAYS** that no amendment shall be made without the Contractor first being afforded the right to make representations to the Responsible Officer **AND** also given the opportunity to indicate whether there will be a supplemental charge in respect of any additional work consequent upon the proposed amendment which the Contractor believes was not in the contemplation of the parties at the date of signing this contract

4 Invoicing & Payment

Unless otherwise agreed in writing, the amount to be paid and dates of payment shall be as specified in the contract, within 30 days of receipt of a written invoice, however, it shall remain open for the parties to agree other arrangements for invoicing and payment, for example: to provide for an inception payment, stage payments and/or retentions.

5 Confidentiality

The Contractor shall not disclose to any person, firm or company any information of a confidential nature obtained in any work under this Contract and for the

avoidance of doubt this obligation of confidentiality shall continue beyond the termination of this contract, without limit of time.

6 Assignment or Sub-Contracting

The Contractor shall not assign, sub-rogate or transfer the Contract or any part or parts thereof to any other person, firm or company, except with the prior written consent of the Authority

7 Intellectual Property Rights

For the avoidance of any doubt it is hereby agreed and declared that all data, text, illustrations, information, correspondence and all documents acquired, created or otherwise obtained in any work under this contract ('the work') shall be the sole property of the Authority, who shall be free to use the work as it sees fit;

The Contractor agrees and undertakes that he/she will not use the Authority's organisational name, logo or other identifying mark without prior written approval from the Responsible Officer.

8 Freedom of Information

This Contract shall be subject to the provisions of the Freedom of Information Act 2000 and the parties acknowledge that the Authority shall comply in all respects with the provisions of the Act and in particular shall communicate to any persons making a request under the Act all and any information contained in or relating to this Contract where required by and in accordance with the provisions of the Act

9 Health & Safety at Work

The attention of the Contractor is directed particularly to the responsibilities of employers under the Health and Safety at Work Act 1974 (as amended) and Codes of Practice issued by the Health and Safety Executive. The Contractor shall at all times be responsible for ensuring safe systems of work, suitable and safe equipment and a safe working environment for all activities coming under the scope of this contract.

10 Bankruptcy/Liquidation etc.

In the event of the Contractor becoming bankrupt or making a composition or arrangement with creditors or having a proposal for a voluntary arrangement for a composition of debts, scheme, or arrangement approved in accordance with the Insolvency Act 1986, the Authority shall be at liberty to cancel the Contract by notice in writing without compensation to the Contractor.

11 Corruption

The Authority shall be entitled to cancel the Contract and to recover from the Contractor the amount of any loss resulting from such cancellation if the Contractor (whether personally or through any person acting on his/her behalf) shall have:

- offered or given or agreed to give any person any payment, gift or inducement in relation to the obtaining or execution of the Contract
- offered or given or agreed to give any person any reward or consideration of any kind for doing or forbearing to do, or for having done or forborne to do any action in connection with the Contract

- or for showing or forbearing to show favour or disfavour to any person in relation to the Contract
- committed any offence under the Bribery Act 2010, Prevention of Corruption Acts 1889 & 1916 or shall have given any fee or reward the receipt of which is an offence under Section 117(2) Local Government Act 1972

12 Force Majeure

Neither the Authority or the Contractor shall be liable to the other for any delay or failure by either party to perform its obligations under the Contract if any such delay or failure arises from any cause or causes beyond the reasonable control of either party, including, but not limited to lightning, earthquakes, riots, acts of terrorism, regulations or orders of any Government, agency or subdivision thereof

13 Variation of Contract

The contract and its provisions shall only be capable of amendment by a written agreement signed by the parties.

14 Termination

This Contract may be terminated at any time, without cause, by the Authority serving 30 days notice in writing on the Contractor.

The Authority reserves the right to terminate the Contract forthwith if at any time it considers that the Contractor is in material or serious breach of obligations under the Contract or that any terms and conditions of the Contract are not being performed in a proper and businesslike manner or to the true intent and meaning of the same.

The termination of the Contract shall have no effect upon the accrued legal rights and obligations under this Contract between the parties.

APPENDIX 2.

SITTAFORD STONE CIRCLE, DARTMOOR, DEVON

AC ARCHAEOLOGY SUBMISSION

Prepared by:
Simon Hughes

On behalf of:
Dartmoor National Park Authority

Document No: E16.106

Date: July 2016

AC archaeology

AC archaeology

Sittaford Stone Circle, Dartmoor

AC archaeology submission

1) Introduction

AC archaeology Ltd is a wholly independent commercial archaeological consultancy and contracting organisation carrying out fieldwork for developers, utilities companies, local authorities, and national bodies. Established originally in 1991, the company has offices near Exeter, Devon and Salisbury, Wiltshire. We regularly undertake work in Devon, Somerset, Cornwall, Dorset and Wiltshire, and have an excellent knowledge of the archaeology of the region. We also have a good and established working relationship with heritage professionals in the various local authorities and with Historic England. We can provide, in-house, both consultancy and fieldwork services targeted on resolving the requirements of individual clients, heritage and environmental organisations and developers. More details can be found at www.acarchaeology.co.uk and via our reports available from the Archaeology Data Service website http://archaeologydataservice.ac.uk/archives/view/greylit/az.cfm.

AC archaeology Ltd currently has a professional staff of 50+ and can provide dedicated teams for specific projects. The two directors have each over 25 years' experience in professional commercial archaeology, while most senior staff have over 10 years.

We are used to archaeological projects of this size and type would therefore approach this as we do with other commissions and carry out a safe, thorough and professional project. The company has carried out a number of excavations on similar schemes and in a similar environment. We would ensure that all works would be carried out within time and budget; we have a proven track record in achieving this.

2) Selected list of relevant projects

The AC archaeology Devon office undertakes over 250 projects a year mainly in Devon, but also a number in Cornwall, Somerset and Wales, many of which include tasks or experience relevant to this scheme. Projects which we believe are particularly relevant to this project are summarised below.

- **Bellever, Dartmoor** (2008-14, Dartmoor National Park Authority)
  Excavations over four seasons of work investigating two Scheduled Bronze Age roundhouses and associated boundary system. These excavations included a strong volunteer involvement, public outreach and worked closely with the DNPA archaeology team.
- **Drakelands Mine, Hemerdon, Plympton**, (2010-2013; Wolf Minerals Ltd).
  Large-scale excavations of 260 hectare landscape, including, survey, trial trenching and subsequent reporting. This project included the investigation of 11 cairns and earthwork systems in an upland setting and represents the most extensive and recent fieldwork of this type in the region. This fieldwork also involved co-ordinating volunteer input.
- **Dartmoor Mires Project Whinney's Down,** (2012; Dartmoor National Park Authority)
  Archaeological monitoring during mire restoration works on behalf of DNPA
- **South Devon Link Road** (2012-14; Devon County Council, Parsons Brinkerhoff, Galliford Try).
  Advance archaeological investigations, consultancy and preparation of published reports.
- **High Peak, Otterton East Devon** (2012; East Devon AONB and Southwest Coast Path)
  Excavation of a Scheduled cliff-top Neolithic settlement and post-Roman enclosure. This work included a strong volunteer input and public outreach, as well as the publication of the findings.
- **Twin Yeo Quarry, Chudleigh Knighton, Devon** (2007-2012; Imerys)
  Excavations of a multi-phase landscape including Iron Age, Romano-British and medieval settlement, with the subsequent publication of findings
- **Embury Beacon Fort, Hartland Devon** (2012; National Trust)
  Excavations of a Scheduled Iron Age clifftop fort and subsequent report publication. This project included working closely with the National Trust and the co-ordination of volunteer input

- **Challaborough, South Hams, Devon** (2014; Devon County Council)
  Rescue excavation of Iron Age and Romano-British settlement following coastal erosion

3) Summary CVs of relevant staff

John Valentin BSc MCIfA – Director
John has been a professional archaeologist since 1985, for the last 13 years as Project Manager for AC archaeology and Exeter Archaeology and now Director with AC archaeology. He has been based in the Westcountry for 25 years, and has managed numerous fieldwork, assessment and consultancy projects across the region for clients including Imerys Minerals Ltd, Persimmon Homes, Mid Devon District Council, Teignbridge District Council, Historic England, Dartmoor National Park Authority, the National Trust, North Devon AONB Partnership, Duchy of Cornwall, Devon County Council, Western Power and Wessex Water.

Simon Hughes BA MCIfA (pending) – Project Manager
Simon has been a professional archaeologist for 13 years and has been with AC archaeology since 2008. In his position of Project Manager, he has directed fieldwalking, survey, evaluation and excavation projects on large-scale quarry, utility, housing schemes and research projects for clients including Wolf Minerals, Persimmon Homes, Galliford Try, Devon County Council, the Dartmoor National Park Authority and South West Water. He has worked extensively in the South West for the majority of his career and has a sound knowledge of the archaeology of the region. Simon has completed the Site Managers Safety Training Scheme.

Alex Farnell BA MA MCIfA – Senior Project Officer
Alex has 14 years' experience in commercial archaeology including the management and supervising of archaeological fieldwork. Alex has worked in the southwest over the last 11 years for AC archaeology and before that, Exeter Archaeology. He has directed teams on a number of complex fieldwork projects for large-scale quarry, utility, housing schemes. Alex also undertakes site surveying and report writing and has a number of published reports.

Sarnia Blackmore BA – Graphics/GIS Officer
Sarnia has worked in archaeology for over 20 years and is an experienced field archaeologist who has the ability to record buildings and undertake field surveys (by hand or using electronic survey equipment). As a graphics/GIS Officer, she uses a suite of current illustration packages, including AutoCAD and GIS and has produced display material for excavation open days.

4) Proposed excavation methodology
Following pre-commencement photographic recording of the site condition, the trenches will be set out according to the geophysical survey data using a Leica Netrover GPS, with sub-1cm accuracy.

The aims for each trench will be addressed, with the consistent theme for each trench to establish the character, date and stratigraphic sequence of the selected stones, each targeted geophysical anomaly or variation in peat thickness, with an emphasis on the retrieval of palaeo-environmental samples.

Archaeological features and deposits will be fully excavated by hand, with sections of the full sequence of contexts and stratigraphic relationships established as appropriate. Should the trenches require extending in order to achieve a full profile of targeted anomalies or stratigraphic sequence, then this will be carried out. If further clarification of deposit depth of the extent of features, then an auger will be available for this purpose.

Samples for the purposes of geo-archaeological or pollen assessment will be taken by the relevant specialist in person, who will also carry out an assessment of the *in situ* deposits. This will be key in the understanding of deposit formation and the accurate retrieval of samples. Samples will be taken in accordance with the English Heritage 2011 guidelines, Environmental Archaeology – A guide to the theory and practice of methods, from sampling and recovery to post-excavation. Sampling will be undertaken by AC archaeology approved specialists (listed below) and in consultation with Vanessa Straker, English Heritage Scientific Advisor as appropriate.

All artefacts or deposits revealed will be recorded using the standard AC archaeology pro-forma recording system, comprising written, graphic and photographic records, and in accordance with AC archaeology's General Site Recording Manual, Version 2. Site plans will be drawn at a scale of 1:20 and sections of features and baulk sections at 1:10 or 1:20 as appropriate. All typologically distinct or closely dateable artefacts will be recorded three-dimensionally using a Leica Netrover GPS.

An adequate photographic record of all archaeological deposits will be made in both plan and section. This will comprise digital photographs (minimum of 12 mega pixels), illustrating in both detail and generally the principal features and finds discovered. The photographic record will also include working shots to illustrate more generally the nature of the archaeological operation undertaken as well as high level overview photographs using a pole-mounted camera.

Each trench will be hand-excavated with spoil stored separately by type on plastic sheeting for subsequent backfilling. Trenches may be stepped wider to allow for safe working. Each trench will have orange netlon barrier fence demarcation. Other health and safety considerations will be included in a site-specific rick assessment.

5) Reporting

The reporting requirements will be confirmed with DNPA archaeologist on completion of the site works. An assessment report will be produced within six weeks of completion on site and, if requested, wider publication will be undertaken.

The contents of the assessment report may vary depending on the findings, but would normally contain:

- A non-technical summary;
- A description of the investigation methodology;
- A description of results including an assessment of any artefact or palaeoenvironmental analysis undertaken;
- A plan showing areas investigated;
- Relevant plans, profiles, sections and photographs;
- A comment on the archaeological importance of the results, with reference to the project aims other published archaeological research from the area; and,
- An assessment of potential of the finds and archive for further analysis.

6) Specialists

Should any finds or samples be recovered during the excavations then, following an initial assessment by the AC archaeology Finds Manager, the following specialists will contribute to a final report as necessary:

- An assessment of any prehistoric ceramics will be provided by Henrietta Quinnell;
- Other ceramics will be assessed by Naomi Payne BA MA PhD ACIfA, Finds Manager, AC archaeology, or other regional specialist as required;
- Land snail analysis, environmental, geoarchaeological and radiocarbon sampling will be carried out by Mike Allen PhD MCIfA FLS FSA;
- Pollen analysis will be carried out by Rob Scaife BSc PhD FRGS;
- General plant macrofossils will be assessed by Wendy Carruthers BSc MSc MCIfA;
- An assessment of worked flint will be carried out by Julian Richards BA FSA MCIfA;
- An assessment of any human remains will be carried out by Charlotte Coles MA ACIfA;
- An assessment of animal bone will be reported on by Charlotte Coles MA ACIfA;
- An assessment of metal objects will be undertaken by Naomi Payne BA MA PhD ACIfA; and,
- Coins will be identified by Naomi Payne BA MA PhD ACIfA.

Other finds or environmental reports will be prepared by appropriate specialists or in-house staff as required.

7) Resources

It is proposed that the excavations will be carried out by four dedicated AC archaeology staff, including a Project Officer, who will work throughout the project alongside DNPA staff and volunteers. Staff will have appropriate PPE including clothing suitable for working in potentially wet conditions. The team will include a first aider and will have emergency procedures briefing. AC archaeology have suitably-sized staff numbers to provide replacements to the team should there be any unforeseen absence.

Should bad weather be forecast that would not allow for any worthwhile work to be carried out, then staff will be temporarily re-deployed onto other projects and the DNPA archaeologist will advise on a suitable mitigation, be it additional staff for subsequent days or an extension to the programme.

AC archaeology have 4WD vehicles within its fleet, which will be available for the duration of the project.

Available site recording equipment will include a Leica Netrover GPS, with sub-1cm accuracy, a pole-mounted camera for obtaining aerial views of the excavations and digital SLR cameras for obtaining high-quality site photographs. An auger will also be available should further clarification of deposits be required.

8) Health, Safety and Insurance

Archaeological staff will operate under AC archaeology's Health and Safety Policy and any other additional requirements set out by the client. All works will also be carried out in accordance with current Health and Safety legislation, to include (but not exclusively rely upon) the *Health and Safety at Work etc Act* 1974, the *Management of Health and Safety at Work Regulations* 1992 and the *Construction (Design & Management) Regulations* 2007. AC archaeology is registered as an approved contractor under the Worksafe Health and Safety Scheme (SMAS), the Contractor's Health and Safety Assessment Scheme (CHAS), and CQMS Safety Scheme as recognised by SSIP (Safety Schemes in Procurement).

For all AC archaeology projects a site-specific risk assessment will be prepared. AC archaeology Ltd carries Public Liability Insurance cover to £5,000,000, Employers Liability to £10,000,000 and industry-standard Professional Indemnity cover to £5,000,000. These can be increased for specific projects as necessary.

9) Quality Assurance

The two Directors are Members of the Chartered Institute for Archaeologists (CIfA), while most other staff are Members, Associates or Practitioners. All archaeological work is undertaken in accordance with the code of conduct of the Institute and their various standards and guidance.

AC archaeology Ltd is currently developing procedures for registration under ISO14001 (2015) *Environmental Management Systems* in 2016, and upgrading our current ISO9001 (2008) *Quality Assurance* procedures to UKAS registration, also in 2016.

10) Ability to meet the terms of the contract

AC archaeology are based in Devon and familiar with the archaeology of the county, as well as relevant sources and specialists that will need to be consulted. We currently employ three Project Managers from our Devon office overseeing fieldwork, as well as five Project Officers and a large team of site assistants and supervisors. The project would be overseen by Simon Hughes, Project Manager, who has co-ordinated numerous research, infrastructure and development projects on behalf of Dartmoor National Park, Devon County Council, other Local Authorities and private developers.

11) Quotation

a) Preparation of a method statement (if required) £150 + VAT
b) Provision of a team of 4 x archaeologists to undertake hand-excavation of the four trenches within the planned 12th to 16th September programme would be £3,700 + VAT. These costs include for welfare, transport and all expenses.
c) Site visit for environmental specialist would be £300 + VAT
d) Contingency time if required for additional trenches, would be £180 + VAT per day per staff member
e) Reporting. Preparation of report to assessment level would be £1,750 + VAT. These figures do not, however, include for any specialist scientific or artefact analysis or publication. Costs for these would be provided at the time.

Simon Hughes
Project Manager
20 July 2016

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