

Witley Court Gloucestershire The parterre de broderie in the East Parterre



**Post Excavation Assessment
and Project Design**



March 2009

Client: English Heritage

Issue No: 01
NGR: SO 77055 64930



Client Name: English Heritage
Client Ref No:
Document Title: Witley Court, Worcestershire, The *parterre de broderie* in the East Parterre
Document Type: OAS PX Assessment & Project Design
Issue/Version Number: v.01
Grid Reference: NGR SO 77055 64930
Planning Reference:
OA Job Number: 3971
Site Code: GWWC08
Invoice Code: GWWCEX4
Receiving Museum:
Museum Accession No:
Event No:

Issue	Prepared by	Checked by	Approved by	Signature
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Document File Location X:\Witley Court\GWWC08_Report\Report
Graphics File Location P:\G_invoice codes\GWWCEX4
Illustrated by A.Kilgour and G.Slater

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Witley Court, Worcestershire

The *parterre de broderie* in the East Parterre

POST-EXCAVATION ASSESSMENT AND PROJECT DESIGN

By Bryan Matthews and Stuart Foreman

with specialist contributions by David Jefferson, David Andrews and Anne Kilgour

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Summary

In April-June 2008, Oxford Archaeology (OA) undertook a programme of excavation and archaeological recording of the East Parterre Gardens at Witley Court, Great Witley, Worcestershire (Malvern Hills District, SAM 306, NGR SO 77055 64930) on behalf of English Heritage (EH), West Midlands Region. This report comprises an assessment of the archaeological evidence from the 2008 excavations. The resulting plans have been integrated into a master CAD drawing showing the results from previous excavation seasons, in 1996-7 and 2007. The excavations have been successful in providing detailed archaeological data, and interpretations of the original design and construction sequence, to inform the planned restoration of the garden.



1 DESCRIPTION OF THE PROJECT

1.1 Background

- 1.1.1 In April-June 2008, Oxford Archaeology (OA) undertook a programme of excavation and archaeological recording of the East Parterre Gardens at Witley Court Scheduled Ancient Monument, Great Witley, Worcestershire (Malvern Hills District, SAM 306, NGR SO 77055 64930) on behalf of English Heritage (EH), West Midlands Region. The Parterre Garden Project Design has been developed as an application to the Heritage Lottery Fund (HLF), and comprises a Conservation Plan and an SMCC(6) application in addition to other technical reports and designs.
- 1.1.2 The gardens at Witley Court, a Scheduled Ancient Monument, were created by William A. Nesfield in 1854-60 for Lord Ward. These comprise two large gardens with parterres and fountains, constructed on the east and south sides of the house and church, designed to compliment the modernisation of the house by Samuel Daukes, and replacing the former open landscaping around the house according to a design by George Repton. In 1937, the house caught fire and was never rebuilt. Later in the 20th century both the house and garden fell into disrepair and were stripped of some architectural details, before coming into public ownership.
- 1.1.3 The programme of archaeological investigation within the East Parterre Garden, carried out by Oxford Archaeology (OA), is intended to inform the conservation and reinstatement of the gardens.
- 1.1.4 The results from these various investigations have been incorporated in a combined AutoCAD plan of the East Parterre Garden. Some recommendations for further work on the archaeological evidence are included in this assessment report. However it is expected that the EH garden design team will take the lead in producing an Up-dated Project Design for analysis and publication, covering the Witley Court garden reconstruction project as a whole.

1.2 Site location and topography

- 1.2.1 Witley Court lies to the south east of the village of Great Witley, Worcestershire (Fig.1).
- 1.2.2 The East Parterre Garden is part of extensive series of landscaped gardens surrounding the ruins of the Witley Court mansion. The garden overlies a sandstone scarp at 85 m OD.
- 1.2.3 The site is presently maintained under a landscape management policy, under the Guardianship of English Heritage, and is open to the public. The surrounding area is open farmland and woodland.

1.3 Previous archaeological work in the East Parterre Garden

- 1.3.1 The archaeological and historical background of the house and its surrounding gardens has been the subject of a number of previous archaeological, documentary, cartographic and pictorial assessments and these are not repeated here (Nottingham University n.d., c1997; Hughes 1997; Callf 1998; Davies and Weaver 2004).
- 1.3.2 The East Parterre Garden has also been the subject of a series of previous archaeological investigations. In 1996, the City of Hereford Archaeology Unit undertook a programme of architectural recording and archaeological surveying of the house and its surroundings (CHAU 1994 and 1996). These works included a landscape survey of the grounds to the south of the house. Archaeological investigations within the gardens



were carried out by Nottingham University between 1996-7. These works included the excavation of trenches within the south, east and north parterre gardens, the redefinition of the Ha-Ha that surrounds the garden balustrade and the partial excavation of the main bed of the East Parterre (Heald and McGee 1996 and 1997). The excavations within the main bed of the East Parterre revealed significant evidence for the survival of its original design.

- 1.3.3 Two phases of excavation were carried out by OA in 2006-7 (comprising detailed excavation of the north and south side beds, and preliminary cleaning and photography of the central bed) and are described in an interim report (OA 2007). This report details the results from the 2008 season of excavations at Witley Court, which took place over two months from April to June 2008. This most recent work was primarily focused on the western end of the central bed, but also included further excavation of the northern side bed.

Geophysical survey

- 1.3.4 Fluxgate Gradiometry and Resistivity surveys have been previously been undertaken within the East Parterre and are reported separately. The results are not helpful in reconstructing the design of the beds and are not repeated here (Engineering Archaeological Services Limited, August 2006).

1.4 Acknowledgements

- 1.4.1 The authors would like to thank Tony Fleming, Brian Dix and supervising staff from English Heritage including, Rob Harding, Brian Kerr, Paddy O'Hara, Annabel Brown, all of whom provided much advice and technical support to the project. Lisa Moffett and Matt Canti provided comment on the potential for environmental sampling. David Andrews and colleagues from the EH Metric Survey Team organised the low-level aerial photography. David Jefferson assessed samples of decorative coloured gravels. The aerial photography was carried out by Upper Cut Productions. Thanks to all the staff at Witley Court for much practical assistance during the archaeological works, in particular Richard Squires.
- 1.4.2 Thanks to the 2008 OA excavation team, including Robert Tutt, Rowena Tucker, Sam Oates, Chris Reese, Trevor Jose, Robin Maggs, Martyn Cooper, Jennifer Salter, Andrea Paylor, Sarah Hopes, Eleri Farley, Vicki Fackell, Abigail Brown and Pete Cox. Anne Kilgour was responsible for on site surveying, integrating the drawing and rectified photographic records from the various excavation phases, and producing the reconstruction of the design, in conjunction with Bryan Matthews.

1.5 Fieldwork aims

- 1.5.1 The objectives of the archaeological programme, as detailed in the original English Heritage brief, are listed below. The objectives have in most cases been met successfully. Objectives highlighted in *italics* were either not relevant to the 2008 season (Objective 7 was addressed in 2006) or were modified in the course of fieldwork, and an alternative approach adopted (Objective 8). Objective 3 was considered and rejected in the planning stages.
1. The project managers should thoroughly familiarise themselves with the site and with existing reports in particular those described above: Nottingham University n.d., c.1997; Hughes 1997; Callf 1998 and Davies and Weaver 2004. The archaeological team should:



2. Assess the records and plans from the 1996 excavations of the evidence for the construction of the parterre, the layout of the box hedging and the areas and pattern of coloured materials and mown grass areas and to assimilate the evidence with the present project's design.
3. *Assess current geophysical potential in discussion with English Heritage Geophysicists and to survey scoped areas in advance.*
4. Assess previous topographical and hachured survey record of the East Parterre [Davies & Weaver 2004] and enhance detail to ensure the complete record and characterisation of the profiles and sloping areas of lawn around the parterre de broderie and the side beds. Enhance previous sections E-W and N-S across the parterre incorporating information from Oxford Archaeology excavations in 2006 which revealed terracing into the bedrock.
5. Survey and record the locations and character of the stems of the surviving box plants, sample and record plant material in accordance with objective 6. To assess the potential for applied archaeological science and to prepare a proposal in discussion with Ms Lisa Moffett the Regional Science Advisor. Questions include, identification of decorative materials and their sources, whether useful pedological, chemical, or dendrochronological / botanical evidence may be obtained. The latter to throw light on the age of the box bushes and their management since abandonment of the gardens in 1938.
6. Identify, define and record in full the archaeological evidence, whether surviving as cut features or soil marks or otherwise, of the garden construction, box hedge layout and design, and the detail of design motifs, their form and construction and any evidence of modification in the whole area of the parterre de broderie and in the side beds.
7. Identify, define and record structural remains of the urns' foundations in the side beds and any similar evidence for the setting of urns within the lawn areas as they appear in the photographic record.
8. *Record the locations and obtain 100% recovery of coloured stones and terracotta forming the permanently coloured elements of Nesfield's design and the evidence for the appearance of the design. To identify evidence for changes in the use/type of materials in any areas within the pattern.*
9. Provide overall archaeological observation and record of ground disturbance during works in the garden, specifically, in association with the repair to the lowest course of the ballroom steps and to integrate the records with previous recording work.
10. Analyse and interpret the records, integrating those of the 1996 work and other relevant records, to provide a clear chronological narrative incorporating description, analysis and interpretation to include a sequence of spatially comprehensive plans and complementary metrically correct photography at a unified scale of the scoped areas showing the development of the layout, construction, design and use of box hedges, areas of decorative materials and lawn.
11. Prepare and provide a master plan of the record and interpretation of the design in CAD format, and as paper output, to inform the reinstatement on the ground of the evidence of Nesfield's designs of the parterre de broderie and the side beds.
12. Propose a method statement: for maintaining the essential protection of the excavated remains from damage during all site works; for the installation of a protective / monitoring layer; and for backfilling.
13. Provide an assessment of the archaeological records accrued from the Nesfield



gardens and propose a post-excavation research design and publication plan.

14. Provide a specification for the management of the archive of documentation from this project, its indexing for ease of retrieval and its curation, taking into account IFA and English Heritage standards and requirements.

1.6 Archaeological methods

Topographical survey

- 1.6.1 A detailed survey framework was re-established for all three beds using a Leica GX 1250 Global Position System (GPS). Planning grids were laid out and a network of photographic tags surveyed, for the purpose of linking the rectified photographic and drawn records. Additional survey data was obtained for the whole of the East Parterre, providing point data suitable for detailed topographical modelling.

Site protection/ preparation

- 1.6.2 Initially the protective wood-chip mulch and geo-textile membranes covering the side and main beds of the East Parterre were removed. A chestnut-paling fence was erected around the the East Parterre and side beds to protect the excavation areas.

Initial cleaning, and rectified photography

- 1.6.3 The central bed of the East Parterre was then carefully hand-cleaned. A series of aerial photographs was taken using a high-definition, remote-controlled digital camera, mounted beneath a tethered balloon. The aerial photography was undertaken by Upper Cut Productions, under supervision of EH Metric Survey Team, who rectified the results. These photographs have been rectified and integrated with the detailed, hand-drawn site plans. The resulting summary CAD drawing covering the central bed, is illustrated as Figure 4. The results are described below.

Detailed excavation and recording

- 1.6.4 It was not possible to reconstruct the original layout of the parterre from rectified photography alone. Extensive excavation of the parterre features was required to produce a more detailed understanding and interpretation of the original design. A sample of approximately 50% of the features was excavated within the western half of the central parterre, and the northern side bed, for this purpose. Samples of apparently *in situ* coloured gravels were collected for specialist identification. Excavation was primarily focussed in the south-west quadrant of the parterre, where the pattern was the best-preserved.
- 1.6.5 An interpretative plan of the East Parterre was produced in AutoCAD, to assist in reconstructing the garden. The CAD drawing incorporates detailed plans and rectified photographs arising from the OA excavations in 2006, 2007 and 2008, a geo-rectified scan of the published 1996-7 plan of the East Parterre centre bed, and interpretative layers reconstructing the original design.
- 1.6.6 Following the initial cleaning of western end of the East Parterre in 2008 it was decided that detailed excavation of the SW quadrant of the beds would produce the clearest understanding of the surviving garden features. The NW quadrant was disturbed to a significantly greater extent by root action than the SW quadrant. From examination of existing photographs it seemed certain that the overall pattern was originally intended to be symmetrical along its main east-west axis. This was confirmed by reversing the detailed plan of the SW quadrant and overlaying it on the NW quadrant pre-excavation



plan. Further cleaning and investigation in the NW quadrant revealed a close match between the two quadrant plans, although some minor discrepancies were noted, probably the result of slight errors in setting out the design, and later disturbance.

- 1.6.7 The features within the SW quadrant were examined in detail, c. 50% of the fills being excavated to elucidate the pattern of the planting beds, drainage features, box hedges and gravel paths. Selective excavation was also undertaken within the other three quadrants of the central bed, in particular the NW quadrant, for comparison with the SW quadrant. Hand drawn scaled pre-excavation and post-excavation plans were produced and an interim interpretation of the East Parterre design was prepared in AutoCAD, guided by the rectified aerial photography.
- 1.6.8 All areas of archaeological interventions were hand excavated, cleaned, and photographed. Sections and plans were drawn at a scale of 1:20 or 1:10 as appropriate. The site plans were digitised and integrated with the photogrammetric record as the excavations progressed.
- 1.6.9 NB: The illustrated plans and section drawings (Figs. 4 to 10) are based on detailed archaeological records which incorporate errors and discrepancies in original execution of the garden design. Imperial and metric scales are provided.
- 1.6.10 The excavations were photographed using monochrome prints and colour transparencies following procedures laid down in the *OAU Fieldwork Manual* (ed. D. Wilkinson, 1992). A digital photographic record was also kept.

Temporary reinstatement method

- 1.6.11 At the end of the excavation, the excavation areas were recovered with Geo-textile membrane or plastic sheeting awaiting the finalisation of the garden design and the commencement of recreation of the gardens.

Report and archive

- 1.6.12 This assessment provides a summary of the results of the 2008 excavation, with reference to the objectives listed above. The present report includes integrated plans of the East Parterre garden, description of the centre bed excavation as a whole and a short note on the results of further excavation work in the northern side bed. Detailed results from the 2006 side bed excavations are otherwise described in detail in a separate interim report (OA 2007).
- 1.6.13 This report is supported by an accompanying CD-ROM. The CD-ROM contains a digital copy of the report in PDF format, and digital data resulting from the project, including scans of conventional film images and digital images in TIFF format.



2 RESULTS

2.1 Introduction

- 2.1.1 The following description of the centre bed is derived from an integrated analysis of the excavation data from the most recent work by OA (2006-8), previous excavations by Nottingham University (1996-7), high-resolution low level aerial photography carried out as part of the 2008 excavation, and close analysis of the few available historic photographs. All of these resources have been required to arrive at a satisfactory reconstruction of the parterre design, particularly in interpreting the more ephemeral features.
- 2.1.2 The further excavation work carried out on the northern side bed in 2008, has confirmed and enhanced the conclusions of the 2007 interim report, but not added significant new information. The 2007 interim report on therefore stands as the current account of the archaeological sequence of the side beds – This report contains a brief note on the further excavation results.

2.2 Dimensions and geometry of the centre bed design

- 2.2.1 Key dimensions for the central bed are listed in Table 1 and illustrated on Figure 10. Dimensions are generally not quoted in the text description for that reason. These dimensions are measured, without modification, from the archaeological survey record. Metric imperial scales are provided, to aid analysis of the design geometry and original method of setting out the parterre design. Such analysis is fraught with difficulties: It is clear from irregularities in the garden layout that some inaccuracy was accepted or overlooked by the designer in transferring the design from the drawing board to the ground. It is also difficult to be certain exactly where the original setting out measurements were taken from in many cases (eg the inside or outside edge of the stone curbs).
- 2.2.2 In the side beds, with their comparatively simple design, it was possible to suggest the method of setting out in some detail (OA 2007). In the centre bed this is more difficult as the geometry of the design is more complex. There was clearly intended to be a formal geometric link between the parterre features and the Flora fountain, to the east which formed the main visual focus of the garden. The east end of the centre bed ends in a curve which appears to be centred on the Flora fountain, but in fact is slightly offset (Fig.10). At this stage it is not clear whether this is a setting out error or deliberate design. There is archaeological evidence that the location of the Flora Fountain was modified after initial ground preparation. The alignment of the Parterre beds is also precisely matched with that of the house and gardens to the south, which would have required very careful surveying to achieve.
- 2.2.3 Some components of the centre parterre design must have been constructed using guide circles inscribed from the central axis of the design, as seems to have been the case in the side beds. Guide circles were presumably also used in setting out curves at the corners and east end of the centre parterre, and circular flower beds around the outer border of the design (see figure 10). However there is some suggestion that a 12 foot grid, or similar, might have been used to guide some aspects of setting out.
- 2.2.4 Of particular interest in this context are two small rectangular features (7066 and 7266) one at each end of the central bed, which lie directly on the central axis of the parterre design, yet do not appear to have formed part of the design. In the historic photographs



these features appear to have been covered over with turf, and this was also indicated by the archaeological evidence. The western feature (7066) was poorly preserved, surviving only as a shallow hollow, filled with yellowish brown and greyish brown loam fills. However the eastern feature (7266) had a surviving compacted gravel base, lined with crushed brick/ tile and was covered by the same orange brown sandy silt soil layer that defines the lawned areas at the eastern and western ends of the parterre. It is possible that the features are the remains of survey reference points, used in setting out the design. A similar argument is made, in the 2007 Interim Report, that the square central plinths of the north and south side beds were used as fixed survey reference points when transferring the design from the drawing board to the ground.

2.2.5 Further analysis and documentary research is required to clarify the geometry of the design and the precise method of setting out. However, it is clear that the design of the centre bed, and the East Parterre generally, was intended to be exactly symmetrical along its east-west axis.

Table 1: Central Eastern Parterre selected dimensions (See Fig.10)

Number (See Fig.10)	Feature	Width		Length		Notes
		Metric	Imperial	Metric	Imperial	
1	Centre bed overall dimensions (to inner curb edges)	23m	75' 6"	40.87m	134'	
2	Typical dimension of decorative perimeter gravel paths	0.55-0.7m, typically 0.6m	1' 10"- 2' 4" typically 2'			
3	Overall width of exterior borders	c.3.5m	11' 6"			
4	Width of main floral design	c.16.02m	52' 6"			
5	Rounded corners at western end of the centre bed	radius c.5.4m	17' 9"			
6	Rounded corners at the eastern end of the centre bed	radius c.8.7m	28' 6"			
7	Arc at centre of eastern end	radius 19.81m	65'			This makes the circle off-centre from the fountain. It appears as though it should have been drawn from a circle with a radius of 21.54m (70' 8") centred on the middle of the fountain.
8	Central bed curbstones	At ground level 0.15m	6"	c.0.5-1.5m	1' 8" - 4' 11"	
9	Typical brick dimensions	0.11m	4"	0.23m	9"	Depth 0.08m (3")
10	Box hedge planting beds	c.0.1-0.17m, typically 0.12m	4" - 7", typically 5"			
11	Circular flowerbeds 7104/7270 within the central parterre design	radius 1.52m	5'			
12	Radius of circular border feature	1.67m	5' 6"			
13	Western rectangular feature (7066) (possible survey station for setting out design?)	0.96m	3' 2"	1.23m	4'	
14	Eastern rectangular feature (7271) (possible survey station for setting out)	1.09m	3' 7"	1.53m	5'	



Number (See Fig.10)	Feature	Width		Length		Notes
		Metric	Imperial	Metric	Imperial	
	design?)					
15	Distance between two possible set out features	31.07m	101' 11"			The distance from the centre of one feature to centre of the other is 32.44m (106' 5")
16	Distance from central bed to Northern bed	18.69m	61' 4"			
17	Distance from central bed to Southern bed	18.34m	60' 2"			

2.3 Description of the centre bed design, based on all strands of evidence

- 2.3.1 The central bed comprises an approximately rectangular plot, with inwardly curved corners, surrounded by a curb of carved limestone blocks. The southern, western and northern sides of the bed are straight, while the eastern side describes a shallow arc which was probably intended to be centred on the Flora fountain to the east, but is fact slightly offset (Figs. 4 and 10). The curbstones are finely shaped at the top, where they show above-ground, but only roughly-shaped below-ground. In sections where the base of the curb was exposed, the stones were founded on a single course of red bricks, as was also seen in the north and south side beds (OA 2007).
- 2.3.2 Inside the curb lies a decorative border, which runs in a continuous band around the edge of the parterre. This comprises two parallel gravel paths, one just inside the curb, which appears to have been coloured using red aggregate (crushed ceramic, including plant pot fragments); The inner path appears to have been coloured using white quartz. The two paths are separated by a border of planting beds, which is studded with a series of thirteen regularly spaced, small, circular flowerbeds (probably intended to be 6 ft in diameter), each of which was surrounded and defined by box hedges and bands of white quartz gravel. There are two of these small circular beds at the western end of the parterre, three at the eastern end, and four along each long side.
- 2.3.3 The main panel of the 'parterre de broderie' design is framed at top and bottom (east and west) by two areas shown covered with lawn on historic photographs. These were clearly visible during the excavation as areas of orange-brown sandy silt, distinctly lighter in colour than the surrounding paths and planting beds.
- 2.3.4 The main parterre design comprises an elaborate stylised floral motif, which is symmetrical along its long (east-west) axis. The centre line of the design takes the form of a highly stylized plant stem. The historic photographs suggest that the stem was originally picked out predominantly in green and white, using closely trimmed box hedges and paths of white gravel. The excavated evidence suggests that at least two probable planting beds of different shapes lie along the stem, which terminates in a large bulb-shaped flowerbed, located slightly east of the centre of the parterre design. The 1996-7 excavation report drawings show the central stem terminating in an expansive fan of stylised foliage, which springs from the large, central bulb-shaped flowerbed and occupies most of the eastern end of the parterre. In the 1996-7 report, the fan is reconstructed as alternating flower beds and gravel paths, separated by lines of box. At the apex of the fan is a circular planting bed surrounded by a bands of box and white gravel.



- 2.3.5 The 2007-8 excavations, focussed in the western side of the parterre, revealed a series of intricate symmetrical forms, flanking the lower part of the design stem. These also appear to have been marked out predominantly in white and green, using closely trimmed box hedges, separated by white gravel paths. The pattern, which is mirrored on either side of the design centreline, represents a stylised flower, enclosed within a continuous, interlaced looping band of red gravel (coloured with crushed red ceramic). A combination of archaeological evidence and close analysis of the historic photographs, indicates that the stem of the flower design was again picked out in a swirling pattern of green box hedges, separated by areas of white gravel (quartz), with possibly only a single feature, part of the flower stem, picked out in blue (slate). Intervening areas containing a mix of white quartz and red ceramic may have been pink in colour, unless this material has been mixed together by post-depositional processes). The swirling stem designs terminate in a matching pair of large circular planting beds, with bowl-shaped profiles, each c. 10 ft in diameter, which represent the flower heads. The predominant colour of the 'flower head' could presumably be varied at will by changing the planting scheme. A line of ceramic drains was found cutting through the top of the two planting beds, apparently linking the main centre and perimeter drains, but set at a considerably higher level (Fig.5). Otherwise the planting beds were filled with a homogeneous dark greyish brown sandy silt and contained no *in situ* evidence for planting, although the historic photographs leave no doubt as to their function.
- 2.3.6 A series of roughly teardrop and kidney shaped curving segmented features were excavated at the interface between the 1996 and 2006/7 excavation areas, which would have formed connecting elements between the eastern and western halves of the Parterre de Broderie. Only the bases of these features survived. The traces of box hedge surrounds were found in places, but no surface finishes were discernible, and the overall pattern of these features could not be defined. With reference to previous design suggestions and rectified photographs (Callf 1998, Fig. 10, Page 42 and plate 29, Page 55) it seems likely that these segmented elements formed part of a possible surround to a 'bell' flower design between the two halves of the parterre.

2.4 Drainage in the centre bed

- 2.4.1 The centre bed was built on sandstone bedrock (7110) which was typically found at a depth of 0.25 – 0.3 m beneath the current ground level (or 84. 65 m OD).
- 2.4.2 Major drains included a series of ceramic pipe drains, which run around the perimeter of the bed, inside the curbstones. There is also evidence for a primary drain running down the central axis of the centre bed. Where investigated, the drain trenches were typically cut into the bedrock to a depth of c.0.30m. The landscaped surface topography drops very slightly from west to east, towards the Flora Fountain, indeed the whole landscape scheme for the East Parterre Garden was no doubt designed to drain to the east, away from the house. A series of four drain covers, located at the eastern end of the central bed, confirm that this is the case.
- 2.4.3 The principal drainage trenches, running around the edge of the central bed, were backfilled with a mixture of brick rubble, tile and loosely compacted soil. The top of the drain trench was sealed beneath a red-coloured gravel path, which formed part of the decorative border of the parterre.
- 2.4.4 A number of other ceramic drains were recorded. These were at a significantly higher level in the sequence, stratigraphically and in absolute depth, being within the upper fills of planting beds in some cases. This does not necessarily indicate different phases of drainage within the central bed – The higher drains may simply have been added at



a later stage in the construction sequence. They were clearly placed to drain specific planting beds in some cases (Fig.5). However they are somewhat irregular in layout, which suggests that they might have been added in an *ad hoc* manner, in response to specific drainage problems. The later drains were not fully exposed but appeared to be non-continuous lines, perhaps as a result of later cultivation of the planting beds and other disturbance.

2.5 The sequence of construction of the centre bed of the East Parterre

- 2.5.1 The following sequence of construction for the centre bed is deduced from the excavated evidence:
- 2.5.2 In preparation for building the garden, the site was first levelled. This seems to have involved cutting into the bedrock in some areas, while building up the ground in others, during the initial phase of landscaping. In the centre bed the bedrock was close to the surface, to the extent that the deeper drains were cut into the rock to a depth of 0.30m. By contrast the side beds and parts of the centre bed seem to have been levelled up, using a clean orange brown silty sand and sandy loam sub-base material.
- 2.5.3 The bed outlines were then set out and further defined and levelled by cutting rough outlines into the landscaped and levelled sub-base.
- 2.5.4 A series of main drainage channels were then cut, comprising side drains running around the inside edge of the parterre, and a relatively shallow drain aligned along the east-west central axis. The deeper drains, which were cut substantially into the bedrock, contained ceramic pipes laid in the base of each cut, which were then back-filled. Typically the lower backfill of the drains contained much broken brick, other ceramic building materials and occasional stone. The drains were overlain by a upper fill which was indistinguishable from the surrounding sub-base apart from being slightly looser than the surrounding soil. It is likely that the main drains were installed before the curbs were in place.
- 2.5.5 The outline of each bed was then set out accurately, to guide placement of the curbs and subsequent refinement of the landscaping. The setting out seems to have been undertaken with considerable precision at this stage, although slight errors and discrepancies are apparent. It is also not always clear where original measurements were taken from, and is therefore difficult to be sure of the precise intended measurements (See Table 1 and Fig.10). It is likely that fixed survey reference points were set up at an early stage, to guide the setting out work, and fix the main axis of the parterre de broderie in relation to the overall landscape design - Two probable reference points (Features 7066 and 7266, just over 100 feet apart) have been identified on the central axis of the central bed in the course of excavation (See comments above on the setting out method). These features clearly did not form part of the design as they were eventually covered over with turf.
- 2.5.6 Having accurately marked the bed outlines, the curbstones were laid in shallow cuts made in the sub-base material or bedrock. Typically the limestone curbs were laid on a single course brick foundation, with some small adjustment of height created by additional mortar courses around the brickwork.
- 2.5.7 An inorganic orange silty sandy was imported into the eastern and western ends of the parterre, and shaped to form a base for the slightly raised lawns visible on historic photographs at each end of the parterre.



- 2.5.8 A continuous subsoil layer, comprising a sifted, sandy loam growing medium was then laid, filling the parterre except for the raised lawn areas. This layer would have provided a level surface for laying out of the detail of the 'parterre de broderie' design.
- 2.5.9 Shallow trenches were then marked out with pegs, and cut out to form the main elements of the parterre design. These trenches typically measure between 0.55 – 0.7 wide and up to 0.1 m deep (or c 2 feet wide by 4 inches deep). It seems likely that a small amount of orange-brown silty soil would have initially been placed against the sides of these shallow trenches. Fine box hedge roots would have then have been placed within the soil at the sides of the features and then covered by a further light covering of soil, resulting in the thin traces of soil that was sometimes apparent across the bottom of the trenches. The trenches would have been roughly reshaped, probably by hand, and a base layer of crushed coal and charcoal laid in the bottom. The purpose of the coal and charcoal was perhaps to discourage worm action and other bioturbation from disturbing the overlying decorative finish, although it may simply have been a convenient aggregate material for the base of the decorative paths.
- 2.5.10 The coal and charcoal base layer within the trenches were then covered with mixed gravels, including a thin surface layer of coloured material. The principal colours for foliage patterns would have been green (the box hedges) separated by bands of white gravel (quartz) – The foliage patterns and planting beds were framed within red borders coloured with crushed red ceramic. A very few features seems to have been coloured blue (using Welsh slate). It seems likely that most of these coloured finishes were deliberately removed as the garden fell into disrepair, so that only traces of the original colour scheme remained (Hughes, 1996). This was certainly born out by the 2008 excavations, although sufficient decorative material survived in small patches to be reasonably confident of the colour scheme presented in Figure 3.
- 2.5.11 Within the central bed a series of shallow drains were then placed to drain specific planting beds. Some of these cut across the design and may be late additions and modifications, made in response to localised drainage needs. Others appear to be quite regularly laid out and may have formed part of the original design.
- 2.5.12 Turf was laid in the lawned areas, which frames the main decorative panel at top and bottom. As the possible survey stations (7066 and 7266) appear to have been covered with turf, the turf was probably laid after the design had been set out in detail.
- 2.5.13 Finally the planting was carried out. This is the most ephemeral aspect of the design and has left no clear archaeological trace. Although occasional flowerpot fragments were found during the 1997 and 2006 excavations, in no case were these clearly *in situ* and it is thought that they represent the casual discarding of broken pots during planting .

2.6 Results of further excavation work in the side beds

- 2.6.1 The excavation work in 2006 focussed primarily on the north and south side beds, which resulted in accurate photographic and drawn records of both beds, which are described in some detail an interim report (OA 2007).
- 2.6.2 In 2008, the features within the western end of the northern side bed were subject to full excavation, with the principal aim of recovering detailed evidence of the shape and use of the planting beds. The additional work has added minor details to description of the side beds, but the form and stratigraphic sequence of the beds remains essentially unchanged from the Interim Report. The following comments are therefore presented as an up-date to the interim report:



- 2.6.3 Additional excavation of the planting beds within the middle of the guilloche was undertaken to establish whether they contained *in situ* planting pots, indicating that these areas had originally contained potted plants. In the event, none were found.
- 2.6.4 Excavation of the features within the western half of the northern side bed confirmed previous indications that crushed coal, was used as a base layer beneath the decorative coloured gravel surfaces, in the borders and the 'guilloche' design of the side beds. This material was certainly not present within the planting beds. The survival of the coal base within the northern bed was quite variable and the extent of the layer only became clear after full excavation. The coal base layer might have been applied to prevent worm action from disturbing the decorative finish above, or simply as a convenient aggregate material, to prevent the path from breaking up under the compressive stress of people walking on it.
- 2.6.5 As a refinement of the 2006 interpretation, the 2008 excavation showed that the box hedges edging the 'guilloche' and borders were originally planted against the sides of shallow trenches excavated to receive the gravel for the decorative paths. This was suspected on the basis of documentary evidence, but not observed very clearly in the excavated evidence from 2006.

3 ASSESSMENT OF FINDS AND SAMPLES

3.1 Soil chemistry samples

- 3.1.1 Following consultation with Lisa Moffat – Regional Science Advisor for English Heritage, and Matt Canti (EH Ancient Monuments Laboratory) soil samples were collected from recorded locations within the western half of the East Parterre for possible soil chemistry analysis. Specialist advice indicates low potential for soil chemistry to provide useful data that will assist with reconstructing the garden. However it was felt that soil samples should be recovered while the site was open, and retained with the archive, in case analysis becomes necessary.
- 3.1.2 Most of the stated research aims that could potentially be addressed by scientific analysis can be more reliably obtained through examination of primary and secondary historical sources relating to gardening practise in the late 19th century.

3.2 Coloured gravel samples

- 3.2.1 Surviving traces of the coloured gravel path surfaces were annotated on site plans where found. It is likely that most of these surface finishes were removed or scattered after the gardens went out of use. However sufficient remained to allow a good impression of the original colouration and extent of the former gravel paths to be obtained, and to determine the material types and provenance. Predominant coloured materials include white quartz, crushed red ceramic and very occasional features in blue slate. Black charcoal, coal and cinders were also present in significant quantities, often mixed with other colours, but is thought most likely to have been used as a base layer for the gravel paths. Samples were taken, wherever possible, from patches of surviving gravel that appeared to be *in situ*. An assessment of the samples has been undertaken by Dr. David Jefferson (Appendix A).
- 3.2.2 *In situ* plant pots were notable for their absence, although fragments of plant pot were found amongst samples of red ceramic coloured gravel. Additional excavation of planting beds in the northern side bed was carried out in search of *in situ* vessels and other potential planting features, but failed to find any convincing examples.



Presumably most, if not all, planting was done without pots. Alternatively vessels may have been placed on or close to the ground surface, and been cleared away regularly to make way for new planting.

3.3 Miscellaneous finds

- 3.3.1 Apart from material used as colouring for the gravel paths, a small number of miscellaneous finds, including clay pipe stems, pottery and glass, were recovered from the excavation. They are most likely to have been introduced to the garden along with the crushed ceramic material used as red colouring in the gravel paths. The quantity is too small to shed any additional light on the garden features. None of the finds are of intrinsic interest and they are not considered further.

3.4 Discussion and interpretation

Reliability of field investigation

- 3.4.1 Survival of the bases of paths and planting beds within the parterre gardens was generally moderately good, but the gravel surface finishes only survived in occasional patches. Definition of the box hedge lines and the planting bed cuts, in plan and section, proven particularly difficult, as feature edges were typically diffuse, probably as a result of root action, animal and earthworm burrowing. In some areas more substantial root action had largely obliterated traces of the beds.
- 3.4.2 Considerable uncertainty remains as to the details of the parterre design in the eastern end of the centre bed, as all but the post-excavation site plans included in the 1997 excavation report have unfortunately been lost. The overall pattern can be seen in general terms on the historic photographs, but the colour scheme can only be deduced from descriptions of the coloured gravels made in the 1997 report, which were based on observations of the distribution of coloured gravels within the excavation. Given this level of uncertainty, the reconstructed drawing (fig.3) leaves the colour scheme at the eastern end of the centre bed unresolved.
- 3.4.3 Otherwise, confidence in the accuracy of the results is high. The combination of rectified photography, hand-drawn plans and sample sections, informed by detailed documentary evidence and historic photographs, has resulted in an accurate and detailed record of surviving garden features/deposits in the East Parterre, and an interpretation of the original design which is consistent with all strands of evidence.

Overall interpretation: Summary of results

- 3.4.4 The series of excavations in the East Parterre Garden have been largely successful in establishing the design and construction sequence of the centre and side beds and the associated landscaping. They have established that once laid out, the garden was subject to very limited modification of hard landscaping features, although it is known that the planting scheme was subject to frequent change during the heyday of the gardens, not always in line with William Nesfield's design concept (Hughes, 1997). Detailed plans and sections of the beds have been generated, which are being used by the EH Gardens Team to define preservation and restoration strategies for the East Parterre Garden.

4



5 RESEARCH AIMS AND OBJECTIVES

5.1.1 In general we consider that little further analytical work is required to bring the archaeological evidence from the East Parterre to publication. The majority of the stated fieldwork aims have been addressed as far as the surviving evidence allows. A number of potential areas of further work are suggested below:

5.2 Further analysis of the design geometry and setting out methods

5.2.1 There is some scope for further analysis of the geometric forms and establishing how the design was originally transferred from the drawing board to the ground. This assessment has demonstrated the difficulties involved. Any such study should be informed by documentary research into 19th century landscape and garden design and contemporary survey methods, particularly William Nesfields preferred methods of working.

5.3 Potential for further analysis of gravel samples

5.3.1 It is not proposed to undertake any further analytical work on decorative coloured gravels. The assessment by Dr. Jefferson (Appendix A) provides a sufficient identification and discussion of the materials. The range of materials present is quite limited. The colour scheme of the paths in the centre and side bed appears to have comprised predominantly white quartz, red ceramics, with very occasional use of blue slate in the decorative design. Some slate may also have derived from edging planting beds. The use of charcoal, as a base layer for the decorative paths, is discussed above.

5.3.2 Sources of appropriate modern material have been recommended, for use in the restoration project.

5.4 Potential for soil chemistry analysis

5.4.1 No soil chemical analysis is currently proposed. Discussion with Lisa Moffett (Regional Science Advisor), and on site discussions with Matt Canti (EH Ancient Monuments Laboratory) indicate low potential for detailed analysis to contribute to the current research aims of the project. Soil samples have been recovered, should such analysis be required as part of a wider specialist study of the gardens at Witley Court. Research questions might include detailed consideration of the use of different soil types within the gardens, including the identification of soil preparation methods. It is recommended that further detailed documentary research be undertaken before any soil chemistry analysis is considered, looking at contemporary primary and secondary accounts of late 19th and early 20th century gardening practise. This will provide essential contextual information for any scientific analysis.

5.5 Plant cuttings and associated scientific analysis

5.5.1 The fieldwork aims include a requirement to survey and record the locations and character of the stems of the surviving box plants. There is also a requirement to investigate the potential for applied archaeological science to address this question. This aspect of the project is being undertaken by the EH garden team at Witley Court, who will undertake any associated scientific analysis that may be required.



6 POST-EXCAVATION PROJECT DESIGN

6.1 Business case

- 6.1.1 The 2008 excavations in the East Parterre at Witley Court have recovered important new evidence regarding the Scheduled Ancient Monument. IFA standards and English Heritage Guidance require that the significant results of archaeological investigations are published in an appropriate format, in a timely manner.

6.2 Project scope

- 6.2.1 It is proposed that the results of the excavation will be published in the English Heritage Historical Review. The report will summarise the scope of the archaeological investigative works and the methodology that was adopted, and contain sufficient supporting information to validate its conclusions. It will provide a factual account of the results, which can be set within the framework of historical garden development provided by documentary and other allied research.
- 6.2.2 Very limited further specialist work is required to bring the report to publication. Descriptive text for the side beds exists in the 2007 interim report. The centre bed archaeology is described in this report. The two texts would require integration, updating and editing, in the light of further documentary research.
- 6.2.3 A further publication may be required for a journal such as Garden History but this would be prepared by Annabel Brown of the EH Gardens team, drawing on the results of archaeological and historical research.
- 6.2.4 An abstract will also be prepared for publication in national, regional, and local specialist periodicals as appropriate, with the scope of the published report varying with the significance of its results for the particular interest group.
- 6.2.5 A microform copy of the site archive and report will be made to appropriate professional standards and supplied to the National Monuments Record and the Hereford and Worcestershire Sites and Monuments Record in accordance with local requirements.

6.3 Interfaces

- 6.3.1 It is suggested that the East Parterre excavation report could be included in a wider publication describing the Witley Court garden restoration project as a whole. In particular the East Parterre report could be used as a focus for publishing summary reports on the various smaller scale archaeological investigations carried out in the course of the restoration project to date.

6.4 Communications

- 6.4.1 Further discussion and liaison with the EH Gardens Team is required to establish the team structure and publication programme.

6.5 Health and safety

- 6.5.1 The work is entirely office-based and will be carried out in accordance with OA Health and Safety Policy. Risk assessments will be carried out for specific tasks not covered by standard procedures.



6.6 Archive preparation

6.6.1 A site archive based on MORPHE is in preparation. Archive preparation includes the indexing, ordering, quantification and checking for consistency of all original context records, object records, bulk find records, sample records, photographic records, drawing records, photographs, drawings, level books, site notebooks, spot-dating records and conservation records, etc. It will be ensured that all retained artefacts and ecofacts are packed and stored in the appropriate materials, containers and conditions as advised by the Client, and that all their associated records are complete. The archive will also include a site archive summary.

6.7 Relevant archaeological standards

- English Heritage 2006, Management of Research Projects in the Historic Environment, (MORPHE)
- Institute of Field Archaeologists (IFA), Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology
- Institute of Field Archaeologists, IFA Guidelines for Finds Work
- Institute of Field Archaeologists 1994 (revised 2001), Standard and Guidance for an Archaeological Watching Brief (as modified in August 1994)
- Institute of Field Archaeologists 1995 (revised 2001), Standard and Guidance for Archaeological Excavation
- English Heritage 2000, Metric Survey Specifications for English Heritage
- English Heritage Centre for Archaeology Guidelines 2002/01, Environmental Archaeology. A guide to the theory and practice of methods, from sampling and recovery to post-excavation
- Museums and Galleries Commission 1994, Standards in the museum care of archaeological collections
- United Kingdom Institute for Conservation 1990, Guidelines for the preparation of Excavation Archives for long-term storage
- Institute of Field Archaeologists Code of Conduct
- Society of Museum Archaeologists 1993, revised 1997 Selection, retention and dispersal of Archaeological Collections



7 RESOURCES AND PROGRAMMING

7.1 Project team structure

- 7.1.1 **The client** is represented by Loraine Knowles (Visitor Operations Director, EH West Midlands).
- 7.1.2 The **Project Manager** of the garden reinstatement project is Rob Harding (EH) - He is responsible for ensuring that the overall project is completed to time, budget and quality standards.
- 7.1.3 The **Project Assurance Officer** is Paddy O'Hara (EH), who is responsible for ensuring that the archaeological work is undertaken in accordance with the agreed scope and specification.
- 7.1.4 The **Project Archaeologist** is Stuart Foreman (OA). He is responsible for preparation and implementation of the Project Design. He oversees personnel and health and safety management including initial risk assessments. He also has responsibility for co-ordinating office-based specialist support staff and the production of reports.
- 7.1.5 The **Project Officer** is Brian Matthews (OA). He is responsible for implementing the Project Design, under the supervision of the Project Archaeologist. He will oversee the work of all site staff, including attached specialist staff, ensuring that archaeological recording standards are maintained.
- 7.1.6 **Specialists** have been identified to carry out anticipated specialist tasks, as listed in Table 2 below:
- 7.1.7 Table 2: Personnel nominated to undertake anticipated specialist analysis

Specialist topic	Nominated specialist
Consultant Garden Archaeologist	Brian Dix
Rectified photography	David Andrews (EH Metric Survey Team)
CAD/ Survey	Anne Kilgour (OA)
Soils analysis	EH Environmental Branch
Petrological identification of gravel samples	David Jefferson (EH Conservation Team)
Small finds and finds management	Leigh Allen (OA)

- 7.1.8 **OA Specialist Departments**, as listed in Table 2, will provide any additional logistical and specialist support to the site team, as and when required. The role of the departments is to provide staff, equipment and training in their specialist field. Department heads may also manage relationships with external specialists, where appropriate.



Table 3: OA specialist departments

Department	Role at Witley Court
Fieldwork	Provides archaeological site manager and field team
Geomatics	Provides CAD, GIS and survey personnel. They conduct topographical survey and setting out, and can provide on-site database support and data control. At Witley Court the site surveyor (A.Kilgour) will liaise with the EH metric survey team in production of rectified photographic plots, and interpretative plots
Logistics	Co-ordinates supply of vehicles and equipment to the field team.
Information technology	Provides IT support and equipment for site and office works, including digital data back-up. Provides database design support.
Finds	Finds processing and co-ordination with conservators and artefact specialists.
Geoarchaeology and palaeoenvironment	Palaeoenvironmental and palaeoeconomic sampling strategies; They process samples and provide palaeobotanists, geoarchaeologists and animal bone specialists.
Burials	Arrange burial licenses. Provide specialist osteological advice, during and after fieldwork. (Unlikely to be required).
Historic buildings	Available to advise on historic building matters if required.
Heritage management services	Available to undertake any additional documentary research that may be required.
Graphics	Academic report graphics including artefact illustration and photography, type-setting, publicity material, popular publication, web design.
Post-excavation and publications	Post-excavation research and academic publication management; Co-ordination with specialists, production and editing of academic reports.
Archives	Digital, paper and photographic archive, processing and deposition.

7.2 Stages, products and tasks

Outline programme

7.2.1 It is anticipated that the archaeological publication of a series of reports on the East Parterre Garden 12 months to complete, starting in April 2009, or as soon as the project design is approved.

Stages and products

- Stage 1 Archaeological excavation - Complete
- Stage 2 Submission of an Assessment Report and Updated Project Design – Complete in draft
- Stage 3 Analysis and Report (together with archive deposition) to be completed within 12 months of an approved Project Design

Stage 3: The product will include:

- Publication text and graphics
- Supporting specialist reports
- Ordered research archive (digital, photographic and paper records)
- Ordered finds archive

Tasks

7.2.2 A detailed task list will be produced task list and programme will be produced in liaison with the garden design team



7.3 Budget

- 7.3.1 To be confirmed following liaison with Garden Design Team.. Guide figure as previously submitted.



APPENDIX A. ASSESSMENT OF FINDS AND DECORATIVE GRAVEL SAMPLES

Introduction

The original gardens at Witley Court were designed by George Stanley Repton and consisted of terracing and ballustrading close to the house, with flower beds and simple parterres below. However, when Lord Ward commissioned William Andrews Nesfield to lay out new gardens in a style appropriate for the newly extended and refurbished House, the original gardens were lost. Following the fire in 1937, the same fate befell Nesfield's gardens. Many of the garden features were dispersed when the contents of Witley Court were sold. The Golden Gates from the South Parterre went to America and are now in Arizona, and the two lions from the portico steps are now at Harlaxton Manor near Grantham. The ornamental beds, including the 'Parterre de Broderie' design from the East Parterre were lost, although traces of their design were still visible from the air. These gardens and the fountains are currently being restored. The South Parterre, together with the 'Perseus and Andromeda' fountain, has been completed and work is currently in hand on East Parterre Garden. As with the South Parterre, coloured earth was used in the design, aggregates of different types being used to provide the different colours. Archaeological excavations in the East Parterre have determined the design of the 'Parterre de Broderie' and recovered aggregate assemblages, which will aid in the determination of the coloured earths which were used. Petrographic analysis of these samples is being undertaken in order to identify their provenance and provide information on suitable replacement materials.

Samples from the East Parterre Garden

A number of samples taken during the archaeological excavations, and which are stored at the Finds Department of the Oxford Archaeological Unit, were selected to represent different features in the garden design. Samples were taken from surviving *in situ* gravel patches where present. The aggregate content was assessed and is detailed in the following table. The most significant materials are indicated by large crosses, the smaller ones indicating that the materials were present in minor quantities.

The pebbles are a mixture of dark brown stone, quartzite and flint. The very occasional stone fragments are the local sandstone. The samples are relatively small and some are clearly selective, for example sample 33 from context 7129. All the samples which had been located and retrieved by the Finds Department were assessed. Most fell into the assemblages noted above. There were, however, some anomalous samples. For example, sample 20 from context 7082 was rich in a light grey-coloured finely granular stone, together with charcoal, rock fragments, pebbles and a little slate. Mortar could be common, for example sample 2 from context 5007 is rich in this material. Sample 24, from context 7023, contains many fragments of a Bath stone which appears to be of a similar type to Combe Down stone. This variety of Bath stone was not only used for the garden features such as the pavilions, it was also used by Daukes when he clad the main house in Bath stone in about 1860.



Table 4: Identification of sample aggregate materials by sample and context

Feature	Context	Sample number	Milky quartz	Ceramic fragments	Slate	Stone fragments	Pebbles	Charcoal	Clinker / slag	Glass
Main fill of inner border	7012	22	X	x			X	x	x	x
		42	X				x			
Charcoal base layer	7016	21		x			x	X		x
Outer border Parterre de Broderie	7120	37	x	X			x			
Crescent borders around circular outer border beds	7129	33		X						
White swirl patterns	7134	25	X	x			X	x		
Main fill of Parterre de Broderie circular borders	7146	28	x	X	x		x	x		
	7151	29		X						
Slate edging in >stem= design	7165	30		x	X	x	x			

Petrographic analysis of the stones

Quartz

The term 'Milky quartz' has traditionally been used to refer to the very common variety of quartz which, due to the presence of a large number of very small air cavities, has a milk-white colour. All the samples collected from the gardens at Witley Court would fall into this category, being almost N9 on the Munsell⁷ colour scale. The fragments, which can be up to 50 mm in size, are clearly vein quartz and therefore are not pure white throughout, since they incorporate small fragments of dark-coloured country-rock and other mineral matter. However, such impurities make up less than about 3% of the total material. Although white quartz veins which would yield this type of material occur in Scotland, the Lake District and in Cornwall and Devon, they do not



occur anywhere near Witley Court. The material must, therefore, have been purchased and brought to the gardens for a specific decorative purpose.

Slate

Three types of slate-like material have been identified in the samples from the garden. One of these is distinctive, being Westmorland slate from the Coniston area, different samples having similarities with slates from Tilberthwaite and Broughton Moor. Another sample has a close affinity with slate from the Delabole region of north Cornwall. The third material is more complex. It is a reddish brown material and in thin section some fragments may be considered to have a similarity with the slate from Blaenau Ffestiniog in central Wales, although others are a chlorite-sericite-schist which could have come from north Cornwall. A third possibility is that the material has come from the Clent Breccia, described below. A study of this rock in 1855 describes the presence of green-banded, ribboned and altered black and green slate from this material. The reddish brown surface staining of the fragments is typical of the stone from the breccia. Much more detailed bulk sampling would be required to determine the reason for the presence of different types of slate. Are the different types distributed in different areas? Do any occur in equal quantities throughout the garden, suggesting that they are associated with the soil?

EXCAVATOR'S NOTE: Observations of the distribution of slate in the 2008 centre bed excavations identified only one concentration in the SW quadrant sufficient to suggest that slate was used as colouring for a path (See figure 3). It is assumed that this feature was mirrored on the NW quadrant, but no evidence for this was apparent, possibly as a result of the greater degree of post-depositional disturbance in that quadrant. Slate was occasionally present as individual fragments elsewhere, but could have derived from use as edging material in the planting beds, or post-depositional disturbance. On balance it seems likely that slate was used to pick out a few selected features only, and utilised a mixture of material, very likely re-used roof slates rather than sourced specifically for decorative purposes.

Stone fragments

The localised presence of Bath stone has been noted above and this is believed to be related either to garden features such as the pavilions, or to the cladding used by Daukes in his re-design of the house. In general stone fragments are not particularly common but, when they do occur they are composed of the local reddish brown sandstone. This material has been utilised for building both in Witley Court itself and in the dam and bridge related to the construction of the ponds. It would not be surprising to find fragments of bedrock in the soil.

Pebbles

These are often greyish red on the outside, about 10R 4/2 on the Munsell7 colour scale, although this is only a thin surface skin, the bulk of the stone being medium light bluish grey, about 5B 6/0.5 on the colour scale. An example taken from sample 25, context 7134, was thin sectioned and found to be a very altered igneous rock, possibly a porphyritic felsite or a feldspathic volcanic ash. This type of pebble is often very angular and this feature, together with the igneous nature of the sample studied petrographically, suggests that it may be derived from the Clent Breccia. This geological horizon occurs at the junction between the Carboniferous and Permian rocks, about two kilometres west of the house. Interestingly, the stream which feeds the five pools, in what was the Park associated with Witley Court, rises on Woodbury Hill. This location is entirely underlain by the Clent Breccia. It is possible, therefore, that gravel from the



valley in which the pools are situated has been brought to the gardens for some purpose. Alternatively the development of the East Parterre may well have required imported soil and this could have been obtained from the valley during the development of the ponds.

A second type of pebble is rather more problematical. Very noticeable in sample 20 from context 7082, these are irregular in shape although well rounded, although this is possibly due to the fact that any abrasion tends to break down their surface. Although their outer surface is always soiled, internally they are pinkish grey in colour, about 5YR 8/2 on the colour scale. They appear to be granular and porous. In thin section the stone is seen to be a magnesian limestone, composed entirely of rhombohedral dolomite crystals, typically about 220 microns in diameter, together with a few scattered quartz grains which are about 80 microns in diameter. The petrography of the stone is similar to some of that from the Linby and Bulwell areas near Nottingham, although the stone from this area has a reddish hue. Mansfield White stone has a similar colour but the dolomite crystals are smaller and the quartz grains larger and more predominant. However, the magnesian limestone from the Permian strata between Nottingham and Mansfield is the only material known to have this type of fabric. It must be assumed, therefore, that the fragments studied from sample 20 originated in this area, about 115 kilometres from Witley Court. Magnesian limestone from the Nottingham area has been used for building, paving, coping and steps. However, other stone suitable for such purposes is certainly available much closer to Witley Court. It has also been used for large garden ornaments. For example, there are two large urns, carved from magnesian limestone, in the West Garden at Chatsworth House. It is possible, therefore, that this apparently limited spread of magnesian limestone fragments in the east garden represent some form of garden ornament. Early photographs show vases set on pedestals in this area and these may well have been carved from stone.

Other

Flint and quartzite pebbles are also present in the samples. Such material, due to its durability, tends to be a fairly common component of soil. These particular flints appear to have little or no special characteristics and are considered to be natural detritus.

Discussion

As is indicated in the table in section 2 above, the predominant material in the assemblages is a white milky quartz. This is considered to have been used deliberately as a colouring material. Three different types of slate, or slate-like material, are also present. The contexts in which these have been found may suggest that they are related to the garden rather than being detritus from the House. However, there is always the possibility that surplus or broken roofing tiles from the building were utilised in the garden. A much more detailed survey of the slate would be required to determine the reason for the unusual mixture of stone types. Although some of the earthenware is clearly from broken plant containers, the quantity of small-size fragments perhaps suggest its deliberate use as an aggregate. The stone fragments and pebbles are believed to be a mixture of natural material and fragments related to garden structures, as well as possibly being from the house itself. It is conceivable that detailed analysis of the mortar found in the excavation, may determine whether material from the house was deposited in the garden. The natural pebbles are unusual and may help identify the provenance of the soil, which may have been brought in to establish the planted beds. Unlike the south parterre, where vitrain-rich bituminous coal was relatively common, this has not been found in the East Parterre. However charcoal is common in this garden. It has been suggested that, since the charcoal was found at lower levels, it was used beneath the surface for horticultural purposes. The small quantity of slag-like material which was found may be a by-product of the central heating boilers



beneath the house, or possibly be related to the fire in 1937 which destroyed the building. The glass may also relate to the fire damage, although some of it may represent broken drinking vessels.

The overall assemblage of materials found in the East Parterre garden is similar to that found in the south parterre and reported upon in 2002. In this area, sampling the two circular beds located north of the 'Perseus and Andromeda' fountain yielded the following materials:

- White milky vein quartz in angular pieces up to 50 mm in length
- Coal, vitrain-rich bituminous, sometimes in flat slabs, up to 80 mm in diameter
- Grey, greenish and purple slate in small pieces
- Fragments of local red sandstone
- Broken pebbles
- Fragments of plant containers, both earthenware and stoneware

It was suggested at that time that the sandstone and pebbles were probably from the soil. The quartz and coal were believed to have been an integral part of the formal design of the beds, as were possibly the slate chippings. Petrographic analysis of the slate fragments had indicated that the stone had originated in both Devon and the Lake District. The samples from the south parterre had been collected from the surface, using a wide sampling grid intended to provide a representative sample of the materials present, rather than determine their spacial distribution and specific use. The main difference between the South Parterre and the eastern garden is the presence of coal in the former. Although charcoal was obtained from the recent excavations in the East Parterre, this was not identified in the original sampling in the southern area. The most likely reason for this is that, even if present below the surface, it is unlikely that charcoal would have survived on the surface. No coal has been positively identified amongst the carbonaceous matter from the recent investigation of the eastern site.

EXCAVATORS NOTE: On this basis, material identified as coal during excavations in the East Parterre is more likely to be charcoal, with some slag-like inclusions.

Sources of replacement aggregate

Despite the fact that white vein quartz is a common material, it has little value and, being extremely hard, it is expensive to extract and crush. As a result, there are no known sources in the United Kingdom. The original quartz used in the garden may well have come from one of the mining areas which were working at the time the garden was laid out. Although not now available in the U.K., white quartz is available from a number of sources in India, such as M/S Asad Mineral Corporation of Andhra Pradesh and 'Synthetic Stones' of Rajasthan, although the minimum quantities supplied tend to be about 100 tonnes. Primary sources, such as India, have the advantage of being able to supply the material in any form and size.

Quartz is imported into the U.K., presumably from areas such as India, as an ornamental material for use on tombs and memorials. A source of such material, Morris Granite & Marble Company Limited, was identified in 2002 for the south parterre garden. This quartz was not quite as white as the original material found in the garden, being somewhat purer and more crystalline, hence it is slightly translucent rather than being a pure white colour. It can, however, be supplied in the required sizes, that is from about 50 mm down to 10 mm in diameter. It is likely that the



larger pieces will be less translucent and therefore whiter. Irish Aggregates Limited also supplies white quartz, although much of this appears to be in the form of rounded pebbles. These addresses of these suppliers are:

Morris Granite & Marble Company Limited
Colomendy Industrial Estate
Denbigh
Denbighshire
LL16 5TA
Telephone : 01745 812532

Facsimile : 01745 815770

Irish Aggregates (Munster) Limited
Ovens
Co. Cork
Ireland
Telephone : 00353 21 4872733

Facsimile : 00353 21 4871705

Slate from Devon and the Lake District is commercially available from both areas. As it is supplied for building, paving and roofing, it is possible to obtain slate in any size, shape or quantity. A mixture of colours will also be available from the companies producing the Cumbrian slate. The relevant suppliers are -

The Delabole Slate Company Limited
Pengelly
Delabole
PL33 9AZ
Telephone : 01840 212242

Facsimile : 01840 212948

L Uglow & Sons
Trecarne Farm
Delabole
PL33 9DG
Telephone : 01840 770579

Facsimile : 01840 770579

Mill Hill Quarries Limited
Mill Hill
Tavistock
PL19 8NP
Telephone : 01822 612786

Facsimile : 01822 616267

Lantoom Limited
Cloak Park
Roseland
Liskeard
PL14 3PQ
Telephone : 01579 342708/320577

Facsimile : 01579 342708

Burlington Slate Limited
Cavendish House
Kirkby-in-Furness
LA17 7UN
Telephone : 01229 889661

Facsimile : 01229 889466



Kirkstone Quarries Limited
Skelwith Bridge
Ambleside
LA22 9NN
Telephone : 01539 433296

Facsimile : 01539 434006

High Fell Greenslate Company Limited
Stone Lea
Spark Bridge
Ulverston
LA12 8BT
Telephone : 01539 437381

Honister Slate Mine Limited
Honister Pass
Borrowdale
Keswick
CA12 5XN
Telephone : 017687 77230

Facsimile : 017687 77958

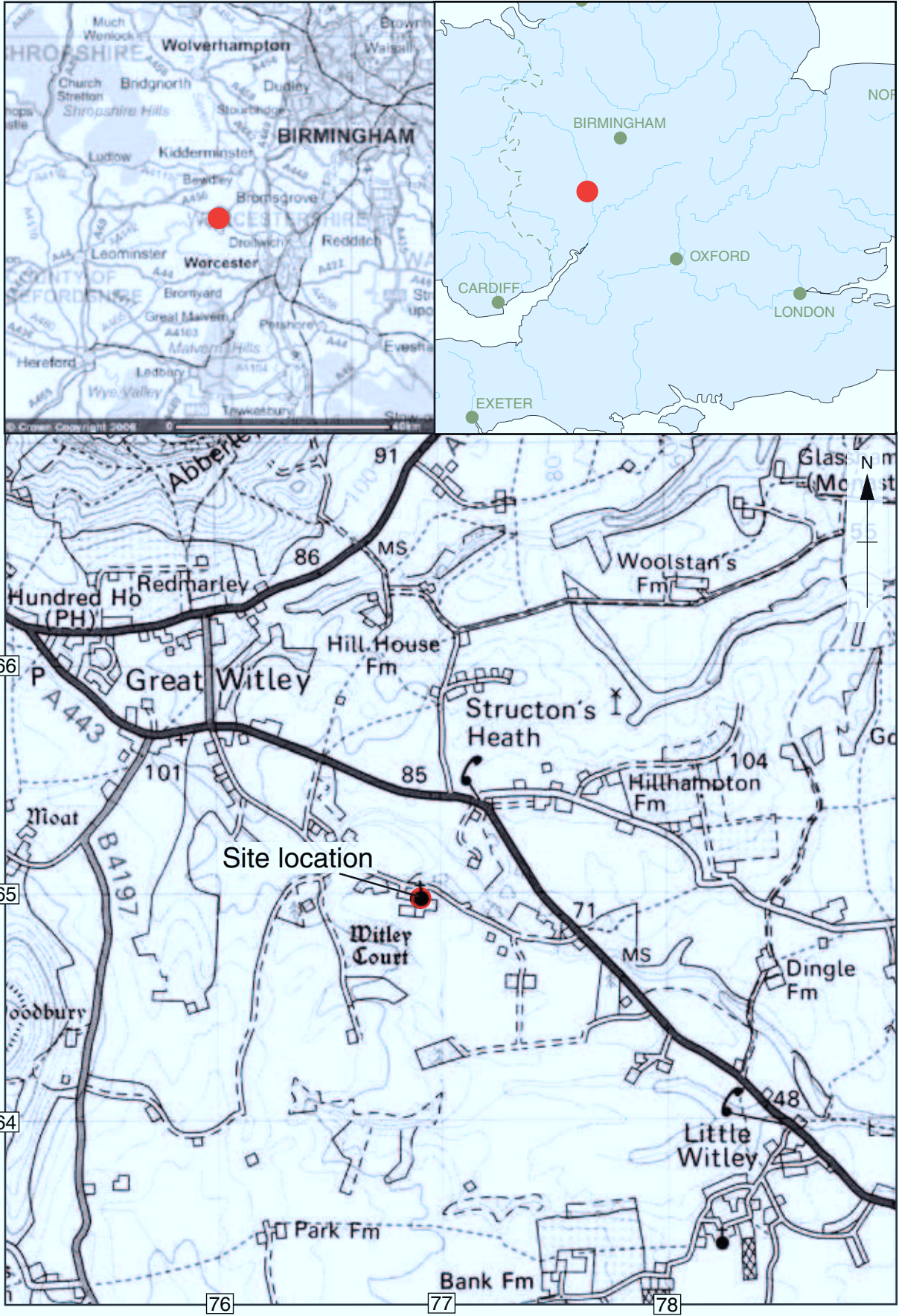
Conclusions

The aggregate assemblage found in the excavation in the East Parterre garden, is similar to that found in the south garden. A white colour to the gardens was supplied by the use of milky quartz, whereas a reddish colour was apparently achieved by the use of fragments of red ceramic material. It appears likely that slate was used as an edging material, stone from slate quarries both in Devon and the Lake District having been identified in the southern parterre garden; the material from the east garden appears to be similar although a third type of slate-like material was also identified. Whether or not the slate was brought is especially for the garden is not known, the fact that it came from two sources being surprising. It is possible that broken material from the roofs of Witley Court were used for the edging. Fragments of magnesian limestone and Bath stone are believed to have been derived from garden features. Stone and flint pebbles, together with fragments of the local red sandstone, are considered to be components of the local soil, although some of this may have been transported from elsewhere on the estate to establish the gardens. Although quartz will have to be sourced overseas, or from an existing importer, slate from both the south-west and north of England can still be purchased commercially.



APPENDIX B. REFERENCES AND BIBLIOGRAPHY

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Scale 1:25,000

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Figure 1: Site location

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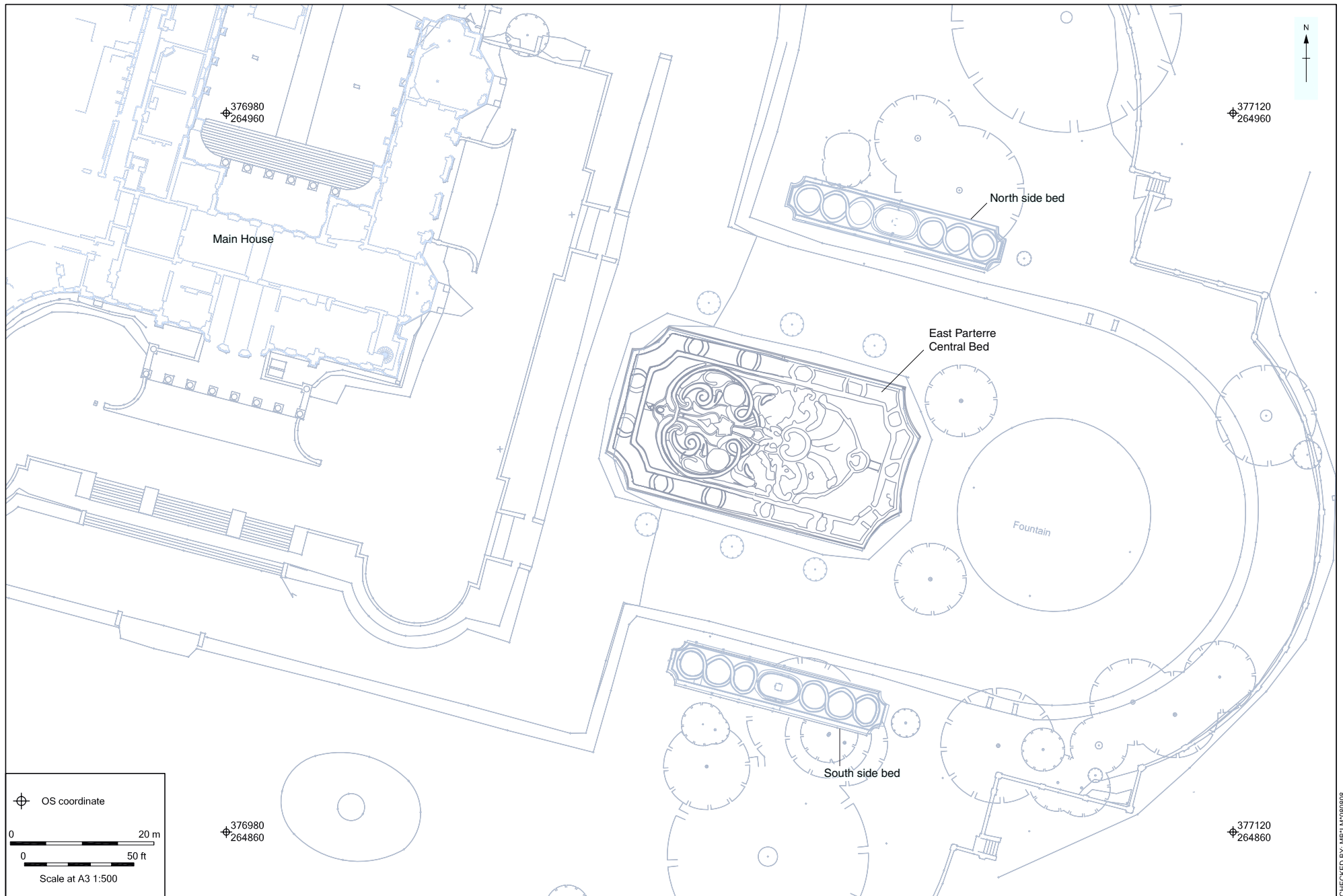


Figure 2: Witley Court East parterre garden: location and general layout

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Figure 5: Witley Court East Parterre garden: drainage and other non-design features

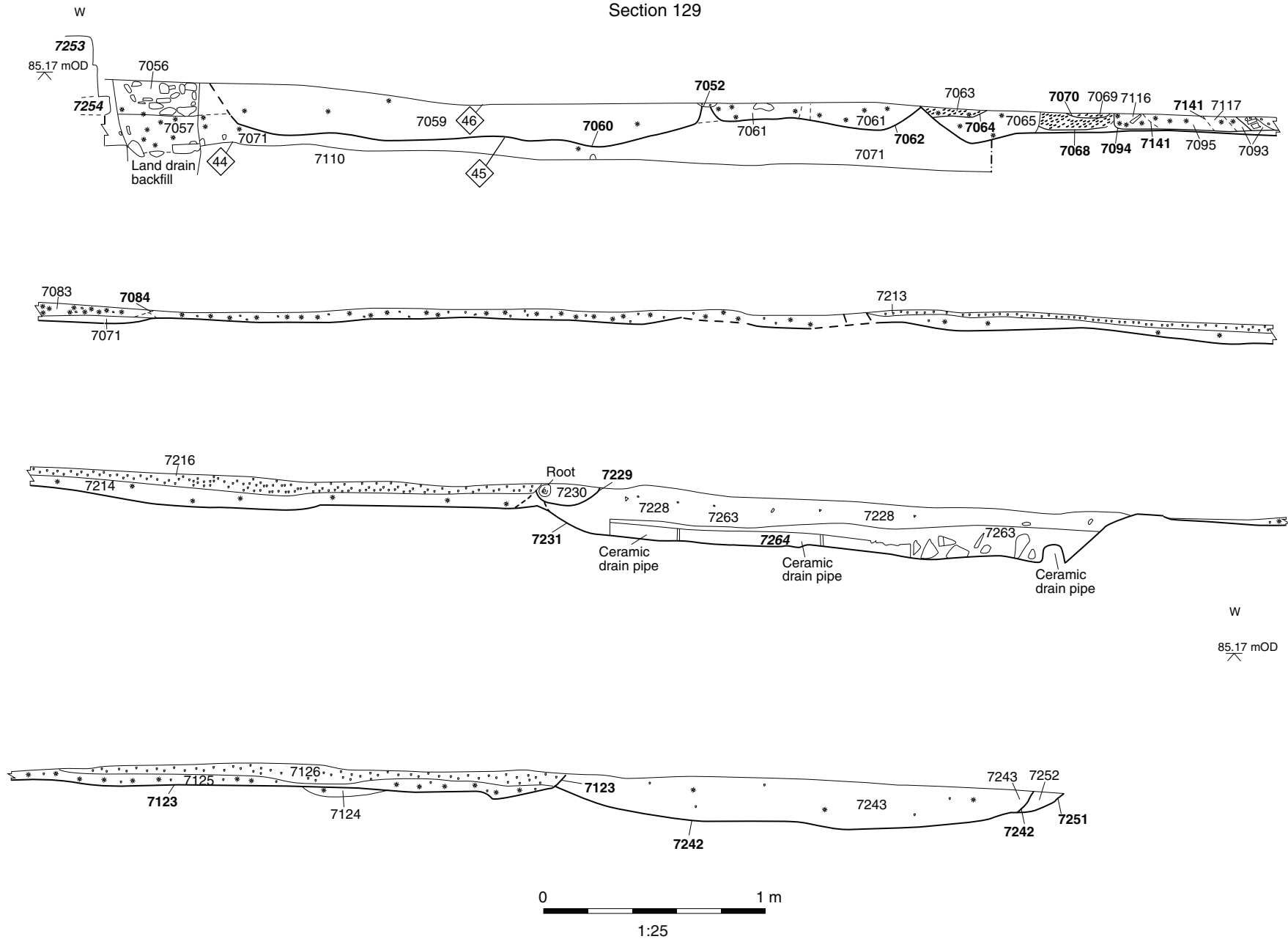


Figure 6 : Witley Court East Parterre Garden: Main east-west section through the centre bed

Section 120

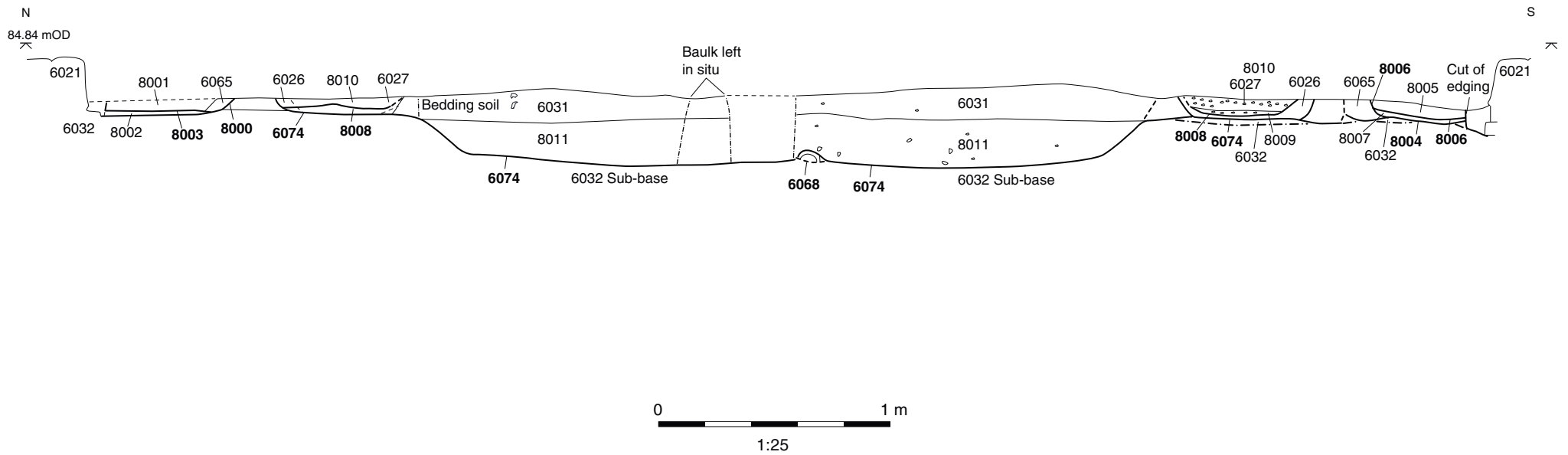
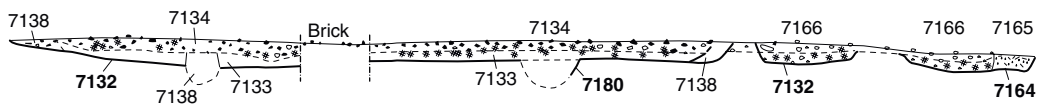


Figure 8: Witley Court East Parterre Garden: N-S section through N side bed

Section 121



KEY	
*	Charcoal/ coal
•	White spa
◦	Stone/ mixed gravel
·	Pea gravel
∖	Slate
-	CBM

Figure 9: Witley Court East Parterre Garden: S facing section through feature 7132

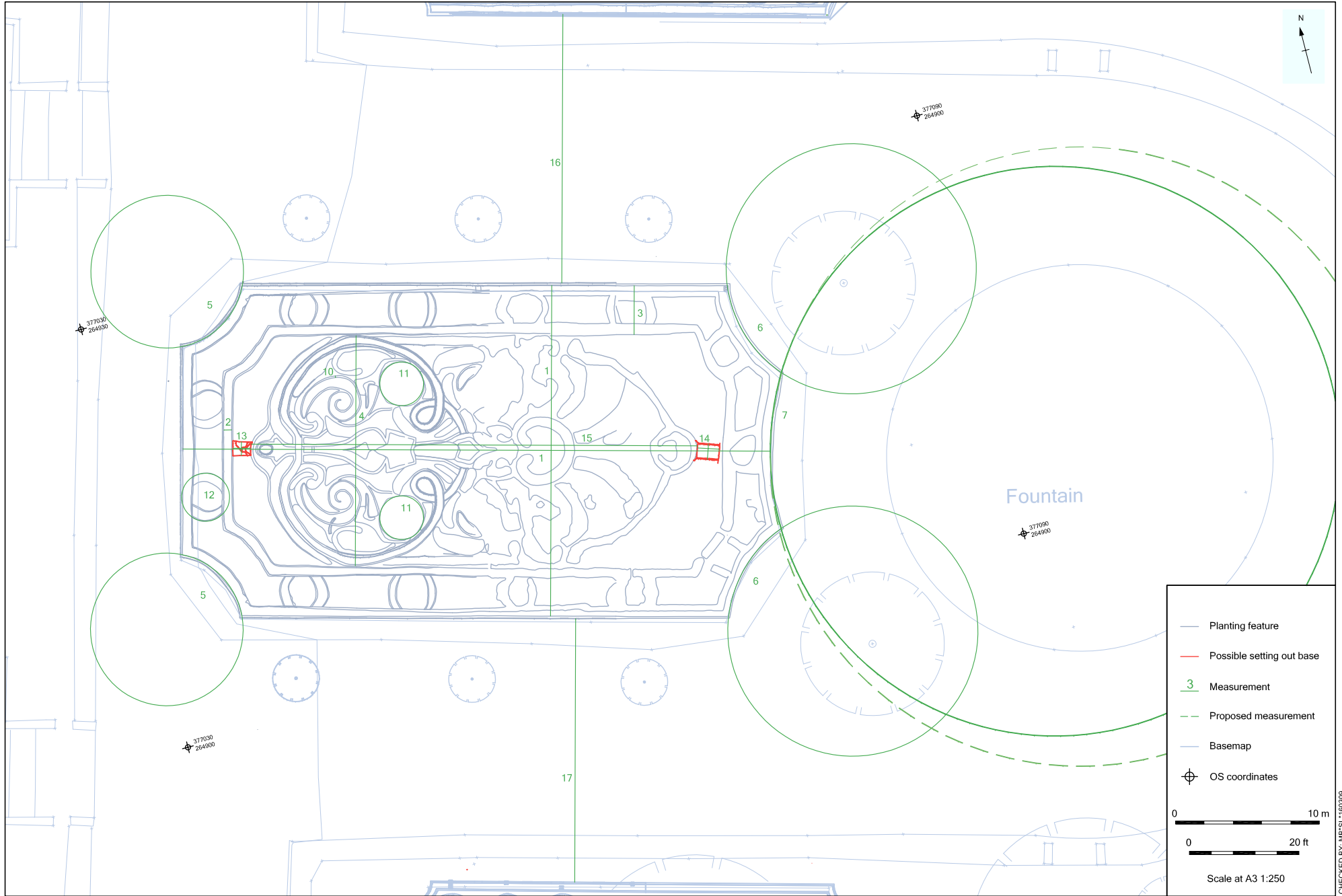


Figure 10 : Witley Court East Parterre garden: measurements of key features



Plate 1: Witley Court East Parterre Garden: Aerial view of centre bed after initial cleaning



Plate 2: Witley Court East Parterre Garden: Panoramic view of the excavated centre bed (looking east)



Plate 3: Witley Court East Parterre Garden: View of centre bed features



Plate 4: Witley Court East Parterre Garden: Work in progress on the centre bed



Plate 5: Witley Court East Parterre Garden: A balloon-mounted digital camera, as used to acquire rectified digital photographs



Plate 6: Witley Court East Parterre Garden: The SW corner of the centre bed, under excavation



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