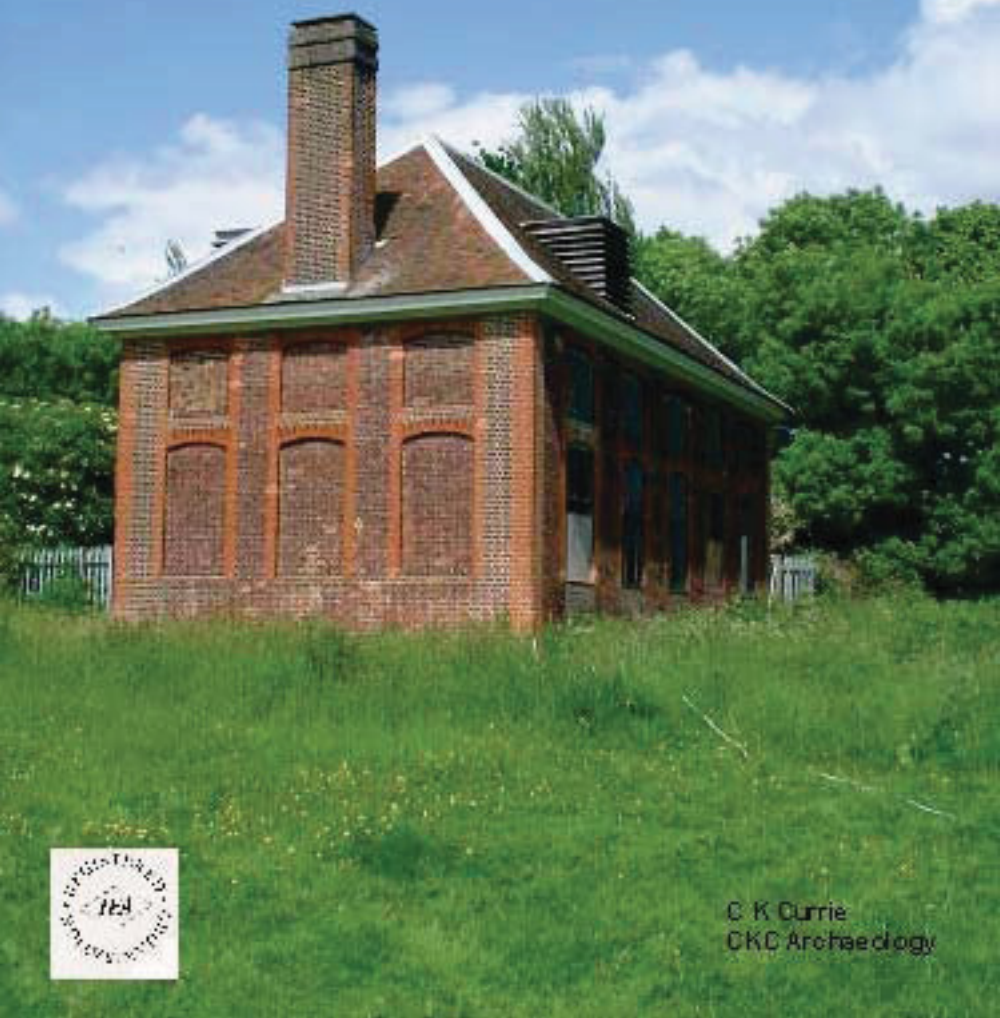


Archaeological recording at the cascade & brewhouse, Upper Lodge,  
Bushy Park, London Borough of Richmond, 2002-04



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**Archaeological recording of the cascade  
and brewhouse at Upper Lodge, Bushy Park,  
London Borough of Richmond, 2002-04**

**NGR: TQ 1462 7020**

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**Report to the Royal Parks**

**October 2004**

## Contents

	page no.
Summary statement	3
1.0 Introduction	4
2.0 Historical background	4
3.0 Strategy	5
4.0 Results	6
5.0 Discussion	10
6.0 Conclusions	12
7.0 Copyright	13
8.0 Archive	13
9.0 Acknowledgements	13
10.0 References	13

## Appendices

Appendix 1: list of contexts excavated	15
Appendix 2: catalogue of photographs taken	16
Appendix 3: glossary of archaeological terms	17

## Figures

Figures 1-11	end of report
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### Summary statement

London Borough of Richmond requested archaeological recording in advance of the reinstatement of existing ponds associated with the cascade at Upper Lodge, Bushy Park, Greater London. Previous archaeological work on the site had recovered the remains of a series of early post-medieval structures and gardens, including the remains of an important later formal garden laid out by Charles Montagu, 1st Earl of Halifax, from around 1710 (Currie 2003). Work was begun in 2002 under the Crown Estate but the project was suspended, to be revived in October 2004 under the aegis of the Bushy Park Restoration Project funded by the Heritage Lottery Fund. The Royal Parks asked C K Currie of CKC Archaeology to carry out the work. This report combines the work of 2002 (previously unreported) with that of the revived project. The new work included trial trenches in the vicinity of the Brewhouse, works not envisaged during 2002.

Further investigations were undertaken around the cascade at Upper Lodge to clarify certain outstanding questions prior to possible repair and reinstatement. The evidence revealed largely confirmed earlier interpretations given in the account published in *Post-medieval archaeology* in 2003. New information included confirmation that both grottoes had a brick buttress behind the dam retaining wall. Excavation behind the south grotto showed that the buttress was bonded into the original retaining wall and was not an afterthought. On the north side of the cascade deeper excavations revealed that the dam retaining wall was supported by a quarter barrel vault.

It was also revealed that the original dam retaining wall had largely survived, and that the yellow brick wall presently evident is only a refacing of the earlier wall. Yellow brick alteration was also found in places on the north retaining wall and along the edges of the cascade steps. This suggests that the cascade fell into a ruinous condition, probably after 1780, and after a long period of neglect was repaired. The exact date of the yellow brick rebuildings is uncertain, but an earlier assessment that this was between 1830 and 1900 needs to be revised to allow for the possibility that this work was done in the first half of the 20<sup>th</sup> century.

Excavation at the back of the cascade showed that it had a sloping brick face that would have allowed the rear of the structure to survive in a stable form to the present day. This trench also showed that the upper pond had been clay lined and that the lining was covered over by a surface of flint cobbles. The relationship between the cobbles and the top of the cascade suggests that the water level may have been shallower in the original ponds than more recent levels.

A series of two pipes and a brick culvert was discovered associated with the Brewhouse. Which of these provided water and which got rid of the waste was not determined. A well-made brick culvert dating from c. 1700 was cut through by a later iron pipe running parallel with the east wall of the building. It is possible this pipe replaced the earlier water supply-discharge system.

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## **Archaeological recording around the cascade and brewhouse at Upper Lodge, Bushy Park, London Borough of Richmond, 2002-04**

**NGR: TQ 1462 7020**

This report has been written based on the format suggested by the Institute of Field Archaeologists' *Standard and guidance for archaeological field evaluation* (Birmingham, 1994), and the *Archaeological guidance papers, nos. 1-3* as issued by English Heritage for the London. The ordering of information follows the guidelines given in these documents, although alterations may have been made to fit in with the particular requirements of the work. All work is carried out according to the *Code of Conduct* and By-laws of the Institute of Field Archaeologists, of which CKC Archaeology is an IFA-registered archaeological organisation (reference: RAO no. 1).

### **1.0 Introduction (Fig. 1)**

London Borough of Richmond requested archaeological recording in advance of the reinstatement of existing ponds associated with the cascade at Upper Lodge, Bushy Park, Greater London. Previous archaeological work on the site had recovered the remains of a series of early post-medieval structures and gardens, including the remains of an important later formal garden laid out by Charles Montagu, 1st Earl of Halifax, from around 1710 (Currie 2003). Work was begun in 2002 under the Crown Estate but the project was suspended, to be revived in October 2004 under the aegis of the Bushy Park Restoration Project funded by the Heritage Lottery Fund. The Royal Parks asked C K Currie of CKC Archaeology to carry out the work. This report combines the work of 2002 (previously unreported) with that of the revived project. The new work included trial trenches in the vicinity of the Brewhouse, works not envisaged during 2002.

### **2.0 Historical background (Figs 2-5)**

The land containing the site was formerly held by the Order of the Knights Hospitallers in the medieval period. They had leased the land out for some years before its confiscation by the Crown in 1537 as part of the Dissolution of the Monasteries. From hereon a deer park evolved here that was attached to Hampton Court Palace. In the same year that the Crown seized this land, a John Field is recorded as living in the lodge. At that time Thomas Heneage was Ranger of the newly created royal deer park at Bushy.

Recent archaeological work and documentary research has shown that a substantial complex of lodge buildings and gardens grew up on the site following Crown requisition of the land. The evolution of the site is complex, and cannot be fully explained by the documentary sources alone, despite a good series of plans from *c.* 1709 onwards. It would appear that a building of some status had developed by the first half of the 17<sup>th</sup> century, with a series of walled courts. Exactly when these disappeared is uncertain, but it would appear that they had been replaced by the early 18<sup>th</sup> century (Currie 2003, 92).

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In 1709 Charles Montagu, 1st Earl of Halifax came to an agreement with the Crown concerning the site. At this time the Ranger's house was reported as being in a ruinous condition. As part of this agreement Montagu agreed to rebuild the house in return for a lease of three lives. He seems to have started work on an elaborate water garden soon after this agreement as part of the landscaping around the new lodge. They were completed soon after this as much comment was made on their beauty before Montagu's death in 1715. Amongst the features of this water garden was a cascade, with flanking grottos, between the two upper ponds (Figs 2-3). This cascade was much admired, being illustrated by Stephen Switzer in his book, *Introduction to a system of hydrostatics and hydraulicks*, published in 1729, and painted by Jacob Bogdani (1660-1724) and an anonymous painter of the school of Peter Tillemans (White & Foster 1997, 23-24; Harris 2000, 46; Fig. 3). Little is known about the fate of the water gardens following Charles Montagu's death, but it is thought that they gradually fell into neglect. The site reverted to the Crown in 1771 on the death of George Montagu Dunk, Charles Montagu's descendent. The office of Ranger thereafter continued as a sinecure with an annual payment of £6-13s-4d.

After 1771 parts of the water gardens were much altered, and many of the remaining original features became dilapidated. During the 19<sup>th</sup> century or early 20<sup>th</sup> century, the cascade was partly rebuilt, possibly following a long period of neglect (Fig. 4). During this phase it is thought that the grottos were removed, and the south revetment wall and part of the north was rebuilt in London 'stocks'. Upper Lodge was empty during the First World War, and George V gave it to the Canadian Red Cross for use as a convalescent home. Between the Wars the house was used as a school, but at the outbreak of the Second World War the house was requisitioned for military use. It remained on lease to the Ministry of Defence until 1994, when it was returned to the Crown Estates (White & Foster 1997, 18-28). Much of the area within the Crown Estate's fence line had been built over by a large number of Ministry of Defence buildings since 1945. These were removed between 1997 and 1999 as part of the present planning application.

From 1997 plans were implemented to convert Upper Lodge back to residential use, and to remove the temporary MoD buildings. A series of archaeological works were carried out as part of this work (Fig. 5). This included an evaluation around the two upper ponds and the cascade in 1998. This rediscovered the site of the grottos that originally flanked the cascade, and enabled provisional interpretation about the previous form of the water gardens here (Currie 1998).

### **3.0 Strategy**

The strategy for the original work around the cascade was given in the project design, to which the reader is referred for further details (Currie 2002). A new project design for the revived work was issued in June 2004 to account for the addition of works around the brewhouse and the modified works around the cascade (Currie 2004). Copies of the project designs can be found in the project archive, deposited with London Museum (Accession number BHY97) or in the Greater London Sites and Monuments Record (hereafter SMR) managed by English Heritage, Fortress House, 23 Savile Row, London.

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## 4.0 Results (Figs. 6-11)

### 4.1 Recording of the cascade prior to reinstatement and repair (Fig. 6)

The recording of the cascade took place in two stages. The main survey was undertaken in May 2002 and a drawn version of the survey appeared as a belated addition to the published excavations undertaken at Upper Lodge between 1997 and 1999 (Currie 2003, 101, Fig. 10). Although this seemed a good idea at the time the drawing has suffered from poor reproduction of the elevation, and the publishers failed to return the original publication drawing, which is now considered lost (the original archive drawing is still retained by the author).

Having undertaken this survey, the Upper Lodge project was suspended for over two years and was only revived as part of the Bushy Park Restoration Project. This led to a further field visit to the site that revealed that the cascade was being damaged by invasive growth. The main damage was the continuing breakup of the concrete render that overlay the mainly brick steps. This led to some minor resurveying in October 2004 to record new information that became available as the undergrowth was removed, taking much of the render with it.

The present cascade is 9.75m wide falling over five steps. In elevation the top step is shown to be comprised of alternate sections of brick and stone. The four lower steps are all brick and comprise flattened semi-circles. The widths of the lower steps at their mid-points are not uniform, being approximately 0.65m, 0.5m, 0.65m and 0.8m from top to bottom, although the drops seem to be fairly uniform at around 0.35m. The discrepancy in step width is something that can be seen at other cascade sites where archaeological recording has been done. For example the different step width at the formal cascade at The Gnoll, Neath, South Wales (c. 1728), is complimented by differing steps heights and types that is considered a deliberate attempt at getting a variety of water falls over its 175m length (Currie et al 1994, 258-9). Although the Upper Lodge cascade is small by comparison, it is possible that step variation was considered a part of the design of early 18<sup>th</sup>-century cascades.

The survey identified a number of alterations to the original design. Firstly the dam retaining wall on the south side of the cascade is faced in yellow brick as opposed to red brick on the majority of the north side. The south wall is also presently longer than that on the north. The above ground length on the south being 11.4m compared with 9.4m on the north. Excavated evidence found in 1998 showed that the north wall had been truncated by later developments and the south wall had been refaced. What was not apparent before the survey was that the south wall projects further to the east than the north wall. Work on Trench 27 (see below) has shown that the original red brick wall had been refaced in yellow brick after a concrete skin was inserted between the two. On the north side of the cascade there is also a yellow brick section projecting about 0.6m from the line of the original wall. This extends for 2.8m from the north edge of the cascade and is also clearly a later alteration.

At some time in the 20<sup>th</sup> century both upper and lower ponds were revetted with concrete and a new brick sluice inserted into the NE corner of the upper pond by the local water authority<sup>1</sup>

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<sup>1</sup> The bricks are marked 'Southern Water'.

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about 1.5m behind the top step of the cascade. This channelled water into a large iron pipe that emerged through the north edge of the cascade, running diagonally across the top of the bottom step, issuing some 2.4m further out into the lower pond. In all but high water conditions in the lower pond this pipe was clearly visible, frequently partly projecting above the water line.

Following the removal of the concrete render over most of the four lower steps it was noticed that the outer edges of these otherwise red brick steps had been repaired with yellow brick before the render was laid over them. This suggests that the cascade was in a ruinous state before the yellow brick phase was carried out, and that the present concrete render dates from that period. It is difficult to determine when this work was carried out. Initially it might be thought that as the yellow bricks are similar to those used to rebuild the lodge in the 1840s, the alterations might be of the same date. However, these bricks (known locally as London Stocks) were common throughout the 19<sup>th</sup> and 20<sup>th</sup> centuries. The concrete skin between the yellow bricks and the original red brick wall in the dam retaining wall on the south of the cascade has a later 19<sup>th</sup>- or 20<sup>th</sup>-century look to it, and it may be that the whole yellow brick phase is contemporary with the revetting of the ponds in concrete.

#### **4.2 Excavation of a trial trench behind the north wall of the cascade (Trench 33a-b) (Fig. 10)**

The original trench was excavated in May 2002 (Trench 33a). In October 2004 an engineer's trench (trench 33b) was opened in the same area that overlapped the original trench, and excavated to deeper levels. The original trench was excavated merely to reveal the top of any supporting buttress for the dome of the grotto roof that might be present and thus needed to be no more than 600mm deep to achieve this. The engineer's trench was excavated to a depth of over 1.3m.

The May 2002 trench was 3.2m N-S by 1.6m E-W. It showed that there was only a single course of brickwork surviving above ground from the dam retaining wall. This had been partly rebuilt in its upper courses. The original red brick wall survived buried behind to a width of 580mm. This had been truncated by a layer of modern concrete in the last 0.9m of the trench. The original brick wall was stepped at the back, and had the remains of a buried brick buttress attached on its west side. This was 620mm E-W and the same N-S but it appeared to be truncated on its north side by the above-mentioned layer of modern concrete.

The brick buttress appeared to be the same as that behind the south dam retaining wall, and was thought to be located there to support the domed roof of the two grottoes either side of the cascade.

The engineer's trench of October 2004 elaborated on these findings by digging to a depth of 1.3m at the south end of the original trench. This discovered a quarter barrel arch below the stepped foundations of the original dam retaining wall. This was probably attached as an additional support to the retaining wall.

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### **4.3 Excavation of trench behind the south wall of the cascade (Trench 27) (Fig. 8)**

This trench was excavated behind the south wall of the cascade. It enlarged on a previously-excavated trench (Trench 14, see Fig. 5) that has been published in Currie (2003). The new trench extended further northwards and excavated deeper to reveal more of a brick buttress found behind the Cascade wall in 1998. Modifications were thus possible on the information given in Currie (2003, 103, 106, Fig. 13).

The new trench, numbered Trench 27, was an irregular shape but with main dimensions of 6.1m N-S and 2.2m E-W. The soil at the back of the present wall was removed to a depth of 650mm. This revealed an original red brick wall behind a refacing of yellow brick with a concrete skin in between. The original red brick wall [context 332] was 600mm thick, comprising three courses of brickwork. The thickness of the concrete skin [context 331] was 180mm whilst the yellow brick facing [context 330] at the front of the structure was 230mm.

Set into the back of the wall was a brick buttress 520mm E-W by 640mm N-S [context 334]. The buttress overlapped the back course of brickwork of the dam retaining wall and was thus bonded into to the latter and thereby contemporary with it. The buttress was surrounded by a course of rubble stone in mortar on the south and west sides [context 335] thus making the overall dimensions of the buttress 900mm N-S and 800mm E-W. It was noted that there was a gap 40mm wide between the brick section of the buttress and the stone part. This was interpreted as subsidence caused by pressure of the dam pushing on the retaining wall and causing it to move eastwards leaving the west (stone) part of the buttress in its original position.

The dam retaining wall was clearly shown to once extended southwards beyond the end of that part of the wall refaced in yellow brick. This east face of this extended original section had been removed but the second course of brick behind was still intact, as was a course of flint and stone rubble [context 336] behind. This ruinous fragment extended 1.4m south of the terminal of the yellow brick wall. It may have extended further but the large root of a mature ash tree had forced its way through the remains giving the excavation a suitable place to end. The ash tree had embedded itself into the ruined part of the wall [336] causing some displacement of masonry.

900mm north of the buttress a further course of brick [context 333] was seen attached to the back of the retaining wall. This was observed for a length of 1.1m and was seen to sit over yet another course of brick. The back of the wall was some 0.5m higher than this brickwork. It was initially thought to be additional buttressing to the dam retaining wall, but, in view of the evidence recovered in Trench 33, it is possible that it might be connected with a quarter barrel vault supporting the dam retaining wall in Trench 27.

### **4.4 Excavation of a trial trench behind the Cascade steps (Trench 28) (Fig. 9)**

This trench was excavated behind the cascade steps at its south end to determine the type of structure there so that its stability could be assessed. This trench was 2.25m N-S and 3m E-W. The back of the cascade comprised a sloping side of brick covered in a concrete render

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[context 327]. It sloped back 1.2m into the upper pond before forming a vertical brick foundation [context 328].

Of interest in this trench was evidence for the make-up of the bottom of the pond. There was about 200mm of silt [context 323] within the pond at this point, but immediately beneath this was a 250mm thick layer of clay [context 325] with a single course of flint cobbles overlying it [context 324]. Underlying the clay was a gravel layer [context 326], which was thought to be redeposited 'natural' (undisturbed subsoil) for the locality. The clay layer was interpreted as a clay lining to the upper pond with a cobbled surface over.

#### **4.5 Brewhouse exploration (Trench 29) (Figs 7, 11)**

This was a long narrow trench along the east side of the brewhouse, 20m by 0.5m. Following the discovery of a brick culvert, the trench was extended westwards to explore this feature further. This culvert [context 347] was made of bricks of the type usual around 1700 and was therefore thought to be contemporary with the brewhouse. Within the extension it was noted that the culvert had been broken through by the iron pipe [context 342] seen in Trench 30 (see below).

The culvert had a semi-circular vault over short vertical sides with a flat bottom. The full extent was not excavated but the vault was about 300mm high and about 600mm wide. It was contained within a linear cut [context 345] that could be clearly seen in section. The culvert had been cut through on a N-S alignment by an iron pipe with a diameter of 175mm. The pipe was in cut [context 340] 400mm wide, the width of the break through the culvert. This break was such that it would seem that the culvert was no longer operational at the time the iron pipe was laid.

#### **4.6 Brewhouse exploration (Trench 30) (Fig. 7)**

This was a long narrow trench along the south side of the Brewhouse, 14m by 0.5m. The only feature observed was an iron pipe following a N-S alignment. This pipe was further observed in Trench 29 (see above).

#### **4.7 Brewhouse exploration (Trench 31) (Fig. 7)**

This was a short narrow trench, 4.9m by 0.5m, designed to cut across the conjectured line of an iron pipe seen in Trenches 29 and 30. The pipe was not found within this trench, despite being excavated down to undisturbed soils at a depth of around 800mm.

#### **4.8 Brewhouse exploration (Trench 32) (Figs. 7, 11)**

This trench was excavated along the north side of the Brewhouse across the present entrance. The purpose was to see if there was a cobbled floor or similar paved surface at the front of the building. No paved surface was seen, although a large bore red clay ceramic drain [context 355], 200mm in diameter, was found leaving the Brewhouse northwards in the direction of the Longford River.

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## 5.0 Discussion

### 5.1 Discussion of the cascade

The cascade and its associated grottoes have been discussed in detail elsewhere (Currie 2003, 103-8). It is only proposed to discuss here the information revealed during the present works that proved to be new. Both survey and excavation showed that the cascade had been repaired and the dam retaining walls partly altered using yellow brick. It was uncertain when this occurred, and the idea that these bricks might be associated with the rebuilding of the lodge in the same material needs to be treated with caution. The concrete skin between the original retaining wall and the yellow brick refacing on the south side of the cascade might suggest a later date than the 1840s rebuilding of the lodge. A late 19<sup>th</sup> or 20<sup>th</sup>-century alteration is suggested although the evidence for this is largely conjectural.

A picture of the cascade has recently come to light in the collections of the former Empress of Russia, Catherine the Great (1729-96). These were part of a series of drawings made by John Spyers, one of Capability Brown's Surveyors, for the Empress in the 1780s. This shows the cascade still intact although with differences from those shown in the Switzer-Bogdanischool of Tillemans illustrations (discussed in Harris 2003 & Currie 2003, 92-96) dating to the early part of the 18<sup>th</sup> century when formal designs were still fashionable. The 1780s' illustration shows weeping willows overhanging the cascade where there were none in the original design. It also appears to show the grottoes as abandoned, being no more than unadorned arches by that time. It would appear that Brown had refrained from making significant alterations to the grounds of Hampton Court, preferring to retain the old design where possible with only minor changes. One of these is that he appeared to allow the close cropped trees and topiary to grow out (Norman 2003). To these 'alterations' it might seem that he had declined to continue to maintain the cascade grottoes, so it must be assumed that they fell into disrepair from around this time.

It has been shown that the formal design of the Upper Lodge water gardens had been largely revamped by the first half of the 19<sup>th</sup> century (Currie 2003, 97-99), and it is likely that the features that remained, such as the cascade, had been allowed to decay slowly after the middle years of the 18<sup>th</sup> century. By the time it was decided to alter much of the dam retaining walls using yellow brick, it can be assumed that this decay was reasonably extensive. These new works probably involved the destruction of what was left of the grottoes, but it is not possible to elaborate on the vague dating for this given in Currie (2003, 107). All the present excavations have told us is that the alterations could have occurred equally in the first half of the 20<sup>th</sup> century as during the previous inference of between 1830 and 1900.

The present excavations confirm that both grottoes had a brick buttress behind the retaining walls to support their roofs, and that these buttresses were contemporary with the dam walls. The grottoes were therefore planned from the beginning to be integrated into the dam walls, and were not an added afterthought.

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It is also possible to see that the retaining walls were supported by a buried quarter vault, with the cascade reinforced at the back with a sloping apron. It was of interest to note that the upper pond was clay lined, as it had been assumed that the ground was so low-lying that any hollow in the vicinity could have held water of its own accord. Although this is possible, it would seem that the pond-builders had made extra sure of this by adding a clay lining. Even more surprising was the cobbled surface of flints added on top of the lining. Such decorative treatment might be thought unnecessary as the water might have been too deep to appreciate this feature. The addition of the cobbles suggests that the ponds may have been shallower than assumed, and this might help to explain why the bottom step of the cascade was under water until recently but is always shown above water in contemporary illustrations. Simply put the modern water levels were probably higher than those of the 18<sup>th</sup> century.

It had been noted in Currie (2003, 96) that the Central Basin was a shallow feature, and this was in keeping with the nature of early 18<sup>th</sup>-century ornamental basins, quoting John James' 1712 treatise as only requiring such features to be 15 to 18 inches deep. It is possible on the existing evidence that both upper and lower ponds were also of a shallow nature.

Cobbling overlying a clay lining in the upper pond further supports the idea of a shallow pond because such a surface makes no sense unless it could be seen. A parallel for such surfaces in ornamental water features of the period around 1700 can be seen at Court of Noke, Pembridge, Herefordshire. Here an ornamental canal of this period in front of a modest gentleman's country house was found to have a cobbled bottom. Canals more distant from the same house were not found to have this feature (Currie & Rushton forthcoming).

## **5.2 Discussion of the brewhouse trenches**

Four trenches were excavated around the Brewhouse to obtain the maximum area covered to determined water sources into and out of the building. It was not possible to excavate a fifth trench on the west side of the building because of the presence of active bee hives adjacent to the line of the proposed trench.

A ceramic pipe and a brick culvert were identified as contemporary with the building plus a later iron pipe. The exact purpose of these features remained a mystery. Initially levels and local topography might suggest that the ceramic pipe on the north side of the Brewhouse took water in whilst the brick culvert on the east side took it out. This is because the flow of water in the area is from west to east and north to south. Thus it may be difficult to imagine water in the brick culvert flowing from the River Longford into the building. Therefore, on levels, it would seem that the ceramic pipe took water into the Brewhouse and it was discharged as waste out of the brick culvert, from where it is assumed to be channelled into the Longford River. Logic, however, seems to fail in this interpretation. The ceramic pipe is unmortared, and of a type usually used in drainage, so it is difficult to see this bringing clean water to the building. Likewise it seems odd that there should be such a primitive inflow when the conjectured outflow, the culvert, is of such a high standard. It would seem more likely that the culvert brought water in and the pipe took waste water away, but then the local topography seems to contradict this. It would seem that the exact nature of water management to the brewhouse could not be determined exactly on present evidence. It is

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possible that there is another pipe/culvert on the west side bringing water in, but this seems the least likely angle to get water in.

The iron pipe discovered in the east and south trenches remains a mystery. It seems to be taking its water southwards. In so doing it cuts through the brick culvert, thus making that feature inoperable. It would seem, therefore, to date from a time after the original water supply to the Brewhouse ceased. It might therefore have been a supply that had no connection with the building. This theory was tested by Trench 31, which put a cutting across the expected line of the pipe. The failure to find the pipe in this trench, or running diagonally across the north face of the building (and thus cutting across Trench 32) seems to suggest that it turns through a right-angle into the brewhouse, and may, therefore, have been a replacement for the brick culvert. None of these conjectures could be verified without excavating a trench closer to the east wall of the brewhouse than safety standards would allow.

The trench on the north side of the Brewhouse was also designed to see if there was a yard or cobbled surface in front of the main entrance to the building. There was no evidence for such a surface and it must be taken that such a feature did not exist.

## **6.0 Conclusions**

Further investigations were undertaken around the cascade at Upper Lodge to clarify certain outstanding questions prior to possible repair and reinstatement. The evidence revealed largely confirmed earlier interpretations given in the account published in *Post-medieval archaeology* in 2003. New information included confirmation that both grottoes had a brick buttress behind the dam retaining wall. Excavation behind the south grotto showed that the buttress was bonded into the original retaining wall and was not an afterthought. On the north side of the cascade deeper excavations revealed that the dam retaining wall was supported by a quarter barrel vault.

It was also revealed that the original dam retaining wall south of the cascade had largely survived, and that the yellow brick wall presently evident is only a refacing of the earlier wall. Yellow brick alteration was also found in places on the north retaining wall and along the edges of the cascade steps. This suggests that the cascade fell into a ruinous condition, and after a long period of neglect was repaired. The exact date of the yellow brick rebuildings is uncertain, but an earlier assessment that this was between 1830 and 1900 needs to be revised to allow for the possibility that this work was done in the first half of the 20<sup>th</sup> century.

Excavation at the back of the cascade showed that it had a sloping brick apron that has allowed the rear of the structure to survive in a stable form to the present day. This trench also showed that the upper pond had been clay lined and that the lining was covered over by a surface of flint cobbles. The relationship between the cobbles and the top of the cascade suggests that the water level may have been shallower in the original ponds than more recent levels.

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A series of two pipes and a brick culvert was discovered associated with the brewhouse. Which of these provided water and which got rid of the waste was not determined. A well-made brick culvert dating from c. 1700 was cut through by a later iron pipe running parallel with the east wall of the building. It is possible this pipe replaced the earlier water supply-discharge system.

## **7.0 Copyright**

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## **8.0 Archive**

The archive for this work has been deposited with London Museum (Accession number BHY97). Copies of the report were lodged with the client, the Greater London Sites and Monuments Record (SMR), Fortress House, 23 Savile Row, London, and the National Monuments Record in Swindon, Wiltshire.

## **9.0 Acknowledgements**

Thanks are given to all those involved with this project. Richard Flenley of Land Use Consultants was the driving force behind the project, liaising with the Crown Estate and Royal Parks to arrange funding for the work, and providing the author with numerous helpful references for the history of the site. Gary Tompkins, of M3 Consulting, managed the project for the Crown Estate, during the 2002 phase. David St John of OFA Project Manager, acting on behalf of Upper Lodge Properties, enabled the author and his team to have access through their land to the site. Nigel Clark, Project Engineer for S R Newman, provided machinery to help dig the trial trench behind the north wall of the Cascade. The author was given on-site assistance throughout the project by Dr Neil Rushton of the Department of History, Trinity College, Cambridge. Kathy White and Peter Foster, local historians, provided the author with background information on the history of Bushy Park and Upper Lodge. Assistance during the 2004 phase of the project was received from the Royal Parks Maintenance Department under the supervision of Ian Allen, who provided machinery and additional staff. The 2004 project was managed in turn by Graham Davy and Greg McErlean. Additional excavation assistance was provided by Trevor Steptoe BA. The project was monitored by Mark Stevenson for the Greater London Archaeological Advisory Service (GLAAS).

## **10.0 References**

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**Appendix 1: list of context excavated**

Context	Description	Munsell Colour
323	T/28; silt layer	10YR 2/1
324	T/28; cobbled flint surface	10YR 2/2
325	T/28; clay layer	2.5Y 5/2
326	T/28; gravel layer	10YR 5/6
327	T/28; brick structure	
328	T/28; brick foundation	
329	T/27; clay layer	10YR 5/4
330	T/27; yellow brick wall facing	
331	T/27; concrete skin	
332	T/27; red brick wall	
333	T/27; brick structure	
334	T/27; brick buttress	
335	T/27; stone rubble structure	
336	T/27; stone & flint rubble structure	
337	T/27; clay loam layer	10YR 4/1
338	T/30; clay loam layer	10YR 4/1
339	T/30; sandy clay layer	10YR 5/4
340	T/30; linear cut	
341	T/30; sandy clay fill of 340	10YR 5/4
342	T/30; iron pipe	
343	T/29; clay loam layer	10YR 4/1
344	T/29; sandy clay layer	10YR 5/4
345	T/29; linear cut	
346	T/29; clay loam fill of 345	10YR 3/2
347	T/29; brick culvert	
348	T/31; clay loam layer	10YR 4/1
349	T/31; sandy clay layer	10YR 5/4
350	T/31; sandy clay & gravel layer	10YR 5/6
351	T/32; clay loam layer	10YR 4/1
352	T/32; sandy clay layer	10YR 5/4
353	T/32; linear cut	
354	T/32; sandy clay fill of 353	10YR 4/3
355	T/32; ceramic pipe	
356	T/33a-b; red brick wall	
357	T/33a; brick buttress	
358	T/33a; concrete slab	
359	T/33a-b; clay loam layer	10YR 3/2
360	T/33a-b; clay layer	10YR 4/4
361	T/33b; red brick quarter barrel vault	

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## Appendix 2: catalogue of photographs taken

Photographs were taken in both colour slide and monochrome print. In the archive the colour slides are prefixed with the site code, followed by 'S' to indicate photograph type, and then followed by the film number, eg (Site Code=BHY97)/S9/\* (\* indicating the photograph number). Monochrome prints are numbered (Site Code=BHY97)/M9/\*, following the same procedure as for slides.

Photo no            Description

### Film number 9 (taken in April 2002)

1	Cascade viewed from across Lower Pond, from E
2	as above; zoomed into steps, from E
3	Cascade from N
4	Cascade steps from NW showing back of steps
5	ditto from SW
6	Modern sluice at back of cascade from S
7	Cascade showing south dam retaining wall from SSE
8	Upper Pond from cascade steps from E
9	Looking towards cascade steps across Upper Pond from W
10	Detail of top step of cascade showing alternate panels of stone and brick from E
11	Detail of top step in N corner of cascade from SE
12	Detail of top step in S corner of cascade from NE
13	Looking down on N corner of cascade showing iron pipe under waterline from NNW
14	Detail of cascade step showing brickwork under concrete render from E
15	Ironwork, possibly from original cascade decoration
16	Example of stonework in woodland near keeper's lodge thought to have come from water gardens
17	Same piece of stone from another angle
18	Further piece of stone from same source
19	T/33a; excavation behind north grotto site showing brick buttress to support domed roof from W
20	ditto from S

### Film number 10 (taken October 2004)

1	T/27; showing buttress at back of south grotto site from N; landscape view
2	ditto; portrait view
3	T/27; ditto from S; landscape view
4	ditto; portrait view
5	T/27; buttress at back of retaining wall from W
6	T/27; additional 'buttress' [333] from S
7	T/28; back wall of cascade from W
8	ditto; from NW
9	T/30; trench by brewhouse completed from W
10	T/30; detail showing iron pipe from S
11	T/29; completed from S
12	T/29; detail of brick culvert [347] cut by iron pipe [342] from S
13	T/31 completed showing that iron pipe did not pass through this trench, from ESE
14	T/32; completed from W
15	T/32, showing ceramic pipe [355] from NW
16	T/33b; engineer's test pit showing quarter barrel vault [361] at back of north dam retaining wall from W

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### Appendix 3: glossary of archaeological terms

**Archaeology:** the study of man's past by means of the material relics he has left behind him. By material relics, this means both materials buried within the soil (artefacts and remains of structures), and those surviving above the surface such as buildings, structures (e.g. stone circles) and earthworks (e.g. hillforts, old field boundaries etc.). Even the study of old tree or shrub alignments, where they have been artificially planted in the past, can give vital information on past activity.

**Artefacts:** any object made by man that finds itself discarded (usually as a broken object) or lost in the soil. The most common finds are usually pottery sherds, or waste flint flakes from prehistoric stone tool making. Metal finds are generally rare except in specialist areas such as the site of an old forge. The absence of finds from the activity of metal detectorists is not usually given much credibility by archaeologists as a means of defining if archaeology is present

**Baulk:** an area of unexcavated soil on an archaeological site. It usually refers to the sides of the archaeological trench.

**Context:** a number given to a unit of archaeological recording. This can include a layer, a cut, a fill of a cut, a surface or a structure.

**Cut:** usually used to mean an excavation made in the past. The 'hole' or cut existed in time as a void, before later being backfilled with soil. Archaeologists give a context number to the empty hole, as well as the backfilled feature (called the 'fill').

**Earthwork:** bank of earth, hollow, or other earthen feature created by human activity.

**Evaluation:** a limited programme of intrusive fieldwork (mainly test-trenching) which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified land unit or area. If they are present, this will define their character, extent, and relative quality, and allow an assessment of their worth in local, regional and national terms.

**Munsell colour:** an objective method of defining soil colour using a specially designed colour chart for soils. The reading defines hue (an objective description of colour; eg YR means yellow-red), value (darkness or lightness of the colour) and chroma (the greyness or purity of the colour). For example 10YR 3/2 is a dark grey-brown.

**Natural [layer]:** in archaeological reports, this is a layer that has been formed by natural process, usually underlying man-made disturbance.

**Period:** time periods within British chronology are usually defined as Prehistoric (comprising the Palaeolithic, Mesolithic, Neolithic, Bronze Age, Iron Age), Roman, Saxon, Medieval and Post-medieval. Although exact definitions are often challenged, the general date ranges are as given below.

**Prehistoric** c. 100,000 BC - AD 43. This is usually defined as the time before man began making written records of his activities.

Palaeolithic or Old Stone Age 100,000 - 8300 BC

Mesolithic or Middle Stone Age 8300 - 4000 BC

Neolithic or New Stone Age 4000 - 2500 BC

Bronze Age 2500 - 700 BC

Iron Age 700 BC - AD 43

**Roman** AD 43-410

**Saxon** AD 410-1066

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**Medieval** AD 1066-1540

**Post-medieval** AD 1540-present

**Pottery sherds:** small pieces of broken baked clay vessels that find their way into ancient soils. These can be common in all periods from the Neolithic onwards. They often find their way into the soil by being dumped on the settlement rubbish tip, when broken, and subsequently taken out and scattered in fields with farmyard manure.

**Project Design:** a written statement on the project's objectives, methods, timetable and resources set out in sufficient detail to be quantifiable, implemented and monitored.

**Settlement:** usually defined as a site where human habitation in the form of permanent or temporary buildings or shelters in wood, stone, brick or any other building material has existed in the past.

**Site:** usually defined as an area where human activity has taken place in the past. It does not require the remains of buildings to be present. A scatter of prehistoric flint-working debris can be defined as a 'site', with or without evidence for permanent or temporary habitation.

**Stratigraphy:** sequence of man-made soils overlying undisturbed soils; the lowest layers generally represent the oldest periods of man's past, with successive layers reaching forwards to the present. It is within these soils that archaeological information is obtained.

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**Fig. 1: General location**

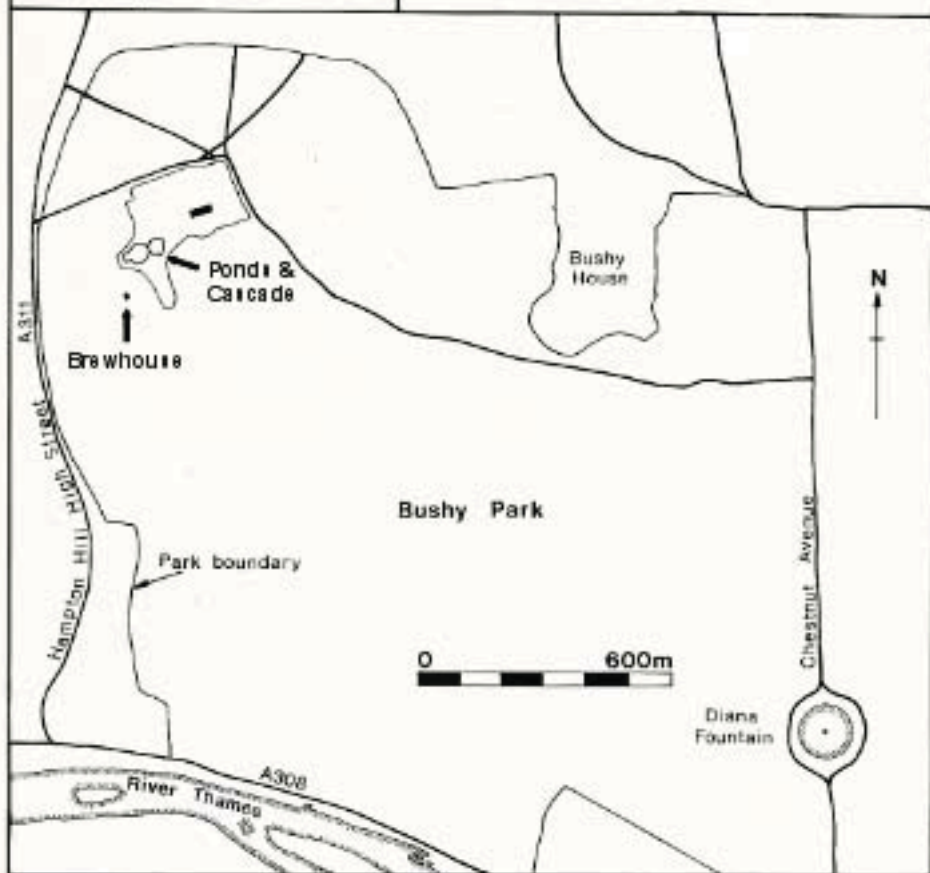


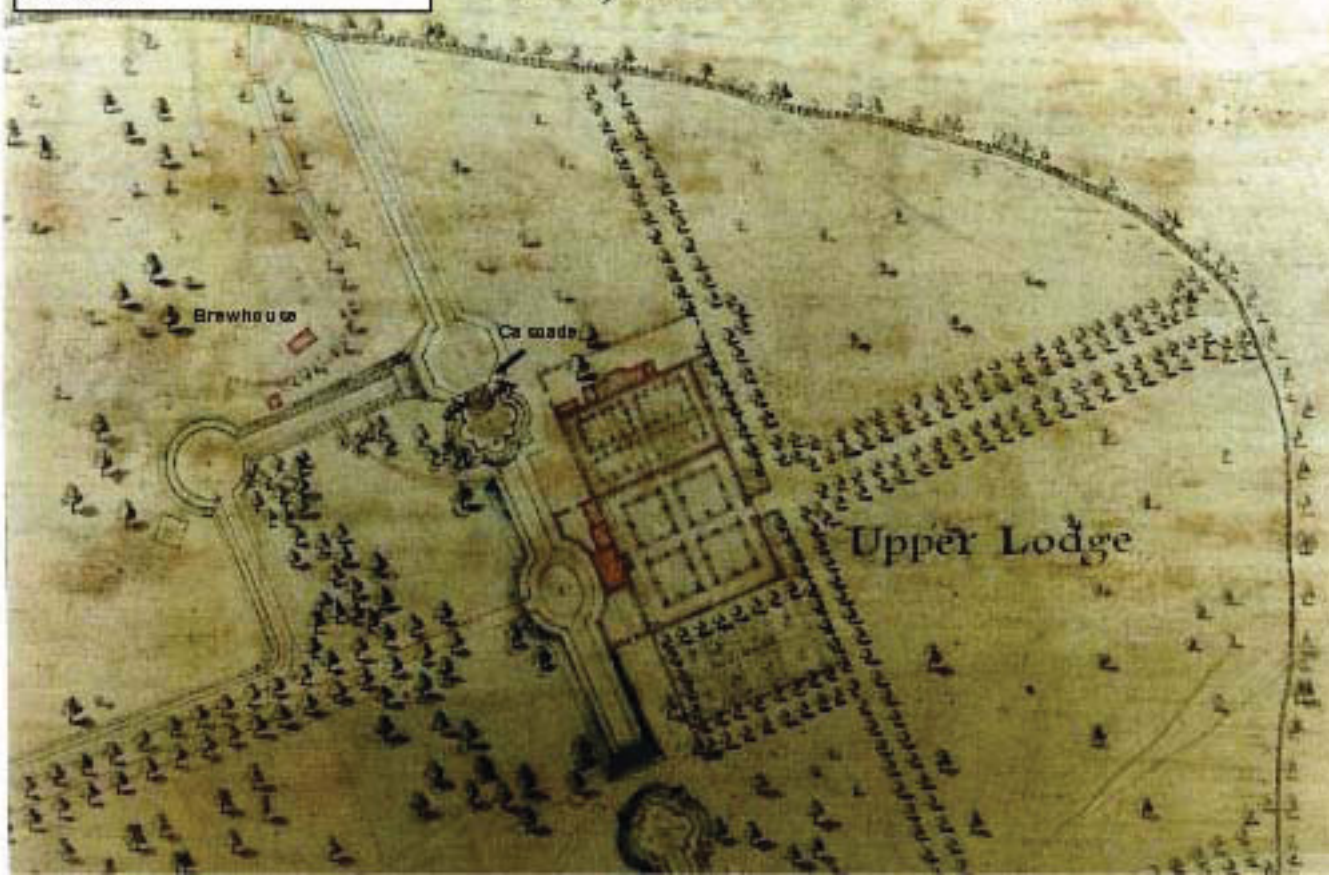


Fig. 2: Upper Lodge watergarden c. 1736  
From P. ROBERTS 1964

Hampton



Common



**Fig. 3 : the cascade and grotto at Upper Lodge c. 1715**

Figure in a garden from the Royal Collection, a school of Titian  
The Royal Collection copyright 2003 Her Majesty Queen Elizabeth II



**Fig. 4: Upper Lodge from OS map of 1897**  
Showing brew house and cascade ponds. North is at the top of the page





Fig. 6: parts of the grounds of Upper Lodge showing location of trenches excavated between 1887-88 on site of water garden and subsequently published in Currie 2003. New trenches shown in Figs 4 & 6

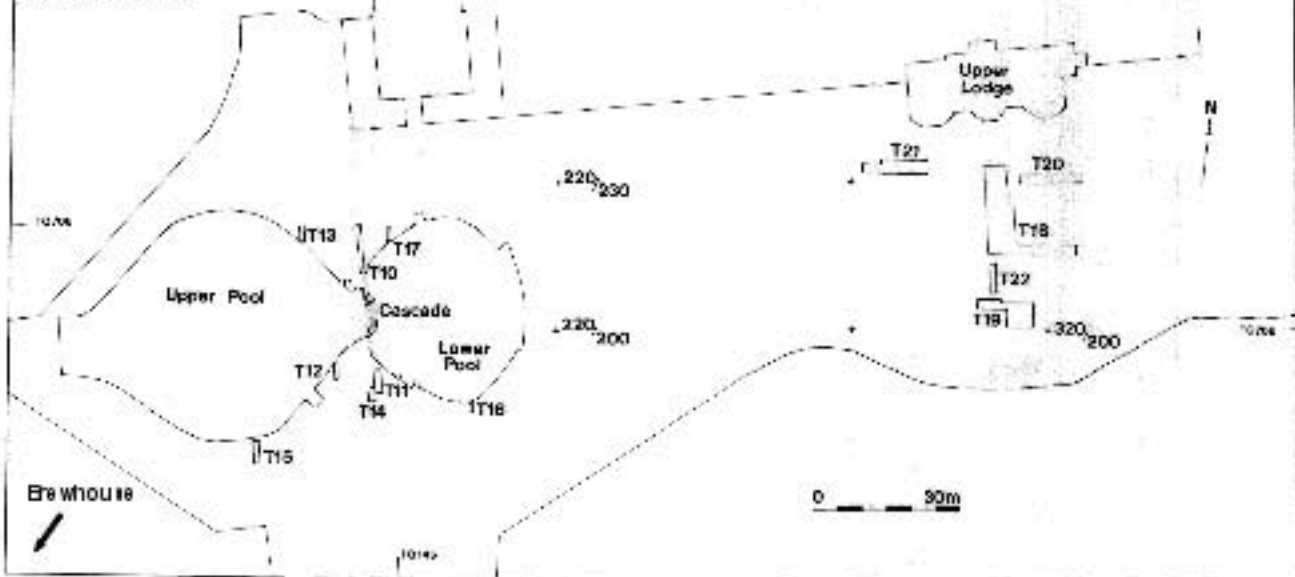


Fig. 6: cascade survey drawings, showing location of excavated trenches 2002-04

A indicates location of buttresses behind deteriorating walls to support dome of former grotto; B indicates thickness of original wall as indicated by excavation. For details of excavated trenches see Figs 6-8

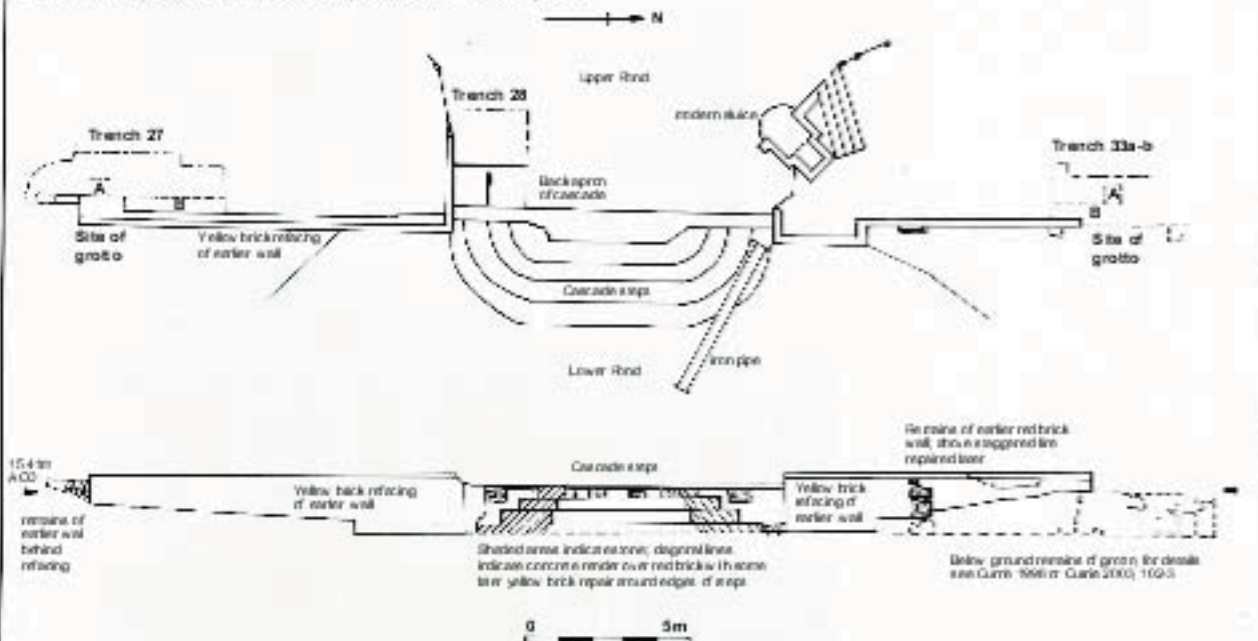
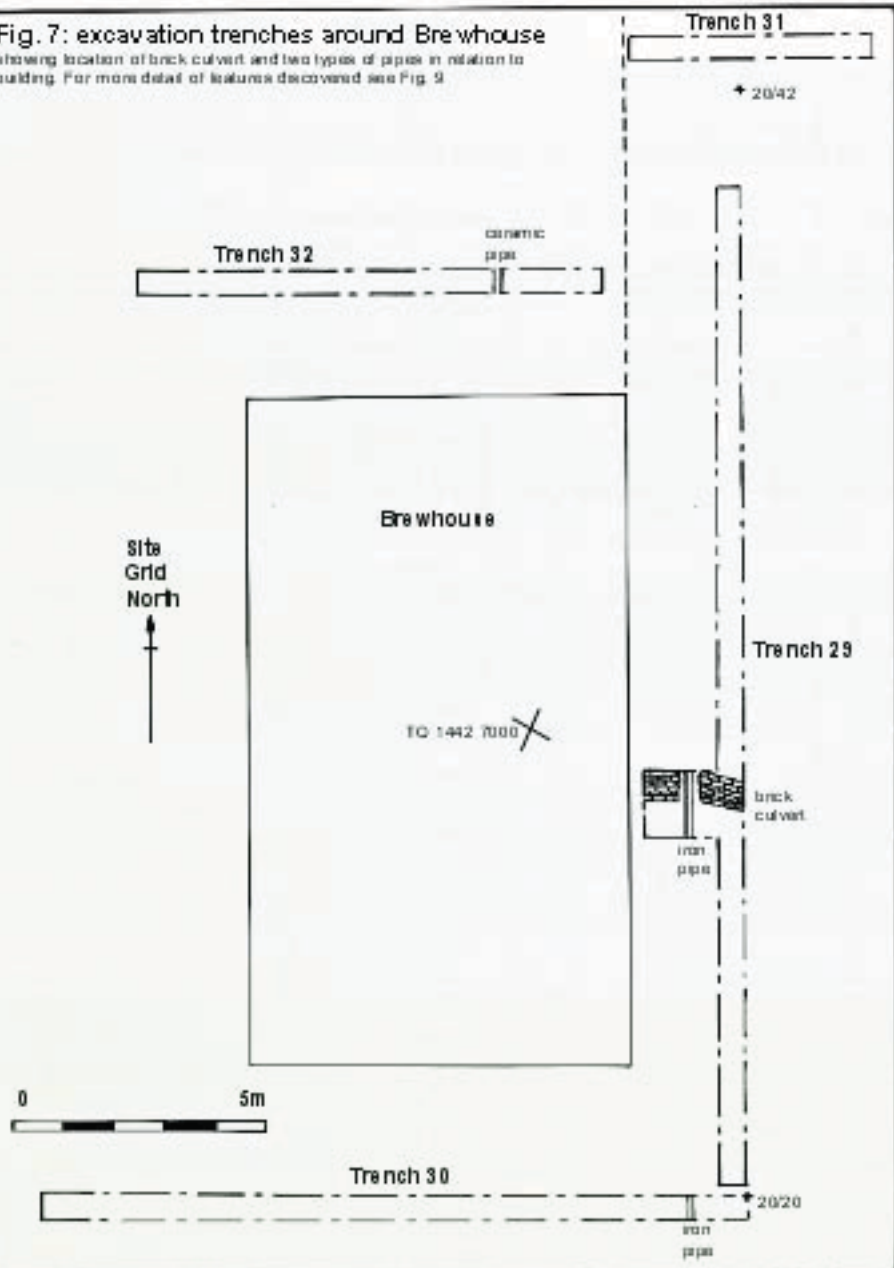


Fig. 7: excavation trenches around Brewhouse

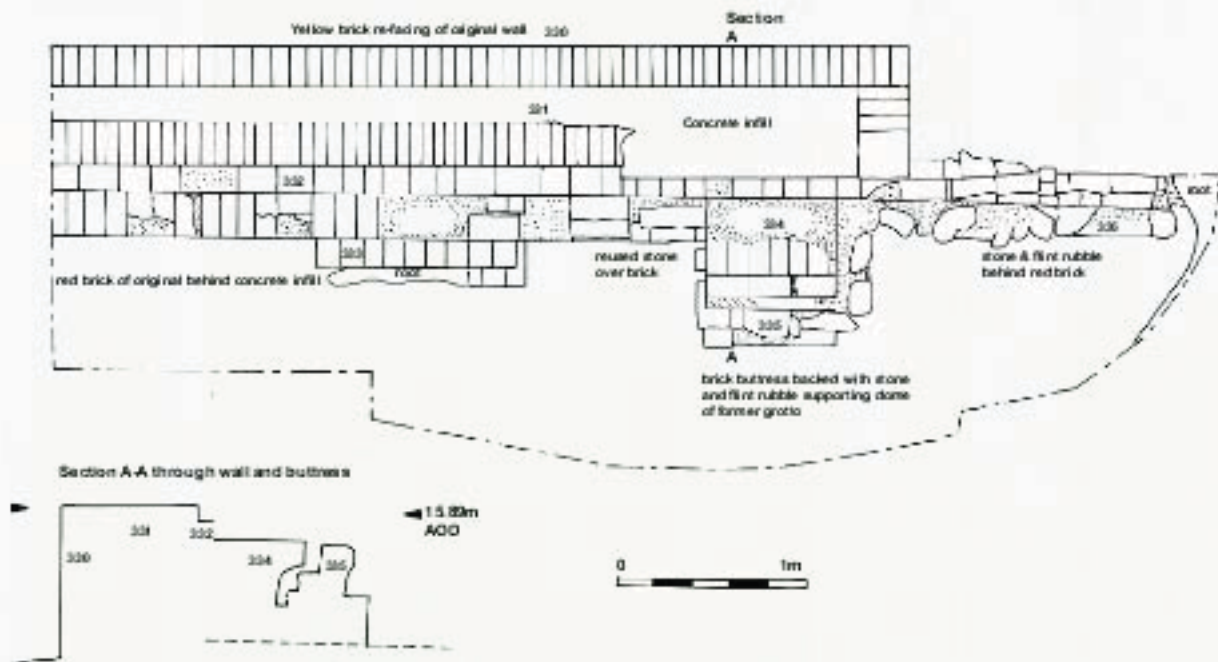
showing location of brick culvert and two types of pipes in relation to building. For more detail of features discovered see Fig. 9





**Fig 8 : Trench 27**

showing wall at back of South Grotto



Trench 28, plan

top step of cascade

render over red brick

327

328 bricks at bottom  
of cascade back

later  
concrete

326

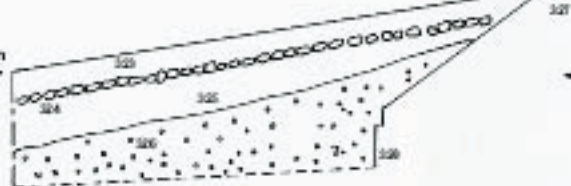
N

Fig. 9: Trench 28

showing details of back of cascade

Trench 28, south facing section

14.92m  
AGD

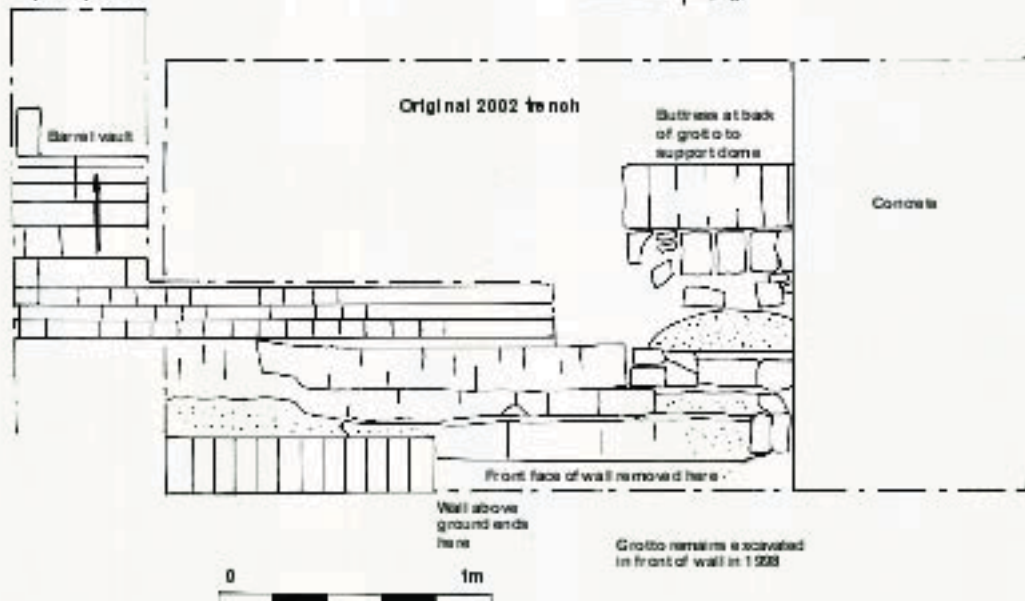


concrete side  
of upper pond

Fig.10: plan of remains behind North Grotto

Original trench excavated in May 2002. In Oct.2004 an engineer's trench was dug slightly to the south of the original and superimposed itself over part of the original, excavating deeper than in May 2004 to reveal quarter barrel vault acting as support to back of wall.

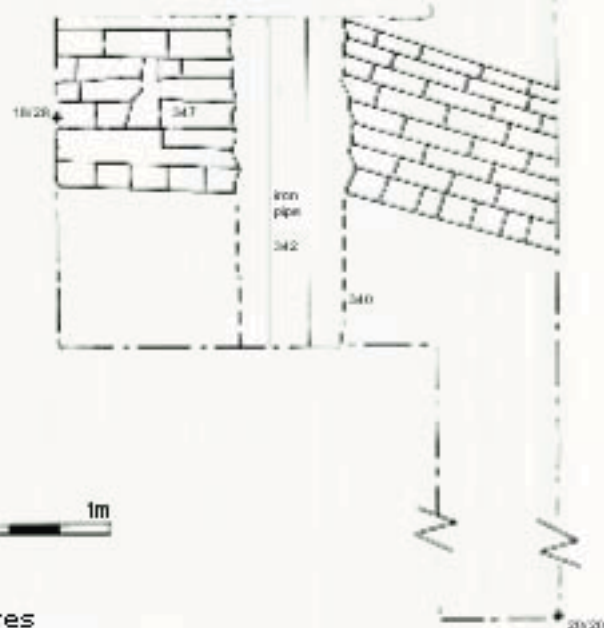
Engineer's 2004  
excavation  
superimposed



Trench 32, plan



Trench 29, plan



Trench 29, east facing section

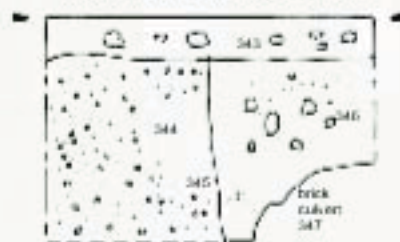


Fig. 11: brewhouse trenches with features



Front cover: the brickwork from SSE.  
Back cover: Trench 27 showing the excavations behind the south dam retaining wall, showing original wall surviving behind yellow brick facing and the brick and stone battens that once supported the domed roof of the south grotto.