

Northamptonshire Archaeology

Archaeological Investigation at

Waddesdon Manor

Buckinghamshire

June 2005



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Report 05/68

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QUALITY CONTROL

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OASIS REPORT FORM

PROJECT DETAILS		
Project name	Archaeological Investigation at Waddesdon Manor, Buckinghamshire	
Short description (250 words maximum)	Geophysical survey and excavation was carried out during preliminary ground works associated with the restoration of the site of the 'Frog Fountain' on the Lower Terrace, in the gardens of Waddesdon Manor, Buckinghamshire. Geophysical earth resistance survey was undertaken in the parterre garden to the north of the Lower Terrace and in adjacent areas to the east and west. The survey did not identify any features relating to former phases of this part of the garden. However, excavation in the area of the Lower Terrace uncovered a series of late 19 th century concrete-reinforced landscaping terraces cut into the hill slope and the remains of two probable cascading fountain basins, which were superseded by the present terrace. Other features included: two opposing flights of steps flanking the fountain basins; nine evenly spaced brick piers, which once supported a broad flight of steps leading from the terrace to the parkland beyond the formal gardens; and two brick vase bases. It is possible that some of the features revealed by the excavation relate to a series of garden designs put forward by the French architect Gabriel-Hippolyte Destailleur, particularly during the period 1886-8.	
Project type (eg DBA, evaluation etc)	Excavation	
Site status (none, NT, SAM etc)		
Previous work (SMR numbers etc)	Trial trench evaluation, Northamptonshire Archaeology 2004	
Current Land use	Garden Terrace	
Future work (yes, no, unknown)	Proposed re-instatement of a structure known as 'The Frog Fountain'	
Monument type/ period	Ornamental garden features, 19 th century	
Significant finds (artefact type and period)		
PROJECT LOCATION		
County	Buckinghamshire	
Site address (including postcode)	Waddesdon Manor	
Study area (sq.m or ha)		
OS Easting & Northing (use grid sq. numbers)	27353/41645	
Height OD	c 150m aOD	
PROJECT CREATORS		
Organisation	National Trust	
Project brief originator	Northamptonshire Archaeology	
Project Design originator	Anthony Maull, Northamptonshire Archaeology	
Director/Supervisor	Anthony Maull, Northamptonshire Archaeology	
Project Manager	Anthony Maull, Northamptonshire Archaeology	
Sponsor or funding body	The Alice Trust	
PROJECT DATE		
Start date	May 2005	
End date	August 2005	
ARCHIVES	Location (Accession no.)	Content (eg pottery, animal bone etc)
Physical		
Paper		
Digital		
BIBLIOGRAPHY		
Journal/monograph, published or forthcoming, or unpublished client report (NA report)		
Title	Archaeological Investigation at Waddesdon Manor, Buckinghamshire	
Serial title & volume		
Author(s)	Simon Carlyle and Anthony Maull	
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**ARCHAEOLOGICAL INVESTIGATION
AT WADDESDON MANOR, BUCKINGHAMSHIRE
MAY TO JUNE 2005**

Abstract

Northamptonshire Archaeology was commissioned by the National Trust to undertake a geophysical survey and excavation during preliminary ground works associated with the restoration of the site of the 'Frog Fountain' on the Lower Terrace, in the gardens of Waddesdon Manor, Buckinghamshire. Geophysical earth resistance survey was undertaken in the parterre garden to the north of the Lower Terrace and in adjacent areas to the east and west. The survey did not identify any features relating to former phases of this part of the garden. However, excavation in the area of the Lower Terrace uncovered a series of late 19th century concrete-reinforced platforms which were cut into the hill slope and the remains of two probable cascading fountain basins, which were superseded by the present terrace. Other features included: two opposing flights of steps flanking the fountain basins; nine evenly spaced brick piers, which once supported a broad flight of steps leading from the terrace to the parkland beyond the formal gardens; and two brick vase bases. It is possible that some of the features revealed by the excavation relate to a series of garden designs put forward by the French architect Gabriel-Hippolyte Destailleux, particularly during the period 1886-8.

1 INTRODUCTION

As part of its programme for the long-term restoration of the gardens and park at Waddesdon Manor, Buckinghamshire, the National Trust, in liaison with Lord Rothschild and the Alice Trust, are proposing to reconstruct a garden feature known as the 'Frog Fountain', which is believed to have once been situated on the south side of the formal gardens. The restoration scheme has been prepared by architects Inskip and Jenkins. The original fountain was positioned on the Lower Terrace, below the balustrade of the parterre garden known as the South Fountain Terrace (Fig 1; centred on NGR SP 7353 1645). The documentary evidence for the 'Frog Fountain' is limited to a brief description in the *Gardeners Chronicle* of June 1885. Following a description of the parterre garden, the article goes on to add:

'Below this fountain terrace [i.e. the parterre garden] is yet another, of a smaller size, having a water basin and fountain of proportionate size; and beyond all is the rapidly falling ground of the park, ...'

However, as it was not shown on the historic maps of the property, including the first and second edition Ordnance Survey maps of 1885 and 1897 respectively (the details have been transcribed onto a modern Ordnance Survey base map, Fig 2), this would suggest that the construction was a very short-lived feature.

Due to the lack of historical documentation, the architect's proposed restoration plans were initially based, to a certain degree, on conjecture. In order to provide a more accurate historical and archaeological basis for the reconstruction trial excavation was

carried out by Northamptonshire Archaeology in September 2004 (NA 2004). This work demonstrated the survival of archaeological remains relating to former phases of the Lower Terrace, but constraints on the size and location of the trenches limited their interpretation.

Preliminary restoration works by IJP Building Conservation commenced during February 2005 and an ongoing watching brief was conducted by Gary Marshall, the National Trust archaeologist for the Thames and Solent Region. The removal of yew hedges and a raised bank abutting the south wall of the parterre garden uncovered structural remains relating to former phases of the Lower Terrace, including a well-built curved wall, believed to be the remnants of a fountain basin.

The unexpected discovery of these remains and the likelihood of recovering further archaeological information relating to the 'Frog Fountain', led to the decision to undertake further excavation on the Lower Terrace. Northamptonshire Archaeology was commissioned by the National Trust, on behalf Lord Rothschild and the Alice Trust, to carry out this work.

2 OBJECTIVES

The overall objectives of the investigation were set out in a brief issued by the National Trust (Marshall 2004) and presented in the method statement prepared by Northamptonshire Archaeology (2005). These were to:

- i) Assess the archaeological potential of the site
- ii) Provide archaeological evidence which will assist with the accurate restoration of the lower terrace
- iii) Record and interpret archaeological evidence which is likely to be destroyed or removed as a consequence of the restoration works.

Specifically, the investigations had the following aims:

- i) To accurately map the location and extent of the remains
- ii) To reveal and record the character of the visible remains
- iii) To create detailed plans and profiles of the visible remains.

3 BACKGROUND

Historical and archaeological background

Waddesdon Manor, a Grade I listed Renaissance-style chateau, was built between 1874 and 1889 for Baron Ferdinand de Rothschild to the designs of his French architect Gabriel-Hippolyte Destailleur. It was built on land purchased from the Duke of Marlborough and was intended to house his growing collection of art treasures, specifically his collection of 18th century French art. The interior was fitted out with wood panelling, screens, fireplaces and other architectural items salvaged from derelict and demolished French chateaux and old houses (www.theheritagetrail.co.uk). The original grounds were laid out by another Frenchman, the landscape gardener and designer Elie Laine, although structural elements of the garden, including the Lower Terrace, may have been based on designs provided by Destailleur. The present pleasure grounds were laid out by the bailiff, Mr Sims and the two Head Gardeners, Mr Bradshaw and Mr 'Johnnie' Jacques (Marshall 2004).

Prior to the construction of the manor and gardens, the site comprised a barren, cone-shaped hill known as Lodge Hill, which was reduced in height to provide a level site for the house. Drives of suitable gradient were laid out across the landscaped parkland, and various fountains, vistas, terraces and walks were designed and built.

It is likely that Destailleur may have designed the original south front garden as he drew a plan, section and elevation, dated 1886, which depict a 'Grotto' style garden running the full length of the south front of the house (Fig 3). Based on the given measurements and relating the position of the semi-hexagonal steps with the modern steps leading down to the parterre garden, the proposed position of this feature relative to the existing garden is shown in Figure 4. The grandiose design comprises a large pool partly enclosed by a recessed bay, the rear wall of which contains seven rusticated arches. Within each archway is a small cascade fountain flowing over a pile of rocks and the columns are adorned with atlantes. Positioned either side of the bay are seven water spouts, with frog-like statues at either end of the bay, spouting water from their mouths. A central fountain completes the design. The 'grotto' is approached by flights of steps either side of the pool, descending from the southern edge of a sloping terrace. At the upper, northern end of the parterre garden there is an additional flight of semi-hexagonal steps leading to the broad terrace immediately in front of the house. It is not known whether this design was ever built, but the semi-hexagonal steps appear to be shown on the first edition Ordnance Survey map of 1885 (Fig 2); no further details of the south front gardens are given.

By 1897, when the second edition Ordnance Survey map was produced (Fig 2), the design of the gardens is shown to broadly conform to the current arrangement. The semi-hexagonal steps shown on the earlier map had been replaced by the existing rectangular steps and the parterre garden had been laid out around the fountain with the marble group of Pluto and Proserpina (Plate 1), which provides the centrepiece of the South Fountain Terrace today. Below the parterre garden the Lower Terrace is shown, with opposing flights of steps leading down to a roughly rectangular terrace. The Lower Terrace was subsequently extended to the north to create the square terrace that is currently being redesigned as the setting for the 'Frog Fountain'.

The map evidence would suggest, therefore, that the remains of the garden features revealed by the evaluation in 2004 pre-date 1897 and relate to earlier, short-lived

designs built after 1885, though not to the grand design drawn up by Destailleur in 1886.

The first investigation on the Lower Terrace was carried out in the mid 1990s when an irregular-shaped trench was cut across the gravel area of the terrace. This revealed several square stone bases, thought to be column bases, adjacent to the retaining wall, and a lime-mortared rubble base within the area of the proposed site for the new fountain. No formal record of this work exists and this information has been provided by Frank Parge, former gardener, and Paul Farnell, current head gardener at Waddesdon Manor. Several photographs taken during the course of this work are held in the National Trust's Regional Archaeological Archive.

The evaluation carried out in 2004, which comprised the excavation of five trenches, revealed clear evidence for substantial landscaping and made-ground within and immediately adjacent to the Lower Terrace, with the natural limestone revealed in all but one trench, showing a gradual slope from north to south, mirroring the slope visible today. A series of archaeological features comprising brick walls, concrete bases and brick piers was recorded. The function of the concrete blocks and evenly spaced brick piers was unclear, although it was considered likely that they related to designs put forward by Destailleur. However, due to constraints it was not possible to ascertain what design elements were present and it was not certain whether the concrete block recorded in one of the trenches related to the site of the 'Frog Fountain'.

Geology by *Ben Pears*

The geology of the Waddesdon area is predominantly represented by rocks of the upper Jurassic period, consisting of the Ancholme Group, a mixture of clay and sand deposits, and the Corallian group, a complex succession of limestones, marls and sandstones. The deposits have a distinctive north-east to south-west orientation. The manor house is situated on an outlier of rock composed of Portland and Purbeck deposits, consisting of hard, light yellow micritic rubbly limestones, containing heavily degraded shell fragments and examples of *Titanites giganteus*, a large ammonite species, and a bivalve, *Protocardia dissimilis* (J de C Sowerby). The limestones, which were found across the site and ranged from 0.6m to 1m thick, were interbedded with soft, green grey glauconitic sand layers with some darker grey limnic staining between 0.3m and 0.6m thick.

The soils on the site are derived from a mixture of eroded limestone and sand from the bedrock and Pleistocene deposits. The result is the locally brashy, well drained calcareous fine loamy soils of the Aberford series (SSEW 1983).

4 GEOPHYSICAL SURVEY RESULTS

Introduction

Northamptonshire Archaeology conducted a geophysical survey in May and June 2005 in the parterre garden and areas adjacent to the Lower Terrace (Fig 5, Areas 1, 4 and 5, and Areas 2 and 3 respectively).

Methodology

The earth resistance survey was conducted over five areas on three different types of ground: gravel paths, a raised flower bed and grass. The gravel paths had to be watered as they were too dry to conduct the electrical current. The survey was carried out using a Geoscan RM15 Resistance Meter in a twin electrode configuration with mobile probe spacing of 0.5m. Transects were spaced 1m apart and were surveyed in a 'zigzag' fashion, with readings logged at 1m intervals.

The data was analysed using Geoplot 3.00p software. Low or negative resistance is shown as white and high or positive resistance as black in the resultant greyscale plots. The data was minimally processed to remove extreme readings and further resample to 0.5m x 0.5m to aid in the identification of small features. The processed data is presented here in the form of greyscale plots geo-referenced onto maps of the survey area and then with associated interpretation plots (Figs 5 and 6).

Survey Results (Figs 5 and 6)

Area 1 was conducted partly over a raised flower bed, which is shown as a low resistance anomaly and does not reveal any evidence of the former gardens. The remainder of the area was a gravel surface. A curved, linear low resistance anomaly was detected and relates to a metal border around the fountain. A high resistance linear anomaly extended from the eastern edge of the fountain to the top of the eastern flight of steps to the Lower Terrace; this may either represent the course of a drain, perhaps leading to a nearby manhole, or the location of a water pipe supplying the existing fountain. An area of high resistance south-west of the raised flower bed represents modern fill material. This may account for a second similar high resistance anomaly north-east of the raised flower bed. The equidistant linear anomalies on the path either side of Area 1 are too narrow to represent a wall or feature of any significance; they are probably drains.

Survey in Areas 2 and 3 was carried out over grass. Two high resistance anomalies were detected in each area, and probably represent dry soil caused by nearby trees. Two areas of low resistance were detected, one in each area. They are uncharacteristic of archaeological features and may simply represent natural variation in the underlying substrate.

In Areas 4 and 5, the survey was conducted over a narrow area divided by raised flower beds/grass (low resistance) and gravel paths (high resistance). It is due to the difference in the ground that the results are contrasting. The limited width of the survey area makes the results difficult to interpret.

Conclusions

The geophysical survey did not reveal any features relating to the former gardens at Waddesdon Manor. The only features it did reveal were vegetation and modern garden features.

5 EXCAVATION RESULTS

Introduction

The removal of the yew hedges and attendant overburden on the site revealed a short-lived archaeological sequence of garden landscaping activity spanning a period of perhaps only 10-15 years. This comprised a series of platforms cut into the slope of the hill, each reinforced and levelled with concrete rafts. Two probable contemporary tiered/cascading fountain basins and other garden features, including a linear trench, robbed out steps, walls and brick bases for ornamental vases were constructed within the terraces (Figs 7 and 8). Four general phases of garden design have been identified (Fig 9), although the actual sequence may be more complex as the interpretation of many of the remains of the first two phases was limited by archaeological and structural constraints. A contexts summary is provided in Appendix 1.

Methodology

Owing to health and safety considerations relating to the structural integrity of the south wall of the parterre garden, it was not possible to strip the site in a single phase of works, the overburden having to be removed in small segments over a period of several weeks whilst scaffolding was erected. The first machining operations comprised the removal of the yew hedges bordering the northern edge of the Lower Terrace, adjacent to the retaining wall, and the cutting of three sections through an underlying bank of made-ground. The removal of the yews and excavation revealed buried structural remains relating to former designs of this part of the garden. This initial work was followed by the staged reduction of the bank and the eventual removal of overburden to a depth of at least 0.4m in the area encompassing the Lower Terrace. The successive stages of ground reduction were undertaken in order to record and interpret archaeological evidence which was likely to be destroyed or removed as a consequence of the restoration works. A JCB-type mechanical excavator, fitted with a 1.8m wide toothless bucket was employed for the excavation of the area. All overburden, which was stripped under archaeological supervision, was removed and stacked adjacent to the Lower Terrace to form a raised bank, allowing safer machine access to and from the site. Mechanical excavation ceased when former buried garden features were revealed, or where these were not present, the natural substrate.

Each feature or deposit was given a unique context number and the details of each context were recorded on *pro-forma* sheets. Archaeological features were planned at a scale of 1:20 and section drawings were made at a scale of 1:10 and 1:20. Levels, which were related to Ordnance Datum, were taken at appropriate points, on section datums and on all major features; the site grid was related to the Ordnance Survey National Grid. A photographic record was made of the excavation, using both 35mm colour transparency and black and white negative film. Additional images were taken using a digital camera. The spoil heaps and features were scanned with a metal detector to ensure maximum finds retrieval.

All works were carried out in accordance with the IFA *Code of Conduct* (1995, revised 2002) and the *Standard and Guidance for Archaeological Field Evaluation* (IFA 1994, revised 2001). All procedures complied with the Northamptonshire County Council

Health and Safety provisions and Northamptonshire Archaeology Health and Safety at Work Guidelines.

Phase 1, fountain basin and walls

The construction of the Lower Terrace involved the reduction of the original ground surface, involving the cutting of terraces into the south-west facing hill slope. The steep-sided terraces were cut into the underlying natural bedrock and were then consolidated by laying substantial concrete rafts. The concrete, when set, undoubtedly added strength to the easily weathered limestone and alleviated any potential problems with subsidence from the garden parterre above. The concrete would have also formed a solid, level sub-base for any proposed garden features which were planned. The insertion of the concrete rafts was identified in plan as extending south from the parterre garden wall to approximately 3m beyond the subsequent wall that eventually bounded the Lower Terrace. Some of the concrete rafts may belong to later phases of construction, particularly those beneath the modern terrace.

Following the initial groundworks the first fountain was constructed. The fountain basin consisted of a substantial, well-built curving/apsidal brick wall [118], c 0.8m thick, and was constructed in English Bond, bonded with a medium coarse yellow/orange mortar (Plate 2). The floor of the basin was constructed of mortared brick and the entire structure was built on a mortar bed laid directly over the bedrock. The basin wall still survived to a height of at least 1m and extended beneath the modern north wall [114] of the Lower Terrace, indicating that the main part of the fountain lies beneath the raised bed in the parterre garden above.

Flanking the southern edge of the fountain to the east and west were two brick walls, their foundations resting on a concrete raft (Plate 3). The two brick walls [109 and 137] were aligned from east to west and were constructed on a line tangential to the southern edge of the fountain. The opening between the ends of the two walls was approximately 8m wide, and provided access and an open vista to the parkland to the south.

Once the fountain and the walls had been constructed, and as part of the same phase of construction, the surrounding area appears to have been made-up, presumably to even out irregularities in the natural bedrock and to change the axis of the slope, to make it perpendicular to the parterre garden. This involved raising the ground level around the fountain, particularly on the lower western side, with re-deposited soils taken from elsewhere in the estate grounds.

Running parallel and to the south of the brick walls was a large trench [184], cut into the bedrock. It measured more than 13m long, 1.3m wide and was at least 0.8m deep. The trench had very sharply defined, vertical sides and a relatively flat base that became deeper towards either end. It was filled with compacted medium orange clayey silts containing substantial small to medium sized limestone inclusions. At the eastern end of the trench the base was partly lined with concrete. The function of the trench is unclear, although its substantial size and the effort expended in its construction would indicate that it may have been a major component of one of the garden designs. It is possible that it was cut with the intention of creating a further water feature, though there is little evidence to suggest that it ever held water. It is likely that the feature was never completed and was backfilled before it was finished.

Phase 2, second fountain basin and brick piers

Very soon after the construction of the first fountain and associated features, a revised design was implemented with the construction of a second fountain basin [203] immediately to the south. This may have replaced the earlier fountain but is more likely to have formed an extension to the original. A salt-glazed ceramic pipe from the first fountain, bearing the manufacturers mark "DOULTON AND CO", appears to have connected to the drain pipe of the later fountain, suggesting that both fountains were in use at the same time. However, due to later robbing a stratigraphic link between the two fountains cannot be established with absolute certainty.

The second fountain basin, which was bedded on a thin layer of concrete, was D-shaped in plan and was formed by a linear rear brick wall [111], measuring 7.5m long by 0.7m wide, which tied into a D-shaped curving apsidal wall [112], approximately 0.3m wide. It had a tiered concrete base, suggesting that the basin was deeper towards the front. The waterproof lining, which survived in the north-west corner of the pool, comprised a 20mm thick layer of bitumen skimmed with a very fine render of cement/mortar (Plate 4). A ceramic pipe [150] ran beneath the back edge of the basin, connecting two overflow drains, one of which partly survived in the north-west corner; the pipe then continued underneath the steps to the south-east.

Associated with the revised design of the fountains, two brick piers were built on either side, directly over the line of the Phase 1 walls. The east pier [151] was almost totally truncated by later activity but the west pier [152] was relatively well-preserved. It was rectangular in shape, up to 1.25m long by 0.8m wide, with an off-centre recess on its southern side. A well-preserved, very fine cement render survived on top of the pier, over which was placed a two brick wide brick pedestal, presumably to support a statue which may have spouted water into either pool. The construction of this feature is similar to that of other statue bases still extant in the estate grounds.

Descending from the parterre garden, opposing flights of dog-legged steps, *c* 0.8m wide, provided access to the fountains. The steps were constructed on thick concrete foundations cut into the Phase 1 made-ground and were surfaced with brick; a small area of the brick surface [144] survived on the eastern flight of steps (Plate 5). The steps cut through the Phase 1 wall on both sides of the fountains.

Examination of the back (north) wall of the modern terrace (Fig 10) shows that it was built in several phases. The brickwork at either end of the wall is the earliest part of the structure, and is probably contemporary with the second fountain. It may have formed part of the arrangement of steps on either side of the fountain, leading down from the parterre garden above. A diagonal scar on the brickwork at the eastern end of the wall indicates the likely position of former steps.

Phase 3, as shown on second edition Ordnance Survey map of 1897

Within a few years following the construction of the second fountain and prior to the second edition Ordnance Survey map of 1897, part of the original parterre garden and the Lower Terrace was re-modelled yet again.

The revised design involved extensive re-modelling of the Lower Terrace and the construction of a new section of wall [114] *c* 5m to the south of the original south wall of the parterre garden, in between the steps leading down to the Phase 2 fountain. The wall, which had brick footings and upper courses of Bath stone topped with coping

stones, was built over the Phase 1 fountain, indicating that this was no longer part of the garden design. The area behind the wall to the north was then infilled to raise ground level to the level of the garden parterre above, effectively creating a rectangular extension on the south side of the South Fountain Terrace; this area is now occupied by the raised bed. The probable footings of the original south wall of the South Fountain Terrace above the steps were recently observed during groundwork carried out by IJP Building Conservation (Colin McGugan pers. comm.).

Although it is not shown on the Ordnance Survey map of 1897, the Phase 2 fountain was probably incorporated into the re-modelled garden design as the new flight of steps to the east of the fountain (see below) was carefully built over the drain pipe (Plate 6), suggesting that it was still in use.

Phase 2 brickwork associated with the original steps to the fountains was incorporated into the new wall. The ground behind the new wall was initially made up to bring it to the same level as the parterre garden, prior to the establishment of a rectangular raised garden bed. Due to the depth of made-ground behind the new wall and the likely tendency of the wall to bow, two supporting brick buttresses [136 and 140] were built on its south side (Fig 11), effectively burying the remains of the earliest fountain, with the exception of the curved south wall [118] that projected into the excavation site (Plate 7).

To the east and west, at either end of the new extension to the parterre garden, formal flights of steps *c* 4.5m wide descended to a new terrace built immediately to the south of the earlier fountains (Plate 8). The original flights of steps descending from the parterre garden were removed. The new terrace measured approximately 10m east-west by 6.5m north-south and was bounded to the north by a well-constructed brick wall [161], built using frogged, unmarked bricks. Within the bounds of the terrace wall the ground appears to have been built-up with re-deposited soil, and surfaced with gravel. Although it cannot be proved to belong to this phase, a broad flight of steps supported on a series of evenly spaced brick piers [190] provided access to the parkland to the south. The brick piers had been noted previously in an evaluation trench (NA 2004, 6), and were of a similar construction to the existing brick piers observed under the stone steps leading down from the parterre garden.

Phase 4, Lower Terrace enlargement

At some point in the mid to late 20th century the Lower Terrace was re-modelled and enlarged to the north. The enlarged terrace is not shown on the Ordnance Survey map of 1922, indicating that this work was carried out after this date.

The steps leading down from the terrace to the parkland to the south were removed and replaced with a low retaining wall [199]. The wall was made of brick and capped with Bath Stone coping stones. The original north wall of the terrace was raised to ground level and the terrace was extended *c* 3m to the north, the new north wall, which was also capped with matching Bath Stone coping stones, being constructed over the Phase 2 fountain.

The foundation trench of the new wall was cut through the fountain basin; marks left by pneumatic breakers were visible in the concrete forming the sides of the trench. In order to alleviate potential problems associated with drainage from the newly extended terrace, the fountain basin, specifically its bitumen lining, was probably ripped out at this time. The foundations of the fountains and earlier structures were then buried under a large bank of soil and building debris cast up to the north of the enlarged terrace,

which was then planted with two yew hedges that covered the bank until their recent removal.

Two square brick bases [164 and 165], situated near the base of the steps leading down from the parterre garden, were built to support ornamental vases; these were still *in situ* until comparatively recently. It is not possible to say whether they belong to this or the preceding phase of the terrace.

6 FINDS

The pottery by Tora Hylton

In total 11 sherds weighing 374g were recovered from the excavation. This small assemblage is represented by a single sherd of domestic tablewares and garden wares. The tableware is represented by the rim from a possible dish in underglaze transfer printed ware, which dates to the late 18th or 19th century. It was recovered from layer 135, a mortar layer that sealed features in the north-east corner of the site. Garden ceramics are represented by 10 sherds of mainly unglazed (8) and glazed (2) sherds of red earthenware. Two vessel forms are represented, standard flowerpots measuring up to 0.28m in diameter, and a shallow dish for placing under pots to collect the water. One of the pots is stamped with "RICHARD SANKEY, BULWELL POTTERY, NOTTINGHAM", a company which was founded in 1855 by Richard Sankey & Son.

Table 1: Pottery summary

Context no.	Description	No. sherds	Weight (g)	Date
131	Glazed red earthenware, rim sherd from shallow dish	1	18	C19th/20th
135	Underglazed transfer-printed	1	25	Late C18th or C19th
138	Glazed red earthenware and a large stamped flower pot	2	202	C19th
139	Red earthenware, ext. buff coloured with tiny spot of glaze on rim.	1	5	C19th/20th
183	Red earthenware flower pot	6	124	C19th/20th
	Total	11	374	

The worked stone *by Joe Prentice*

The excavation produced a small assemblage of worked stone. With the exception of one fragment, all of the stone was common to that used throughout the house and gardens and was therefore assessed on site and not retained.

The assemblage derived from the following three contexts:

Context 123 (*made-ground*)

Four fragments of Bath Stone were recovered from this deposit, one a fragment of an ashlar facing block, the other three all pieces of the coping which was used to form a kerb along the edges of the stairs. This was a simple recessed quarter moulding and cannot be closely dated. It has been used throughout the gardens at Waddesdon and merely indicates that when additions have been made they have continued to use the existing style.

A fragment of a cavetto moulding, usually found on window surrounds/mullions, was also found in this deposit, carved from a fine-grained limestone (source unknown). This fragment might come from an earlier building that would probably pre-date 1680/90, or it could come from the present house which uses this type of moulding.

Context 166 (*fill of Phase 1 trench*)

A white marble floor tile and three small fragments of Bath Stone ashlar facing, one with mortar attached to one side, were found. The tile is incomplete, but was probably square. The present complete edge measured approximately 150mm and the tile is 20mm thick. The upper surface, indicated by the fact that the sides of the tile slope inwards, is polished. The marble must be foreign, probably continental. It may be a waste piece from the laying of floors in the house.

Context 168 (*made-ground*)

Two blocks of limestone were recovered from this layer of made-ground. One was a roughly rectangular dressed piece, though probably not ashlar as it was too thick to be used for this. On one side was a very crudely cut socket, perhaps a secondary feature. The second piece was wedge-shaped and almost certainly represents a slip of stone used to close a course where it was truncated by the sloping coping of the staircase.

7 DISCUSSION

The Lower Terrace, which forms part of the south front gardens of Waddesdon Manor, Buckinghamshire, has undergone a number of significant structural alterations since it was first built in the 1880s. These alterations probably reflect changing fashions in garden design in the late 19th and early 20th century. Unfortunately, there is little surviving documentary or photographic evidence associated with earlier design phases of this part of the garden.

No evidence was found for the grand, Italianate 'grotto' design put forward by Destailleur in 1886. If this was ever built its remains lie further to the north, under the

parterre garden and fountain of Pluto and Proserpina.

The earliest remains found beneath the modern Lower Terrace are those of a relatively small, though well-built fountain basin, the curving southern edge of which extends from under the rear wall of the terrace. The tight curve of the fountain basin wall doesn't match the shallow curve of the pool shown on Destailleur's design. It is therefore clear that the Lower Terrace originally extended further to the north, into the area now occupied by the modern raised bed in the parterre garden above. The original north wall of the Lower Terrace was probably on the same line as the main length of the south wall of the parterre garden, as suggested by observations during groundworks carried out by contractors.

Following the completion of the first fountain, a second basin was built immediately to the south, at a slightly lower level. The form and structure of the second basin suggests that there was a cascade between the two basins, and the network of drains confirms that they were in operation at the same time, at least over a certain period. It is not known if there was a fountain in the second basin, although brick piers either side of the basins may have supported water-spouting statues.

Access to the Lower Terrace from the South Fountain Terrace above was by way of opposing flights of relatively narrow, dog-legged steps, surfaced with brick. The scale of these steps and the use of brick rather than stone, and the relatively small, pool-like basins, suggests that the original Lower Terrace may have been an informal, perhaps private area, compared with the formal gardens to the north and the open parkland to the south. Although there is no evidence for the planting, beds of shrubs and ferns may have created a secluded 'wilderness' around the fountains, very much in keeping with the late Victorian passion for ferneries and 'wilderness' gardens. An undated drawing (Fig 12) held in the archives at Waddesdon Manor appears to show such a design, based around heavily planted, tiered semi-circular terraces, although the fountains are not shown.

The fountains were short-lived, probably in use for no more than ten years before they were replaced by a plain terrace and flights of broad steps providing access to the parkland from the parterre garden. The new terrace was decorated with two stone vases on plinths, which remained *in situ* until relatively recently. This change occurred before 1897, when the new design is shown on the second edition Ordnance Survey map. It is possible that the lower fountain basin may have temporarily formed part of the new design, as the supporting brick wall for the new steps was carefully built to incorporate the drain from the lower basin. However, the upper fountain was demolished at this time, when the new rear (north) wall of the Lower Terrace was built over its foundations.

In the mid to late 20th century the terrace was modified and enlarged, when the broad steps leading down to the park from the terrace were removed and a 3m extension was added to its northern side. If it hadn't already been removed previously, the surviving fountain basin was now demolished, as the foundation trench for the new north wall of the terrace cuts right through its base and foundations. The remains of the fountains were subsequently buried under a bank of earth and building debris piled up against the north wall of the Lower Terrace and yew hedges were planted over the bank. The appearance of the Lower Terrace remained unchanged until earlier this year, when work began to reconstruct the 'Frog Fountain', its design loosely based on drawings and written descriptions held in the Waddesdon archive.

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APPENDIX 1 Contexts summary

Context no.	Feature Type	Description	Depth (m) min-max
(100)	Topsoil	Firm to friable light to mid grey clay loam with 10 – 15% small angular to rounded pebbles, brick fragments and occasional pot sherds and limestone flecks. Occurs as remnants across the site with very clear boundaries.	0.10 to 0.30
(101)	Subsoil	Compacted yellow brown clay silt containing frequent small to medium sized fragments of decayed limestone with occasional to rare charcoal flecks and frequent roots. Occurs across the site with clear boundaries.	0.30 to 0.50
(102)	19 th to 20 th century make-up layer	Moderately compacted mixed rubble and mortar layer, pale grey, brown colour with occasional to moderate limestone fragments and rare charcoal and brick fragments.	0.04 to 0.42
(103)	19 th to 20 th century make-up layer	Loose to firm pale mid grey brown clay silt with charcoal flecks and occasional small brick fragments	0.06 to 0.10
(104)	19 th to 20 th century make-up layer	Moderately firmly compacted pale grey brown rubbly layer with clay silt, contains moderately frequent broken concrete and brick fragments deriving from wall [109]. Clear boundaries.	0.50
(105)	19 th to 20 th century make-up layer	Moderately firmly compacted mid grey brown clay silt, contains moderately frequent broken concrete and brick fragments deriving from wall [109]. Clear boundaries.	0.40
(106)	Concrete layer	Moderately compacted light red brown clay mixed with mortar lumps and brick fragments. Seals wall [111] and abuts wall [112]. Clear boundaries. Width 60mm, depth 800mm. Same as (176).	0.80
(107)	19 th to 20 th century make-up layer	Firmly compacted light yellow grey clay mixed with limestone fragments and mortar lumps. Clear boundaries.	0.30
(108)	Mortar layer	Very hard (compacted) mortar (lens of) comprising of small broken brick fragments. Interdeposited with pale cream silt.	/
[109]	Small brick wall	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish with no bond. Lower foundation is less well built and has a surface covering of mortar (strength). Small end of wall similar to (137). Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. Length 0.50m x 290mm wide x +1m deep. Some disturbance by Yew roots.	1.00
(110)	Concrete foundation	Very hard concrete foundation for wall (109). Slopes North to South	>0.35
(111)	Brick floor surface	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Good finish laid flat with no coursing or bond. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. +2.6m length, 980 width.	0.14
[112]	Fountain wall (W)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Good coursing with English Bond. Forms an abutting, lozenge shaped edge around fountain base (115). Exposed intact around west and east ends. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. 1.08m length, 500mm width. Abuts floor surface (111) but constructed around similar time.	+0.30
(113)	Concrete edging	Vertical slab of concrete, possibly screened to be viewed from the north, looking south over lower terrace garden.	/

Context no.	Feature Type	Description	Depth (m) min-max
[114]	Masonry wall	Medium coarse, yellowy, grey coloured shelly limestone with distinctive inclusions of ooliths, pelites and some shell fragments (bivalves). Inclusions range from <1mm to 5mm. Bath Stone Layered in areas to form distinctive cross bedding. Range from 600mm to 1100mm long to 200mm to 350mm deep and 300mm wide. Well worked ashlar blocks in wall face capped by raked coping stones. The wall is roughly coursed with no bond. Forms top section of retaining wall between upper and lower terrace. Faces south with an east to west orientation. Bonded very closely by a fine grained yellow, orange calcareous sand mortar with few inclusions of shell and quartz <2 to 4mm in size. 9m length, 1.75 height, 350mm deep. In places the Yew roots have caused cracking and breaks in some stones.	1.75
(115)	Fountain base	Compacted concrete base for fountain (Frog?). Heavily truncated by later garden schemes. Survived particularly well in NE corner where present with a drain feature (150). Enclosed on NW edge by wall (112).	/
(116)	Concrete layer	Very compacted concrete layer overlying curved E – W wall (109).	/
(117)	Concrete surface	Very well compacted lime and brick concrete surface, overlain by fountain base (115) and E to W brick wall + foundations of (111). Appears to sit within a foundation cut.	/
[118]	Curved brick wall	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Good coursing with English Bond. Forms part of an apsidal wall with a shallow, discrete turn. Distinctive tapered sides widening at the base. South facing face. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. Length 5m (exposed), width at top 800mm at base 1.10m, depth 1m. runs beneath masonry wall (114) and (141) and beneath buttresses (136) and (140).	1m
(119)	Make-up layer	Moderately compacted grey brown rubble deposit comprising of decayed limestone abutting against wall (118)	0.06 to 0.20
(120)	19 th to 20 th century make-up layer	Loosely compacted grey brown sand/silt with occasional small decayed limestone fragments. Clear boundaries.	0.24
(121)	19 th to 20 th century make-up layer	Well compacted rubble deposit containing broken limestone, occasional brick fragments and scarce charcoal fragments. Slopes from North to South abutting north face of curving garden wall (118). Very clear boundaries.	0.38
(122)	Broken fountain lining	Loose to firmly compacted broken fountain lining within a light grey brown clay silt matrix. Very clear boundaries.	0.18
(123)	Rubble make-up layer	Moderately compacted rubble layer abutted by layer (122) contains decayed limestone fragments. Clear boundaries.	/
(124)	Buried subsoil	Firmly compacted mid brown clay silt, extremely sterile.	0.32
(125)	Foundation fill	Compacted light grey brown clay with frequent flecks of decayed limestone. Abuts wall (118) with clear boundaries. Same as (132)	0.38
(126)	Foundation fill	Very compacted dark grey brown silt clay silt with frequent small angular sub-angular decayed limestone fragments. Clear boundaries. Same as (133)	0.30
(127)	Concrete foundations	Very compacted concrete foundation for wall (118). Clear boundaries.	/
(128)	Concrete foundations	Very compacted concrete capping for wall (118). Clear boundaries.	/
(129)	Concrete foundations	Very compacted concrete capping for wall (118). Clear boundaries.	/

Context no.	Feature Type	Description	Depth (m) min-max
(130)	Natural limestone	Hard compacted, light yellow, white cream coloured fine grained shelly/oolithic (<10%) limestone with 60%+ shell fragments (mainly bivalves) between <1mm to 15mm. Contains ammonites including <i>Titanites giganteus</i> . Some inclusions of iron spherules in pyritic form <5% occurrence mainly reddish staining. Occurs in bands across the site between 600mm and 1m thick. Same as (174). Banded in between glauconitic sand deposit (172) and (175).	0.60 to 1m
(131)	19 th to 20 th century make-up layer	Compacted mid brown grey clay with limestone and brick fragments. Very clear boundaries	/
(132)	Foundation fill	Compacted light grey brown clay with frequent flecks of decayed limestone. Abuts wall (118) with clear boundaries. Same as (125)	0.38
(133)	Foundation fill	Very compacted dark grey brown silt clay silt with frequent small angular sub-angular decayed limestone fragments. Clear boundaries. Same as (126)	0.30
(134)	Make-up layer	Moderately compacted mid grey brown clay, substantial amounts of decayed limestones and clear boundaries.	/
(135)	Mortar/cement spread	Moderately firm cement surface recovered in NE corner of excavated area.	/
[136]	Brick buttress (E)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Good coursing with English Bond at the rear and none at the front. Forms large buttress well built at the contact with (114) and distinctive taper at the southern end creating the forward force. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. 630mm deep, by 500mm wide by 1.2m long. Built directly upon wall (118).	0.63
[137]	Small brick wall	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish with no bond. Lower foundation is less well built and have a surface covering of mortar (strength). Small end of wall similar to (109). Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. Length 2.20m x 350mm wide x +490m deep. Some disturbance by Yew roots.	+0.49
(138)	Make-up layer	Moderately compacted pale grey brown clay with frequent decayed limestone fragments.	/
[139]	Small brick wall	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish and coursed well in English Bond. Lower foundation areas show no bond, are less well built and have a surface covering of mortar (strength). Sub terraced along south facing wall. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. Length 9m x +1m deep. Some disturbance by Yew roots.	+1.00
[140]	Brick buttress (W)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Good coursing with English Bond at the rear and none at the front. Forms large buttress well built at the contact with (114) and distinctive taper at the southern end creating the forward force. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 –	0.85

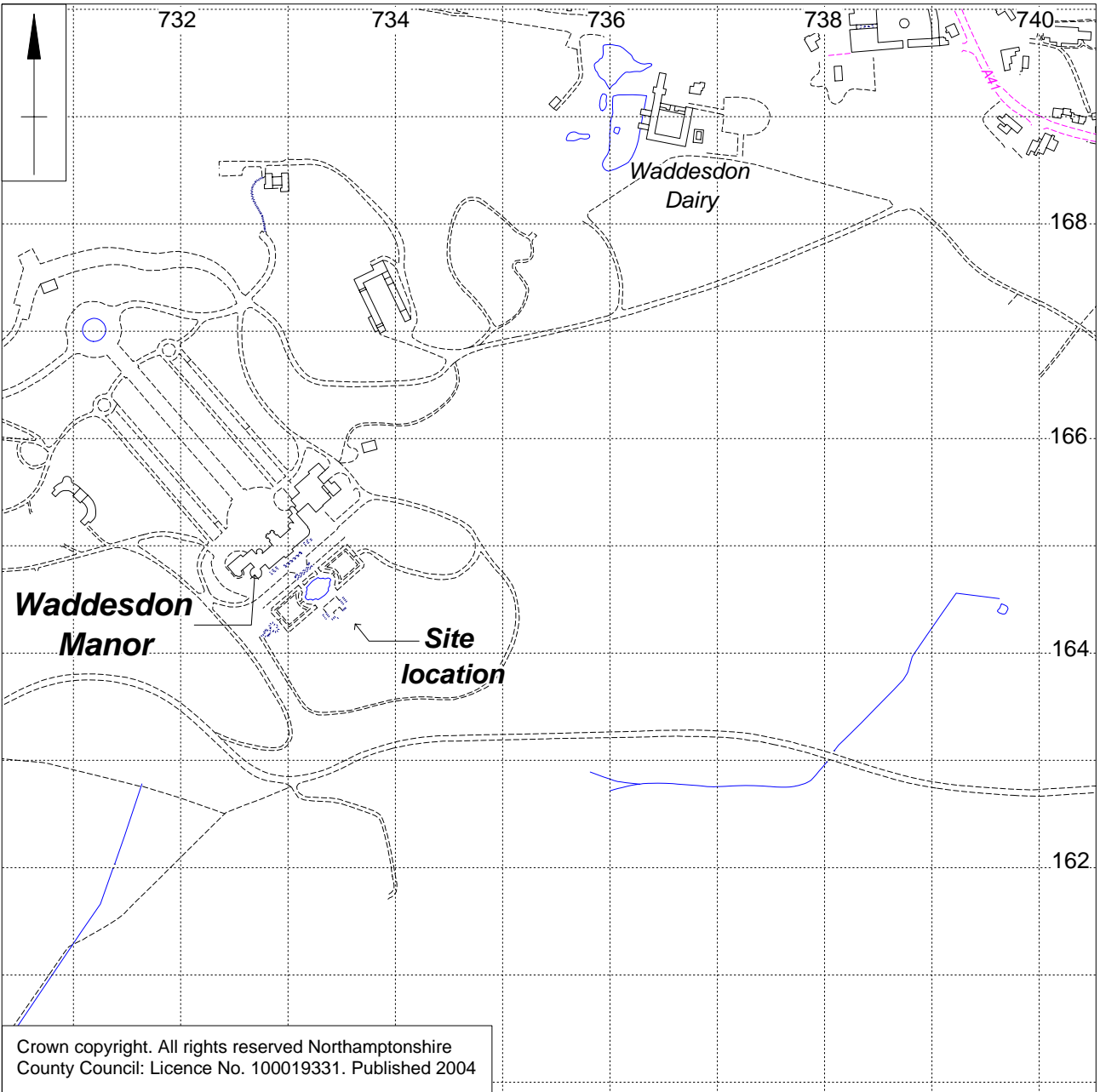
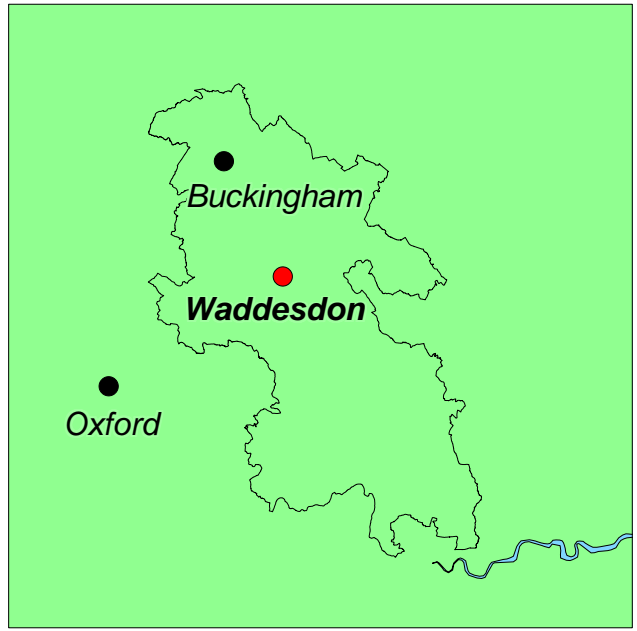
Context no.	Feature Type	Description	Depth (m) min-max
		15% occurrence. 850mm deep, by 500mm wide by 1.10m long. Built directly upon wall (118).	
[141]	Masonry wall	Medium coarse, yellowy, grey coloured shelly limestone with distinctive inclusions of ooliths, pelites and some shell fragments (bivalves). Inclusions range from <1mm to 5mm. Bath Stone Layered in areas to form distinctive cross bedding. Range from 600mm to 1100mm long to 200mm to 350mm deep and 300mm wide. Well worked ashlar blocks in wall face capped by raked coping stones. The wall is roughly coursed with no bond. Forms top section of retaining wall between upper and lower terrace. Faces south with an east to west orientation. Bonded very closely by a fine grained yellow, orange calcareous sand mortar with few inclusions of shell and quartz <2 to 4mm in size. 9m length, 1.75 height, 350mm deep. In places the Yew roots have caused cracking and breaks in some stones.	1.75
(142)	Concrete layer	Very compacted concrete layer underlying possible brick steps in NW corner.	/
(143)	Concrete layer	Very compacted concrete layer underlying possible brick steps in NW corner.	/
(144)	Brick steps	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Random coursing in the centre with good outer edge. Distinctive form, bricks form clean flat surface running down from upper terrace to lower fountain base (115). Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. Length 1.10m, width 740mm, depth 70mm.	0.70
(145)	Construction trench (E)	Linear, elongate north to south orientated cut with almost vertical edges with sharp top + bottom breaks of slopes and flat base. Length of excavation 750mm, length of feature 4.60m, width 600mm, depth 600mm. Re-interpreted as remnant of made ground after truncation by the construction of concrete rafting	0.60
(146)	Concrete layer	Very compacted concrete layer overlying fill (147) in NW corner.	/
(147)	Fill of construction trench [145]	Medium to hard compaction orangey yellow silty clay with 30% silt to 70% clay and large inclusions of limestone fragments 60 – 70% occurrence at 10 to 20mm. Fills cut [145].	0.49
[148]	Fountain wall (E)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm. Good coursing with English Bond. Forms an abutting, lozenge shaped edge around fountain base (115). Exposed intact around west and east ends. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. 800mm length, 500mm width, depth +300mm. Abuts floor surface (111) but constructed around similar time.	+0.30
(149)	Concrete layer	Very compacted concrete layer underlying brick wall (148) in NE corner.	/
(150)	Drain pipe	Drain pipe runs from fountain base (112) underneath liner (115) where it meets a pipe coming out of wall (118). It continues eastwards along (111) before running downslope under existing steps, which have built around it showing continuity of use. Length +7.30m, width 140mm, depth 140mm.	
[151]	Stone + brick plinth (E)	Medium coarse, yellowy, grey coloured shelly limestone with distinctive inclusions of ooliths, pelites and some shell fragments (bivalves). Inclusions range from <1mm to 5mm.	/

Context no.	Feature Type	Description	Depth (m) min-max
		Bath Stone. Measures 400mm ² with a rough finish to the stone on southern side. Possibly a decorative part of brick steps on NE side or a plinth for a small statue.	
[152]	Stone + brick plinth (W)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish with no bond. Lower foundation is less well built and have a surface covering of mortar (strength) with random coursing and good form capped with smooth concrete. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. 1.20m long, 400mm deep, 800mm wide. Forms part of a possible statue base or part of brick step decoration.	0.40
(153)	Construction trench (W)	Linear, elongate north to south orientated cut with almost vertical edges with sharp top + bottom breaks of slopes and flat base. Length of excavation 800mm, length of feature 4.60m, width 800mm, depth 1m. Filled with (154). Re-interpreted as remnant of made ground after truncation by the construction of concrete rafting	1.00
(154)	Fill of construction trench [153]	Medium to hard compaction orangey yellow silty clay with 30% silt to 70% clay and large inclusions of limestone fragments 60 – 70% occurrence at 10 to 20mm. Length 800mm, width 800mm, depth 1m Fills cut [153].	1.00
(155)	Concrete base	Hard, solid light yellow grey concrete contains small pebbles. Length 3.20m, width 1.80m, depth 300mm.	0.30
(156)	Fill of construction trench [158]	Very compacted concrete layer orangey, yellow colour fills apsidal construction trench [158]. 2.40m length, width 1.40m, depth 300mm.	0.30
(157)	Fill of construction trench [158]	Moderately compacted rubble layer contains decayed limestone fragments. Clear boundaries. Fill of apsidal construction trench [158]. +6.0m length, width 1.40m, depth +300mm.	+0.30
[158]	Apsidal construction cut	Apsidal, curvilinear construction trench with steep distinctive 70° edges with sharp top and bottom breaks of slope and a flat base. Length +8.0m, width 1.20m, depth 600 to 800mm. Filled with (156) and (157).	0.60 to 0.80
(159)	Concrete layer	Very compacted concrete layer overlying concrete base (155) in centre of terrace and (156) within [158].	/
[160]	Drain pipe cut	Elongate cut, with vertical sides and flat base. Length +7.30m, width 140mm, depth 140mm.	
[161]	Front brick wall	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish and coursed well in English Bond. Lower foundation areas show no bond, are less well built and have a surface covering of mortar (strength). Sub terraced along south facing wall. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. Length 12.60m, width 600mm, depth 220mm.	0.22
(162)	Concrete base	Hard, solid light yellow grey concrete. Lies beneath brick wall (161) and piers (164) and (165) Length +12m, width 2.00m, depth 1.40m.	1.40
[163]	Foundation cut for concrete base (162)	Irregular where heavily disturbed but regular where structural evidence in place. Mostly under wall (161) runs west to east with vertical edges and sharp breaks of slope and flattish base. Length +12m, width +2m, depth 1.40m.	1.40

Context no.	Feature Type	Description	Depth (m) min-max
[164]	Brick pier (W)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish and coursed well in English Bond. Lower foundation areas show no bond, are less well built and have a surface covering of mortar (strength). Square pier form. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. 680m ² by 220mm deep. Sits on concrete (162) and surrounded on two sides by wall (161).	0.22
[165]	Brick pier (E)	Small to medium red, orange, yellow, grey coloured bricks (from different batches) measuring 220mm x 100mm x 70mm, with a fair to medium finish and coursed well in English Bond. Lower foundation areas show no bond, are less well built and have a surface covering of mortar (strength). Square pier form. Bonded by a medium to coarse, yellow, orange sandy mortar with inclusions of quartz 5 – 10mm at 70 – 80% occurrence and small shell fragments <2mm in size at 10 – 15% occurrence. 680m ² by 220mm deep. Sits on concrete (162) and surrounded on two sides by wall (161).	0.22
(166)	Fill of construction trench	Medium to hard orangey, yellow, brown silty clay with 40% silt to 60% clay and inclusions of broken fragments of limestone 25 to 30% occurrence at 10 – 20mm. Concrete fragments 2 – 5% at 15 – 25mm. Brick pieces 2 -5% at 20 – 25mm. Length +8.80m, width 800mm, depth 480mm. Heavily truncated on north side by [158] and south side by [163]. Capped by (161). Same as (183).	0.48
[167]	Construction trench	Linear shaped west to east construction trench with heavily truncated edges by later features [158] and [163]. In undisturbed areas the cut had vertical sides with sharp boundaries, breaks of slopes and a flat base. Length +8.80m, width +800mm, depth +480mm.	+0.48
(168)	Re-deposited glauconitic sand	Soft light green, grey yellow colour silty sand with 60% silt 40% sand spread over a large area of 3.60m by 4.60m by 10 – 25mm thick.	0.10 to 0.25
(169)	Re-deposited natural	Medium light yellow, orange, grey silty clay with 40% silt to 60% clay. With inclusions of limestone between 30 – 35% at 10 – 20mm. spread within terrace area between existing stairs 60 ² .	0.30
(170)	Layer	Distinctive medium to hard light grey blue silty clay with 20% silt and 80% clay. Length +700mm, width +350mm, depth 270mm.	0.27
(171)	Re-deposited natural	Medium light yellow, orange, grey silty clay with 30% silt to 70% clay. With inclusions of limestone between 15 – 20% at 10 – 20mm. Length 1m, width 800mm, depth 560mm.	0.56
(172)	Natural glauconitic sand (Lydite Beds)	Soft light greenish grey silty sand with 40% silt and 60% sand which covers the whole site and is banded between solid rubbly limestone (174). Depth 300mm to 600mm. Banded in between rubbly limestone layers (130) and (174).	0.30 to 0.60
(173)	Concrete base	Hard, solid light yellow grey concrete. Lies beneath brick piers. Length +1.80m, width 2.00m (on northern side), depth +200mm.	0.20
(174)	Natural limestone	Hard compacted, light yellow, white cream coloured fine grained shelly/oolithic (<10%) limestone with 60%+ shell fragments (mainly bivalves) between <1mm to 15mm. Contains ammonites including <i>Titanites giganteus</i> . Some inclusions of iron spherules in pyritic form <5% occurrence mainly reddish staining. Occurs in bands across the site between 600mm and 1m thick. Same as (174). Banded in between glauconitic sand deposits (172) and (175).	0.60 to 1m

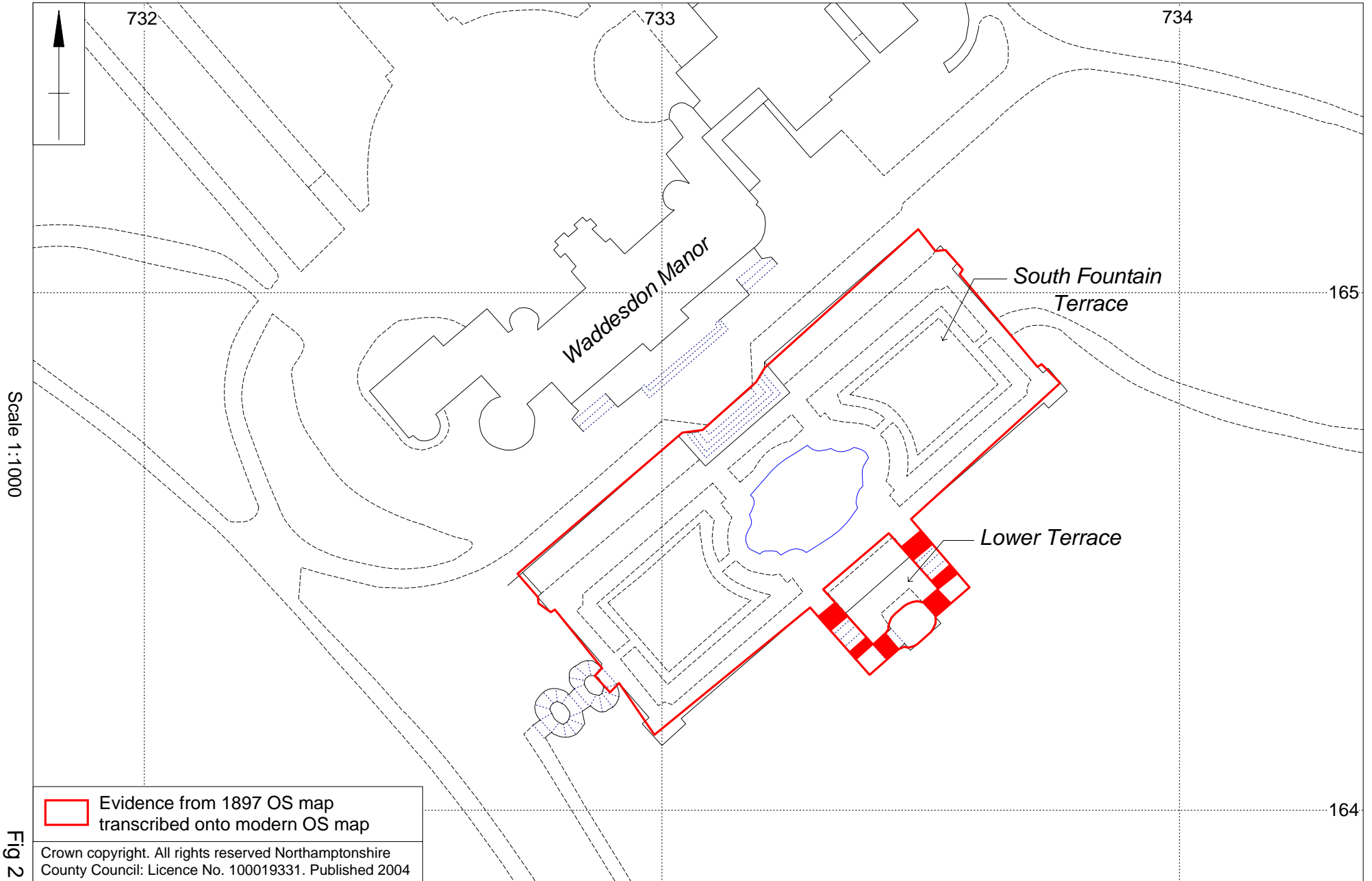
Context no.	Feature Type	Description	Depth (m) min-max
(175)	Natural glauconitic sand (Lydite Beds)	Soft light greenish grey silty sand with 40% silt and 60% sand which covers the whole site and is banded between solid rubbly limestone (174). Depth 300mm to 600mm. Banded in between rubbly limestone layers (130) and (174).	0.30 to 0.60
(176)	Concrete layer	Moderately compacted light red brown clay mixed with mortar lumps and brick fragments. Seals wall [111] and abuts wall [112]. Clear boundaries. Length +6.00m, width 60mm, depth 800mm. Same as (106).	0.80
[177]	Construction cut	Elongate, linear shape orientated west to east with sharp edges +70° with sharp breaks of slope and flat base. Length +10m, width 1.20m, depth 1.60m.	1.60
(178)	Interface layer	Medium dark yellow, grey brown silty clay with 60% silt and 40% clay. Length 10m, width 1.00m, depth 1.00m.	1.00
[179]	Robber trench	Elongate, linear orientated west to east with sharp 70° edges, sharp breaks of slope and a flat base. Length +10m, width 1.20m, depth 1.60m.	1.60
(180)	Concrete below buttress (136)	Hard, solid light yellow grey concrete contains large lumps of brick fragments. Structural base for buttress (136). Length 400mm, width 2.30m, depth 800mm.	0.80
(181)	Concrete below buttress (140)	Hard, solid light yellow grey concrete contains large lumps of brick fragments. Structural base for buttress (136). Length 400mm, width 1.80m, depth 640mm.	0.64
(182)	Concrete	Moderately compacted light red brown clay mixed with mortar lumps and brick fragments. Below (115). Clear boundaries. Length +6.00m, width 60mm, depth 800mm.	0.80
(183)	Fill of construction trench	Medium to hard orangey, yellow, brown silty clay with 40% silt to 60% clay and inclusions of broken fragments of limestone 25 to 30% occurrence at 10 – 20mm. Concrete fragments 2 – 5% at 15 – 25mm. Brick pieces 2 -5% at 20 – 25mm. Length +8.80m, width 800mm, depth 480mm. Same as (166).	0.48
[184]	Construction trench	Linear shaped west to east construction trench with heavily truncated edges by later features [158] and [163]. In undisturbed areas the cut had vertical sides with sharp boundaries, breaks of slopes and a flat base. Length +8.80m, width +800mm, depth +480mm. Same as [167]	+0.48
(185)	Construction deposit	Soft light yellow, orange silty (20%) sand (80%). Length 5.40m, depth 200mm.	0.20
(186)	Layer	Medium orange, yellow silty (40%) clay (60%) and inclusions of limestone from 10 – 15% at 15 – 20mm. Length +3.00m, depth 240mm.	0.24
(187)	Concrete layer	Very compacted concrete layer. Abuts [153], may have had steps on like (144).	/
(188)	Concrete layer	Very compacted concrete layer. Laid below wall (109).	/
(189)	Layer	Medium orange, yellow silty (40%) clay (60%) and inclusions of limestone from 10 – 15% at 15 – 20mm. Length +3.00m, depth 240mm. Packed around concrete base (162).	0.24
[190]	Brick pier (N of wall)	Brick built pier (one of a series of 9 regular spaced brick piers, [190-198] measuring up to 0.9m high aligned with a later e-w adjacent to later South Terrace boundary wall). The brick piers are constructed over a semi-circular concrete plinth and probably represent the foundations of a flight of broad steps (removed) leading down to the parkland to the south.	0.90
[191]	Brick pier (N of wall)	See 190 above.	

Context no.	Feature Type	Description	Depth (m) min-max
[192]	Brick pier (N of wall)	See 190 above.	
[193]	Brick pier (N of wall)	See 190 above.	
[194]	Brick pier (N of wall)	See 190 above.	
[195]	Brick pier (N of wall)	See 190 above.	
[196]	Brick pier (N of wall)	See 190 above.	
[197]	Brick pier (N of wall)	See 190 above.	
[198]	Brick pier (N of wall)	See 190 above.	
[199]	Brick wall (rear wall of south terrace)	E-W wall same as trench [31/8], forming the brick footings of the southern boundary wall of the lower terrace. The wall was constructed of irregular laid brickwork using whole and half bricks bonded by a coarsely laid very hard cement, not laid in any recognisable bond, e.g. English or Flemish. The roughness of the completed work is not unusual for foundation walls that were not intended to be seen, the brickwork utilised as infilling between the brick piers.	
(200)	Fill of 201	Rubble fill comprising irregular shaped limestone and brick fragments and pea grit set within an orange brown matrix same as trial trench (31/7).	
[201]	Construction trench cut	Shallow steep sided cut adjacent to [199].	



Scale 1:6000

Fig 1



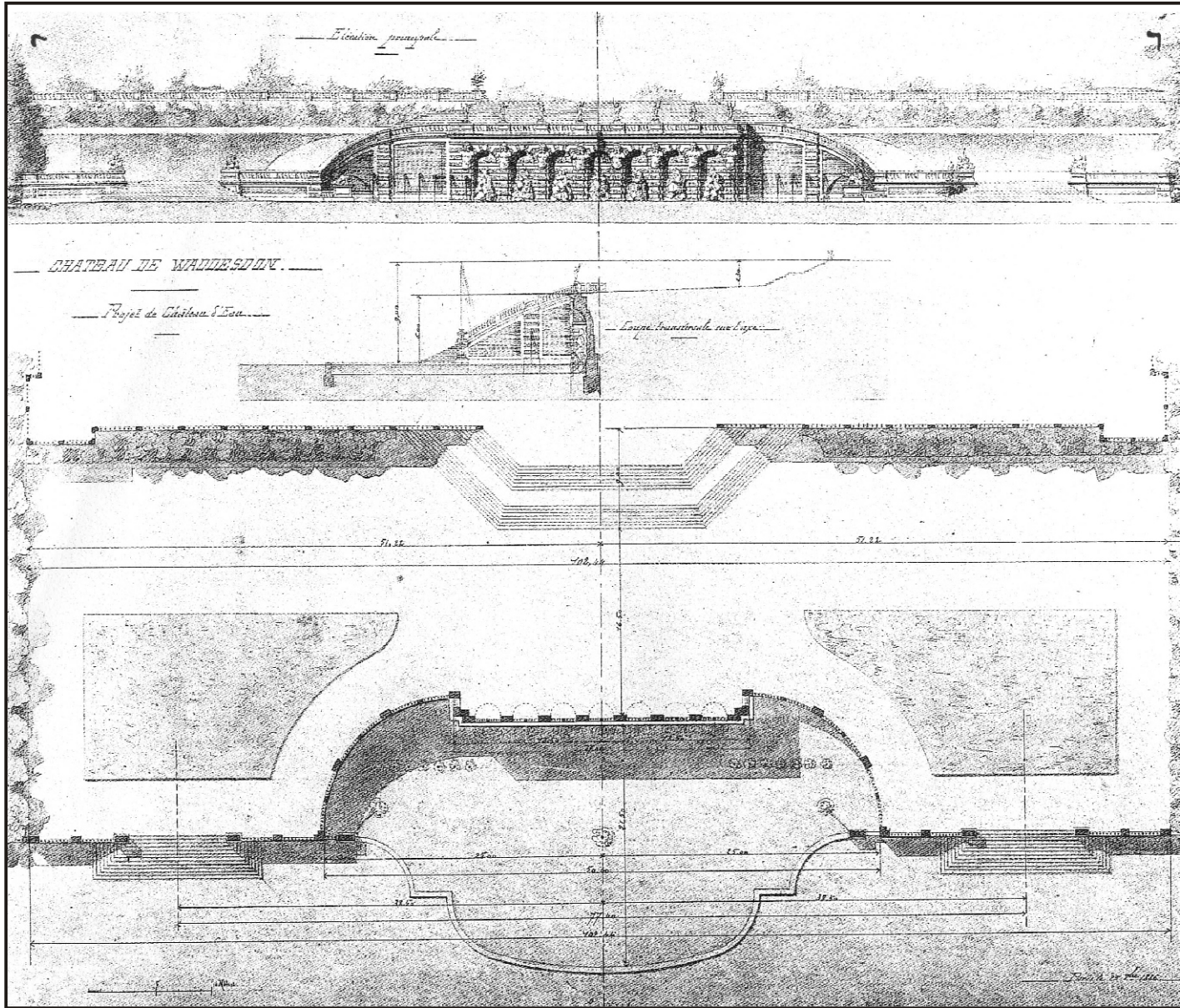
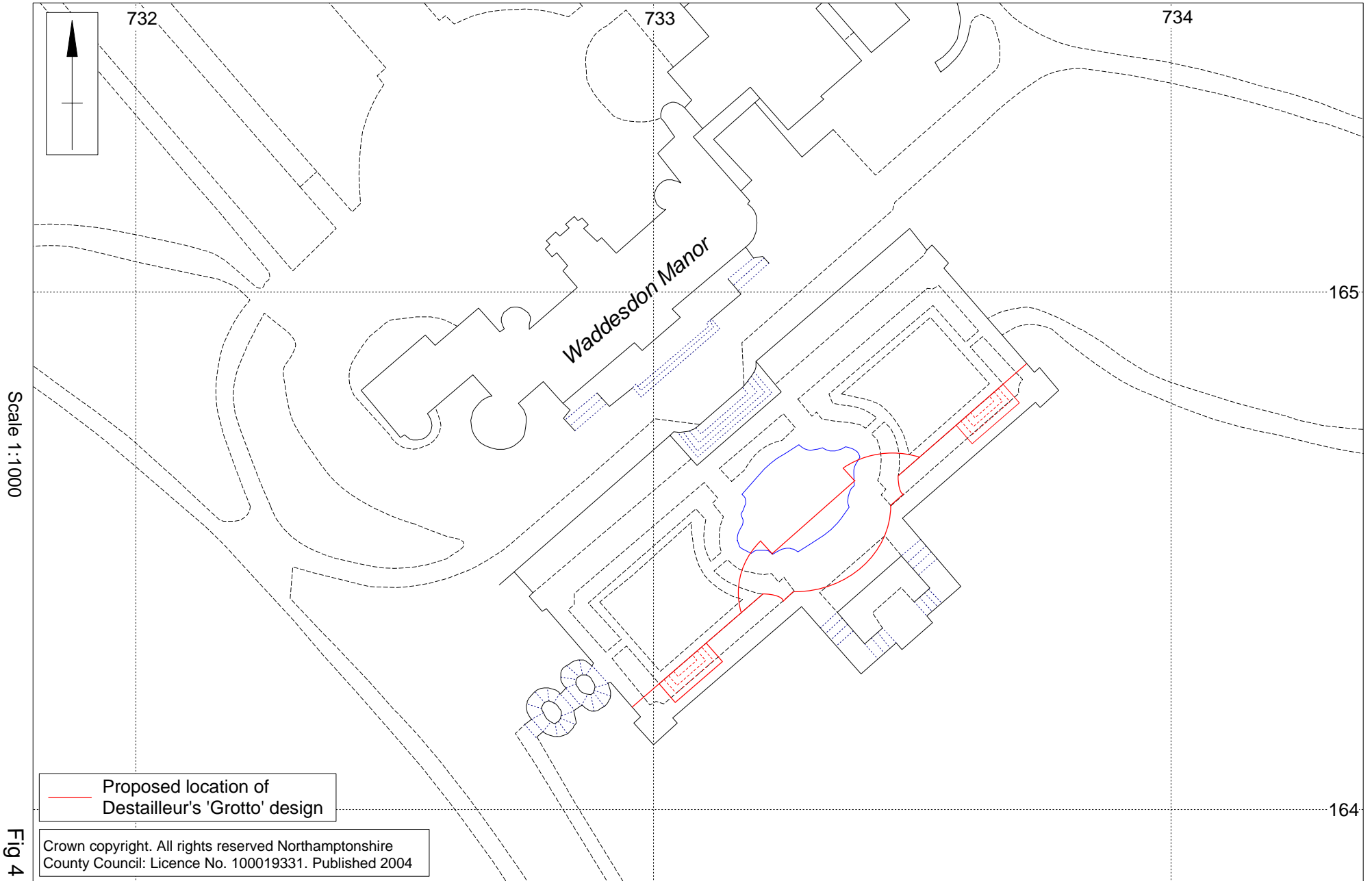
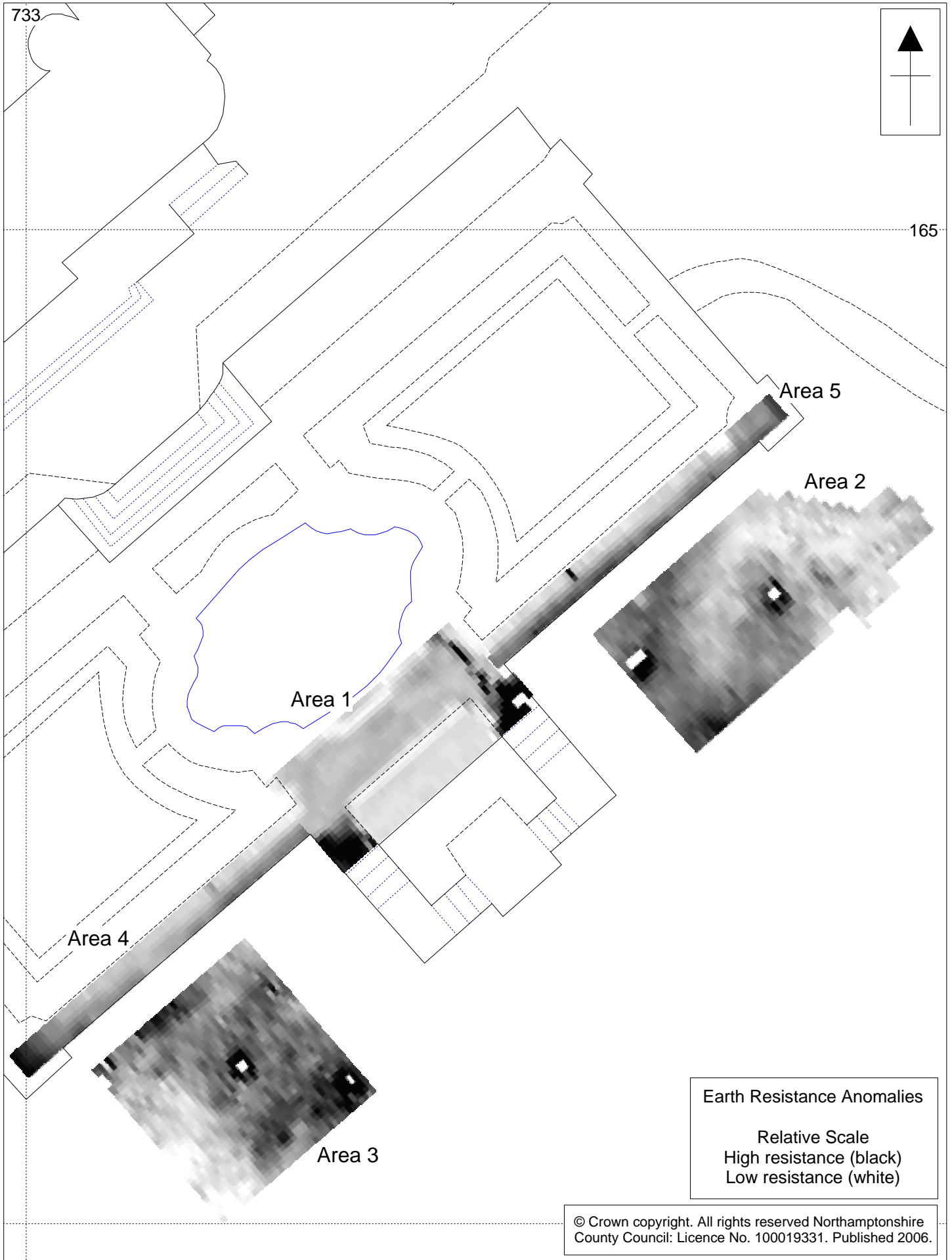


Fig 3

1886 Destailleur Plan

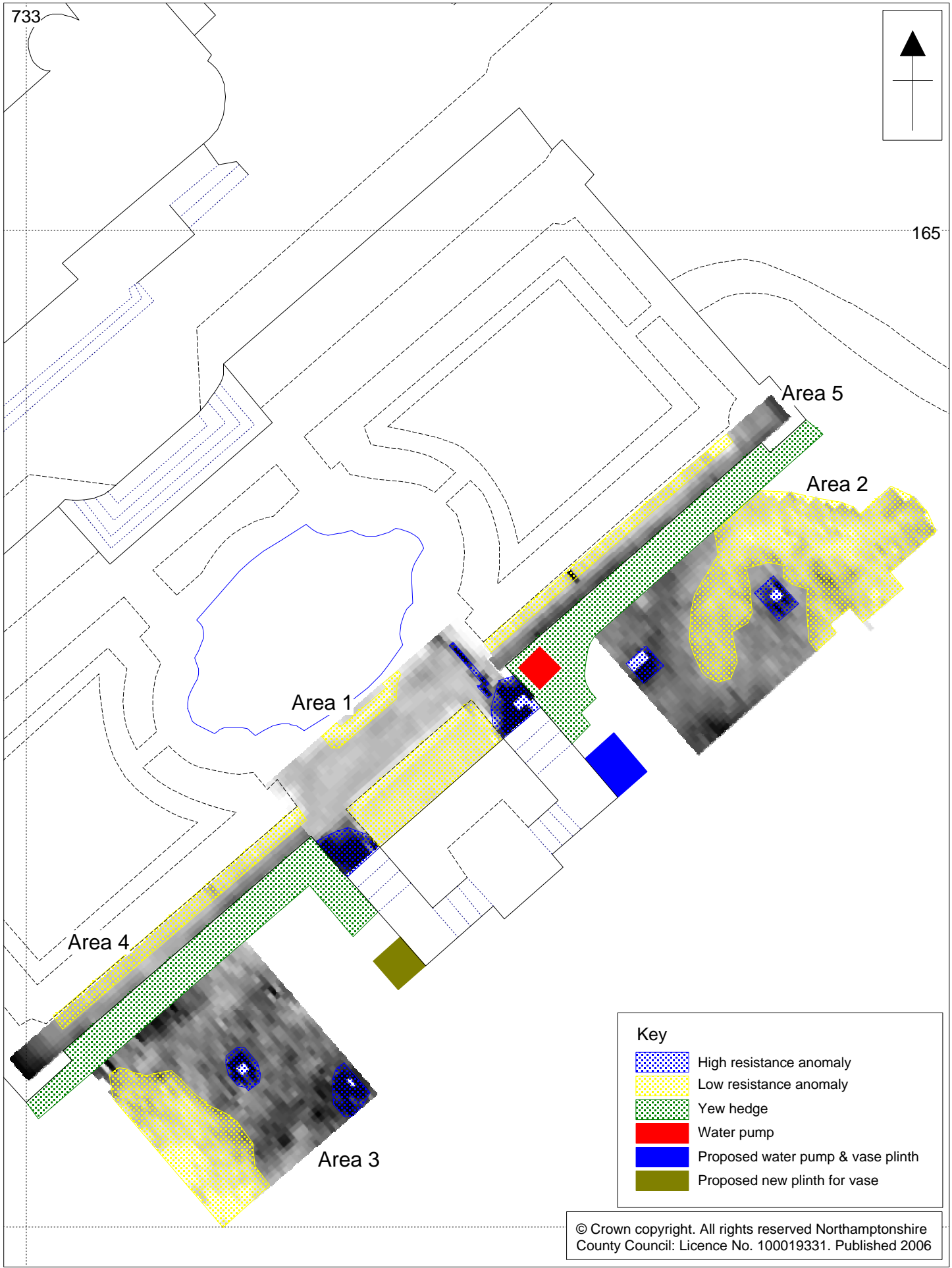




Waddesdon Manor Earth Resistance Survey Results

Scale 1:500

Fig. 5



Waddesdon Manor Earth Resistance Survey Results with Interpretation

Scale 1:500

Fig. 6

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Continued from figure 7

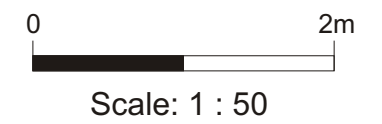
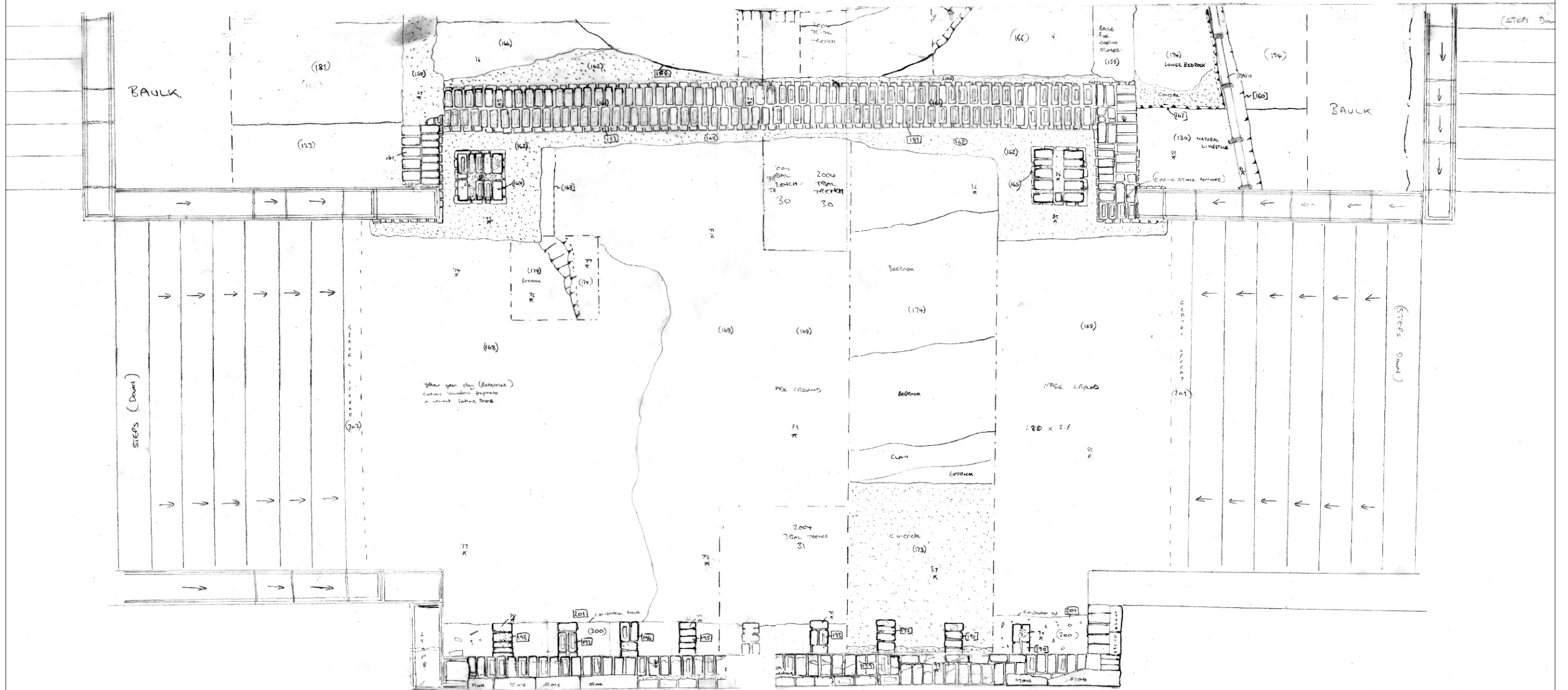
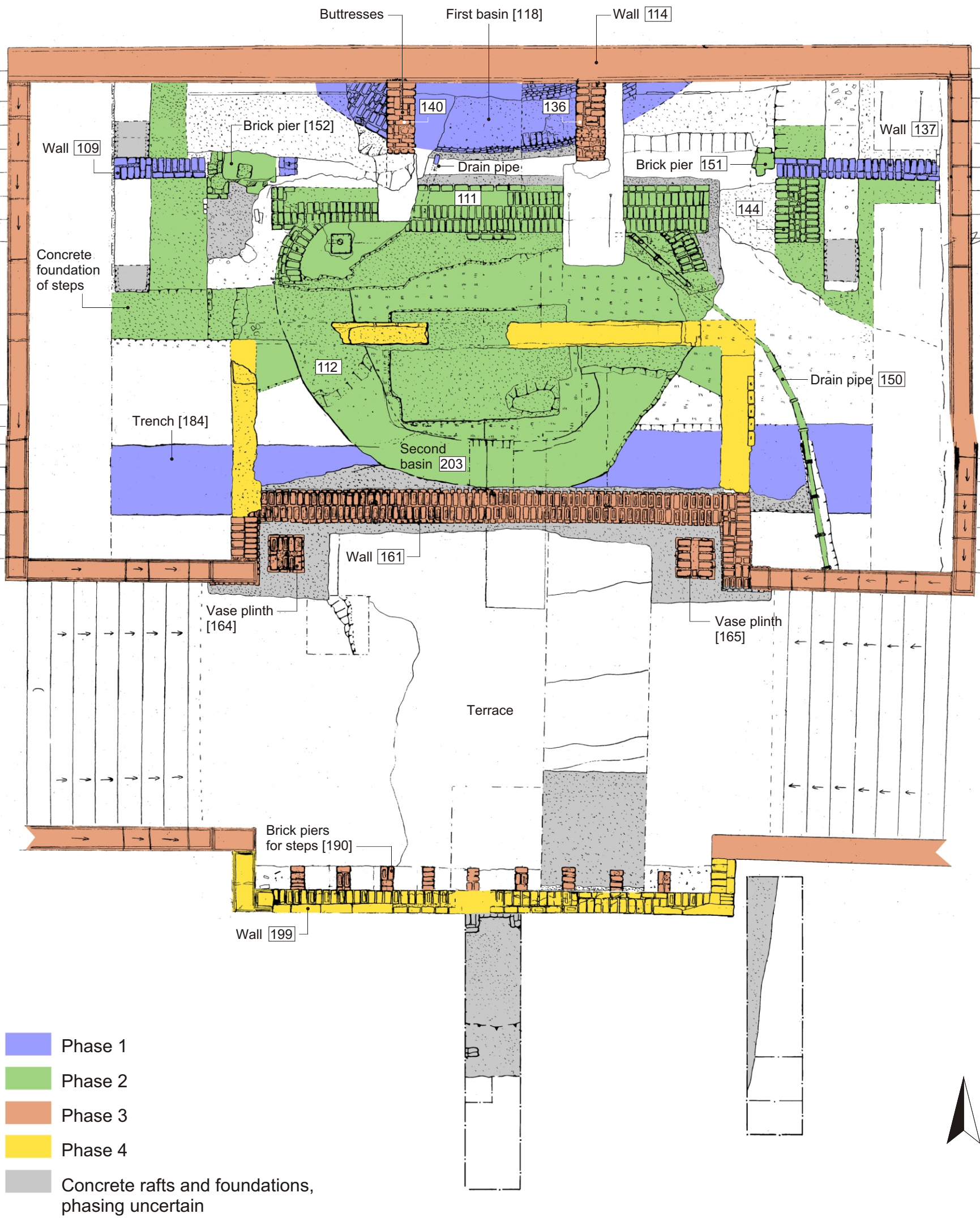


Fig 8

Waddesdon Manor - Phase Plan



- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Concrete rafts and foundations, phasing uncertain



Fig. 9

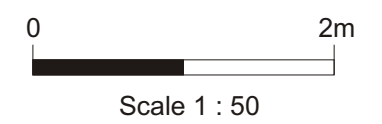
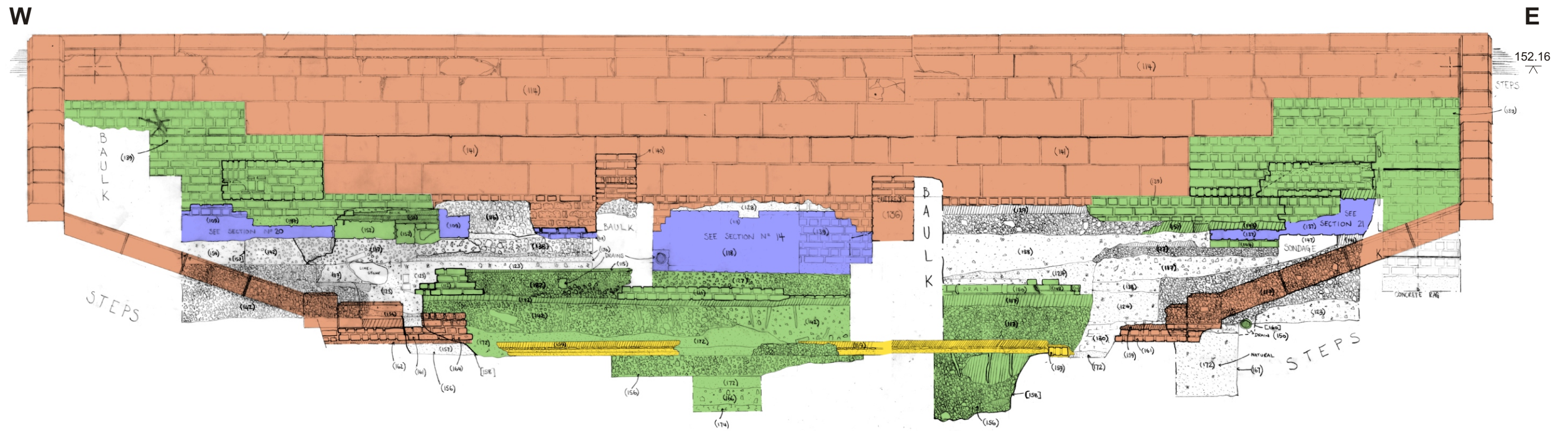
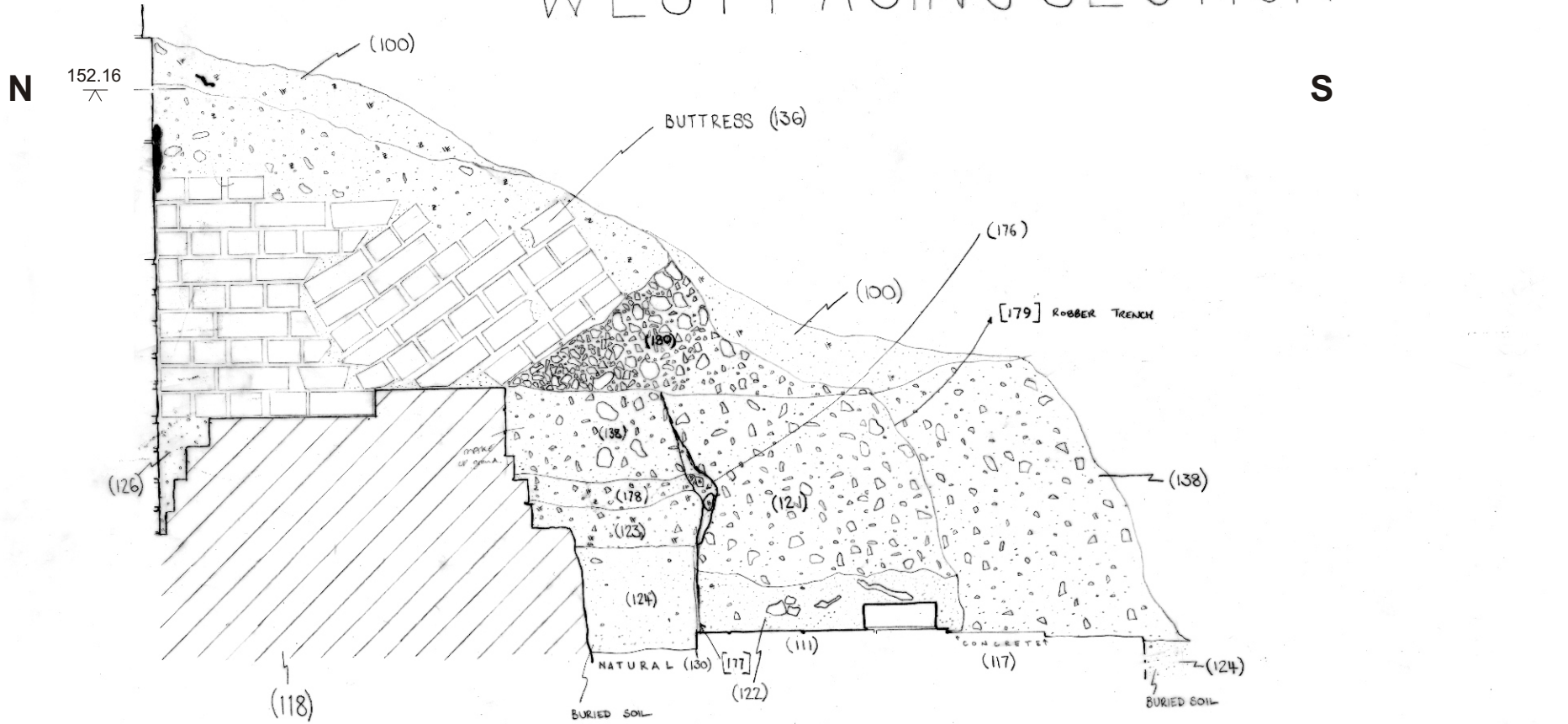


Fig. 10

WEST FACING SECTION



Butters and fountain basin, N-S section

Transcription of the undated sketch of the South Fountain and Lower Terrace Design

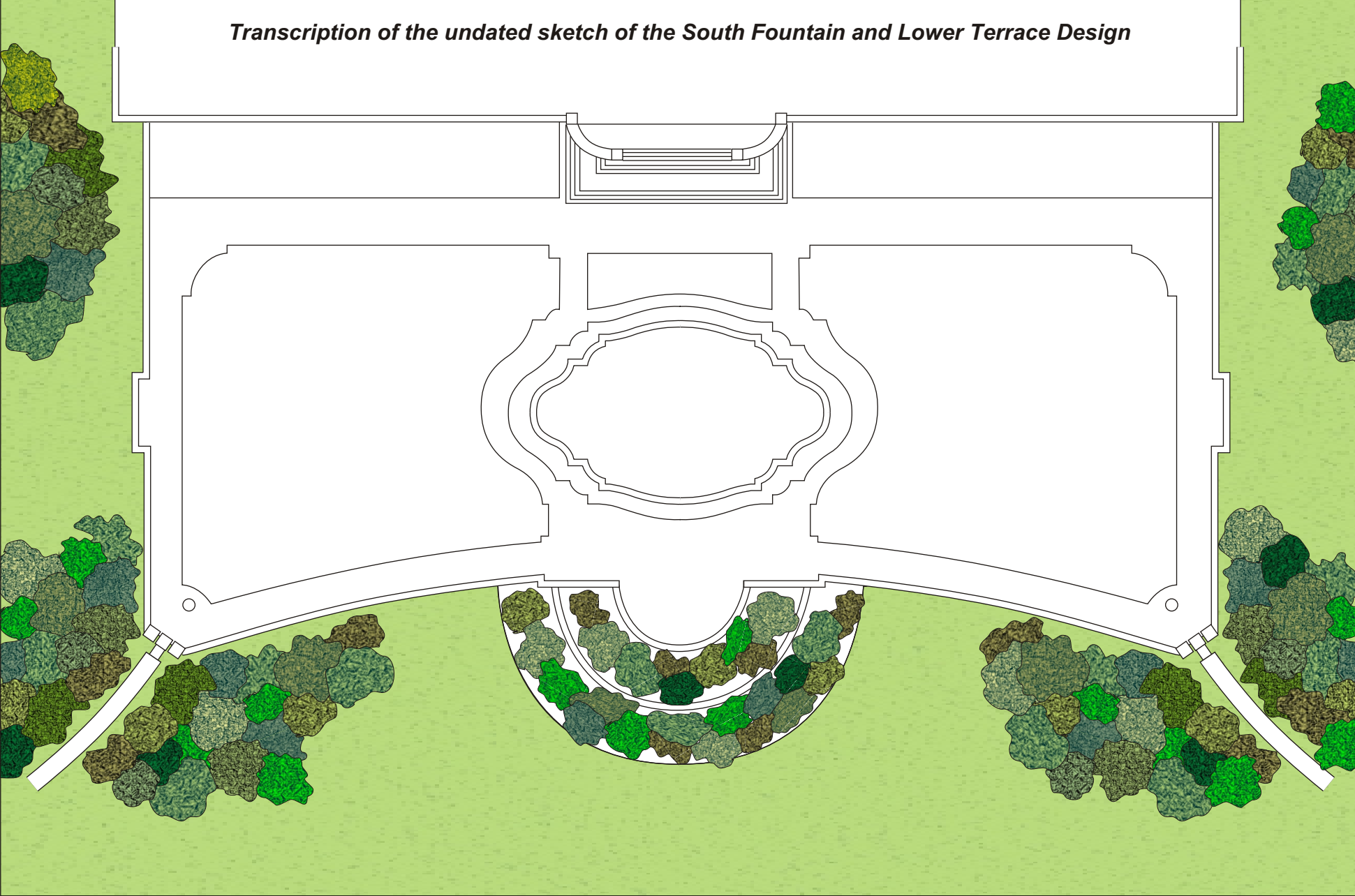


Fig 12



Pluto and Prosperina Fountain, South Fountain Terrace

Plate 1



South wall of first fountain basin [118] during excavation

Plate 2



Wall [109] and concrete foundations

Plate 3



Drain and bitumen lining of second fountain basin [111 and 112]

Plate 4



Brick surface [144]
of Phase 2 flight of steps

Plate 5



Drain [150] running under
Phase 3 flight of steps

Plate 6



Butresses [136] and [140] cutting through first fountain basin

Plate 7



East flight of Phase 3 steps descending to Lower Terrace

Plate 8