

**ARCHAEOLOGICAL EVALUATION AND MONITORING  
OF DESIGNED LANDSCAPE  
WREST PARK  
SILSOE  
BEDFORDSHIRE**

**ARCHAEOLOGICAL WORKS: BATH HOUSE AREA,  
ORANGERY WETLANDS, BOWLING GREEN/YEW  
QUARTERS AND GREATER GARDENS**

**Albion**  
archaeology



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Project: WP2633

Document: 2016/177

Version: 2

| Compiled by  | Authorised by |
|--|---------------|
| Hester Cooper-Reade,<br>Jo Barker<br>Victoria Hainsworth,<br>and Wiebke Starke | Drew Shotliff |

03/06/2016

Produced for:  
English Heritage



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## **Preface**

*Every effort has been made in the preparation and submission of this document, and all statements are offered in good faith. Albion Archaeology cannot accept responsibility for errors of fact or opinion resulting from data supplied by a third party, or for any loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in this document.*

## **Acknowledgements**

*This version of the report (2) has been prepared by Victoria Hainsworth and edited by Jo Barker (Project Officer). The previous report (version 1.0) was prepared by Wiebke Starke (Project Supervisors) and Hester Cooper-Reade (Business Manager). Both versions of the report have been approved by Hester Cooper Reade (Business Manager) and Drew Shotliff (Operations Manager)*

*Stage 1 of the archaeological fieldwork was undertaken by Wiebke Starke and Slavec Utrata (Project Supervisors), James Rackham (geoarchaeologist) and Marcin Synus (Archaeological Technicians), with assistance from Jack Eldridge (Volunteer). Stage 2 was undertaken by Victoria Hainsworth (Project Supervisor), Gareth Shane and Marcin Synus (Archaeological Technicians). All Albion Archaeology projects are under the overall management of Drew Shotliff (Operations Manager) and Hester Cooper-Reade (Business Manager).*

*Albion Archaeology would like to thank the staff of Wrest Park, particularly Shelia Das, Amy Moffat, Andrew Turvey, and the garden volunteers for their assistance and co-operation during the project. The project commissioned on behalf of English Heritage by Ndai Halisch (Project Manager) and co-ordinated by Max Askew (Contract Administrator).*

*Thanks are also due to Brian Kerr, Magnus Alexander and Will Fletcher (Historic England), Gareth Watkins and Kate Philips (English Heritage), Max Askew (Landscape Architect, Askew Nelson) and Marcus White (Irriplan Ltd) who provided input and assistance throughout the two phases of work.*

*Albion Archaeology  
St Mary's Church  
St Mary's Street  
Bedford, MK42 0AS  
☎: 0300 300 8141  
Fax: 0300 300 8209  
E-mail: office@albion-arch.com  
Website: www.albion-arch.com*

| Version | Issue date | Reason for re-issue  |
|---------|------------|--|
| 2       | 03/06/16   | Inclusion of results of Stage 2: Archaeological Monitoring |
| 1.0     | 05/11/15   | N/A  |



## **Key Terms**

Throughout this document the following terms or abbreviations are used:

|                   |  |
|-------------------|--|
| Albion            | Albion Archaeology   |
| BLARS             | Bedfordshire and Luton Archives and Records Service                                  |
| CifA              | Chartered Institute for Archaeologists   |
| English Heritage  | Registered charity who own Wrest Park and commissioned both stages of work           |
| Irriplan          | Consulting engineers   |
| HER               | Historic Environment Record  |
| Historic England  | Governor's expert advisor on England's heritage                                      |
| OD                | Ordnance Datum   |
| OS                | Ordnance Survey  |
| Procedures Manual | <i>Procedures Manual Volume 1 Fieldwork, 2nd Edition 2001.</i><br>Albion Archaeology |
| SM                | Scheduled Monument   |
| SMC               | Scheduled Monument Consent   |
| WSI               | Written Scheme of Investigation  |



## 1. INTRODUCTION

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### 1.1 *Project Background*

The house and gardens of Wrest Park are a designated Scheduled Monument (SM) (Reference: SM BD48/46293) and the gardens are on the Historic England Register of Parks and Gardens (DBD 1000113). In addition, the park and surrounding land have been designated as a Conservation Area (DBD 6477) by Mid Bedfordshire District Council, now Central Bedfordshire Council.

During 2015 Albion Archaeology was commissioned by English Heritage to undertake archaeological evaluation within a number of areas of the designed landscape in order to assist with the formulation of plans for restoration and future management. Historic England produced a brief outlining the required works which were subsequently carried out under Scheduled Monument Consent (SMC), issued by the Inspector of Ancient Monuments for Bedfordshire.

The purpose of the work was to assess the survival, construction and location of paths within three areas of the park where restoration was planned. In addition further evaluation of the Bath House area was required in order to inform plans for improving the drainage of the area. Work in the Bath House area was to include monitoring of auguring undertaken by the hydrological engineers and test pits being dug to look at the structural condition of the Bath House.

In early 2016 further work was commissioned by English Heritage and Albion Archaeology undertook archaeological monitoring and investigation during the ground works associated with restoration and improvement of drainage in the Bath House Pond and Orangery Wetlands area, and during the reinstatement of historic paths in the Great Gardens East. The work was carried out under SMC (S001029025), issued by the Historic England Inspector of Ancient Monuments on behalf of DCMS.

A Written Scheme of Investigation (WSI) was issued in advance of both stages of work (Albion Archaeology 2015, 2016) prior to the commencement of ground works.

### 1.2 *Site Location and Description*

Wrest Park (centred at TL 09100/35100) is located on the southern margins of the Greensand ridge on a gentle south-facing slope, at the eastern edge of the village of Silsoe and approximately 15km south of Bedford (Fig. 1). The geology of the area is of calcareous gley type of the Wicken association over gault clay.

The areas under investigation were the Bath House, its pond and surrounding paths; the Bowling Green and paths within the Yew Quarters to its east, and an area of the greater gardens around the north, east and south of Ladies Lake,



encompassing paths in the vicinity of the Boat House, Chinese Temple, Brown's Column and the Graeco-Roman altars.

### **1.3 Historical and Archaeological Background**

Wrest Park was the home of the De Grey family from the 13th century until 1917. The present Wrest Park house was completed by 1834 and replaced an earlier manor house that was located further to the south. The 40 hectare designed landscape at Wrest Park dates from the 1650s onwards, when Amabel (second wife of Henry Grey, 10th Earl of Kent), her son Anthony and his wife Mary began constructing a 'new' garden using Amabel's personal wealth and, from 1871, that inherited by Mary after the death of her father. Although much of the visible form of the gardens dates from 1758–60 when the park was landscaped under the direction of Lancelot "Capability" Brown, significant elements of the pre-existing formal garden survive. This includes Ladies' Lake, which was created between 1705 and 1707 (Land Use Consultants 1993).

Numerous archaeological investigations have been carried out in Wrest Park, though the most extensive work relates to the restoration works carried out in the 1980s/90s and again from 2007 onwards. In recent years Albion Archaeology has carried out work within the gardens of Wrest Park, during ongoing maintenance and as part of planned restoration and improved visitor access. Much of this work was related to hydrological restoration in the area of the Woodland Gardens and Old Park Water (Albion Archaeology 2007 and 2009). Most recently, several pieces of work have been carried out by English Heritage (now Historic England) archaeologists and Albion Archaeology (commissioned by, the then, English Heritage) as part of a revitalisation project. Works have included a number of measured metric surveys and investigation and recording during the creation of the new visitor centre facilities in the walled garden (Albion Archaeology 2012b).

Work previously undertaken within the gardens of Wrest Park is summarised in the synthetic Historic England research report published in 2013 (Alexander *et al*). Other pieces of work undertaken in the park during routine maintenance and as a result of larger restoration projects are published as grey literature reports, mostly available on the Archaeological Data Service<sup>1</sup>. In addition, a previous landscape study, carried out by LUC for the Wrest Park Masterplan in 1993, provides a synthesis and interpretation of the map evidence for the development of the park.

Letters indicate that the Bath House cascade was being built during 1769-1772 and that by the early 1800s there were problems associated with the pipes and general drainage of the area (Alexander *et al* 2015).

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<sup>1</sup> ADS available at: [www.archaeologydataservice.ac.uk/archives/view/greylit](http://www.archaeologydataservice.ac.uk/archives/view/greylit). Accessed: 31/05/16



## 1.4 Project Objectives

### Archaeological Evaluation

The objectives of the archaeological evaluation were to investigate and record the location and construction of historic paths as shown on the first edition Ordnance Survey map. Within the Bath House area, the work was to include investigation of features associated with the water supply and drainage of the area. The project was designed to help inform the restoration of paths within the gardens and to provide some additional information on historic water supply and drainage.

At the initial stage the brief required a measured survey of the Bath House area and GPR survey of the Bowling Green area. These surveys were carried out by the Historic England Assessment team. The results were made available to Albion Archaeology and were used to assist with location of trenches and interpretation of results. The Historic England Survey was to include invert levels on various drains and water features.

### Archaeological Monitoring

The objectives of the second stage of fieldwork comprised archaeological monitoring of all hydrological improvements to the Orangery Wetlands and Bath House pond area, including:

- All drainage ditches within the Orangery Wetlands deepened and cleared of vegetation,
- Removal of vegetation (including significant amounts of *Equisetum* or Horse Tail) and the natural silt build-up within the Bath House Pond. The pond was also to be deepened by one metre to facilitate less invasive management in the future,
- A drainage pipe between the Orangery Wetlands and Bath House pond was to be installed, replacing one from 2003.

In the Great Gardens East the historic garden paths were to be reinstated accurately to their original location and extent, using information from the first edition OS map, the archaeological evaluation, and a number of test slots. The Groundwork to fully reveal the path extents and the investigation was monitored by Albion Archaeology and any archaeological deposits/features were recorded. Additionally to this, clearing of three drainage ditches was to be observed; two on the Graeco-Roman alters round, and one E-W orientated south of the Browns Column. Works along two stretches of Yew hedge were also monitored: the first being to reinstate the hedge by the Diana statue, and the second to follow the western edge of the path along Broad Water.

## 1.5 Archaeological Requirements

The archaeological requirements for all stages of the project were as follows:





## Bath House

### Stage 1

Investigate extent of paths, their alignment, width, any edgings and surface materials; excavate cross section trenches to understand path construction to inform restoration.

Investigate extent of shrubberies to establish any edge detail.

Excavate and reveal route of piped supply to the cascade. *After an assessment of the known location of previously mapped pipes and a site visit that showed this pipe as buried beneath the mounded area to the north of the Bath House pond, it was apparent that excavation of a hand dug trench in the location of the known pipe was not possible. Trenching further along its possible route or routes was not considered an effective method of establishing the location of the pipe. On discussion with the hydrological engineer it was decided that this trench was no longer required. This allowed some additional trenching across the paths in other areas of the garden.*

Remove modern chamber (north of Bath House pond) to reveal possible older drains below/behind.

Excavate and reveal possible spring (west of Bath House).

Excavate trenches across ditch on west side of modern green fence and across the possible ditch (west side of former nursery ground). *After the discovery of peat during the auger survey it was decided that drainage of the area to the west of the Bath House Pond was more complex than first thought and that as a result it was unlikely to go ahead as planned. For this reason excavation of a section across the ditch was not required. Later discussion has however indicated that a machine dug trench will be required at a later date.*

Watching brief during auger survey undertaken by hydrological engineers.

Watching brief during excavation of test pits to assess Bath House structure. *In the event the garden volunteers were unable to excavate the test pits as first planned. As a result the pits were excavated and recorded by the Albion Archaeology project team under the direction of the Historic England structural engineer, Arthur McCullum. This was made possible within the project programme as a result of the removal of the requirement to excavate trenches across the ditches on the western margins of the Bath House area.*

### Stage 2

Watching brief during the Bath House Pond dredging

*Archaeological observation during the dredging of the Bath House Pond was required to ensure that the historic shape of the pond was preserved and to record any archaeological deposits that may exist at its base.*

*This also provided an opportunity to gather any information regarding the ponds construction and recovery of stray artefacts.*

Watching brief during the re-excavation of a pipe trench between the Orangery Wetlands and Bath House Pond.

Watching brief during the removal of a laurel hedge.



## **Orangery Wetlands**

Watching brief during the re-excavation of drainage ditches in the Orangery Wetlands

## **Bowling Green Lawn & Yew Quarters**

Investigate extent of paths, alignment, width, any edgings, surface materials around the Bowling Green and through the Yew Quarters.

Excavate cross section trenches, to understand path construction to inform restoration.

## **Great Gardens East**

### ***Stage 1***

Investigate and reveal extent, construction and condition of former paths north and south of Ladies Lake, around the Brown Column and Graeco-Roman Altars. In particular investigate alignment, width, construction materials and edgings.

Excavate cross section trenches to understand path construction to inform restoration.

### ***Stage 2***

Watching brief during the restoration of the paths north and west of Ladies Lake, around Brown's Column and Graeco Roman Altars, to establish their position and alignment, initially indicated by evaluation trenches and historic maps, and to record any variability in their construction and materials used.

Watching Brief during the restoration of culverts and headwalls.

Watching brief during the excavation of new drainage pipes around the Graeco-Roman Altars round and south of the Brown's Column circular path.

## **1.6 Methodology**

A full methodology was provided in the WSI (Albion 2015-16).

### **First Phase 2015**

The first phase of archaeological investigation and recording was undertaken during August and September 2015.

Prior to deciding on the location of the trenches a surveying arrow was used to 'spike test' the soil in order to identify firmer, more gravelly surfaces that might represent paths. Although this was relatively successful in identifying firm gravel paths in less stony areas, it did not prove a particularly effective method in all areas of the park. All trenches were excavated by hand. Any historical features revealed were hand cleaned and recorded. Sections excavated through make up and path layers were the minimal necessary to better characterise and assess the deposits. All deposits/features were recorded using a unique number sequence, commencing at 1, with context numbers in square brackets referring to the cuts [\*] and round brackets to fills or layers (\*).



Both an archaeologist and a geo-archaeologist were present during the auger survey to assess findings, although the survey was undertaken in accordance with the requirements of the hydrological engineer. However, a gouge auger was used which did at least give a better indication of the deposits and their depths than would have otherwise been possible. Collection of samples for off-site analysis was not part of the archaeological brief.

The test pits to investigate the footings of the Bath House were excavated and recorded archaeologically at a location specified by the structural engineer.

All trenches were surveyed onto the base plan of Wrest Park provided by English Heritage and geo-referenced with OS co-ordinates.

## Second Phase 2016

The second phase of archaeological monitoring was undertaken between February and May 2016. All excavation was carried out by a mechanical excavator fitted with a toothless ditching bucket, under close archaeological supervision. When mechanical excavation was not possible, it was carried out by hand. Wherever possible, the spoil heaps were also scanned for artefact recovery.

All archaeological deposits or features identified were investigated by hand and recorded using Albion Archaeology's pro forma sheets. They were subsequently drawn and photographed as appropriate. All deposits/features were recorded using a unique number sequence, commencing at 1000, with context numbers in square brackets referring to the cuts [\*\*\*\*] and round brackets to fills or layers (\*\*\*\*). The prefix 'G' refers to a generic context number for a larger area of a deposit/feature and has been used to reconcile both stages of archaeological investigation, wherever possible.

### 1.7 Standards and guidance

Throughout the project the standards set out in the following documents were adhered to:

|                    |  |
|--------------------|--|
| Albion Archaeology | <i>Procedures Manual: Volume 1 Fieldwork</i> (2nd ed., 2001).  |
| Historic England   | <i>Management of Research Projects in the Historic Environment: MoRPHE Project Managers' Guide</i> (2009)                    |
| CIfA               | <i>Code of Conduct</i> (2014)  |
|                    | <i>Standard and Guidance for an Archaeological Evaluation</i> (2014)   |
|                    | <i>Standard and Guidance for Excavation</i> (2014)   |
|                    | <i>Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials</i> (2014) |



The project archive will be passed to English Heritage and Historic England and a copy of the report will be deposited with the Central Bedfordshire Historic Environment Record (HER).

### **1.8 Constraints**

The statutory designations of Wrest Park meant that dredging works and any excavation had to remain within agreed areas and to an agreed extent. The initial stage of trial trench evaluation was also limited to hand excavation. Excavation through archaeological deposits was limited to that required to assess their nature and character. Not all trenches revealed remains that were easy to interpret. In order to minimise impact further excavation was only undertaken where it was felt that this would add new information.

Excavating trenches to establish or confirm the location of features such as paths on a scheduled site and within the constraints of agreed work will not always yield the results expected. Similar work undertaken by Albion Archaeology at Wrest Park has shown that not all paths are easily identifiable. Historic dredging of the water bodies has often led to dumping of arisings around the grounds and some of the paths are indicated only through slight changes in the texture or soil. Although the archaeological results often add significant new knowledge to the development of the park, their use as a guide to restoration is not always definitive.

Tree roots were a major constraining factor, and to avoid damage to historic trees, excavation was only undertaken in areas and to depths agreed with the garden team. In many cases it was found that tree roots naturally grew around the edges of paths, presumably where the ground was softer. This meant that in some trenches, the precise historic edges of paths were obscured.

In particular, investigation of the possible spring head at the northern end of the western ditch was limited to clearance around the stone structure revealed in this area. The location of trenches within the Yew Quarters and along the paths west and south of the former boathouse on Broad Water was also largely dictated by the presence of trees.

The park was open to the public during works, although this did not impact significantly on the location of trenches.

One of the original objectives was to excavate a trench along the existing pipe, now dry, but which one supplied water to the cascade above the Bath House pond. This pipe ran below the mound to the north of the Bath House pond and was encased in concrete at its outfall. Excavation to establish the route of the pipe could only take place beyond the mounded feature to the north of the Bath House and was therefore reliant on an understanding of its location. Without any indication of the route that this pipe took, or its depth in relation to the current topography, it was felt that locating a trench to trace the route of the pipe was not likely to be a particularly successful strategy and, in any case, would require a series of trenches. This type of intervention was considered outside the scope of the current work and scheduled consent. A meeting with



the hydrologist on site, prior to start of works, confirmed that trenching to locate this pipe was not necessary and was better focussed elsewhere.

In any case, further inspection of the pipe leading to the cascade indicated that it ran in a north easterly direction towards the orangery rather than towards the manhole immediately to the north as was first supposed. Furthermore, inspection of the chamber only revealed pipe openings on its northern and western sides. This arrangement was further confirmed by the survey evidence which showed a pipe, unconnected with the cascade, draining water from north of the area and then west towards the boggy area at the head of the ditch located along the western edge of the area.

### **1.9 The historic maps**

In order to properly evaluate the paths uncovered and their relationship to the first edition OS map some assessment of other historic maps depicting the park is required. A number of paths shown on the first edition OS map are also depicted on the earlier maps, in some cases following a slightly different route. It is therefore important to look at any evidence for former paths in conjunction with earlier maps to establish the most likely phase of the path represented. The key plans showing the layout of the gardens are: 1719 Laurence map (Fig. 2), 1735 and 1737 Rocque maps (Fig. 3), 1829 De Grey Sketch (Fig. 4) and OS map (Figs 5-11).

After allowance is made for the level of interpretation and potential inaccuracies in scaling, the first edition OS map has proved remarkably accurate in its depiction of paths, trees and planting within the gardens at Wrest Park. The error margin often relates to inevitable inaccuracies of the geo-referencing as a result of the re-scaling of copies of the old maps. In addition, it should be noted that the best fit overlay used here represents one interpretation of the map evidence.

### **1.10 Relevant previous investigation**

A number of previous interventions are relevant to these works.

Bedfordshire County Council Archaeological Service (subsequently Albion Archaeology) carried out a trenching evaluation within the woodland panels and gardens in 1988 prior to a phase of restoration of water bodies, paths and rides (Dawson 1989 and 2001). This work included the excavation of trenches across the round to the west of Brown's Column (Dawson's trenches 4a, 4b and 4c), across the path joining the eastern corner of Ladies Lake with Brown's Column (Dawson's trench 5a) (Fig. 11).

Dawson's trenches 4a, 4b and 4c revealed a sandy spread, comprising iron rich orange sand, adjacent to the present hedge. This was interpreted as a circular flanking sand-based path around the enclosure. Sections showed that it had a shallow foundation trench

In 2003 a record was made of a drain (Fig. 12) revealed during works to the west of the Orangery (Albion Archaeology 2003). Blockage of drains in this was thought to have caused waterlogging behind the Orangery and a major



scheme of drainage works was planned. As an initial phase of works drain clearance was being undertaken on the main outlet to the stream, via the Bath House pond. This drain was exposed by the estate staff and Albion Archaeology was asked to undertake a rapid recording exercise on the exposed drain structure and to record path and road surfaces cut through by the trench. Several phases of drain construction were noted over the length of the trench. The drain was shown to have a brick culvert head at its eastern end (Fig. 13).

A borehole survey was undertaken in 2006 in conjunction with hydrology restoration in Wrest Park. This was monitored by Albion Archaeology (Albion Archaeology 2006). Cores were taken from the vicinity of the Bathhouse (AG52, AG53 and AG54) (Fig. 14). The area to the west of the bath house, outside the limits of the Wrest Park Gardens, consists of disturbed ground and has been used for dumping of material until the recent past. Several cores had to be abandoned due to the compacted nature of the ground or bricks obstructing the auger. The one successful core (GW60) showed a succession of man-made dump layers with frequent inclusions of brick, stones and charcoal, interspersed with thin layers of re-deposited peat and orange clay. The core reached the natural bluish-grey Gault Clay at a depth of 1.70m.

The cores in the area of the Bath House Pond (AG52, AG53 and AG54) showed a succession of mid-orange and grey-brown silty clay subsoil over a layer of peat at an average depth of 0.80m below ground level. The deepest borehole (AG52), adjacent to the Bath House Pond, indicated that the layer of peat was *c.* 0.60m deep and overlay the bluish-grey gault clay.

A desk-based assessment and investigation of the woodland panels south of the main gardens was carried out in 2009 as part of the restoration and hydrological works within this area (Albion Archaeology 2009a). The works included the excavation of trial trenches to investigate culverts adjacent to Brown's Column (Albion Archaeology 2009a, Fig. 22 this report, Tr 37) and on the east-west path leading from the western edge of round containing the Graeco-Roman altars (Albion Archaeology 2009a, Fig. 10 this report, Tr 56). These trenches also revealed path deposits in the area.

Also in 2009, a series of trenches investigated the banks of Old Park Water prior to the dredging of that water body (Albion Archaeology 2009b). Trenches excavated towards the northern end of the lake revealed wooden stakes suggesting some form of revetment has been necessary to stabilise the sides of the lake.

In 2012 small test pits excavated at both ends of the Broad Walk and revealed historic gravel path deposits beneath the turf and topsoil extending either side of the limits of the current gravel path (Albion Archaeology 2012a, Fig. 12). These trenches showed that the path extended 0.75–1.3m further to the south of the current path, whilst those to the north extended beyond the limits of the test pits. The authors noted that it was possible that some of the gravel deposits may relate to earlier path layouts; a wider terrace is shown in a similar location to that of the Broad Walk on maps pre-dating the construction of the current house.



## 2. RESULTS

### 2.1 Introduction

The results of non-intrusive survey and deposits and archaeological features revealed during the two stages of intrusive archaeological investigation are described below, organised by area.

Figures and plates are bound at the back of the report.

### 2.2 Non-intrusive survey

#### GPR survey

A GPR survey was undertaken on the Bowling Green in June 2015. The image shows a large quantity of land drains running from the bowling green into the Leg O'Mutton Lake.

There is a possibility that some of these drains, if not most of them, date to the late 1980s, when a program of restoration works was undertaken in the park and where, amongst other things, the Bowling Green arches were restored and the Leg O'Mutton Lake was restored to its shape of 1735.

#### The topographic survey

Prior to the excavation of the test pits, the Historic England Assessment team carried out a topographic survey of the area around the Bath House (Alexander et al 2015). The survey identified and confirmed the location of a number of garden features and paths in this area through the identification of structural elements such as edging stones and changes in the contour of the ground. The results of the trenching in this area need to be looked at in conjunction with the survey results. (Fig 12)

### 2.3 The Bath House area

(Figs 5, 12, 15, 16, 17 and 18)

Trenches 1 to 9 and 30, 31 and 32 were excavated in the area surrounding the Bath House. Trenches 1-6 were located to investigate the paths to the west and north of the Bath House, Trenches 7-8 to investigate the area of planting to the east of the Bath House pond and Trench 32 to investigate structures, paths and the possible location of spring at northern end of the western ditch.

Trenches 30 and 31 were structural investigation pits to investigate cracks in the fabric of the Bath House; they were, however, excavated and recorded archaeologically. In addition an archaeological watching brief was maintained during the hydrological auger survey. Information from that survey, along with a number of archaeological observations, is included here.

#### Investigation of paths

##### *Trenches 1 and 2*

Trenches 1 and 2 were located over a path west of the Bath House, visible at current ground level through a line of edging stones on each side (Figs 5, 17).



Both trenches revealed that the path surface lay under topsoil at a depth of 100mm and that it was contained within the limit of the edging stones. Investigation either side of the edging stones showed no evidence for this path, or any earlier ones. The path material consisted of compacted mid-yellow, brown silty sand with occasional small stones (Layer 4 in Trench 1), and compacted mid orange, brown silty sand with moderate small stones (Layer 7 in Trench 2).

The thickness of the deposit was recorded at 50mm, and the width of the path at 1.05-1.1m.

### ***Trench 4 and 5***

Trenches 4 and 5 targeted a rectangular path layout west of the Bath House (Figs 5, 17). This area is characterised by marshy conditions. Path remains were discovered under the current topsoil at a depth of 200mm. The path comprised friable mid-orange, brown silty sandy clay with occasional small stones (Layer 12). The width of the path varied between 910mm in Trench 4 and 1.8m in Trench 5. The thickness of the path deposit was recorded as 110mm.

### ***Trench 6***

Trench 6 was excavated to the north of the Bath House and its cascade (Figs 5, 17). This area is characterised by dryer conditions and mature trees with very little undergrowth. A deposit interpreted as a path was located underneath topsoil at a depth of 130mm below ground surface. It was truncated at the south-eastern end by root disturbance. The remainder of the path extended over a width of 1.13m with a maximum thickness of 200mm. The probable path consisted of compacted mid-yellow, brown silty sand with occasional small stones.

### ***Trench 3***

Trench 3 was located at the top of the bank of the higher ground to the west of the Bath House (Figs 5, 17). A sequence of two path deposits were recorded, Layer (8) being the more recent. The path represented by Layer (8) measured 2.7m in width and was found 80mm-170mm below the existing ground surface. This path was made of a compact light-brown, grey silty sand and gravel; it was 60mm thick. The earlier path, Layer (9), was at least 1.66m in width. The path represented by Layer (9) comprised compact mid-orange, brown clayey sand and gravel. These paths were more substantial than the paths identified elsewhere within the Bath House area.

### **Investigation of shrubberies to east of Bath House pond**

(Figs 5, 12, 16, 18)

The existing planting in this area is somewhat different to that shown on the first edition OS map and although, in places, some extant edging stones exist, it was impossible to ascertain whether or not any of them were once part of formal edging around the shrubbery as shown on the earlier map.





The first edition OS map shows planting around the eastern edge of the pond, with an area of grass to the west, encompassing most of the current planting. The edge of the 19th-century planting is shown as running north east to south west, from the hedge adjacent to the path west of the Orangery to a point some 15m east of Old Park Water along the line of the former yew hedge. Trenches 7, 8, and 9 are located in an attempt to ascertain whether or not there was any evidence to show the edge of the shrubbery, as shown on the first edition map.

### **Trench 7**

Trench 7 was located amongst the existing edging towards the north-east corner of the area, where it was felt that the stones were most likely to represent the edge of the 19th-century planting (Figs 5 and 18). Trench 7 revealed a thin gravel spread 50mm thick (15) above a deposit of silty sand. Neither of these were path layers; they are more likely to represent layers formed during an episode of landscaping within the park. The layers encountered were uniform across the trench with nothing to distinguish between areas of former planting and lawn. Subsequent map regression shows that Trench 7 is most likely to be wholly within the area of former planting as shown on the first edition OS map (Fig. 5).

### **Trenches 8 and 9**

Trenches 8 and 9 were located at the southern margin of this shrubbery in an area that is currently grass (Figs 5 and 18). Trench 8 uncovered a sequence of landscaping deposits and a slightly more gravelly spread which also included a few larger sandstone blocks, similar to stones used as edging, but clearly not *in situ*. Although located reasonably close to the earlier house, none of the stones showed any evidence that they had been set in mortar, and none of them were recognisably architectural in nature. Layer 18 in Trench 8 is comparable to the more gravelly layer, 15, in Trench 7, although here it was 180mm thick. Within Trench 9 removal of the topsoil revealed a sandy clay with some chalk inclusions. This layer, which was not present in Trench 8, was 550mm thick. Both the gravel-based layer (18) in Trench 8 and the sandy clay in Trench 9 overlay a wet, mid grey, brown silty clay. Map regression shows that Trench 8 was most likely within the area of former planting, whilst Trench 9 was within the lawn.

### **Observation of auger survey**

The augering undertaken by the hydrological engineers was designed solely to allow an assessment of the volume of material that might need removing in order to improve drainage (Figs 12 and 14). As a precautionary measure and in view of the statutory designation of the site Historic England required that the auger survey was observed by a geo-archaeologist. The geo-archaeologist was able to confirm and comment on the results of interest to an archaeological understanding of the site, but opportunity for input into the location of the auger positions and intervention was limited. The initial intention was to use a bucket auger, however for most of the auger holes a gouge auger proved more effective which did at least enable some observation of undisturbed deposits.

The auger holes revealed a layer of peat some above the gault clay. In general the peat was around 500mm below ground surface and around 500mm to



800mm thick. Archaeological observation of the deposits did not reveal any additional information to that recorded by the hydrological engineers. However, part of an obliquely driven wooden stake was noted from an auger position near the edge of the Bath House pond. This might suggest that some form of revetment was necessary in order to stabilise the edges of the pond, although this would need to be confirmed before any firm conclusions can be made.

The auger holes show that the level of the Gault over the area investigated is similar, around 52m OD (1.10m to 1.70 below current ground level), based on the measurements taken during the survey. The auger holes indicate that the Bath House Pond has been excavated within an area of peat pre-dating the park. This is confirmed by the results of the trenches located within this area.

The auger positions were recorded by the hydrological engineers.

### **Structural investigation test pits**

#### ***Trench 30 and 31***

Trench 30 and 31 were dug as structural investigation pits (Figs 12 and 15). The aim was to investigate the nature of two cracks visible in the Bath House structure and their impact on the subsurface foundations.

The investigation has revealed that the cracks do not visibly continue throughout the foundations.

Beneath the turf, both test pits revealed backfill deposits (57 and 61) associated with the construction of foundations for the Bath House. Deposit 57 contained fragments of glass, brick, stone and tile (noted but not retained), whilst deposit 61, only visible in Trench 3, was a more mixed silty peat deposit. The waterlogged peat layer (58) was recorded below the foundation cut in Trench 30. The southern half of Trench 30 was disturbed by a pipe on a north-west-south-east alignment.

The deposits encountered in these trenches suggested the existence of a foundation trench excavated during the construction of the Bath House and its pond and ultimately backfilled with the arisings.

These trial pits revealed gault at *c.* 1.15m below the level of the weir situated between the Bath House Pond and the Old Park Water. The weir level was 52.87m above OD.

### **Investigation of structures at the northern end of the western ditch and possible spring**

#### ***Trench 32***

Trench 32 investigated the stone structure observed at the northern end of the ditch marking the western edge of the Bath House area. This is in the area where a number of paths converge and towards the higher ground at the edge of the westernmost path investigated by Trench 3 (Figs 5, 12, 16 and 18). The



area north and east of the stone structure was marshy and waterlogged and it is likely that the structure sits at the head of the ditch shown on the first edition OS map, since in-filled.

Tree roots meant that it was impossible to excavate sufficient an area to fully understand how the paths running into this area would have converged. However some of the surrounding trees, including the one in the immediate vicinity of the structure and convergent paths would have been in existence at the time of the first edition OS map (Shelia Das, pers. com.).

Similarly, the presence of tree roots hampered investigation of the stone structure and only a small section of the wall could be investigated. Four courses of sandstone blocks representing a relatively substantial structure were exposed. It is most likely that this structure represents a culvert at the convergence of paths from the north and the more marshy ground to the east.

The area immediately to the north of this structure took the form of a small boggy hollow, this was investigated during excavations around the structure. A succession of historic water features within this general area of the park suggests the presence of a historic spring that would ultimately have fed the Bath House cascade either directly, or via a piped water supply. The map evidence suggests that spring was most likely located north, and possibly slightly to the west, of the Bath House cascade. The deposits within the hollow were very similar to those observed during the auger survey and a spike test showed that the softer deposits were of a similar depth. In addition, there was no evidence of any additional structures to indicate maintenance of a spring in this location. More likely the formation of a slightly wetter hollow in this location was the result of the outfall from a known pipe draining water into the silted up ditch.

### **The piped water supply**

(Figs 12, 15, 16)

Several water pipes are known from old survey plans; a number are still visible at their outfall, or within drain chambers. In addition a previously unknown pipe was identified within Trench 30, dug to investigate the structural stability of the Bath House (see 2.2.4.1)

A survey drawing from the 1990s shows a pipe running towards the western ditch from a point north of the cascade. The route of the pipe is marked by two manholes. Investigation of the chamber north east of the cascade shows a pipe running in from the north and a pipe leading out to the west towards the western ditch. The survey confirms the location of this pipe which drained water southwards from an area to the north, via the manhole chamber north east of the cascade and onwards in a south westerly direction to an outfall at the northern end of the now in-filled ditch. The, highest, easternmost manhole has a cover level of 54.16mOD; the pipe an invert level of 53.64m OD. Further west the manhole cover level is 53.90m OD; the pipe has an invert level of 53.12m OD.



The history of water supply to the Bath House cascade is unknown, although at some point it was piped in through a pipe, now encased in concrete at its outfall. This pipe was seen to enter the cascade from a sharp north-easterly direction, which indicated that it crosses the yard area behind the Orangery. Landscaping, including the construction of the mound to the north of the cascade, shows that the pipe will be deeply buried in the area currently being investigated. Even if its route could be pinpointed with any accuracy, the presence of historic trees would also limit the likelihood of placing trenches in locations likely to reveal the pipe. It is clear, however, that this pipe is not associated with the pipes leading into and out of the chamber to the north of the cascade.

A number of drawings dated to 1972 show proposals to install an electrical water pump at the north east end of Broad Water. These show a pipe, described as a “6 inch PVC pipe”, leading from Broad Water to the cascade feeding the Bath House pond.

Only a small part of the pipe within Trench 30 was revealed, but it was buried 150mm deep and shown to be on a northwest - southeast alignment, towards the northern end of the western ditch.

### **Bath House Pond Dredging**

(Figs 25 and 26, Plates 3-6)

Dredging of the Bath House Pond [1011] commenced with the removal of Horse Tail and other vegetation. During this process an underlying dark brownish grey silt (1021) was noted and removed, which had been deposited through alluvial process and the breakdown of pond vegetation. Further detailed identification of deposits was restricted by the waterlogged nature of the dredged material.

### **Timber revetments**

Upon removal of silt along the banks of the pond, four lengths of timber revetment were uncovered (Fig. 25 and Plate 8). Three lengths were identified along the northern edge, (1016), (1017) and (1032), and one length (1031), along the southern bank, which abutted the weir. This substantiates the evidence from the auger survey evidence when the geoarchaeologist noted the presence of a wooden stake in hole 17 (James Rackham pers. com) that coincided with revetment (1032). Due to overhanging vegetation it was unclear whether the timber revetments were continuous along the edge of the pond. No mention made of a revetment during previous pond dredging in the 1960s although similar wooden stakes were noted on the western bank of Old Park Water (Albion Archaeology 2009b).

The revetment comprised horizontal planks, up to 1350mm x 150mm x 20mm in size, which were held in place by upright square stakes. Only two stakes were uncovered and their distribution along the bank is uncertain. Individual planks were held together by wooden pegs. Analysis of wooden plank (1008), forming part of revetment (1016), revealed that they were tangentially sawn and had rectangular cross sections. Based on saw markings, that were at 45



degrees to the plank, this had been carried out by hand. The revetment timbers did not appear to be treated and no carpenter's marks were visible.

### **Worked stone**

One fragment of architectural stone (1012, RA10) was recovered during the dredging process (Plate 7). It was located close to the southern bank of the pond, approximately 17m east the weir (1013). It comprised a sandy limestone that had been finely dressed on five faces, although two faces had been damaged. One face contained a chamfered corner with a ledge like projection at 45 degrees to the main body.

A fragment of modern concrete flooring (RA11), was also recovered and may have originated from a concrete foundation created during repairs to the Bath House in the 1960s (Kate Philips, Historic England, *pers com.*)

### **Bath House pond weir**

As part of the regeneration works alterations were made to the Bath House pond weir (1013) (Plate 6), which is situated at the south-west end and regulates the flow of water into Old Park Water. Alterations involved the removal of a Portland concrete capping and the subsequent removal of the top three courses of stonework. As the top sections had been previously rebuilt a number of times, these latest alterations were not considered to have a detrimental effect on the historical integrity of the structure. All of the stone had been worked and was square in shape. The largest example was 500mm x 430mm x 140mm in size.

### **Laurel hedge**

A length of Laurel hedge, bordering the path between the Bath House pond and the Orangery Wetlands, was removed to ground level and its roots dug out. No datable artefacts were encountered, but a number of stones were uncovered during this work in the area adjacent to the Bath House bridge. Elsewhere, similar stones have been used to define the edges of paths and it is, therefore, likely that these mark the location of an former path, although no corresponding path surface was identified.

At the southern end of the hedge an inert pipe was identified, but left *in situ*. It was made of iron and probably dates to the Victorian period. It is relevant to note that it was aligned north-south; parallel to the existing path. However, it had not been identified in any previous excavations and so its route remains unknown.

### **New culvert between Orangery Wetlands and Bath House pond**

The installation of a new culvert between the Orangery Wetlands and the Bath House pond comprised the excavation of a 0.4m wide trench (Figs 25 and 26). The east end of the trench revealed the extent of the modern pathway [1023], which in total measures *c.* 3m wide and 0.8m deep. No evidence of an earlier path surface was encountered.

Within this section, a landscaping layer comprising a mid-brown orange sand (1019), 0.25m thick, was also revealed. It overlay a buried subsoil (1020), but



was concealed beneath topsoil layer (1018). In all likelihood, layer (1019) corresponds to material used during the initial landscaping of the Bath House area.

Spread along the length of the trench was a spongy, dark grey organic peat (1022) that was encountered 1.25m below the current ground surface. Its thickness and full extent was not ascertained, but it is likely to be part of the same peat layer encountered during the auger survey and, therefore, extends further east than previously expected (Irriplan 2015).

## **2.4 Orangery Wetlands**

Excavation of partially in-filled drainage ditches [1000] to [1006] within the wetlands area consisted of the pre-approved removal of silt deposits to a depth of *c.* 0.25m below their current level (Fig. 26, Plates 1-2). As such, excavation did not reveal the historic base of the original drainage ditches. Excavation of the southern ditch [1006], however, revealed the original concave edge and at this point the soil matrix changed to mid-orangey grey clayey silt.

The deposits within all of the ditches consisted of a homogenous and waterlogged, dark brownish grey clay silt, with occasional small stones. All fills were heavily root disturbed. Modern debris recovered from the majority of ditches, such as flowerpot fragments, confirmed that they had not been excavated beyond their original extent.

## **2.5 Bowling Green: paths**

Trenches 22, 23, 24, 25 and 26 were excavated around the Bowling Green (Figs 6 and 19).

### ***Trench 22 and 23***

Trench 22 was positioned between the Leg O'Mutton Lake and the corner of the Bowling Green with the purpose of locating the probable path depicted on the first edition OS map (Figs 6 and 19). No distinct path deposit could be identified, however, Layer (47) containing gravel was encountered beneath the turf (46) at a depth of 80mm below ground level. The layer comprised compact mid-grey, brown clay silt with frequent small-medium stones and had a thickness of 40mm. It extended *c.* 8.8m from the slope of the bank near the lake, up towards the Bowling Green.

Towards the lake Layer 47 was underlain by a makeup layer (49) comprising mixed mid grey brown silty clay material with occasional small-large stones. Towards the Bowling Green the spread (47) sits on top of the subsoil (48).

Trench 23 was dug as a small investigative test pit west of Trench 22, to ascertain if the gravel spread continued along the area between the Bowling Green and the Pond. The same material as in Trench 22 was recorded beneath the turf, at the same depth.

In 1988 restoration works were undertaken at the Leg O'Mutton Lake and the Bowling Green. It is likely that with the reshaping of the lake the bank was rebuilt leading to the destruction or disturbance of earlier deposits.



### ***Trench 24, 25 and 26***

The existing path around the Bowling Green is a relatively recent re-instatement and it is clear that it is only approximately in the location of previous paths. Trenches 24 to 26 were positioned on three sides of the Bowling Green to ascertain the width and character of former path deposits (Figs 6 and 19).

Trench 24, located in the centre of the southern path, revealed the former path layer (39) beneath the current path layer (41). At its southern end the trench also revealed a similar gravelly layer (40) to that recorded in Trenches 22 and 23. This indicates that the layer might represent a more widespread subsoil layer associated with general landscaping within the park

The earlier path, (39), consisted of compact mid-brown, grey sandy gravel. Its thickness was recorded as 70mm and the maximum width as 3.6m in Trench 26. The current path (41) is made of compact light yellow brown sandy gravel. Its width varies from 2m in Trench 24 to, 2.3m in Trench 25 and 2.38m in Trench 26.

Trench 25 and 26 showed a similar path build up to Trench 24, with the same materials. Trench 25 was located in the centre of the east side of the Bowling Green. Trench 26 was located in the eastern part of the northern Bowling Green path.

## **2.6 Yew Quarters: Paths**

Trenches 20, 21, 27 and 28 were excavated within the Yew Quarter.

### ***Trench 20 and 27***

Trench 20 and 27 were excavated across the path in the northern section of the Yew Quarter (Figs 7 and 20). Trench 20, excavated over the path running on the north-south axis, revealed a probable surfaced path which is orientated slightly to the west of the current track. The path layer (21) is characterised by firm mid-brown, yellow silty sand. The compacted area is c. 2.1m wide and 100mm thick.

Trench 27 also revealed a sand-based path (66). This overlay a sequence of landscaping deposits. Path (66) measured a minimum of 1.2m in width, it was 90mm thick and was made up of a firm mid-yellow, brown silty sand. Due to the presence of historic trees, the full extent of the path could not be excavated.

### ***Trench 21 and 28***

Trench 21 and 28 are located in the southern part of the Yew Quarter (Figs 7 and 20).

Trench 21 was placed over an east-west aligned path, currently a dirt track. In this trench a gravel-based path was encountered beneath the overburden, at a depth of c. 200mm. The path deposit (50) sat upon a clayey landscaping deposit (28). The path itself comprised of compacted mid-yellow, brown sandy gravel. It extended over a width of 2.3m and was 150mm thick.



Trench 28 is located west of Trench 21, in a little clearing skirted by yews on two sides. Its purpose was to understand whether the clearing was formerly surfaced with gravel. A sequence of gravel and make up deposits was recorded beneath the current ground surface. The first gravel layer (53) is directly beneath the current topsoil at a depth of 100mm. It comprised compacted mid-yellow, brown sandy gravel, 70mm in thick. This gravel layer blankets a levelling deposit (54) of firm mid-grey, brown sandy clay with occasional small stones, 40mm thick. Below this was an earlier gravel deposit (55) which comprised compacted mid-brown, grey sandy gravel 100mm thick. Beneath this second gravel layer was another layer of firm mid-brown, grey silty clay (56).

## **2.7 North-east Great Gardens**

Trenches 10, 11, 12 and 13 were excavated north of Ladies Lake, south of the Broad Water at the boathouse end, trenches 14 and 15 were excavated to the east of Ladies Lake and trenches 16 to 19 and Trench 29 were located around Capability Brown's Column and the Graeco-Roman Altars (Figs 8-10, 21-23).

### **Ladies Lake: paths to the north and east**

#### ***Trench 10, 11 and 12***

Trenches 10, 11 and 12 were excavated around a fork in the track depicted on the first edition OS map (Figs 8 and 21). The current path still forks here, albeit in a different location. Trench 10 was set to locate the eastern arm of the track and Trench 11 targeted the western path. Trench 12 targeted an area coming off the western path to form a little square, presumably the former position of a statue, or similar garden feature.

Trench 10 revealed a sequence of two path layers, (26) and (27). These were beneath the topsoil (32) and above a clay-based make-up layer (24). The earlier path deposit (27) consisted of friable, mid-brown, yellow silty sand with occasional small stones. It was recorded with a maximum thickness of 260mm. The later path (26) comprised mid-yellow, orange sandy gravel. It was recorded over a width of 2.22m with a thickness of 60mm.

Trench 11 also revealed the remains of a path (68), beneath topsoil at a depth of 150mm below ground surface. The path was constructed out of a compact mid- orange, brown silty sand with frequent medium stones, including some chalk fragments. It was recorded over a width of 2.5m. Due to heavy root disturbance within the trench, the thickness of the deposit could not be determined. The path was overlaying subsoil.

Trench 12 targeted the square "dead-end" to the east of the main north-south aligned path as shown on the first edition OS map. This path was also in an area close by a gardeners' storage yard. No path deposits were encountered within the trench which, instead, revealed mixed deposits containing fragments of London Brick and therefore suggestive of the dumping of material in the more recent past. Trench 12 was excavated to a maximum depth of 500mm.





### ***Trench 13, 14 and 15***

Trench 13 and 14 were located along the east-west aligned path running alongside Broad Water and heading to the Chinese Bridge, the path then follows Broad Water in a southerly direction (Figs 8 and 22). Trench 15 was located across the north-south aligned part of this path (Figs 9 and 22).

Trench 13 targeted the edges of the current path to determine if an earlier path might have extended to either side. As it was not possible to dig through the existing track, the trench was excavated in two segments, one at each side. The northern segment of Trench 13 revealed that the edge of the current path extends underneath the turf for a further 500mm. No other layers consistent with path material were encountered, although the deposits were heavily disturbed by tree roots.

The location for Trench 14 was chosen to verify the southern edge of the path at this location. The First Edition OS map depicts several lines here and it is not clear which parts of the map show hedge lines and which depict paths. The situation is further confused by the presence of an existing hedge which did not exist at the time of the map. Path deposit (38) was recorded beneath the topsoil. It was over 1.5m wide and comprised compacted mid-orangey brown sandy gravel with occasional fragments of brick and medium stones. The southern edge of the path reaches into the boxwood hedge. The northern edge of the path was not located due to the presence of the current path. As a result of the location of the trench within the hedge line the thickness of the path deposit could not be determined.

Trench 15 targeted a probable path depicted on the first edition OS map leading along the eastern perimeter of the woodland panels and the east arm of Broad Water. The trench revealed a sequence of two path deposit beneath topsoil at a depth of c. 100mm.

The earlier deposit (27) was c.180mm beneath topsoil. It comprised compact light-yellow, brown sandy gravel and silty sand. It measured 260mm in thickness and was recorded with a minimum width of 1.2m beneath deposit (26). Deposit (26) represents the second path layer. It consisted of compacted mid-yellow, orange sandy gravel and was recorded with a thickness of 60mm and a width of 2.22m.

### ***Path Restoration (2016)***

(Figs 28 and 29)

Excavation to reveal the historic paths commenced with a number of investigation slots along the north-south aligned paths west of Ladies Lake. These were dug to a sufficient depth to reveal the top surface of the path.

Once fully revealed, paths G1111 and G1112 were shown to match the alignment indicated on the first edition OS map and the findings of the archaeological evaluation (Albion 2015). These paths both comprised compacted mid brownish orange, gravelly sand with small chalk inclusions. Historic Yew trees on both sides of the path determined the route of much of G1111 and the northern stretch of G1112.



Path G1113 was found to take a straighter north-south alignment than depicted on the first edition OS map (Fig. 28). To maintain consistency, the path was realigned to match the first edition OS map and, therefore, does not always follow the archaeological evidence. The path surface contained inclusions of London brick, suggesting that it had been repaired since being initially laid.

All three paths, G1111, G1112 and G1113, were revealed to be *c.* 1.8m (6 ft) wide, and have been reinstated as such.

Excavation in advance of path restoration between Broad Water and Ladies Lake (Figs 28 and 29) revealed paths G1119, G1127 and G1129 that were *c.* 2.75m (9 ft) wide. All three comprised a very compact mid brown orange sand gravel with small chalk and flint inclusions. A segment dug through the full thickness of path G1119 revealed a cut [1103], 0.5m deep, with steep sides and a flat base (Fig. 30). Two 0.1m thick make-up layers were present:

- (1104) - a firm mid grey brown silt clay, and
- (1105) - a firm mid orange brown clay silt with brick and chalk stone inclusions.

These were sealed beneath a path surface (1106), 0.35m thick, which pre-dated the current one (1100). The presence of a thicker laid path along Broad Water suggests heavier use, perhaps for carriages rather than foot traffic.

A circular feature [1107] was cut into the top of the surface of path G1119 (Plate 18). It measured *c.* 3.7m x 1.4m x 0.7m, and based on its irregular shape in plan is considered to be a tree throw, indicating trees once lined the path along the water-side.

During the excavation of path G1127, around the Chinese Bridge, a makeup layer (1128) was revealed which measured in plan 2.4m x 1.3m. It contained a large quantity of slag and glazed pottery. Analysis of recovered pottery revealed a pattern name of 'DORIC Star & CM', with the 'CM' referring to Charles Meigh of Staffordshire, dating to 1832-1850. It is, therefore, likely that this material represents a repair layer.

### **Brown's Column: paths**

#### ***Trench 16***

Trench 16 targets the path from Ladies Lake towards Brown's Column (Figs. 9, 10, 22). The excavation revealed a gravel path with a slight camber, at a depth of 70mm to the highest point of the path. The path itself consisted of compact mid-yellow, brown sandy gravel (69). It measured 2.5m in width and was 50-100mm thick.

#### ***Trench 29***

The path around Brown's column was previously investigated in 2009 (Albion Archaeology 2009a) (Figs. 9, 10). A gravel-based path, 250mm thick and extending at least 2m south of the column, was recorded during these



investigations. The 2009 investigations also show that Brown's column sits on a layer of concrete (Fig. 10).

Trench 29 revealed the same mid-brown silty sand and gravel deposit (65). This was exposed over a length of 3.5m. (north-south) These results indicate that a larger area around the column was laid out with a gravel surface.

### ***Path restoration 2016***

Four test slots were dug around Brown's Column to reveal the extent of circular path G1124 (Fig. 27, Plate 9). It was revealed to be larger in diameter than expected, c. 9.15m, with Brown's Column at the centre. Full excavation of the path revealed two phases of construction:

- G1123 - the earliest phase; rectangular in shape and situated 2.6m west and 3.1m east of Brown's Column. It comprised compacted mid brown orange sand gravel with occasional chalk and flint stones.
- G1124 – the later path; it overlay path G1123 and comprised a circular area of friable mid brown orange sand.

A northeast-southwest aligned gully [1125], with steep sides and flat base was found to be dug into path G1118, north of Brown's Column (Fig. 29, Plate 12). No dating evidence was identified, but it clearly post-dated the path.

The course of a new drainage pipe was positioned to the south of Brown's Monument, on an east-west alignment. The intention was to bridge the gap between two existing drainage ditches in order to improve drainage in this area of the Great Gardens. No archaeology was revealed whilst laying this pipe.

### **Graeco-Roman Altars: paths**

#### ***Trench 17***

Trench 17 was located over the path from the Graeco-Roman Altars towards Brown's Column in order to characterise and define the path in this area (Figs., 11, 23). Two segments were excavated either side of the current grass path. Remains of an earlier path were recorded in the southern segment. These comprised a layer of compact mid-red, brown sandy silt (44). The layer was 1.14m wide and 50mm in thick. This previous path is much narrower than the current path and runs along its southern edge. The path remains were located at a depth of 100mm, directly beneath the current turf. The path overlay a clay-based make-up deposit.

#### ***Trench 18 and 19***

Trenches 18 and 19 were located over two aspects within the round holding the five Graeco-Roman Altars (Figs 11 and 23). They were placed to identify a path round the perimeter of the round. Trench 18 was excavated across the northern perimeter of the round with a north-south orientation and Trench 19 on its southern side with an east-west alignment.



Previous excavations within this area (Trenches 4a, 4b, 4c, Dawson 1998) revealed sand-based paths around the perimeter of the round.

In Trench 18 path remains (34) were located at 250mm below both topsoil (turf) and a levelling deposit (33). The path remains (34) consisted of mid-orange, brown sandy gravel which survived in patches only. The width of the path is likely to have been more than 1.35m. The remains of the gravel deposit was >50mm thick.

The 120mm thick levelling deposit (33) above the path is characterised by mid-grey, brown sandy clay mixed with small stones and chalk flecks, and is likely to be associated with a design change within the round; possibly indicating that the path encountered belonged to an earlier phase of garden design.

Trench 19 revealed two probable path deposits beneath topsoil. Layer (30) which consisted of mid-grey, brown sandy clay with gravel and chalk inclusions, is the obvious path deposit. It was 60mm thick and 3.8m wide. Less obvious is the earlier deposit (29), which comprised friable mid-orange, brown sandy clay and silty sand with occasional stones. Deposit (29) was 90mm thick and was recorded over a minimum width of 2.1m beneath layer 30. Layer (29) is similar to path (44) in Trench 17.

### ***Path Restoration 2016***

(Fig. 29)

During the excavation of paths G1114, G1115 (Plate 16) and G1116 (Plate 15) around the Graeco-Roman Altars two differing path compositions were revealed, though both were probably contemporary. The surfaces comprised:

- G1114 and G1116 = friable mid brown orange silt sand with ironstone flecks,
- G1115 = compacted mid brown orange sand gravel.

It is likely that the reason for the contrasting surface materials was a design feature to make the main circular path around the central altar stand out from the others. G1114 and G1116 were heavily rutted due to wet conditions, but their extents were clear in plan. All three were found to be *c.* 2.75m wide (9ft) and consistent with the majority of paths in the North-east Great Gardens.

Based on the first edition OS map paths G1114 and G1116 ran northeast to southwest from the central altar. Further excavation, however, revealed that they had not been placed at right angles to the central altar and so their position was altered slightly to match the archaeological evidence.

In addition to the original plan, two seating areas, *c.* 2.75m x 1.35m, were created on the north and south sides of path G1115. No archaeological remains or layers were encountered in these areas.



At the west end of path G1114 a previously undiscovered land drain was revealed, aligned northwest-southeast. Flat peg tiles (1122) had been placed on top of the pipe and the dating of these (1600-1700) suggests they may have derived from the original Wrest Park house or associated buildings (Plate 13).

***Lady Duchess Ride***

A test segment positioned at the east end of path G1116 was extended eastwards along Lady Duchess Ride (Fig. 29, Plate 14). This revealed a compact gravel path surface that appeared to lead southwards down the Ride. Prior to this it had been assumed that the surface of Lady Duchess Ride had been grassed.



## 2.8 The Finds

A small assemblage of artefacts was recovered from the most recent investigations at Wrest Park. A short description and, where possible, date range is provided below. Most finds were collected from the topsoil layers and are therefore likely intrusive from other sources.

### Archaeological Evaluation 2015

The two pieces of architectural stonework, comprising roll moulding with hollow chamfer either side cannot be closely dated; roll moulding and hollow chamfers were used in the medieval and later periods. Roll moulding is frequently used in doorways and windows, or as a string course, but in the instance of the example from context 32 this use is unlikely due to the fact that both sides and the back are finely finished. The roll moulding from context (23) (dumped material within Trench 12) has what appears to be a lead joint at one end indicating this was part of a larger, composite piece.

| Context         | Trench | Material                         | Object  | Date      |
|-----------------|--------|----------------------------------|---|-----------|
| 10<br>(topsoil) | 3      | Glass<br>Glass<br>Glass<br>Glass | Olive green wine bottle base and kick (Noel Hume type 19?)<br>Olive green wine bottle lower wall and start of base<br>Olive green wine bottle neck/shoulder fragments<br>Olive green wine bottle body sherd | 1750-70   |
| 23              | 12     | Stone                            | Roll moulding with hollow chamfer either side (Limestone)   | -         |
| 31              | 15     | Glass                            | Clear, colourless window glass  | -         |
| 32<br>(topsoil) | 10     | Stone                            | Roll moulding with hollow chamfer either side (Limestone)   | -         |
| 36              | 13     | Iron<br>Bone                     | Flat rectangular headed nail<br>Whittled mammal long bone   | -         |
| 37<br>(topsoil) | 20     | Copper alloy                     | Flat disc button with alpha loop on reverse   | 1800-1900 |

**Table 1:** Finds assemblage from Archaeological Evaluation in 2015

### Archaeological Monitoring 2016

A number of artefacts were recovered from the Bath House pond and from the area of the Great Gardens East during path restoration work. They were taken back to the offices of Albion Archaeology, St Marys Church, Bedford, where they were cleaned and examined by Albion's pottery and artefact specialists (Jackie Wells and Holly Duncan). The finds will be returned to Wrest Park upon completion of the report and transfer of the project's archive. All finds have been summarised in the Table 2 below.



| Context                   | Material     | Object  | Date      |
|---------------------------|--------------|---|-----------|
| 1008                      | Worked wood  | Plank. Incomplete, sawn plank of rectangular section (tangentially sawn). Part of Revetment G1032   | -         |
| 1012                      | Worked stone | RA10 Chamfer/splayed corner with ledge-like projection at 45 degree angle from chamfer (Limestone). From Bath House pond.   | -         |
| 1012                      | Concrete     | RA11 Paving/flooring. Concrete. Upper surface smoothed flat. The concrete is off-white yellow in colour with frequent angular fragmented slate-like stone. Recovered from the Bath House Pond | -         |
| 1122                      | CBM          | Flat roof tile (peg tile)   | 1600-1700 |
|                           | CBM          | Flat roof tile (peg tile)   | 1600-1700 |
| 1128<br>(From path G1124) | Pottery      | Modern plant pot rim  | -         |
|                           | Pottery      | Large vessel (tureen) with hor handle   | 1800-1850 |
|                           | Pottery      | Dish base with pattern name 'DORIC Star & CM' set in a patterned cartouche.   | 1832-1850 |
|                           | Pottery      | Plate with gently scalloped rim and blue transfer floral design   | -         |
|                           | Pottery      | Rim with brown transfer floral design   | -         |
|                           | Pottery      | Soup bowl (?) with gently scalloped rim and blue transfer design. DORIC Star pattern  | -         |
|                           | Pottery      | White earthenware plate with gently scalloped rim and embossed and gilt decoration  | 1800-1850 |

**Table 2:** Finds assemblage from archaeological monitoring 2016



The following three tables (Table 3 - 5) provide a summary of the paths identified in trenches excavated as part of the 2015 archaeological evaluation. Table 4 has been updated to show the results of the full excavation of paths in the North-East Great Gardens.

| Trench                   | Type of path             | Below ground level | Width          | Thickness      | Description  |
|--------------------------|--------------------------|--------------------|----------------|----------------|--|
| <b><i>Bath House</i></b> |                          |                    |                |                |  |
| 1                        | Sand-based               | 100mm              | 1.05 – 1.1m    | 50mm           | Compacted mid-yellow, brown silty sand with occasional small stones; edging stones present   |
| 2                        | Sand-based               | 100mm              | 1.05 – 1.1m    | 50mm           | Compacted mid-orange, brown silty sand with occasional small stones; edging stones present   |
| 3 (layer 8)              | Sand-based               | 80mm               | 2.7m           | 60mm           | Compacted light brown, grey silty sand and gravel  |
| 3 (layer 9)              | Sand-based               | 86mm               | At least 1.66m | Not determined | Compact mid-orange, brown clayey sand and gravel   |
| 4                        | Sand-based (some stones) | 200mm              | 910mm          | 110mm          | Friable mid-orange, brown silty sand with occasional small stones  |
| 5                        | Sand-based (some stones) | 200mm              | 1.8m           | 110mm          | Friable mid-orange, brown silty sand with occasional small stones  |
| 6                        | Sand-based (some stones) | 130mm              | 1.13m+         | 200mm max.     | Possible path layer. Compacted mid-yellow, brown silty sand with occasional small stones (truncated at SE end by root disturbance) |

**Table 3:** Bath House Area: summary of path layers





| Path number | Trench           | Type of path                 | Below ground level | Width          | Thickness      | Description  | Results of Path Restoration 2016   |
|-------------|------------------|------------------------------|--------------------|----------------|----------------|--|--|
| G1129       | 10<br>(layer 26) | Gravel-based                 | 200mm              | 2.22m          | 60mm           | Mid-yellow, orange sandy gravel  | Compact mid brown orange sand gravel with moderate small flint and chalk stones.                       |
|             | 10<br>(layer 27) | Sand-based (some stones)     | 260mm              | <or= 2.22m     | 260mm          | Friable, mid-brown, yellow silty sand with occasional small stones                               | Not seen.  |
| G1111       | 11               | Sand-based containing stones | 150mm              | 2.5m           | Not determined | Compact mid-orange, brown, silty sand with frequent small stones, including some chalk fragments | Loose mid brown orange gravel sand with occasional flint and chalk stones.                             |
|             | 12               | No path identified           |                    |                |                |  | Path doesn't extend to this location   |
| G1129       | 13               | Gravel-based                 |                    | 2.82m          |                | Edge of existing path defined but no earlier path identified                                     | Compact mid brown orange sand gravel with moderate small flint and chalk stones.                       |
| G1127       | 14               | Gravel-based                 | 230mm              | Over 1.5m      | Not determined | Compact mid-orange, brown sandy gravel with occasional fragments of brick and medium stones      | Compact mid brown orange sand gravel with moderate small flint and chalk stones.                       |
| G1119       | 15<br>(layer 26) | Gravel-based                 | 100mm              | 2.22m          | 60mm           | Compact mid-yellow, brown sandy gravel mixed with silty sand                                     | Compact mid brown orange sand gravel with moderate small flint and chalk stones.                       |
|             | 15<br>(layer 27) | Gravel-based                 | 180mm              | Min width 1.2m | 260mm          | Compact light-yellow, brown sandy gravel mixed with silty sand                                   | Not seen.  |
| G1117       | 16               | Gravel-based                 | 240mm              | 2.5m           | 50-100mm       | Compact mid-yellow, brown sandy gravel   | Compact mid brown orange sand gravel with moderate small flint and chalk stones. Moderate root damage. |
| G1116       | 17               | Sand-based                   | 100mm              | 1.14m          | 50mm           | Mid-red, brown sandy silt  | Friable mid brown orange silt sand with moderate ironstone flecks.                                     |
| G1115       | 18               | Gravel-based                 | 250mm              | <1.35m         | >50mm          | Mid-orange, brown sandy gravel   | Compact mid brown orange sand gravel with moderate small flint and chalk stones.                       |
| G1115       | 19               | Sand-based (some             | 120mm              | 3.8m           | 60mm           | Mid-grey, brown sandy clay with  | Compact mid brown orange sand  |



|                |                  |                          |       |       |       |   |   |
|----------------|------------------|--------------------------|-------|-------|-------|---|---|
|                | (Layer 30)       | stones)                  |       |       |       | gravel and chalk inclusions                                 | gravel with moderate small flint and chalk stones.  |
|                | 19<br>(Layer 29) | Sand-based (some stones) | 120mm | 2.1m  | 90mm  | Friable mid-orange, brown silty sand with occasional stones | Not seen.   |
| G1123<br>G1124 | 29               | Gravel-based             | 100mm | <3.5m | 250mm | Mid-brown silty sand and gravel                             | Compact mid brown orange sand gravel with moderate chalk and flint stones. Slight rooting damage. |

**Table 4:** North-east Great Gardens: summary of path layers



| <b>Bowling Green</b> |                    |          |           |          |   |
|----------------------|--------------------|----------|-----------|----------|---|
| 22                   | No path identified |          |           |          |   |
| 23                   | No path Identified |          |           |          |   |
| 24 (layer 39)        | Gravel-based       | 120mm    | 3.6m      | 70mm     | Compact mid-brown, grey sandy gravel  |
| 25 (layer 39)        | Gravel-based       | As above | As above  | As above | As Above  |
| 26 (layer 39)        | Gravel-based       | As above | As above  | As above | As Above  |
| <b>Yew Quarters</b>  |                    |          |           |          |   |
| 20                   | Sand-based         | 70mm     | 2.1m      | 100mm    | Firm mid-brown, yellow silty sand   |
| 21                   | Gravel-based       | 200mm    | 2.3m      | 150mm    | Compacted mid-yellow, brown sandy gravel  |
| 27                   | Sand-based         | 120mm    | Min. 1.2m | 90mm     | Firm mid-yellow silty sand  |
| 28                   | Gravel-based       | 100mm    | >1.10m    | 120mm    | Two gravel-based deposits separated by levelling layers suggesting some form of surface within rectangular clearing |

**Table 5:** Bowling Green and Yew Quarters: summary of path layers



### 3. CONCLUSIONS

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#### 3.1 *The Gardens*

##### **The paths**

Wrest Park has been subject to constant landscaping and re-design which has often led to significant changes to the layout of the park. Despite this many of the paths are recognisable through several phases of the park's history. However, continual re-use, restoration and even periods of neglect, will have caused changes to alignment, width and surfacing material. As a result the interpretation of deposits encountered within relatively small trenches is always subject to a degree of uncertainty.

Trenches 1-6, to the west and north of the Bath House and its pond, confirm the existence of pathways depicted on the first edition OS map. All the paths in this area were constructed of a sand-based material placed directly onto the underlying deposits. The paths revealed by Trenches 1, 2 and 5 directly overlay the peat deposits, more fully recorded during the augering work, whilst the paths in Trenches 3 and 6 in overlay more mixed subsoil deposits.

Trenches 10-13, were located on the paths around the northern end of Broad Water, on its southern side. These generally appear to correlate with the paths depicted on the first edition OS map, although the geo-referencing in this area was slightly more unreliable. Trench 11 recorded a path identified by a sand-based layer containing medium stones, including some chalk. This was slightly to the west of the mapped path compared to the best fit overlay used. Trench 12 did not yield any path or other external surface, but it did indicate a degree of later disturbance and dumped material in this area which may have removed any evidence of previous paths. Trench 13 more fully exposed the edges of the existing path in its northern segment. The path did not continue into the southern segment of the trench, suggesting that the southern edge of the existing path has been in its existing location throughout its use

The earliest record for the change in path layout in the area of Trenches 10 -13 is recorded on the 1829 sketch (Fig. 4). Here De Grey depicts a similar layout to the OS map (Fig. 9). Prior to this, both the Lawrence (Fig. 2) and the Rocque map (Fig. 3) show Broad Water as the Mill Pond and John Duell's Canal, with Trench 13 located in the vicinity of an east-west path leading from the gardens of the former house towards the Mill Pond. Trenches 10 – 12 are located on, or close by, paths within the main gardens.

Trenches 14, 15 and 16 were located over the paths to the west of Broad Water and south of the Chinese Temple. Here the similarity in the depiction of paths and edging on the first edition OS map makes it difficult to pinpoint the path from a cartographic point of view. On the ground the presence of a hedge on a different alignment to that shown on the OS map further confuses the interpretation (Figs 8 and 9). All of these trenches recorded a compact, gravel-based path.



The path recorded in Trench 16, leading from Ladies Lake to Browns Column, is not as wide as depicted on the OS map (Fig. 9). The area has undergone several changes since the mid-18th century. The 1735 and 1737 Rocque plans (Figs. 2, 3) show a wide north-south aligned ride leading from Ladies Lake to the bastion at the southern border of the park. In the 18th century the location of Trench 16 would have been within a grass area to the south of Lady Duchess Canal. On De Grey's 1829 sketch plan (Fig 4) the path over which Trench 16 is located is shown curving round slightly to the east of the later 19th century path, by the time of the first edition OS map this path has been straightened out.

A trench excavated to the north of Trench 16 in 1988 revealed that the path as over 300mm thick and made up of hoggin comprising yellow sand and gravel. This path was more substantial than the mainly sand and grass paths revealed elsewhere and its thickness represented several phases of path construction and repair (Dawson 1989, 2001). The results of the current investigations revealed the same gravel-based material within the make-up of the path investigated in Trench 16.

A path has been present in the area of Trench 17 since at least 1735 (Fig. 3). The section of path recorded in Trench 17 is much narrower than both the current grass path and the path depicted on the first edition OS map. Although the best fit map overlays indicate that the path has shifted its location on a number of occasions, this is more likely the result of mapping inaccuracies and distortions than significant alterations to the location of the path. The path deposits identified in Trench 17 suggest that the former path was constructed from a sand-based material.

Trenches 18 and 19 identified internal paths in the round containing the Graeco-Roman Altars. The First edition OS map is not very clear on the layout of paths within the round and shows four trees on the inside (Fig. 11). The current excavations and earlier investigations in 1988 (Dawson 1989) confirm the presence of a path, or a sequence of paths, around the outer perimeter of the round. However different phases of this path, in similar locations, pre-date the OS map. The area is shown as a round using the same conventions for paths on the 1719 map, whilst by 1735 the Rocque map depicts a path around the outer perimeter of the round. The perimeter path is shown at differing widths on the subsequent 1829 sketch and the first edition OS map. The current trenches located several probable sand-based path deposits, most surviving in patches only.

Trench 29 investigated the area around Brown's column at the head of a north-south woodland ride, and at the junction of both the path leading to Ladies Lake and that leading to the Graeco-Roman altars (Figs 11 and 23). Results showed that this area was surfaced with a gravel-based material (Figs 10 and 11). However, whilst the path leading to Ladies Lake was shown to be of a more substantial gravel construction along its full extent, Trench 17 suggested that the path leading to the Graeco-Roman altars consisted of a more sand-based material.



The trenches in the Yew Quarter (20, 21, 27 and 28) appear to correlate quite well with the paths depicted on the OS map (Fig. 7). Pre-19th century maps show a formal layout of this part of the garden, where the design base established then has prevailed until today. The only divergence is depicted on the 1829 de Grey sketch (Fig. 4). Here a winding, more naturalistic path is depicted to the east of Berceau Walk. This path is not shown on the OS mapping. A study of the maps shows that Trenches 27 and 28 were located fairly close to points where the path depicted on the de Grey sketch would have been crossed by the already established east-west paths that the current trenches were set to investigate. Part of the Berceau Walk was restored in the 1960s.

The first edition OS map shows the northern of the east-west paths, within a hard-edged boundary; the path located within Trench 27 is represented by the inner pair of dotted lines depicting the path. Trenches 20 and 21 confirmed that the existing paths mirrored the location of paths shown on the first edition OS map. The path recorded in Trench 21 was more compact and less sandy than that encountered in Trench 20 and 27 (Figs 7 and 19).

The path surrounding the Bowling green was investigated by Trenches 22-26 (Figs 6, 7, 19, 20). The three trenches around the Bowling Green itself (24, 25, 26) revealed the width of the former path; wider than the existing restored path.

Trench 22 was placed between the lake and the edge of the Bowling Green to locate a path from its south-east corner, towards the Yew Quarters as depicted on the first edition OS map. Excavation failed to locate any paths in this area, though it did reveal a gravel-based spread of material beneath turf. It is likely that the whole area was reworked during some of the more recent restoration and dredging works that took place in the park during the 1950s to 1970s.

### **Path restoration 2016**

The full excavation of paths in the Great Gardens East were able to expand on the findings of the evaluation. In the majority of cases the course of the paths and their widths matched the depictions on the first edition OS map.

## **3.2 Bath House Area**

### **Water systems in the Bath House area**

#### *The spring*

The 1719 Lawrence map shows a water feature in the Bath House area feeding into a ditch on roughly the same alignment as, and immediately to the west of, the current pond (Fig. 16). This ditch feeds into the Octagon Lake. Neither the Octagon Lake nor the water feature appears on the 1735/37 Rocque map. The De Grey sketch of 1829 labels the 'Chalybate Spring' in the vicinity of the Bath House cascade and suggests that the water body which includes the spring curves around the back of the existing cascade somewhere in the vicinity of Trench 6. Given what we now know about the hydrology of this



area, it is quite likely that other springs may have existed, though it seems most logical that the water features were all placed so that they could be fed from an active spring located in the vicinity of the current Bath House cascade.

Without regular maintenance springs would have a tendency to dry up or re-appear elsewhere requiring other solutions to maintain the supply of water.

The structure investigated in Trench 32 within the Bath House area (Fig. 16), is at the northern end of a ditch probably represented on de Grey's sketch as the western boundary of the grounds, but now infilled. It had been tentatively suggested that the marshy hollow at this end of the ditch might represent the location of the spring which would have fed the water features in this area. Further investigation showed this unlikely to be the case. A north-south aligned drain is shown entering a chamber north of the Bath House, before heading in a westerly direction via another chamber to the head of the now infilled ditch. The point where the drain discharges is recognisable as a hollow, even more waterlogged than the surrounding area. It seems likely that the structure is part of a culvert at the point at which various paths converge and which allowed piped water from elsewhere on the site to drain into the ditch.

### *Drains and water pipes*

In addition to the pipe that most recently fed the cascade, the current investigation revealed the location of two buried pipes, one of which was previously unknown (Figs 12, 15). A further two buried pipes are known from documents or previous work in the area.

A water-pipe drains into the head of the former ditch marking the western extremity of the low-lying area west of the Bath House and now marked by a marshy hollow. This pipe is shown on surveys of the park and its course is confirmed by the recent topographic survey and investigation of the drain chamber north of the cascade. This pipe would have had a drainage function and it is unlikely to have been directly associated with the spring or management of the water systems within the Bath House area. Although the pipe was damp, water was not flowing at the time of the survey, although the weather conditions were dry.

The pipe running beneath the mound to the north of the Bath House is designed to feed water into the Cascade and down into the Bath House pond. The source of the water that was fed through this pipe is not known. This makes it difficult to ascertain whether the pipe was designed to feed water from the spring to the cascade or whether it was a later solution inserted after the spring had dried up. The pipe leads off in a sharp north easterly direction, towards the yard area behind the Orangery. Without major excavation, it would be almost impossible to locate the pipe further along its course through archaeological trenching. Whilst it is always conceivable that the pipe turns sharply northwards somewhere beneath the mound above the cascade, the direction of the pipe suggests that it feeds water from somewhere other than the spring known to have existed here.



A previously unknown water pipe was revealed in one of the test pits excavated to inspect the Bath House foundations (Trench 30). The pipe appears to be an asbestos cement pipe typical of those used in the 1950s and 60s. Although this is a type of pipe designed to withstand pressure, it was probably re-used by the agricultural institution that occupied the site at the time (Marcus White *Pers. Com.*). This pipe is broadly aligned to the ? culvert identified at the northern end of the western ditch. It is likely that general movement of the seasonal wetting and drying of the soil will have caused the jointing to fail, allowing root intrusion and failure of the system.

The pipe revealed in Trench 30 is opposite another drain on the eastern side of the pond investigated in 2003 during previous attempts to improve drainage in this area. The drain exposed as part of these works was subject to a rapid archaeological investigation which recorded a capped culvert constructed of sandstone and tile within which was a drain constructed of clay pipes. The clay pipe drain was removed during the works and replaced with PVC piping. The site archive notes that initial drain clearance was being undertaken on the main outlet to the stream, via the Bath House pond.

The site photographs also show a pipe to the east of the path dividing the Bath House area from the marshy ground behind the Orangery. This pipe runs in a north-westerly to south-easterly direction between the Orangery and Old Park Water. Although outside the area being currently investigated, its presence is worth noting.

A plan from the 1970s, a copy of which was taken from previous research into the archive, shows the location of a proposed 6 inch PVC pipe. This pipe was designed to take water pumped from the Broad Water to the cascade in order to restore flow to the Bath House pond. Whether or not this pipe feeds into the existing outfall pipe is unclear as its precise location in the ground is unknown.

### **Planting and garden features in the Bath House area**

Trenches 7, 8 and 9 were excavated to investigate the shrubberies to the east of the Bath House pond. Trenches 7 and 8 contained larger stones similar to edging stones used for the path recorded in Trench 1 and 2, however in Trench 8 the stones are not *in situ* and have come from elsewhere (Figs 5, 12). It is always possible that stone in this area may have derived from the former house, although in this case none of the stone was worked, neither was there evidence of any mortar. More likely these stones were used as edging for paths or planting, possibly buried as a result of landscaping changes when the shrubberies shown on the first edition OS map were laid to grass.

A number of sections of edging stone mark the current planting in this area. The first edition OS map suggests that at its northern end the edge of the current planting correlates with the planting shown on the map and it is therefore possible that some of the stones in this area may have been left *in situ* from the earlier planting phase. More likely all of the existing stones represent a re-use of edging stones used to define the former planting area as shown on the first edition OS map. Unfortunately, excavation of Trench 7 in this area failed to clarify whether the stone edging in this area also represents the edging





for the earlier planting as depicted on the first edition OS map. Trenches 8 and 9 were located across the area of shrubberies and were designed to encompass an area both outside and inside the area of previous planting. Additional map regression during analysis of the results now seems to suggest that these trenches were slightly off-target with Trench 8 excavated within the former planting area but not quite crossing its boundary and Trench 9 excavated outside the planting area. Interestingly the deposits in each of these trenches were slightly different with the deposits in Trench 8 showing more similarity with those in Trench 7, than with Trench 9. This perhaps indicates the difference between areas of former planting (Trenches 8 and 7) and areas that were laid to grass. An edge picked up by the topographic survey in this location may represent the position of the original planting (Alexander *et al.* 2015).

An emergency watching brief carried out during works to clear drains in 2003 resulted in the excavation of a machine-dug trench across this area (Albion Archaeology 2003). Although the excavation of the trench was not observed and recording work focused on the drain that was being cleared, some sections were drawn of deposits above the drain and a series of photographs show the deposits through which the drain was cut (Fig. 13).

During the recent removal of a laurel hedge to the east of the Bath House pond edging stones were encountered that, in the absence of a corresponding path surface, probably indicate the presence of a former path in this location.

### **3.3 Orangerie Wetlands**

#### **3.4 The peat deposits**

In the absence of further work, it is difficult to provide conclusive comment on the peat bog identified as a result of the auger survey (Figs 12, 14, 15) and its full extent remains unclear. The area behind the Orangerie and around the Bath House has been low lying and boggy for many years and peat was noted in previous borehole logs, but the presence of a peat bog pre-dating the park was unexpected. The Bath House and its pond are clearly cut into the peat and it was also observed beneath the drier, grassy areas to its west and east. During 2006, the difficulty of driving boreholes through the disturbed ground beyond the western fence was noted. This area had been used for dumping material over a number of years. A successful bore hole was located adjacent to the stream and showed disturbed deposits containing re-deposited peat and clay. Although this re-deposited material may have been introduced from elsewhere, it could equally suggest that the peat extends at least this far westwards. Borehole 54 (Albion Archaeology 2006) confirms the presence of peat beneath the grassed area between the western ditch and the existing fence.

The excavation of the drainage channels in the Orangerie Wetlands was not deep enough to prove or disprove the presence of peat this far eastwards, but it was encountered in a pipe trench linking the wetlands and Bath House pond (Fig.25).



Bedfordshire's largest wetland the SSSI Flitwick Moor is located 4km to the west of Wrest Park, also along the River Flit, some Peat deposits were cut here as late as the 1960s, Pottery found below the peat at Flitwick indicates that the deposits were formed within the last 2,000 years.

The previous water feature and Octagon Lake in this area were only shown on Laurence's 1719 map; by the time of Rocque (1735/37) part of the Bath House area, including the probable location of the spring as an orchard. The extent of the orchard westward is just as likely to relate to the edge of the drawn map as the actual edge of the planting. However, its mapped extent southwards brings it in line with the former position of the yew hedge shown on the first edition OS map and still visible today. It is difficult to see how fruit trees would have been successfully grown in a presumably poorly drained area above a peat bog, even if extensive landscaping had built the ground level up. Without further investigation, the potential changes to the landscape, hydrology and environment as a result of the presence of the peat are, however, difficult to quantify.

### **3.5 Assessment of results**

The results of various pieces of work at Wrest Park show that the first edition OS map provides an accurate depiction of the location and dimensions of paths, garden features, areas of planting and even individual trees. When excavated, the character of the historic paths varies from clearly defined compact layers of sand and gravel, through to much more ephemeral layers of sand and more mixed deposits, often only identifiable through the presence of slightly more gravel or a harder more compact feel during excavation.

Evidence for the paths during the 2015 evaluation did not always exist where it they were expected, but failure to find a clear path does not necessarily mean that they did not exist. Often the surfaces have eroded meaning that the historic surface can only be described as broadly sandy or broadly gravelly. Use, erosion and re-instatement have also meant that the actual widths and thicknesses of the paths may not represent the historic dimensions. Many of the historic paths are still in use, although on a slightly different alignment, or with a slightly different width. Whilst it is possible to indicate the previous alignments and widths of various paths, it is not always possible to establish whether this relates to the path shown on the first edition OS map or another, earlier map. The trenches excavated as part of this project in most cases revealed layers that were thought to represent former paths shown on the first edition OS map. The path leading from the south-eastern corner of the Bowling Green and those adjacent to Broad Water were less successfully identified. In general the major paths were usually constructed of gravel whilst those within the gardens were usually of sand. It is possible that those paths identified through more compact layers containing slightly more gravel or sand than the surrounding deposits were mostly unsurfaced paths in between areas of shrubbery or planting. The trenching exercise has enabled a broad understanding of the paths within the area investigated.

Full excavation of the paths during the 2016 restoration work in the Great Gardens East has proved to be successful in finding the paths, establishing



their widths and course. The surfaces were patchy in places, but enough had survived to indicate that the path layout depicted on the first edition OS was generally accurate and that the widths based on this map were also correct: ranging from 1.8m (6ft) to 2.75m (9 ft).

An earlier path was also identified beneath Brown's Column (Fig. 27), which, based on its shape and position, pre-dates the relocation of the column to this location, sometime in the 1930s. At the same time a new circular path was laid that encompassed the column.

The water systems at Wrest Park and the way that they interact are complex and throughout the history of the park have proved difficult to manage. Various interventions have been made to improve drainage through the use of pumps, insertion of pipes and dredging. There is only partial documentary and survey evidence for the changes that have taken place and what information there is, is usually supplementary to other pieces of work and is often incomplete. Over the years a number of interventions to improve drainage have only been partially completed. A full assessment of the documentary evidence for the water systems at Wrest Park and, in particular, the various interventions that have been made in more recent times, would provide useful information for the planning of future work.

The current work has not successfully located the course of the pipe feeding into the Bath House cascade. The use of hand excavated trial pits within a scheduled site is only appropriate if the location and direction of the pipe can be predicted with some degree of accuracy. Once it was clear that the pipe which would once have fed water into the cascade was not linked to the chamber north of the cascade mound, but instead followed a more easterly direction towards the Orangery, locating a trench accurately further along its length became problematical. An alternative means of locating buried pipes would be more effective in this case.

Using a combination of documentary research, map regression and on site investigation, the other drains and water pipes in the vicinity of the Bath House have been more successfully mapped. In addition, a previously unknown pipe was revealed running in a roughly east-west direction to the close to the southern wall of the Bath House. Although a less destructive method of locating the pipe would generally be preferred, test pits along the projected alignment might in this case have a greater degree of success in establishing its route and direction of fall.

The augering undertaken by the hydrological engineers revealed the extent and potential significance of peat deposits that were previously recorded during hydrological works in 2006. The scale and focus of the 2006 work meant that the deposits were not recognised as particularly significant at the time. As the current work was also undertaken as a watching brief there was no opportunity for sampling of deposits, although the work was observed by a geo-archaeologist (James Rackham) who was able to provide comment on the deposits. The locations of boreholes and depths of deposits were recorded and described by the hydrologists. These are all consistent with the 2006 borehole



logs and deposits identified during the excavation of the structural trial pits, Trenches 30 and 31 (Fig. 15). It is clear that the peat pre-dates the garden, although its date of formation remains speculative until samples can be taken, assessed and dated. There are equally attestable alternative views as to whether the peat might have formed relatively quickly (*e.g.* medieval in date) or whether it was laid down in the more ancient past. However, without further information in relation to the date and formation of these deposits they should be seen as a potentially fragile and rare survival of a regionally significant past landscape. It is therefore important to establish the date and extent of the peat deposits through pollen analysis and C14 dating.

In addition to the peat deposits, the geo-archaeologist noted the presence of wood from a stake or post within the augered material from the edge of the Bath House pond. This is suggestive of some sort of revetment, possibly similar to that identified in previous work along the edge of Old Park Water (Albion Archaeology 2009). More recently in 2016, dredging of the Bath House pond revealed further lengths of timber revetment, on both sides of the pond. It has not been possible to establish how extensive the revetment was, but it is likely that if more lengths had existed they would have been visible during this work.

Dredging of the Bath House Pond also indicated that other than large stones, matching those used in the construction of the Bath House, cascade and bridge, any stray finds relating to the past use of the bath house were not present. If any had survived they had probably been removed during dredging of the pond in the 1960s.

The test pits either side of the Bath House showed that the foundations were built onto the gault clay. The test pits indicated the presence of a foundation cut for the Bath House backfilled with the arisings, thus creating mixed deposits containing some finds of brick, tile and glass. Dredging may remove evidence relating to the construction method and sequence of the pond and Bath House and whilst this will be difficult to devise a scheme of pre-works trenching to investigate this, careful observation during works would be required.

The initial findings of the auger survey suggested that the waterlogged area to the west of the Bath House was more complex than first thought and that as a result re-instatement of the western ditch would be unlikely improve drainage in this area. The proposed trenches across the ditch were not excavated. However, more recent discussions have indicated that a section across the ditch to include investigation of the possible head wall at its southern end is still required. Ideally this should be undertaken by a small mechanical excavator with allowance for hand digging around any structural elements uncovered. However, it should be noted that the nature of the deposits in this area may make the former edges of the ditch difficult to spot.



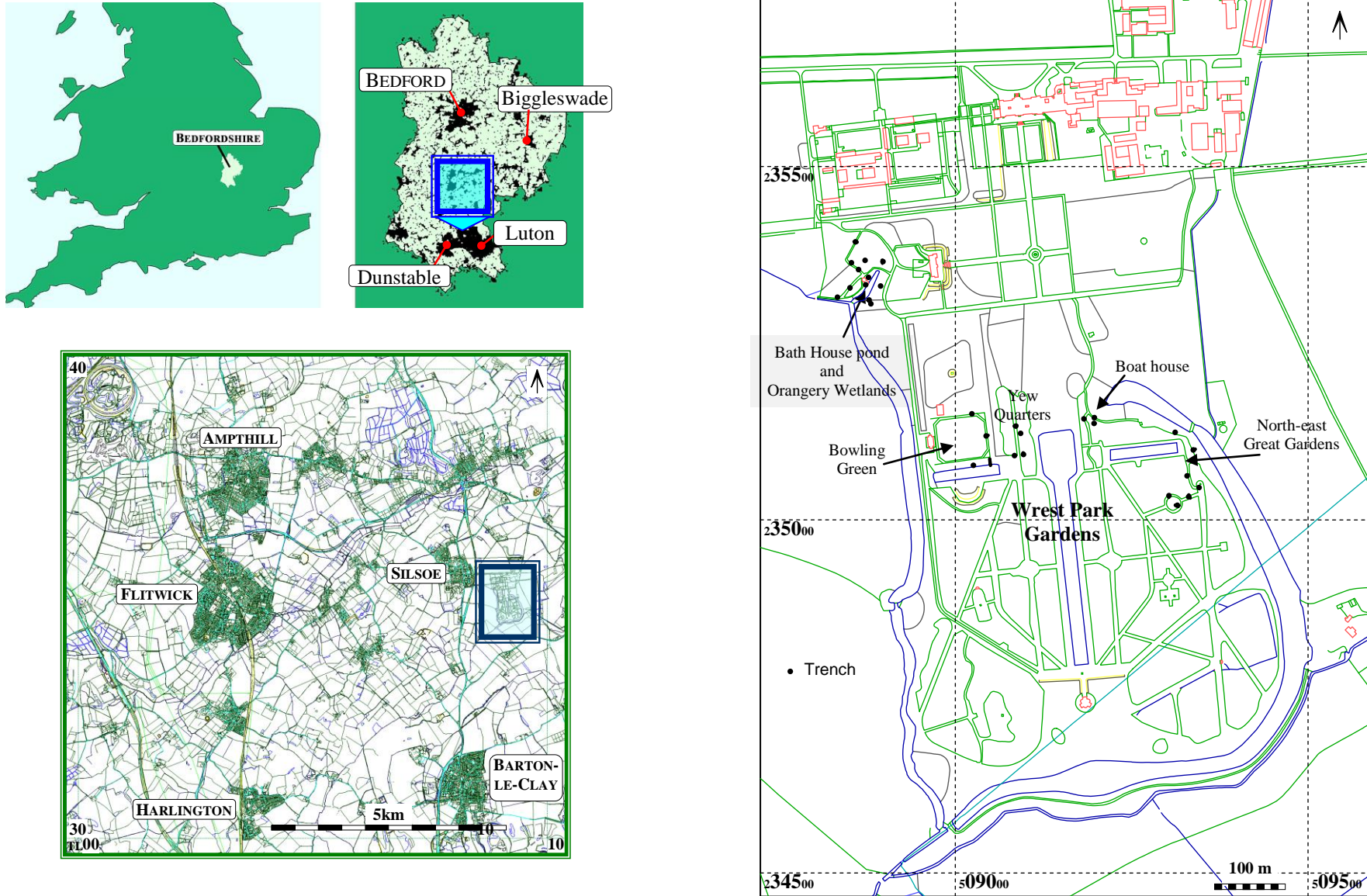
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Land Use Consultants, 1993 *Historical Survey of Wrest Park, Wrest Park  
Masterplan (2) for Restoration and Management*



**Figure 1: Site location**

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**Figure 2:** 1719 map showing position of trenches



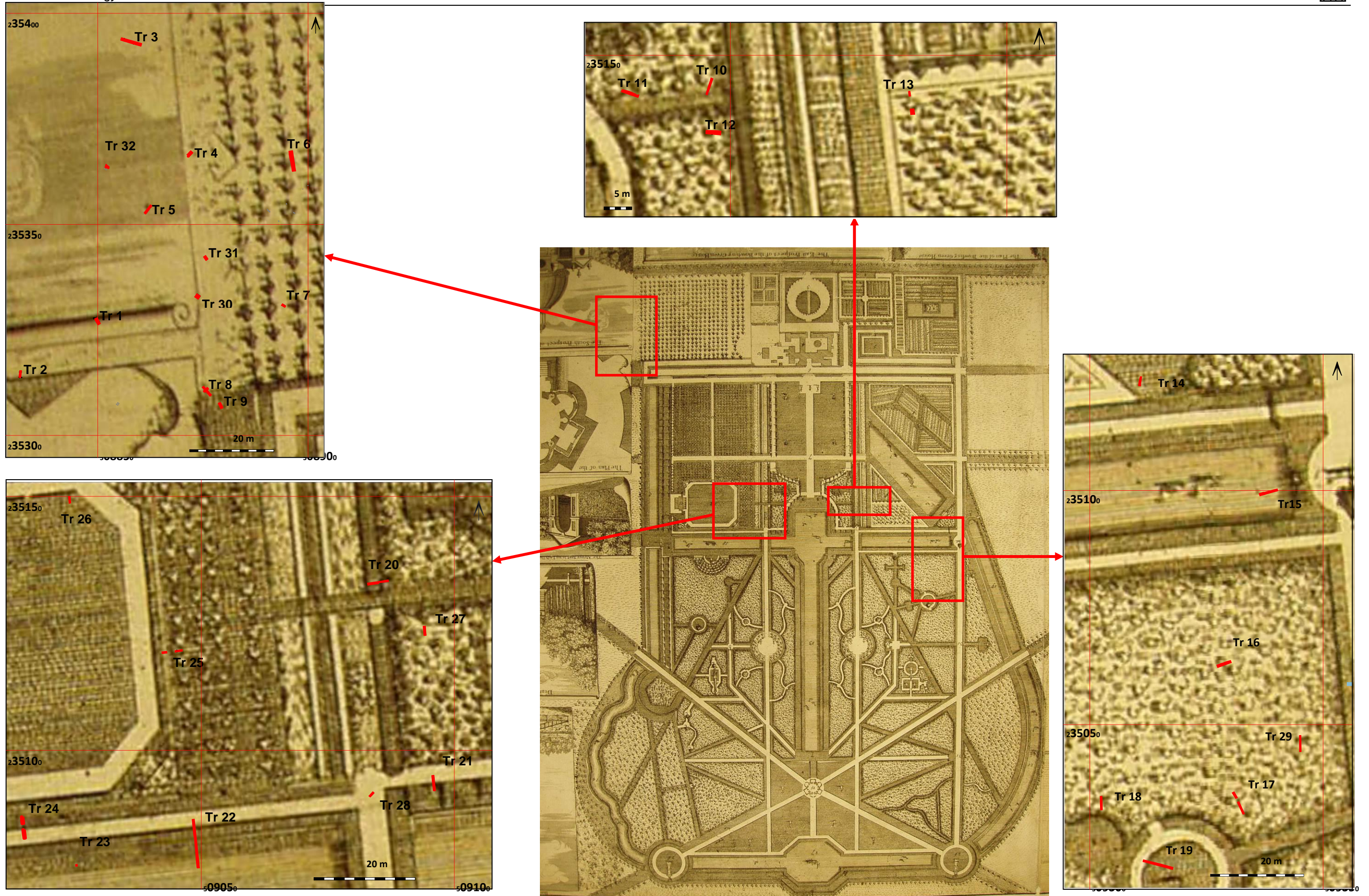


Figure 3: 1735 map showing position of trenches



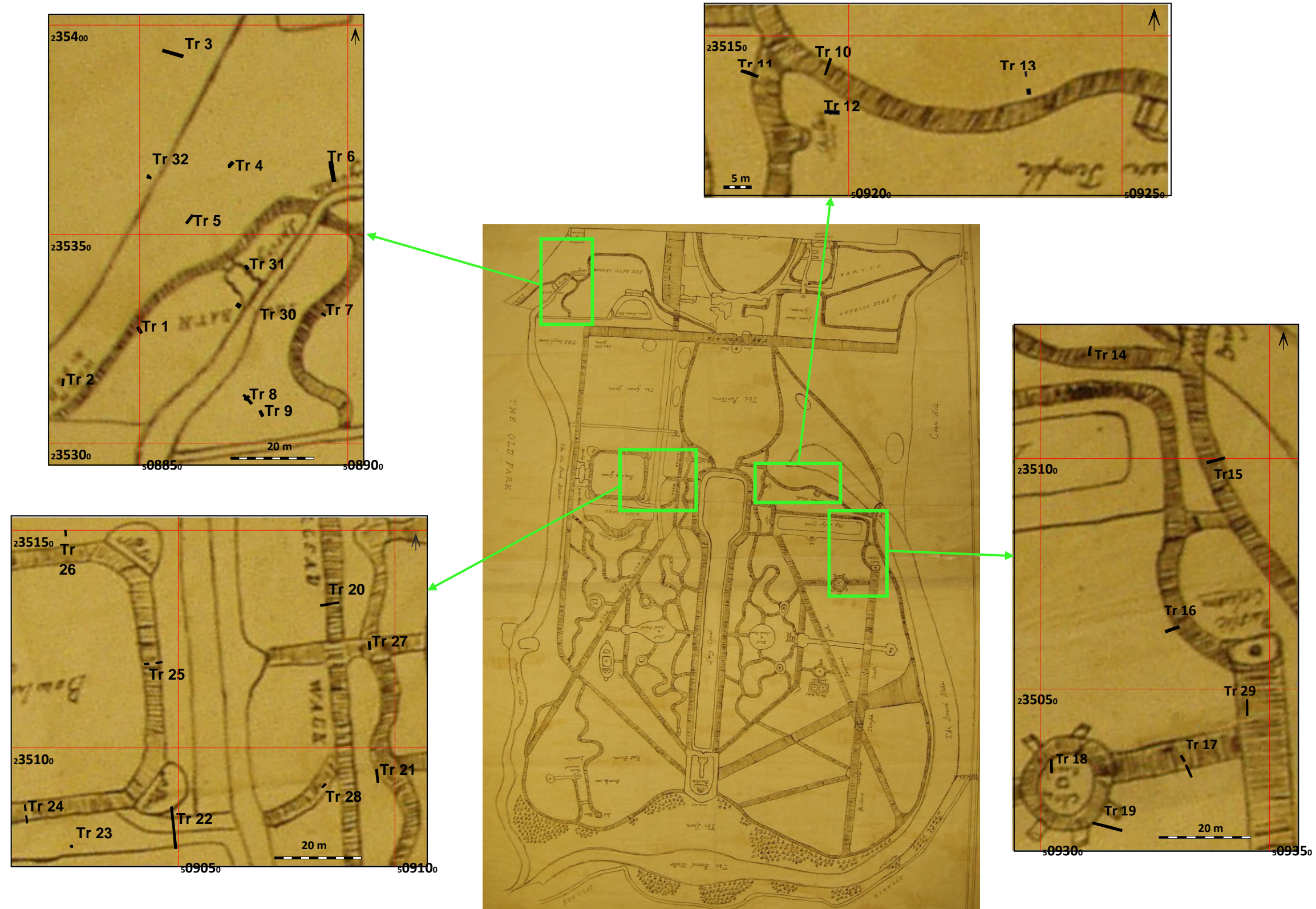
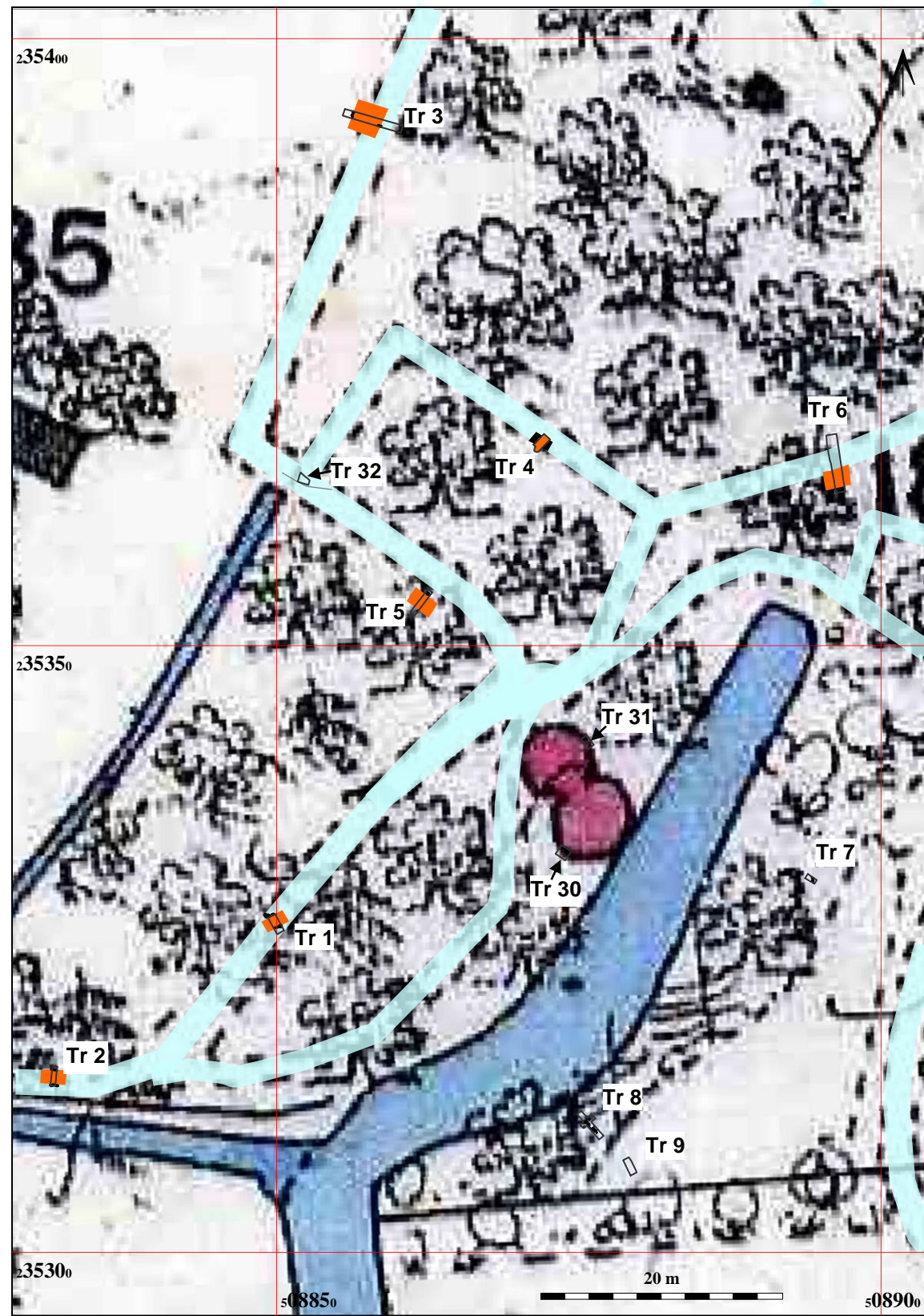


Figure 4: 1829 map showing position of trenches





- Path on 1<sup>st</sup> edition OS map (best fit overlay)
- Trench contains layers identified as path

**Figure 5:** Trenches in the Bath House area



Trench 1 (Scale 1m)



Trench 2 (Scale 1m)



Trench 3 (two photos joined) (Scale 1m)



Trench 4 (Scale 1m)



Trench 5 (Scale 1m)



Trench 6 (two photos joined) (Scale 1m)

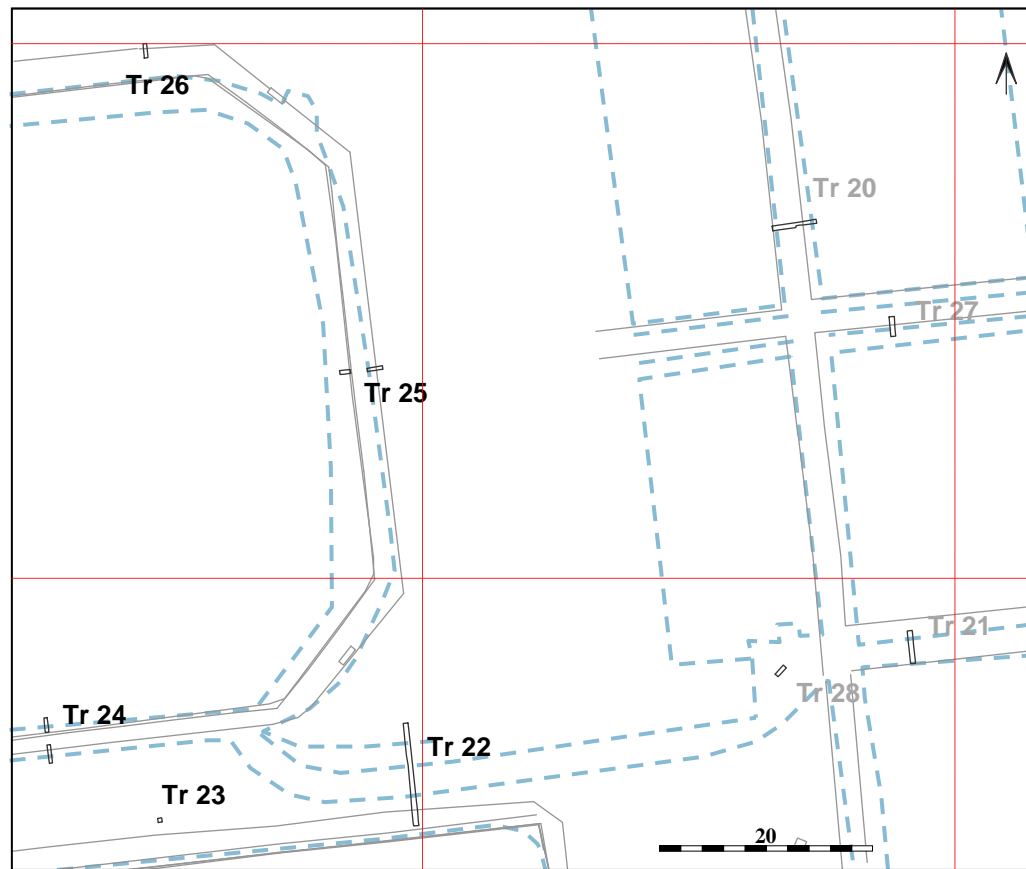


Trenches 8 (left) & 9 (below), (Scale 1m)



Trench 7 (Scale 1m)





Trench 22: a) General view looking south; b) west facing section north end; c) west facing section south end; 1m scale



Trench 24, west facing sections, 1m scale

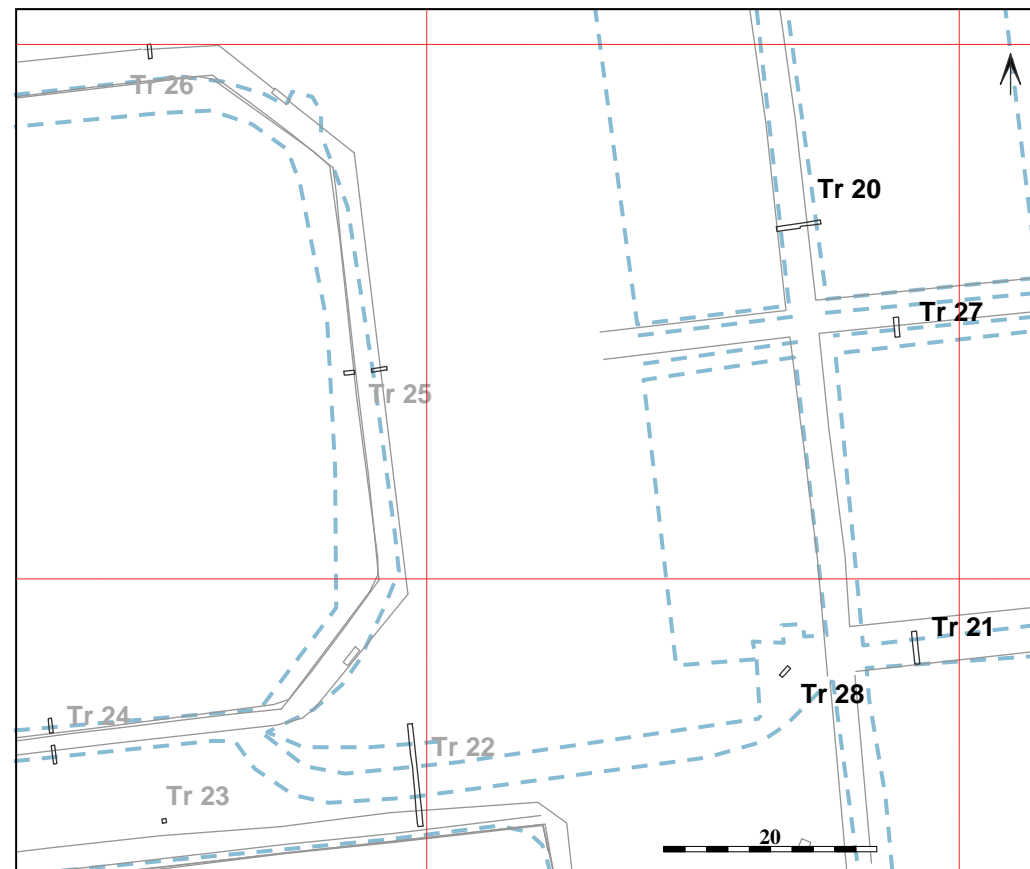


Trench 25, south facing sections, 1m scale



Figure 6: Trenches, Bowling Green (22 – 26)





Trench 20, south facing section, 1m



Trench 21, west facing section, 1m



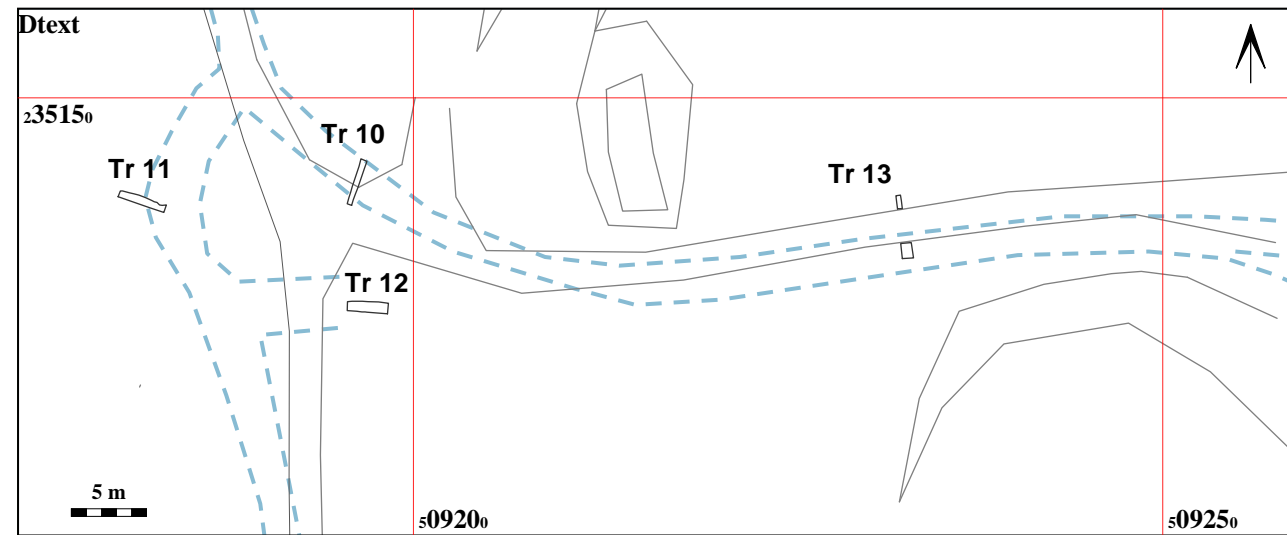
Trench 27, east facing section, 1m



Trench 28, south-east facing section,

**Figure 7:** Trenches, Yew Quarter (20, 21, 27, 28)





Trench 10, general shot looking north-east, 1m scale



Trench 11, general shot looking south-east, 1m scale



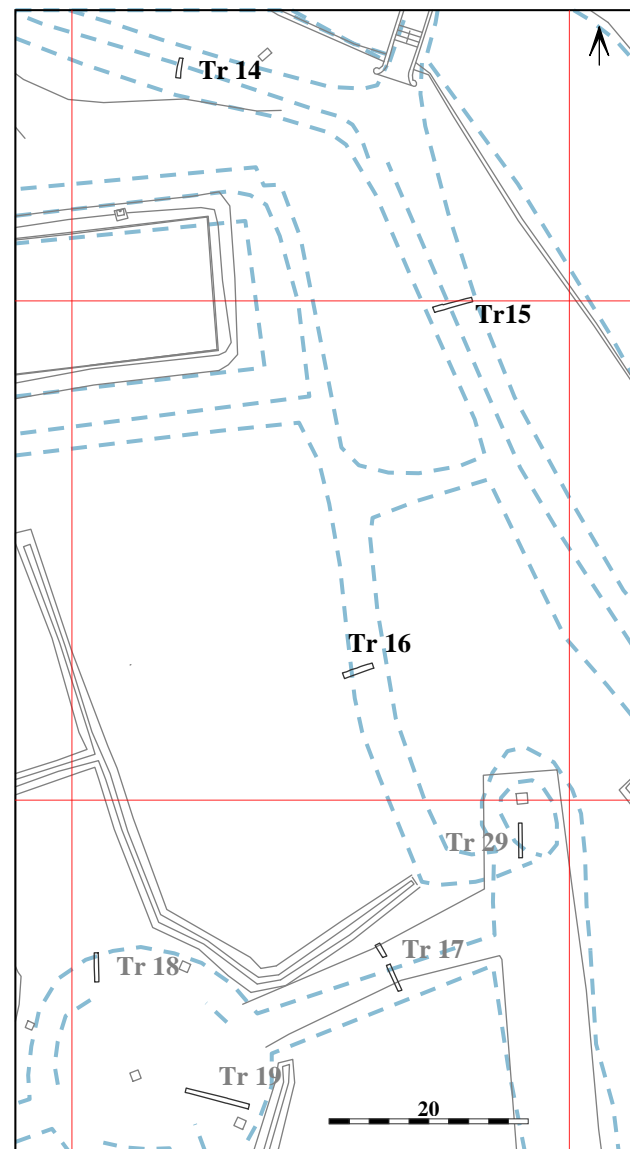
Trench 12, north facing section, 1m scale



Trench 13, east facing section, 1m scale

**Figure 8:** Great Gardens, paths near boathouse, Broad Water (Trenches 10-13)





Trench 14, west facing section, 1m scale



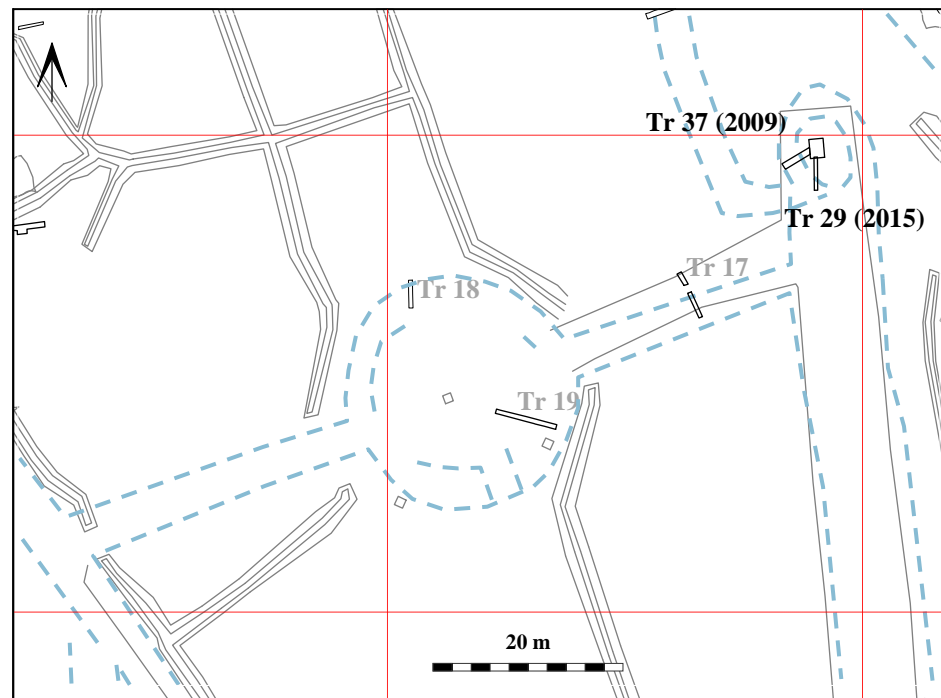
Trench 15, south facing section, west part, showing two gravel layers, 1m scale



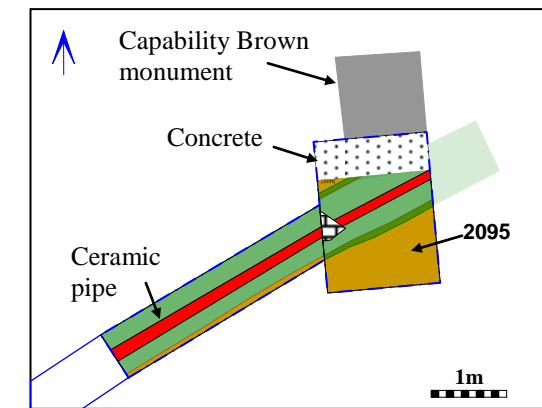
Trench 16, north facing section, 1m scale.

**Figure 9:** Trenches in Great Gardens between former boat house and Chinese Temple





Trench 37 after extension showing path layer 2095. Looking south west. Scale 1m (2009 evaluation)



Trench 37 (2009 evaluation)

- Trenches
- Ditches
- Path layers
- Cuts
- Cuts projected



Figure 10: Trenches around Brown's Column

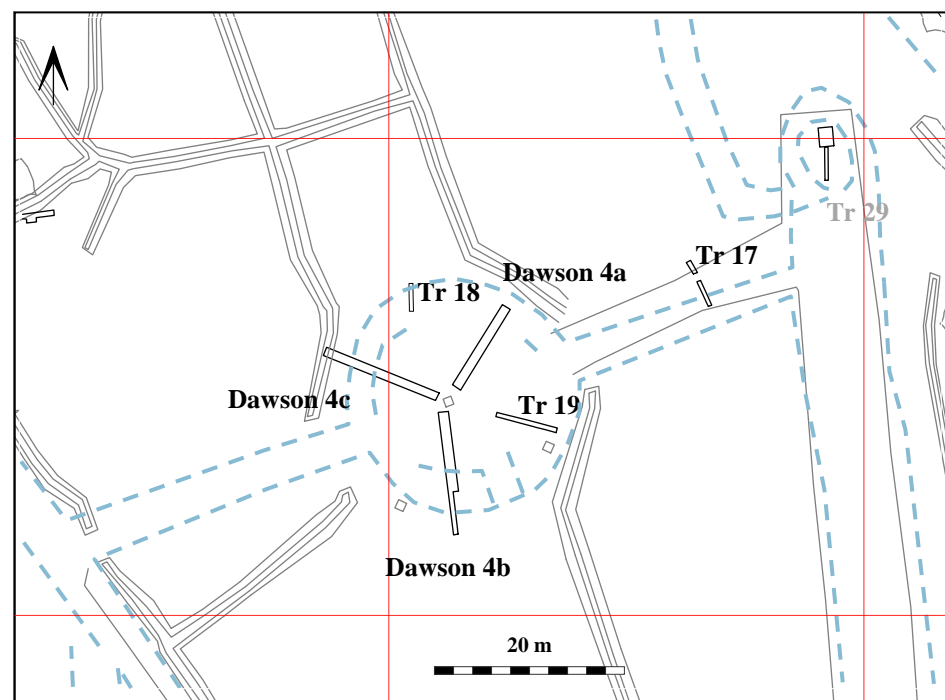


Composite photograph of Trench 37 and Capability Brown monument. Looking north. Scale 1m (2009 evaluation)



Trench 29 (2015 evaluation), looking east (west-facing section) Scale 1m





Trench 17: southern trench, south-facing (left), northern trench, west-facing (right)



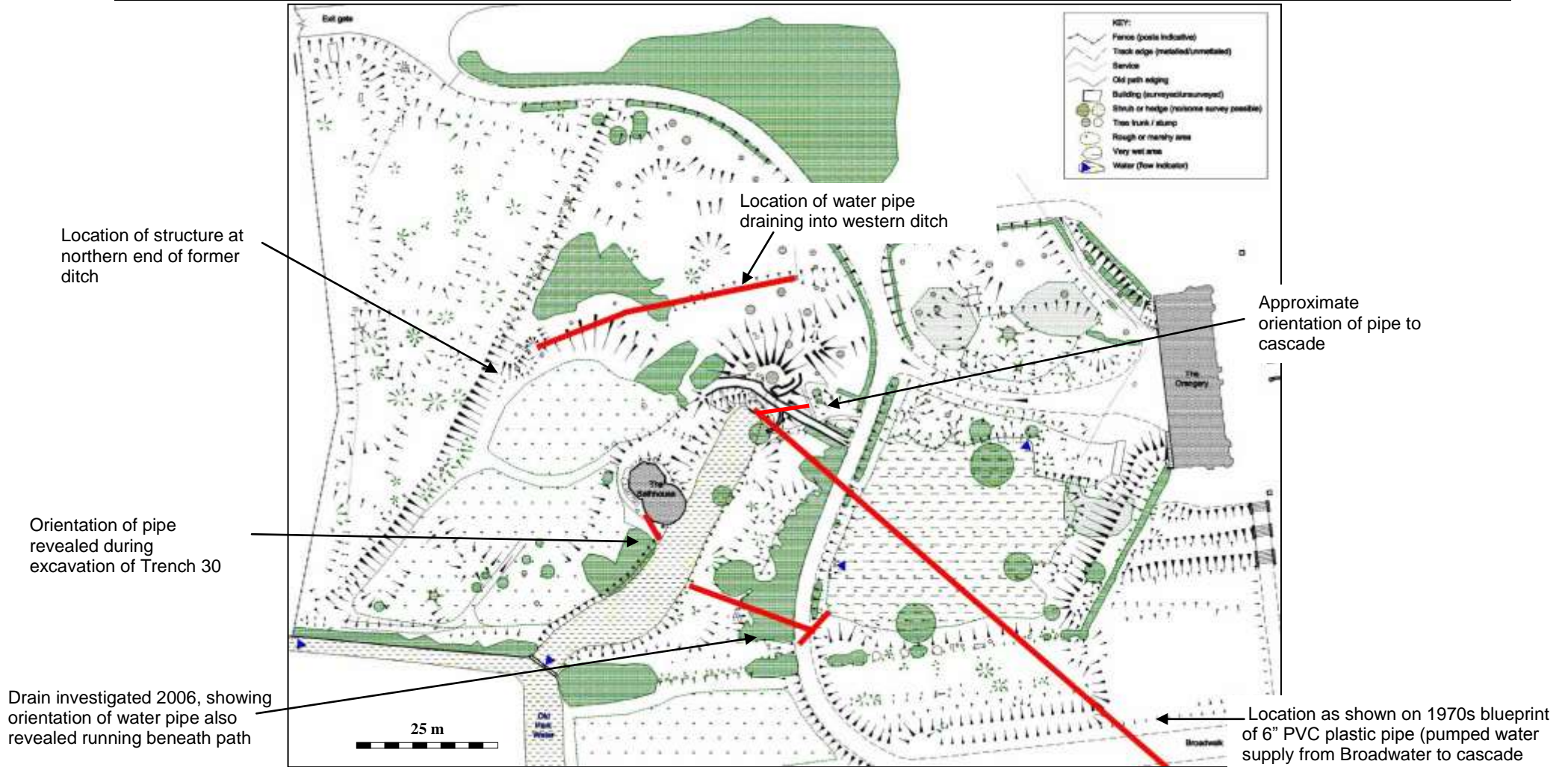
Trench 18, general shot, looking south, 1m scale



Trench 19, general shot looking south-east, 1m scale

**Figure 11:** Great Gardens, trenches in area of Greco-Roman Altars (Trenches 17 – 19)





**Figure 12:** Piped water supply, drains and other features in Bath House area  
(Base plan Historic England topographic survey)





Location of drain revealed in 2003



Drain revealed in 2003, looking towards Bath House pond



Drain revealed in 2003, looking towards path and orangery



Drain revealed in 2003, looking towards path and orangery

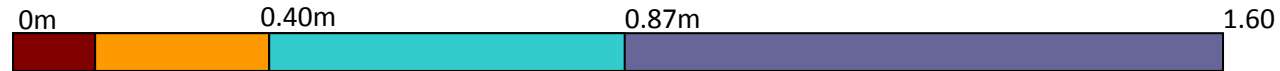
**Figure 13:** Drain revealed in 2003, east of Bath House pond



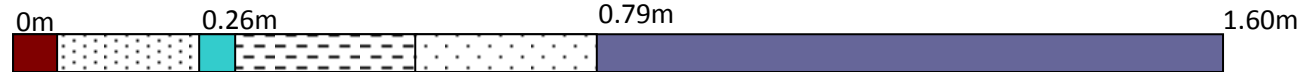
AG 52 (TL 08875/35357)



AG 53 (TL 08838/35329)



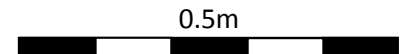
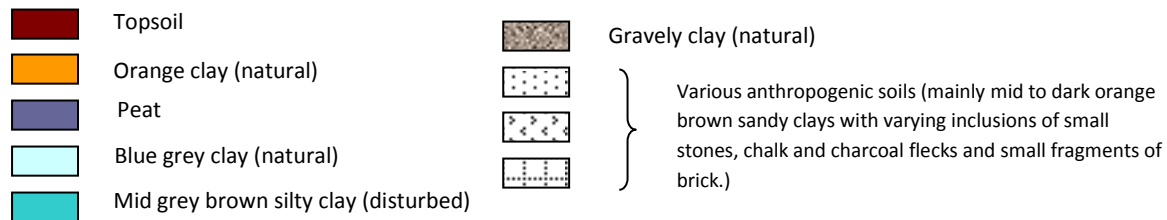
AG 54 (TL 08826/35367)



GW 60 (TL 08793/35358)



**Key to borehole diagrams**

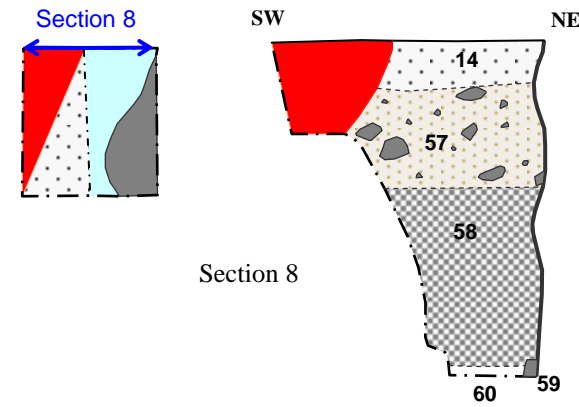


**Figure 14:** 2006 Borehole logs, Bath House area

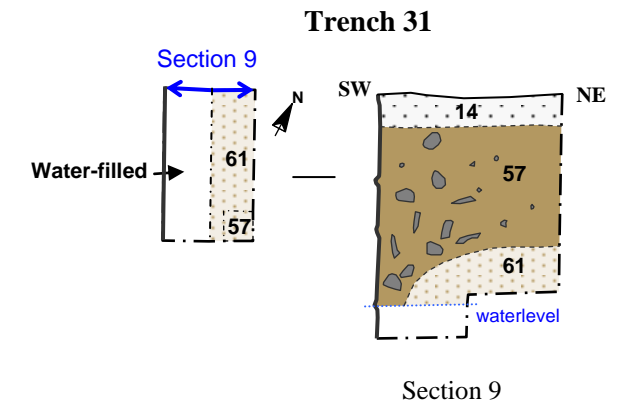




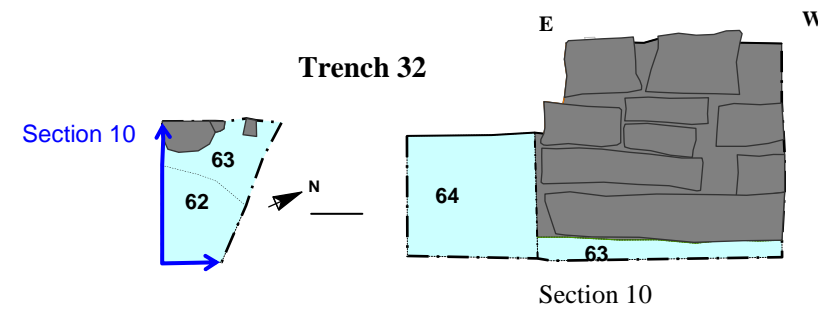
Trench 30, south-east facing section, 1m scale



Trench 31: south-east facing section, 1m scale;



Trench 32, north-east facing section of headwall section, 1m scale

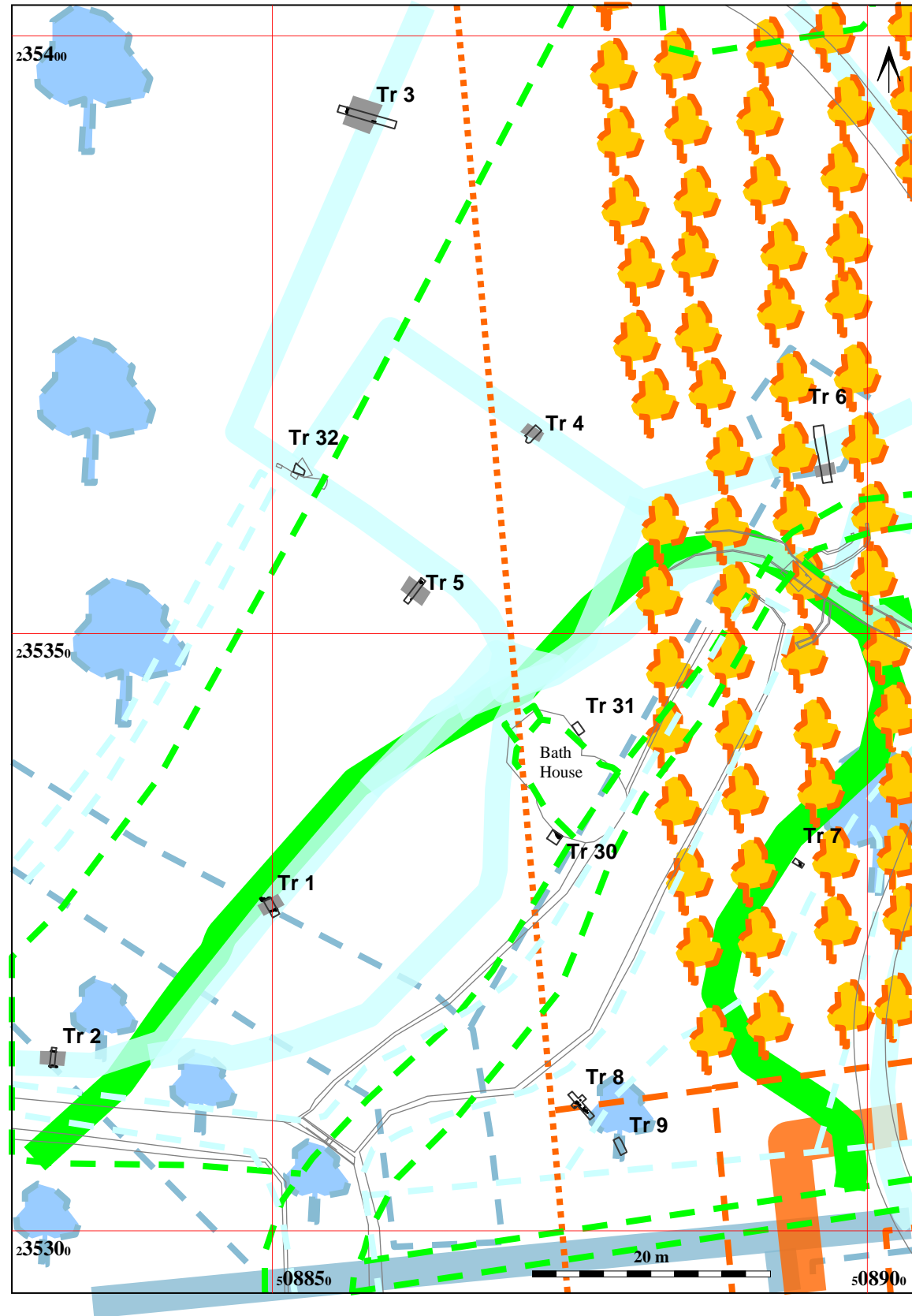


Trench 31: Bathhouse foundations at location of crack 500mm scale

- Topsoil
- Gravel spread
- Gravel path
- Other layers
- Natural
- Stones
- Fragmented stones
- Root disturbance
- Pipe trench
- Silt
- Peat

**Figure 15:** Structural Investigation Test Pits (trenches 30-31) and western ditch (trench 32), Bath House area

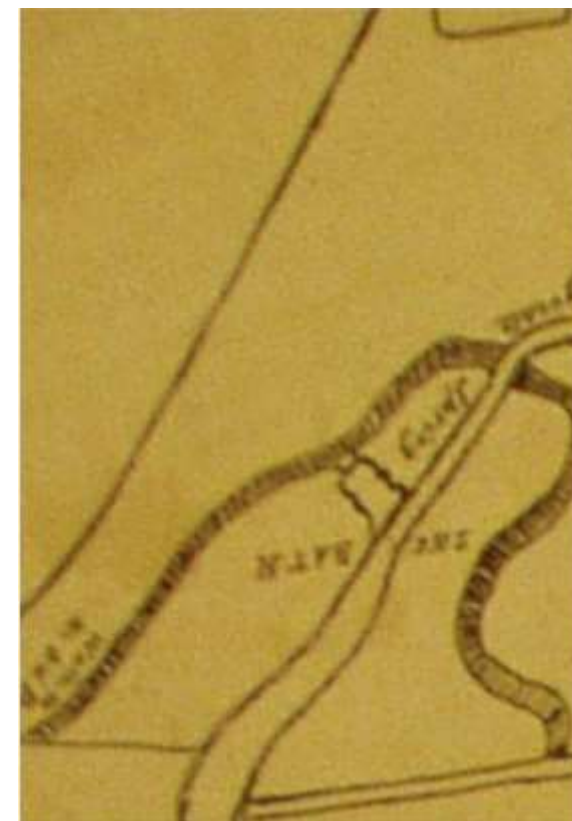




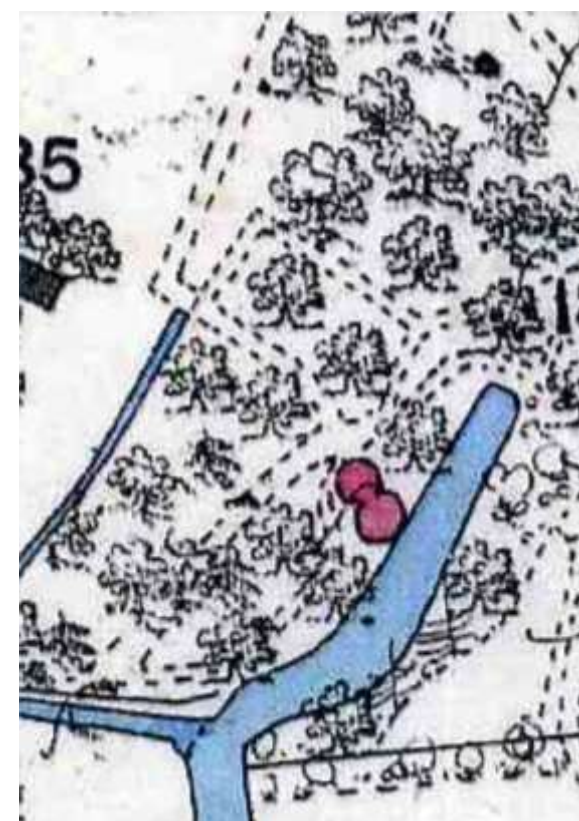
1719 Laurence map  
 - - - Boundaries and buildings  
 Paths



1735 Rocque map  
 - - - Boundaries and buildings  
 Paths



1829 sketch map  
 - - - Boundaries and buildings  
 Paths



1<sup>st</sup> edition OS map  
 - - - Boundaries and buildings  
 Paths

**Figure 16:** Map evidence, Bath house area

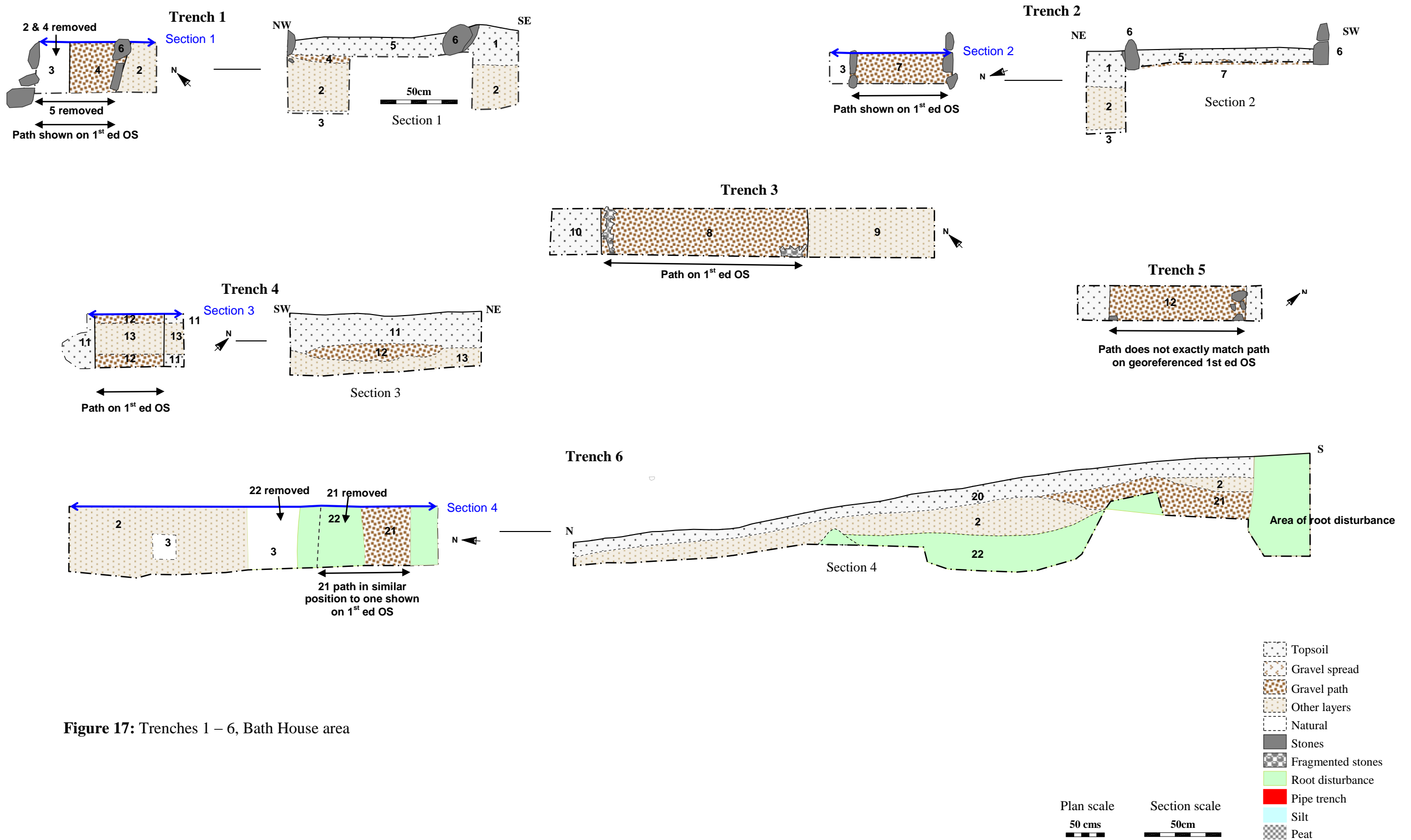
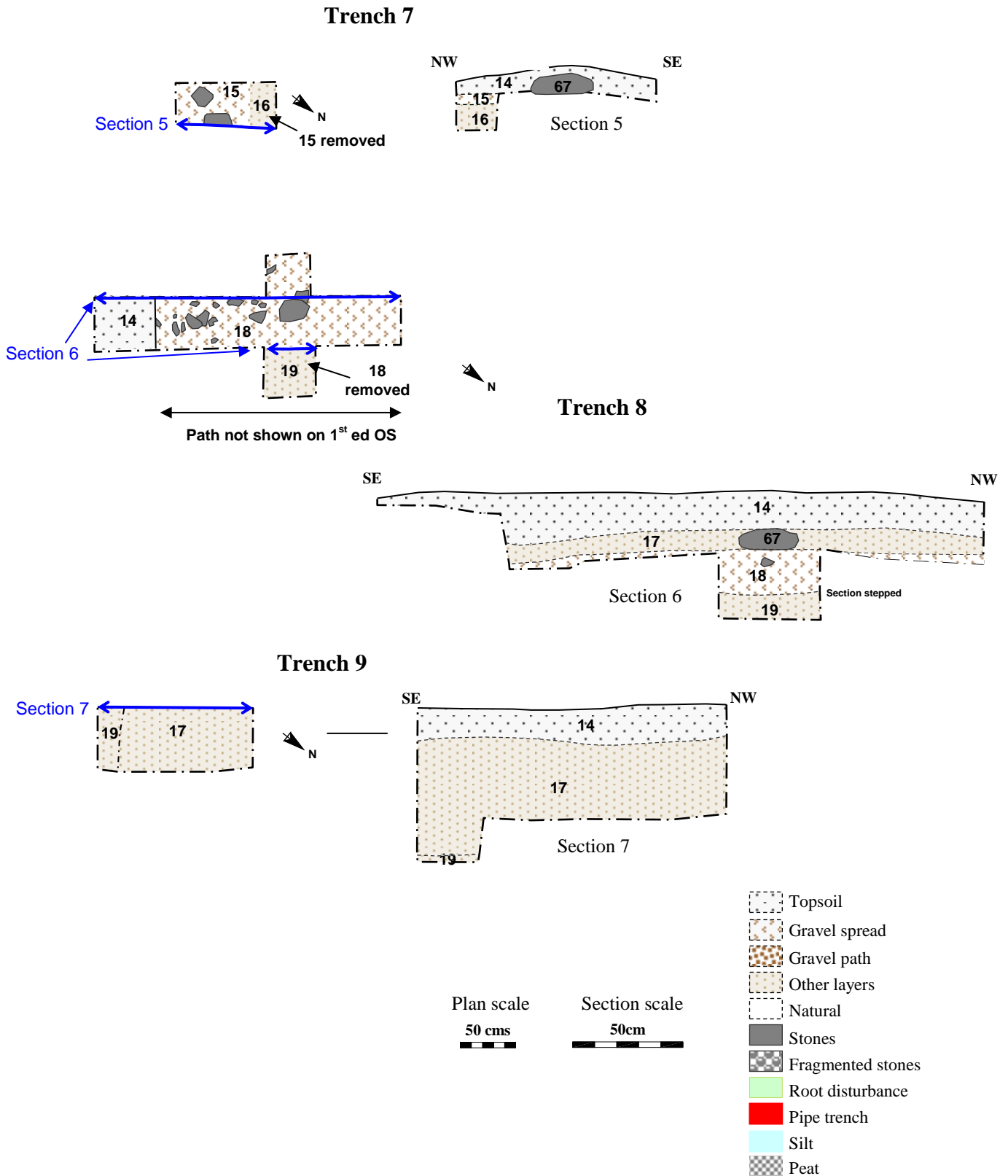
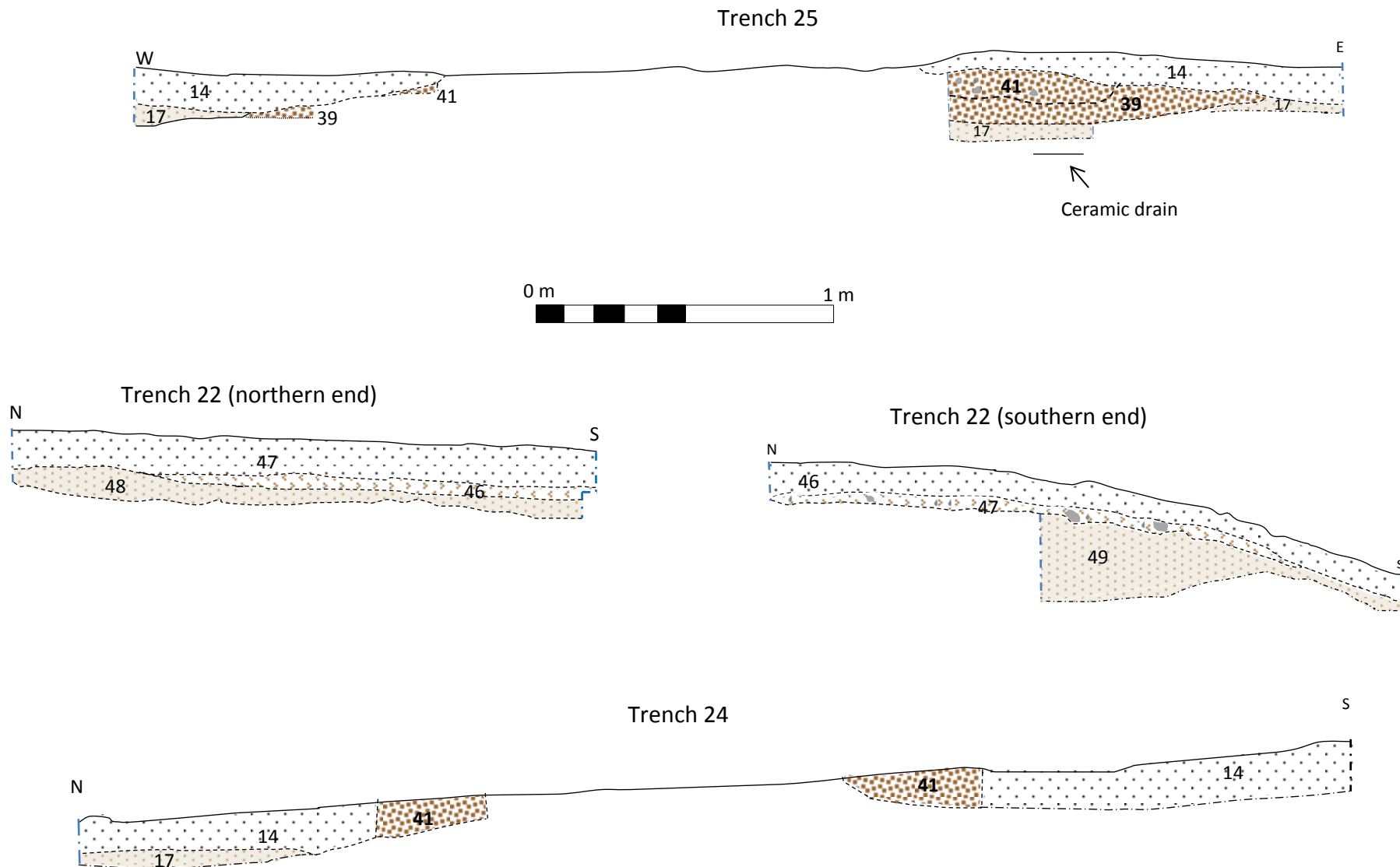


Figure 17: Trenches 1 – 6, Bath House area



**Figure 18:** Trenches 7 – 9, Shrubberies





**Figure 19:** Bowling Green; Trenches 25, 22, 24

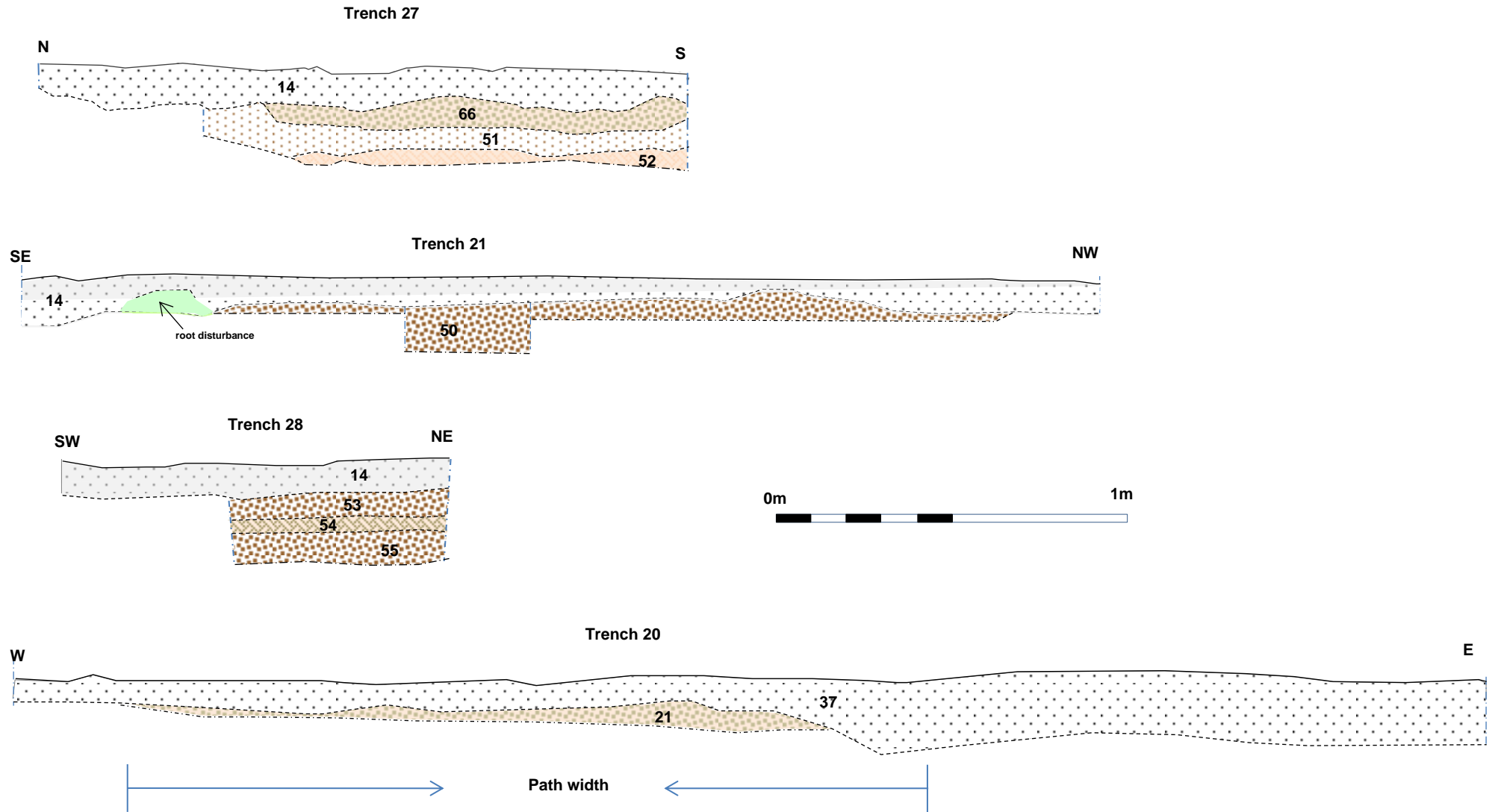
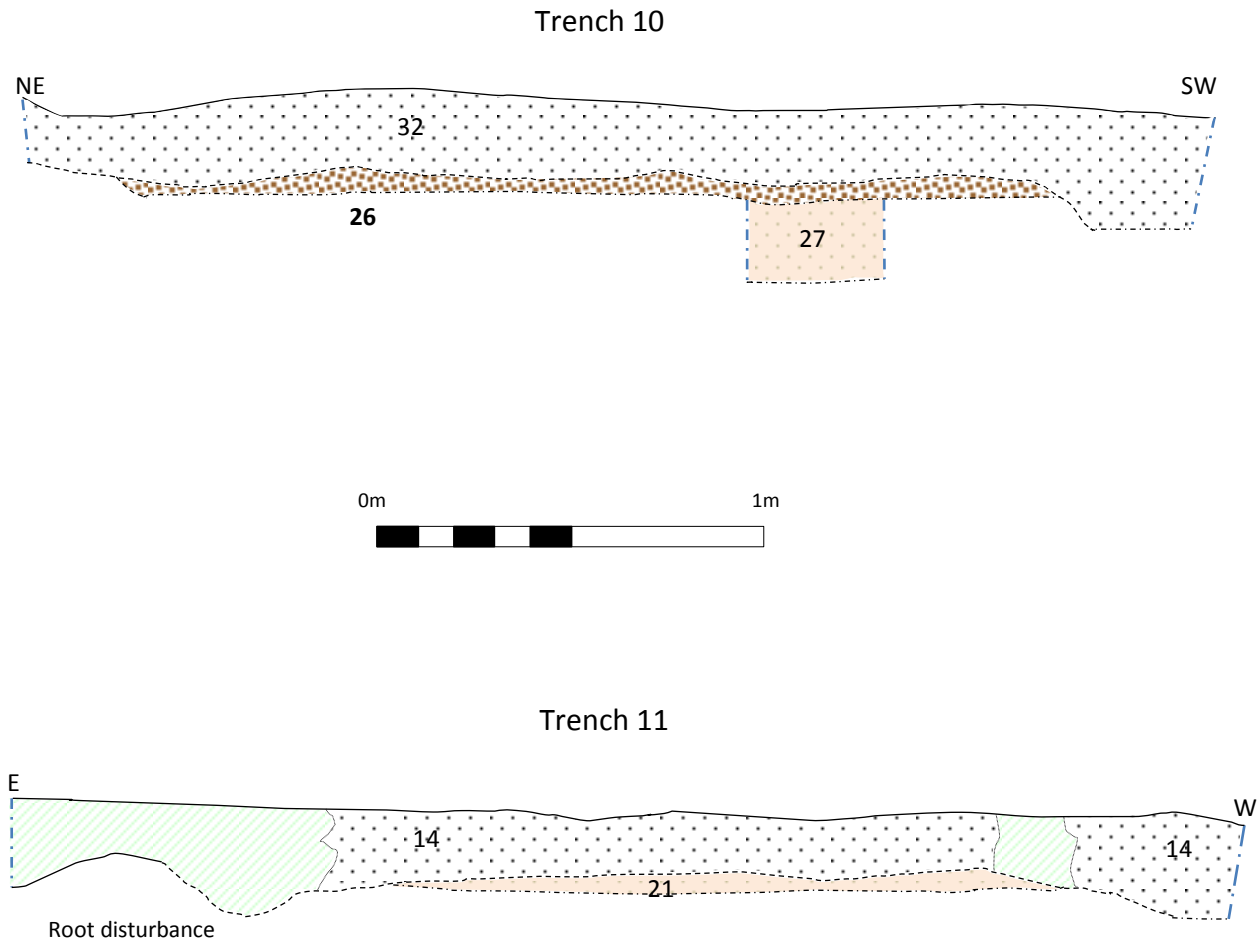
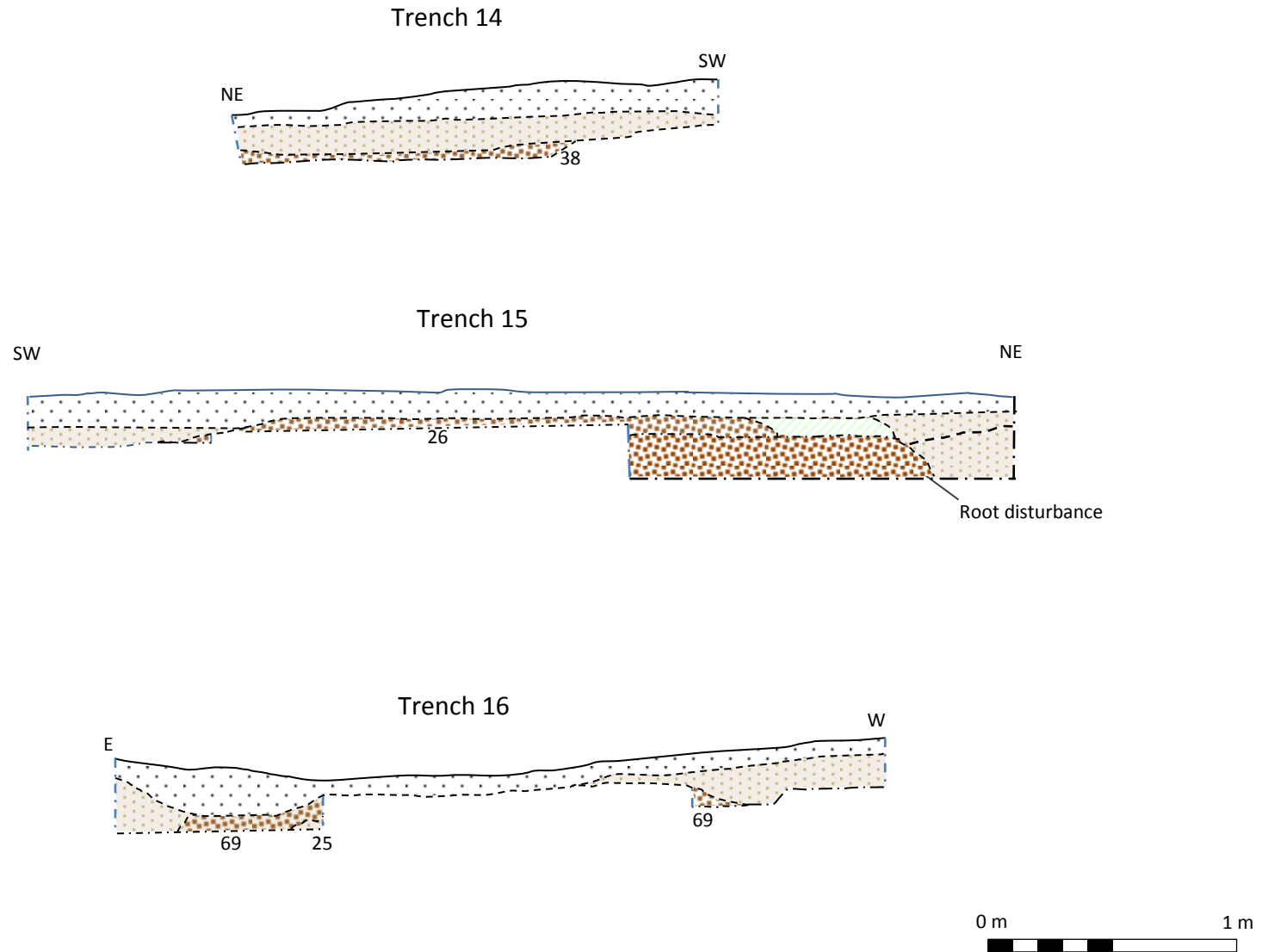


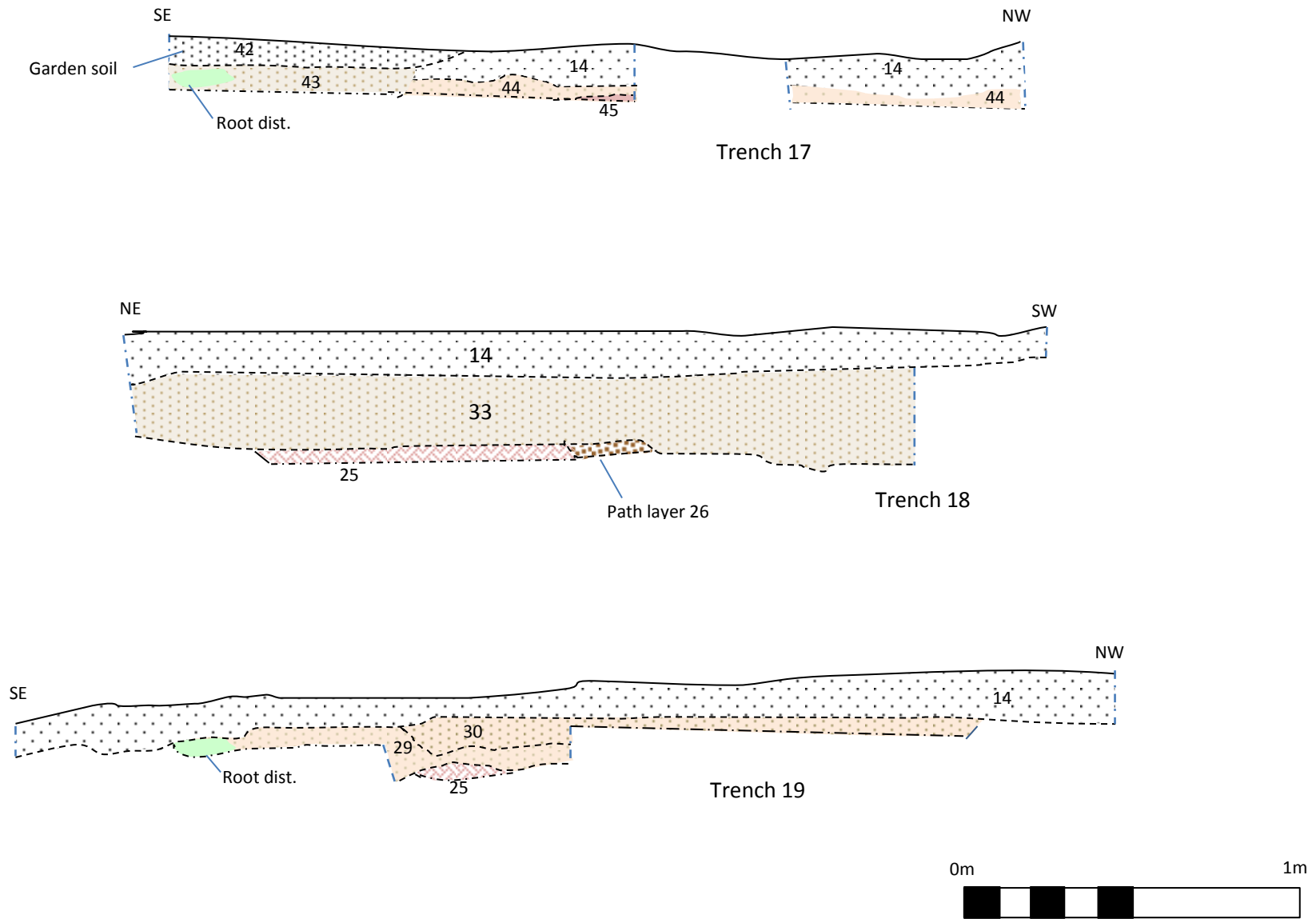
Figure 20: Yew Quarter: Trenches 20, 21, 27, 28



**Figure 21:** Trenches 10 and 11, Great Gardens (north)



**Figure 22:** Trenches 14, 15, 16, Great Gardens (east and south)



**Figure 23:** Trenches 17, 18, 19: Great Gardens, the round

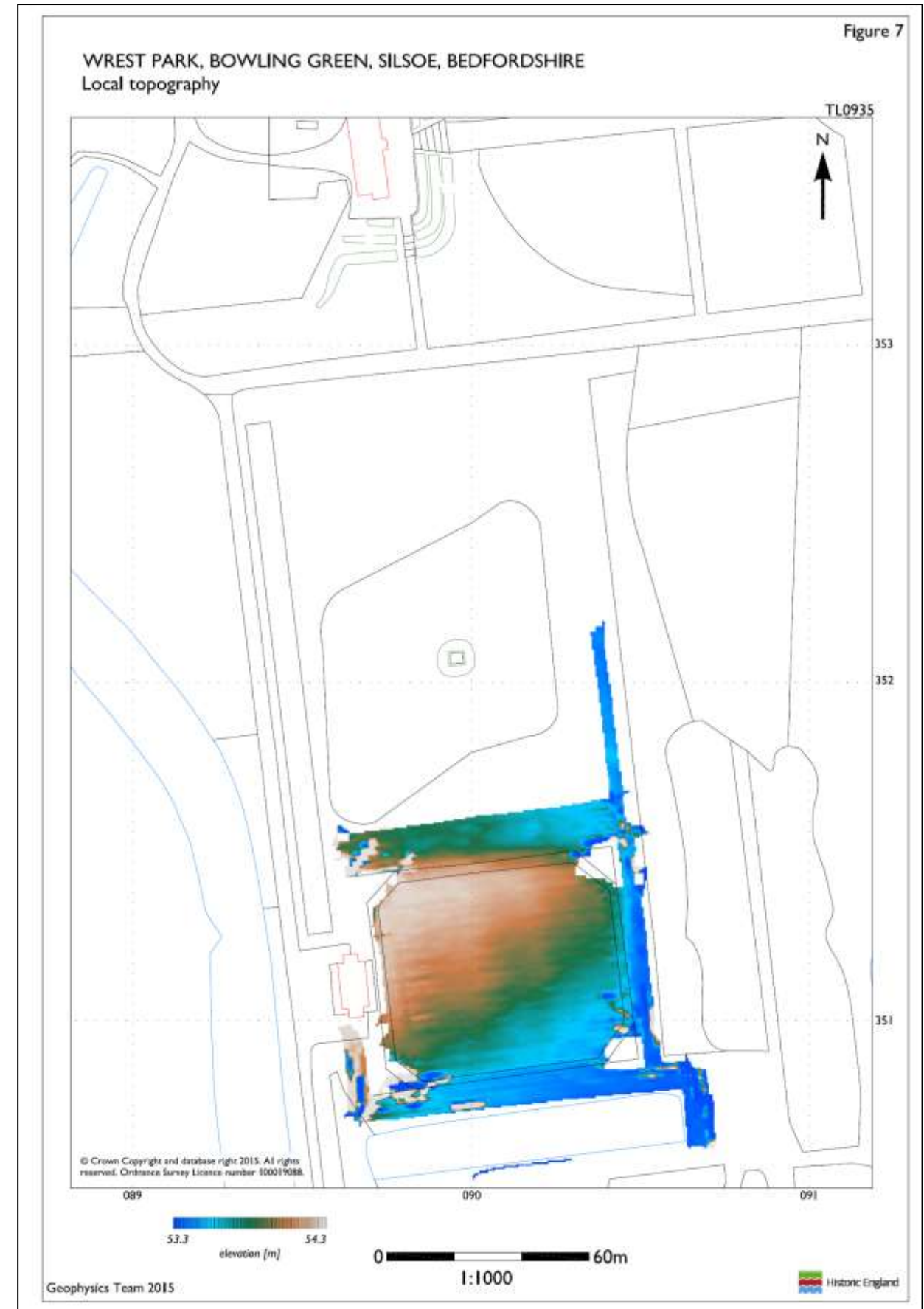
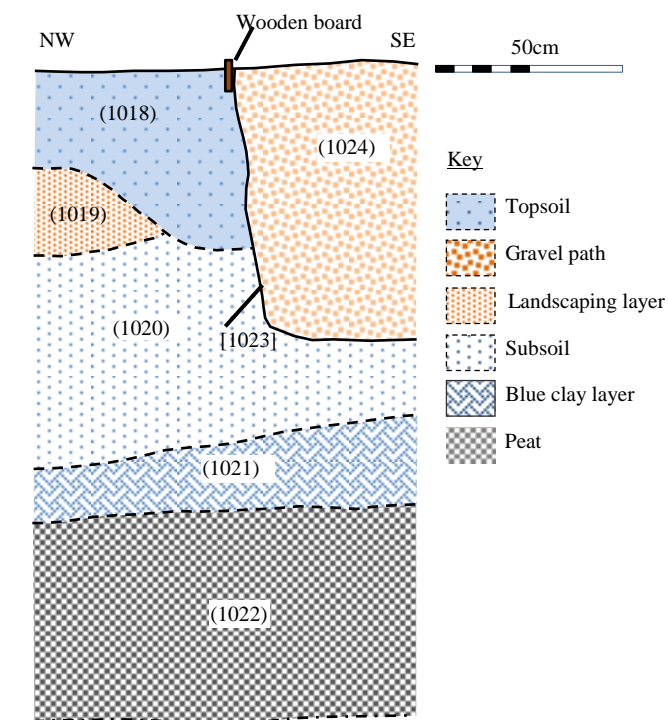
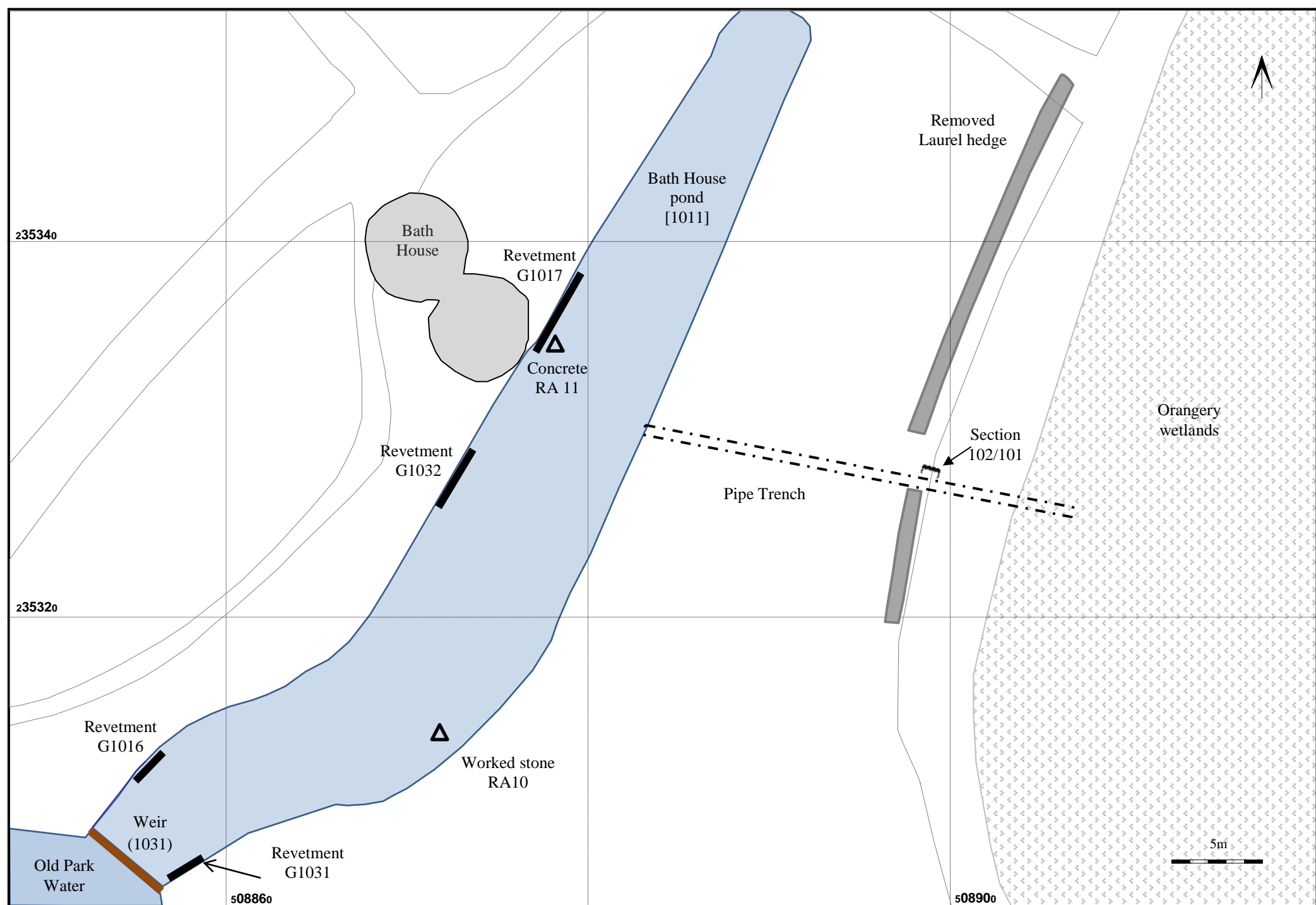


Figure 24: Results of GPR survey (Historic England)



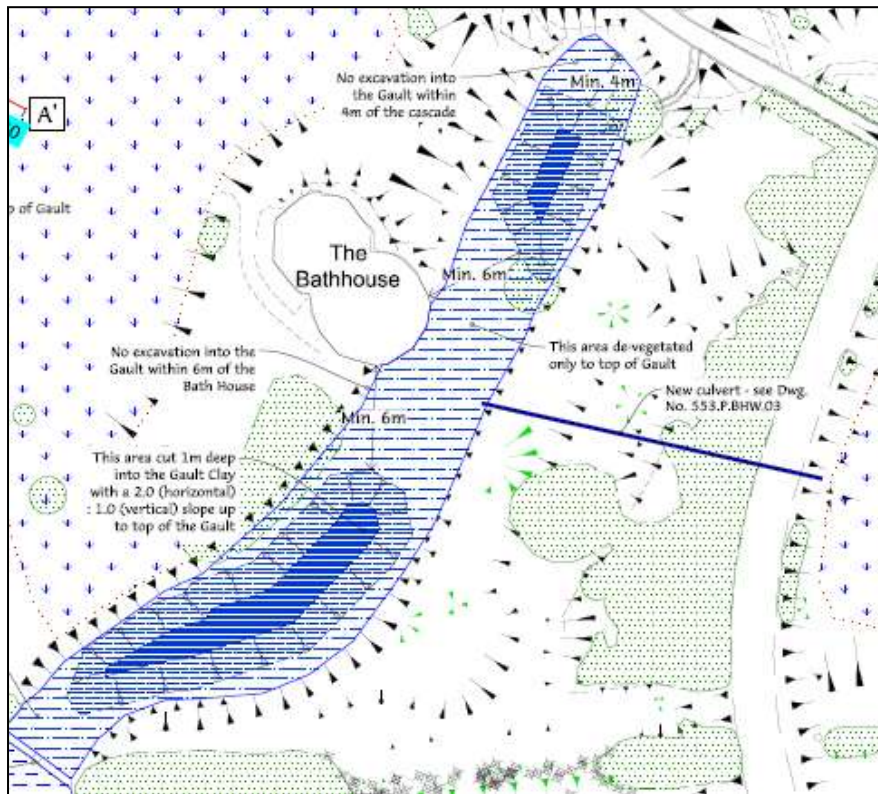


Section 120/101, south -west facing

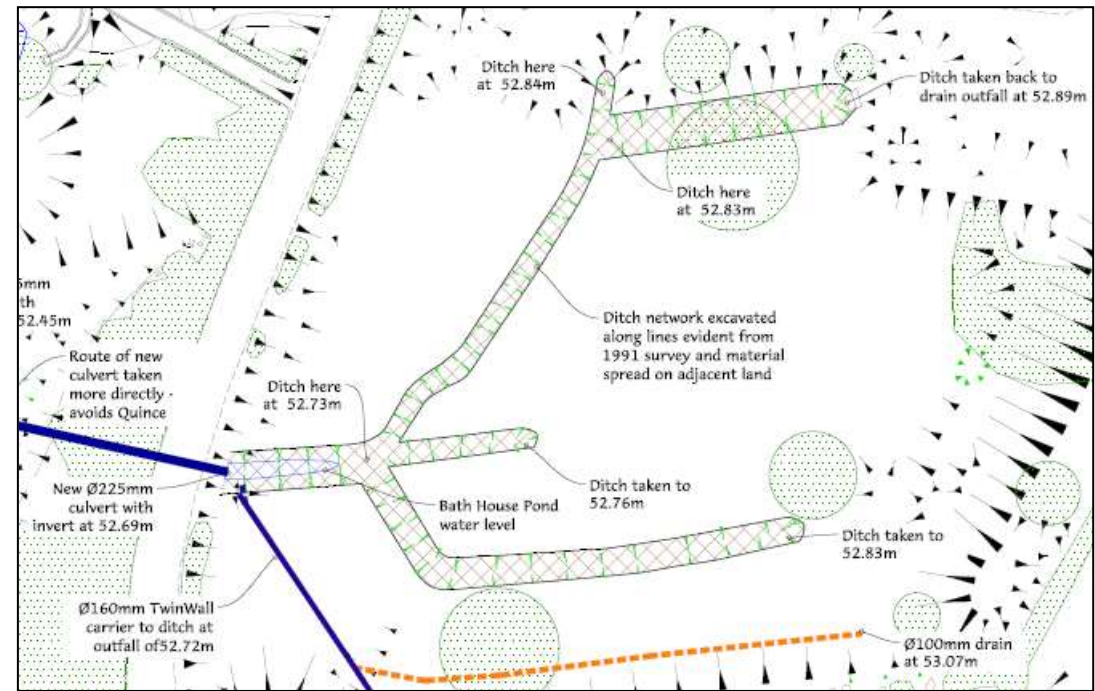


Timber revetment G1031

Figure 25 : Plan showing areas under to archaeological monitoring in the vicinity of the Bath House pond



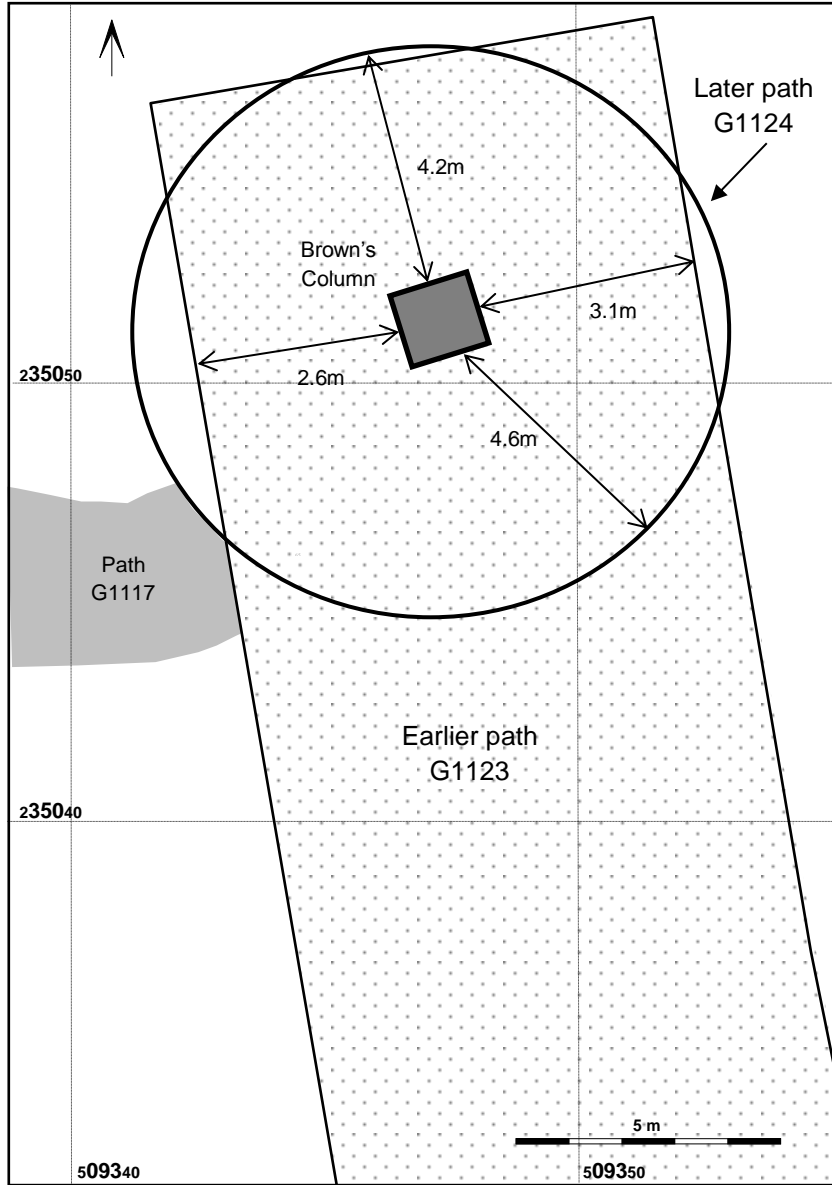
Bath House pond: showing the depth of dredging (Irriplan drawing: 553.P.BHW.02)



Drainage channels in the orangery Wetlands (Irriplan drawing 553.P. BHW. 03)

**Figure 26:** Technical plans showing drainage works undertaken in the Bath House pond area and Orangery Wetlands (Not to scale)





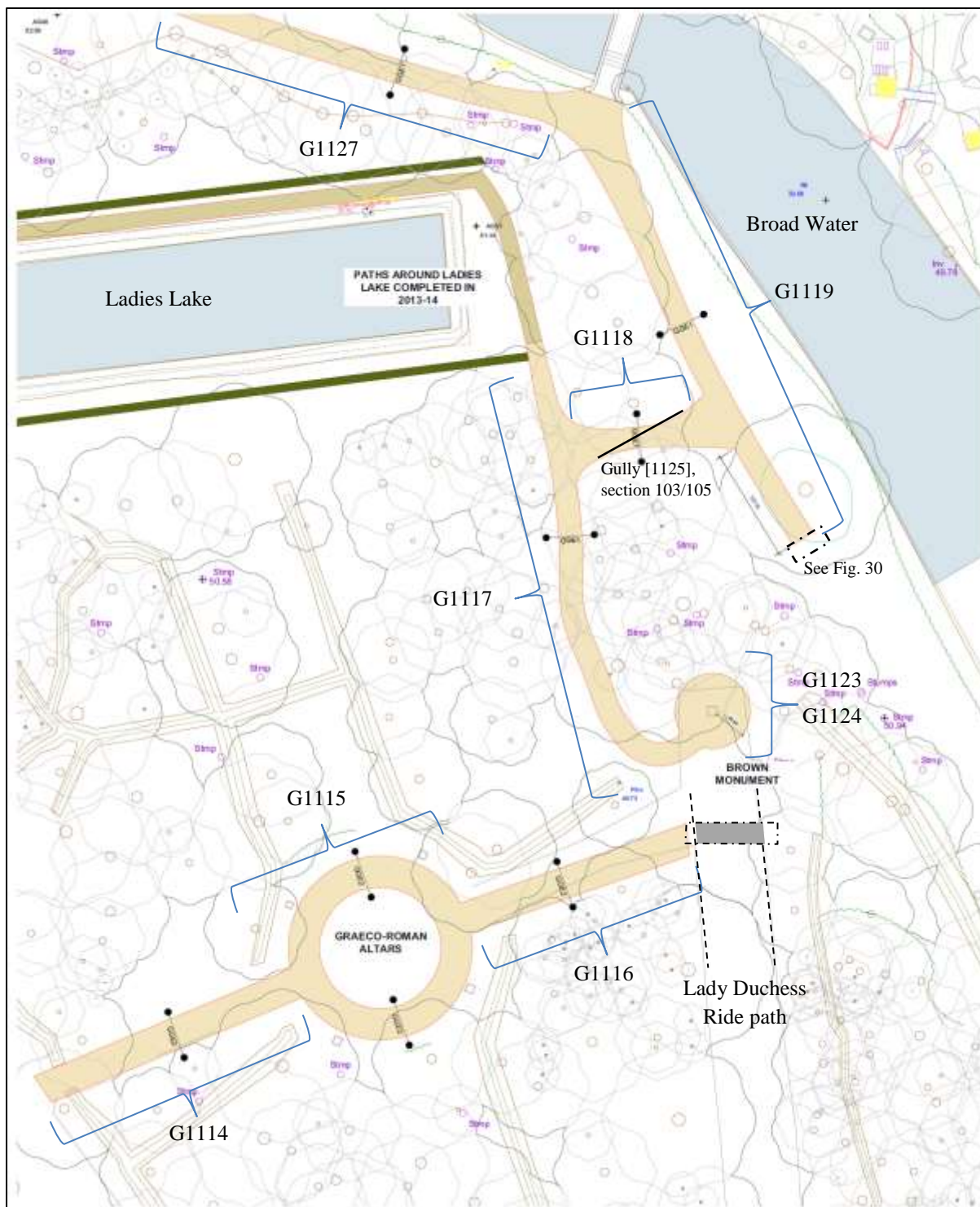
Brown's Column looking south



**Figure 27:**  
Two phases of historic path around  
Brown's Monument

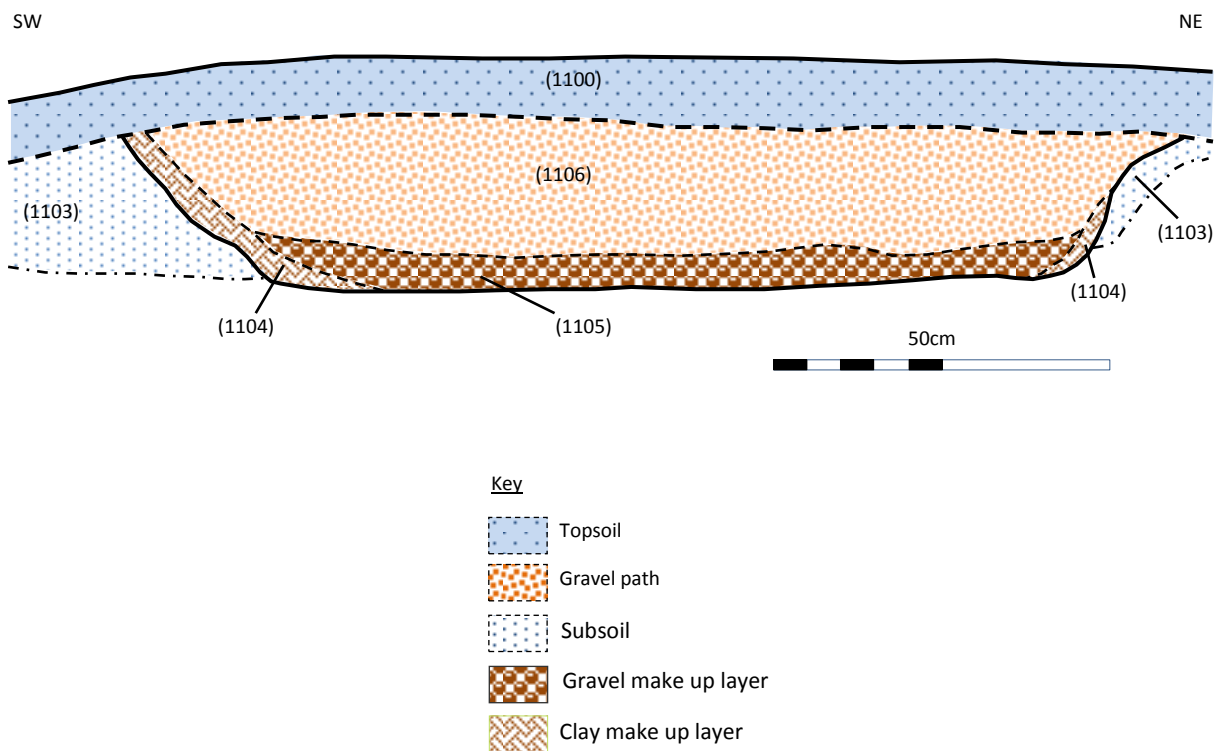


**Figure 28:** Plan showing path restoration to the north and west of Ladies Lake  
(Based on drawing AN.076.304.T by Askew Nelson)  
Not to scale



**Figure 29:** Plan showing path restoration to the north and east of Ladies Lake  
 (Based on drawing AN.076.305.T by Askew Nelson)  
 Not to scale





**Figure 30:** Section and photograph of historic path G1119, to the west side of Broad Water



**Plate 1:** Orangery Wetlands southern ditch [1006], looking west



**Plate 2:** Orangery Wetlands western ditch [1002], looking north-east





**Plate 3:** Bath House pond, looking north-east



**Plate 5:** Bath House and pond, looking north-west



**Plate 4:** Bath House pond, looking north-east



**Plate 6:** Bath House pond weir, looking west



**Plate 7:** Worked stone (1012) recovered from Bath House pond  
(0.2m scale)



**Plate 8:** Timber from revetment G1032  
(0.4m scale)





**Plate 9:** Historic path G1124 around Brown's Column, looking south



**Plate 11:** Historic path G1118, looking east



**Plate 10:** Historic path G1117 to the west of Brown's Column



**Plate 12:** South-west facing section of gully [1125] (0.4m scale)





**Plate 13:** Tiles (1121) covering a land drain at the west end of path G1114



**Plate 15:** Historic path G1116, looking south-west



**Plate 14:** Test trench showing historic path surface extending down Lady Duchess Ride, looking south west



**Plate 16:** Historic path G1115, around the central Graeco-Roman Alter



**Plate 17:** Historic path alongside Broad Water, G1119, looking south



**Plate 19:** Historic path G1119 leading to the Chinese Bridge, looking north



**Plate 18:** Tree-throw [1107] cut into historic path G1119, looking north east



**Plate 20:** Historic path G1127 leading to the Chinese Temple, looking north west





**Plate 21:** Historic path G1130, looking south



**Plate 23:** Excavation of Yew hedge trench, west of Ladies Lake, looking south



**Plate 22:** Historic path/garden edging found above G1130



**Plate 24:** Drainage pipe trench within the Graeco-Roman Alters round, looking south west



**Albion**  
archaeology



Albion Archaeology  
St Mary's Church  
St Mary's Street  
Bedford  
MK42 0AS

**Telephone** 01234 294000  
**Email** [office@albion-arch.com](mailto:office@albion-arch.com)  
[www.albion-arch.com](http://www.albion-arch.com)

