**Prior Park Bason, Dam and Cascade 2024**
**Bath**

**Tim Lunt**
**David Stubbs**
**December 2024**

# Abstract

Surveys and excavation in the pasture during March and July 2024 at Prior Park Landscape Garden, Bath, by volunteers from the National Trust Archaeology Team and the Bath and Counties Archaeological Society has revealed some stunning results.

The back edge of a dam which held back the 100ft diameter bason of water shown on the 1752 engraving by Anthony Walker was excavated last year for a length of 35m. The bason, conceived by the architect John Wood, was the focal point for the first phase of the garden created by Ralph Allen in 1740. Guided by last year's previous discoveries and geophysics results, this year we have revealed the full width of the dam to be 3m, tapering to 1m at its east end and therefore a substantial structure.

Part of a cascade below the dam shown on a 1758 painting by Thomas Robins was discovered last year. This year we have uncovered more of what remains of the cascade and established that it was built after the dam and bason. Both the dam and bason were gone by 1760 following the creation of three lakes and a Palladian Bridge lower down the valley.

Arguably the most exciting discovery was a stone water culvert of 18c arched design with the same dimensions as the outlet culvert located at the bottom of the pasture in 1993. This culvert under the dam wall may have been constructed at the same time as the dam but then later extended down the hill when the lakes were created.

The report of archaeological activity in 2023 can be found at https://www.bacas.org.uk/wp-content/uploads/2023/11/priorparkbason2023.pdf which also contains historical information about the site.

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# 1 Introduction

## 1.1 Location

The work was carried out in Prior Park Landscape Garden, a property owned by the National Trust to the south of Bath and originally the garden of Prior Park Mansion, built by Ralph Allen in the 1740s and now occupied by Prior Park College.

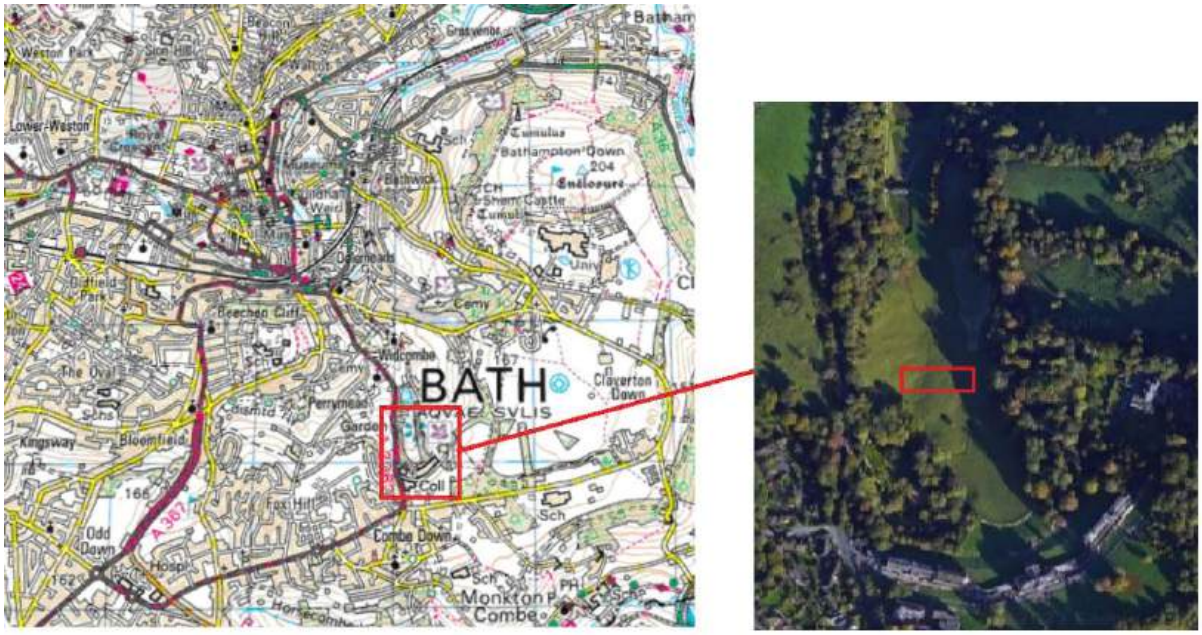


Figure 1 : Prior Park Garden; red rectangle indicates excavation area

All images in this report are aligned with north to the top unless shown otherwise. Small grid poles in photographs have 10cm divisions; Large poles 20cm.

## 1.2 Dates

Preliminary activity on the site was undertaken in 18th – 21st March 2024 to perform resistivity surveys, resistivity profiling, water infrastructure investigation and precautionary pre-excavation metal detecting. Excavations were undertaken over 8 days from 15th – 23rd July 2024 during the Festival of Archaeology.

## 1.3 Personnel

The survey and excavation were led by Tim Lunt and David Stubbs and performed by the following National Trust volunteers and members of the Bath and Counties Archaeological Society (BACAS):

Martin Ansell, Terri Bell, Jane Briggs, Nicholas Calfe, Rachael Carkett, Steve Clarke, Jenni Craft, Steve Drew, Sally England, Eleanor Fletcher, Awaz Jehad, John Knapper, John Oswin, Sue Rhodes, Neil Scott, Philip Stack, Gillian Vickery, Louise Williamson, Colin Wisbey, Jon Wrigley.

## 1.4 The Site

The site is located in Prior Park Garden, a Registered Park or Garden, halfway down the pasture in the centre of the valley. The pasture is a mix of grass, taller vegetation and some brambles. The excavation area had been strimmed.
No visible remains of any structures were identifiable other than the remains of a probable water trough.

## 1.5 Acknowledgements

The National Trust for access to the Garden, permission for excavation and generous assistance with facilities and equipment.

The National Trust volunteer garden team for their assistance.

Fliss Swallow, Head Gardener, for her help in providing support, equipment and logistics at the site during the Festival of Archaeology which was visited by several hundred people.

Richard Lewis for assistance with bason reflection characteristics.

Steve Clarke for aerial photography.

Steve Drew for metal detection.

Cat Lodge, National Trust Archaeologist SW, for her support.

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The time and effort of all the BACAS and National Trust staff and volunteers involved.

# 2 Background

A short history of the garden development at Prior Park is shown below.
Further detail was included in the 2023 excavation report:
https://www.bacas.org.uk/wp-content/uploads/2023/11/priorparkbason2023.pdf

## 2.1 Dam and Bason

The earliest evidence for John Wood's 'Bason' is Thorpe's map of 1742 entitled 'Survey of Five Miles round Bath'. It shows the landscape garden leading down to a water-filled Bason, and a water course carrying the overflow water down the valley to Gibbs Mill.

Figure 2 : '*Survey of Five Miles round Bath'* Thorpe 1742

The Bason was part of John Wood's design for Prior Park (Fig 10 below) and although Wood did not go into any detail on the landscape garden, he does relate his proposed buildings at Prior Park to a 'Bason' of water lower down the valley, which would have required an expensive dam to be built in a location entirely contrary to the lie of the land. Its centre represented the point where a great compass would have to be inserted to describe a '*Circle of a Quarter of a Mile Diameter*'. The scale on the plan suggests that the 'Bason' had a diameter of 100 feet (approx 30m).

Following completion of Allen's mansion Anthony Walker visited Bath in 1750 and created an engraving which was published in 1752.

Figure 3 : '*Prior Park, the Seat of Ralph Allen, Esqre, near Bath'*. Anthony Walker, 1752

In the bottom left hand corner can be seen the 'Bason'. The exploded view below suggests a steeply sided valley with a dam holding back the water. The dam is faced with stone and appears to have a walkway along its top. On the left hand side is another structure, believed by some to be some sort of viewing platform, with access from the path leading back up the hill.

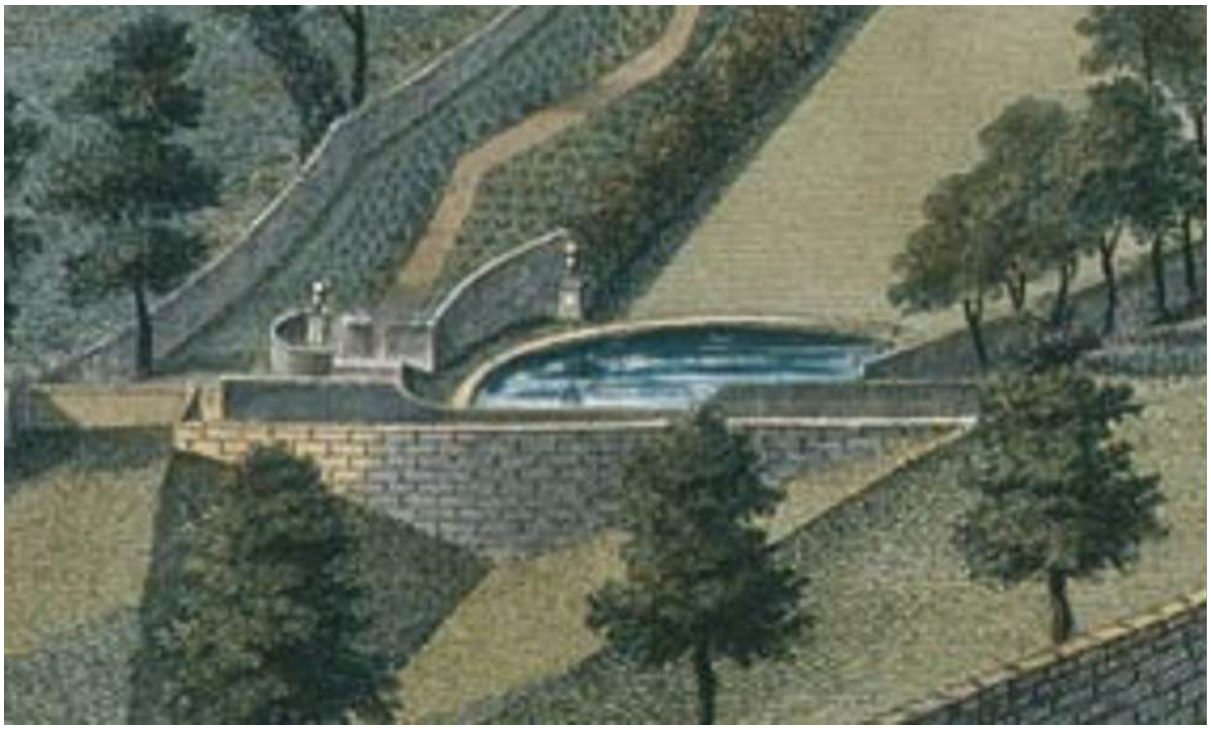


Figure 4 : Exploded view of Bason. Anthony Walker, 1752

## 2.2 Cascade

The only source for the cascade is the Thomas Robin's watercolour from 1758 for which evidence was found in the 2023 excavations.

Figure 5 : Thomas Robins, 1758

A puzzle lies in the fact that the '*Survey of the Manours'* prepared for Ralph Allen between 1758 and 1762 by Thorpe and Overton shows many elements of today's garden but no hint of the bason or cascade. As the cascade was not shown in the Walker image, this suggests perhaps Robins captured the time between 1750 and 1758 when the dam had been demolished and the cascade built. The cascade then missing from the Survey of the Manours may indicate it did not last very long before being also removed.

Figure 6 : Thorpe and Overton map, 1762

# 3 Investigations

Investigation work was performed in various ways described below during March and completed during July to be used to instruct the major excavation work.

## 3.1 Resistivity

Four resistivity grids covering 1200 sq m. were surveyed to provide a detailed plot for the east end of the dam and associated possible ‘viewing platform’.

An area of higher resistivity was found in the expected position to the east of the 2023 excavations of the dam wall indicating further stonework and this was used to direct this year’s work.

Details of equipment, method and grid layout can be found in Appendix B1.

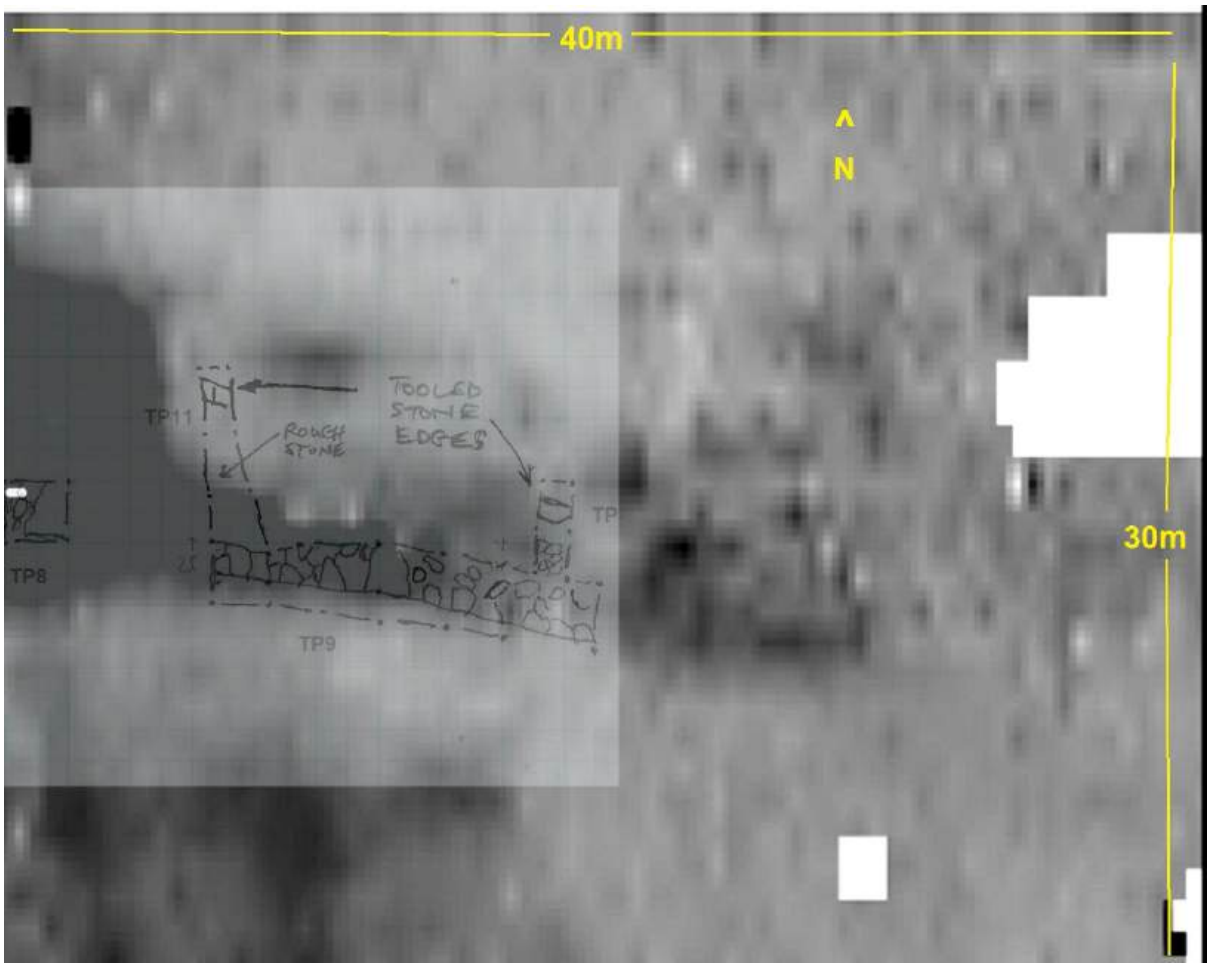


Figure 7 : Overlay of 2023 excavation on 2024 resistivity grid area of 40x30m

## 3.2 Resistivity Profiling

Five resistivity profiles were performed around the bason and dam to look for evidence of the pool bottom and the water culverts known to flow underground down the hill.

A number of possible culvert positions were found as shown in Fig 8. Excavation in the centre of the bason during March 2024 had revealed a junction with a culvert from the south-west, known to carry water from the Serpentine Lake overflow, meeting another running south to north directly under the bason. In July another culvert from the east was also seen to join some metres further north . Profiles 1-3 suggested that the central north-south culvert ran in a direct line under the bason and the dam wall before continuing down the hill.
No evidence of the bason pool bottom could be seen in profiles 1 and 3 which were made across the bason interior.

Details of profile positions are shown in Fig 8 with the profile results below. Culvert numbers and directions are described in 4.4 below. Equipment, plan and method is shown in Appendix B2 .

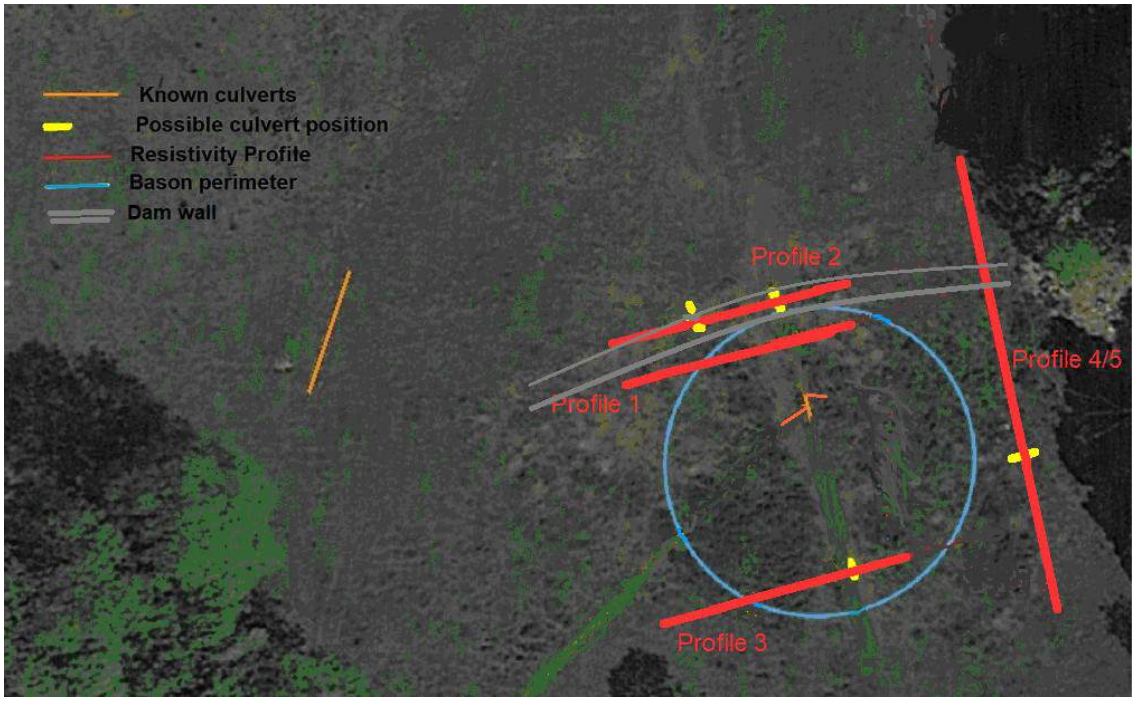
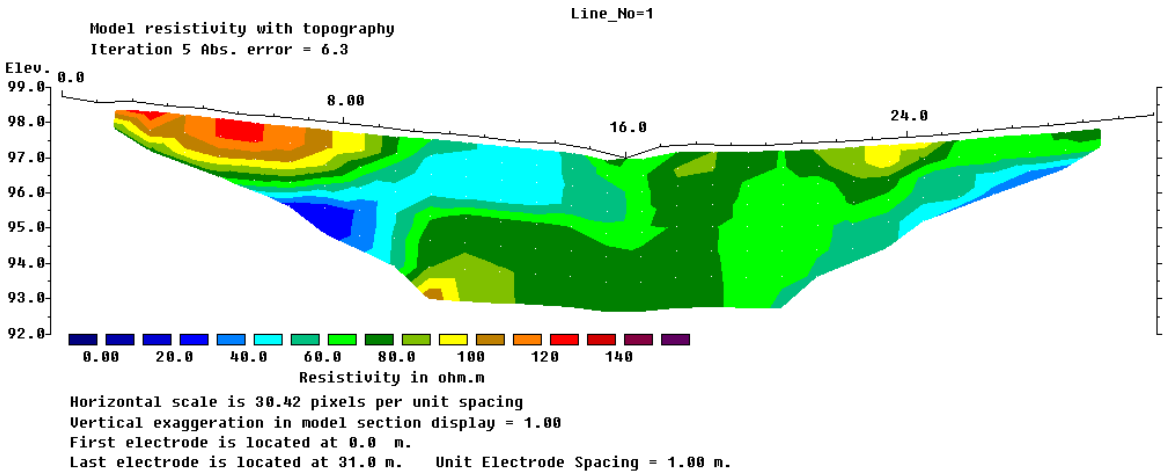
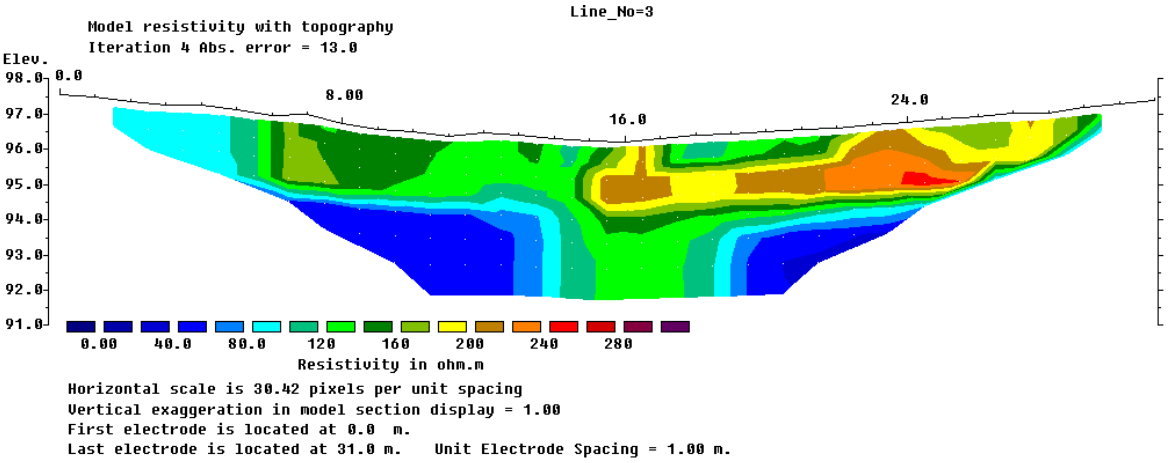


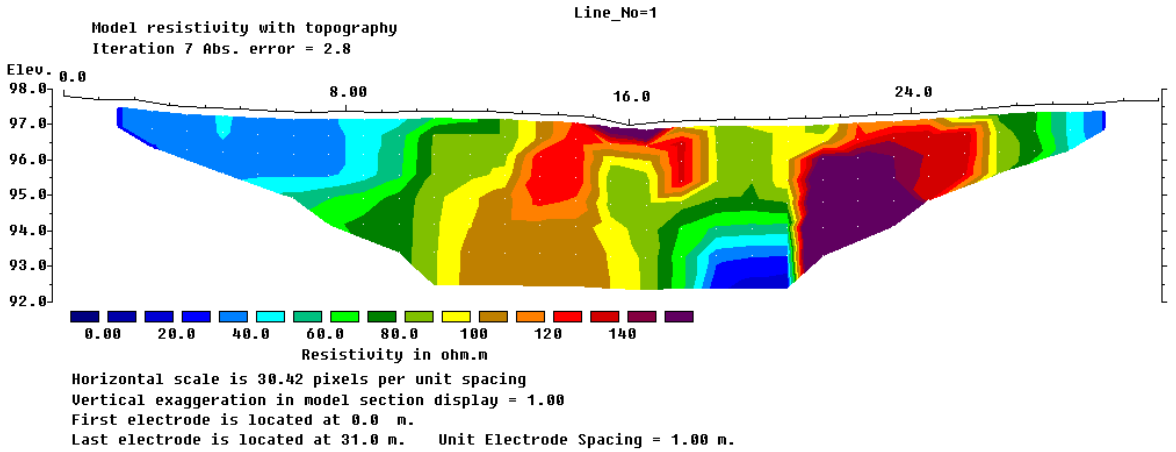

Figure 8 : Resistivity profiles showing known culverts with the junction under the bason



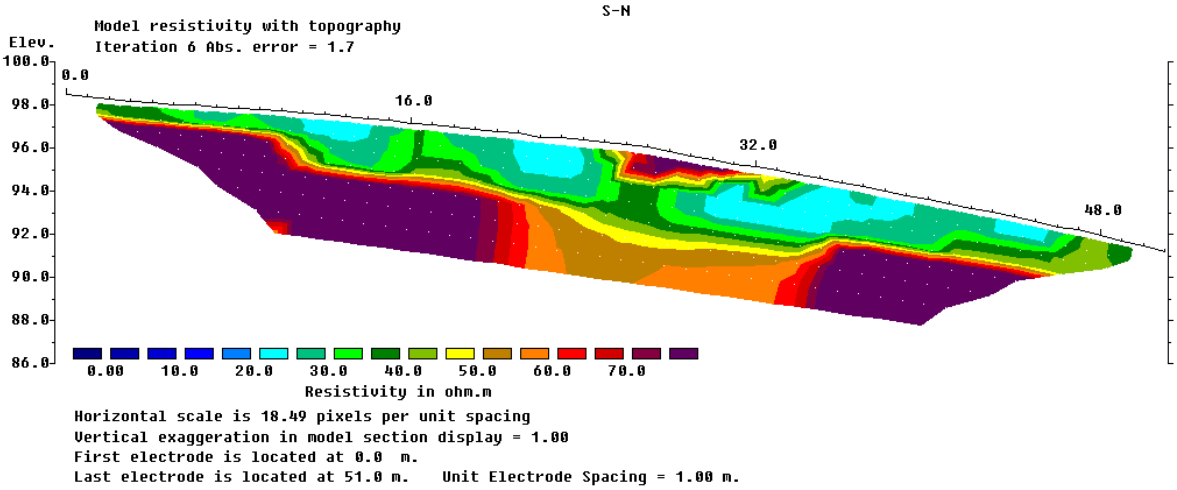

Profile 1 above was made across the northern edge of the bason pool within the dam wall, shown looking north. It shows an area of higher resistance stone work on the western edge which may be accounted for by the position of the dam wall at this point which has not yet been excavated at this end. The bason pool would have lain east from the 16/17m point and there is some change of resistivity here but no sign of a base to the pool. There is no clear indication of any culvert.




Profile 2 shown looking north straddled the top of the dam wall at the 6m point and a probable stonework depth of approx 2m for the remaining foundations shows from this point. There is a possible culvert position within the dam wall at 16/17m and the probable culvert 7 around 23/24m.




Profile 3 ran across the south side of the bason and is shown looking north. No evidence can be seen of the bason bottom. Possible culvert 6 position at the 16m point. High resistance around 24m uncertain.




Profiles 4 and 5 : Overlapped by 10m and running south (left) to north (right) for 50m along the east side of the bason. The profile crossed the line of the excavated dam wall at the 26-32m point as shown by the higher resistance. A possible pipe shows at 16m which may correspond to pipe P2.

## 3.3 Topography

The excavated dam wall was manually surveyed to establish the difference of height from the remaining top course of the foundations exposed in trench 5 at the end of the wall to those at the estimated centre point by trench 1. The height difference was found to be 2.57m.

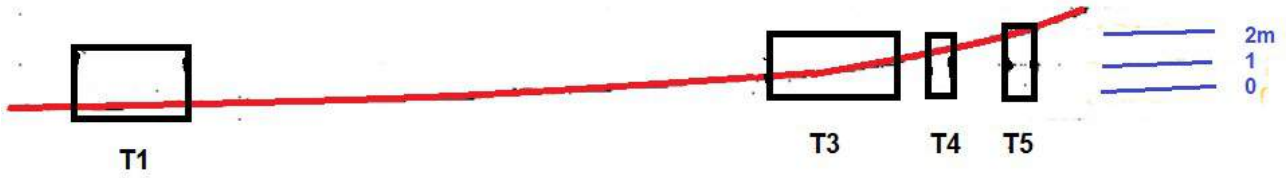



Figure 9 : Profile of eastern dam wall foundation top with trench positions looking north

## 3.4 Metal Detection

A precautionary metal detection survey was carried out in and around the bason and dam in March 2024 with all finds recorded individually with GPS position.

The finds are discussed in the Finds: Section 5. A detailed list along with details of the equipment and method is in Appendix A.

## 3.5 Bason Pool Reflection

The considerable width of the bason with a diameter of 100 feet (30m) led to consideration of the reflection on the surface of the pool. John Wood's architectural plan for the house and garden shown in Fig 10 below indicates how the building and bason were geometrically linked with the mansion and wings at the same distances from the centre of the bason. This suggests that the pool reflection may have been a major factor in his design.

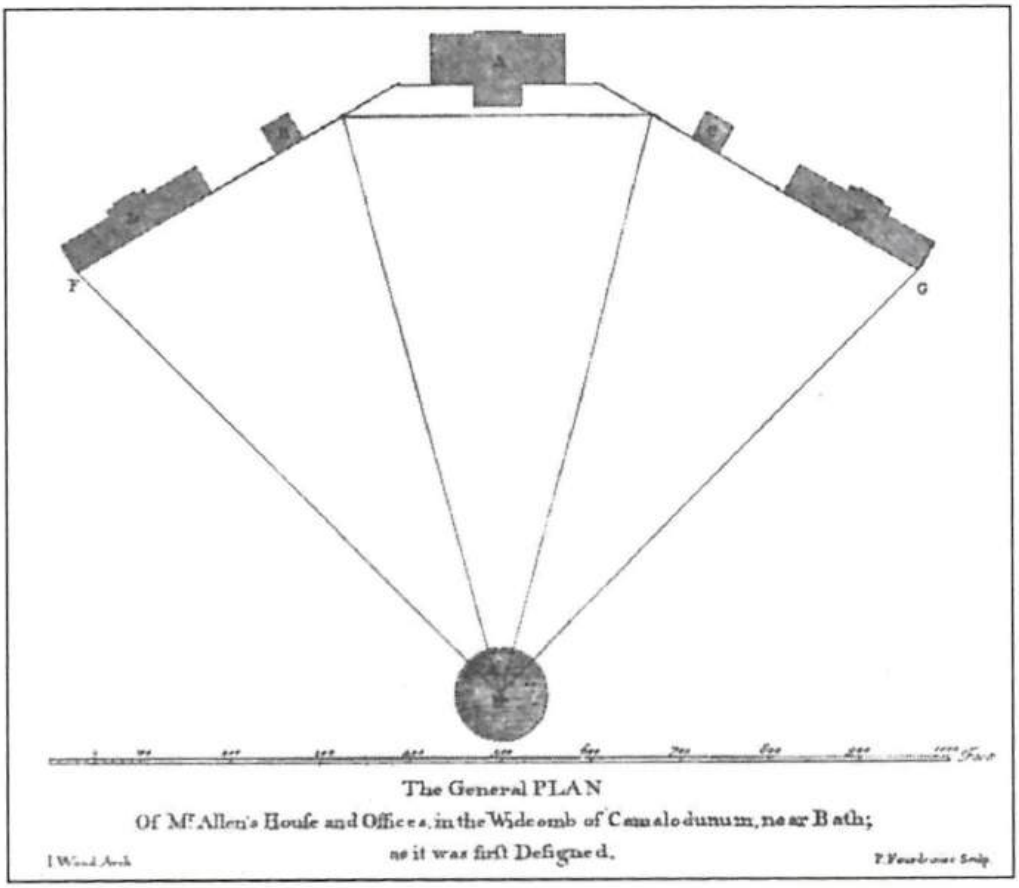



Figure 10 : *'General Plan for Mr Allen's House and Offices'.* John Wood

As only the dam foundations remain, the height/altitude of an observer on the top of the dam wall relative to the altitudes of the bason pool and the Mansion remains conjectural. However, an observer of 2m height standing on the top of the dam wall would have seen a complete reflection of the mansion and both wings if the dam wall height above the bason water surface did not exceed approx 2m. A dam wall height above the bason of over 2m would have excluded the base of the mansion building in the reflection. It should be noted that the full reflection of mansion and wings would not be possible today with the tree growth in front of the wings.

Details of the reflection analysis can be found in Appendix B3.

Figure 11 : Imagined reflection of Prior Park Mansion in the bason as seen from the dam wall

# 4 Excavation 2024

## 4.1 Objectives and Method

1. Reveal and record the east end of the dam wall to find the extent of the foundations and any evidence of the viewing area shown in the Walker engraving
2. Reveal and record more of the Robins cascade and its chronology with the construction of the bason
3. Find and record underground water culverts passing to and across the bason site and their chronology with the construction of the dam and bason.
4. Investigate the water trough and its water supply

Excavation of features highlighted by the geophysics surveys was carried out on the dam wall and cascade with extension of trenches in areas of interest. Trench positions are shown in Fig 12 below.

Figure 12 : Trench positions

## 4.2 Dam Wall

35m of the inside southern edge of the stone dam wall were excavated in 2023 and the work in 2024 extended this east by another 9m. Three trenches (T3,T4,T5) were dug across the dam wall exposing in each the entire width and showing the dam wall tapered towards the east from 3m to 1m and turning gradually from a concave arc to convex.

Figure 13 : Dam wall in trenches 3,4,5

The wall was largely edged with courses of irregular stone blocks and infilled with mortared rubble. The remaining foundations at one point was shown to have at least 3 courses remaining and be over 1m high.

It was hoped to find evidence of the area with walls and statuary shown in the Walker engraving. The perspective and accuracy of this image is questionable but as only the dam wall was found in the 3 trenches across the wall, a small excavation was made (T6) approx 3m south of the dam wall to look for evidence. Some rough stonework was exposed but further excavation is required to understand what is there.

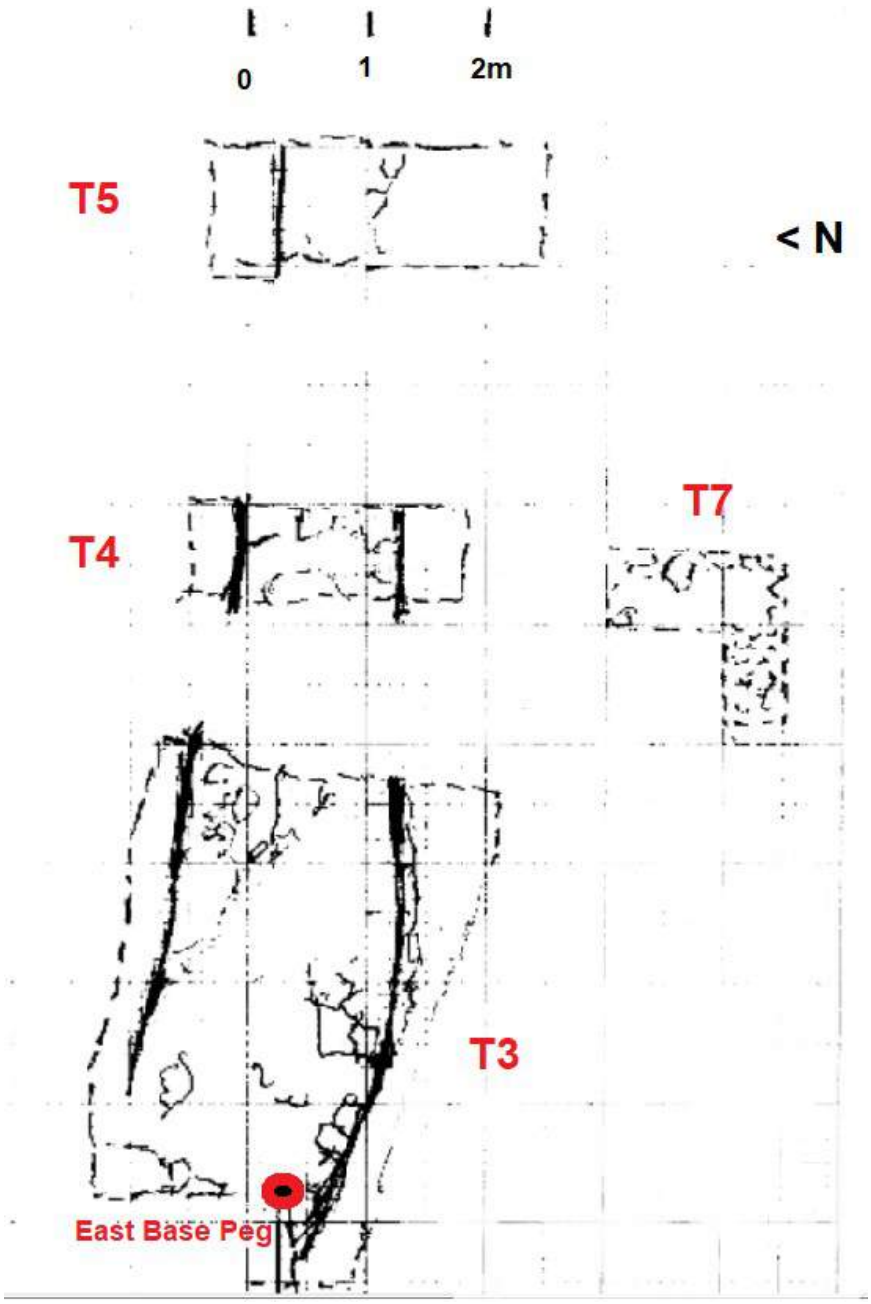



Figure 14 : Dam wall trench plan

4.2.1 Trench 3 (T3)

Trench 3 continued the excavation from 2023 east by approx 4.5m with edges following the inner and outer sides of the dam wall exposed at approx 40cm depth. It showed the width of the dam to be slowly diminishing from 3m to 2.7m over this distance. Construction was as previously found to be made up from rough cut stonework on the edges with the interior infilled with mortared rubble and the occasional bigger stone.

Figure 15 : Trench 3 looking east

4.2.2 Trench 4 (T4)

Dug at a distance 1.5m east of T3 showed the dam width had by then dropped to 1.3m with similar construction. Three courses of stonework were visible in a section dug to approx 1m depth on the north side of the dam.

Figure 16 : Trench 4 looking east

4.2.3 Trench 5 (T5)

Dug at a distance a further 2m east of Trench 4 across the dam showed the wall width had dropped to approx 1m with similar construction.

Figure 17 : Trench 5 looking east

### 4.2.4 Trench 7 (T7)

Dug 1.5m south of T3-T5 at the end of the excavation, there was insufficient time to understand the results. Rough stonework was evident but was difficult to interpret without further extension of the trench.

Figure 18 : Trench 7 looking east

## 4.3 Cascade

The Robins painting of 1758 showed the cascade below the site of the dam and a trench dug in 2023 found evidence. This year that trench was uncovered and extended south as Trench 1 up to and over the dam wall to expose more of the mortared rough stonework thought to be the cascade floor. The 2023 cascade excavation was also widened to find edges and extended north down the hill as Trench 2.

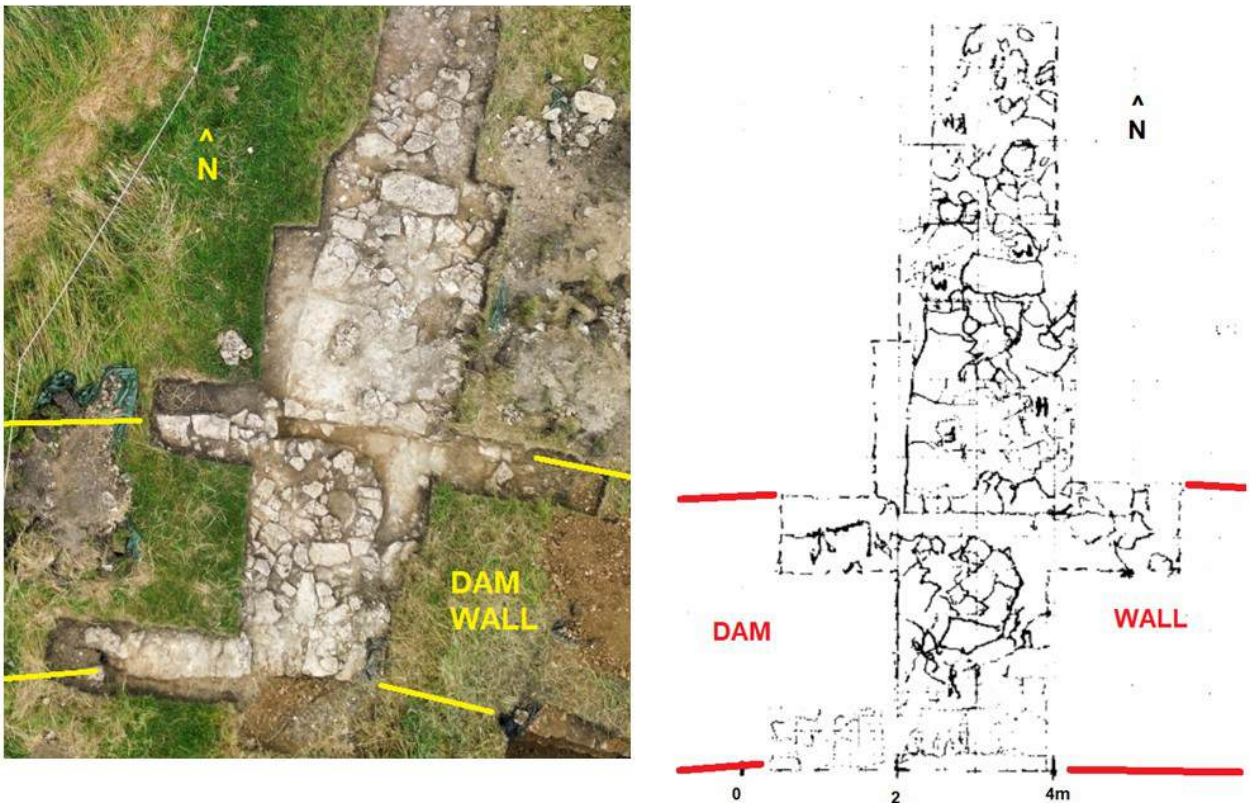



Figure 19 : Cascade trenches 1 and 2

The rough stonework layer was continuous as it passed from the south inner edge of the remaining dam wall and then over the north outer edge of the dam wall to continue down the hillside.

Figure 20 : Cascade looking north from inner edge of dam

Where the cascade crossed over the line of the outer, northern edge of the dam, some of the cascade stonework layer was removed and shown to have been constructed over the foundations of the dam with stonework mortared against and above the remaining dam edge stone course as shown in Fig 21. No evidence was found to show how water had been brought to the top of the cascade as no stonework was found within the inner edge of the dam at the cascade head.

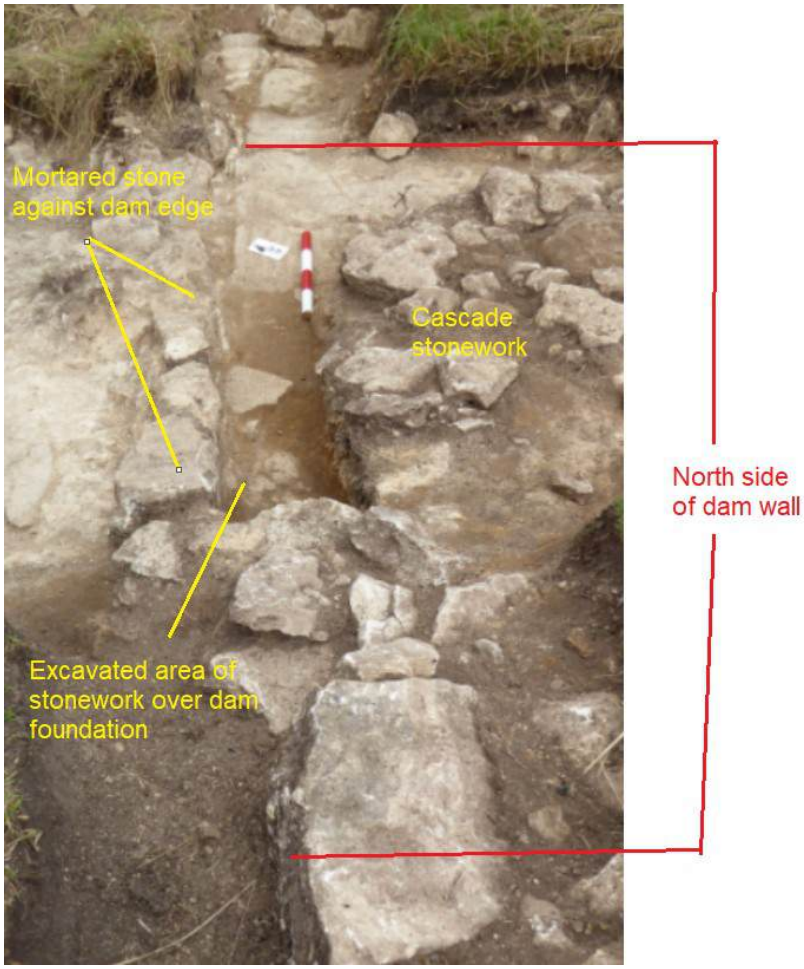


Figure 21 : Cascade stonework built over remaining dam foundations

Robins showed kerb sides to the cascade in his painting but these were not found. However the edge of the cascade stonework could be seen on the west side of the trench as shown in Fig 22 below.

Figure 22 : Looking north showing western edge of cascade

Stonework found at the northern end of T2 was more fragmentary than that at the head of the cascade in T1 which may be due to poorer construction, stone removal or erosion from the hill slope.

## 4.4 Culverts

The site of a culvert position was shown in a 1990s photo taken when the National Trust were investigating the garden shortly after acquisition. This was rediscovered during the geophysics surveys in March 2024 and found to be a point where two stone culverts merged (C4 and C6).

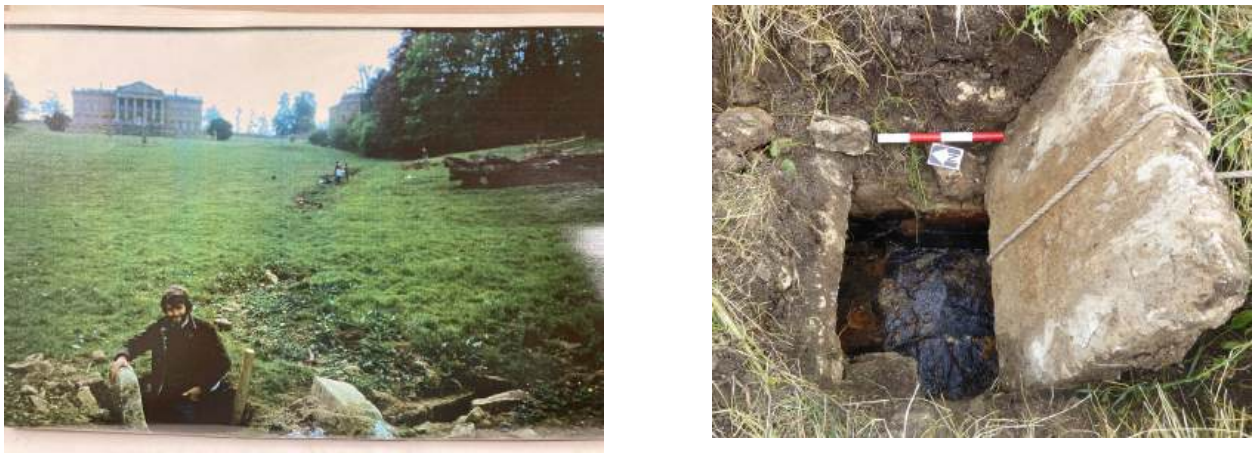


Figure 23 : 1993 culvert junction excavation; reopened in March 2024 as Trench 8

The estimated culvert routes down the valley from this point are shown below in Fig 24 followed by descriptions of each.

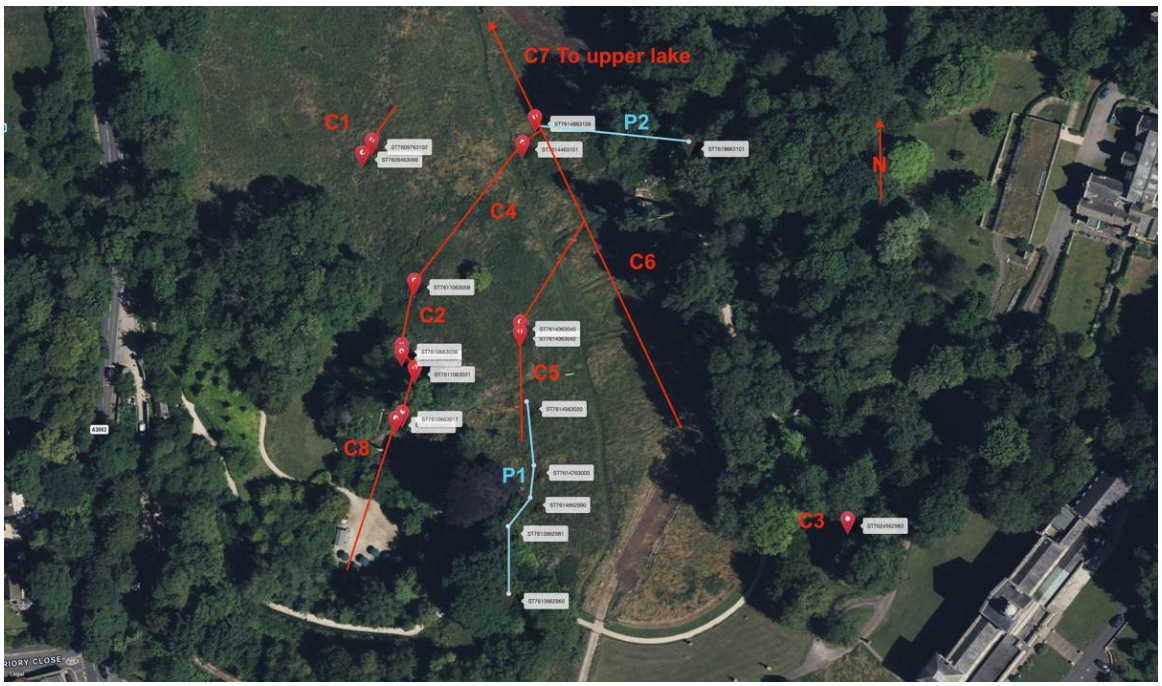



Figure 24 : Probable culvert routes down the valley. Red are culverts, Blue are pipes

The culvert and pipe descriptions following are shown in inches as they would have been designed and constructed using imperial measures.

### 4.4.1 Culverts 4 and 6

In March the capstones for a culvert (C4) were located to the east of the central pasture path. The culvert contained running water flowing down hill on a southwest/northeast axis. A dye test confirmed that the source of the water was Culvert 2, which emerges below the Gothic Temple. The culvert, whose 4” thick capstones were located 200/400mm below ground level, was exposed for a distance of about 1.69m starting close to the pasture path at its west end. The culvert, constructed of a mix of dressed Bath stone with some use of rubble, is 11” wide and 12” high.

Figure 25 : Culvert 4 looking west

Two trial pits were dug in a south westerly direction in order to track the direction of the culvert. The culvert was found in two locations at a depth of 30cm and 40cm. The northeast end of the culvert was exposed 3.9m from the pasture path by partially lifting a large capstone at about 45cm below ground level. The capstone measured 635mm by 810mm, with a thickness of 150mm.

Figure 26 : Culverts 4 & 6 looking east

Below the capstone was revealed a T junction with Culvert 4 entering another culvert (Culvert 6), also containing running water and flowing downhill on a broadly south/north axis. The source of the water in Culvert 6 was not identified, but in all probability emanated from the culvert located below a manhole located on land within Prior Park College on the bank below and to the east of the Mansion House.

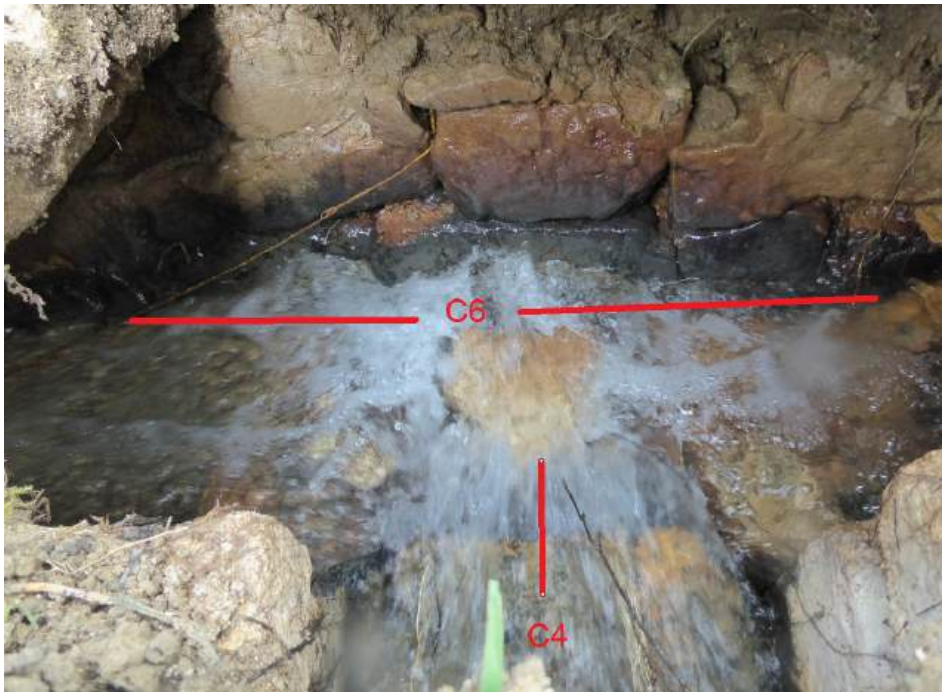


Figure 27 : C4 & C6 T Junction looking east

At its junction with Culvert 6, Culvert 4 was 12” wide and 12” high. Culvert 6 was 18” wide and 17” high upstream (south) of the junction with Culvert 4. By contrast Culvert 6 was 23” wide and 18” high downstream (north) of its junction with Culvert 4. This would make sense as the combined volume of water downstream of the junction is now greater. A plan of this excavation is at Appendix C.

### 4.4.2 Culvert 5

The top and east side of Culvert 5 were found to be exposed and above ground for about 1.47m with water leaking from its east side into a very boggy area. Water was also emerging from the ground above and to the side of the south end. The west side was abutted by pasture turf. The culvert was excavated for a further 1.07m north. The exposed culvert ran in a broad south/north direction at a bearing of 350° North for 2.9m.

Figure 28 : Culvert 5 looking south

The culvert is constructed of undressed Bath stone with single course rubble side walls varying in depth from 7” to 10” and with a width of 9”. The capstones varied in width across the culvert from with a thickness of about 4”. The thickness of the bottom stone could not be determined. The culvert contained running water. A water dye test confirmed that the water in Culvert 5 ran into Culvert 6 somewhere south of its junction with Culvert 4.

### 4.4.3 Culverts 6 and 7

In July we again lifted the capstone over the junction of Culverts 4 and 6. Our objective was to establish its direction north to find out where it would have encountered the dam wall. The northward investigation of Culvert 6 was continued by attaching a torch to a 10m length of drainage rods coming to a point 5.4m south of the dam wall. Here a 700mm deep trial pit (Trench 9) was dug striking the top of a stone structure.

Figure 29 : Culvert 7 arch top looking south in Trench 9

A dislodged stone enabled a camera to be lowered into the structure and establish that it was an arched culvert, to be known as Culvert 7, approximately 34" (0.86m) high (to the top of the arch) and 28" (0.7m) wide. It is estimated that the rectangular Culvert 6 becomes the arched Culvert 7 approximately 15m south of the dam wall. A dye test carried out in March confirmed that the water flowing through Culvert 6 ended up in the Upper Lake. The July discovery means that the water is also carried through Culvert 7.

Figure 30 : Arched culvert C7 looking north

4.4.4 Pipe 1

An initial torch lit visual inspection of Culvert 6 revealed water entering through what appeared to be a ceramic pipe (estimated to have a diameter of 12”) on its east side, about 1.4m north of its junction with Culvert 4. A water dye test confirmed that the water entering the culvert emanated from an 8” diameter ceramic pipe located on the west side of the stream which runs above the east side of the east path.

Figure 31 : Culvert 6 Inlet pipe

Immediately to the north of this outfall pipe is a stone structure believed to have been built as a cistern to control the flow of water and perhaps provide a silt trap.  Further investigation of this structure is required.

## 4.5 Stone Trough

In March a stone structure was spotted in nearby undergrowth which when excavated was thought to be a stone water trough and this was further investigated in July to identify a potential water supply

Figure 32 : Trough March 2024 looking east

To date, desk top research has revealed no mapping or other evidence to establish the date or purpose of the trough. It is located on the east side of the pasture below the fence adjoining the east path.

Figure 33 : Trough location

The base of the trough comprises either a single block of stone which has cracked or two blocks of stone which have been poorly jointed. Its overall size is 750mm x 1280mm. The front (west) and right (south) sides of the trough have been stone robbed. The lower part of the left (north) side remains. It slopes from back to front and is 140mm thick. The lower part of the rear (east) side remains, also 140mm thick. However, the right (south) end of the rear side has been repaired/reconstructed with cement mortar. Set into the repaired/reconstructed rear side is a glazed earthenware pipe having an internal diameter of 3” (76mm) and an external diameter of 4” (102mm).

Further excavation in July (Trench 6) behind the trough’s rear (east) side revealed a 300mm section of 3” (76mm) internal diameter collar jointed glazed earthenware pipe running in a broadly east/west direction and aligned with the earthenware pipe set into the trough’s rear side. The pipe contained a T junction on its left (north) side. There was a ½” thick layer of calcite in the bottom of the pipe. The earthenware pipe was on a broad east/west alignment which suggests that it might have been fed from a pipe which is located on the west side of a stream which runs on the east side of the east path. That pipe is located above the present water level of the stream and has a diameter of 4” (102mm). Water was poured from a watering can into this pipe, but the results were inconclusive.

Figure 34 : Earthenware Pipe

About 800mm north of this earthenware pipe a stone was lifted to reveal what we believe to be a 90mm x 90mm square soakaway. having a depth of 140mm. Immediately above and to the right (south) of this soakaway was a 3” internal diameter glazed earthenware pipe on a north/south alignment which would connect it with the T junction previously described.

If the trough was originally supplied with water from the stream located to the east, the soakaway would act as a form of overflow, in the same way a ball valve does in modern cattle troughs.

Figure 35 : Soakaway and inlet pipe

To the right (south) of the trough, fragments of very rusted iron pipework were uncovered, suggesting perhaps a later supply of piped water. The internal diameter of the pipe was 0.4" (10mm). This dimension can only be approximate because of the heavy rusting.

Figure 36 : Metal pipe

In front (west) of the trough was an area of 'tumbling' which we concluded had no archaeological significance.

# 5 Finds

There were many finds of various types but very few which could be definitely dated earlier than modern times. It had been hoped that Ralph Allen's wealthy visitors had dropped many valuables as they promenaded around the bason but this may be due to the short life of the first phase of the garden. Items which could be roughly dated included a lead palm guard, a probable George III coin and clay pipe fragments. In addition there were nails, iron pieces and oyster shells which probably related to the construction or demolition of the dam and bason.

A complete list of finds is included in Appendix A.

## 5.1 March 2024 metal detection - Pasture

In March 2024 a metal detecting sweep of the pasture was carried out in preparation for the ground investigations planned for later in the year.

The 106 finds recovered included 60 spent .303 calibre cartridge cases, metal buckles, decimal and older coins, dog tags, modern jewellery, nails, palm guard, pen knife, spoon and possible weight.

### 5.1.1 Palm guard

The standout find is probably a complete Post Medieval palm guard (14) dating from 1600 to 1900 and commonly used for leather working. The guard is made of lead, broadly oval in plan and D-shaped in cross section. The obverse face is slightly convex and in the centre is a slight circular depression of the type commonly found on the surface of palm guards. The reverse face is flat, although slightly uneven.

Figure 37: Palm Guard 14

### 5.1.2 .303 Calibre cartridge cases

60 spent .303 Blank Mark VI (post 1907) cartridge cases were found throughout the pasture at an approximate depth of 150mm. Some were found in pairs. Two further cartridges (Head Stamp RG 76 and Z67 56) were recovered from Trench 6 in July.

The headstamp of a cartridge is the major identifier of the manufacturer and year.

| **Stamp** | **No.** | **Date** | **Manufacturer** |
|---|---|---|---|
| HXP 82 | 28 | 1980s | Greek Powder and Cartridge Company |
| K67 Z67 | 5 | 1920-1976 | Kynock Division of ICI Ltd, Birmingham |
| RG 14 | 2 | 1942-1973 | Ministry of Supply Factory (later Royal Ordnance Factory), Radway Green, Cheshire |
| RG Z6 | 1 | 1942-1973 | Ministry of Supply Factory (later Royal Ordnance Factory), Radway Green, Cheshire |
| RG Z67 14 | 1 | 1942-1973 | Ministry of Supply Factory (later Royal Ordnance Factory), Radway Green, Cheshire |
| XP5 (or 6) | 1 | No information | |
| Z87 RG?4 | 1 | | Probably Radway Green (RG), 'Z' denoting nitrocellulose fill |
| Z67 50 | 1 | No information | |
| Z67 56 | 1 | No information | |
| 84 | 3 | No information | |
| Indecipherable | 16 | No information | |
| **Total found** | **60** | | |

Data regarding the date and origin were obtained primarily from this web site:

https://stephentaylorhistorian.com/2020/09/19/british-303-cartridge-case-identification-headstamps-and-much-more/

Figure 38 : Cartridges

The cartridges were most likely dropped during firing exercises carried out by the Prior Park College Combined Cadet Force (CCF) during the 1980s up until the garden was purchased

by the National Trust in 1993. Distribution of finds was mainly across the lower part of the pasture.

Figure 39 : .303 bullet case finds layout

Two percussion cap remains (39 & 45) from larger calibre bullets were also recovered, both with the letters LONDON on the headstamp.

### 5.1.3 Belt buckles

Two possible belt buckles were recovered, but with no obvious evidence of a prong for the belt. Another belt buckle (40) was also recovered with possible evidence of a belt prong. They are all in all probability 20th century or later.

Figure 40 : Buckle 40

5.1.4 Clay pipe

A small section of clay pipe stem was recovered. Using a digital calliper the internal diameter was measured as being 5/64". This would suggest it is late 17th to late 18th Century [The National Pipe Archive].

5.1.5 Coins

Four pre decimal coins were recovered. Whilst one was indecipherable (5), two others are identified as a Shilling dated 1929 (21) and a Penny dated 1921 (22).

The fourth coin (37) has the letters 'GEO GI' which is probably 'GEORGIUS'. It has been suggested that this might be a George III Halfpenny (1760-1820).

Figure 41 : Coin 37

13 decimal coins were recovered dating from 1971 to 2001. The 1p coin dated 1971 would be one of the first decimal coins to be introduced following decimalisation in February 1971.

### 5.1.6 Metal disc

An irregularly shaped metal disc (15) with a hole in the middle was recovered. Its diameter is 35/36mm, it is 1.8mm thick and it weighs 18 grams (5/8 ounce).

Possible interpretations include a possible button or weight for a dress or skirt. Enquiries have been made of National Trust archaeologists at Smallhythe Place, where a similar looking disc has been interpreted as being a post-medieval copper-alloy disc weight.

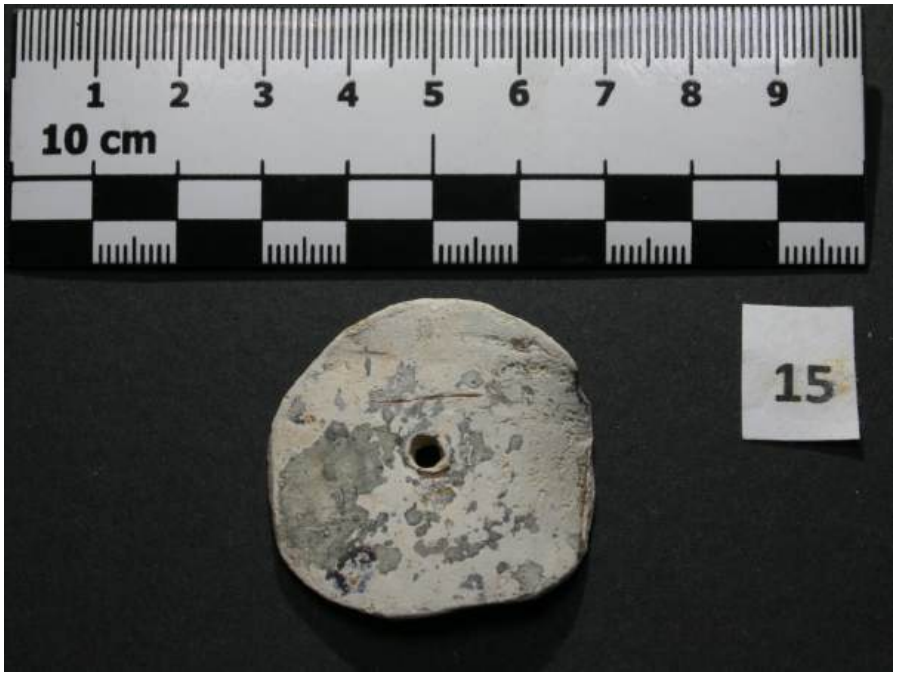


Figure 42 : Disc 15

### 5.1.7 Dog tags

Two dog tags were recovered, presumably lost whilst dog walking since the garden was purchased by the National Trust in 1993.

### 5.1.8 Modern jewellery

Four items of modern jewellery were recovered.

- A modern Sterling silver ring (16) stamped '925'.
- One half of what was probably a silver or stainless steel "Best Friends' necklace (17).
- a small charm (24) with a small suspension hole through which a small ring has been threaded. On the obverse is a male head and the lettering 'caesarav— '.
- A silver identity bracelet and chain (44).

5.1.9 Metal items

Five rusty metal objects were recovered, including a possible blanking cap for the end of a metal pipe (3), a metal ring 18), a pair of hinges (20) and a possible container lid (35).

A small wedge shape piece of metal (4) was also recovered, which may have been a wedge for tightening wooden tool shafts.

Figure 43 : Wedge 4

5.1.10 Nails

Four rusty iron nails were recovered. Three are hand wrought and therefore pre 1800. One has been bent into a ‘u’ shape and is possibly a horseshoe nail (38).

Figure 44 : Horse nail 38

5.1.11 Weight

A complete probable lead weight or plumb of uncertain date was recovered (9). The lead is conical with a flat base and rounded tip with a small circular dimple.

Figure 45 : Plumb 9

## 5.2 July 2024 excavations - Pasture

The 29 finds recovered included an animal tooth, fragments of china, clay pipes and glass, nails, oyster shells, wooden dowels and petrified wood.

### 5.2.1 Animal tooth

An animal tooth (60), probably from a sheep, was found in trench 2.

Figure 46 : Animal tooth 60

### 5.2.2 Chinaware

Three small fragments of decorated chinaware were found in trenches 3 and 6.

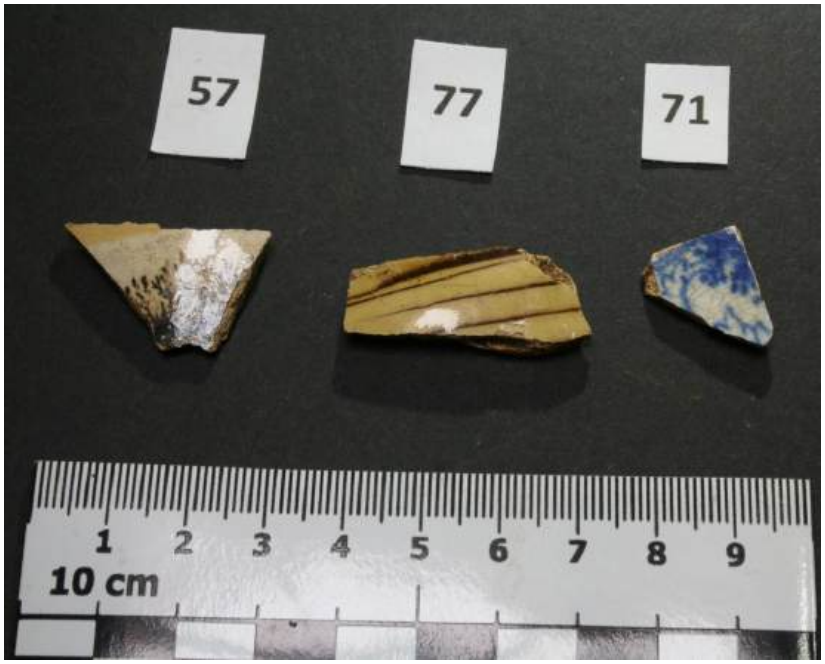


Figure 47 : China

5.2.3 Clay pipes

Two fragments of clay pipe stem (54 & 75) were found in trenches 1 and 3. A small section of clay pipe stem with a fragment of the bowl and spur (53) was found in trench 4.

Using a digital calliper the internal diameters were measured as being 5/64". This would suggest they are late 17th to late 18th Century [The National Pipe Archive].

It is likely that these clay pipe fragments were concurrent with the construction or demolition of the dam, perhaps dropped by those building or demolishing the dam.

5.2.4 Glass

A fragment of half round glass (52) which looks like the neck of a bottle was found in trench 3. The inside face appears to have been gilded. The glass is 3.5mm thick.

Gilding is usually achieved using gold dust/gold paint/gold leaf applied to one side, usually the reverse, to enhance the reflective beauty of the glass. Typical applications are for signage or artistic decoration on glassware.

Figure 48 : Glass 52

5.2.5 Metal

A fragment of moulded lead (68) which may have been part of a window frame was found in trench 6.

A 35mm long fragment of what might have been uninsulated copper cable (69) was also found in trench 6.

5.2.6 Nails

7 rusty iron nails (48, 51, 55, 58, 59, 63 and 64) were found in trenches 1, 2 and 3.

All are rectangular, tapering uniformly from the head to the tip, although most of the original tips are missing. The likelihood is that these are hand wrought nails dating from before 1800.

Whilst It is likely that most of these nails were concurrent with the construction or demolition of the dam, why were they in this location? One suggestion is that they were used in the construction of timber scaffolding used when the dam was built, or demolished, or both.

Figure 49 : Nails

5.2.7 Oyster shells

Two fragments of oyster shell (49 & 76) were found in trenches 2 and 3.

Oysters were not a luxury in the 18th Century – indeed, they were eaten as snacks almost as packets of crisps are today. Masons used the shells, or shards of slate, to pack mortar joints and support the stone until the soft lime mortar had set.

Whilst we have been unable to date the shells, they may well be either discarded snacks or once formed part of the wall structure.

Figure 50 : Oyster shells

### 5.2.8 Slate

Two fragments of slate (56 & 72) were found in trenches 2 and 7.

The only explanation for their presence is that they may have been used to pack mortar joints and support the stone until the soft lime mortar had set.

Figure 51 : Slate

### 5.2.9 Stone

A fragment of stone (50) was found in trench 3. The stone is about 3mm thick with a layer of calcification 7 to 15mm thick. This may be part of a larger piece of stone which had been exposed to water over a number of years, perhaps in a stone culvert.

Figure 52 : Stone 50

5.2.10 Wood

Four items of wood were recovered from trenches 2 and 7.

Two (61 & 62) are fragments of cylindrical shaped wood tapering at one end. They are reminiscent of wooden dowels.

Figure 53 : Dowels

Two (73 & 74) are fragments of what appears to be petrified wood.

Figure 54 : Wood 74

## 5.3 Trough investigation

The nine finds recovered included china, glass, metal pipe, pottery and slate.

### 5.3.1 Chinaware

One small fragment of chinaware with blue and white decoration with a brown rim.

### 5.3.2 Glass

Three small fragments of glass, one clear, one brown and one dark green.

### 5.3.3 Metal pipe

A 140mm length of rusted iron pipe (8) having an internal diameter of c17.8mm. Another 300mm length of rusted iron pipe (9) having an internal diameter of c 13/16mm. All measurements affected by heavy rusting. Both pipes may have been part of a water supply pipe, evidence of which was found to the south of the trough.

Figure 55 : Metal pipe 9

A 230mm length of rusty iron pipe with a (copper) sheath (6). Internal diameter 20mm. We have no explanation thus far for the purpose of this pipe.

Figure 56 : Metal pipe 6

### 5.3.4 Pottery

Two fragments of glazed pottery (2), both with a gentle curvature, the largest being 16.5mm thick. They may have been part of a glazed water pipe.

Figure 57 : Pottery 2

A small fragment of glazed pottery (3), coloured cream on one side and brown on the other. Probably part of a piece of tableware.

### 5.3.5 Slate

9 fragments of slate, some with traces of mortar which may have been used for ‘packing’ in the construction of the stone trough.

Figure 58 : Slate 1

# 6 Interpretation

The chronology of Prior Park garden and its changing design between the building of the Mansion and Ralph Allen's death has to be surmised from the limited number of maps, paintings and recorded events of this 30 year period. We know that Allen dismissed John Wood as architect in 1737 during the building construction to employ his Clerk of Works, Richard Jones to manage the project and that Jones made changes to the east wing design. A difference noted in the 1742 Thorpe map of the oval shape of the bason may be another change by Jones to the original circular design by Wood.

Allen only obtained the Collet land at the bottom of the garden in 1743 (Fig 59). The changes that can be seen by comparing the Walker and Robins paintings, made at the beginning and end of the 1750s, show that this opportunity to remake a larger garden at Prior Park to reflect the latest landscape fashions was quickly grasped.

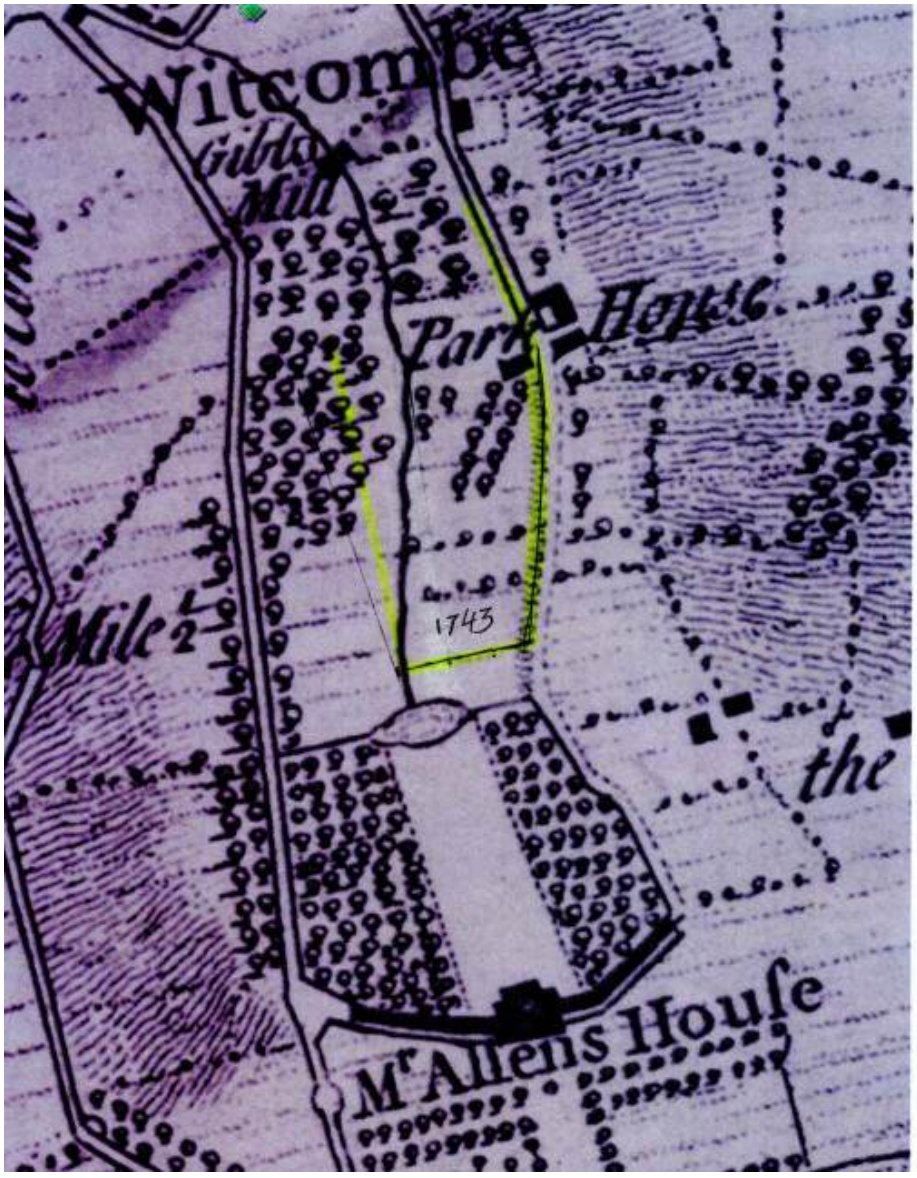


Figure 59 : Collet land purchase, 1743, outlined in yellow

Robins captured this later garden in 1758 with the cascade and lakes but only a few years later the "*Survey of the Manours"* by Thorpe and Overton (Fig 6) shows no cascade and this may point to a date for its early abandonment.

The timeline in Fig 60 shows the sequence of events between 1734-64 and the evidence found in the excavations is described below.

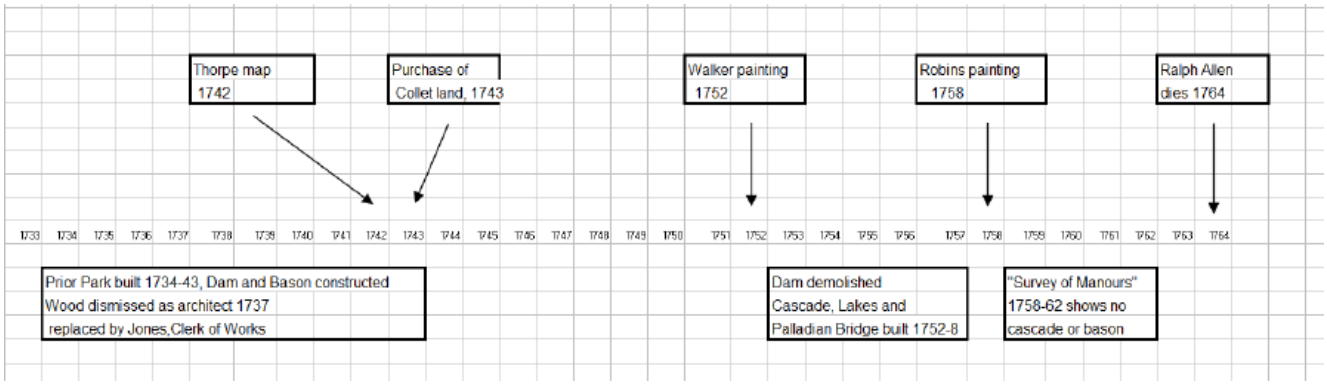


Figure 60 : Timeline of Prior Park, 1734-64

## 6.1 Culverts

Thorpe's map of 1742 (Fig 59) shows a water course leading from the bason down the valley towards Gibbs Mill above Widcombe and it suggests this is how the overflow of water from the bason was conducted down the hillside at this time.

What has now been found is that the line of the main arched culvert C7 under the dam foundations shows no disturbance has been caused to the dam stonework (Fig 61 below). This must indicate that a water outlet from the dam was designed as part of the plan for the original construction.

Figure 61 : Route of arched culvert under dam wall

What is also apparent from Thorpe's map is that there is no sign of any watercourse filling the bason which can only be explained by underground culverts, particularly C6. In addition, the springs above and below the mansion were clearly known by the architect to be significant to the stability of the building and a further network of culverts to drain this water has been mapped coming down into Prior Park Garden from the College grounds above. All this water needed to be channelled in various ways down the hillside, either as visible water features in streams, pools and cascades or taken underground, but in a controlled way which would not mar the formal garden.

It seems therefore that the design for the bason was for it to be filled from culvert(s) bringing water down the hill with some type of sluice/gate arrangement to control the bason water level and send any overflow out from the dam into the stream shown on the map. It has not yet been established whether the culvert junction under the site of the bason and the continuation of C6/7 to the dam outfall was constructed at the same time as the dam or later.

However, the oval shape of the bason shown on the Thorpe map of 1742 (as opposed to Wood's 100ft round bason) suggests that the north end of Culvert C6 could represent the main inlet of water at the southern edge of the bason.

Examination of culvert C7 does show it is the 'Main Culvert' as the dimensions match the outfall arch by the Palladian bridge described by Tina Barnett in the 1994 report submitted to the National Trust by Bath Archaeological Trust. During excavation for the silt trap built to the south of the upper lake, a culvert was found and described as follows:

'The Main Culvert was shown to be of a standard 18th century arched design. Constructed of roughly faced limestone blocks, it had an internal width of 0.7m and measured 0.9m in height.'

## 6.2 Cascade

Excavation in 2023 strongly pointed to the stonework revealed below the centre of the dam wall to be the top part of the cascade shown in the 1758 Robins painting. The painting also showed that the dam had gone and the Palladian bridge and lakes had been built at the bottom of the valley. More of this cascade was revealed in 2024 including the western edge and the connection with the dam wall as described in 4.3. How the cascade stonework had been laid and mortared over the dam foundation stone course after demolition was quite clear on excavation and proved the Robins sketch was authentic.

What is not clear was how water was presented at the top of the cascade after the dam had gone. The Robins painting shows no dam but it is possible the bason was retained allowing the water flowing into it to pass over its northern lip directly down the cascade. This would be a more attractive proposition than water emerging directly from underground culverts and/or an exposed stream.

No date or reason is known for the removal of the cascade, and bason if that was still in existence. However the demise of the cascade would certainly have required the construction of culvert C7 from the original dam wall outfall down the hill to take the water to the lakes.

## 6.3 Dam

The Walker engraving shows a very much deeper valley crossed by the dam which cannot be explained by the small 2.6m change in topography found between the east and centre of the dam foundations. Any estimation of the height of the dam from the engraving would be likely to be misleading.

No engineering reason exists for the dam being very high to contain the bason as an ornamental pool with a likely depth of say 1m. Also, if the full mansion reflection is a factor, the limit of a 2m height of dam wall above the water level would also apply. 1-2m therefore seems a reasonable estimate for the height of dam wall top to bason surface.

Taking these estimates together would indicate a visible wall height at the centre of the dam of say 2-3m even though the considerable width of the dam foundations that have been excavated suggest a much higher wall. The width of the dam probably only represents the need for a wide pathway for visitors to stroll along the top of the wall above the bason.

The subsequent removal of the dam is assumed to have taken place because the landscape restyling of the garden required a clear view from the Mansion down to the new lakes and Palladian bridge. To achieve this it would only be necessary to remove sufficient stonework to allow the line of sight and this is apparent in the profile of the hillside shown in Fig 62. Excavation of the wall shows that stonework lies only buried by 20-30cm depth of soil cover across the remaining foundations, ie a minimum removal of stonework has taken place required for the view.

Figure 62 : Profile of hillside from mansion to lakes

The possibility discussed in 6.2 that the bason was used to feed the cascade would mean that the water level in the bason also determined the position of the top of the cascade and the level that was to remain of the dam foundations.

## 6.4 Bason

Turning again to Thorpe's map it can be seen that the bason is oval and not circular as seen in John Wood's architectural plan and this may be due to changes made by Richard Jones, employed after Wood's dismissal. It is possible that the shape of the bason was changed and the convex dam profile that has been uncovered with an estimated length of over 60m, twice the diameter of the planned circular bason, would seem to be more apposite for the oval pool as shown by Thorpe.

As yet no evidence of the bason has been found although it would most likely have had a stonework surround and a waterproof impermeable base of clay to retain water. Although some possible evidence of blue lias puddling clay was found at one place close to the centre of the dam wall in 2023, nothing of this sort was seen in the two trenches (T9,T10) dug into the bason pool area to locate the culvert junction and arched culvert. An explanation for this may be that when the bason was removed to return the pasture to grass, together with any landscaping requirements, the clay lining of the bason would need to be removed and replaced with topsoil.

## 6.5 Trough

With no documentary or hearsay evidence for a trough in this location, it is difficult to draw any meaningful conclusions but it is thought the trough was originally supplied with water from the stream located to the east, the soakaway acting as a form of overflow, in the same way a ball valve does in modern cattle troughs.

We believe it is most likely to have been built as a cattle trough during the 19th or early 20th centuries. There is photographic evidence from the early 20th century of estate fencing along the east side of the upper and middle lakes, suggesting that cattle were grazing in the pasture. Enquiries of the first Head Gardener employed by the National Trust could be beneficial.

## 6.6 Finds

### 6.6.1 March Pasture Finds

The majority of the March finds provide evidence of mainly post war use of the garden by visitors, most probably since ownership by the National Trust in 1993. Visitors were dropping coins, inexpensive jewellery, dog tags and belt buckles. The .303 cartridges provide evidence of the garden being used by Prior Park College for CCF exercises, probably in the period leading up to its acquisition by the National Trust.

The nails, clay pipe and possible George III halfpenny point to the 18th Century and the period when the dam and cascade were being built, used and then demolished. What we cannot explain is the presence of a palm guard.

### 6.6.2 July Pasture Finds

With the exception of the nails, wooden dowels, slate and oyster shells, none of the finds contribute to our knowledge of the construction or use of the dam or cascade. However, what the chinaware, glass and pottery do point to is evidence of subsequent human activity, perhaps picnics, at some time or other. What we cannot explain is the presence of petrified wood or calcified stone.

### 6.6.3 March and July Trough Finds

The two sections of metal pipes clearly once belonged to a pipe which may have supplied water to the trough. We have not yet been able to explain the function of the metal pipe with a copper sheath. The fragments of glazed pottery pipe in all probability came from the fractured water supply pipe found in July. The fragments of slate may well have once been used as packing in the construction of the trough. None of the finds have enabled us to accurately date the construction of the trough.

# 7 Conclusions

The objectives set for the excavation have been largely met in revealing more of the dam wall, cascade and culverts so giving a greater understanding of their design and a possible chronology of these different elements. It has also been possible to make some observations on the relative heights of dam wall and bason pool in the landscape.

With the culverts there is more knowledge of the layout of the network from various parts of the higher garden down to the bason and onward to the Palladian Bridge. Reappraisal of Thorpe's 1742 map and Robins painting has shown that the sequence of culvert construction to the lower lakes would probably have been in two or more stages before and after the cascade period.

The eastern end of the dam stonework was not quite reached by the excavations but, with the dimensions already found and assuming a symmetrical design, the overall dam length is over 60m sweeping in an elegant convex curve across the valley with tapered ends turning outwards. A low height for this dam is suggested with the broad 3m width explained by use as a path around the bason.

Until evidence of the bason is unearthed there is now a question about its shape, oval or circular, given the Thorpe map and the size/profile of the dam wall. It does however now seem possible that the bason was kept to supply water to the cascade after the dam was demolished and the lakes constructed at the foot of the valley.

Some remaining questions surrounding the dam, bason and cascade could be further examined in another excavation.

- What shape was the bason and is there any evidence of its stonework or clay lining?

  The Walker engraving shows a separate stone surround which still may still partly remain and would help in confirming its shape and size.

- How did the culvert water feed the bason pool, then later the cascade and pass on to to the lakes?

  Further excavations at the northern and southern edges of the bason may provide answers to the sequence of culvert design, control and construction.

- Where is the “viewing area”?

  A principal feature of the eastern dam wall that was not found was this area shown in the Walker engraving with its various walls and statues. The perspective of the picture may mean that this area lies a little south of our trenches but it is not indicated by the geophysics and could be another piece of artistic licence by Walker.

- Where is the foot of the cascade?

Evidence of the bottom of the cascade could be sought to determine its length and the route of the water from this lower point on to the lakes.

- How do the other water sources connect?

To complete the mapping of the culverts would need further examination of the C5 and C6 junction, water coming from the Prior Park College grounds, and the silt trap and cistern above pipe P2.

# APPENDIX

## A FINDS

### A1 Finds from Prior Park Pasture – March 2024

All dimensions mm

Site Code: PPP24 (Prior Park Pasture 2024)

18 to 24 March 2024

| URN | Date | Grid Ref ST | | Group | Description |
|---|---|---|---|---|---|
| 26 | 20/03/2024 | 76175 | 62993 | Buckle | A possible buckle frame of rusty metal. Dimensions: Length 74mm, Width 50mm, Thickness 3mm, Weight 18g. The shorter sides each have small rectangular openings. |
| 30 | 20/03/2024 | 76174 | 63003 | Buckle | A possible metal buckle frame. The shorter uprights are of different widths but there is no evidence of a prong for a belt. The reverse sides of the uprights have small teeth. The longer sides have loops on the reverse side. Dimensions: Width 60mm, Height 43mm, Weight 24g. |
| 40 | 21/03/2024 | 76124 | 63188 | Buckle | A metal buckle frame with possible evidence of a belt prong. Straight on one side and curved on the other side. Dimensions: Upright straight side length 33.8mm, Width 28.8mm. Weight 8g. |
| 43 | 21/03/2024 | 76136 | 63211 | Buckle | A rectangular brass buckle frame with possible evidence of a belt prong. Dimensions: Long side 32.6mm, Short Side 24 mm. Weight 6g. |
| 1 | 18 to 21 March 2024 | See schedule | | Cartridge | Sixty .303 calibre blank cartridge cases. Refer to full description. |
| 39 | 21/03/2024 | 76132 | 63237 | Cartridge | Percussion cap remains for a cartridge. Headstamp includes 'LONDO' with further indistinct letters. Dimensions: Diameter 22mm. |

| | | | | | |
|---|---|---|---|---|---|
| 45 | 21/03/2024 | 76104 | 63259 | Cartridge | Percussion cap remains for a cartridge. Headstamp includes LONDON with further indistinct letters. Dimensions: Cartridge case internal Diameter 36/37mm, external diameter 39mm. |
| 13 | 19/03/2024 | 76139 | 63176 | Clay pipe | Small section of clay pipe stem Dimensions: Length 34mm, External Diameter 5mm, Internal Diameter 5/64 (2mm). Internal diameter suggests 1680 to 1700. |
| 5 | 19/03/2024 | 76120 | 63121 | Coin | Possible coin. Dimensions: Diameter 28mm. Thickness 2mm. Very limited lettering is indecipherable. |
| 21 | 20/03/2024 | 76160 | 63052 | Coin | One Shilling dated 1929, in good condition. |
| 22 | 20/03/2024 | 76154 | 63045 | Coin | One Penny dated 1921 |
| 37 | 21/03/2024 | 76122 | 63186 | Coin | Pre decimal coin. The only readable letters are 'GEO GI' which is probably GEORGIUS which would make the coin Georgian. Dimensions: Diameter 28/28.5mm, Thickness 2.1mm, Weight 8g. May be GIII (1760-1820). Found on apex of carriage drive. |
| 47 | 21/03/2024 | 76139 | 63190 | Coin | Any lettering or decoration is indecipherable. Dimensions: Diameter 21.6mm, Thickness 1.5 mm, Weight 4g. |
| 6 | 19/03/2024 | 76141 | 63120 | Decimal coin | £1 coin dated 1983. |
| 7 | 19/03/2024 | 76141 | 63120 | Decimal coin | 20p coin dated 2001 |
| 8 | 19/03/2024 | 76141 | 63120 | Decimal coin | 20p coin dated 1982 |
| 19 | 20/03/2024 | 76163 | 63053 | Decimal coin | 20p coin dated 1982 |
| 23 | 20/03/2024 | 76161 | 63043 | Decimal coin | 50p coin dated 1997 |
| 25 | 20/03/2024 | 76168 | 63047 | Decimal coin | 5p dated 1975 |
| 27 | 20/03/2024 | 76175 | 62990 | Decimal coin | 20p coin dated 1982 |
| 28 | 20/03/2024 | 76173 | 62987 | Decimal coin | 50p coin dated 2001 |
| 29 | 20/03/2024 | 76172 | 62977 | Decimal coin | 2p coin dated 1989 |
| 32 | 20/03/2024 | 76174 | 63004 | Decimal coin | 1p coin dated 1971 (Decimalisation Feb 1971) |
| 33 | 20/03/2024 | 76170 | 63011 | Decimal coin | 2p coin dated 1977 |
| 42 | 21/03/2024 | 76137 | 63137 | Decimal coin | £1 coin dated 1985 |
| 46 | 21/03/2024 | 76117 | 63288 | Decimal coin | 1p coin dated 1976 |

| | | | | | |
|---|---|---|---|---|---|
| 15 | 19/03/2024 | 76159 | 63069 | Disc | An irregularly shaped metal disc with a hole in the middle. Dimensions: Diameter 36mm max35mm min. Thickness 1.8mm, Weight 18 g (5/8 oz). A possible weight or button. |
| 34 | 20/03/2024 | 76116 | 63173 | Dog tag | A dog tag with a suspension hole for attaching to a collar. |
| 41 | 21/03/2024 | 76137 | 63193 | Dog tag | A possible metal dog tag with an external suspension hole for attaching to a collar. |
| 10 | 19/03/2024 | 76159 | 63143 | Handle | A small metal handle with fragments of leather at one end. Perhaps once part of luggage, either a small handle or strap bracket. Dimensions: Length (straight line) 53mm, Width 11.7mm, Thickness 3.7mm Weight 12g. |
| 16 | 19/03/2024 | 76165 | 63066 | Jewellery | A modern Sterling silver ring stamped '925'. There is an outer rotating ring with hammered decoration. For sterling silver, the minimal millesimal fineness is 925 (92.5% silver). It is what is known as the ‘sterling standard’. A 925 sterling silver hallmark is stamped on the bottom of each genuine piece. Dimensions Internal diameter 18.7mm External diameter 23mm, Weight 6g. |
| 17 | 19/03/2024 | 76166 | 63067 | Jewellery | One half of what was probably a silver or stainless steel "Best Friends' necklace (without chain) with the words "FRIENDS' stamped on one side, the other side having a starburst pattern. Dimensions: Length 22mm, Thickness 1.6mm, Weight 2g. |
| 24 | 20/03/2024 | 76161 | 63043 | Jewellery | A small charm with a small suspension hole through which a small ring has been threaded. Obverse: A male head with the lettering 'caesarav--' with some further indecipherable lettering. Reverse: A crustacean with the lettering 'WRL'. Dimensions: Diameter 18.5mm, Thickness 2.3mm, Weight 2g. |
| 44 | 21/03/2024 | 76133 | 63224 | Jewellery | A silver identity bracelet and chain with no inscription or hallmark. Dimensions: Overall length 200mm, Engraving Plate length 32.6mm, Weight 26g. |
| 3 | 18/03/2024 | 76140 | 63112 | Metal | A metal disk with no visible markings. Dimensions: Diameter 28mm. Thickness .5mm. Possibly a blanking cap for the end of a metal pipe. |
| 4 | 18/03/2024 | | | Metal | Small rusty wedge shaped piece of metal. Dimensions: 35mm long. 21mm wide reducing to 15mm. Possibly a wedge for tightening wooden shafts. |
| 18 | 20/03/2024 | 76154 | 63060 | Metal | A rusty metal ring. Dimensions: Outer diameter 50mm, Internal diameter 40mm, Weight 18g. |
| 20 | 20/03/2024 | 76163 | 63050 | Metal | A pair of rusty metal hinges. Hinge 1 dimensions: Length 106mm, Max Width 41 mm. Weight 44g. Hinge 2 Dimensions: Length 100mm. Max Width 40mm, Weight 34g. Hinge 2 has a fixing hole at its narrow end. |

| | | | | | |
|---|---|---|---|---|---|
| 35 | 20/03/2024 | 76091 | 63208 | Metal | A possible metal lid, badly squashed and damaged. Dimension: Diameter 56mm, Weight 22g. |
| 11 | 19/03/2024 | 76139 | 63176 | Nail | Rusty four sided rectangular iron nail with tip missing and a flat rectangular head Dimensions: Length 46mm, Thickness 6.5/9mm. Hand wrought. Pre 1800. |
| 12 | 19/03/2024 | 76139 | 63176 | Nail | Rusty four sided rectangular iron nail with tip missing and a flat rectangular head Dimensions: Length 45.5mm, Thickness 4/6.3mm. Hand wrought. Pre 1800. |
| 31 | 20/03/2024 | 76174 | 63003 | Nail | Rusty four sided rectangular bent iron nail with tip missing and a flat rectangular top with the original head missing. Dimensions: Length 64mm, Thickness 6/7mm. Hand wrought. Pre 1800. |
| 38 | 21/03/2024 | 76137 | 63137 | Nail | Rusty four sided rectangular iron nail bent into a 'U' shape. Possibly a horseshoe nail. Dimensions: Length 27mm, Width 3.75mm, Thickness 4mm, Weight 6g. |
| 14 | 19/03/2024 | 76154 | 63081 | Palm Guard | A complete Post Medieval lead palm guard, c.AD 1600-1900. The palm guard is broadly oval in plan and D-shaped cross section; all the edges are uneven. The obverse face is slightly convex and in centre is a slight circular depression of the type commonly found on the surface of palm guards. The reverse face is flat, although slightly uneven. The object is 79.8mm long, 47.5mm wide, 9.2mm thick and weighs 138 grams. |
| 36 | 21/03/2024 | | | Pen Knife | A rusty penknife with no identification marks. Dimensions: Length 92mm, Max. Width 17mm, Weight 34g. |
| 2 | 18/03/2024 | 76109 | 63107 | Spoon | Metal teaspoon 130mm long with handle slightly bent. Lettering on the handle that is readable: Line 1 - ….LCO. Line 2 - …..KEL SILVER. Line 3 - …..ENGLAND. Nickel Silver was first patented in England in Birmingham by George Elkington in 1840. |
| 9 | 19/03/2024 | 76162 | 63142 | Weight | A complete probable lead weight or plumb of uncertain date. The lead is conical with a flat base and rounded tip with a small circular dimple. Dimensions: Length 64mm, Diameter 16mm, Weight 110g. |

## A2 Finds from Prior Park Pasture – July 2024

All dimensions mm

Site Code: PPP24 (Prior Park Pasture 2024)

15 to 22 July 2024

| URN | Date | Trench | Group | Description |
|---|---|---|---|---|
| 60 | 19/07/2024 | T2 | Animal | Small animal tooth, possibly from a sheep. |
| 66 | 19/07/2024 | T6 | Cartridge | .303 calibre blank cartridge case. Headstamp RG Z6 |
| 67 | 19/07/2024 | T6 | Cartridge | .303 calibre blank cartridge case. Headstamp Z67 56 |
| 57 | 17/07/2024 | T3 | Chinaware | Small fragment of glazed chinaware. Outside face cream/dark brown decoration. Inside face yellow. Possible yellow rim. 3.8mm thick. |
| 71 | 22/07/2024 | T6 | Chinaware | Small fragment of blue and white decorated glazed chinaware. 3mm thick. |
| 77 | 19/07/2024 | T3 | Chinaware | Small fragment of decorated glazed chinaware. Outside face tan coloured with brown decoration. Inside face plain tan colour. 4.3mm thick. |
| 70 | 22/07/2024 | T6 | Clay | Sample of clay |
| 53 | 16/07/2024 | T4 | Clay pipe | Small section of clay pipe stem with fragment of bowl and spur. Dimensions: Length 50mm, External Diameter 7mm, Internal Diameter 5/64 (2mm). Internal diameter suggests 1680 to 1700. |
| 54 | 17/07/2024 | T1 | Clay pipe | Small section of clay pipe stem. Dimensions: Length 30mm, External Diameter 6.5mm, Internal Diameter 5/64 (2mm). Internal diameter suggests 1680 to 1700. |
| 75 | 19/07/2024 | T3 | Clay pipe | Small section of clay pipe stem. Dimensions: Length 55mm, External Diameter 7mm, Internal Diameter 5/64 (2mm). Internal diameter suggests 1680 to 1700. |
| 52 | 16/07/2024 | T3 | Glass | Fragment of half round glass which looks like the neck of a bottle, with on the inside face what appears to be gold leaf. Dimensions: Length 70mm, Thickness 3.5mm. |
| 68 | 19/07/2024 | T6 | Metal | Fragment of moulded lead, perhaps from a window frame. Dimensions: Length, 55mm, Thickness 3.13mm, Weight 24 grams. |
| 69 | 19/07/2024 | T6 | Metal | 35mm long fragment of what might be stranded uninsulated copper cable. |

| | | | | |
|---|---|---|---|---|
| 48 | 16/07/2024 | T1 | Nail | Rusty four sided rectangular iron nail with tip missing and a flat rectangular head. Dimensions: Length 50mm, Thickness 4.6/6.5mm. Hand wrought. Pre 1800. |
| 51 | 16/07/2024 | T3 | Nail | Rusty four sided rectangular iron nail with tip missing and a flat rectangular head. Dimensions: Length 55mm, Thickness 7/9mm. Hand wrought. Pre 1800. |
| 55 | 17/07/2024 | T2 | Nail | Rusty four sided rectangular iron nail with tip and head missing. Dimensions: Length 35mm, Thickness 3.8/4.3mm. Possibly Hand wrought. Pre 1800. |
| 58 | 18/07/2024 | T2 | Nail | Rusty four sided rectangular iron nail with tip missing and a flat rectangular head. Dimensions: Length 95mm, Thickness 6.25/7.5mm. Hand wrought. Pre 1800. |
| 59 | 19/07/2024 | T2 | Nail | Rusty four sided rectangular iron nail with tip missing and a flat rectangular head. Dimensions: Length 65mm, Thickness 5.5/8.5mm. Probably Hand wrought. Pre 1800. |
| 63 | 19/07/2024 | T3 | Nail | Rusty four sided square iron nail with tip bent and a flat round head. Dimensions: Length 35mm, Thickness 5mm. Hand wrought. Pre 1800. |
| 64 | 19/07/2024 | T3 | Nail | Rusty four sided square iron nail with a flat round head. Dimensions: Length 55mm, Thickness 4.3/5.3mm. Hand wrought. Pre 1800. |
| 49 | 16/07/2024 | T2 | Oyster shell | Fragment of Oyster shell |
| 76 | 19/07/2024 | T3 | Oyster shell | Fragment of Oyster shell |
| 56 | 17/07/2024 | T2 | Slate | Fragment of slate, 5.5mm thick. |
| 72 | 22/07/2024 | T7 | Slate | Fragment of slate, 4.3/8mm thick. |
| 50 | 16/07/2024 | T3 | Stone | Fragment of calcified Bath stone. The stone is a maximum of 3mm thick. The calcification is 7 to 15 mm thick. |
| 61 | 19/07/2024 | T2 | Wood | Fragments of cylindrical shaped wood tapering at one end. Perhaps a wooden dowel. Length 30mm Max diameter 11.8mm |
| 62 | 19/07/2024 | T2 | Wood | Fragment of cylindrical shaped wood tapering at one end. Perhaps a wooden dowel. Length 20 mm Max diameter 8.8mm |
| 73 | 23/07/2024 | T7 | Wood | Fragment of petrified wood. Length 30mm |
| 74 | 23/07/2024 | T7 | Wood | Fragment of petrified wood. Length 30mm |

**A3 Finds from Prior Park Trough – March and July 2024**

All dimensions mm

Site Code: PPT24 (Prior Park Trough 2024)

21 March and 16 July 2024

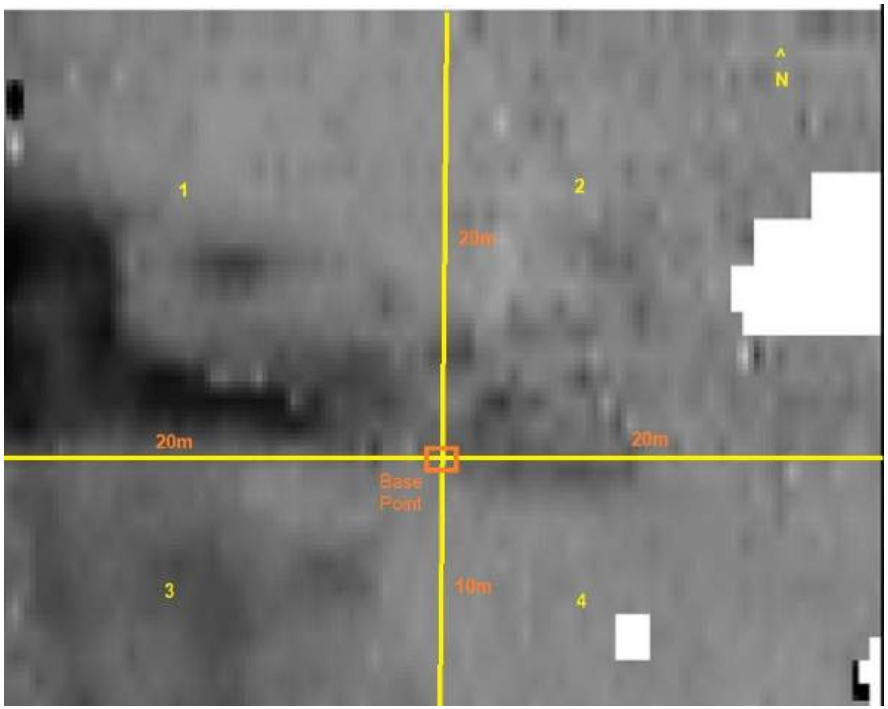
| URN | Date | Location | Group | Description |
|---|---|---|---|---|
| 7 | 16/07/2024 | Trough | Chinaware | Small fragment of blue and white decorated glazed chinaware. One side blue and white decoration with brown rim. Other side white. 2.4mm thick. |
| 4 | 21/03/2024 | Trough | Glass | Three small fragments of glass. One clear (3mm thick). One brown (3.7mm thick) and one dark green (8mm thick). |
| 5 | 21/03/2024 | Trough | Metal | Two fragments of metal, possible copper (green patina) which may relate to the copper sheathed pipe (URN 7). Dimensions: Length 80mm and 85mm, Width 19mm and 20mm, Thickness 1.0mm. |
| 8 | 16/07/2024 | Trough | Metal pipe | Length of rusted iron pipe, perhaps part of a water supply pipe. Dimensions: Length 140mm. External diameter 31mm, Internal diameter 17.8mm (0.7in). Measurements heavily affected by thickness of rust. |
| 9 | 16/07/2024 | Trough | Metal pipe | Length of rusted iron pipe, perhaps part of a water supply pipe. Dimensions: Length 300mm. External diameter 28/31mm, Internal diameter 13/16mm (0.5/0.6in). Measurements heavily affected by thickness of rust. |
| 6 | 21/03/2024 | Trough | Metal pipe | Length of rusty iron pipe with a (copper) sheath. Dimensions: Internal diameter 20mm, External diameter 28mmLength 230mm, Thickness of sheath 1.0mm. |
| 2 | 21/03/2024 | Trough | Pottery | Two fragments of glazed pottery, both with a gentle curvature. May have been part of a glazed water pipe, although curvature may be too gentle. Dimensions of large fragment: Thickness 16.5mm. |
| 3 | 21/03/2024 | Trough | Pottery | Small fragment of pottery, glazed on both sides, cream on one side, brown on the other. Probably part of a piece of tableware. Dimensions: Thickness 6.75mm. |
| 1 | 21/03/2024 | Trough | Slate | 9 fragments of slate, some with traces of mortar. May have been used for 'packing' in the construction of the trough. |

# B SURVEYS

## B1 Resistivity

Four grids were completed, 1 and 2 of 20x20m, 3 and 4 of 20x10m, with base point centred on the eastern peg position at ST7615663101, horizontal line to west peg , with grid numbering and base point position as shown below.

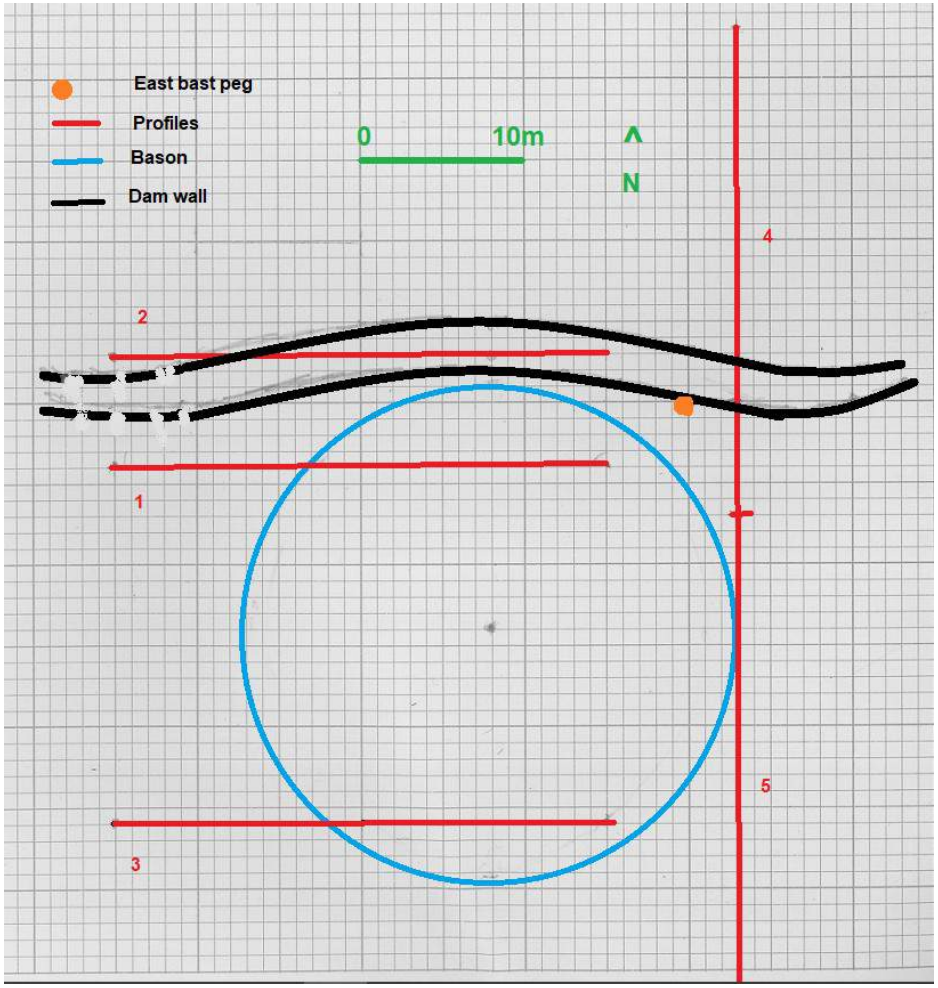
Twin-probe resistance with 1m probe spacing was performed with Frobisher RM-3 equipment. Readings were taken at 0.5m intervals along lines 1m apart in each 20x20m grid square. Analysis software was INSITE v3.



Resistivity grids 1-4 around east base point peg at ST7615663101

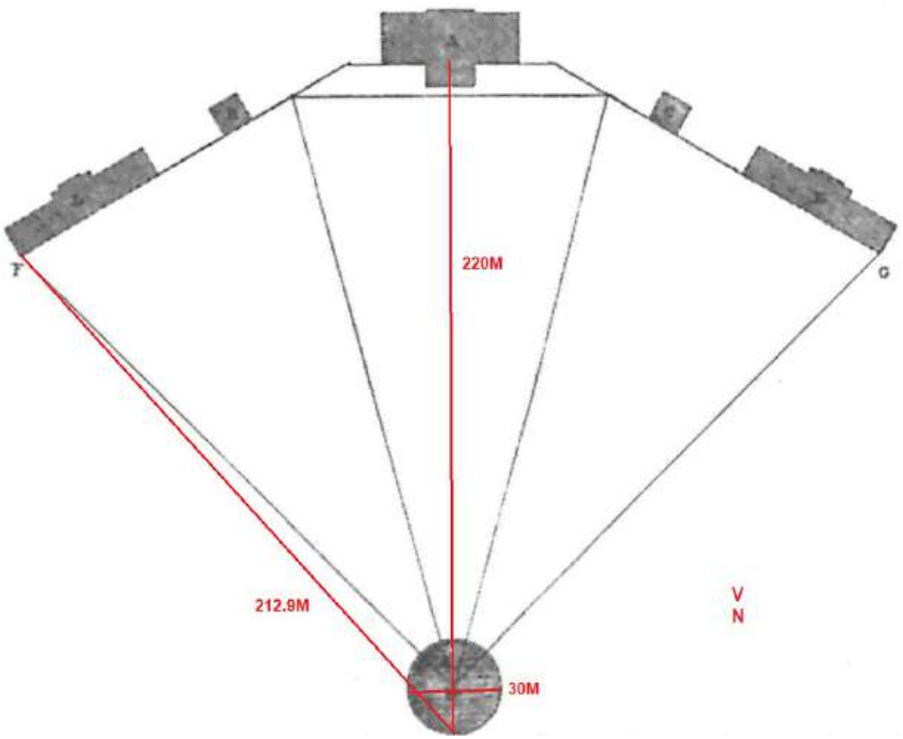
## B2 Resistivity Profiling

For all five profiles, 32 probes were used with 1m spacing (giving a line length of 31m unless overlapped as with profiles 4 and 5).
All measurements were taken from east base point peg at ST7615663101
Data was collected with the Frobisher RM-3 resistivity meter. Resistivity profile data was generated from Geotomo RES2DINV v3.71 for analysis.




Resistivity Profile Plan

## B3 Bason Reflection Analysis



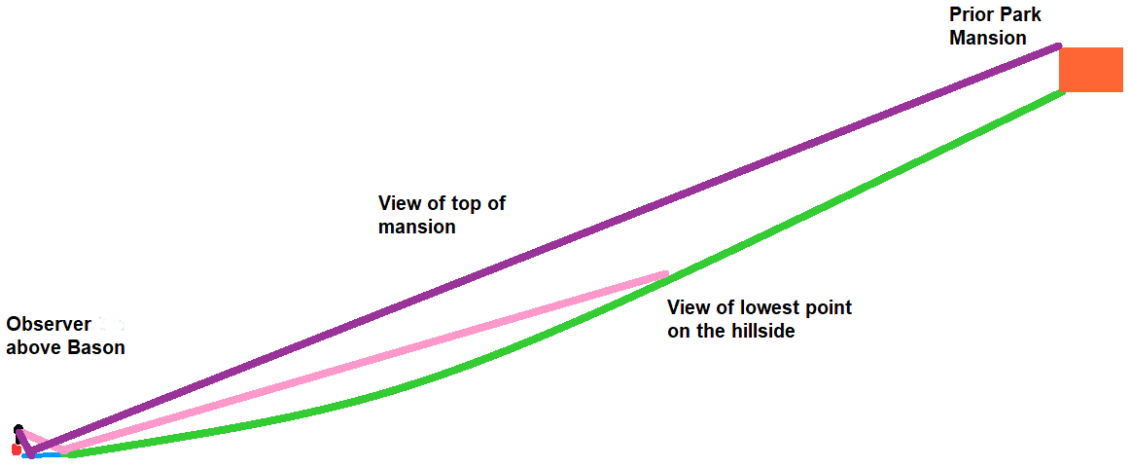

**Measurements**

Diameter of bason/ distance of observer on dam wall from far side of pool looking directly at Prior Park mansion : 30m
Distance of observer on centre of dam wall from far sides of pool looking towards end of east/west wings of mansion : 25.9m
Distance of observer to Prior Park mansion : 220m
Distance of observer to ends of mansion wings : 212.9m
Height of mansion : 20m
Height of mansion foundation above bason : 30m
Possible height of dam wall above bason : 1-2m

Height of observer : 2m

The angle of incidence to the water of the reflection must equal the angle of sight to the water, so when looking at the far side of the bason the observer will see the reflection of the lowest point of a vertical object at a certain distance away. For an observer of 2m above the bason on the top of a 1m dam wall viewing the far side of the pool 30m away, the mansion is 220m away so the lowest point visible reflected in the water would be 220 x (2 + 1) / 30 = 22m above which would be on the hillside below the mansion.
Similarly the top of the mansion will be reflected at a distance of A from the far bank, where
(2 + 1) / (30 - A) = (30 + 20) / (220 + A) ➡ 660 + 3A = 50 * 30 - 50A ➡ 53A = 1500 - 660 ➡ A = 19.4m
The top of the east and west wings of the mansion will be reflected at distances from the far bank on each side of the pool, where
(2 + 1) / (25.9 - A) = (25.9 + 20) / (212.9 + A) ➡ 638.7 + 3A = 45.9 * 25.9 – 45.9A ➡ 48.9A = 550.1 ➡ A = 11.2m

A 2m dam wall height would have these characteristics.
Lowest point visible on hillside : 29m above, ie just below the foot of the mansion building
Reflection of top of mansion : 11.5m from far bank of bason
Reflection of top of east and west wings : 6.75m from far bank on each side of the pool



# C Prior Park Water Supply Infrastructure

When Prior Park Landscape garden was created by Ralph Allen in the 18th Century, water was central to the garden design. Water features included a serpentine lake, cascade, bason and streams. The water supplied by numerous springs located along the approximate 500' contour was collected and redirected using a network of underground stone culverts.

This appendix summarises the outcome of our investigations undertaken since 2022.

A map at the end identifies the approximate locations of the culverts found and recorded to date. The pins represent known locations whilst solid lines represent a 'best guess' of the culvert routes.

Culvert dimensions are given in inches because that would have been the unit of measurement is use when the culverts were constructed.

## Culvert 1

In July 2023, Culvert 1 was excavated for a length of approximately 6 metres from ST 76094 63098 to ST 76097 63102. The culvert was dry and ran in a broad northeast direction. Intermittent excavations were made for a further 49 m confirming a broad continuation of the direction of travel down the pasture.

[Image – Culvert 1 looking north]

The culvert is constructed of undressed bath stone with rubble side walls about 15mm thick with an external lining of clay of undetermined thickness. The capstones varied in width from 500 mm to 640 mm, with a thickness of about 4". The thickness of the bottom stone could not be determined. Two capstones were missing.

Width: 16"
Height: 13"

[Image – Culvert1 internal]

## Culvert 2

Culvert 2, investigated in July 2023, is located next to the estate fencing to the northeast of the Gothic Temple, running for about 5.7m in a northerly direction from ST 76117 63057 to ST 76110 63058, at which point the water drops vertically to an undetermined depth into either a silt trap and/or a lower culvert.

Water was running, having emanated from the underground pipework, culverts and ditches which capture the water at the bottom of the cascade (Culvert 8).

Two large capstones were observed at the south end, underneath which modern Twinwall plastic pipe has been laid. The pipe ended at the northern end with a 90° downward bend. The culvert had been crudely backfilled with earth and stones.

[Image – Culvert 2 looking south]

A dye test carried out in March 2024 confirmed that Culvert 2 links into Culvert 4 which in turn links into Culvert 6.

As this culvert takes the water from the Serpentine Lake/Cabinet it is likely to date from 1740 when Phase 1 of the garden was completed.

## Culvert 3

In July 2022 we were excavating the east end of Ralph Allen's Bath House.

Excavation outside the east wall exposed a stone feature sloping down at 13°, closely beside it but at roughly the same height as the wall foundations. It ran down from the south towards the pasture on a bearing of 315°.

Made of mortared rough stone it was topped with a mix of large rough and recycled dressed stone blocks 101-152mm thick which on removal were found to cover a water culvert blocked with dry soil and leaves. The sides of the culvert were made from smooth cement whilst the bottom was dressed Bath stone.

Width: 9”
Height: 13”

[Image – Culvert 3]

A number of water culverts are recorded in the bank above the Bath House running down from under St Peter’s and can be seen under various manhole covers located within Prior Park College. They carry significant amounts of spring water, which is channelled downhill, and in all probability resurface as the stream in today’s Summerhouse Glade. By following the alignment of the Culvert 3 south towards these other culverts, no connection could be found.

If the original ground level is accepted as being about 1.6m lower than the top of the culvert and the Bath House foundations, then the culvert, only 700mm below the present ground level, must have been constructed after the Bath House.

.
Culvert 3 is likely to be 19th Century, perhaps connected with the construction of the carriage drive in 1834 when the 18th Century culverts would have had to be diverted.

## Culvert 4

In March 2024 we located the capstones for Culvert 4 located to the east of the central pasture path. The culvert contained running water flowing down hill on a southwest/northeast axis. A dye test confirmed that the source of the water was Culvert 2, which emerges below the Gothic Temple.

[Image – Culvert 4 looking east]

The culvert, whose 4” thick capstones were located 200/400mm below ground level, was exposed for a distance of about 1.69m starting close to the pasture path at its west end (ST 76144 63101). Construction is a mix of dressed Bath stone with some use of rubble.

Width: 11”
Height: 12”

[Image – Culvert 4 looking west]

Two trial pits were dug in a south westerly direction in order to track the direction of the culvert.  The culvert was found in two locations at ST 76144 63097 (at a depth of 300mm) and ST 76140 63093 (at a depth of 400mm).

The northeast end of the culvert (ST 76148 63095) was exposed 3.9m from the pasture path by partially lifting a large capstone at about 450mm below ground level.  The capstone measured 635mm by 810mm, with a thickness of 150mm.

[Image – Culverts 4 & 6 looking east]

Below the capstone was revealed a T junction with Culvert 4 entering another culvert (Culvert 6), also containing running water and flowing downhill on a broadly south/north axis.

[Image – C4 & C6 T Junction]

The dimensions of Culvert 4 and its junction with Culvert 6 was:

Width: 12”
Height: 12”

As this Culvert takes the water from the Serpentine Lake/Cabinet it is likely to date from 1740 when Phase 1 of the garden was completed.

## Culvert 5

Culvert 5 was investigated in March 2024.

The top and east side were found to be exposed and above ground for about 1.47m with water leaking from its east side into a very boggy area.  Water was also emerging from the ground above and to the side of the south end.  The west side was abutted by pasture turf.  The culvert was excavated for a further 1.07m north.

The exposed culvert ran in a broad south/north direction from ST 76143 63042 at a bearing of 350◦North for 2.9m to ST 76143 63045.

[Image – Culvert 5 looking south]

The culvert is constructed of undressed Bath stone with single course rubble side walls.

Width: 9”
Height: 7” to 10”

The capstones varied in width across the culvert with a thickness of about 4”.  The thickness of the bottom stone could not be determined.

[Image – Culvert 5 looking north]

The culvert contained running water.  A water dye test confirmed that the water in Culvert 5 ran into Culvert 6 somewhere south of its junction with Culvert 4.

We believe this culvert links somehow to the east end of the Serpentine Lake.  If that is the case it is likely to date from 1740 when Phase 1 of the garden was completed.

## Culvert 6

In March 2024 Culvert 6 was exposed when the large capstone at the east end of Culvert 4 was lifted (ST 76148 63095) and a T junction between Culverts 4 and 6 was revealed.

The culvert contained running water flowing down hill on a broad south/north axis.  A dye test confirmed that the water continued on downhill, meeting Culvert 7 (see below) and into the upper lake.  The source of the water in Culvert 6 was not identified, but in all probability emanated from the culvert located below a manhole located on land within Prior Park College on the bank below and to the east of the Manion House.

[Image – Culvert 6 looking south]

The dimensions of Culvert 6 upstream (south) of Culvert 4 were:

Width: 18”
Height: 17”

Its dimensions downstream (north) of Culvert 4 were:

Width: 23”
Height: 18”

## Culvert 7

In July 2024 the capstone over the junction of Culverts 4 and 6 was again lifted and the investigation of Culvert 6 in a northerly direction was continued by attaching a torch to a 10m length of drainage rods, which confirmed that it continued in a straight line in a broad northwest direction.

A 700mm deep trial pit was dug 10m northwest (ST 76148 63109) and struck the top of a stone structure.

[Image – C7 Arch top]

A dislodged stone enabled a camera to be lowered into the structure and establish that it was an arched culvert approximately 34” (0.86m) high (to the top of the arch) and 28” (0.7m) wide.  We estimate that the rectangular Culvert 6 becomes the arched Culvert 7 approximately 15m south of the bason dam wall.

[Image – C7 looking north]

We have concluded that the arched Culvert 7 is the ‘Main Culvert’ described by Tina Barnett in the 1994 report submitted to the National Trust by Bath Archaeological Trust. During excavation for the silt trap built to the south of the upper lake, a culvert was found and described as follows:

‘*The Main Culvert was shown to be of a standard 18th century arched design. Constructed of roughly faced limestone blocks, it had an internal width of 0.7m and measured 0.9m in height.’*

A dye test carried out in March 2024 confirmed that the water flowing through Culvert 6 ended up in the Upper Lake. Our July discovery means that the water is also carried on through Culvert 7.

## Culvert 8

Culvert 8, which comprises both underground and overground sections, runs from the bottom of the Cascade on the south side of the Cabinet to just below the Gothic Temple, where it connects with Culvert 2.  In May 2024 the Culvert was surveyed and recorded in 6 sections.

As this Culvert takes the water from the Serpentine Lake/Cabinet it is likely to date from 1740 when Phase 1 of the garden was completed.

### Culvert 8A

Culvert 8A runs under the Cabinet from the bottom of the Cascade to ST 76104 63015.  This construction of this culvert is not known.  Whilst it would originally have been made of stone, it may have been replaced with modern piping when the Cabinet was refurbished in 2025/6.

### Culvert 8B

In April/May 2024 Culvert 8B was revealed during investigations into a potential culvert blockage.  The culvert was found buried under significant debris.

At its south end, three capstones were lifted, the culvert cleared out and the capstones subsequently replaced.  At its southern end the culvert dimensions are:

Width: 12”
Height: 8”

[Image – 8B South end looking south]

The culvert, which is open apart from one other capstone, runs for 7.35m in a broadly southwest/northeast direction from ST 76104 63015 to ST 76106 63017.

## Culvert 8C

Culvert 8C runs for 10.2m in a broad northerly direction on a shallow curve from ST 76106 63017 to ST 76110 63031.  Ground cover is very shallow, only 6mm in places.

Its dimensions are:

South end:
Width 13”
Height 12”

North end:
Width: 19”
Height: 11”

{Image: 8C North End]

## Culvert 8D

Culvert 8D is in fact a waterfall linking Culverts 8C and 8E located adjacent to the east side of the Gothic Temple.  The water drops about 1.6m into Culvert 8E

[Image: 8D looking south]

## Culvert 8E

Culvert 8E runs for 3.9m in a broad northerly direction from ST 76106 63036 to ST 76106 63038.  The north end receives water from the bottom of the waterfall (8D).

[Image: 8E North end]

Its dimensions are:

South end:
Width 8”
Height 12”

North end:
Width: 12”
Height: 13”

There is a possible collapsed capstone close to the south end.

[Image: 8E South end]

## Culvert 8F

Culvert 8F is in fact an open stream which connects the north end of Culvert 8E with the south end of Culvert 2.

# Culvert Dimensions

The table below is a summary of the internal dimensions of the culverts identified and surveyed to date.

| **Culvert** | **Width inches** | **Depth inches** | **Notes** |
|---|---|---|---|
| C1 | 16 | 13 | Dry |
| C2 | Not recorded | Not recorded | |
| C3 | 9 | 13 | Bath House |
| C4 | 11 | 12 | |

| | | | |
|---|---|---|---|
| C5 | 9 | 7/10 | |
| C6 | 18 | 17 | |
| C7 | 28 | 34 | Arched |
| Main Culvert | 27 | 35 | 1994 investigation |
| C8B | 12 | 8 | S end |
| C8C | 13 | 12 | S end |
| C8C | 19 | 11 | N end |
| C8E | 8 | 12 | S end |
| C8E | 12 | 13 | N end |

# Pipes

## Pipe 1 – Culvert 5 pipe diversion

In June 2024 a trench was dug parallel to, and west of, Culvert 5 to the south of the section investigated in March 2024. Into that trench was laid Thinwall plastic piping. The plastic piping continues in a southwest direction, passing under the estate fencing, and eventually connecting with at outfall from the east end of the Serpentine Lake.

The image below shows the trench for the Thinwall pipe at its northern end adjacent to Culvert 5

[Image – Pipe 1 trench north end]

The Thinwall piping takes the following route:

ST 76145 63020
ST 76147 63000
ST 76146 62990 (Estate fence)
ST 76139 62981 (Bottom of slope to Serpentine Lake)

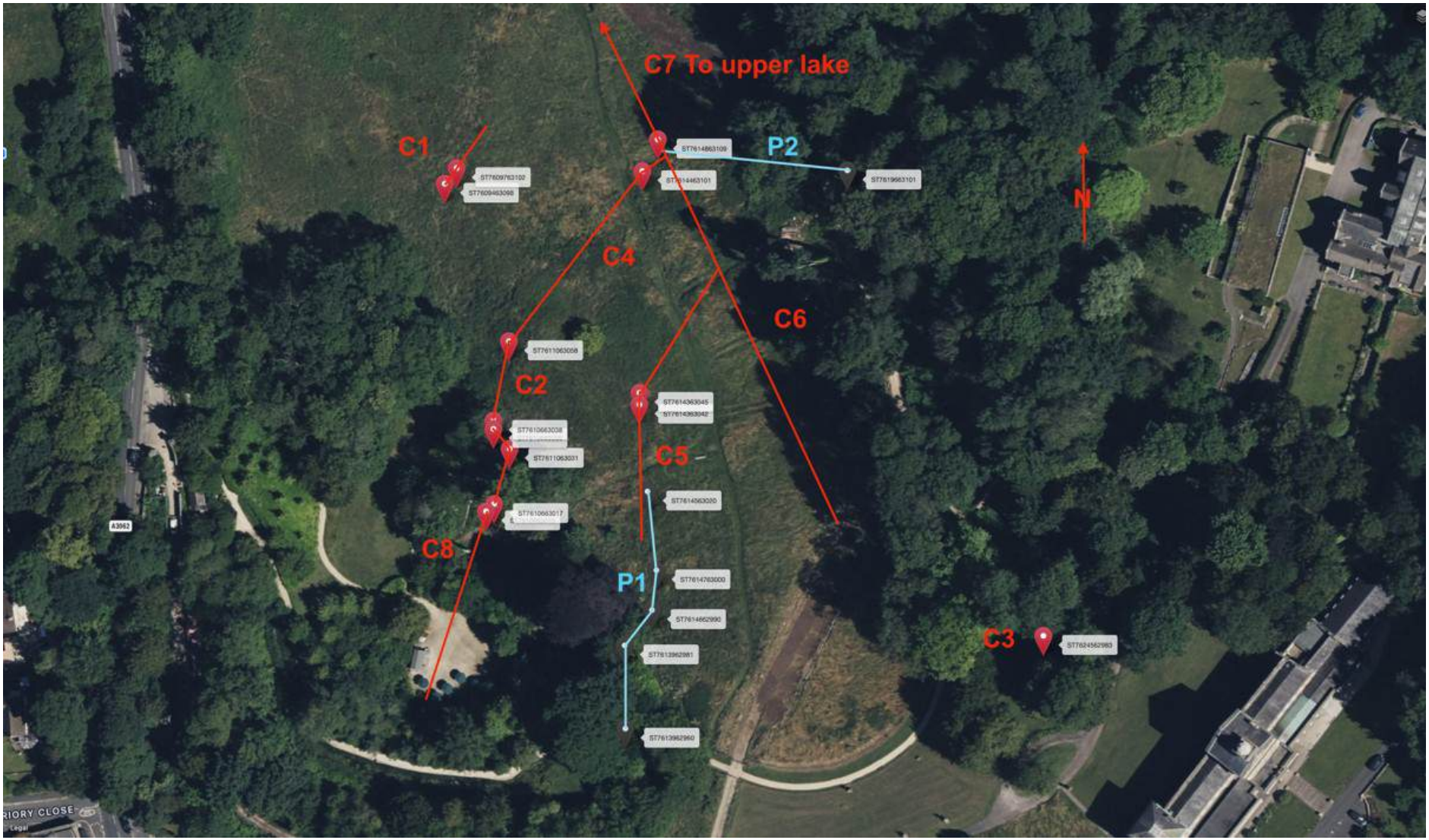
## Pipe 2 – From east stream to Culvert 6

In July 2024, when the capstone over the junction of Culverts 4 and 5 was lifted, an initial torch lit visual inspection revealed water entering the culvert through what appeared to be a ceramic pipe (estimated to have a diameter of 12”) (Pipe 2) on its east side,

about 1.4m north of its junction with Culvert 4.  A water dye test confirmed that the water entering the culvert emanated from an 8” diameter ceramic pipe located (at ST 76196 63101) on the west side of the stream which runs above the east side of the east path.

[Image – C6 Inlet pipe]

Immediately to the north of this stream outfall pipe is a stone structure believed to have been built as a cistern to control the flow of water and perhaps provide a silt trap.  Further investigation of this structure is required.




Probable culvert routes down the valley. Red are culverts, Blue are pipes