Wessex Archaeology

Tottiford Reservoir
Dartmoor National Park, Devon

Archaeological Evaluation and Assessment of Results

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TOTTIFORD RESERVOIR
DARTMOOR NATIONAL PARK, DEVON

Archaeological Evaluation and Assessment of Results

Prepared for:
Videotext Communications Ltd
49 Goldhawk Road
LONDON
SW1 8QP

by
Wessex Archaeology
Portway House
Old Sarum Park
SALISBURY
Wiltshire
SP4 6EB

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TOTTIFORD RESERVOIR
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Archaeological Evaluation and Assessment of Results

Contents

Figures

Tables

TOTTIFORD RESERVOIR
DARTMOOR NATIONAL PARK, DEVON

Archaeological Evaluation and Assessment of Results

Summary

In August 2010 an archaeological evaluation was undertaken by Channel 4's 'Time Team' at the site of Tottiford Reservoir, Dartmoor National Park, Devon (NGR 281100, 083150). Lower than usual water levels in 2009 had led to the identification of a previously unknown stone circle, as well as two stone alignments and a number of possible cairns. An evaluation comprising twelve trenches provided an opportunity to investigate these features.

A combination of evaluation and geophysical survey confirmed the presence of the stone circle, estimated to be around 25m in diameter and to have contained between nine and 18 stones. The Tottiford stone circle brings the total of free-standing stone circles on Dartmoor to 15. No suitable dating material was obtained for this feature, although a concentration of probable later Mesolithic worked flint was found within the circle.

A north-west – south-east aligned double stone row appeared to be aligned towards a raised mound which lay to the south-west of the circle. Its alignment and situation in the river valley are unusual. A radiocarbon date of 4590-4450 cal. BC was obtained from a fragment of charred hazelnut shell found within the deliberate backfill of one of the stone settings. This is thought to pre-date the feature itself as a fragment of late prehistoric pottery was also obtained from the sample.

Excavation of the possible cairns demonstrated that they were situated on the original ground surface prior to the flooding of the reservoir, and a fragment of clay tobacco pipe confirmed the post-medieval radiocarbon date previously obtained for this deposit by Plymouth University in 2009. The nature of the features suggests that they are dumps of stone rubble of post-medieval date rather than structured cairns, and they may well be related to the construction of the reservoir in 1861.

An east – west stone alignment was found on excavation to be a more continuous feature rather than another stone row. Consisting of a linear cut loosely filled with granite cobbles and boulders, this feature remained undated. Its purpose is unclear but it is most likely a boundary feature.

A brief summary of the results of the evaluation, including the results of the radiocarbon dating, will be submitted to the *Proceedings of the Devon Archaeological Society*, for inclusion in the annual round-up of archaeology in the county.

TOTTIFORD RESERVOIR
DARTMOOR NATIONAL PARK, DEVON

Archaeological Evaluation and Assessment of Results

Acknowledgements

This programme of post-excavation and assessment work was commissioned and funded by Videotext Communications Ltd, and Wessex Archaeology would like to thank the staff at Videotext, and in particular Michael Douglas (Series Editor), Jane Hammond (Production Manager), Carly Hilts (Researcher) and Ainsley Allen (Production Co-ordinator) for their considerable help during the recording and post-excavation work.

The geophysical survey was undertaken by John Gater, Jimmy Adcock, Emma Wood and Graeme Attwood and landscape survey and map regression was undertaken by Stewart Ainsworth of English Heritage. The excavation strategy was devised by Francis Pryor. The on-site recording was co-ordinated by Naomi Hall, and on-site finds processing was carried out by Helen MacIntyre, both of Wessex Archaeology.

The excavations were undertaken by Time Team's retained archaeologists Tracey Smith, Matt Williams, Raksha Dave, Ian Powlesland, Phil Harding and Faye Simpson assisted by Danni Wootton, Megan Val Barker, Helen Thomas, Carl Thorpe, Neil Craze and John Gould.

The archive was collated and all post-excavation assessment and analysis undertaken by Wessex Archaeology. This report was compiled by Naomi Hall with specialist reports prepared by Matt Leivers (finds), Chris J. Stevens (palaeo-environmental and radiocarbon report) and David Norcott (soils and sediments). The illustrations were prepared by Kenneth Lymer. The post-excavation project was managed on behalf of Wessex Archaeology by Lorraine Mepham.

Thanks are also extended to the landowners, South West Water, for allowing access to the Site for geophysical survey and archaeological evaluation.

TOTTIFORD RESERVOIR
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Archaeological Evaluation and Assessment of Results

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by Videotext Communications Ltd to undertake a programme of archaeological recording and post-excavation work on an archaeological evaluation undertaken by Channel 4's 'Time Team' at the site of Tottiford Reservoir, Dartmoor National Park, Devon (NGR 281100, 083150) (hereafter the 'Site') (**Figure 1**).

1.1.2 This report documents the results of archaeological survey and evaluation undertaken by Time Team, and presents an assessment of the results of these works.

1.2 The Site, location and geology

1.2.1 The Site is situated within the eastern part of the recently drained Tottiford Reservoir, the central lake within a complex of three reservoirs some 5km north of the village of Bovey Tracey and 13km to the north-west of Newton Abbott. The Site is located within the parish of Christow at a height of around 234m aOD.

1.2.2 The Site lies at the southern end of north-west – south-east aligned natural river valley, now flooded to form Tottiford Reservoir to the south and Kennick Reservoir to the north. Beyond the base of the valley the ground slopes steeply upwards.

1.2.3 The underlying bedrock is a coarse-grained granite (British Geological Survey sheet 339); however, due to the topography of the Site a number of alluvial and river terrace deposits were encountered as the superficial geology.

1.3 Archaeological Background

1.3.1 Very few known sites or findspots are listed in the Historic Environment Record (HER) within a 1km radius of the Site. The exception is Moor Barton barrow (HER reference number 9337) to the north-east of the Site. Here a cist containing a cremation, accompanied by a Bronze Age spear-head and a glass bead, was reported in the early 20th century. Another cist (National Monument Number 899606) was reported in the mid 19th century from Aller Farm, just to the south of Christow and to the east of the Site. The *Magna Britannia* (a topographical and historical survey of Britain, published between 1806 and 1822) also mentions the discovery of a number of bronze axe-heads within cairns which lay between Bridford and Christow (Lysons and Lysons 1822).

1.3.2 A Neolithic chambered tomb known as the Bradstone is thought to have stood near Stratton, a hamlet of Christow just to the east of the Site

(National Monument Number 447343). This is reported to have been broken up for building stone in 1817.

1.3.3 There are a large number of stone circles and stone alignments listed in the Devon HER, most of which are situated further west onto Dartmoor. Although there are none listed within the parish of Christow, two concentric stone circles were noticed in the mid 19th century near Bottor Rock, near Hennock to the south of the Site. These were largely destroyed in 1842 but may have formed part of a Bronze Age settlement (HER reference number 13812). The Ordnance Survey mapping marks two areas as containing hut circles, immediately to the west of Bowden Beer Wood and adjacent to Christow Common; both lie to the north-west of the Site.

1.3.4 Due to the growth of Torquay by the mid-19th century, the local water board obtained the right to impound water from the junction of the Kennick Brook and the Trenchford Stream. Tottiford Reservoir, the central of the three, was first to be constructed in 1861. Trenchford Reservoir to the south was the last to be constructed between 1903 and 1907.

1.4 Previous Archaeological Work

1.4.1 During the late summer in 2009 an amateur archaeologist alerted the Dartmoor National Park Authority Archaeologist, Jane Marchard, after he noticed that the unusually low water level in Tottiford Reservoir had revealed some possible cairns, a line of stones running parallel to the shoreline and another running from east to west across the base of the reservoir. A survey of the features was then undertaken by Jane Marchard and her colleague Jeremy Butler, along with some fieldwalking of a flint scatter located over an area of higher ground. The survey identified at least nine possible cairns about 25m west of the path that runs along the eastern shoreline. On a slightly more north-westerly trajectory and slightly further west was a double stone row, and at the north-west end of this was the raised mound where the flint scatter was found. To the north-west of this mound was a free-standing stone circle and to the north of this was an east – west aligned stone row. All the visible features were located in the northernmost part of the reservoir.

1.4.2 In response to this, and before the water levels rose once more, Plymouth University undertook a small trial trench evaluation and Ground Penetrating Radar (GPR) survey in November 2009 (Fyfe 2010). The GPR survey was targeted on the area of the stone circle and a cairn at the eastern end of the northern stone row. Conditions for the GPR survey were not ideal, but it appears that the interior of the circle is topographically higher. Although no additional features were located within the circle, a north – south linear feature was located to the east of the circle. A trench (1m x 0.5m) was excavated into the cairn at the eastern end of the northern stone row. The stones were found to lie within a dark black-brown silt containing visible charcoal inclusions, and this lay upon a grey sandy silt. The darker black-brown context was sampled and a radiocarbon sample produced a date of 1682-1954 cal. AD (BETA-271087). This material was concluded to be from pond sediments which had infiltrated the stones of the presumed prehistoric cairn.

2 AIMS AND OBJECTIVES

2.1.1 A project design for the current work was compiled (Videotext Communications 2010), providing full details of the research aims and methods. A brief summary is provided here.

2.1.2 The aim of the project was to characterise the nature and date of the Site and place it within its historical, geographical and archaeological context. Three broad research aims were outlined:

Research Aim 1: Chronology
The principal aim of the project was to address, through survey, targeted trenching and sample collection, the chronological sequence for the site. A further objective was to establish a loose phasing for the distinct monument types on site.

Research Aim 2: Extent of surface and subsurface archaeology
In order to set the site in its wider landscape context and tie this data in with Ordnance Survey information, an extensive survey of the reservoir basin was to be carried out, including a supplementary re-surveying of the monuments themselves.

The flooding of the Tottiford Reservoir in the late 19th century has resulted in the site being preserved to an extent under a layer of silt. Geophysical survey techniques were to be applied to the site in order to identify features preserved under the current surface, which would then be targeted for trenching if considered appropriate.

Research Aim 3: Preservation
Before the evaluation, the state of preservation of organic deposits and any artefacts other than flint was unknown. Investigations by the University of Plymouth had demonstrated that organic deposits might be expected to be well preserved, although this might not be the case across the site. It is clear that the standing stones have suffered from 200 years underwater with cracking and stone rot is evident. Of particular interest are a number of visible monuments, and the investigation was intended to target these in particular:

<u>Terminal cairn and single stone row</u>
The cairn was investigated during the 2009 trial work; the stones make up the ‘single row’ running east-west at the northernmost extent of the site. The cairn was thought to be a ‘terminal cairn’, specifically placed on the end of the row. The intention was that the stratigraphic relationship between stones making up the row and the cairn should be investigated.

<u>Stone Circle</u>
Investigation here would provide the opportunity to section the stone settings making up the circle, to investigate the preservation of any land/occupation surfaces and to identify potential sampling locations.

Unidentified mound feature
The 'mound' feature was to be investigated in order to determine whether the feature was natural or artificial. If artificial, it may have sealed an earlier landscape, again offering opportunities for sampling.

Double stone row
A targeted investigation in this area was intended to take in two sides of the 'double stone row' in order to establish the stratigraphic relationship between parallel rows, and the presence or absence of any outer linear ditches associated with this monument.

Possible terminal cairn
It was also intended to investigate an undisturbed cairn in order to investigate its potential relationship with the double stone row.

3 METHODOLOGY

3.1 Geophysical Survey

3.1.1 Prior to the excavation of evaluation trenches, a geophysical survey was carried out across the Site using a combination of resistance and magnetic survey. The survey grid was tied in to the Ordnance Survey grid using a Trimble real time differential GPS system.

3.2 Landscape and Earthwork Survey

3.2.1 A Landscape Survey and analysis of the cartographic evidence was undertaken by Stewart Ainsworth, Senior Investigator of the Archaeological Survey and Investigation Team, English Heritage. Where relevant the findings are incorporated into the general discussion.

3.3 Evaluation Trenches

3.3.1 Twelve trenches of varying sizes were excavated, their locations determined in order to investigate and to clarify geophysical anomalies and to address specific research objectives (**Figure 1**).

3.3.2 The trenches were excavated using a combination of machine and hand digging. All machine trenches were excavated under constant archaeological supervision and ceased at the identification of significant archaeological remains, or at natural geology if this was encountered first. When machine excavation had ceased all trenches were cleaned by hand and archaeological deposits investigated.

3.3.3 At various stages during excavation the deposits were scanned by a metal detector and signals marked in order to facilitate investigation. The excavated up-cast was scanned by metal detector.

3.3.4 All archaeological deposits were recorded using Wessex Archaeology's pro forma record sheets with a unique numbering system for individual contexts. Trenches were located using a Trimble Real Time Differential GPS survey system. All archaeological features and deposits were planned at a scale of 1:20 with sections drawn at 1:10. All principal strata and features were related to the Ordnance Survey datum.

3.3.5 A full photographic record of the investigations and individual features was maintained, utilising digital images. The photographic record illustrated both the detail and general context of the archaeology revealed and the Site as a whole.

3.3.6 At the completion of the work, all trenches were reinstated using the excavated soil.

3.3.7 The work was carried out on the 3rd-6th August 2010. The archive and all artefacts were subsequently transported to the offices of Wessex Archaeology in Salisbury where they were processed and assessed for this report.

3.4 Copyright

3.4.1 This report may contain material that is non-Wessex Archaeology copyright (e.g. Ordnance Survey, British Geological Survey, Crown Copyright), or the intellectual property of third parties, which we are able to provide for limited reproduction under the terms of our own copyright licences, but for which copyright itself is non-transferrable by Wessex Archaeology. You are reminded that you remain bound by the conditions of the Copyright, Designs and Patents Act 1988 with regard to multiple copying and electronic dissemination of the report.

4 RESULTS

4.1 Introduction

4.1.1 Details of individual excavated contexts and features, the full geophysical report (GSB 2010), the summary of the landscape and earthwork survey and details of artefactual and environmental assessments, are retained in the archive. Summaries of the excavated sequences can be found in **Appendix 1**.

4.2 Geophysical Results

4.2.1 Geophysical survey was carried out over a total area of 0.4 hectares using a magnetometer, and over 0.25 hectares using Ground Penetrating Radar (GPR) (**Figures 2 and 3**). The following discussion and accompanying data is taken from the report complied by GSB (2010).

4.2.2 Conditions for survey were not ideal. The recently drained reservoir was very wet and muddy, and rain during part of the survey only made conditions worse. Although walking with the instruments was difficult, the gradiometer data have not been affected as it was possible to slow the data collection rate down to account for the conditions. The GPR survey was surprisingly successful but also very slow and, as a result, it was not possible to survey the whole area of interest so, instead, two targeted areas were selected. The aforementioned rainfall has caused a slight difference in response levels between the two survey areas.

Gradiometer Results (Figure 2)

4.2.3 Anomalies (A) coincide with known stones which form part of the stone circle; others can be seen within the data and have been marked as such. A handful of pit-like responses close to this area have been given the category

of *?Archaeology* as it is uncertain as to whether they represent further stones, stone pits or possibly even post-holes, or perhaps something of a more geological origin.

4.2.4 Two grids were placed over the single stone row; anomalies (B) represent the known stones and projected locations of others. This survey block lay on the bank of the reservoir and the natural responses show the differences between this area and the wetter floor of the reservoir.

4.2.5 Natural responses are also visible throughout the data from over the stone circle and mound, and are likely to be associated with the local geology, although processes associated with the flooding of the reservoir or former agricultural activity may have influenced the results.

4.2.6 An area of increased magnetic response coincides with the mound (C), but this is likely to be a natural rather than an anthropomorphic effect.

4.2.7 Whilst the majority of the ferrous anomalies are modern in origin, the magnetic signatures of some of the stones have an igneous component which must be taken into account when viewing the interpretation.

GPR Results (Figure 3)

4.2.8 The radar survey has successfully identified the hidden terrain lying beneath the silt. The radargrams show a complex picture of channels and hollows within an undulating but shallow buried surface, which breaks through the present lake bed in places; this all overlies multiple, geological reflectors down to a depth where the GPR signal is completely attenuated. When converted to time-slices, the near-surface slices highlight the shallowest deposits as zones of high amplitude or increased response, whilst the silt-filled channels and depressions show as low amplitude anomalies.

4.2.9 The distribution of responses within the time-slices appears to correlate well with those features which remain extant; for example, the present mound is coincident with the oval zone of increased response (1) and actually extends slightly further south, beneath the silt. Whilst it is evident that the mound is a natural feature, this southern half of the survey area was targeted to find evidence of a man-made walkway extending from a double line of stones up towards the mound, but there was no clear evidence for this in the results.

4.2.10 The ring of stones to the north is also associated with a zone of increased response (2), although in this case the rising topography does not quite break the surface, aside from a small dry area obvious in the shallowest raw time-slice. The extent of the stone circle is delimited on the western side by a sharply defined in-filled channel (3), which the present stream still seems to follow. Some unrecorded, exploratory traverses suggested that the base of this channel is over a metre below the present lake bed.

4.2.11 The eastern side of the ring was initially thought to be defined by a shallow channel (4), which opens out at its southern extent. However, once the position of the extant stones was plotted over the data, it became clear that this was not the case, as one sits within or directly over this channel. Having identified potential buried stones between the visible examples, some of

these were also found to be coincident with this channel. Given the nature of this valley, the responses from the GPR and the results of coring conducted at the time of survey (Dr. Henry Chapman, *pers. comm.*), it is obvious that this area would have been marshy, probably with a braided watercourse of which the individual branches were relatively mobile, albeit with a fairly static main channel (3). This gives rise to two possible interpretations for the stones / channel phasing: the first is that the channel (4) pre-dates the stones, and by the time of their construction this part of the valley was once again relatively dry, or it post-dates their installation and has eroded the eastern limits of the drier ground, sinking these stones into its course.

4.2.12 Other anomalies associated with the subtler undulations around these monuments include another channel right on the eastern limits of survey (confirmed through coring: Dr Henry Chapman, *pers. comm*.) which is flanked by a slight 'ridge' (5), before the topography drops away again to the west. With depth, the variation seen is entirely related to geological formations, including what is assumed to be a joint or fracture (6) running roughly east-west which is associated with a similar magnetic anomaly.

Conclusions

4.2.13 The magnetic survey has shown an area of magnetic enhancement coincident with the mound but not in the vicinity of the stone circle; that said, some of the extant stones do show a magnetic effect and, on this basis, it has been possible to predict the position of some other buried stones. A number of natural anomalies likely to be geological have been identified whilst other trends and responses may be associated with either the reservoir construction or former agricultural features.

4.2.14 The ground penetrating radar survey has modelled what would have been a wetland environment in antiquity, probably with a relatively mobile braided river system. The data imply that the mound is natural and that both this and a broad area coincident with the standing stones were drier regions within this wetland. Possible buried stones have been identified between the presently extant sections of the circular monument along with natural, geological features.

4.3 Evaluation Trenches

Introduction

4.3.1 Eleven trenches and nine tespits were excavated, all within the northern part of the reservoir and all nearest the eastern edge. The size and shape of the trenches varied to account for the varying potential targets that they were sited on and the archaeology subsequently uncovered. Any substantial remains were left *in situ*. Trench 7, the southernmost trench, occupied the lowest position at a height of 233.49m aOD. Trench 1, one of the northernmost trenches, occupied the highest position at a height of 234.87m aOD.

4.3.2 The trenches saw the removal of between 0.06m and 0.25m of overlying reservoir silt and between 0.11m and 0.20m of the underlying buried soil in order to expose the archaeology. Where encountered the natural geology was either degraded granite rab or alluvial gravel.

Trench 1 (Figure 4)

4.3.3 Trench 1 was situated over and alongside one of the possible cairns that coincided with the west – east aligned stone row. It also incorporated the trench excavated by Plymouth University in 2009.

4.3.4 The re-excavation of the initial trial trench confirmed that the postulated cairn (118) was constructed on an organic and humic dark deposit. The deposit beneath the cairn (102) was equivalent to that numbered *(105)* by the Plymouth University trial trench. The nature of this deposit, particularly the semi-decomposed organic components, strongly suggested that this was a fairly recent deposit and that the preservation of organic material within it was a result of the construction of the reservoir, causing water-logging of the ground. The possible cairn itself lacked structure, both in terms of its boundaries and its internal construction, and appeared rather to be a dump of stone (**Figure 4, Plate 3**). This all suggested that the post-medieval radiocarbon date obtained by Plymouth University for the layer beneath the cairn was a true date rather than the result of contamination and that (102) was the original ground surface before the construction of the reservoir.

4.3.5 The overlying contexts numbered by Plymouth University as *(101), (102), (103)* were not sub-divided in this excavation but were grouped under the context number (101). Variation between silts and sands within this deposit are a result of variables in alluvial deposition, but ultimately this layer is the product of the silting at the base of the reservoir. The silt layer numbered as *(104)* in the Plymouth University trial trench is probably equivalent to (108) in this evaluation, which is also likely to represent a lower level of silting within the reservoir. Different episodes of silting within the reservoir, probably due to changes in the height of the reservoir, were observed further to the west. In the north-eastern part of the trench the reservoir silting (108) overlay a humic silt loam; although numbered as (116), this was identical to (102).

4.3.6 The eastern edge of a feature (107) which is likely to correspond to the north – south aligned linear trend identified from the GPR survey was located in the western part of the trench (not illustrated on **Figure 4**). This appears to be a river channel, but only the far eastern extent of this feature was revealed and only the upper part, comprising alluvial layers, was excavated. The upper edge of the channel overlay (117), the preserved B horizon (see below, **6.4**).

4.3.7 Excavation of the east – west aligned stone feature (105) showed that it was a more continuous feature than previously thought. It was found to be approximately 2m wide and contained a single fill (106) incorporating deliberately placed granite boulders ranging in size from 0.04m to 0.75m (**Figure 4, Plate 2**). The necessity of leaving the granite boulders *in situ* meant that the feature could not be fully excavated, but it appeared to be relatively shallow. The feature itself lay beneath layer (103), the former E horizon (see below, **6.4**), and is therefore earlier than the post-medieval soil, but no definite dating could be obtained for the structure.

Trench 2 (Figure 5)

4.3.8 Trench 2 was placed to incorporate two of the possible cairns, one of the smaller ones and one of the larger examples.

4.3.9 After removal of the reservoir silts, both the larger 'cairn' (206) and the smaller (207) were found to lack any formal structure and were situated directly upon layer (202) (**Figure 5, Plate 5**). This dark humic deposit, similar to (105), was identified as the old ground surface prior to the establishment of the reservoir. A fragment of clay tobacco pipe from this layer confirmed this date. This led to the conclusion that, in common with (118), these were post-medieval dumps of stone rather than cairns.

4.3.10 Layer (203), beneath (202), is likely to represent the preserved B horizon of this soil. This lay directly upon a silty clay (204) which contained frequent fragments of degraded granite, the 'rab' layer seen in Trench 1 as (104). A small sondage dug into this revealed that the depth of this deposit in Trench 2 was not very great, no more than 0.13m, and that it lay upon natural gravel, (205).

Trench 3 (Figure 5)

4.3.11 Trench 3 was positioned on a visible stone which formed part of the double stone row in the southern part of the Site. By extending this trench to the west it was hoped to locate the cut for the pair to this stone.

4.3.12 The extant orthostat (311) was situated within cut (309), which was cut through the natural rab (307) and after the placement of the stone backfilled with deposit (310). The stone survives to a height of 0.88m high with 0.48m of this above the present ground surface (**Figure 5, Plate 6**). The lower part of the cut exposed the river gravels (312) beneath the rab.

4.3.13 Around 1m to the west-south-west was cut (305) (**Figure 5, Plate 6**). This was shallower and smaller than (309) and contained a lower primary fill (306) as well as an upper secondary fill (304). Its smaller dimensions suggest a smaller stone upright than (311), but this is not surprising as those stones still visible along the row show considerable variation in size and shape. Smaller size may account for this stone being removed while the larger, more deeply set stone (311) was left *in situ*.

4.3.14 Sealing stone setting (311) but cut by (305) was (303) a possible buried subsoil horizon, similar to (203). Overlying this in the area immediately between the two features was (308), a thin layer of degraded granite which may be related to the removal of the second stone. Across the whole trench was a fairly deep depth of the buried topsoil (302), and this lay beneath a fairly thin layer of reservoir silt.

Trench 4 (Figure 4)

4.3.15 Trench 4 was situated to the west of Trench 1 on the linear stone feature. A similar stratigraphy to the other trenches was observed, with the reservoir silt (408) overlying the buried A horizon (407). This in turn overlay the buried B horizon (401). A very pale grey-brown silt (402) was seen beneath this; similar deposits were seen in Trenches 6, 8 and 10. Layer (402) overlay

both (403), fine lenses of silting, and (406), a dark gravelly silt. Both (403) and (406) overlay the natural degraded granite rab (404).

4.3.16 In the central part of the trench was the continuation of the east – west aligned stone feature (405) (**Fig. 4, Plate 1**). At this point no cut could be clearly discerned, but its extent may be indicated by the absence of (402) in the central part of the trench.

Trench 5 (Figure 1)

4.3.17 Trench 5 consisted of nine testpits situated across the raised mound. This area had previously been fieldwalked by Jane Marchard and Jeremy Butler from the Dartmoor National Park Authority and had yielded a number of pieces of struck flint. Further fieldwalking was carried out prior to the testpits being excavated and any flint found was located by GPS. Originally ten testpits were numbered, but Testpit 5 was later extended and renumbered Trench 11.

4.3.18 The location and nature of these testpits meant that they shared broadly the same stratigraphic sequence. In order to clearly link corresponding and identical deposits while preserving the location information, once deposits from different testpits were concluded to be identical the same context number was assigned but a suffix added to indicate testpit number.

4.3.19 The upper deposit of the mound area, (501), was a fine sandy gravel deposit; both the flint from the 2009 fieldwalking and that from the current fieldwalking lay within the area of the mound and on this deposit. The amount of flint obtained during the current fieldwalking was small, the majority presumably having been collected during the 2009 survey. No distinctive pattern of distribution was visible, but the presence of flint on the mound area is likely to be a product of water deposition, the rising ground causing a loss of energy in the water flow causing it to deposit the heavier parts of its load.

4.3.20 Beneath (501) in all tespits was (502), the buried A horizon, confirming that the mound was a raised area of ground prior to the reservoir's construction. Below this was (503) which appears to have been the buried subsoil or B horizon. Layer (503) was the lowest excavated or exposed deposit in Testpits 1, 6, 7, 8, 9, and 10.

4.3.21 Some variation was seen in Testpit 3 where a layer (506) was excavated in the north-western part of the testpit. This dark silt was stratigraphically beneath (502) and above (503) and contained some charcoal and burnt clay flecks. An environmental sample was taken but found only charred stems and rootlets. Further variation was seen with two discrete patches of possible heat-affected material (507) beneath (503), but no clear cut could be seen and they may well be merely areas of bioturbation.

4.3.22 Testpits 2, 3 and 4 either exposed or excavated the natural layer (504) beneath (503). This was a mixed silty deposit containing very few coarse components. Only Testpit 4 exposed the layer beneath this (505), an alluvial terrace deposit at a depth of 0.26m below ground level. The full depth of this was not excavated but it extended below a depth of 0.70m below ground level.

Trench 6 (Figures 6 and 7)

4.3.23 Trench 6 was located on the western side of the stone circle, on the position of an *in situ* stone. The stone, (608), survived to a height of 0.98m with 0.32m of this above the present ground surface (**Figure 7, Plate 7**). The stone setting (607) cut through the natural rab layer (610). The lower part of the cut exposed the river gravels (609) beneath the rab. After the placement of the stone there were two deliberate backfill deposits, the lower (606) probably to allow the stone to be positioned correctly before the addition of the upper material (605). Large fragments of granite were used as packing material within both deposits.

4.3.24 Sealing the stone setting was (604), an apparently water deposited layer. Above this was (603) which appears to represent material that accumulated within a natural hollow around the base of the stone. Above this was an alluvial silting layer (602), probably equivalent to (803) and (1003) seen in adjacent trenches, which lay directly beneath the reservoir silts (601).

Trench 7 (Figure 1)

4.3.25 Trench 7 was targeted next to a visible stone near the south-east end of the stone row with the aim of confirming whether a pair for this stone stood to the immediate north-east.

4.3.26 Removal of the overlying silt (701) revealed a sub-oval cut (702). This was presumably the result of the removal of a standing stone. This had filled with (703), a dark grey silt loam, similar to (1105) seen in Trench 11. Sounding of the cut using a ranging pole suggested that it was around 0.42m deep. The pit (702) was cut into river gravels (704), similar to those seen in Trench 3 (312), but at a higher level. This trench did not display the depth of overlying deposits or the full sequence of these deposits seen in trenches further to the north.

Trench 8 (Figures 6 and 7)

4.3.27 Trench 8 was originally situated on a radar signal thought to be another stone placement within the circle, but excavation of this showed that another cut lay to the west of this. The trench was therefore extended in order to expose any intervening features which lay between the stones (**Figure 7, Plates 8 and 9**).

4.3.28 At the far eastern part of the trench a machine dug sondage was excavated. This showed that the reservoir silts (801) overlay the buried ground surface (834) and the preserved B horizon (802) beneath this. In this part of trench these deposits overlay a pale grey-brown alluvial deposit (803). This overlay the natural rab layer. In the eastern part of the trench the full depth of (803) was not seen, but it was seen to rise up sharply and did not extend much beyond 6.9m into the trench. The easternmost of the stone settings seen in this trench, (804), was cut into this layer.

4.3.29 Six features were exposed in Trench 8; (804), (808), (811), (815), (829) and (831). Feature (804), the easternmost of these, contained an outermost fill (821) which is likely to have been the original deliberate backfill; within this was a central fill (805) and packing stones (806). Although the stone from

this setting has been lost, the majority of the fills appear to be relatively undisturbed.

4.3.30 Feature (808) still contained an *in situ* upright stone, (810), as well as the deliberate backfill (809), packing stones (824) and deposit (820) into which the packing stones were set. Although the stone was still *in situ*, the upper portion of it had been damaged and its current height was no more than 0.53m.

4.3.31 Of the remaining features, it was not possible to determine whether they were all settings for stones or whether some of the smaller features, for example (815), were actually post-holes. Upon excavation, (815) was found to have a steep-sided profile but was only 0.37m deep. The depositional sequence suggested that the post or stone had been pulled out; the lowest deposits were two primary fills, (822) and (823), and above this were secondary deposits (819) and (818). Above this was stony deposit (817) which contained granite fragments thought to be disturbed packing material, and this was overlain by silt rich deposit (816).

4.3.32 Feature (811) was also excavated. The upper deposits showed an alternation of dark black-brown and light grey-brown silty deposits ((826), (827), (835), (825), (813) and (812)). The exception to this was some possible disturbed packing stones (814). Beneath this sequence of silting was (828), a possible deliberate backfill which may have been one of the original fills within the feature. This deposit was not fully excavated due to time constraints.

4.3.33 In the western end of Trench 8 were features (829) and (831). In the upper portion of (829) was only one visible deposit (830); fragments of granite within this fill may be the remnants of packing material. Feature (831) to the west contained a darker outer fill (832) and a pale grey inner fill (833). Both features were left unexcavated.

Trench 9 (Figure 6)

4.3.34 Trench 9 was situated in the central part of the stone circle in order to locate any structures associated with the circle. What was discovered was a possible post-hole (905). This was relatively shallow for its size but is likely to have been truncated. Within the upper surface of the natural rab (903) a large number of small pieces of struck flint of probable Mesolithic date were found. A sondage was dug along side the southern part of the trench and the spoil from this was sieved in order to aid finds retrieval.

Trench 10 (Figures 6 and 7)

4.3.35 Trench 10 was situated on one of the stones of the stone circle identified by the radar survey. The stratigraphy found was similar to that in the neighbouring trenches with the alluvial reservoir silts (1001), overlying the buried soil horizon (1002). In common with Trench 8 a grey silty deposit was found beneath this (1003) overlying the natural rab (1004). The stone (1005) was found to be recumbent but nearly 2m in length (**Figure 7, Plate 10**). No trace of a cut for the stone could be seen within the trench, but this may lie beneath the stone. Possible disturbed packing stones could be seen lying near the stone.

Trench 11 (Figure 5)

4.3.36 Trench 11 was originally Testpit 5 but was renumbered after the discovery of the continuation of the double stone row caused it to be extended. The final extent of the trench revealed four possible features - (1104), (1107), (1108) and (1110) - cut into (1111), the natural rab (**Figure 5, Plate 4**).

4.3.37 The most westerly of these, (1110) was fairly irregular, and its sole fill (1109) was almost identical in colour and characteristics to the subsoil; it was therefore concluded to be a natural feature.

4.3.38 Located within the original area of the testpit and centrally within the trench were features (1107) and (1108). The earlier of the two, (1108), was an oval feature which was concluded to have been the original setting for a stone upright; this was only partly excavated. The smaller feature (1107) situated in the top of this was thought to have been formed by the removal of this stone and was probably not a deliberately cut feature as such. The remnants of granite packing stones could be seen at the interface between (1107) and (1108). Both (1105), the material that had accumulated into the hollow left by the removal of the stone, and (1106), the deliberate backfill of (1108), were sampled. While (1105) contained uncharred seeds, charred seeds and rootlets these elements were not present in the sample from (1106), and instead fragments of charred hazelnut shell were found. A radiocarbon date from the hazelnut shell gave a date of 4590-4450 cal. BC (UB-16266), indicating that the hazelnut was charred within the very Late Mesolithic period. This material is likely to be residual, as a fragment of late prehistoric pottery was also obtained from the sample. As charred material will only survive for relatively short periods of time within active soils, its presence here does suggest nearby Mesolithic activity.

4.3.39 Trench 3 to the south-east had confirmed the presence of a double stone row. Feature (1104), therefore, to the east of (1108), appeared likely to be the corresponding stone setting. It was smaller than (1108) and the cut was difficult to discern due to its single fill, (1103), being very similar to the natural rab (1111), although possible packing stones could be seen within the fill. There was no *in situ* stone nor was there clear evidence of its removal, but the small size of this feature could suggest that the stone placement was much smaller and shallower, leaving less trace.

Trench 12 (Figures 6 and 7)

4.3.40 Trench 12 was opened up in order to locate more struck flint (as retrieved from Trench 9 immediately to the south). After removal of the reservoir silt (1201) an interface layer, (1202), was encountered on top of the natural rab, (1207). This deposit was 100% sieved on site and found to contain a large number of small pieces of struck flint. These were concluded to be of probable Mesolithic date (see below, **5.6**).

4.3.41 A post-hole (1208) was also located. This contained two secondary deposits, (1203) and (1206), which both contained a significant proportion of re-deposited rab. A second feature just to the north, (1204), proved to very shallow and irregular and is likely to be of natural origin (**Figure 7, Plate 11**).

5 FINDS

5.1 Introduction

5.1.1 A small quantity of finds was recovered from seven of the trenches, and from the test pits excavated as Trench 5 (no finds were recovered from Trenches 1, 3, 4 or 7). The finds assemblage was dominated by struck flint, although small quantities of stone and burnt flint were recovered, as well as single fragments of pottery, iron and clay tobacco pipe. All finds have been quantified by material type within each context, and totals by material type and by trench are presented in **Table 1**.

5.2 Clay pipe

5.2.1 A single piece of clay pipe stem came from the buried topsoil in Trench 2.

5.3 Iron

5.3.1 A single small, unidentified iron object came from the spoil in Trench 8.

5.4 Pottery

5.4.1 A single sherd weighing 1g was recovered from Trench 11. The sherd is in a micaceous quartz sand matrix with quartzite temper, perhaps of Late Bronze Age or Early Iron Age date although not really chronologically distinctive.

5.5 Stone

5.5.1 An unstratified piece of fine grained sandstone measuring 100 x 45 x 40mm maximum (but broken at the narrower end) had smoothed surfaces and appeared to be a whetstone.

5.5.2 Two small fragments (respectively from Trenches 6 and 10) appear to be crystalline rocks, probably naturally occurring in the granite.

5.5.3 The remaining four pieces are flat water-worn cobbles (three from Trench 5; 1 from Trench 6). None shows any sign of working or use.

5.6 Flint

5.6.1 A total of 156 pieces of worked and burnt flint was recovered. Tools were very poorly represented, with only a neat end scraper of probably later Neolithic date and a notched flake of probable Mesolithic date from Trench 5, a very much cruder end scraper from an unstratified location, and an unstratified piercer. Otherwise, the material consists of debitage, much of which is small enough to qualify as chips. The small size of much of the material, the indications of blade and bladelet technology, and one triangular platform rejuvenation flake, suggest a date in the (probably later) Mesolithic for most of the material.

5.7 Recommendations

5.7.1 There is no potential for any further analysis of the material. The flint would justify inclusion in any summary of the site included in the county journal, but no separate publication is warranted.

6 PALAEO-ENVIRONMENTAL SUMMARY

6.1 Introduction

6.1.1 Eleven bulk samples were taken from features within Trenches 2, 3, 5.3, 6, 8 and 11. Six of the eleven samples came from fills associated with stone-holes. Two were associated with stone-hole (1108); that from cut (1107) came from the backfill of the robbed-out stone, while that from (1106) came from the *in situ* stone packing. The remaining four samples came from stone-hole (305) in Trench 3; stone-hole (607) (upper fill 605 and lower fill 606) in Trench 6; and stone-/post-hole (815) in Trench 8. The remaining five samples came from layers associated with probable pre-reservoir fills:?mound material in Trench 5 (Testpit 3); a possible old ground surface in Trench 2; a peaty looking layer in Trench 3; and a layer cut by stone-hole (305). The final sample was from a layer sealing stone-hole (607). The samples were processed for the recovery and assessment of charred plant remains and charcoals.

6.1.2 During the initial processing, sub-samples of 1 litre were processed for waterlogged material, with laboratory flotation undertaken and flots retained on a 0.25mm mesh and residues on a 0.5mm mesh. While uncharred seeds were seen in all of the samples given their pristine condition they are almost certainly modern.

6.1.3 The remainder of all the bulk samples were then processed by standard flotation methods; the flot retained on a 0.5mm mesh, residues fractionated into 5.6mm, 2mm and 1mm fractions and dried. The coarse fractions (>5.6mm) were sorted, weighed and discarded. Flots were scanned under a x10 – x40 stereo-binocular microscope and the presence of charred remains quantified (**Table 2**) to record the preservation and nature of the charred plant and wood charcoal remains. Preliminary identifications of dominant or important taxa are noted below, following the nomenclature of Stace (1997).

6.2 Charred and Uncharred Plant Remains

6.2.1 Several of the flots were large with high numbers of assumingly modern roots, moderate to low numbers of uncharred seeds and occasional insect remains. Such remains were mainly notable in the robber fill 1107 associated with stone-hole (1108), the old ground surface in Trench 2, the upper fill of stone-hole (607) and the samples in Trench 3. Visual inspection of this latter material within the sample suggested that it was more probably organic soil material.

6.2.2 It is possible that some of this uncharred material may relate to the pre-Victorian land surface, but it is highly unlikely to pre-date this event or to be associated with the prehistoric archaeological deposits, given that such material was largely absent from deeper deposits.

6.2.3 The reservoir had been drained to low levels on previous occasions (in particular in the summer of 2009), over which time it had become vegetated. Much of the uncharred material comprised seeds of sedge (*Carex* sp.), cinquefoil type (*Potentilla* sp.), dock (*Rumex* sp.) and bramble (*Rubus* sp.) Additionally within the upper fill of 607 were gametes of stonewort (*Chara*

sp.), as well as occasional larvae of Caddis fly, statoblasts of bryozoan, including *Cristatella mucedo*, and frequent worm cocoons. It is quite possible that much of the uncharred material therefore relates to recent events in which lower water levels allowed colonisation by sedges and wet-grassland species, while the statoblasts more probably relate to aquatic vegetation, but have become incorporated into the deposits during periods of drying and assumingly soil development. Stonewort inhabits still to slow moving, often shallow water bodies.

6.2.4 The main charred components seen were charred rootlets of monocots and dicots, along with occasional seeds of marsh bedstraw (*Galium palustre*), plantain (*Plantago lanceolata*), heath grass (*Danthonia decumbens*) or sweetgrass (*Glyceria* sp.), cinquefoil (*Potentilla* sp.), sheep's sorrel (*Rumex acetosella*), sedge (*Carex* sp.), and one seed of possible red bartsia (*Odontites vernus*). All of this material was extremely well preserved with no signs of abrasion or reworking. Importantly, that from stone-hole (305) contained half charred roots and rootlets, suggesting that this material was charred shortly before the material became waterlogged. This type of material was only present in the same samples listed above, which had uncharred seeds, high numbers of roots and worm cocoons, with the exception of that from 'peaty layer' (303) and layer (506) in Testpit 3 which had only a few charred stems and rootlets.

6.2.5 The most significant finds were 2-3 fragments of hazelnut shell (*Corylus avellana*), that came from the stone packing associated with stone-hole (1108). This same sample also produced a sherd of prehistoric pottery. That charred fragments of hazelnut shell are extremely common elements of Neolithic and Early Bronze Age sites (Moffet *et al*. 1989) would certainly suggest that they could be associated with the general period of the erection of the stones.

6.2.6 A comparison of the material from the fill of the robbed-out stone (1107) with the stone-packing material in stone-hole (1108) is suggestive of the origin of the various types of plant material. The *in situ* stone packing, while containing fragments of hazelnut shell, did not contain any evidence for uncharred seeds and charred rootlets, while both of these items were present in high numbers in the robbed-out stone fill, along with charred seeds of wet-grassland species. This confirms that the charred rootlet material is also likely to at least post-date the stone-row as suspected. Similarly, both charred rootlets and uncharred seeds and gametes of stonewort were present in the upper fill of stone-hole (607) but not the lower fill.

6.2.7 As stated above, given that much of the charred rootlet material was very fresh, and that from stone-hole (305) was half-charred. As it appears relatively widespread, it seems most probable that this material relates to activities perhaps associated with the clearing of the local vegetation just prior to the construction of the reservoir in the 1860s. The high amount of material within the robbed-fill (1107) of stone-hole (1108) might also suggest that this stone was in fact removed during this general period.

6.3 Wood Charcoal

6.3.1 Wood charcoal was noted in some of the flots of the bulk samples and is recorded in **Table 2**. However, there was very little charcoal in any of the samples.

6.4 Sediments

6.4.1 Two monolith samples were taken from Trench 1, as shown in **Table 3**. Examination of the monoliths together with the site records and photographs show that the sequence in **monolith 13** is a poorly to moderately well-developed podzolic or stagnopodzolic soil sequence, typical of such an upland context, with deposit 116 representing the topsoil (O or A horizon), and (103) the leached E horizon. The B horizons are not clear but are contained within (117) and (114).

6.4.3 Care should be taken when interpreting any finds through this sequence, as the horizons are pedogenically formed and are not stratigraphy.

6.4.4 This sequence directly underlay the modern reservoir deposits and represents the pre-reservoir 19th century land surface. The shallowness of the sequence and the extensive biological and pedological reworking means that no meaningful record of landscape history will be preserved here.

6.4.5 **Monolith 12** samples apparently alluvial deposits which are most likely associated with the flooding of the site during construction of the reservoir (the channel or other erosive water feature drawn is shown to cut the pre-reservoir podzol).

6.5 Potential and further recommendations

Introduction

6.5.1 As much of the material relates to either the construction of the reservoir or more recent vegetation during periods of low water-levels there is generally little overall potential for further work. It might be noted that radiocarbon dates from uncharred waterlogged material recovered in an earlier investigation showed it to be no earlier than the late 17th century and most probably belonging to the period immediately preceding the construction of the reservoir in 1861 (Fyfe 2010).

Charred and uncharred plant remains

6.5.2 The charred material has little potential. The charred rootlets and seeds almost certainly can be related to the wet-grassland and shrub environment present prior to the reconstruction of the reservoir. The hazelnut shells are indicative of general food-related activities assumed to be broadly contemporary with the time of the construction of the alignment.

6.5.3 No further work is proposed.

Wood charcoal

6.5.4 The wood charcoal is all too small for identification and has no further potential. No further work is proposed.

Sediments

6.5.5 **Monolith 13** represents the pre-reservoir (19th century) land surface. While earlier artefacts may be present in these contexts, the potential for palaeoenvironmental work on macro- or micro-fossils is low.

6.5.6 In **monolith 12,** given the recent date, rapid deposition and apparent lack of contextual link between the sampled sequence and the archaeological remains nearby, this sequence has low potential for adding to out knowledge of the archaeology on site, or any significant span of landscape history.

6.5.7 No further work is proposed.

Dating

6.5.8 Currently few of these stone alignments have been dated, and radiocarbon dating of the alignment from Cut Hill, Dartmoor, some 15 miles to the west, suggested a date of around 3,500 cal. BC (Fyfe and Greeves 2010). This date was much earlier than might be expected and as such a date on the stone-row from Tottiford would be extremely significant.

6.5.9 The potential for dating the hazelnut shell from stone-hole 1108 was therefore high. That this fill contained no charred or uncharred roots indicates that it was relatively undisturbed in at least Victorian times. Given that the hazelnut did not appear too eroded it also seemed probable that it was neither reworked from earlier deposits nor intrusive from later activity. As such it had the potential to date the stone row itself, although ideally collaborative further dates from other stone-holes would have been needed to verify the date of the alignment beyond doubt.

6.5.10 The returned radiocarbon determination (5683±29 BP, UB-16266; **Appendix 2**) was calibrated within OxCal 4.1.1 (Bronk Ramsey 2001; 2009). The calibrated date for the sample was 4590-4450 cal. BC (at 95.4% probability), indicating the hazelnut was charred within the very Late Mesolithic. A discussion of the significance of the date is given in **Appendix 2**.

7 DISCUSSION

"The granite tors of Devon and Cornwall… furnished materials for the erection of circles, cromlechs, and rows, abundant in supply… sublime from their very simplicity and vastness… imperishable as the hills from which they were taken, rude and untouched by the workman's tool, as when dislodged by some primeval convulsion of nature from their original position" (Rowe 1896, 28).

7.1 Introduction

7.1.1 Despite the enthusiastic work by the Dartmoor Exploration Committee and other antiquarians, the stone monuments of Tottiford have apparently remained overlooked until the 21st century. The Committee were active from 1893-1906, crucially several years after the construction of the reservoir. However, Samuel Rowe was active from the 1830s and in his 'Perambulation of Dartmoor' (first published in 1848) describes an already

destroyed barrow at Moor Barton just to the east of the Site, yet there is no mention of any monuments in the valley below.

7.1.2 The site at Tottiford has therefore provided a rare opportunity to evaluate a previously unknown complex of monuments. Despite the small scale of the current fieldwork it was possible to evaluate all four potential aspects of the complex (cairn alignment, stone circle, double stone row, northern stone alignment). While the possible cairn alignment was shown to be a much more recent deposit, possibly related to the construction of the reservoir, the stone circle and double stone row were confirmed as prehistoric monuments. However, despite excavation, the nature of the northern stone alignment remains enigmatic.

7.2 Possible Late Mesolithic activity

7.2.1 Trenches 9 and 12 both contained significant amounts of struck flint likely to be Late Mesolithic in date, suggesting that Mesolithic activity was focused in this area of the Site. A post-hole was located in each of the two trenches, both relatively shallow for their diameter but possibly truncated. It has not been certainly demonstrated that the flint in these trenches was contemporary with these features, but it does strongly suggest activity and a possible structure on this area of higher ground prior to the construction of the stone circle.

7.2.2 The radiocarbon date obtained from a fragment of charred hazelnut shell found in Trench 11 proved to be Late Mesolithic, and although presumed to be residual in its context, it does suggest disturbance of nearby Mesolithic deposits.

7.3 The west – east stone row and 'terminal cairn' (Trenches 1 and 4)

7.3.1 Trenches 1 and 4 were positioned over the eastern end of the west - east aligned stone alignment that appeared to stretch across the head of the valley. Excavation showed that this differed considerably in its characteristics from the south-east – north-west double stone row. Instead of regularly placed cut features for individual stones, this feature appears as a more continuous linear feature. Within the cut were placed granite cobbles and boulders ranging in size and form. This may have been a boundary feature, but no dating evidence was recovered. Although the alignment is at odds with the post-medieval field boundaries and with the prehistoric monuments, its date and purpose remain unclear.

7.4 The stone circle (Trenches 6, 8, 9, 10 and 12)

7.4.1 The discovery of the Tottiford stone circle brings the total of free-standing stone circles on Dartmoor to 15. It is perhaps unusual that it remained overlooked when the area had such a flourishing antiquarian movement, but this could well be due to obstruction by vegetation; the wet and muddy river valley with its shifting and braided streams was likely to be a off-putting prospect for both walkers and amateur archaeologists. Many of the known stone features of Dartmoor are on the moorland itself, the short vegetation height causing these features to be clearly visible, if remote. The wet, boggy floodplain at the junction of Kennick Brook and Trenchford Stream would have supported much more bushy vegetation.

7.4.2 Two stones were demonstrated to be *in situ* and a further recumbent stone was revealed. Results from geophysical survey, visible stone fragments and excavation suggests that the circle was composed of somewhere between nine and 18, fewer than many of the Dartmoor circles (Burl 1976, 109). Difficulties in assessing the number of stones arise not just from the small excavation area but also the presence of several features whose nature was unclear - they could have been stone settings, post-holes or pits.

7.4.3 The 'circle' appears to be slightly oval in shape, the longer axis orientated south-west – north-east with a length of approximately 25m; the shorter north-west – south-east axis is nearer 23m. This would put it near to the mean average size for the stone circles of Dartmoor.

7.4.4 No suitable dating evidence was obtained from a secure context within the stone circle, despite several environmental samples being taken. Trenches 9 and 12 within the circle both yielded struck flint of probable later Mesolithic date, but it cannot be directly connected with the monument. Generally this type of monument is thought to date from later Neolithic and Bronze Age periods (*c*. 2400-700 BC), although few have been directly dated.

7.4.5 This circle lies on the outer edge of Dartmoor while most of the other Dartmoor stone circles lie further west within the higher moorland. Many of the circles do seem to have an association with waterways, most notably the concentration of monuments around the headwaters of the Teign (Burl 1976, 107). However, the nearest known stone circle to Tottiford, the Mardon Down circle near Mortonhampstead, which is larger in diameter and with considerably more stones, is not near water.

7.5 The mound (Trench 5)

7.5.1 Excavation on the mound confirmed the presence of struck flint in this location, but given the topography this is likely to be result of selective deposition by water and is likely to originate from further upstream.

7.5.2 The geophysical survey and augering work undertaken, as well as the testpits on the mound itself, confirmed that this was a natural topographic feature. Water is likely to have flowed to the east of this feature as well as to the west as it does today. The edge of a channel could be seen in the western part of Trench 1. Given its elevation and situation, the mound is likely to have been a focus for activity.

7.5.3 The south-east – north-west double stone row was clearly aligned on the mound, leading either towards or away from this natural feature.

7.6 The south-east – north-west double stone row (Trenches 3, 7 and 11)

7.6.1 The alignment and presence of the double stone row was confirmed by excavation in Trenches 3, 7 and 11. No direct stratigraphic relationship between the individual rows could be obtained but it seems almost certain that they were part of the same monument.

7.6.2 The still visible and *in situ* stones display considerable variation in size and form, as do the diameter and depth of the settings for the stones. No evidence of any tool-marks was seen on the stones, suggesting that they

were used unworked. All three trenches confirmed that the width between the two rows was consistently 1.2m.

7.6.3 Stone alignments or rows are generally thought to date to the Late Neolithic or Early Bronze Age period although none on Dartmoor have been directly dated. There are over sixty stone rows on Dartmoor, often associated with stone circles or burial cairns. Few have been excavated in modern times with the exception of Cholwichtown (Eogan 1964) and Cut Hill (Fyfe and Greeves 2010). Cholwichtown (a stone row and circle) remained undated despite full excavation (Eogan 1964), but a series of radiocarbon dates obtained from the peat above and below the Cut Hill stones indicated a date in the 4th millennium BC (Fyfe and Greeves 2010). A radiocarbon date of 4590-4450 cal. BC (UB-16266) obtained from the deliberate backfill of one of the stone settings a Tottiford is thought to pre-date the feature itself (see **Appendix 2**).

7.6.4 The Tottiford alignment is at least 54m long. Many of the Dartmoor rows are longer, more typically 100-150m. Its position and orientation are also unusual. Most of the Dartmoor stone rows are north-east – south-west aligned (Emmett 1979). Equally atypical is the topographical situation of the Tottiford stone row. Most of the known examples are on hillsides and ledges (*ibid.*). It is unclear how much this is a factor of differential preservation, but the position of this alignment within a river valley seems to be unique. Its orientation appears to be determined by the alignment of the valley and the mound.

7.7 The 'cairns' (Trench 2)

7.7.1 Excavation in Trenches 1 and 2 demonstrated that an apparent line of 25 'cairns' on the eastern shore of the reservoir was in fact of post-medieval origin. The apparent 'terminal cairn' was not related to the east – west stone feature and is stratigraphically much later. Excavation showed that the 1682-1954 AD calibrated radiocarbon date obtained by Plymouth University is likely to be correct and not the result of contamination. A local farmer, Dave Hoskins (pers. comm.), recalls a memory passed down by his grandfather that 'field stone' was purchased from local farmers in order to construct the reservoir. It seems likely then that these apparent 'cairns' are dumps of the smaller unusable fragments of stone. The other possibility is that they are clearance cairns from post-medieval agricultural activity from the field to the east.

7.8 Conclusions

7.8.1 The complex of monuments at Tottiford is situated within a shallow river valley. Areas of raised and drier ground appear to have provided a focus for prehistoric activity. Coring work suggests streams running along the west and east leaving drier land where the stone circle is located as well as the mound.

7.8.2 This Site clearly has Mesolithic origins. The amount of struck flint, as well as the radiocarbon date obtained from charred hazelnut shell, indicates Mesolithic activity in the area, although this could not be linked to specific features. This activity was probably focused on the islands of higher ground

such as the mound and the area later occupied by the stone circle, as well as the valley sides.

7.8.3 Later prehistoric activity appears to have had a more ritual focus. The double stone row may have functioned as a processional way to (or from) the higher ground. If this interpretation is correct then it suggests some restriction of access as with a width of 1.2m no more than two people could have walked comfortably abreast. The focus for the stone row appears to be the mound, and this is unlike other examples in Dartmoor which are associated with a stone circle or burial cairn.

7.8.4 Although not directly dated, the stone circle also occupies an area of higher ground. It is unclear whether this monument was associated with or in use at the same time as the double stone row.

7.8.5 The west – east stone boundary feature appears to delineate and span the head of the valley. It is not clear whether this was associated with the other monuments or a much later feature.

7.8.6 The number of prehistoric monuments reported and destroyed in this area in the mid to late 19th century clearly show that this was period of substantial change and development, culminating in the construction of the reservoirs. The Tottiford stone circle and double stone row were clearly deliberately damaged at some point in their history before the construction of the reservoir. It is known from sites such as Avebury in Wiltshire that much systematic destruction occurred in the 17th and 18th centuries and it may be that something similar occurred here.

8 RECOMMENDATIONS

8.1.1 The evaluation has provided a useful update for the recently discovered monuments at Tottiford, confirming the presence of some, while revealing that others were of more recent origin. No firm dating evidence, however, was recovered for the prehistoric monuments.

8.1.2 A brief summary of the results of the evaluation, including the results of the radiocarbon dating, will be submitted to the *Proceedings of the Devon Archaeological Society*, for inclusion in the annual round-up of archaeology in the county.

9 ARCHIVE

9.1.1 The project archive, which includes drawn plans and sections, photographs, written records, artefacts and digital data is currently held at the Wessex Archaeology offices under the project code 74159. It is intended that the archive should ultimately be deposited with the Royal Albert Memorial Museum, Exeter, under the Accession Number **EXEMS:149/2010**. The archive will be prepared for deposition following the Museum's own recommended procedures (2010), and in general following nationally recommended guidelines (SMA 1995; Richards and Robinson 2000; Brown 2007).

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10.2 Online resources

Mapping and NMR information
http://magic.defra.gov.uk/website/magic/

NMR and HER information
http://ads.ahds.ac.uk/catalogue/
http://www.pastscape.org.uk/default.aspx

British Geological Survey
http://www.bgs.ac.uk/data/services/digmap50wms.html

Table 1: Finds totals by material type and by trench (number / weight in grammes)

Material	Trench									
	2	**5**	**6**	**8**	**9**	**10**	**11**	**12**	**unstrat.**	**Total**
Clay pipe	1/9									1/9
Flint		22/34	3/13		86/77	3/12		39/98	1/5	154/236
Burnt flint		2/2								2/2
Stone		3/218	2/71			1/1			1/361	7/651
Iron				1/33						1/33
Pottery							1/1			1/1
Total	**1/9**	**27/254**	**5/84**	**1/33**	**83/77**	**4/13**	**1/1**	**41/98**	**2/366**	

Table 2: Assessment of the charred plant remains and charcoal

Samples				Flot (Charred)							Flot uncharred
Feature	Context	Sam-ple	Ltrs	Flot (ml)	% roots	Charred Plant Remains				Charcoal >4/2mm	Uncharred seeds
						Grain	Chaff	Other	Comments		
Trench 5.3											
Layer / mound	506.3	1	4	20	30%	-	-	C	Charred rootlets & stems	1/1ml	-
Trench 11											
Stonehole 1107	Robbed 1105	2	4	60	60%	-	-	C	Charred roots, stems &rootlets. cf. Galium palustre, Plantago, Glycereia/ Danthonia Potentilla, Rumex acetosella	2/1ml	Rumex Carex Potentilla worm cocoons, Viola, birch
Stonehole 1108	In situ stone-packing 1106	3	5	40	50%	-	-	C	2-4 fragments of hazelnut	1/1ml	-
Trench 2											
?subsoil of old ground surface	203	4	18	150	30%	-	-	C	Charred Carex type. Charred roots. Coal/vitrified stuff w quartz inclusions	2/2 ml	Rubus. worm cocoons. Potentilla
Trench 3											
"peaty" layer	303	5	28	200	90	-	-	C	Charred rootlets (v. few). 1x Odontites type	1/2 ml	-
Stonehole 305	306	6	10	500	90	-	-	C	Half-charred roots.& charred monocot and dicot roots	0.2/0.2 ml	Potentilla, Carex,
Layer ?cut by 305	307	7	5	20	90%	-	-	-	-	-	-
Trench 6											
Stonehole 607 upr fill	605	8	16	40	90%	-	-	C	Small number of charred roots. Pinnule type	0/0ml	*Cristatella* *Mucedo* Potentilla worm cocoons , Chara gametes, Ranunculus sp.
Layer seals 607	604	9	10	5	90%	-	-	-	-	0/0ml	-
Stonehole 607 lwr fill	606	10	6	20	10%	-	-	-	-	-	-
Trench 8											
Stone/post hole 815	818	11	3	10	10%	-	-	-	-	0/0/3ml	-

Key: A*** = exceptional, A** = 100+, A* = 30-99, A = >10, B = 9-5, C = <5; sab/f = small animal/fish bones, Moll-t = terrestrial molluscs, Moll-f = freshwater molluscs; Analysis: C = charcoal, P = plant, M = molluscs, C14 = radiocarbon.

Table 3: Summary of monolith samples

Monolith/ core sample no.	Description
12	Alluvial sequence
13	Pre-reservoir soil sequence

APPENDIX 1: TRENCH SUMMARIES

bgl = below ground level

TRENCH 1			**Type:**	Hand excavated
Dimensions: 3.35x2.55m		**Max. depth:** 0.50m	**Ground level:** 234.43-234.87m aOD	
Context	**Description**			**Depth (m)**
101	*Layer*	Alluvial silting at base of reservoir. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous but occasional lenses of fine sandy gravel. Overlies (108) and (118).		0.00-0.08 bgl
102	*Buried soil*	Buried topsoil horizon. Dark grey black silt loam; humic; homogeneous. Overlies (103). Identical to (116).		0.12 deep
103	*Layer*	Former E horizon. Pale grey silt. Fairly homogeneous. Overlies (106).		0.16 deep
104	*Natural*	Rab. Mid yellow-brown silty clay; 30% granite (mostly degraded), sub-rounded – rounded, <1-3cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles. Cut by **(105)**.		0.10-0.30+ bgl
105	***Cut***	**Cut for stone row or boundary, east – west aligned. Shallow concave sides, not bottomed. Approximately 2m wide. Filled with (106). Cuts (104).**		**0.30+ deep**
106	*Deposit*	Fill of **(105)**. Pale grey-brown silty clay, deposit greyer (less oxidised) to the west. 40% deliberately placed granite boulders, sub-rounded, 4-75cm. Moderately compact; fairly homogeneous. Overlies **(105)**.		0.30+ deep
107	***Cut***	**Possible channel cut, north – south aligned. Only eastern edge excavated. Filled with (109), (110), (111) and (115). Cuts (117).**		**0.18+ deep**
108	*Layer*	Alluvial deposit related to the reservoir. Mid red-yellow silt, includes fine gravel and sand. Fairly homogeneous; moderately compact. Overlies (102), (112) and (116).		0.02 deep
109	*Layer*	Alluvial deposit within channel **(107)**. Mid grey-brown silt loam. Moderately compact; fairly homogeneous. No visible coarse components. Overlies (110).		0.06 deep
110	*Layer*	Alluvial deposit within channel **(107)**. Mid grey silty clay. Moderately compact; fairly homogeneous. No visible coarse components. Overlies (111).		0.09 deep
111	*Layer*	Alluvial deposit within channel **(107)**. Pale grey silt, includes fine gravel and sand. Moderately compact. Occasional mid grey mottles and very occasional degraded chalk flecks. Not fully excavated; lowest excavated deposit within **(107)**. Identical to (115).		0.04+ deep
112	*Layer*	Alluvial deposit related to the reservoir. Mid grey-brown silt loam. Moderately compact; fairly homogeneous. No visible coarse components. Overlies (113).		0.03 deep
113	*Layer*	Alluvial deposit related to the reservoir. Mid yellow-brown silt loam. Moderately compact; fairly homogeneous. Fine gravel component. Overlies (114).		0.02 deep
114	*Layer*	Alluvial deposit related to the reservoir. Mid grey-brown silt loam with some sand component. Moderately compact; fairly homogeneous. No visible coarse components. Overlies (103).		0.12 deep
115	*Layer*	Alluvial deposit within channel **(107)**. Pale grey silt, includes fine gravel and sand. Moderately compact. Occasional mid grey mottles and very occasional degraded chalk flecks. Not fully excavated, lowest excavated deposit within **(107)**. Identical to (111).		0.04+ deep
116	*Buried soil*	Buried topsoil horizon. Dark grey black silt loam; humic. Homogeneous. Overlies (103). Identical to (102).		0.10 deep
117	*Buried soil*	Possible buried subsoil horizon. Mid grey-brown silt. Gritty but no visible coarse components. Moderately compact; fairly homogeneous. Overlies (104).		0.11 deep
118	*Stone*	Structure originally thought to be a cairn but lacks structure and		0.12 high

	dump	overlies (101). Mid yellow-brown silt. 80% granite, sub-rounded, 2-32cm. 2.20m long, 2.00m wide.	

TRENCH 2			**Type:** Hand excavated
Dimensions: 4.44x2.90m		**Max. depth**: 0.43m	**Ground level:** 233.87-234.01m aOD
Context	**Description**		**Depth (m)**
201	*Layer*	Alluvial silting at base of reservoir. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous but occasional lenses of fine sandy gravel. Overlies (206) and (207).	0.00-0.25 bgl
202	*Buried soil*	Buried topsoil horizon. Dark grey-black silt loam; humic. Homogeneous. Overlies (203).	0.17-0.31 bgl
203	*Layer*	Possible buried subsoil horizon. Mid grey-brown silt. Gritty but no visible coarse components. Moderately compact; fairly homogeneous. Environmental sample number 4. Overlies (204).	0.25-0.37 bgl
204	*Layer*	Rab. Mid yellow-brown silty clay. 60% granite (mostly degraded), sub-rounded – rounded, <1-3cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles. Overlies (205).	0.31-0.42 bgl
205	*Natural*	River terrace deposit. Mid yellow-orange gravel, sub-rounded, <1-3cm. Slightly sandy/gritty.	0.41+ bgl
206	*Stone dump*	Structure originally thought to be a cairn but lacks structure and overlies (202). Mid yellow-brown silt. 80% granite, sub-rounded, 2-66cm. 3.34m long, 2.64m wide.	0.28 high
207	*Stone dump*	Structure originally thought to be a cairn but lacks structure and overlies (202). Mid yellow-brown silt. 75% granite, sub-rounded, 2-24cm. 1.75m long, 1.60m wide.	0.20 high

TRENCH 3			**Type:** Hand excavated
Dimensions: 2.50x1.00m		**Max. depth:** 0.45m	**Ground level:** 233.72-233.79m aOD
Context	**Description**		**Depth (m)**
301	*Layer*	Alluvial silting at base of reservoir. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous but occasional lenses of fine sandy gravel. Overlies (302).	0.00-0.06 bgl
302	*Buried soil*	Buried topsoil horizon. Dark grey black silt loam; humic. Homogeneous. Overlies (308).	0.04-0.18 bgl
303	*Layer*	Possible buried subsoil horizon. Mid brown silt. <1% granite, <1cm. Moderately compact; fairly homogeneous. Environmental sample number 5. Overlies (310).	0.09-0.27 bgl
304	*Deposit*	Upper secondary fill of **(305)**. Dark brown sandy loam. 70% degraded granite, very gritty and coarse. Upper surface fairly friable but lower part more compact. Fairly homogeneous. Overlies (306).	0.14 deep
305	***Cut***	**Cut for stone placement; stone upright removed. Sub-oval in plan, slightly irregular. 0.64m long, 0.44m wide. Steep, straight sides, flat base. Filled with (304) and (306). Cuts (303).**	**0.16 deep**
306	*Deposit*	Primary fill of **(305)**. Mid grey-brown silt loam. <1% granite, <1cm. Fairly organic. Fairly homogeneous; compact. Overlies **(305)**.	0.12 deep
307	*Layer*	Rab. Mid brown silty clay. 80% granite (mostly degraded), sub-rounded – rounded, <1-3cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles. Overlies (312).	0.19-0.39 bgl
308	*Layer*	Thin layer of degraded granite lying between the two cuts. Possibly related to the removal of the stone from **(305)**. Overlies (303).	0.04 deep
309	***Cut***	**Cut for standing stone. Sub-oval in plan. 0.60m long, 0.54m wide. Steep, straight sides, flat base. Filled with (310) and (311). Cuts (307).**	**0.32 deep**
310	*Deposit*	Deliberate backfill of **(309)**. Mid brown sandy loam. <1% granite, sub-rounded, <1cm. Gritty. Fairly homogeneous; moderately compact.	0.29 deep

		Overlies (311).	
311	*Stone*	Upright stone, single sub-angular granite stone. Fill of **(309)**. Part of south-east – north-west aligned double stone row. 0.26m wide, 0.68m long.	0.88 high
312	*Natural*	River gravel. Mid yellow gravel, <1-3cm. Compact.	0.33+ bgl

TRENCH 4			**Type:**	Hand excavated
Dimensions: 2.35x1.26m		**Max. depth:** 0.50m	**Ground level:** 234.06-234.12m aOD	
Context	**Description**			**Depth (m)**
401	*Layer*	Possible buried subsoil horizon. Mid grey-brown silt. 1% stone, sub-rounded, <1cm. Moderately compact; fairly homogeneous. Overlies (402).		0.20 deep
402	*Layer*	Possible alluvial deposit. Pale grey-brown silt. 1% granite, sub-rounded, <1cm. Occasional pale yellow-grey mottles. Moderately compact. Overlies (403), (406) and (405).		0.27 deep
403	*Layer*	Lenses of silt overlying the natural rab (404). Dark grey-brown silt. 1% stone, sub-rounded, <1cm. Fairly homogeneous.		0.08 deep
404	*Layer*	Rab. Mid brown silty clay. 80% granite (mostly degraded), sub-rounded – rounded, <1-3cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles.		0.35+ bgl
405	*Deposit*	No clear cut visible at this point but its extent may be indicated by the abrupt termination of (402). Primarily composed of large granite boulder forming continuation of east – west aligned stone feature.		0.56 high
406	*Layer*	Found in southern part of trench, possible alluvial layer. Dark grey silt with gritty sand and fine gravel component. 5% stone, sub-rounded, <1-2cm. Fairly compact; moderately homogeneous. Overlies (404).		0.13 deep
407	*Buried soil*	Buried topsoil horizon, very indistinct at base of (400). Dark grey black silt loam; humic; homogeneous. Overlies (401).		0.05 deep
408	*Layer*	Alluvial silting at base of reservoir. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous but occasional lenses of fine sandy gravel. Overlies (407).		0.00-0.12 bgl

TRENCH 5			**Type:**	Hand excavated
Dimensions: consists of nine m^2 testpits		**Max. depth:** 0.60m	**Ground level:** 234.08-234.75m aOD	
Context	**Description**			**Depth (m)**
501	*Layer*	Waterborne/deposited sand and fine gravel. Mid yellow-brown loamy sand. Very occasional larger pieces of granite, 2-8cm. Overlies (502).		0.00-0.04 bgl
502	*Layer*	Alluvial silting/buried turf line. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous. Overlies (503) except in Testpit 3 where it overlies (506.3).		0.02-0.12 bgl
503	*Layer*	Possible buried subsoil horizon. Mid orange-brown silt loam. <1% stone, sub-rounded, <1-2cm. Very mixed, frequent mid orange-yellow and mid grey-brown mottles, occasional sandier mottles. Evidence of considerable bioturbation. Moderately compact. Overlies (504).		0.04-0.20 bgl
504	*Layer*	Similar to (503). Mid grey-brown silt loam. <1% stone, sub-rounded, <1-2cm. Mixed, frequent mid orange-yellow mottles, occasional sandier mottles. Evidence of considerable bioturbation. Moderately compact. Overlies (505).		0.12-0.31 bgl
505.4	*Layer*	Alluvial layer, only reached in Testpit 4. Pale yellow-grey sandy loam. Very gritty. Occasional iron oxide mottling. Fairly compact; fairly homogeneous.		0.26-0.60 bgl
506.3	*Layer*	Only seen in northern part of Testpit 3. Mid grey silt. Rare charcoal flecks, possible burnt clay flecks. Moderately compact; fairly homogeneous. Environmental sample 1. Overlies (503).		0.02-0.11 bgl
507.3	*Layer*	Two discrete patches of possible heat-affected material within Testpit		0.06 deep

		3. Mid red-brown silty clay. Moderately compact. Not within discernible cut. Overlies (504).	

TRENCH 6			**Type:**	Hand excavated
Dimensions: 2.26x1.06m		**Max. depth:** 0.65m	**Ground level:** 233.99-234.01m aOD	
Context	**Description**			**Depth (m)**
601	*Layer*	Alluvial silting/buried turf line. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous. Overlies (602).		0.00-0.06 bgl
602	*Layer*	Possible alluvial deposit. Mid grey-brown silt loam. 1% granite, sub-rounded, <1-2cm. Fairly mixed with dark brown sandy loam mottles. Rare charcoal flecks, possible burnt clay flecks. Moderately compact. Overlies (603).		0.04-0.18 bgl
603	*Layer*	Material accumulated in natural hollow surrounding standing stone (608). Dark grey-brown sandy loam. <1% granite, <1cm. Moderately compact. Overlies (604).		0.11 deep
604	*Layer*	Water-deposited layer. Pale grey sandy loam. Occasional darker mottles and lighter sandier mottles. 1% granite, sub-rounded, <1-2cm. Moderately compact. Overlies (610).		0.08-0.16 bgl
605	*Deposit*	Upper deliberate backfill of **(607)**. Mid grey-brown sandy loam. Frequent mid orange mottles. 25% granite, sub-rounded, <1-2cm, also includes larger granite packing stones 20-38cm in size. Fairly loose. Overlies (606).		0.38 deep
606	*Deposit*	Lower deliberate backfill of **(607)**. Mid grey silt loam. 25% granite, sub-rounded, <1-2cm, also includes larger granite packing stones 8-12cm in size. Organic. Fairly compact. Overlies (608).		0.08 deep
607	***Cut***	**Cut for standing stone, only partly seen in plan. Sub-oval. 0.51m+ long, 0.56m wide. Steep, straight sides, flat base. Filled with (605), (606) and (608). Cuts (610).**		**0.48 deep**
608	*Stone*	Upright stone, single sub-angular granite stone. Fill of **(607)**. Part of circle. 0.31m wide, 0.87m long. Overlies **(607)**.		0.98 high
609	*Natural*	River gravel. Mid yellow gravel, <1-3cm. Compact.		0.61+ bgl
610	*Layer*	Rab. Mid grey-brown sandy loam. 80% granite (mostly degraded), sub-rounded – rounded, <1-3cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles. Overlies (609).		0.16-0.61 bgl

TRENCH 7			**Type:**	Hand excavated
Dimensions: 0.90x0.90m		**Max. depth:** 0.13m	**Ground level:** 233.49-233.53m aOD	
Context	**Description**			**Depth (m)**
701	*Layer*	Alluvial silting at base of reservoir. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous. Overlies (702).		0.00-0.13 bgl
702	***Cut***	**Cut where stone upright has been removed. Sub-oval 0.32m+ long, 0.30m wide. Unexcavated but approximate depth sounded. Filled with (703). Cuts (704).**		**~0.42 deep**
703	*Deposit*	Upper fill of **(702)**. Dark grey brown silt loam. <1% stone/gravel, <1cm. One piece of granite, sub-rounded, 8cm – former packing material. Fairly compact. Fairly homogeneous. Unexcavated.		-
704	*Natural*	River gravel. Mid yellow gravel, <1-3cm. Compact.		0.13+ bgl

TRENCH 8			**Type:**	Machine excavated
Dimensions: 20.60x4.30m		**Max. depth:** 0.50m	**Ground level:** 233.93-234.11m aOD	
Context	**Description**			**Depth (m)**
801	*Layer*	Alluvial silting at base of reservoir. Dark grey silt. <1% stone/gravel, <1cm. Moderately compact; fairly homogeneous. Overlies (834).		0.00-0.13 bgl

802	*Layer*	Possible preserved B horizon. Mid-brown silt. <1% stone, sub-rounded, <1cm. Fairly compact; fairly homogeneous. Overlies (803).	0.14-0.22
803	*Layer*	Possible alluvial layer. Pale brown-grey silt loam. No visible coarse components. Moderately compact; fairly homogeneous. Cut by **(804)**. Overlies (807).	0.20-0.50 bgl
804	***Cut***	**Cut for standing stone, filled with (803), (806) and (821). Stone has been removed; deposits (805) and (806) are probably related to this disturbance. Sub-circular in plan. 1.46m long, 1.44 wide. Unexcavated. Cuts (803).**	**-**
805	*Deposit*	Disturbed secondary fill of **(804)**. Dark brown sandy silt loam. 5% stone, sub-rounded, <1-3cm. Moderately compact; fairly homogeneous. Overlies (806).	-
806	*Deposit*	Disturbed packing material within **(804)**. Sub-angular granite, 8-24cm. Overlies (821).	-
807	*Layer*	Rab. Mid orange-brown sandy loam. 30% granite (mostly degraded), sub-rounded – rounded, <1-3cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles.	0.18+ bgl
808	***Cut***	**Cut for standing stone, part of stone circle. Filled with (809), (810), (820) and (824). Sub-oval. 2.16m long, 2.06m wide. Unexcavated. Cuts (807).**	**-**
809	*Deposit*	Possible deliberate backfill of stone setting **(808)**. Dark brown silt loam. 10% stone, angular – sub-angular, <1-2cm. Moderately compact. Fairly homogeneous. Unexcavated but likely to overlie (820).	-
810	*Stone*	Upright stone, upper portion damaged and missing. Fill of **(808)**. Part of stone circle. Sub-angular granite. 0.82m long, 0.42m wide. Unexcavated but thought to overlie **(808)**.	0.53 high
811	***Cut***	**Cut of posthole or stone setting. Filled with (812), (813), (814), (826), (827) and (828). Sub-oval. 1.85m long, 1.4m wide. Steep, slightly convex sides, not fully excavated. Cuts (807).**	**0.41+ deep**
812	*Deposit*	Secondary fill of **(811)**, result of silting. Dark black-brown silty clay. No visible coarse components. Homogeneous; moderately compact. Overlies (813).	0.02 deep
813	*Deposit*	Secondary fill of **(811)**, result of silting. Light grey-brown silty clay. No visible coarse components. Homogeneous; moderately compact. Overlies (825).	0.04 deep
814	*Deposit*	Disturbed packing stones, sub-angular granite 10-22cm. Overlies (826).	0.14 deep
815	***Cut***	**Cut of posthole or stone setting. Filled with (816), (817), (818), (819), (822) and (823). Sub-oval. 0.94m long, 0.86m wide. Steep, slightly convex sides, flat base. Deposit sequence suggests that the post or stone has been pulled out. Cuts (807).**	**0.37 deep**
816	*Deposit*	Secondary fill of **(815)**. Dark grey sandy loam. 5% stone, mostly degraded granite, sub-rounded, <1-4cm. Moderately compact; fairly homogeneous. Overlies (817).	0.10 deep
817	*Deposit*	Disturbed packing material within **(815)**, sub-angular – sub-rounded, 6-20cm within dark grey sandy loam (same as (816)). Moderately compact; fairly homogeneous. Overlies (818).	0.18 deep
818	*Deposit*	Secondary fill of **(815)**, possible silting. Mid grey sandy loam. <1% stone, sub-rounded, <1cm. Moderately compact; fairly homogeneous. Overlies (819).	0.06 deep
819	*Deposit*	Secondary fill of **(815)**. Mid grey sandy loam. 10% stone and gravel, sub-rounded – sub-angular, <1-3cm. Moderately compact; fairly homogeneous. Overlies (822) and (823).	0.12 deep
820	*Deposit*	Possible deliberate backfill of **(808)**. Deposit in which packing stones (824) are set. Dark brown silt loam. Fairly homogeneous; moderately compact. Unexcavated.	-
821	*Deposit*	Deliberate backfill of **(804)**. Dark orange-brown sandy silt loam. 2%	-

		stone, sub-angular – sub-rounded, <1-2cm. Compact. Slightly mixed, occasional mid yellow-orange mottles. Overlies **(804)**.	
822	*Deposit*	Primary fill of posthole or stone setting **(815)**. Mid orange-grey sandy silt loam. 15% gravel, sub-angular, <1-2cm. Slightly mixed occasional mid orange sandy clay mottles. Moderately compact. Derives from the south. Overlies **(815)**.	0.16 deep
823	*Deposit*	Primary fill of posthole or stone setting **(815)**. Mid orange-grey sandy silt loam. 15% gravel, sub-angular, <1-2cm. Slightly mixed occasional mid orange sandy clay mottles. Moderately compact. Derives from the north. Overlies **(815)**.	0.05 deep
824	*Deposit*	Packing material for stone (810), fill of **(808)**. Sub-angular granite, 0.24-0.32m. Set into (820). Fill of **(808)**. Unexcavated.	-
825	*Deposit*	Secondary fill of **(811)**, result of silting. Dark black-brown silty clay. No visible coarse components. Homogeneous; moderately compact. Overlies (835).	0.02 deep
826	*Deposit*	Secondary fill of **(811)**, result of silting. Light grey-brown silty clay. No visible coarse components. Homogeneous; moderately compact. Overlies (825).	0.18 deep
827	*Deposit*	Secondary fill of **(811)**, result of silting. Dark black-brown silty clay. No visible coarse components. Homogeneous; moderately compact. Overlies (814).	0.02 deep
828	*Deposit*	Secondary fill of **(811)**, possible deliberate backfill. Mid orange-brown silty clay. 40% stone, sub-angular – sub-rounded, <1-2cm, includes degraded granite. Occasional mid orange mottles. Moderately compact. Lowest excavated fill of **(811)**.	0.13+ deep
829	***Cut***	**Cut of possible stone seating filled with (830). Sub-oval. 1m long, 0.62m wide. Unexcavated. Cuts (807).**	**-**
830	*Deposit*	Secondary fill of **(829)**. Dark black-grey sandy silt loam. 8% stone, sub-angular – sub-rounded, <1-3cm, 8-12cm. Include possible disturbed packing material. Slightly mixed; moderately compact. Unexcavated. Overlies **(829)**.	-
831	***Cut***	**Cut of possible stone seating filled with (832) and (833). Sub-oval. 1.28m long, 1.14m wide. Unexcavated. Cuts (807).**	**-**
832	*Deposit*	Secondary fill of **(831)**. Dark grey-brown silt loam. 2% stone, sub-angular – sub-rounded, <1-4cm. Slightly mixed; moderately compact. Unexcavated. Possible lower/outer fill of **(829)**.	-
833	*Deposit*	Secondary fill of **(831)**. Pale grey-brown silt loam. No visible coarse components. Homogeneous; moderately compact. Unexcavated. Possible upper/inner fill of **(829)**.	-
834	*Buried soil*	Buried topsoil horizon. Dark grey-black silt loam; humic; homogeneous. Overlies (802).	0.12-0.14 bgl
835	*Deposit*	Secondary fill of **(811)**, result of silting. Light grey-brown silty clay. No visible coarse components. Homogeneous; moderately compact. Overlies (827).	0.04 deep

TRENCH 9			**Type:** Hand excavated
Dimensions: 2.00x2.00m	**Max. depth:** 0.22m		**Ground level:** 233.97-234.01m aOD
Context	**Description**		**Depth (m)**
901	*Layer*	Alluvial silting/buried turf line. Dark grey silt. <1% stone/gravel, <1-2cm. Moderately compact; fairly homogeneous. Overlies (902).	0.00-0.07 bgl
902	*Layer*	Possible buried soil horizon. Mid grey-brown silt. Gritty but no visible coarse components. Moderately compact; fairly homogeneous. Overlies (903).	0.04-0.12 bgl
903	*Layer*	Rab. Mid yellow-brown sandy loam. 60% granite (mostly degraded), sub-rounded – rounded, <1-5cm. Very gritty; compact. Occasional diffuse mid yellow-orange mottles.	0.08+ bgl

904	*Deposit*	Secondary fill of **(905)**. Mid grey-brown sandy loam. 15% granite/gravel, sub-rounded – rounded, <1-2cm. Gritty; moderately compact. Occasional diffuse mid yellow-orange mottles. Overlies **(905)**.	0.10 deep
905	***Cut***	**Possible posthole, sub-oval in plan. Concave, moderate sides, concave, slightly irregular base. 0.70m long, 0.64m wide. Filled with (904). Cuts (903).**	**0.10 deep**

TRENCH 10			**Type:** Hand excavated
Dimensions: 2.90x2.10m		**Max. depth:** 0.29m	**Ground level:** 233.92-233.96m aOD
Context	**Description**		**Depth (m)**
1001	*Layer*	Alluvial silting/buried turf line. Dark grey silt. <1% stone/gravel, <1-2cm. Moderately compact; fairly homogeneous. Overlies (1002).	0.00-0.10 bgl
1002	*Layer*	Possible buried soil horizon. Mid brown silt. Slightly gritty but no visible coarse components. Moderately compact; fairly homogeneous. Overlies (1003).	0.10-0.17
1003	*Layer*	Possible alluvial layer. Pale grey silt loam. No visible coarse components. Moderately compact; fairly homogeneous. Overlies (1004).	0.17-0.29 bgl
1004	*Layer*	Rab. Mid yellow-grey sandy loam. 40% granite (mostly degraded) and gravel, sub-rounded – rounded, <1-25cm. Very gritty; compact. Very occasional diffuse mid yellow-orange mottles.	0.29+ bgl
1005	*Stone*	Recumbent stone (1.92x0.84m), thought to have been displaced, probably deliberately. Possible disturbed packing stones can be seen in the top of (1004). No trace of the original cut could be seen be this may be beneath the stone.	0.28 high

TRENCH 11			**Type:** Hand excavated
Dimensions: 3.36x2.10m		**Max. depth:** 0.22m	**Ground level:** 233.77-233.94m aOD
Context	**Description**		**Depth (m)**
1101	*Layer*	Alluvial silting/buried turf line. Dark grey silt. <1% stone/gravel, <1-2cm. Moderately compact; fairly homogeneous. Overlies (1102).	0.00-0.16 bgl
1102	*Layer*	Possible water-deposited layer. Mid grey-brown sandy loam. 1% granite, sub-rounded, <1-2cm. Occasional grey mottles. Fairly compact. Overlies (1111).	0.08-0.22 bgl
1103	*Deposit*	Mid orange-grey sandy loam. <1% granite, <1cm. Similar to (1111). Moderately compact. Overlies **(1110)**.	0.20 deep
1104	***Cut***	**Possible stone socket. Sub-circular in plan. Steep concave sides, flat base. Diffuse and difficult to discern. 0.48m long, 0.36m wide. Filled with (1103). Cuts (1111).**	**0.20 deep**
1105	*Deposit*	Secondary fill of cut removing stone upright. Dark blue-grey silt loam. 2% granite, sub-angular, <1cm. Humic. Fairly compact; homogeneous. Environmental sample 2. Overlies **(1107)**.	0.20 deep
1106	*Deposit*	Deliberate backfill of **(1108)**. Mid grey-brown silty clay, slightly sandy. 2% granite, sub-angular, <1cm and 10% in situ packing stones, angular–sub-angular, 8-18cm. Not re-deposited natural. Environmental sample 3. Cut by **(1107)**. Overlies **(1108)**.	0.20+ deep
1107	***Cut***	**Cut where stone upright has been removed. Sub-circular in plan. 0.36m long, 0.32m wide. Steep, straight sides, flat base. Filled with (1105). Cuts (1106).**	**0.20 deep**
1108	***Cut***	**Cut for standing stone. Sub-oval. 0.78m long, 0.68m wide. Largely unexcavated. Filled with (1106). Cuts (1111).**	**0.20+ deep**
1109	*Deposit*	Mid yellow-grey sandy loam. <1% granite, <1cm. Similar to (1111). Moderately compact. Overlies **(1110)**.	0.21 deep
1110	***Cut***	**Cut of natural feature, filled with (1109). Sub-oval but slightly irregular in plan, concave sides, fairly flat base. 0.80m long, 0.62m**	**0.21 deep**

		wide. Slightly diffuse in plan. Cuts (1111).	
1111	*Layer*	Rab. Mid yellow-grey sandy loam. 10% granite (mostly degraded), sub-rounded – rounded, <1-2cm. Compact. Occasional diffuse mid yellow-orange mottles.	0.22+ bgl

TRENCH 12			**Type:** Hand excavated	
Dimensions: 2.00x2.00m		**Max. depth:** 0.15m	**Ground level:** 234.05-234.07m aOD	
Context	**Description**			**Depth (m)**
1201	*Layer*	Alluvial silting/buried turf line. Dark grey silt. <1% stone/gravel, <1-2cm. Moderately compact; fairly homogeneous. Overlies (1202).		0.00-0.08 bgl
1202	*Layer*	Interface with the rab. Mid yellow-brown sandy clay loam. 20% granite (mostly degraded), sub-rounded – rounded, <1-4cm. Very gritty; fairly compact. Very occasional diffuse mid yellow-orange mottles. Overlies (1207)		0.06-0.10 bgl
1203	*Deposit*	Secondary fill of **(1208)**. Dark grey-brown silty clay. 2% granite, sub-rounded, <1-2cm. Occasional mid yellow-orange clay mottles. Slightly gritty. Overlies **(1208)**.		0.09 deep
1204	***Cut***	**Possible posthole or natural feature, sub-oval in plan. Concave, shallow sides, slightly irregular base. Very shallow. 0.53m long, 0.42m wide. Filled with (1205). Cuts (1207).**		**0.05 deep**
1205	*Deposit*	Secondary fill of **(1204)**. Pale grey-brown silty clay. <1% granite, sub-rounded, <1-2cm. Rare charcoal flecks. Slightly gritty. Overlies **(1204)**.		0.05 deep
1206	*Deposit*	Secondary fill of **(1208)**. Mid orange-brown silty clay. 2% granite, sub-rounded, <1-3cm. Occasional mid yellow-orange clay mottles. Slightly gritty. Overlies **(1208)**.		0.08 deep
1207	*Layer*	Rab. Mid yellow-brown sandy clay loam. 40% granite (mostly degraded) and gravel, sub-rounded – rounded, <1-8cm. Very gritty. Compact. Very occasional diffuse mid yellow-orange mottles.		0.10+ bgl
1208	***Cut***	**Posthole, sub-circular in plan. Concave, steep sides, very slightly concave base. 0.43m long, 0.40m wide. Filled with (1203) and (1206). Cuts (1207).**		**0.17 deep**

APPENDIX 2: RADIOCARBON REPORT ON CHARRED HAZELNUT SHELL

Introduction

A sample from the stone-packing (1106) associated with stonehole 1108 yielded a few fragments of hazelnut shell. The deposit was deemed *in situ*, and unlike other samples there were no intrusive uncharred seeds within the sample, although a very small sherd of quartzite-tempered late prehistoric pottery was also recovered from the context. Additionally the hazelnut shell looked relatively fresh with little indication of reworking. The material was therefore regarded as suitable material for radiocarbon dating to provide an indication of the date for the stone alignment.

The sample, comprising three fragments of charred hazelnut shell weighing 0.05g, was submitted for radiocarbon dating at ^{14}CHRONO Centre, Queens University, Belfast.

Result

The returned radiocarbon determination (5683±29 BP, UB-16266; **Table 4**) was calibrated within OxCal 4.1.1 (Bronk Ramsey 2001; 2009). The calibrated date for the sample was 4590-4450 cal. BC (at 95.4% probability), indicating the hazelnut was charred within the very Late Mesolithic.

Discussion

While dates ranging from 3000 to 1000 cal. BC have been suggested for stone-rows in Western Europe (Burl 1993), with the exception of Cut Hill, also on Dartmoor, none have yet been accurately dated. The latter site, on the basis of radiocarbon dating of overlying and underlying peats, was broadly dated to the 4th millennium BC with the authors favouring an earlier Neolithic date (Fyfe and Greeves 2010). This paper demonstrated that the stones were earlier than the dated overlying peat at around 2500-2200 cal. BC, however, depending if the stones were laid directly onto the peat surface or had toppled onto older peats, then the date of the underlying peats 3700-3500 cal. BC provides a *terminus post quem* or *terminus ante quem* respectively. The dates certainly suggested a Neolithic date and given that stones from Tottiford were set within stoneholes then the early Neolithic, early 4th millennium date would look more likely.

The date from Tottiford is pre-Neolithic and therefore some 700 years to one millennium earlier than that suggested by Fyfe and Greeves (2010). This raises two possibilities.

The first is that that the date is contemporary with the setting of the stone alignment, this would date such monuments to the mid to late 5th millennium BC and hence while contemporary with the earliest known monuments in northern France (cf. Kinnes 1999), to earlier than that accepted for Britain (cf. Whittle *et al*. 2008). Additionally, on present evidence this would also pre-date the earliest evidence for agriculture and monuments in Britain by some 500 years (cf. Brown 2007).

The second, and far more likely possibility, is that the material is residual. The chance of residual charred material from Mesolithic deposits tends to be rarer than from later periods. This is mainly because charred material will only survive in active soils for a fairly short time periods without burial, although where larger accumulations are present such incidences obviously increase. As such where residual material has been recovered it is usually from Early Neolithic deposits that

have cut through Mesolithic occupation layers, or where continued occupation from the late Mesolithic into the Early Neolithic has occurred resulting in the mixing of material from Mesolithic features with Neolithic material (e.g. Atkinson 2002; Cowell in Bayliss *et al*. 2007, 72). In both cases Mesolithic lithics usually accompany such dates.

Mesolithic material, mainly flint, is present at Tottiford, although in the excavations conducted here such material while present in other trenches was generally absent from Trench 11. There was then little indication of the sort of accumulations that might be associated with Mesolithic occupational scatters within either the sample or the Trench. Further no buried horizons, from which such material could be derived, were seen either in this stage of excavations or previous work by Fyfe (2010)

While it seems probable that the material is residual it provides importance evidence for late Mesolithic activity in the vicinity of the site. That charred material comprising hazelnut was not recovered from any of the other deposits would tend to suggest that it was not present within buried soils or a general component within the deposits on site. As such the presence of material of this date provides a difficulty regarding its interpretation as to whether it survived for a millennia or more or alternatively if it can be used to support an early Neolithic date for the monument.

Table 4: Radiocarbon measurements from the post-packing (1106) associated with stone-hole 1108

Material	Id.	Lab ref.	$\delta^{13}C$	Date BP	calibration AD 2 sigma (95.4%)
Charred hazelnut shell. 3x fragments 0.05g	*Corylus avellana*	UBA-16266	-25.2	5683±29	4590-4450 cal. BC

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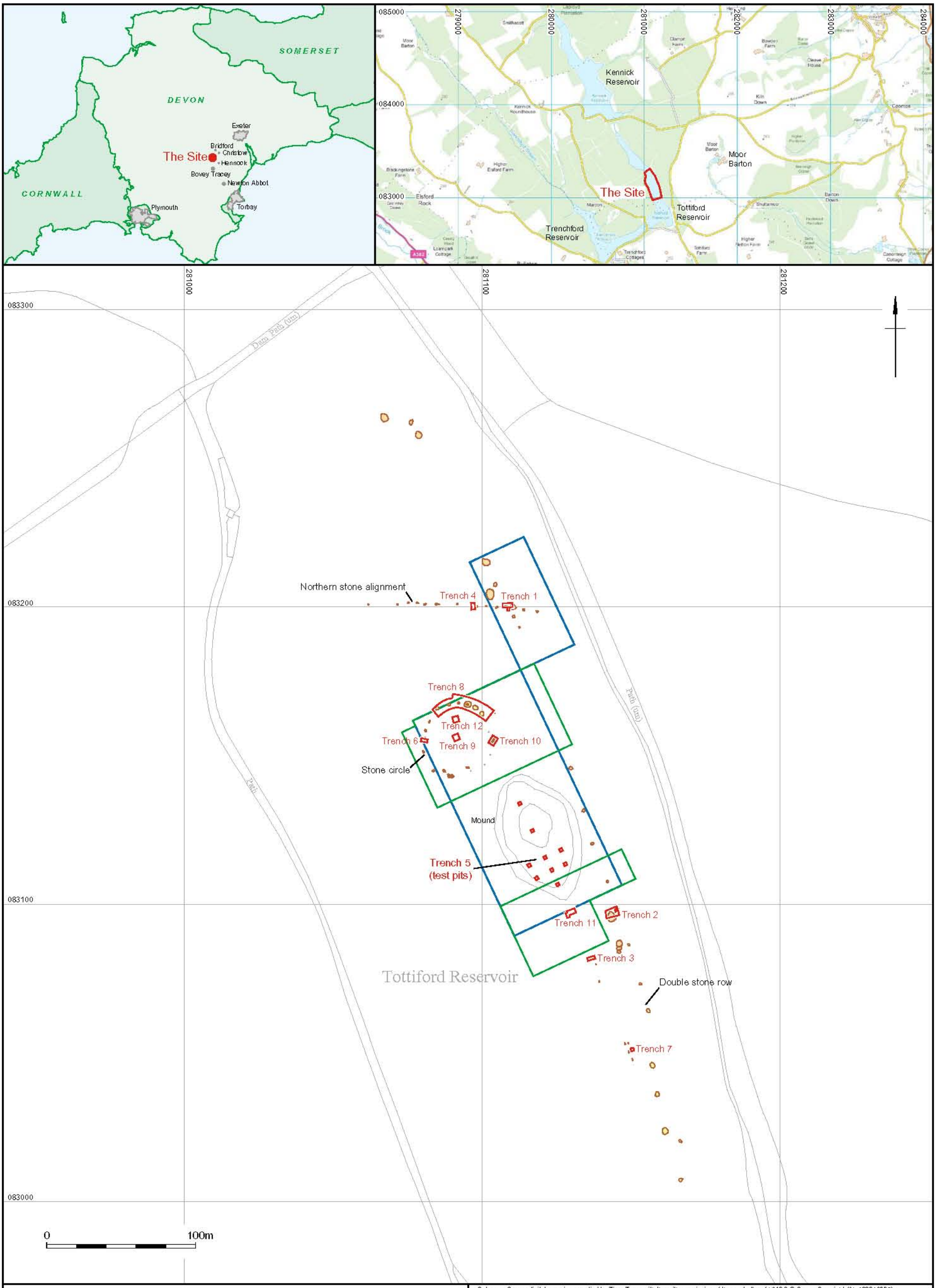

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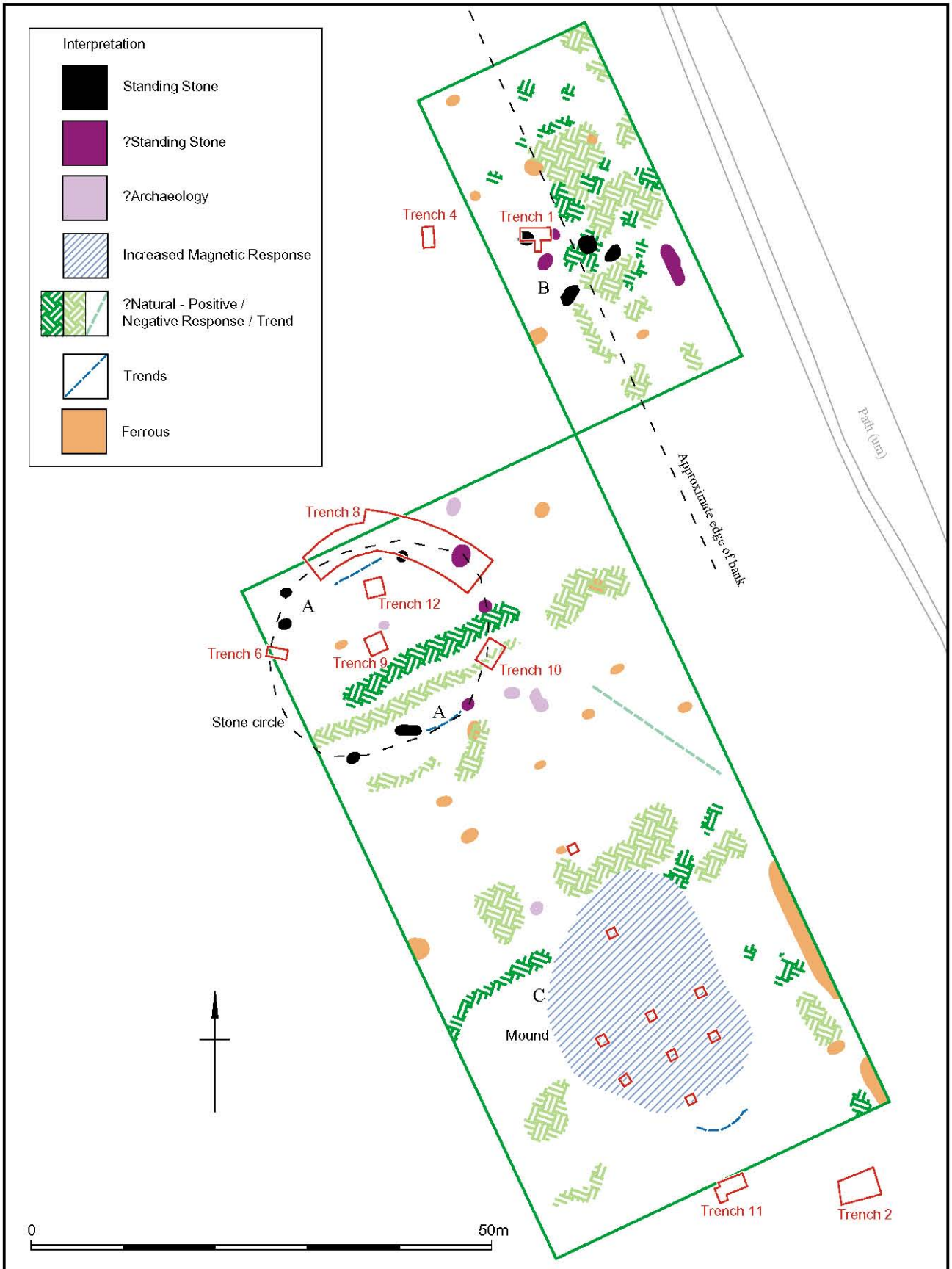
Location of site, trenches and geophysical survey areas

Figure 1



Evaluation trench

Gradiometer survey area

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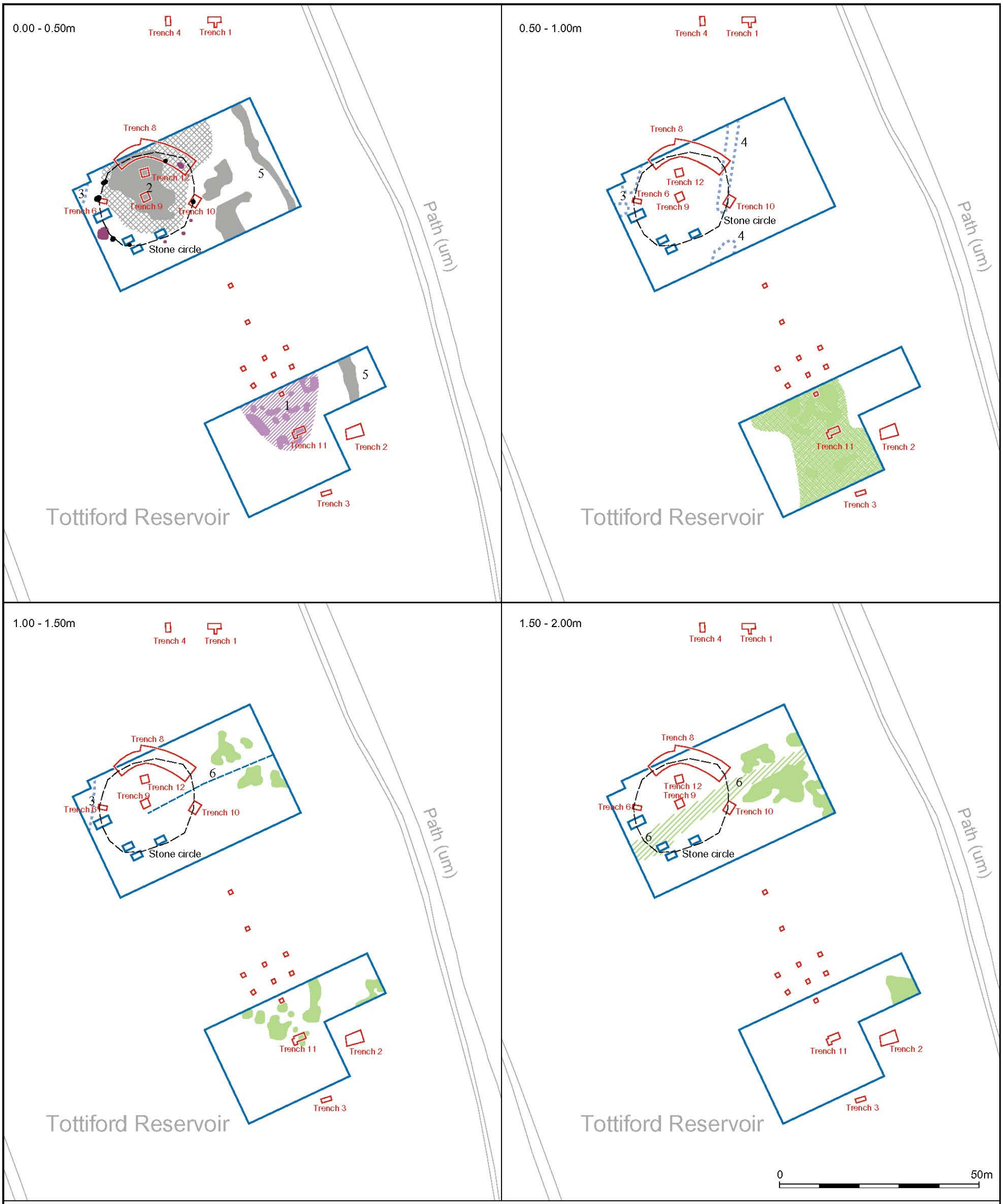
Gradiometer interpretation

Figure 2



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Summary of GPR interpretation

Figure 3

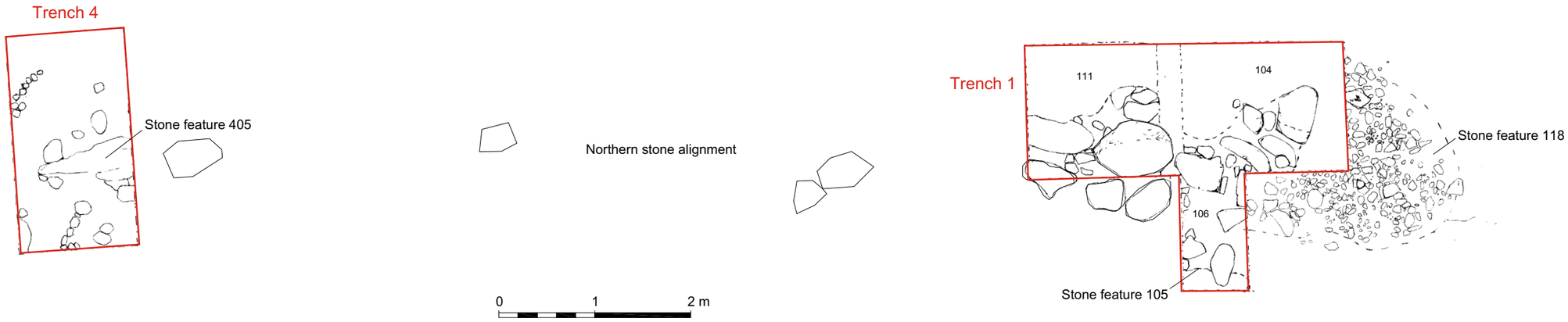

Plate 1: Trench 4 post-excavation, view from south

Plate 2: Trench 1 mid-excavation, view from west

Plate 3: Trench 1 post-excavation, view from east

Evaluation trench

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Trenches 1 and 4: plan and photographs

Figure 4

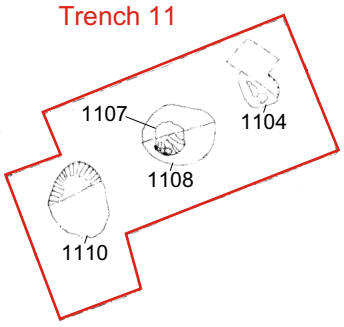

Plate 4: Trench 11 post-excavation, view from north-east

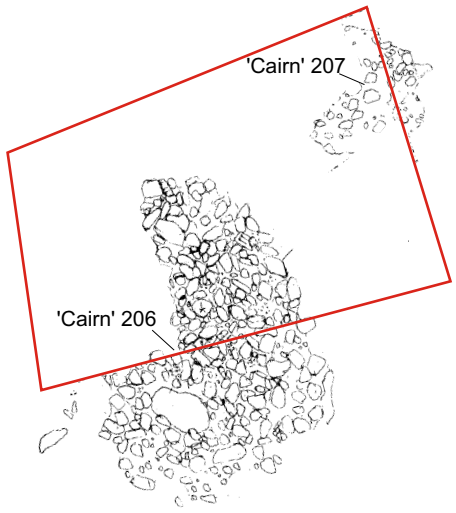

Plate 5: Trench 2 post-excavation, view from north-west

Plate 6: Trench 3 mid-excavation , view from the south-west

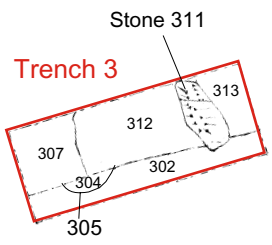

Plate 7: Trench 3 post-excavation, view from north-west

Evaluation trench

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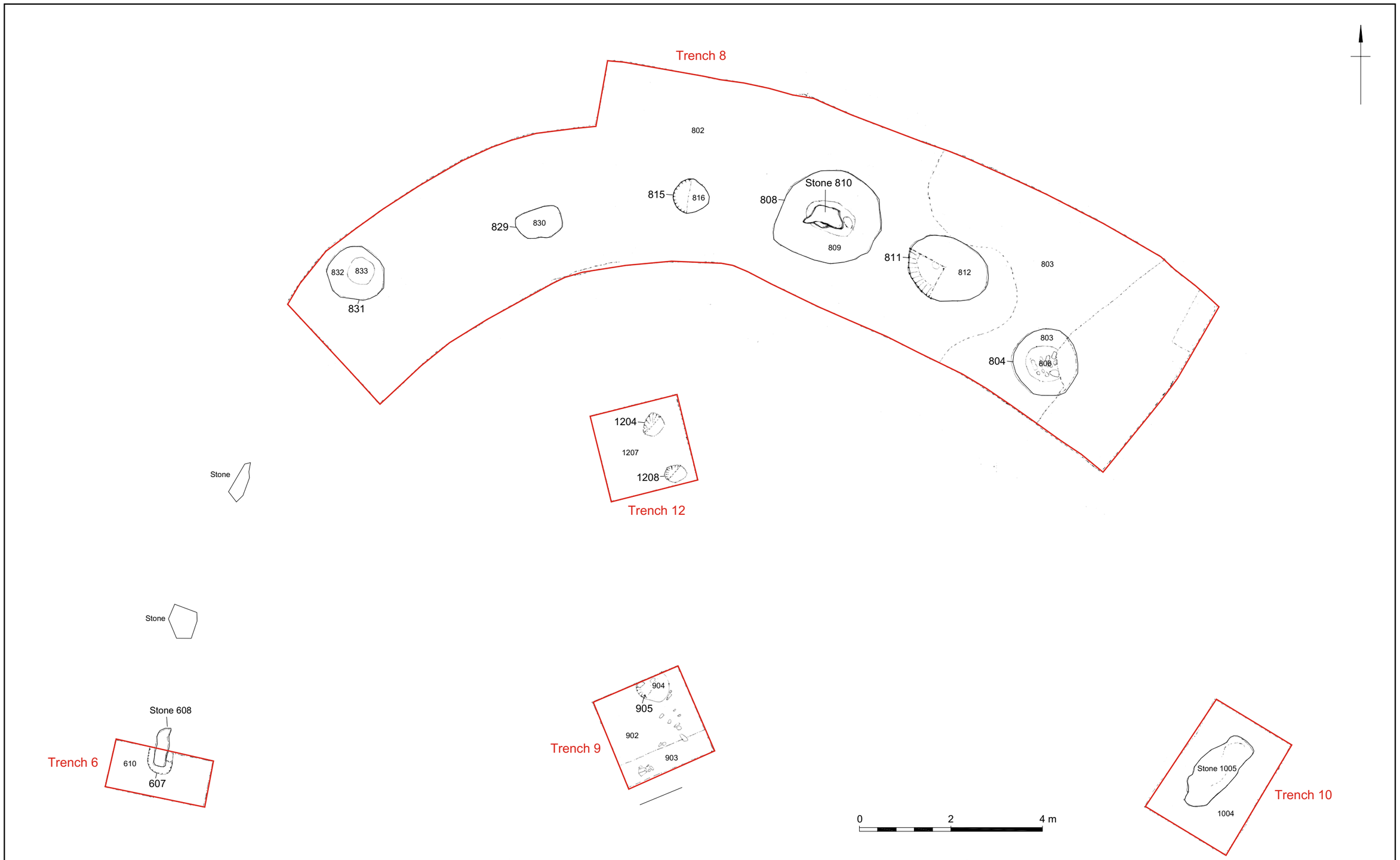
Trenches 2, 3 and 11: plan and photographs

Figure 5



Evaluation trench

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Trenches 6, 8, 9, 10 and 12: plan

Figure 6

Plate 8: Trench 6 south-west facing section

Plate 9: Trench 8 post-excavation, view from east

Plate 10: Trenches 8 and 12, view from west

Plate 11: Trench 10 post-excavation, view from north-east

Plate 12: Trench 12 post-excavation, view from south-west

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Trenches 6, 8, 10 and 12: photographs

Figure 7

WESSEX ARCHAEOLOGY LIMITED.
Registered Head Office: Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB.
Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk
Regional offices in **Edinburgh**, **Rochester** and **Sheffield**
For more information visit **www.wessexarch.co.uk**