HISTORIC ENGLAND

EXCAVATION AND ANALYSIS

Phases 2 and 3 Evaluation of the grounds at Marble Hill House, Twickenham, London Borough of Richmond

Site Archive Completion Report

Compiled by Andrew Valdez-Tullett

With contributions from Alice Forward, Kevin Wooldridge, Dan Miller

Title	Site Archive Completion Report
Authors	Andrew Valdez-Tullett
Contributors	Alice Forward, Kevin Wooldridge, Dan Miller
Origination date	October 2017
Date of last revision	
Version	1.0
Status	Draft
Summary of changes	
File Name and Location	S:\oldshare\Projects\Pr7382_MarbleHillHouseExcavation\Investigation\SiteArchiveCompletion\SiteArchiveCompletionReport\HE7382_SAC_Report_Phase 2 v1.0
Circulation	Project team

Table of Contents

Table of Contents 2

Table of Figures 5

Table of Tables 10

1. Introduction 11

2 Summary account of the structural record 13

The structural archive 13

Trench Narratives 14

Trench Locations 14

Phase 2 16

Trench 3 (SSD10003) – Grotto 16

Stratigraphic narrative 17

Material culture 24

Interpretation 27

Trench 4 (SSD10004) – Grotto 30

Stratigraphic Narrative 33

Material culture 36

Interpretation 38

Trench 5 (SSD10005) – Ninepin Alley 40

Stratigraphic Narrative 42

Material culture 48

Interpretation 50

Trench 7 (SSD10007) - Ice House Seat 53

Stratigraphic Narrative 55

Material culture 60

Interpretation 61

Trench 8 (SSD10008) – Grotto 63

Stratigraphic narrative 64
Material culture 70
Interpretation 71
Trench 9 (SSD10009) – Grotto 73
Stratigraphic narrative 73
Material culture 82
Interpretations 85
Phase 3 90
Trench 10 (SSD10010) – Grotto 90
Stratigraphic narrative 90
Interpretations 100
Trenches 11a and 11b (SSD10011 & 10111) – Grotto 106
Stratigraphic narrative 110
Interpretations 121
Trench 12 (SSD10012) 124
Stratigraphic narrative 127
Interpretations 136
Trench 13 (SSD10013) 139
Stratigraphic narrative 142
Interpretation 147
Trench 14 (SSD10014) 149
Stratigraphic narrative 149
Interpretations 158
Trench 15 (SSD10015) 163
Stratigraphic narrative 163
Interpretations 168
Summary 171
The grotto 171

The terrace trenches 176
3. Artefacts 177
Assessments 177
4. Conservation 183
5. Environmental Archive Statement 183
6. Tabulated quantification of the site archive 193
6.1 Record Numbers Allocated All phases 193
6.2 List of X-rays 195
6.3 Spot dating 195
6.4 Drawing Sheets Index 195
6.5 The 'paper archive' 198
6.6 Box List 198
Bibliography 198

Table of Figures

Figure 1 - Marble Hill House grounds. 12

Figure 2 – Location plan for all trenches. 15

Figure 3 - Geophysical anomalies identified by Linford et al (2016) and the locations of trenches 3, 4, 8 and 9. 17

Figure 4 - Features in trench 3 18

Figure 5 - Deposits in trench 3 19

Figure 6 - Harris matrix for trench 3. 20

Figure 7 - South facing section across the fills of grotto hollow [93017] trench 3. Scales 1m. Photo 7193. 21

Figure 8 – Section 23004. East facing section trench 3. 22

Figure 9 – Section 23003. South facing section trench 3. 22

Figure 10- Planting features [93013] (left) and [93015] (right) in the base of [93017]. Scale 1m. Photo 7153. 23

Figure 11 – Phased Harris matrix for trench 3. 27

Figure 12 - Gravel pathway (93003) trench 3. Scales 1m. Photo 7030. 28

Figure 13 Plan dated 1906 showing a hollow in the area of the grotto. 29

Figure 14 - features in trench 4 31

Figure 15 - deposits in trench 4 32

Figure 16– Harris matrix for trench 4 33

Figure 17 – Section 24001. West facing section trench 4. 34

Figure 18 - Bedding trenches [94014] and [94013]. North west facing section trench 4. Scales 2x1m and 1x2m. Photo 7534. 35

Figure 19 - Cut [94008]. North west facing section trench 4. Scale 2m. Photo 7229. 36

Figure 20 - phased Harris matrix for Trench 4 38

Figure 21 - trench 5 location. 41

Figure 22 - features in trench 5. 42

Figure 23 - deposits in trench 5. 43

Figure 24 – Harris matrix for Trench 5. 44

Figure 25 – Trench 5 sondage east facing section. Scales 1m. Photo 7524. 45

Figure 26 – Section 25005. East facing section trench 5 showing cut across [95006], part 1. Sheet 13. 46

Figure 27– Section 25005. East facing section trench 5 showing cut across [95006] and sondage, part 2. Sheet 14. 46

Figure 28 – Deposit (95014), the clay fill of [95006]. Scales 1m and 2m. Photo 7514. 47

Figure 29 – Phased Harris matrix for Trench 5. 50

Figure 30 – Compressed gravel features [95002] (top) and [95004] (centre). Scales 1m. Photo 7506. 51

Figure 31 – Trench 5 post excavation. Shallow, oval bowl shaped feature [95006] constituting the bowling alley playing area. Scales 1m and 2m. Photo 7519. 52

Figure 32 - trench 7 location. 54

Figure 33 - trench 7 features. 55

Figure 34 - trench 7 deposits. 56

Figure 35 – Harris matrix for trench 7. 57

Figure 36 – Section 27001. South, east and north facing section from trench 7. Sheet 41. 57

Figure 37 – pre-excavation photo of fill (97004) (dark deposit near scales) showing its localized nature. Scales 0.5m. Photo 7553. 58

Figure 38 – North facing section of [97009]. Scales 0.5m and 1m. Photo 7570. 59

Figure 39 – South facing section of [97009]. Scales 0.5m and 1m. Photo 7563. 59

Figure 40 – Phased Harris matrix for trench 7. 61

Figure 41 - Harris matrix trench 8 64

Figure 42 - trench 8 features. 65

Figure 43 - trench 8 deposits. 66

Figure 44 – Section 28001. South facing section from trench 8. 67

Figure 45 – Field drain (98006) in trench 8. Scales 1m. Photo 7286. 67

Figure 46 – The s-profiled roof tile structure with the field drain (98006). Scale 0.5m. Photo 7287. 68

Figure 47 – West facing section showing the buried soil (98004) overlying the field drain (98006). No evidence of cut [98007] can be identified in the section. Scale 0.5m. Photo 7290. 69

Figure 48 – Plan 2801. Field drain in trench 8. Sheet 47. 69

Figure 49 – Phased Harris matrix for trench 8. 71

Figure 50 - Harris matrix trench 9. 74

Figure 51 - trench 9 features. 75

Figure 52 - trench 9 deposits. 76

Figure 53 – East facing section across [99037] in trench 9. Scales 2m. Photo 7169. 79

Figure 54 – South facing section across [99037] in trench 9. Scales 1m and 2m. Photo 7172. 79

Figure 55 – Section 29001. East facing section of [99037]. Sheet 26. 80

Figure 56 – Section 29001. South facing section of [99037]. Sheet 27. 80

Figure 57– Phased Harris matrix for trench 9. 85

Figure 58 – Trench 9 post-excavation facing east. The cut for the grotto [99037] can be seen in the bottom corner. The sectioned bedding trenches can be seen in parallel rows. Scales 1m. Photo 7301. 86

Figure 59 – southern edge of [99037] showing the natural bands of sand and gravel and the cut through the end of bedding trenches [99046] and [99049] (top). Scales 2m. Photo 7173.87

Figure 60 – Features in trench 10. 91

Figure 61 – Deposits in trench 10. 92

Figure 62 – Harris matrix trench 10. 93

Figure 63 – Calcium carbonate inclusions within (90030). Photograph 8373. 94

Figure 64- East facing section 20051. 95

Figure 65 – south facing section 20053. 96

Figure 66 – North facing section 20056. 97

Figure 67 – south facing section 20055 and west facing section 20054. 98

Figure 68 – phased Harris matrix for trench 10. 100

Figure 69 – Feature [90016] and the southern part of section 20051. Scales 2 x 1m. Photograph 8350. 101

Figure 70 – Bedding trenches [90027] and [90029]. Scales 2m and 0.5m. Photograph 8301. 103

Figure 71 – Planting feature [90012]. Scale 1m. Photograph 8159. 103

Figure 72 - Linear feature [90014] running across the trench above concrete post setting (90017). Scales 2 x 1m. Photograph 8156. 104

Figure 73 – Features in trench 11. 107

Figure 74 – Deposits in trench 11. 108

Figure 75- Matrix for trench 11. 109

Figure 76 - Feature [90157]. Photo 8333. 110

Figure 77 - Feature [90151]. Photo 8337. 111

Figure 78- Large cut feature [90107] with its single fill (90109). West facing section from trench 11a. Photo 8072. 112

Figure 79 - Context (90113) illustrating it's a very pale brown colour and frequent fragments of mortar and CaCO flecks. 113

Figure 80- Feature [90123]. West facing section of trench 11a. Photo 8105. 115

Figure 81- Extract of the Graphical summary of significant magnetometer and earth resistance anomalies, December 2015 showing anomaly r14. 116

Figure 82– Feature [90152] and its stoneless fills (90147) and (90148) (photo 8287). 117

Figure 83 - Phased matrix for trench 11. 121

Figure 84 – Planned location of trench 12 in relation to 1752 plan. 125

Figure 85 – Actual layout of trench 12 as positioned to avoid trees, tree roots and tree throws. 126

Figure 86 – Features in trench 12. 127

Figure 87 – Deposits in trench 12. 128

Figure 88 - Matrix for trench 12. 129

Figure 89 – The drain and wall facing south. Scale 1m. Photo 8380. 131

Figure 90 – Barrel hoop and tree throw [90202] facing south west. Scales 1m and 2m. Photo 8184. 132

Figure 91 – Gravel and rubble deposit (90207) and tree throw [90204] facing northeast. Scales 1m and 2m. Photo 8202. 133

Figure 92 – Phased matrix for trench 12. 136

Figure 93 – location plan for trenches 13, 14 and 15 across the central terraces. 138

Figure 94 – Features in trench 13. 140

Figure 95 – Deposits in trench 13. 141

Figure 96- Harris matrix Trench 13. 142

Figure 97 – section 20351. East facing section trench 13. 143

Figure 98 – Section 20354. East facing section trench 13. 144

Figure 99- Trench 13 facing north showing drain [90303] (left hand side). Photo 8022. 145

Figure 100- Features [90303] and [90310]. West facing section trench 13. Photo 8035. 146

Figure 101- Phased Harris matrix trench 13. 147

Figure 102 – Features in trench 14. 150

Figure 103 – Deposits in trench 14. 151

Figure 104 – Harris matrix for trench 14. 152

Figure 105 – Section 20463. West facing section trench 14. 153

Figure 106 – section 20451. East facing section trench 14. 154

Figure 107 – Section 20452. South facing section trench 14. 154

Figure 108 – ditch [90414] showing post hole [90420] in its base. Photo 8050. 155

Figure 109 – Part excavated feature [90416]. Photo 8120. 156

Figure 110 – Phased Harris Matrix for trench 14. 159

Figure 111 – Post-hole [90418] with possible post-pipe. Photo 8056. 160

Figure 112 – south facing section trench 14. Presumed landscaping deposit (90402) is the second layer from the top, sitting on top of the gravel layers of the drain backfill. Photo 8019. 162

Figure 113 – east facing section of trench 14. Presumed landscaping deposit (90402) is the second layer from the top, sitting on top of the gravel layers of the drain backfill on the right-hand side. Photo 8013. 162

Figure 114 - Matrix for trench 15. 163

Figure 115 – features in trench 15. 164

Figure 116 – Deposits in trench 15. 165

Figure 117 – northern half of the east facing section from trench 15. Photo 8176. 166

Figure 118– southern half of the east facing section from trench 15. Photo 8175. 166

Figure 119 - Phased matrix for trench 15. 168

Figure 120 – Section 20361. East facing section trench 15. 169

Figure 121 – Section 20362. West facing section of trench 15. 169

Figure 122 - Phase 2 and 3 trenches around the grotto 172

Table of Tables

Table 1 – index of material culture recovered from trench 3. 24

Table 2 - index for material culture recovered from trench 4. 36

Table 3 - index for material culture recovered from trench 5. 48

Table 4 - index for material culture recovered from trench 7. 60

Table 5 - index for material culture recovered from trench 8. 70

Table 6 - index for material culture recovered from trench 9. 82

Table 7 – Possible of combined phasing of the grotto trenches. 175

Table 8 showing the list of record numbers to be used for allocation off-site 193

Table 10 showing the list of drawings created during excavation 195

1. Introduction

An archaeological evaluation was undertaken by Historic England's Excavation and Analysis team on the site of Marble Hill House, London Borough of Richmond. The evaluation was part of a wider Marble Hill House Landscape Assessment which will contribute to the re-instatement of the 18th-century gardens as well as further interpretive work in the house (Alexander and Carpenter 2017). A first phase of fieldwork had previously been conducted in the area of the former east wing of the house in November 2016 (Wooldridge and Forward 2016). These excavations formed a second phase of work with six trenches placed around the Pleasure Grounds section of the park. In particular they were tasked with revealing elements present on a plan thought to date from 1752. A full list of Project Aims and Objectives and the evaluation Method Statement can be found in the Project Designs (Valdez-Tullett 2017a, 2017b) at:

S:\oldshare\Projects\Pr7382-MarbleHillHouseExcavation\02-ProjectManagement\ProjectDesign\

The second phase of fieldwork was carried out between 5th and 31st March 2017. The excavation followed an extensive survey of documentary and cartographic sources, geophysical and geomorphological survey of the grounds. These were used to locate anomalies around the grotto and in the area where a ninepin bowling alley was thought to have existed. A further trench tasked with locating a former icehouse seat was placed with reference to a geomorphological survey but no geophysical survey results were available due to problems of access due to heavy ground vegetation cover.

The third phase of fieldwork was undertaken between the 7th August and the 1st September 2017. A further six trenches were excavated, two to the north and west of the grotto, one tasked at identifying the arbor and three looking at the terracing.

The project archive – physical and digital - is currently located at Fort Cumberland (see 'location of digital data' within section 2).

The archive will be deposited with English Heritage collections at Wrest Park. Copies of reports will also be sent to project partners listed in the Project Design. All data created will be Historic England copyright.

This document includes provisionally phased matrices and interpretative context indexes which integrate the evidence to provide specialists with information on the site sequence, phasing, dating and residuality and contamination in a useful and accessible format. Areas which are key, stratigraphically or otherwise, to the understanding and phasing of the site are identified.

Figure 1 - Marble Hill House grounds.

2 Summary account of the structural record

The structural archive

All context records were entered into the project database (see 'location of digital data' below) and checked on site. Context sketches, all site drawings and the working and trench matrices were scanned and imported into the database.

Survey data is stored in the project database. Survey stations were established using the GPS, and no permanent points were left *in situ*. The site survey book contains handwritten logs of the daily survey work.

All project photography was digital, and the photographs have been imported into the project database. All project photographs have been given site-level metadata using BreezeBrowser. The photograph descriptions and relationships are in the project database.

Interpretative information: Phases and Structural Groups have been created in the project database where appropriate. Matrices for each trench are included below and available at:

S:\oldshare\Projects\Pr7382 MarbleHillHouseExcavation\04-Investigation\Images\Matrixes

Location of the digital data
The Intrasis database can be found in I:\Database\Pr7382MarHil
A zipped back-up file of the Intrasis database is included in the folder
All other digital files are in the appropriate locations in the project folder S:\oldshare\Projects\ Pr7382 MarbleHillHouseExcavation
The Record Numbers Used Form and Drawing Sheet Index are Sections 6.1 and 6.4 of this report

Accession of the physical records is being arranged with Archaeological Archives (21/11/16). A list of the paper records it is currently intended to retain and a box list form Sections 6.5 & 6.6 below.

Trench Narratives

Trench Locations

During Phase Two, four trenches (3, 4, 8 and 9) were placed around the grotto targeting anomalies identified through geophysical survey and thought to represent elements of a path network visible on the 1752 plan. One trench (5) investigated the area of a ninepin bowling alley and the last trench (7) was placed in an area of woodland to the south of the icehouse to hunt for the ice house seat. A further trench (6) originally planned to investigate the arbour was not opened as permission to dig within the wooded areas of the grounds was received late and insufficient time was available for its excavation. This delay in permissions also resulted in trench 7 being scaled back in size.

For Phase Three trenches 10, 11, 12 from the original plan were excavated with trenches 13 and 14 added the week before the start of excavations and trench 15 added during the excavation. Trenches 10 and 11 were positioned to the north and west of the grotto to continue the investigations started in Phase Two. Trench 12 targeted the north east quadrant of the arbour. Trenches 13, 14 and 15 were positioned to investigate the profile of the terrace.

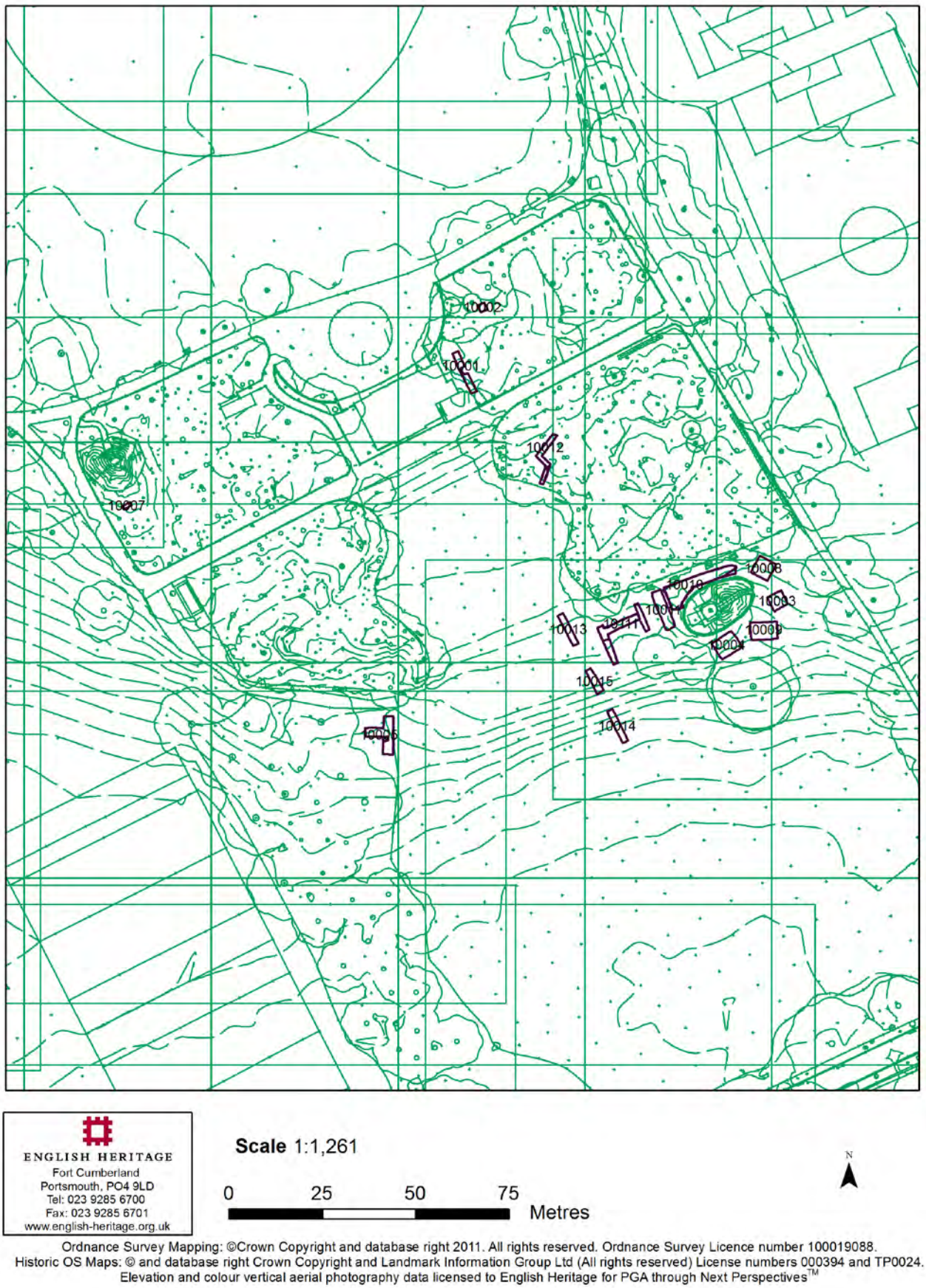


Figure 2 – Location plan for all trenches.

Initial consideration of the context record suggests that the evaluation produced sufficient evidence to predominantly meet the project objectives. A summary report of the excavations follows which includes

descriptions of each trench (Section 2.2 below), and a tabulated quantification of the context record, site photographs and drawings (section 6.1).

Phase 2

This section details the stratigraphy excavated in each trench followed by a table of material culture recovered from the trench and an interpretation of the stratigraphy.

Trench 3 (SSD10003) – Grotto

SSD	10003		
Contexts	93001-93021		
Samples	53001		
Small Finds	3007, 3012, 3015, 3016		
Drawings	Sheet 3-7, 11, 23, 24, 28-35, 38, 40	Plans 2301-2314	Section 23001-23005

Sheet #	Number of drawings on sheet	Drawing numbers
3	1	2302
4	1	2303
5	1	2304
6	1	2305
7	1	2306
11	1	2308
23	1	23005
24	1	2307
28	1	2312
29	1	2311
30	1	2310
31	1	2313
32	1	23004
33	2	23001, 23002
34	1	2309

35	1	2314
38	1	23003
40	1	2301

Figure 3 - Geophysical anomalies identified by Linford et al (2016) and the locations of trenches 3, 4, 8 and 9.

Trench 3 was one of four trenches placed around the east and south sides of the grotto. It was placed over the nexus of several linear features to the east of the current grotto's entrance. This pattern appeared to match a nodal point in gravel pathways recorded on the 1752 plan. There appeared to be some spatial variation between the 1752 plan and the initial geophysical surveys but this was thought to represent an initial 18th century surveying error. The trench measured approximately 4m by 4m and was machined to a level at which the underlying archaeology was clear.

Stratigraphic narrative

The natural geology in trench 3 was (93020), a mix of gravel and coarse sand. It had a brownish grey colour (10YR 6/2) and was identified across the entire trench. It was given several vigorous cleans to see whether it would resolve into features such as paths but it obstinately remained a natural gravel deposit that produced no finds.

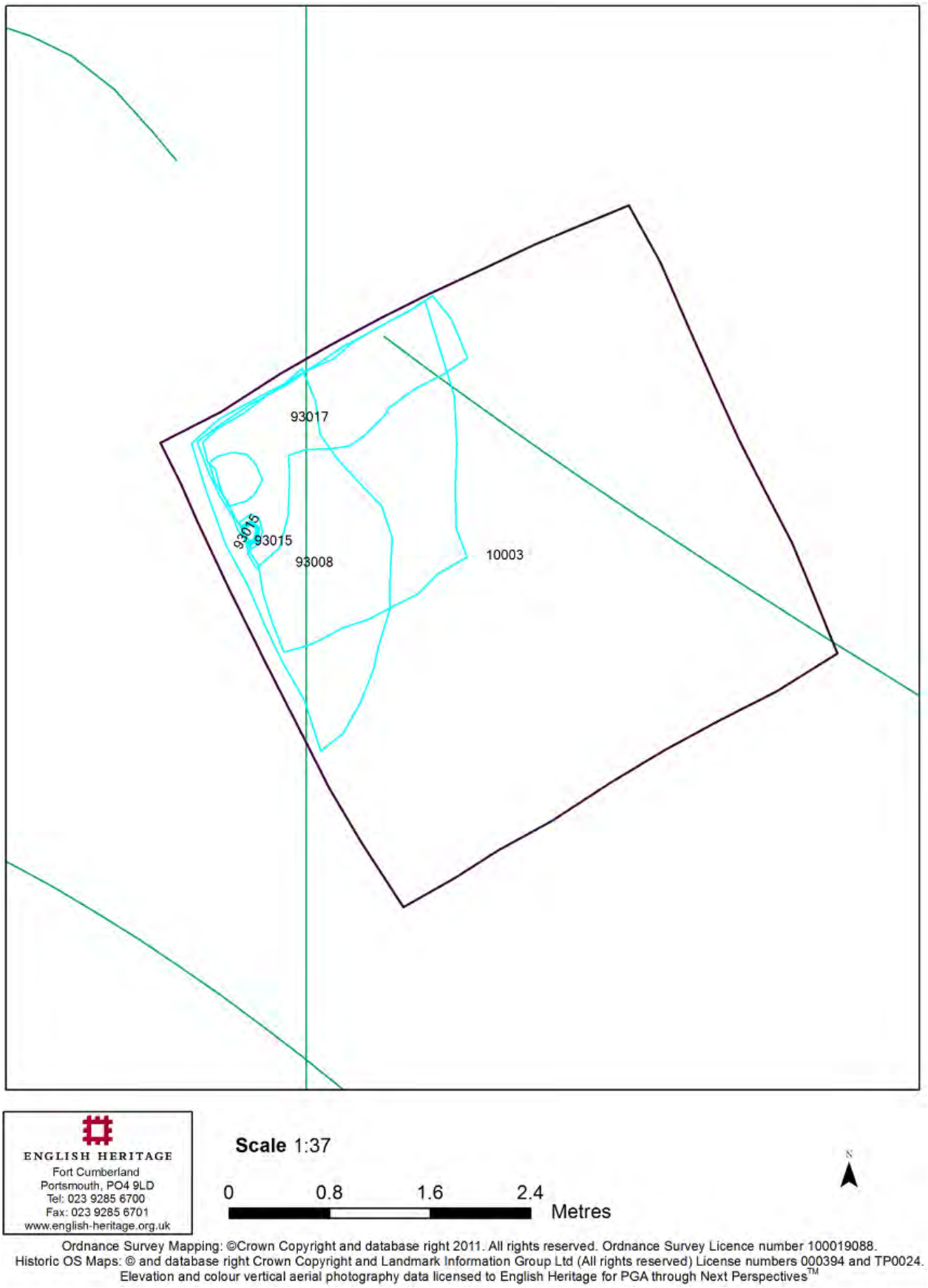


Figure 4 - Features in trench 3

Figure 5 - Deposits in trench 3

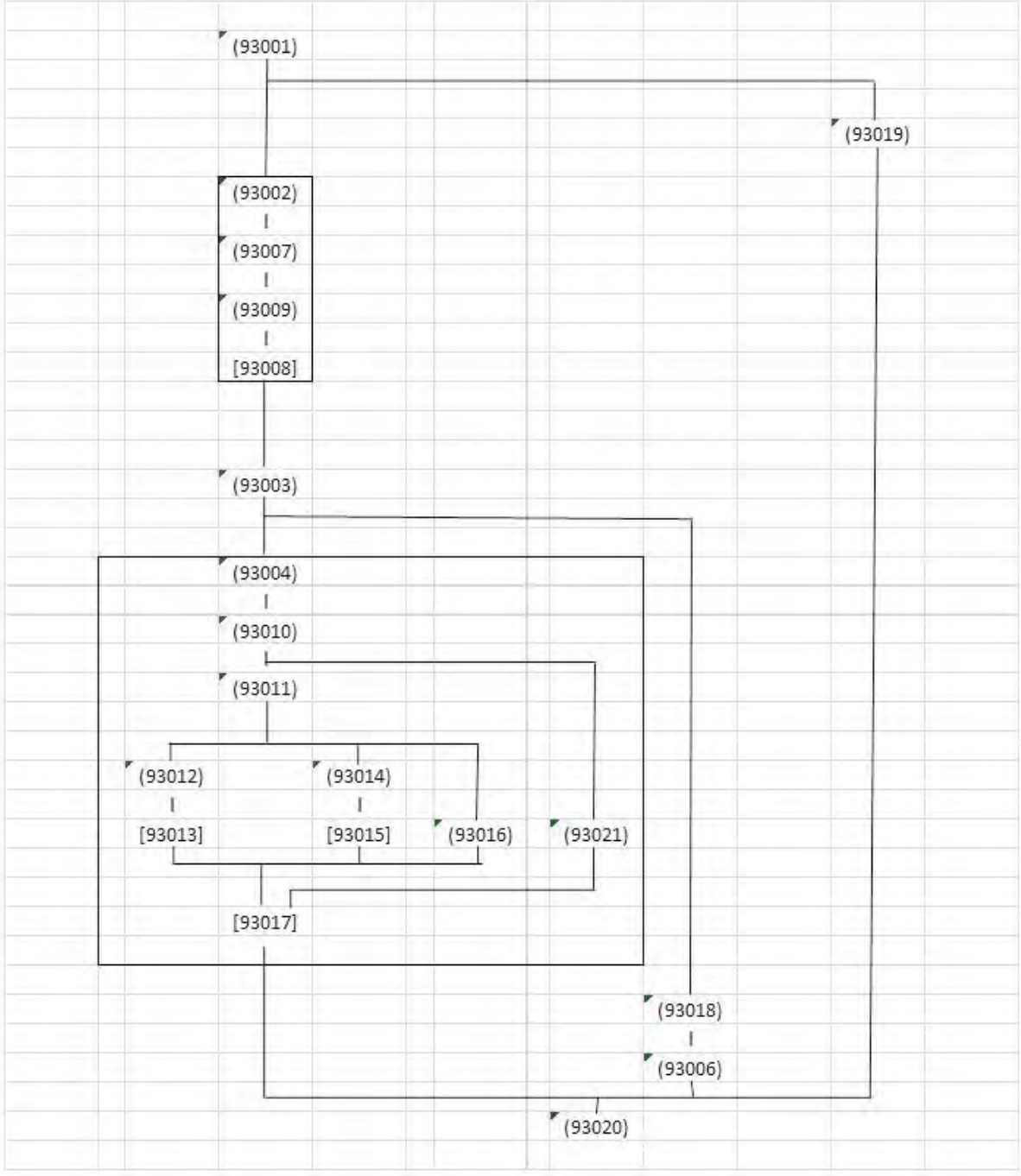


Figure 6 - Harris matrix for trench 3.

In the eastern part of the trench several layers that had been removed during the machine stripping were observed in section but could not be traced in plan. These are described from observations of the section. Immediately above the natural gravel was layer (93006). This was a 0.24m thick soily brickearth-like layer with a yellowish brown colour (10YR 5/4) and a sandy loam texture. In the south facing section it was observed underlying (93004). On top of this was layer (93018) a 0.05m thin band of gravel in a dark greyish brown matrix (10YR 4/2) with a sandy loam texture.

The main feature in trench 3 was cut [93017] situated in the north west corner, measuring 2.3m by 2.3m in the trench and extending beyond the limits of excavation to north and west. In plan it was curved with a steep side that had an irregular character possibly resulting from collapse of loose gravel at an early stage.

This sloped down to a slightly irregular concave base. It cut the natural gravel (93020) and subsoil (93006) and was filled by deposits (93003), (93004), (93016), (93010), (93011) and (93021).

Figure 7 - South facing section across the fills of grotto hollow [93017] trench 3. Scales 1m. Photo 7193.

Evidence of the collapse of the side was identified on the upper slope where gravel slump (93021) was found. This had a light brownish yellow colour with grey patches (10YR 6/6 + 10YR 2/2) with a sandy matrix. No finds were recovered. A second fill on the slope, (93016), had a more sandy clay texture with a mid-light brownish yellow colour (10YR 6/6) with small patches of dark brownish grey. It was unclear whether this had accumulated naturally or whether it was a structural dump of material to stabilize the bank but the second seems most likely. The deposit contained frequent flecks charcoal.

At the base of [93017] were two small cuts [93013] and [93015]. The largest of these was [93013]. It was roughly circular measuring 0.39m by 0.35m and cut 0.14m into the underlying gravel. The sides were steep descending to a concave base. It had a single fill (93012) which was a mid-dark yellowish brown colour (10YR 5/4) with a silt loam texture. It had occasional small gravel inclusions but also contained pieces of glass slag and ceramic building material. Just to the south of this was [93015], again roughly circular, measuring 0.24m by 0.19m and cut 0.14m into the underlying gravel. It also had steep sides and a concave flattish base. It had a single fill (93014) that was a mid-dark yellowish brown colour (10YR 5/4) with a silt loam texture. This deposit also contained small pebbles but did not produce any finds.

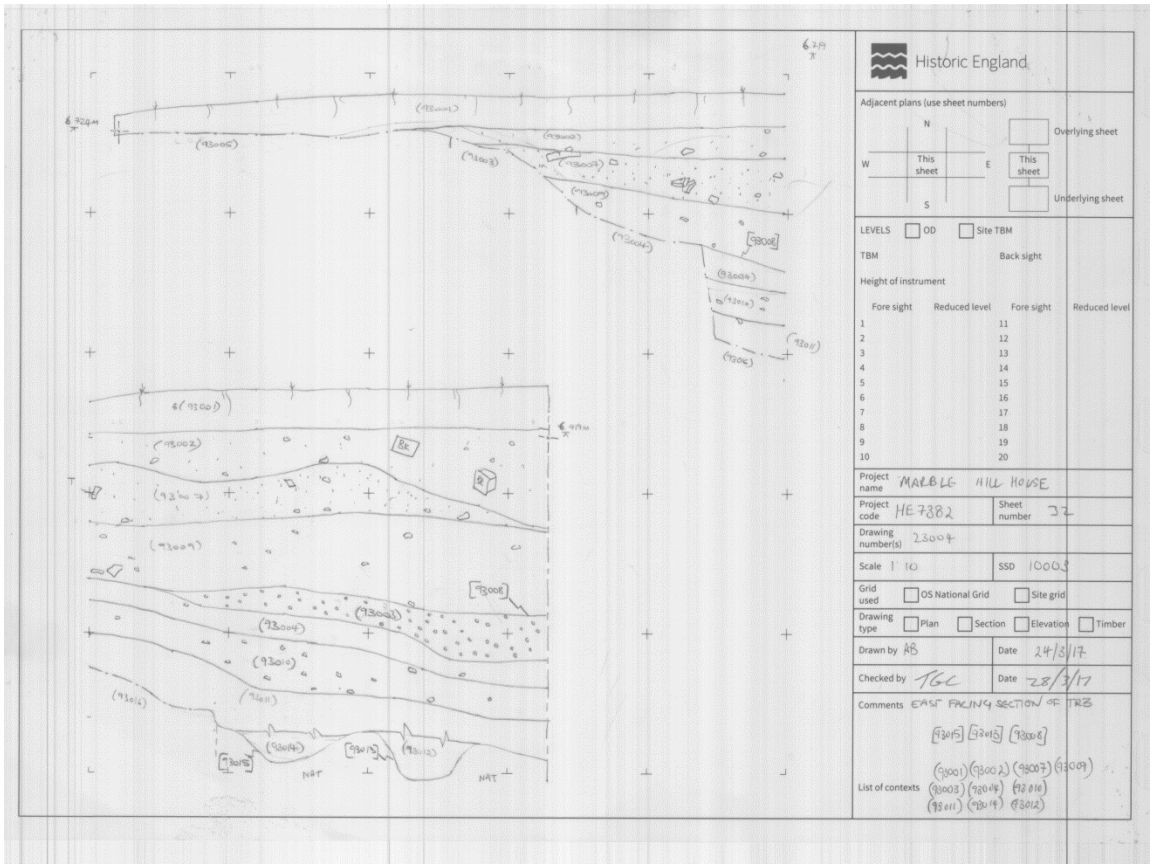


Figure 8 – Section 23004. East facing section trench 3.

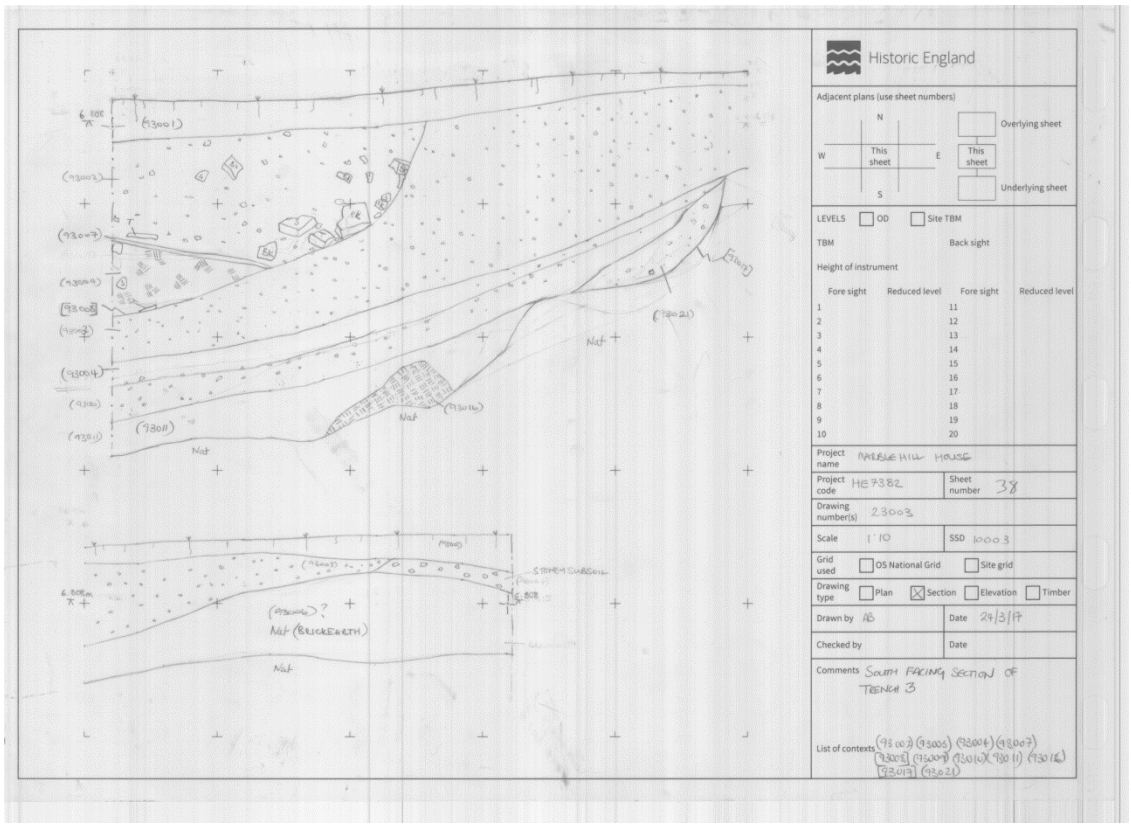


Figure 9 – Section 23003. South facing section trench 3.

Figure 10- Planting features [93013] (left) and [93015] (right) in the base of [93017]. Scale 1m. Photo 7153.

Overlying these features was deposit (93011) that was observed for an area of 1.9m by 1.7m, but that extended beyond the limits of excavation to north and west. It attained a maximum depth of 0.1m and had a mid-dark yellowish brown colour (10YR 5/4) with a silt loam texture. There were occasional flecks of charcoal throughout the deposit and moderate amounts of pinkish white mortar flecks and fragments in the upper part of the deposit. Finds included pot, metal, glass slag and ceramic building material.

Above this was deposit (93010) which covered an area of 2.05m by 1.97m but extended beyond the limits of excavation to the north and west. It had a maximum thickness of 0.18m with a brownish grey (10YR 4/2) colour and a sandy loam texture. It contained frequent quantities of gravel, especially downslope but had a more soily consistency than earlier fills. Its upper and lower horizons were very diffuse. Flecks and fragments of the pinkish white mortar were more prevalent in this layer than (93011) and finds included pot, bone and ceramic building material.

Overlying this was deposit (93004) which covered an area of 4.14m by 2.9m with a thickness of 0.1m. It was a dark greyish brown colour (10YR 3/2) with a sandy silt loam texture. This was a very distinct layer that stood out from all the others. Finds included pot, clay tobacco pipe and shell.

Deposit (93003) was situated on top of (93004). Its thickness varied from 0.64m along the edge of cut [93017] but thinned out downslope to only 0.2m. It had a sharp interface with its neighbouring deposits. It was formed by very well sorted, pale brown (10YR 6/3) gravel with a sandy matrix. In general there were very few finds from this deposit but small pieces of ceramic building material, pottery and slag were recovered.

It was originally thought by the excavators that these layers were cut by feature [93008] but it later became clear that it actually represented a significant interface in the fills of feature [93017]. Immediately above

this interface sits deposit (93009). This is a 0.15m thick, mid-reddish brown (5YR 4/4) colour deposit with a sandy clay loam texture and frequent sub angular pebbles. This clay rich layer contained an assortment of ceramic building material, medieval pottery and shells. (93007) sat upon this and at its maximum thickness (to the south) was 0.14m but thinned to a mere 0.01-0.02m at its northernmost intersection with the trench limit. It was a light yellow colour (5Y 8/8) and had a sandy texture. It had a loose compaction and was packed with ceramic building material, including brick, concrete, plaster, glazed tile and pipes, but also produced clay tobacco pipes, animal bone and glass slag. It shared a diffuse boundary with deposit (93002) above it. This had a dark brown colour with patches of light yellow and orange with a loamy sand texture. It was 0.17m thick and was packed with ceramic building material and stone but also included clay tobacco pipe, glass, post-medieval pottery, animal bone and some human bone.

In the west facing section (93006) and (93018) appeared to be interrupted or cut by a 1.35m wide deposit (93019). This was 0.3m thick and had a light orange brown colour (10YR 5/6) with a sandy silt loam texture. Inclusions included specks of charcoal and pieces of wood / roots. A gravel lens similar to (93018) but at a different depth was also noted within deposit (93019) but not allocated a separate context number.

The uppermost layer was topsoil (93001). This was up to 0.15m thick with a mid-dark brown colour (5YR 4/2) and a silty loam texture. Occasional pieces of glass, ceramics and ceramic building material were observed.

Material culture

This section covers the index for material culture recovered from trench 3. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 1 – index of material culture recovered from trench 3.

Context	Type
93001	Ceramic - Building material
93001	Ceramic - Building material
93001	Stone - Other
93001	Ceramic - Building material
93001	Ceramic - Building material
93001	Pottery - Post Medieval
93001	Clay Pipe
93001	Pottery - Medieval
93001	Clay Pipe
93001	Bone - Animal
93001	Shell - marine
93001	Pottery - Post Medieval
93001	Pottery - Medieval
93001	Glass
93002	Ceramic - Building material
93002	Coal
93002	Bone - Animal
93002	Bone - Human
93002	Pottery - Post Medieval
93002	Ceramic - Building material
93002	Ceramic - Building material

93002	Pottery - Post Medieval
93002	Clay Pipe
93002	Glass
93002	Ceramic - Building material
93002	Ceramic - Building material
93002	Ceramic - Building material
93002	Ceramic - Building material
93002	Stone - Other
93002	Ceramic - Building material
93002	Ceramic - Building material
93002	Stone - Architectural
93002	Ceramic - Building material
93002	Ceramic - Building material
93002	Stone - Other
93002	Stone - Other
93002	Stone - Other
93002	Ceramic - Building material
93002	Ceramic - Building material
93002	Stone - Other
93002	Stone - Other
93002	Ceramic - Building material
93003	Ceramic - Building material
93003	Industrial Debris - Slag and Glass
93003	Pottery - Post Medieval
93004	Ceramic - Building material
93004	Pottery - Post Medieval
93004	Pottery - Medieval
93004	Ceramic - Building material
93004	Clay Pipe
93004	Shell - marine
93004	Industrial Debris - Slag and Glass
93004	Industrial Debris - Slag and Glass
93004	Bone - Animal
93004	Industrial Debris - Slag and Glass
93004	Glass
93006	Pottery - Post Medieval
93006	Shell - marine
93006	Clay Pipe
93006	Clay Pipe
93006	Shell - marine
93007	Shell - marine
93007	Ceramic - Building material
93007	Bone - Animal
93007	Clay Pipe
93007	Pottery - Post Medieval
93007	Industrial Debris - Slag and Glass

93007	Ceramic - Building material
93007	Ceramic - Building material
93007	Mortar and Plaster
93007	Ceramic - Building material
93009	Ceramic - Building material
93009	Pottery - Medieval
93009	Shell - marine
93009	Ceramic - Building material
93009	Ceramic - Building material
93009	Ceramic - Building material
93009	Ceramic - Building material
93010	Pottery - Post Medieval
93010	Mortar and Plaster
93010	Bone - Animal
93010	Shell - marine
93010	Industrial Debris - Ceramic
93010	Ceramic - Building material
93010	Industrial Debris - Slag and Glass
93011	Ceramic - Building material
93011	Pottery - Post Medieval
93011	Clay Pipe
93011	Ceramic - Building material
93011	Shell - marine
93011	Industrial Debris - Slag and Glass
93011	Ceramic - Building material
93011	Coal
93011	Clay Pipe
93011	Industrial Debris - Slag and Glass
93011	Industrial Debris - Slag and Glass
93012	Coal
93012	Ceramic - Building material
93012	Pottery - Post Medieval
93012	Industrial Debris - Slag and Glass

Interpretation

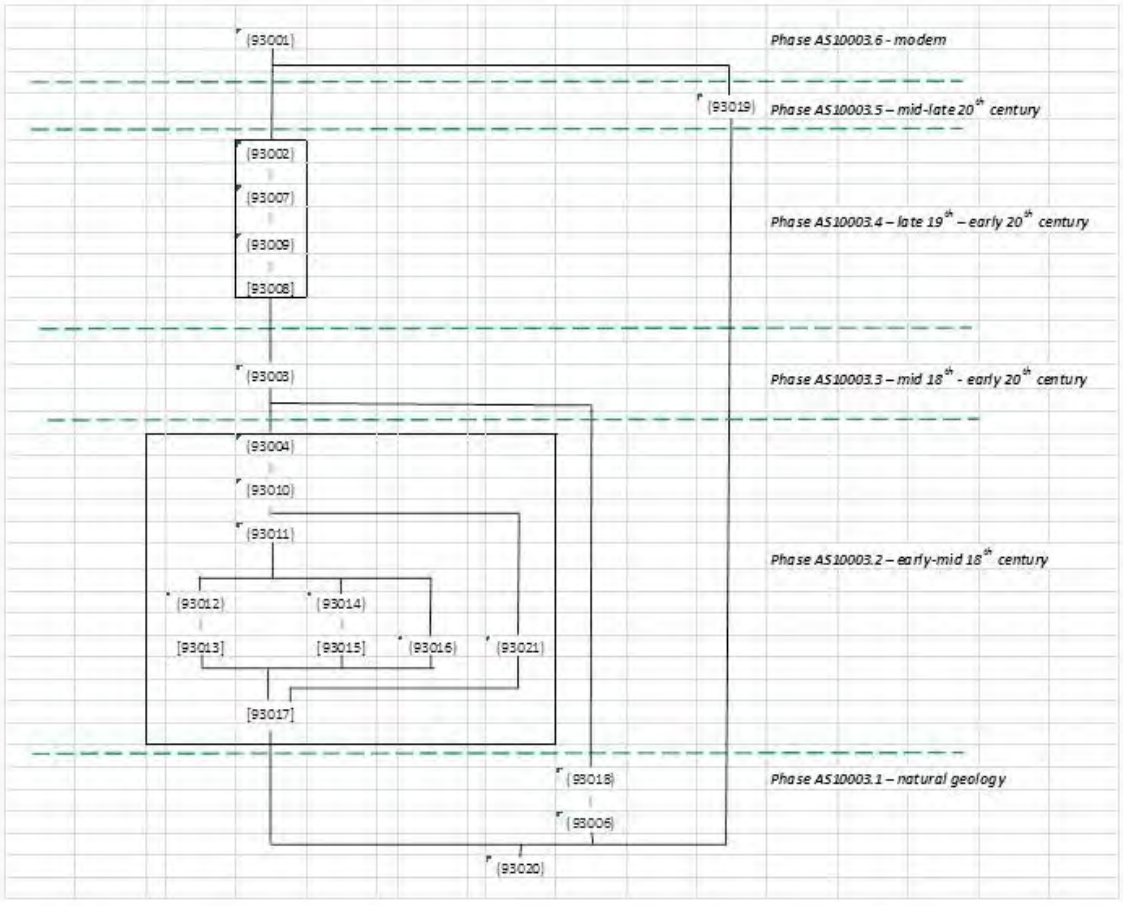


Figure 11 – Phased Harris matrix for trench 3.

Phase AS10003.1 – natural geology

The natural geology in trench 3 was gravel mixed with coarse sand (93020). Immediately above this was a mixed soily / brickearth deposit (93006) which appears to represent a natural subsoil. The thin gravel lens (93018) that formed a boundary between the subsoil and topsoil (93001) probably resulted from worm sorting.

Phase AS10003.2 – early-mid 18th century

It is hypothesised that there is a sand / gravel quarry that predates the grotto but there is no evidence for this in trench 3. [93017] represents the initial cut for the grotto. There are deposits filling this cut before there is any stabilization that can actually be associated with landscaping of the grotto itself. There is erosion of the sides indicated by gravel slump (93021). (93016) and (93011) are more clay rich deposits and it is unclear whether these are deliberate episodes of redeposition or natural silting. Based on the evidence it is thought that the most likely interpretation is that (93016) represents a deliberate attempt to stabilize the bank and that (93011) results from silting of finer material into the base of the feature, something that also seems likely for deposit (93010). The presence of anthropogenic material such as mortar, glass slag and ceramic building material in these fills implies that construction was taking place in the area and may hint at an element of trampling as these deposits were forming.

Cuts [93013] and [93015] were only observed cutting the lowest fills implying that they belong to the creation of the large pit. Their fills (93012) and (93014) are however very similar to overlying deposit

(93011). This has probably resulted in the obscuring of a cut higher in the sequence of deposits. If they were deeper features it would allow for them to function as postholes associated with grotto structures however perhaps more likely is that they represent planting holes for small shrubs or large plants.

Deposit (93004) was a very distinct band running down the slope. It is believed that this represents a thick well developed buried soil 'A' horizon and of all the layers posited as buried soils in different trenches this was the thickest. It is believed that this layer represents the original surface of the grotto after it had undergone the first phase of landscaping. The thickness of the organic component may suggest that the type of vegetation in this area had allowed a greater build-up of humic material prior to burial than in other areas. Woods would create the greatest build-up and grassland the least although in this case we are only able to suggest the qualitative relationship between these layers rather than the vegetation types (Matt Canti pers. comm.). It is possible that this area was more overgrown with vegetation at the point that it was buried.

Phase AS10003.3 – mid 18th - early 20th century

Deposit (93003) sits immediately on top of this buried soil and must represent a further development in the grotto's form and use. It appeared to represent a gravel path situated at the top of the grotto slope. At its northern end it appears to approach the grotto from the east and in the grotto cut itself it has a near vertical western margin that must have been revetted to have remained in place. It then followed a line around the lip of the grotto cut to the south west. It is much narrower along this line and had a sloped rather than vertical western margin. There was also a narrower band of this deposit covering the buried soil downslope and it is thought that the pathway's revetment must have collapsed in at least one location causing the gravel to cascade down the slope.

Figure 12 - Gravel pathway (93003) trench 3. Scales 1m. Photo 7030.

Phase AS10003.4 – mid 19th – early 20th century

(93009) sat above the collapsed gravel pathway within the grotto cut. It is the lowest of a group of deposits that represented the deliberate backfilling of the grotto. The excavator noted that this deposit is similar to

that often used for bedding or packing around a drain structure for waterproofing or repairing. In this case it appears to be a bedding deposit for the rubble dumps of (93007) and (93002) which represents the final decommissioning of the grotto and its complete backfilling. Initial impressions of the majority of finds recovered from these latter fills appear to have a late nineteenth century date.

The OS 1st edition map of the area from 1881 does not show any evidence of the grotto suggesting that it had been fully backfilled by this time however a map dated 1906 from the Metropolitan archive appears to show a hollow. If these maps are accurate it suggests that the grotto had been backfilled by the 3rd quarter of the 19th century but that settling of the filling material and its subsidence had led to the formation of a depression. Analysis of the material recovered from this trench is hoped to help date these deposits and hence the decommissioning sequence for the grotto, as are future excavations.

Figure 13 Plan dated 1906 showing a hollow in the area of the grotto.

Phase AS10003.5 – mid-late 20th century

This phase is represented by deposit (93019). This appears to be within a feature cutting layers (93006) and (93018). A gravel lens sitting within (93019) probably results from similar soil processes as (93018). Topsoil (93001) is much thinner above (93019) than (93018) suggesting that it has had less time to form here and that (93019) is a very recent feature. As this was only observed in section as the profile dried, it is not possible to say much about its plan. It does however appear to line up with a linear feature on the geophysics that heads eastwards from the trench. It does not appear to represent a pathway but could be either a recent bedding trench or less likely a tree throw.

Phase AS10003.6 - modern

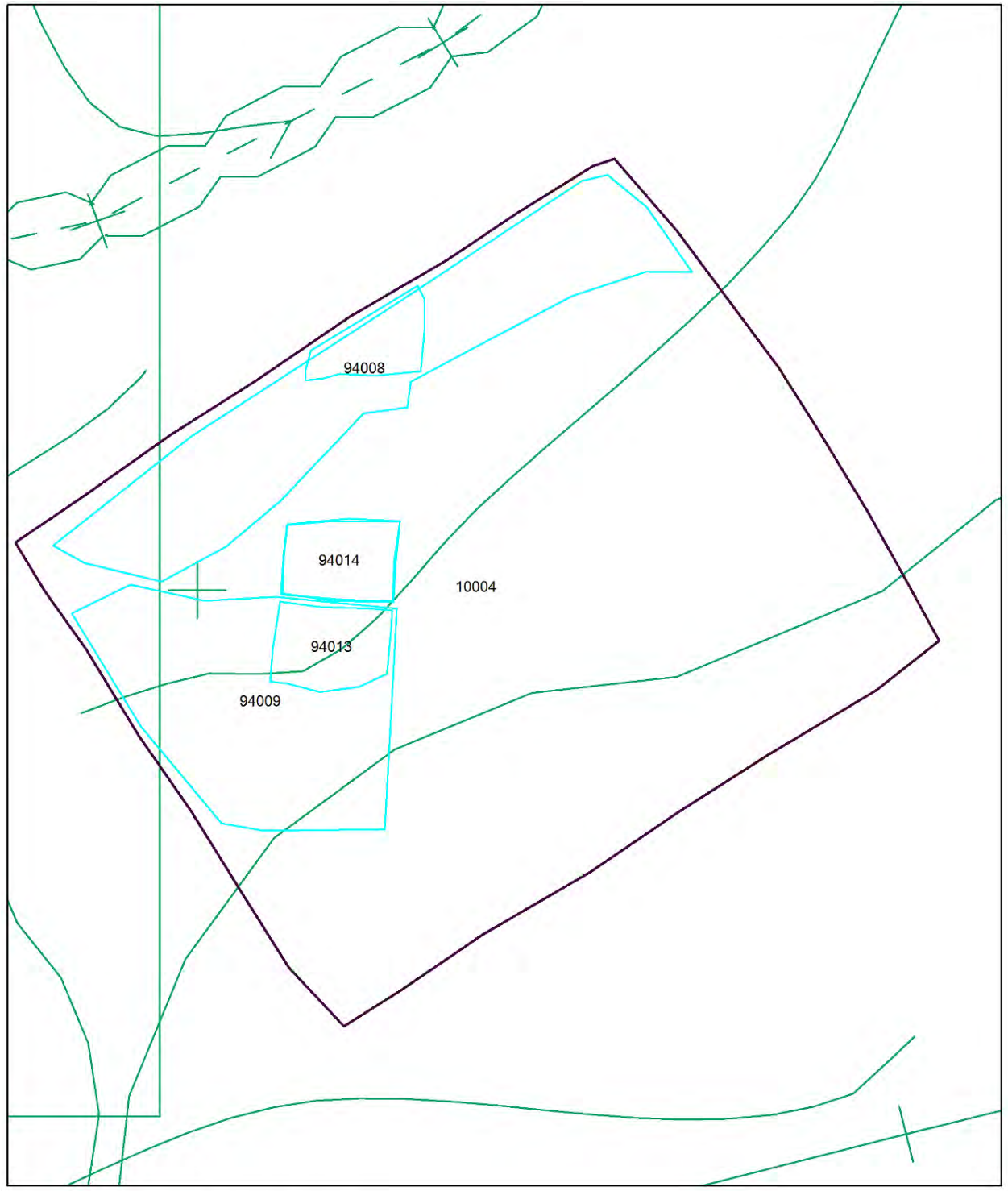
The final phase in trench 10003 was topsoil (93001) which had resulted from natural formation processes.

Trench 4 (SSD10004) – Grotto

SSD	10004		
Contexts	94001-94016		
Samples	54001-54002		
Small Finds	3005, 3006, 3014, 34001		
Drawings	Sheet 22, 36, 37, 42	Plans 2401-2402	Section 24001-24002

Sheet #	Number of drawings on sheet	Drawing numbers
22	1	2401
36	1	2402
37	1	24001
42	6	24002 (+ 29015, 29016, 29017, 29018, 29019)

Trench 4 was situated to the south of the grotto to investigate two main things. A substantial linear feature identified on the geophysical surveys running from the lawn in the centre of the Pleasure Gardens to the south of the grotto and the location of an arch-like structure present on the 1752 plan. The topsoil was stripped by machine to the point where archaeological features became visible. Due to time constraints a 1m wide, long section north-south section was cut across the trench to get a profile of the features.



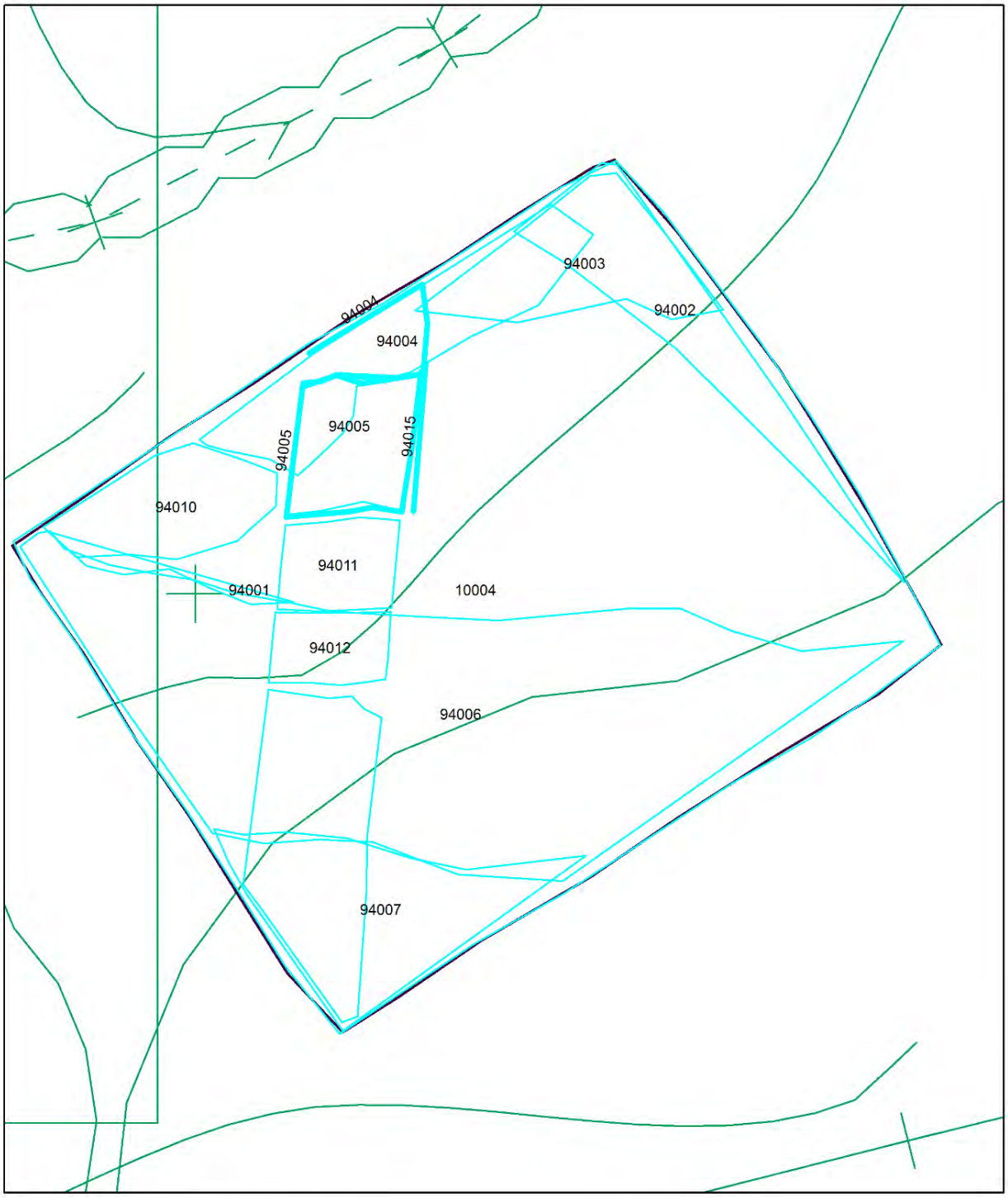
ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:45

0 1 2 3 Metres

N

Figure 14 - features in trench 4



ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:45

0 1 2 3 Metres

N

Figure 15 - deposits in trench 4

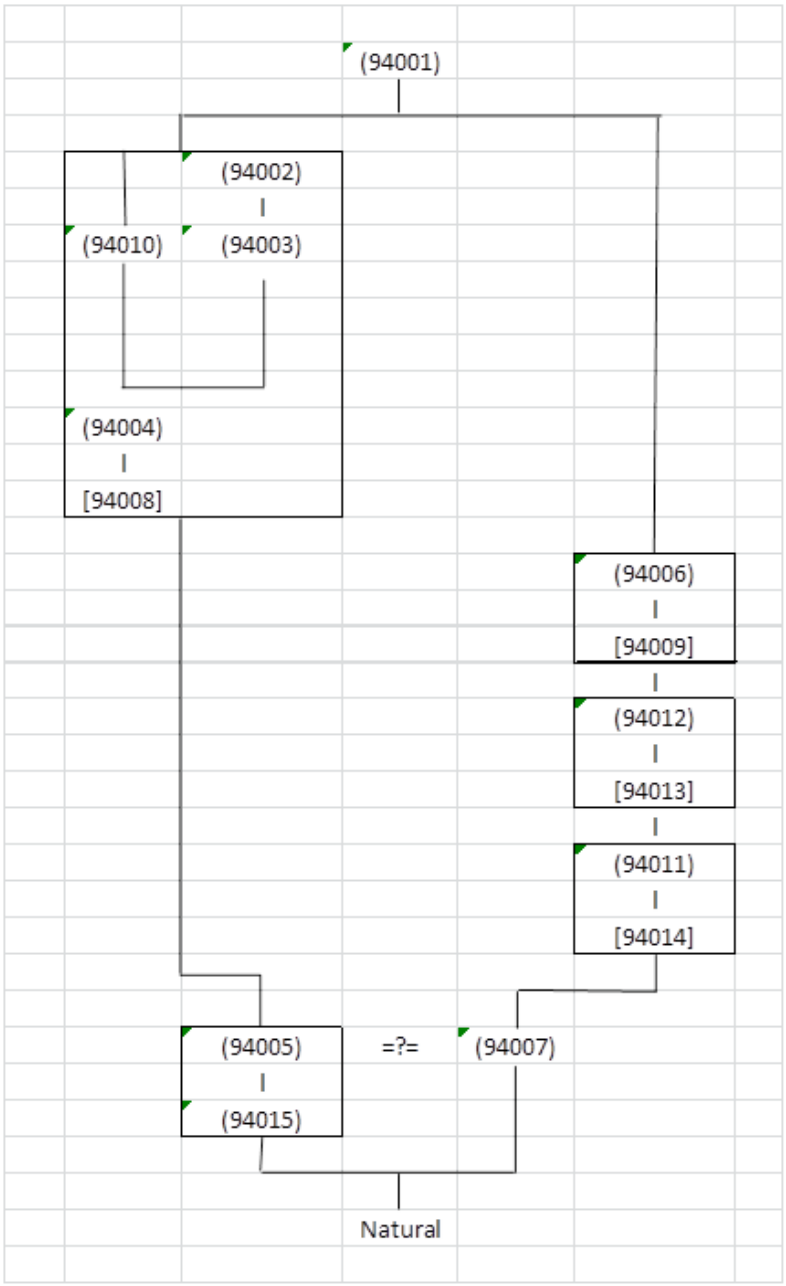


Figure 16– Harris matrix for trench 4

Stratigraphic Narrative

Natural underlying geology was variable across the site but in trench 4 it appeared to be a mix of coarse gravel and sand probably laid down in a fluvial environment.

The earliest cut feature sloped to the north and contained two fills. The first was (94015) an olive yellow (2.5Y 6/6) sand that was 0.7m at its thickest. No finds were recovered from it. Above this was (94005), a 0.19m thick, yellowish brown (10YR 5/6) deposit with a sandy silt loam texture that had the appearance of a redeposited brickearth. It contained a wealth of material including pot, ceramic building material, clay tobacco pipe, animal bone, worked stone, marine shell and glass slag.

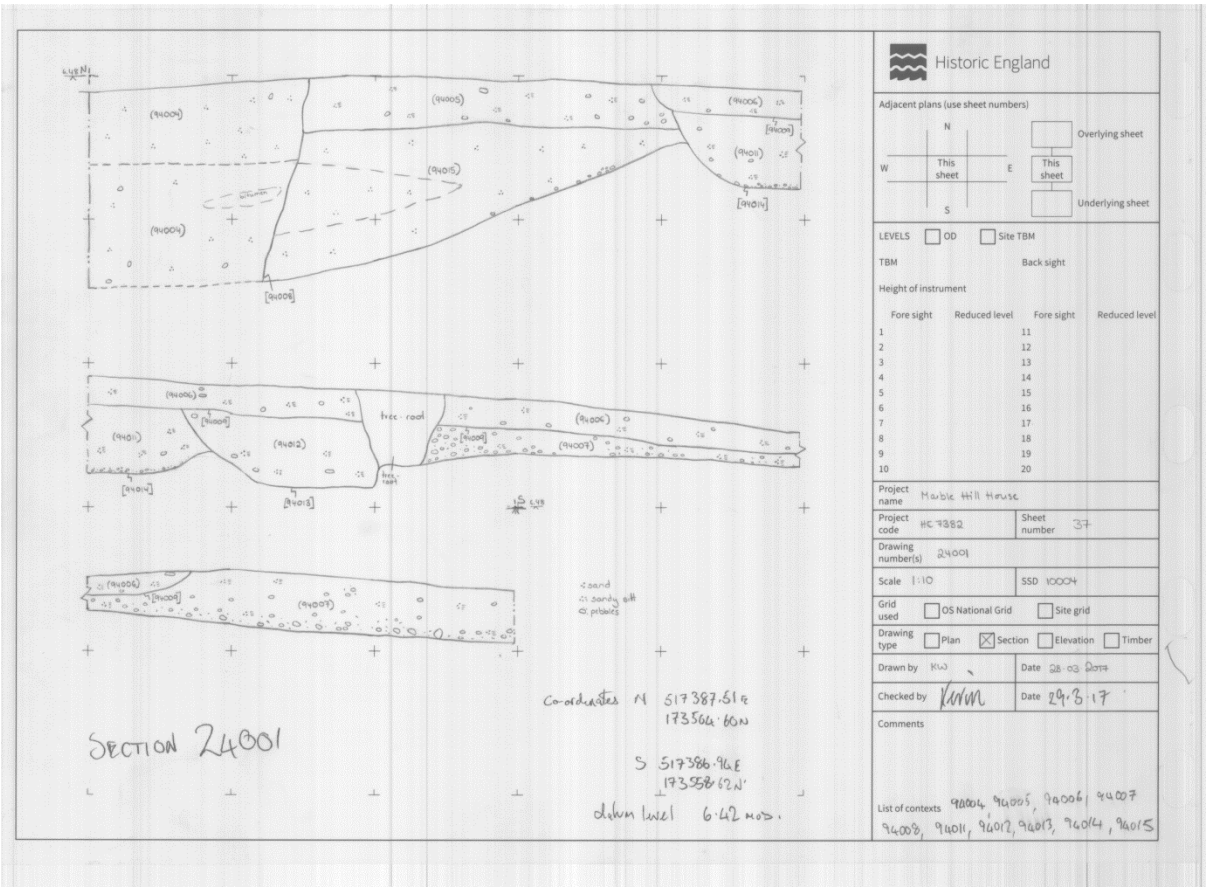


Figure 17 – Section 24001. West facing section trench 4.

Further to the south, layer (94007) was considered to be the same as (94005) denoting that the excavator considered that both deposits had similar formation processes. A spread of 3m of this was excavated and found to be 0.19m thick with a yellowish brown colour (10YR 5/6) and sandy silt loam texture. It contained ceramic building material, clay tobacco pipe and pottery.

Fills (94015) and (94005) were then cut by two different features. To the south they were cut by [94009] and [94014] whilst [94008] truncated the fills to the north.

[94014] appeared to be the earliest of these cuts and also cut the natural underlying gravel. It had steep sides descending to a concave break to a flat base. It was 0.78m wide, 0.33m deep, roughly symmetrical and although only a small section was exposed, appeared to be a linear feature aligned WNW-ESE. It had a single fill (94011) which was very dark greyish brown (10YR 3/2) with a silt loam texture. Finds included animal bone, marine shell, ceramic building material, pottery and clay tobacco pipe. Sample <54001> was taken from this deposit to look for botanical remains that could point to its original planting.

(94011) was cut by feature [94013] which runs parallel to [94014] it also cut the natural gravel and layer (94007). The southern edge of this feature was obscured in section by root action but elsewhere it was ascertained to be 0.77m wide and 0.25m deep with steep sides with concave breaks to a flat base. It had a single fill (94012) with a dark brown colour (10YR 3/3) and a silt loam texture. Finds included clay tobacco pipe and ceramic building material. Sample <54002> was taken from this deposit to look for botanical remains that could point to its original planting.

Figure 18 - Bedding trenches [94014] and [94013]. North west facing section trench 4. Scales 2x1m and 1x2m. Photo 7534.

The excavators identified a shallow cut feature [94009] that truncated deposits (94011), (94012) and (94007) although it was not entirely clear if this was a feature or a horizon between layers. It was revealed to be about 6m wide with a WNW-ESE orientation similar to [94013] and [94014]. The northern edge cut the top of fill (94005) and was slightly stepped out from the underlying margin of [94014] hence leading to its interpretation as a feature. Its edges were concave and its base was flat. It had a single fill (94006) which was up to 0.17m thick (although the top of the deposit may have been truncated by the machine stripping). It was a very dark greyish brown (10YR 3/2) colour with a sandy silt loam texture. Finds included ceramic building material and worked stone, along with a copper alloy thimble (small find no. 34001).

Cut [94008], and its four fills (94004), (94010), (94003) and (94002), were the latest feature in trench 4. Only a small proportion of the feature was excavated and where revealed in section it was found to have a near vertical edge with the margins extending beyond the trench margins to the north and east. It was only excavated to a depth of about 0.7m but it is thought to be a continuation of [99037] excavated in trench 9 and will probably be structurally very similar. The only excavated fill was (94004) which was also thought to be the earliest of the visible fills. It was a yellow (2.5Y 8/8) sand that contained no finds.

In the north east corner of the trench the upper section fills in [94008] were revealed in the west facing section. This showed that deposit (94003) sat on top of (94004). (94003) was a very dark greyish brown (10YR 3/2) with a sandy silt loam texture. It was at least 0.05m thick and plunged to the north. It appeared to represent a buried soil horizon. Finds recovered from this deposit include ceramic building material, glass, pottery, marine shell and animal bone. The top fill in this section was (94002) a 0.1m thick, dark greyish brown (10YR 4/2) deposit mottled with orange-grey patches. Its matrix had a sandy silt loam texture and a high concentration of gravel. It contained charcoal inclusions along with coal and ceramic building material.

Figure 19 - Cut [94008]. North west facing section trench 4. Scale 2m. Photo 7229.

The final deposited attributed as a fill of [94008] was (94010). This was not observed in any section and was not excavated. It was only observed and recorded in plan where it outcropped at the surface covering an area of 1.6m x 1.1m. It shared an interface with (94004) but its relationship to the fills of [94008] was not confirmed. It had the character of brickearth mixed with sand but no finds were recovered and no other details were recorded.

The uppermost layer encountered in trench 4 was topsoil (94001). It was 0.2m thick with a dark greyish brown (10YR 4/2) colour and silt loam texture. A wealth of material was recovered from this layer including ceramic building material, slag, glass, animal bone, pottery, worked stone, marine shell, coal and clay tobacco pipe.

Material culture

This section covers the index for material culture recovered from trench 4. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 2 - index for material culture recovered from trench 4.

Context	Type
94001	Ceramic - Building material
94001	Industrial Debris - Slag and Glass
94001	Coal
94001	Stone - Other
94001	Pottery - Post Medieval
94001	Pottery - Medieval
94001	Mortar and Plaster

94001	Clay Pipe
94001	Bone - Animal
94001	Pottery - Post Medieval
94001	Shell - marine
94001	Shell - marine
94001	Bone - Animal
94001	Glass
94001	Industrial Debris - Slag and Glass
94001	Industrial Debris - Slag and Glass
94003	Pottery - Medieval
94003	Ceramic - Building material
94003	Pottery - Post Medieval
94003	Shell - marine
94003	Bone - Animal
94003	Glass
94003	Ceramic - Building material
94004	Industrial Debris - Slag and Glass
94005	Stone - Other
94005	Shell - marine
94005	Clay Pipe
94005	Ceramic - Building material
94005	Ceramic - Building material
94005	Pottery - Post Medieval
94005	Ceramic - Building material
94005	Pottery - Post Medieval
94005	Clay Pipe
94005	Pottery - Post Medieval
94005	Bone - Animal
94005	Stone - Other
94005	Stone - Other
94005	Industrial Debris - Slag and Glass
94005	Ceramic - Building material
94006	Ceramic - Building material
94006	Ceramic - Building material
94006	Ceramic - Building material
94006	Ceramic - Building material
94006	Ceramic - Building material
94006	Stone - Architectural
94007	Ceramic - Building material
94007	Clay Pipe
94007	Pottery - Post Medieval
94007	Clay Pipe
94007	Ceramic - Building material
94011	Ceramic - Building material
94011	Bone - Animal
94011	Shell - marine

94011	Ceramic - Building material
94011	Pottery - Post Medieval
94011	Clay Pipe
94011	Stone - Other
94012	Clay Pipe
94012	Ceramic - Building material
94012	Ceramic - Building material

Interpretation

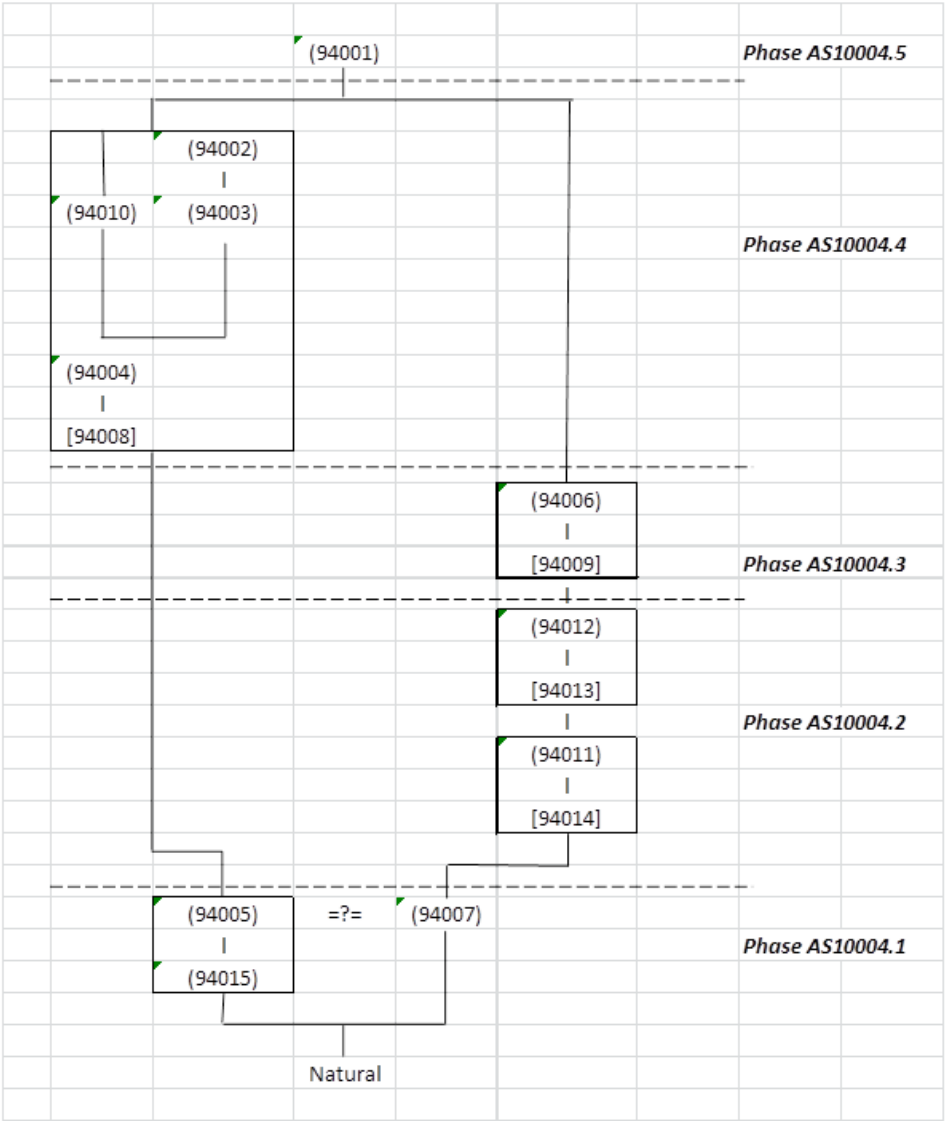


Figure 20 - phased Harris matrix for Trench 4

Phase AS10004.1 – early-mid 18th century

The earliest cut feature appears to be associated with the initial construction of the grotto. Its fills probably relate to the early stages of grotto construction. (94015) is free from finds and may represent the first development of a topsoil. Its similarity with (94007) suggests that both could represent topsoil surrounding the grotto when it was being constructed. The wealth of material in (94005), including glass working slag,

probably relates to the construction of the grotto itself. It implies that these fills were laid down during the creation of the grotto.

Phase AS10004.2– early-mid 18th century

Deposits (94015) and (94005) were cut by [94014] which is stratigraphically the next event. Its single homogenous fill and profile suggest that this was a long linear bedding trench. [94013] is also interpreted as a bedding trench for similar reasons and the two features are visible on the geophysical surveys, running for a distance of at least 19m. Although [94014] is recorded as being cut by [94013] they appear to be contemporary garden features.

Phase AS10004.3 - late 18th century to early 20th century

[94009] appears to supersede [94014] and [94013] it is shallow but may be best interpreted as another planting trench. The shallower nature may suggest that it held plants that required less rootage and perhaps hint at flower planting rather than shrubbery.

Phase AS10004.4 – late 18th century to late 19th century

Feature [94008] is clearly a cut related to the edge of the grotto. The vertical nature of cut [94008] is suggestive. If this had been left open for any length of time we would expect weathering of the deposits through which it was cut. This should result in a sloping profile. As this didn't occur we must assume that after this feature was cut it was backfilled almost immediately. (94004) is very similar in character to the sandy fills banked against the cut of [99037] and we must assume that this too was banked against the edge as part of a landscaping sequence. (94003) is a buried soil horizon indicating that after backfilling and re-landscaping there was a period of stability during which time vegetation was able to flourish before it was buried beneath (94002).

Phase AS10004.5 - late 18th century to late 19th century

The gravelly nature of (94002) led the excavator to muse as to whether it represented a gravel pathway but it is a very thin deposit and it seems more likely that it is associated with the final backfilling of the grotto. As more of this vertical grotto cut and its fills were revealed in trench 9 this is explored in more detail there but is thought that a similar sequence would exist in [94008] if it was excavated further.

Phase AS10004.6 - modern

This final phase was represented by topsoil (94001).

Trench 5 (SSD10005) – Ninepin Alley

SSD	10005		
Contexts	95001-95021		
Samples	55001-55003		
Small Finds	3003,3004, 3009, 3011, 3013, 3017, 3018, 3019, 35001		
Drawings	Sheet 13-20	Plans 2501	Section 25001-25005

Sheet #	Number of drawings on sheet	Drawing numbers
13	1	25005
14	1	25005
15	1	25004
16	3	25001, 25002, 25003
17	1	2501
18	1	2501
19	1	2501
20	1	2501

Trench 5 was placed to investigate an area thought to contain a ninepin bowling alley. It was placed with reference to the 1752 plan and evidence from the earthwork survey that suggested a slight scarp that could conceivably have formed the northern boundary of the alley.

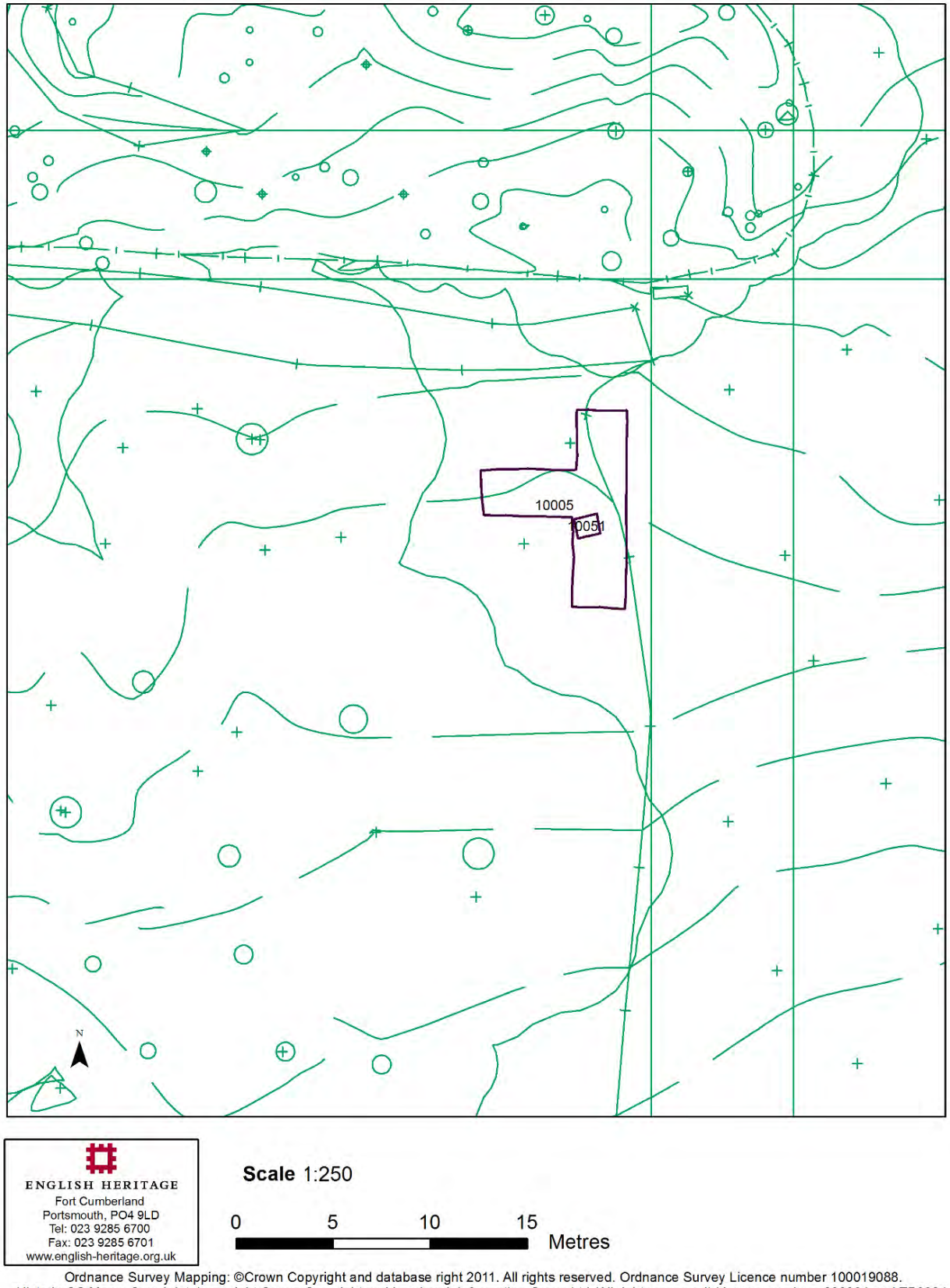


Figure 21 - trench 5 location.

Stratigraphic Narrative

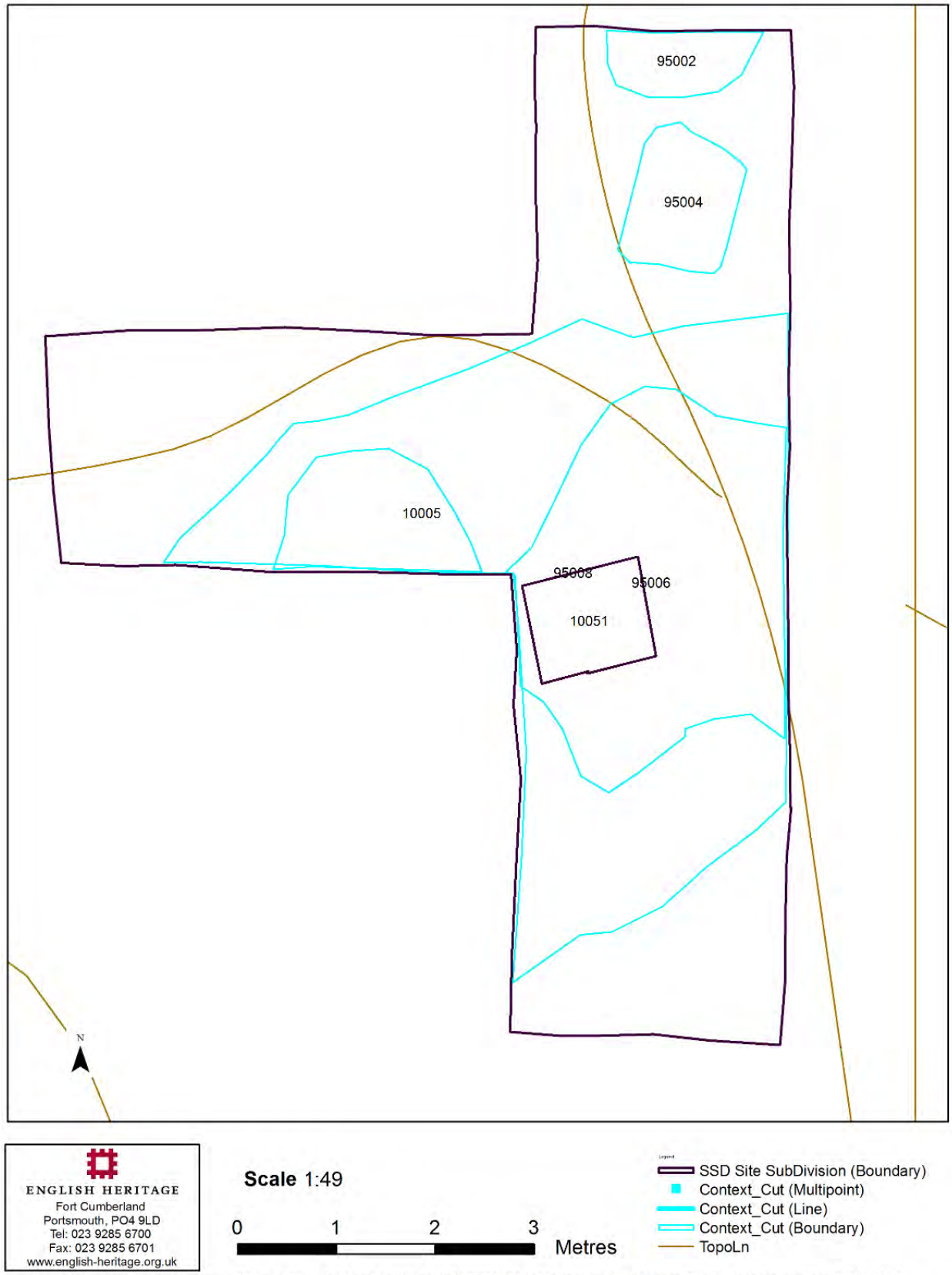


Figure 22 - features in trench 5.

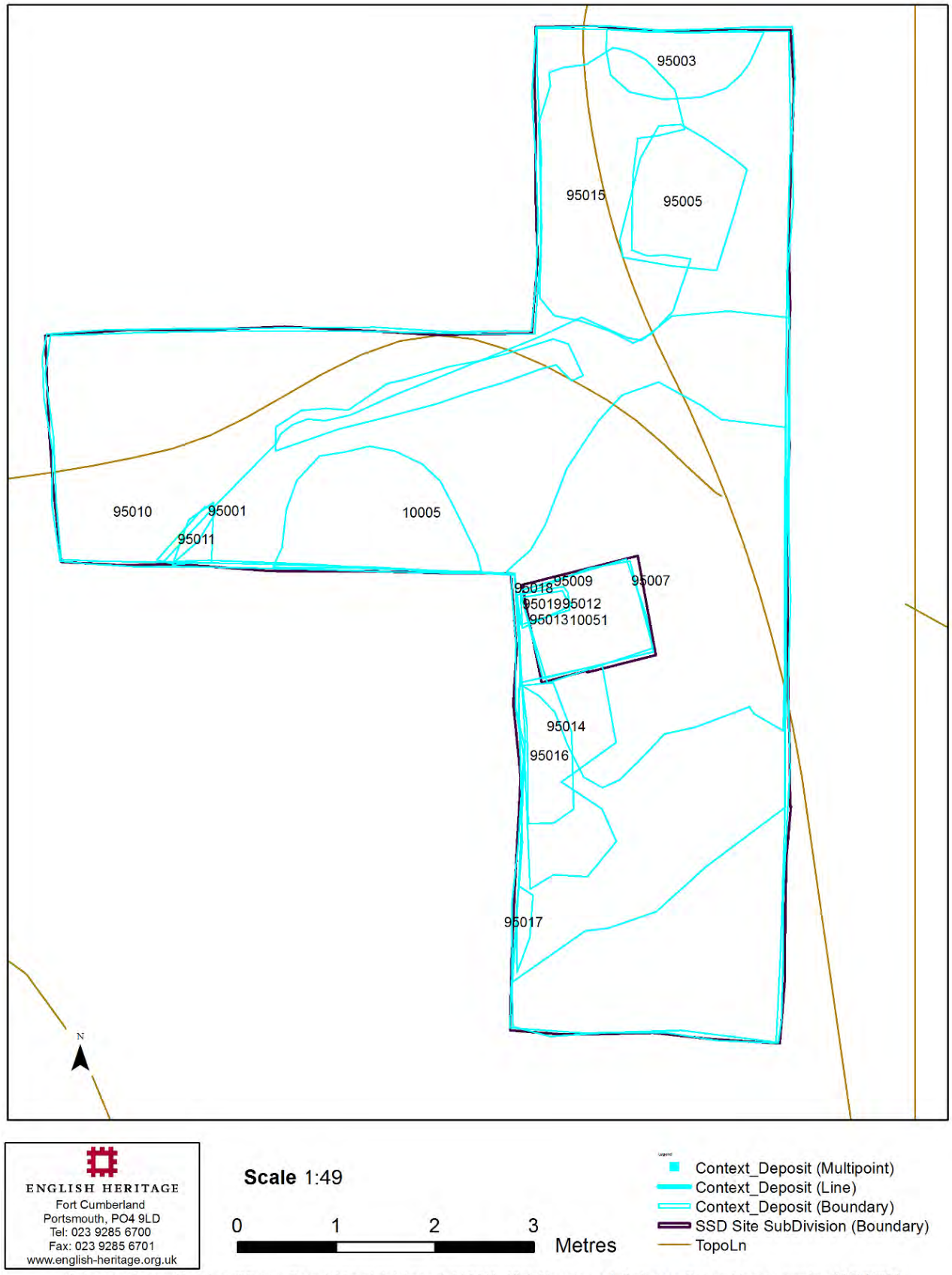


Figure 23 - deposits in trench 5.

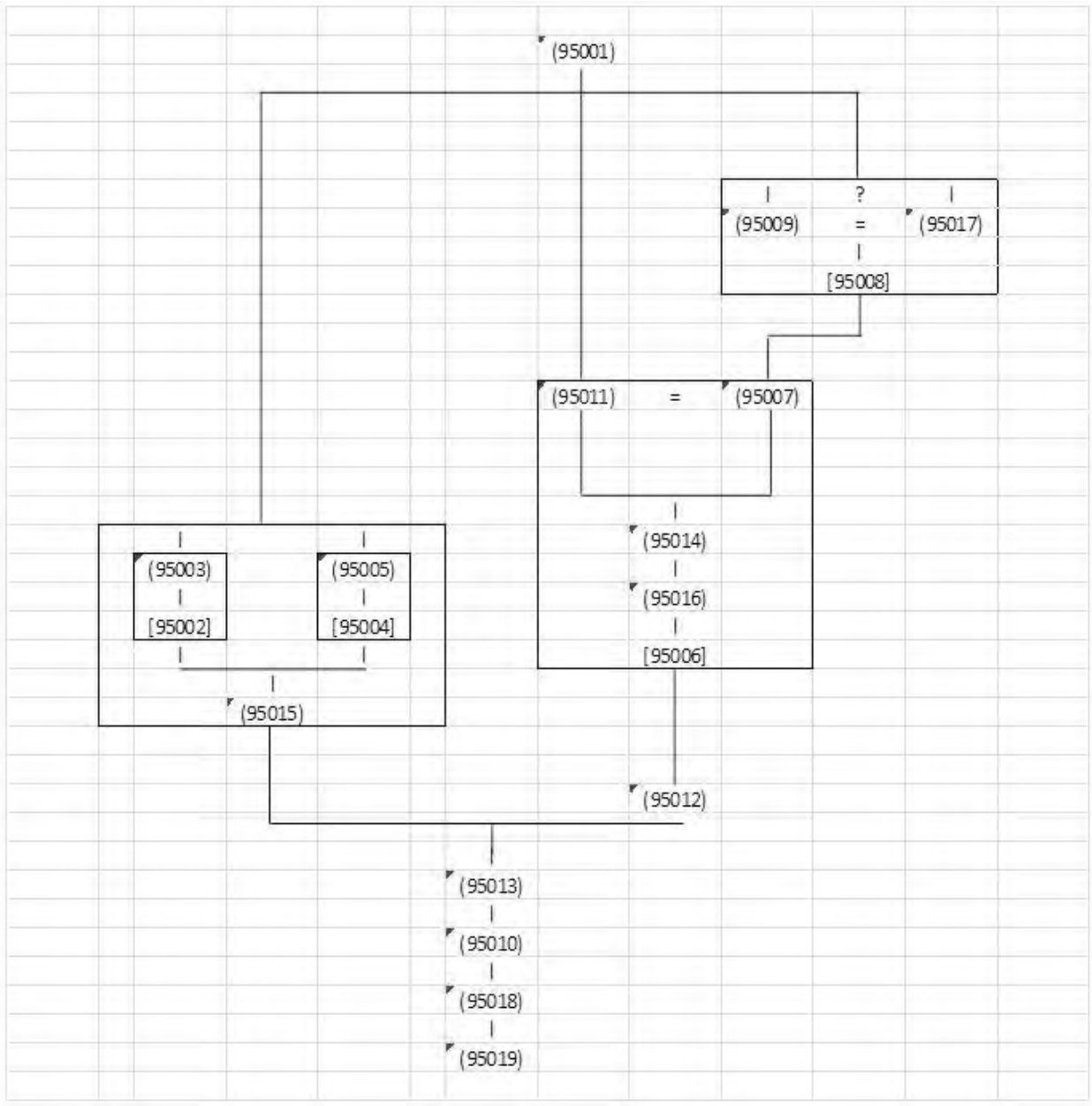


Figure 24 – Harris matrix for Trench 5.

A sondage excavated in the centre of trench 5 revealed a series of layers of probable geological origin beneath the more recent archaeology. At the base of the sondage at a depth of 0.95m below the surface was (95019). This was considered to be site natural for trench 5; it is probably fluvial derived gravel consisting of 50% gravel in a 50% clay matrix that had a yellowish brown colour (10YR 5/4). Overlying this was (95018) dark orangey brown (7.5YR 4/3), sandy clay loam, brickearth. The layer was 0.18m thick and contained occasional small rounded pebbles but no finds. Next was (95010) a dark yellowish brown (10YR 4/6), sandy silt loam, brickearth. This was 0.35m thick and contained no finds.

Layer (95013) was also revealed in the sondage with a thickness of 0.1m. In colour it was orangey brown (10YR 3/4) with grey brown (10YR 5/1) mottling. It was a sandy clay loam brickearth with occasional small rounded pebbles and occasional flecks of charcoal / coal. It contained a small assemblage of material including pottery, ceramic building material, coal and stone. Like all the brickearths it had a very low humic content but it was higher than the layers immediately above and below it.

Figure 25 – Trench 5 sondage east facing section. Scales 1m. Photo 7524.

Layer (95012) was also revealed in the sondage but formed the background brickearth under the topsoil. It had a maximum thickness of 0.15m and was located up to 0.25m under the ground surface. It was orangey brown in colour (10YR 4/4) with mid grey patches of mottling. It had a sandy silt loam texture and had the appearance of a dirty brickearth. It contained a single piece of daub and a sherd of medieval pottery.

Although there are no direct relationships, it appears that the next layer chronologically is (95015). It was a metalled gravel surface-like spread situated in the northern part of the trench. It measured 1.44m by 3m but was only 0.02m thick. The gravel was set in a loamy matrix with a dark reddish grey (5YR 4/2) colour. No finds were removed from this deposit but ceramic building material and fragments of glass slag were observed embedded in its surface. This layer was recorded as lying on top of (95010) the upper deposit of brickearth grouped as natural. However this brickearth shared many of its characteristics with (95012) and it is possible that (95015) actually lay on top of (95012).

Cut into (95015) and the underlying brickearth (probably (95012)) were two shallow features. [95002] was a sub-circular feature in the northern part of trench 5 measuring 0.75m by 1.7m and 0.04m deep. It had sharp sides and a flat base. Its single fill (95003) consisted of compressed gravel with a dark greyish brown (10YR 4/2) matrix with a silty clay texture. It produced no finds. Similar to this was [95004] a rectilinear shaped feature measuring 1.08m by 1.38m. It was 0.12m deep and had sharp edges and a flat base. Its single fill (95005) consisted of compressed gravel in a dark reddish grey (5YR 4/2) matrix with a silty clay texture. The only finds recovered from this were ceramic building material.

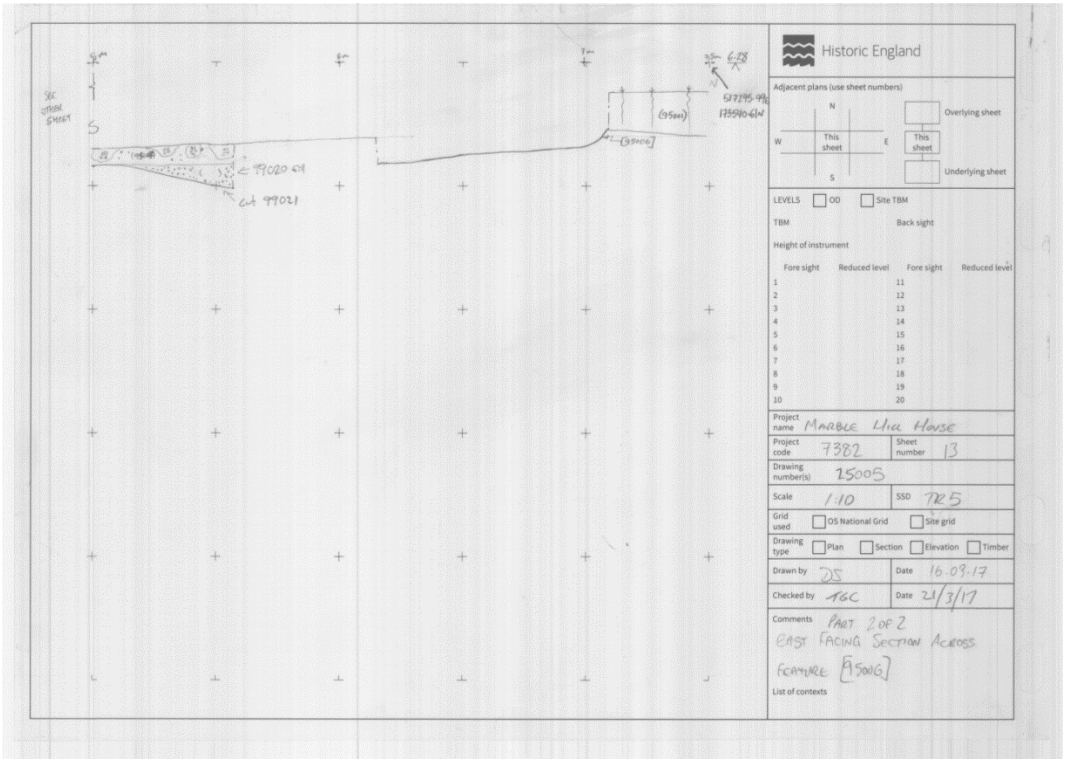


Figure 26 – Section 25005. East facing section trench 5 showing cut across [95006], part 1. Sheet 13.

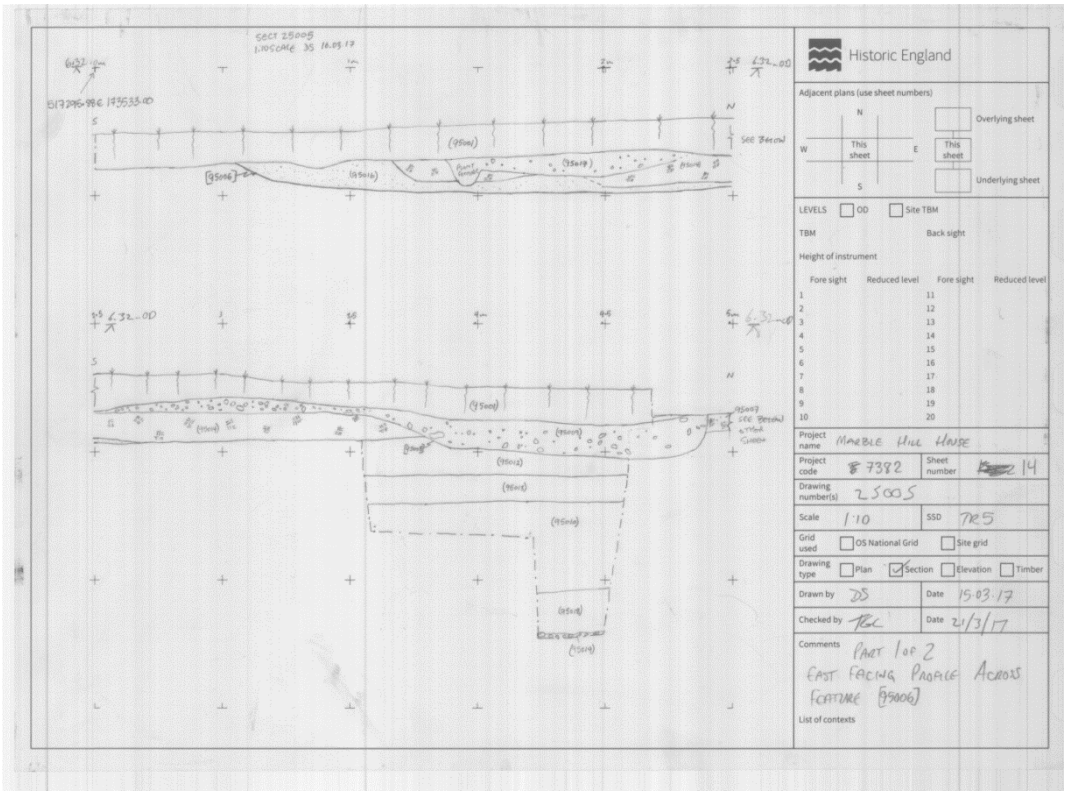


Figure 27– Section 25005. East facing section trench 5 showing cut across [95006] and sondage, part 2. Sheet 14.

Centred in the trench was feature [95006] which cuts (95012) and (95015). It was shallow at only 0.16m deep. It was linear in plan with a slight oval shape to the area that was excavated and was orientated northeast - southwest. It measured 6.18m wide and at least 6.3m long although it extended beyond the limits of the trench and may have been in excess of 7m. Its sides had a concave profile and sloped gently to an uneven but flattish base.

The primary fill of [95006] was (95016) with a maximum thickness of 0.11m, a dark yellowish brown (10YR 4/4) with mottled mid grey (10YR 3/1) patches, sandy clay loam containing small rounded pebbles. Finds recovered from this fill included pottery, glass, ceramic building material and plaster. This was a discontinuous layer and only located in a small part of the trench where it was overlain by (95014). (95014) was up to 0.13m thick, and appeared to be a compact clay-like deposit with a silty clay loam texture. It was light pink in colour (2.5YR 6/2) containing a moderate number of small rounded pebbles, with finds including pottery, glass, ceramic building material and plaster. It was discontinuous but covered a larger part of the feature than (95016) and in some places went down immediately on to the base of the feature. It was particularly noted around the edges of the feature.

Figure 28 – Deposit (95014), the clay fill of [95006]. Scales 1m and 2m. Photo 7514.

Fill (95007) was a 0.09m thick, very dark grey (10YR 3/1) silty clay that covered a 1.61m by 2.21m area in the northern part of [95006]. In places it overlay clay deposit (95014) whilst in others it lay directly on the brickearth beneath the cut. In places it appeared to include redeposited lenses of clay (probably derived from (95014). It contained lots of pebbles and included finds of medieval and post-medieval pottery, glass, ceramic building material, glass slag, roman tile and clay pipe. Very similar to this fill was (95011) a 0.15m thick, dark reddish grey (5YR 4/2) colour with a silt loam texture located at the western end of [95006]. It was originally thought to be a separate feature but turned out to be a variation of (95007).

[95008] was a slightly irregular polygon with curvilinear sides which extended beyond the limits of the trench but where exposed measured 1.3m x 1.4m. It was 0.17m deep and had a sharp cut at the top that sloped to a flat base. It cut through deposit (95014). It had two fills (95009) and (95017). (95009) was a very dark grey / black (10YR 2/1), sandy loam with frequent small and medium rounded subangular pebbles. A wealth of artefactual material was recovered from this fill including human bone, medieval and post-medieval pottery, medieval floor tile, glass, glass slag and ceramic building material. The fill itself extended south outside of the limits of the cut as recorded probably indicating that it had been truncated or masked by soil processes forming the 'A' soil horizon. Fill (95017) to the south of (95009) was only recorded in

section. It had a mixed mid to dark grey and orangey brown colour with a sandy silt loam texture. It contained frequent small and medium rounded subangular pebbles that made it morphologically similar to (95009) but with a different humic content. It was thought that these may have originally been part of the same deposit although worm action in the topsoil appears to have removed any direct relationship and they were recorded separately.

The final layer was (95001) the number allocated to topsoil.

Material culture

This section covers the index for material culture recovered from trench 5. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 3 - index for material culture recovered from trench 5.

Context	Type
95001	Ceramic - Building material
95001	Pottery - Post Medieval
95001	Clay Pipe
95001	Ceramic - Building material
95001	Pottery - Post Medieval
95001	Stone - Other
95001	Pottery - Post Medieval
95003	Clay Pipe
95003	Clay Pipe
95003	Pottery - Post Medieval
95005	Ceramic - Building material
95007	Ceramic - Building material
95007	Pottery - Medieval
95007	Pottery - Post Medieval
95007	Pottery - Post Medieval
95007	Clay Pipe
95007	Clay Pipe
95007	Pottery - Post Medieval
95007	Ceramic - Building material
95007	Pottery - Post Medieval
95007	Ceramic - Building material
95007	Industrial Debris - Slag and Glass
95007	Glass
95007	Ceramic - Building material
95009	Bone - Human
95009	Pottery - Post Medieval
95009	Glass
95009	Clay Pipe
95009	Pottery - Medieval
95009	Pottery - Post Medieval
95009	Ceramic - Building material

95009	Pottery - Post Medieval
95009	Ceramic - Building material
95009	Ceramic - Building material
95009	Industrial Debris - Slag and Glass
95011	Ceramic - Building material
95011	Ceramic - Building material
95011	Ceramic - Building material
95012	Ceramic - Building material
95012	Pottery - Medieval
95012	Pottery - Medieval
95012	Ceramic - Building material
95012	Industrial Debris - Slag and Glass
95013	Stone - Other
95013	Coal
95013	Pottery - Post Medieval
95013	Ceramic - Building material
95013	Ceramic - Building material
95016	Ceramic - Building material
95016	Pottery - Post Medieval
95016	Pottery - Post Medieval
95016	Ceramic - Building material
95016	Glass

Interpretation

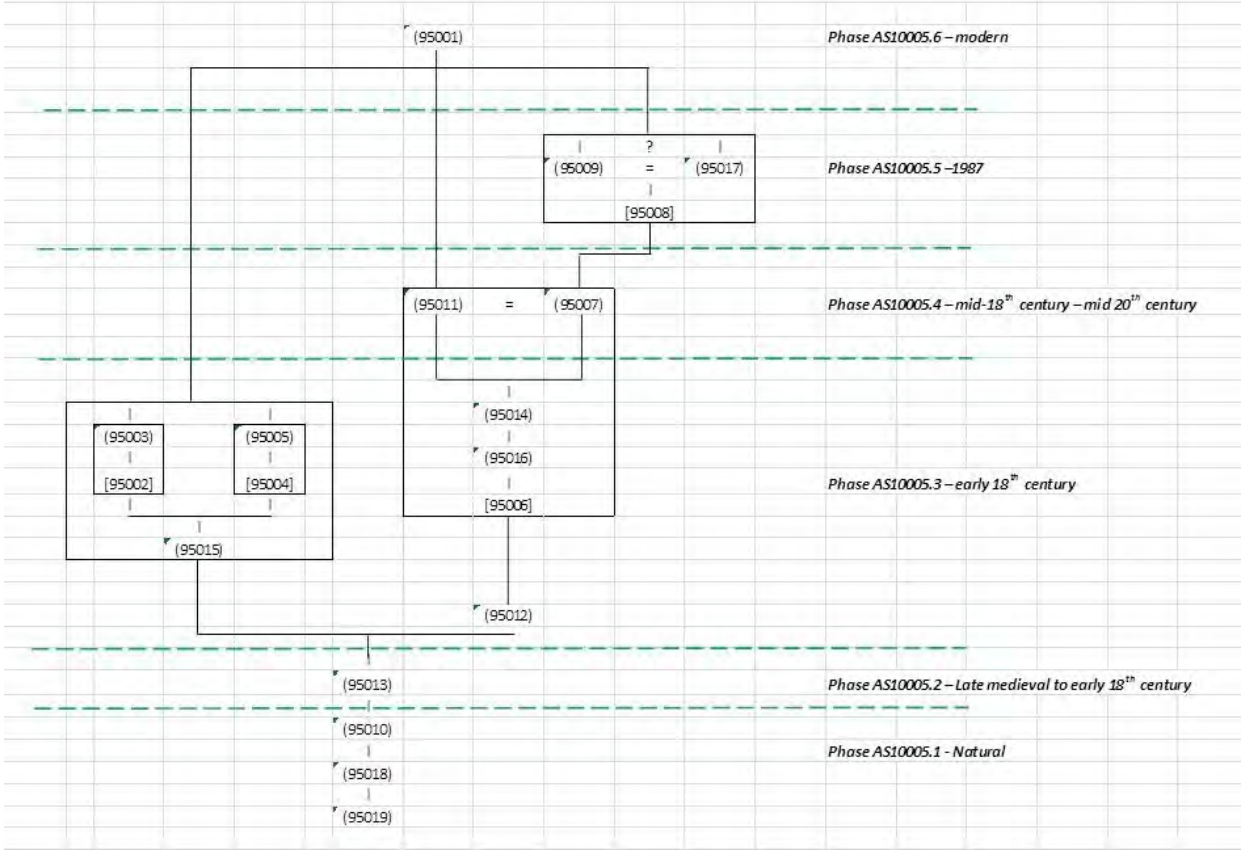


Figure 29 – Phased Harris matrix for Trench 5.

Phase AS10005.1 - Natural

Layers (95019), (95018) and (95010) are grouped under the naturally derived, non-anthropogenic, geological phase. As identified elsewhere around the site, there is a degree of variation in the basal gravels and loamier brickearth deposits that form the 'natural' in each of the trenches. The main reason for a division between (95018) and (95010) is on colour difference but this may be a result of natural geochemical processes and it is entirely possible that they were laid down as part of the same event.

Phase AS10005.2 – Late medieval to early 18th century

Layer (95013) was very similar to the layers below it but it appeared to have a slightly higher humic content and contained finds and flecks of charcoal. This anthropogenic element to it has led to its interpretation as part of a relict soil, possibly an 'A' horizon. It is therefore likely that this layer relates to the use of the area for agricultural purposes (possibly including ploughing) prior to the land being turned over to parkland.

Phase AS10005.3 – early 18th century

Layer (95012) was another brickearth but more sterile looking than the layer below it. It did still contain two finds but its nature is not soil-like. Instead it could be interpreted as an episode of colluviation but it seems more likely that this layer results from a deliberate act of landscaping to level the area prior to the construction of the ninepin alley. It is hypothesised that (95015) sat on top of this and was the metalled surface of the ninepin alley. It is also hypothesised that (95012) or equivalent gravel metalling originally covered a much larger extent than revealed during the excavations. Into this surface were set two features

[95002] and [95004] which themselves were filled by compressed gravel that made them stand out from (95012). These may have been ornamental features decorating the ninepin alley or may have been constructed as hard-standing to take heavy objects, possible heavy planting pots.

Figure 30 – Compressed gravel features [95002] (top) and [95004] (centre). Scales 1m. Photo 7506.

We believe that the actual playing area of the alley is represented by feature [95006] which appears to have a more oval shape to it that the square illustrated in the 1752 plan. (95016) and (95014) were interpreted by the excavators as deliberately laid fills, possibly as part of a laid surface for the ninepin alley playing area. It has been questioned how well a clay surface would survive unless it was covered from the elements. The rough broken nature of the clay may be evidence for the surface drying and cracking during dry warm summers before inundation during less clement weather. The clay deposits are a key part of the argument against [95006] being a shallow bedding trench for plants or a tree throw. (95014) is a clean and homogenous clay except for cracks and root holes where gravel and humic soil has filtered in from above. There is little in the way of humic components and it is not a dumped deposit, or a turned-over bedding trench fill.

Figure 31 – Trench 5 post excavation. Shallow, oval bowl shaped feature [95006] constituting the bowling alley playing area. Scales 1m and 2m. Photo 7519.

Phase AS10005.4 – mid-18th century – mid 20th century

If we assume that (95014) was the original fill across the entire playing area [95006], its absence in some places is a mystery. (95007) is more extensive but appears to include clasts of (95014) as well as overlying it in places or being situated directly on top of the brickearth in others. It has a very wide range of finds including medieval and roman material. It does not appear to be associated with the original construction of the ninepin alley but has the character of material brought on to site to backfill or patch up the playing area of the ninepin alley. It is possible that (95014) had been worn away in some areas and required patching for the alley to remain a useful feature or was deliberately removed in areas (possibly to aid drainage) after the alley had fallen out of use.

Phase AS10005.5 –1987?

Feature [95008] cuts the fills of the bowling alley initial interpretations included hollows worn into the playing area or as a later planting bed. This feature corresponds with a shallow depression recorded during the earthwork surface of the grounds. It is also known that trees were lost in this area during the 1987 storm. It seems most likely that [95008] therefore represents a tree throw and that (95009) therefore represents a reworked version of (95007) that was deposited into the tree throw.

Phase AS10005.6 – modern

The final phase identified in the trench is represented by topsoil (95001).

Trench 7 (SSD10007) - Ice House Seat

SSD	10007		
Contexts	97001-97010		
Samples	57001-57002		
Small Finds	3008, 3020		
Drawings	Sheet 41	Plans -	Section 27001

Sheet #	Number of drawings on sheet	Drawing numbers
41	1	27001

Trench 7 was originally placed to locate the Ice House Seat which was believed to be situated immediately south of the ice house mound. This was in an area of woodland that required consent from Richmond Borough Council to excavate within. Permission for hand excavation was received late during the fieldwork meaning it was impossible to excavate the whole area in the available time. The area was probed to a depth of 0.3m in an attempt to locate shallow buried masonry associated with the seat but none was encountered. The decision was taken to excavate a small trench 2.5m x 1m that was tasked with ascertaining the profile of the bank that runs south from the ice house mound, to inform on future excavation strategy. Due to safety considerations associated with the depth, along with time constraints this trench was stepped. Natural geological layers were not reached.

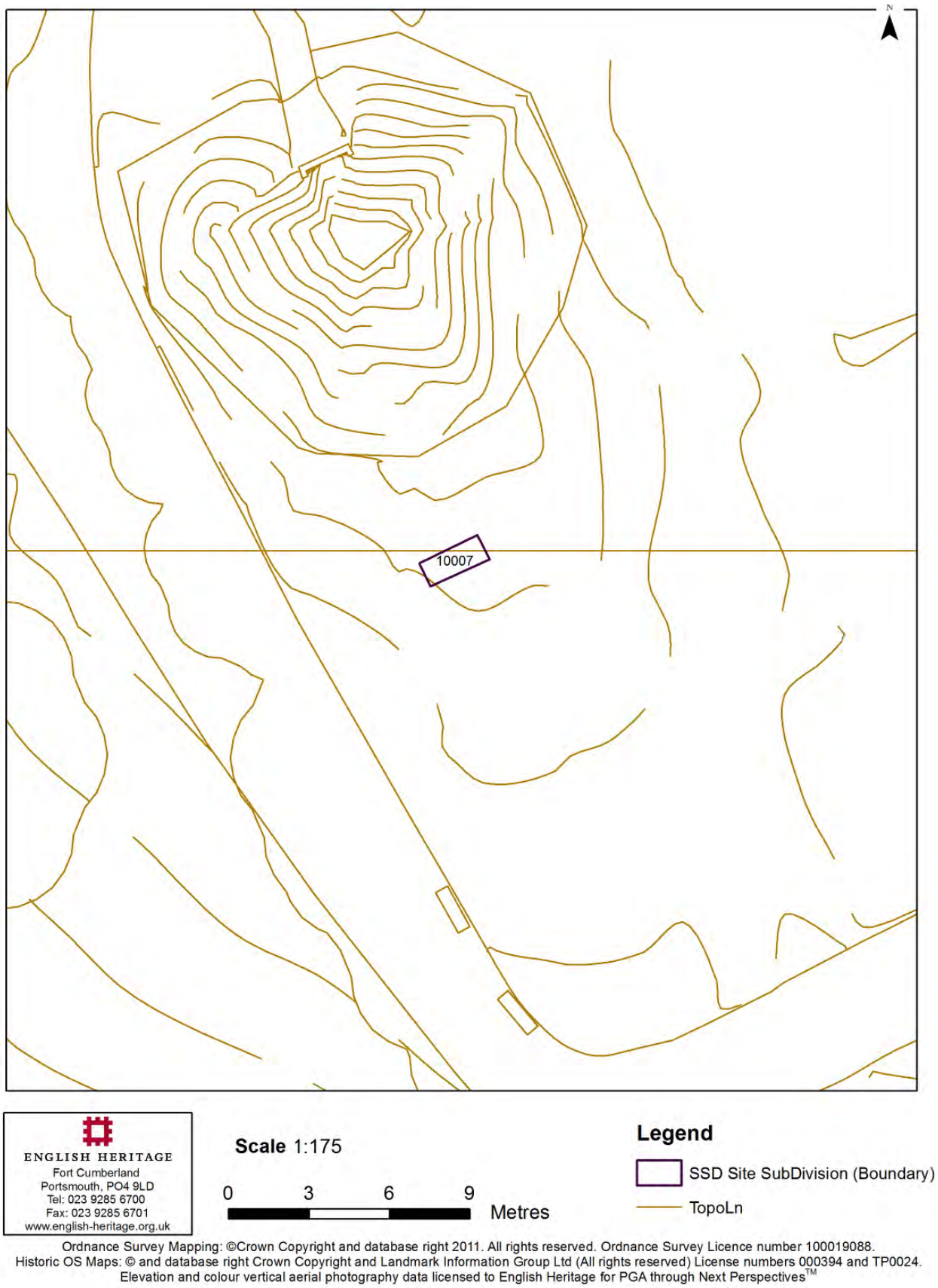


Figure 32 - trench 7 location.

Stratigraphic Narrative

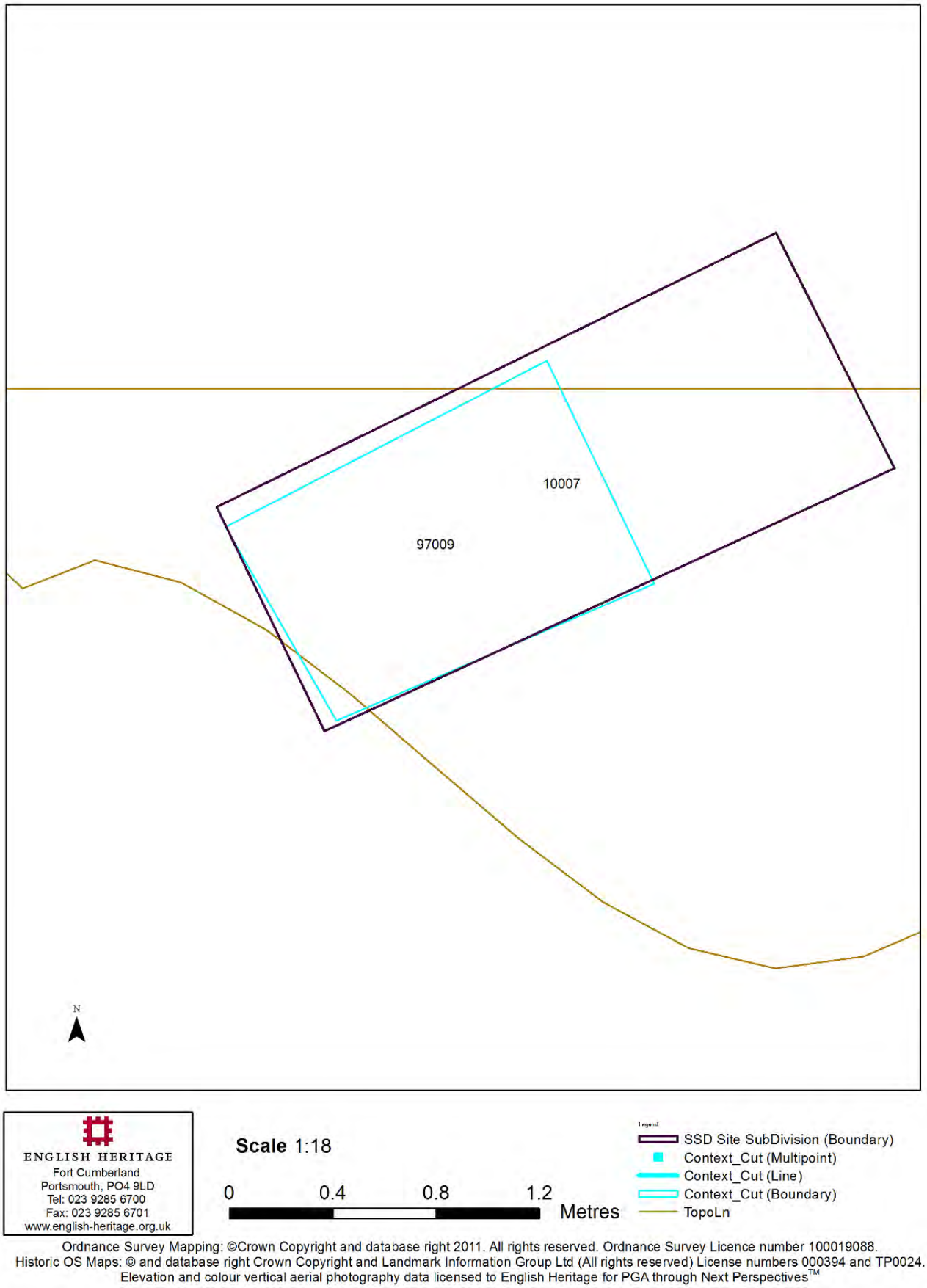


Figure 33 - trench 7 features.

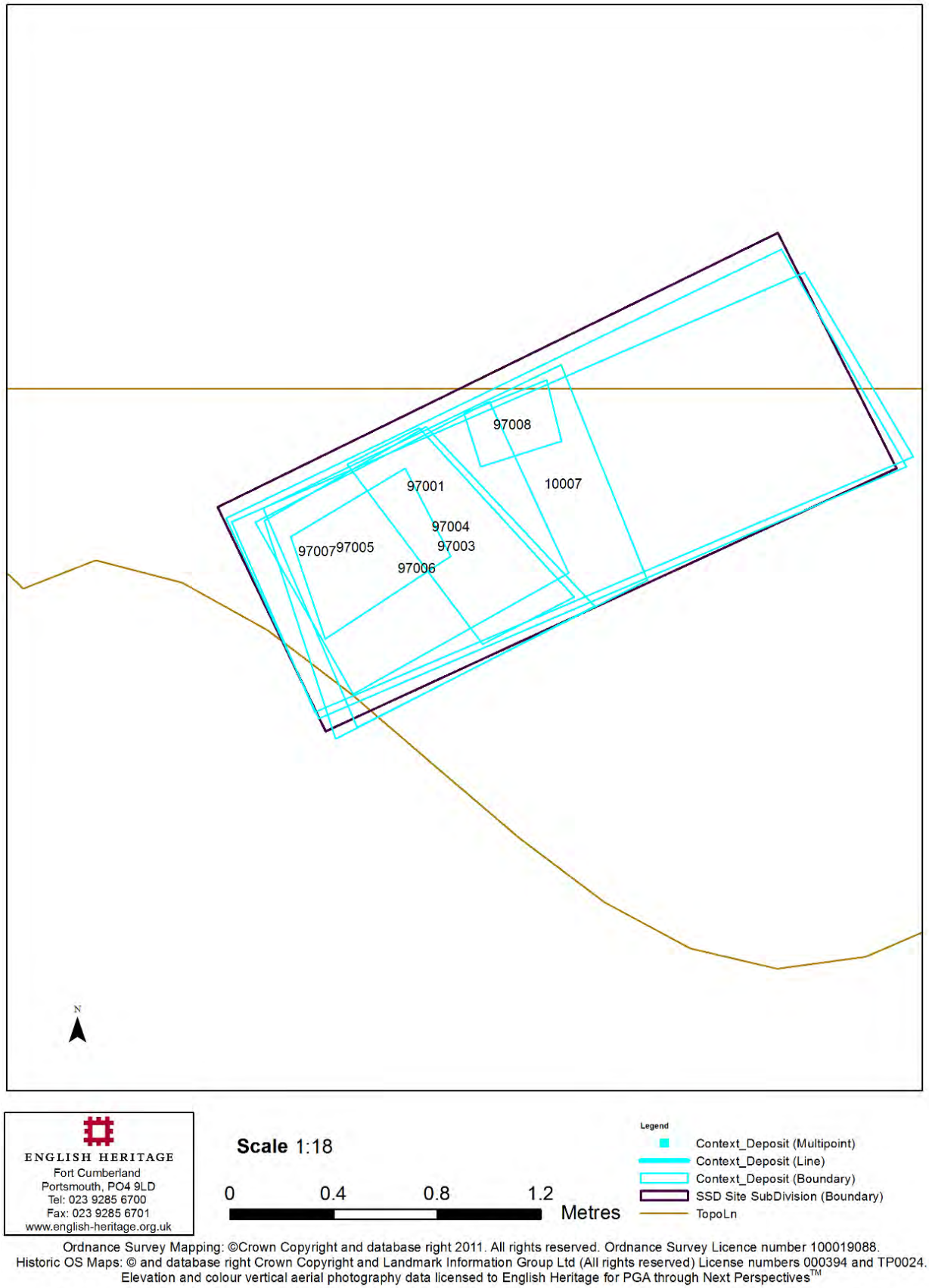


Figure 34 - trench 7 deposits.

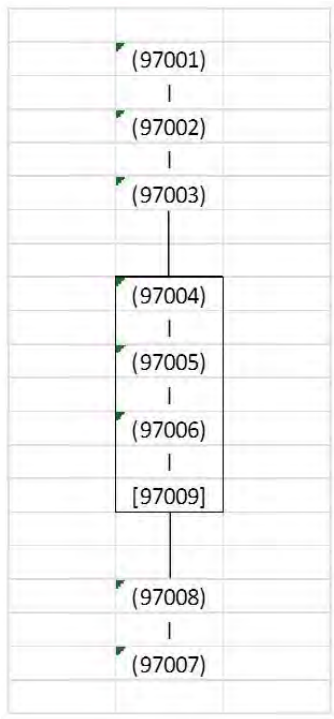


Figure 35 – Harris matrix for trench 7.

The oldest deposit encountered was (97007). At the deepest it was 1.3m beneath the modern ground surface. The base of this deposit was not located and it was found to be at least 0.55m thick. It was a yellow orange brown (10YR 6/6), clay sand commonly referred to on site as a brickearth. It was very compact (cemented). Finds included small pieces (10-30mm) pieces of ceramic building material, shell and pottery.

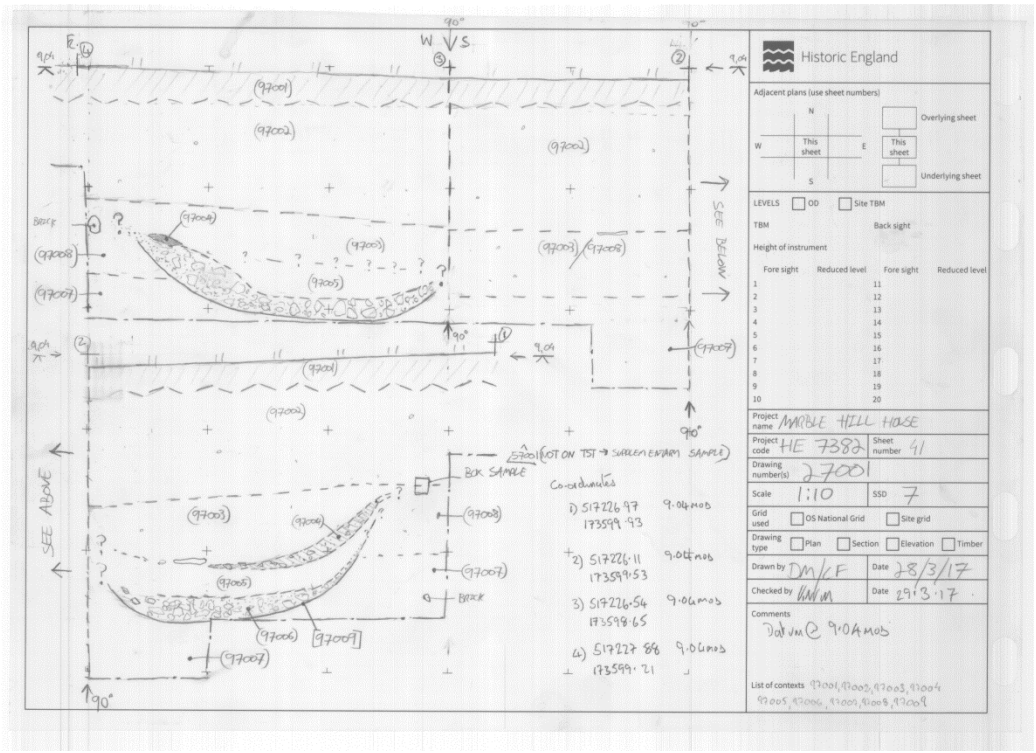


Figure 36 – Section 27001. South, east and north facing section from trench 7. Sheet 41.

Overlying (97007) was (97008). This compact fill was about 0.25m thick, a yellow orange brown (10YR 6/4) colour with a clayey sand texture. Finds included ceramic building material. (97008) and (97007) were very

similar in character and the interface between them was very diffuse and largely differentiated through a slight change in colour rising up the profile.

Layers (97008) and (97007) were cut by feature [97009]. This feature cut across the trench on a north-south orientation. Margins to the east and west were indistinct but the feature was at least 1.3m wide and would have originally been at least 0.6m deep. It had a symmetrical profile with gradually sloping concave sides descending to a concave, slightly uneven base which was situated about 1m below the modern ground surface.

The primary fill of [97009] was (97006) a sandy loam deposit with gravel inclusions and a light greyish brown (10YR 6/2) colour. It was 1.2m wide and up to 0.15m thick. Finds included pot, animal bone, glass, worked stone and pieces of clay tobacco pipe.

Above this was fill (97005), a greyish brown (10YR 5/2) sandy loam. It was up to 1.1m wide and up to 0.15m thick. Finds included pot, human bone, animal bone, glass, shell, worked stone and ceramic building material. The top fill of [97009] was (97004). This was only identified in the south facing section and not the north facing one. It may therefore represent quite a localized fill. It was a dark blackish brown (10YR 2/2) deposit with a sandy texture, pebble and charcoal inclusions. It was 1.0m wide and up to 0.08m thick. It appeared have been derived from burnt material and contained pieces of pot, coal, animal bone, shell, clay tobacco pipe, worked stone, ceramic building material, slag and what appeared to be industrial glass working waste.

Figure 37 – pre-excavation photo of fill (97004) (dark deposit near scales) showing its localized nature. Scales 0.5m. Photo 7553.

Completely infilling the remainder of [97009] was (97003) which covered the entire trench with a thickness of at least 0.25m. It was a greyish brown (10YR 5/2) colour with a silt loam texture. Finds included pot, glass, clay tobacco pipe, shell, animal bone and ceramic building material. The lower boundary with (97004) was very clear but the boundary with (97008) could not be identified.

Figure 38 – North facing section of [97009]. Scales 0.5m and 1m. Photo 7570.

Figure 39 – South facing section of [97009]. Scales 0.5m and 1m. Photo 7563.

There was a very diffuse boundary with overlying layer (97002) yellowish brown (10YR 6/8) colour sandy loam that was up to 0.5m deep and covered the entire trench. There was a lot of small root activity identified throughout this layer. Finds included pot, clay tobacco pipe, coal, animal bone, glass, worked stone and ceramic building material.

The final layer in trench 7 was topsoil (97001). This was 0.1m deep with a very dark brown colour (10YR 2/2) with a high humic content. Finds included pot, glass and slag.

Material culture

This section covers the index for material culture recovered from trench 7. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 4 - index for material culture recovered from trench 7.

Context	Type
97001	Industrial Debris - Slag and Glass
97001	Pottery - Post Medieval
97001	Glass
97002	Ceramic - Building material
97002	Pottery - Post Medieval
97002	Clay Pipe
97002	Coal
97002	Bone - Animal
97002	Stone - Other
97002	Glass
97002	Ceramic - Building material
97002	Ceramic - Building material
97003	Ceramic - Building material
97003	Pottery - Post Medieval
97003	Clay Pipe
97003	Shell - marine
97003	Stone - Other
97003	Bone - Animal
97003	Stone - Other
97003	Glass
97003	Ceramic - Building material
97004	Ceramic - Building material
97004	Bone - Animal
97004	Shell - marine
97004	Stone - Other
97004	Clay Pipe
97004	Coal
97004	Industrial Debris - Slag and Glass
97004	Industrial Debris - Slag and Glass
97004	Stone - Other
97004	Stone - Other
97004	Glass
97005	Pottery - Post Medieval
97005	Stone - Other
97005	Shell - marine
97005	Shell - non-marine
97005	Bone - Human
97005	Bone - Animal
97005	Glass
97005	Ceramic - Building material

97006	Ceramic - Building material
97006	Ceramic - Building material
97006	Ceramic - Building material
97006	Glass
97006	Clay Pipe
97006	Bone - Animal
97006	Stone - Other
97006	Glass
97006	Ceramic - Building material
97007	Ceramic - Building material
97007	Mortar and Plaster
97007	Pottery - Medieval
97007	Stone - Other
97007	Shell - non-marine
97007	Shell - marine
97008	Ceramic - Building material

Interpretation

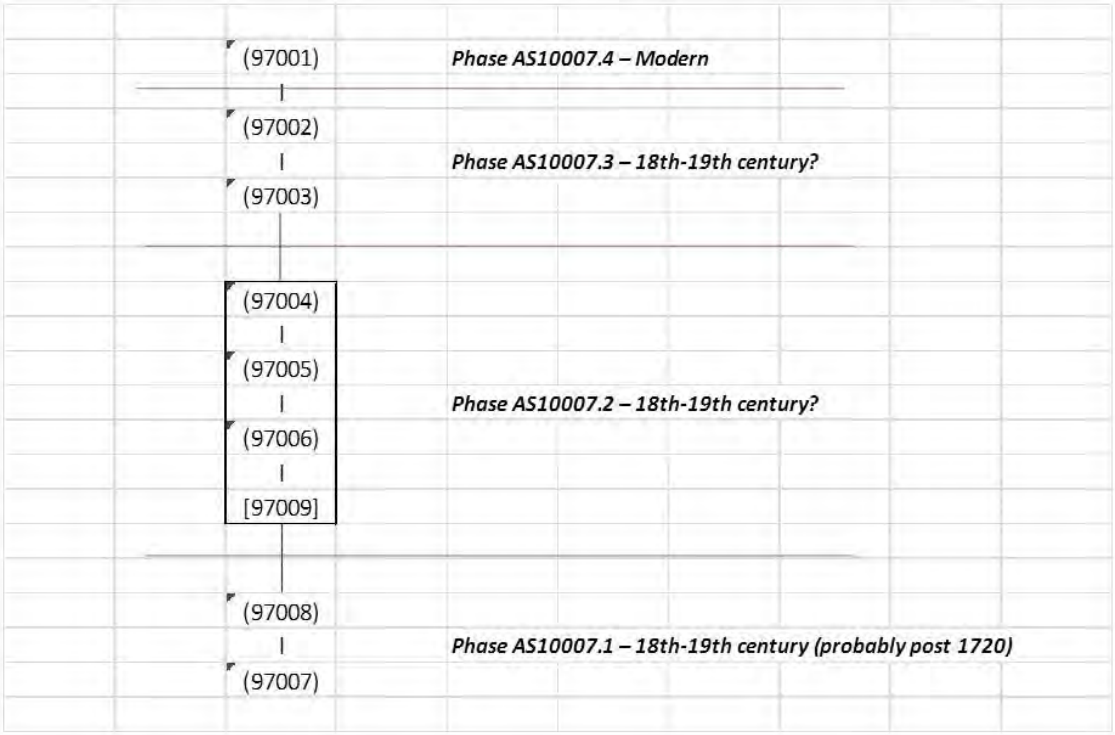


Figure 40 – Phased Harris matrix for trench 7.

Phase AS10007.1 – 18th-20th century (probably post 1720)

The earliest deposits reached during excavation were (97008) and (97007). These were interpreted as redeposited brickearth associated with an episode of landscaping. It is probable that these deposits were laid down in a single event and may have initially been quite homogenous but that natural processes have led to the observed differences between them. It is unclear where this material was originally derived from.

They contained anthropogenic material and so a certain degree of mixing must have occurred between extraction and deposition. One possible source would be from the initial construction of the ice house but this cannot currently be verified.

Phase AS10007.2 – 18th-20th century (probably post 1720)

The second phase of activity was feature [97009]. The small area excavated means that we do not have its shape in plan and it has been raised that it could represent a tree throw. Its symmetrical profile and apparent north-south orientation mirroring the dominant alignment of structures in the area however is perhaps better interpreted as a ditch or gully. If this is a ditch, it is possible that this represented an early boundary demarcating the pleasure gardens. It is unlikely that two boundary features (this and the large ditched feature interpreted as a ha-ha lying to the immediate west) co-existed at the same time. The ha-ha appears on the 1752 plan but it is unknown when it was constructed or backfilled. Further excavation in this area and of the ha-ha should be able to resolve this issue.

(97006) and (97005), the primary fills of [97009] appear to be derived from natural processes of silting and sedimentation incorporation small quantities of anthropogenic material that had been lying on the ground surface. (97004) is a much more localized deposit and probably results from a single dumping event. The excavator thought that the material had the consistency of hearth sweepings and this sounds like a reasonable interpretation.

Phase AS10007.3 – 18th-20th century (probably post 1720)

The next phase of activity appears to be a landscaping event that completely back filled feature [97009] and raised the height of the bank (by possibly a further 0.5m). The deposits (97003) and (97002) that represent this landscaping event may have originally derived from a single homogenous material that has since undergone changes brought about by natural processes. The lack of a clear boundary between (97003) and (97008) suggests that there was not time for a topsoil develop after the first identified phase of bank construction before the final landscaping event took place. Thus although we have broken the sequence into phases AS10007.1, AS10007.2 and AS10007.3 there may have only been a short space of time from the start of AS10007.1 and end of AS10007.3. Phase AS10007.3 sees the infilling and decommissioning of the boundary ditch. The source of (97003) and (97002) are unclear but they could represent material from the construction of the ha-ha which would not only have superseded ditch [97009] but produced the material to completely backfill it.

Phase AS10007.4 – Modern

The final phase identified in the trench is topsoil (97001).

Trench 8 (SSD10008) – Grotto

SSD	10008		
Contexts	98001-98010		
Samples	-		
Small Finds	3021, 38001, 38002		
Drawings	Sheet 47-52	Plans 2801-2808	Section 28001

Sheet #	Number of drawings on sheet	Drawing numbers
47	1	2801
48	1	2802
49	1	2803
50	1	2804
51	1	2805
52	1	28001

Trench 8 was initially scheduled as a trench that would be excavated if time allowed. It was positioned to the north east of the grotto to target an area where geophysical survey indicated a possible nodal point in a series of linear features. Prior to the excavations it was thought that these could represent gravel paths showing up against background brickearth geology. The topsoil was stripped by machine to the point where archaeological features became visible. In trench 8 this was a large spread of building rubble that covered almost the entire trench. In places bricks superficially had a placed appearance but after cleaning it was ascertained that there was little-no structure within the dumped material.

At the beginning of the final week of excavation it was decided to place a 1m wide section along the northern edge of the trench to identify the margin of the grotto. This was the only portion of the trench to be excavated.

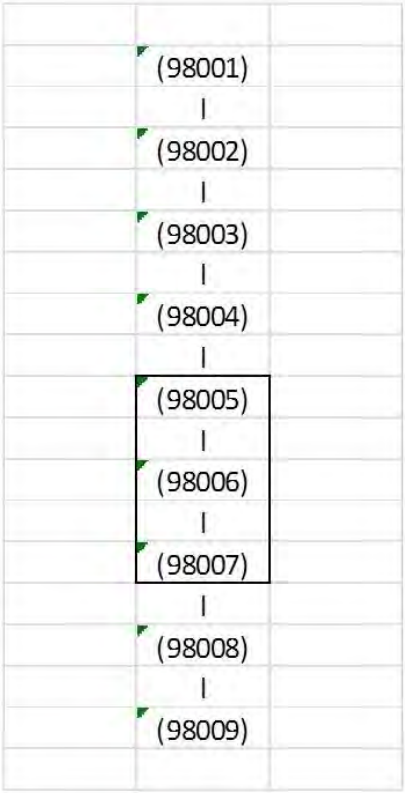
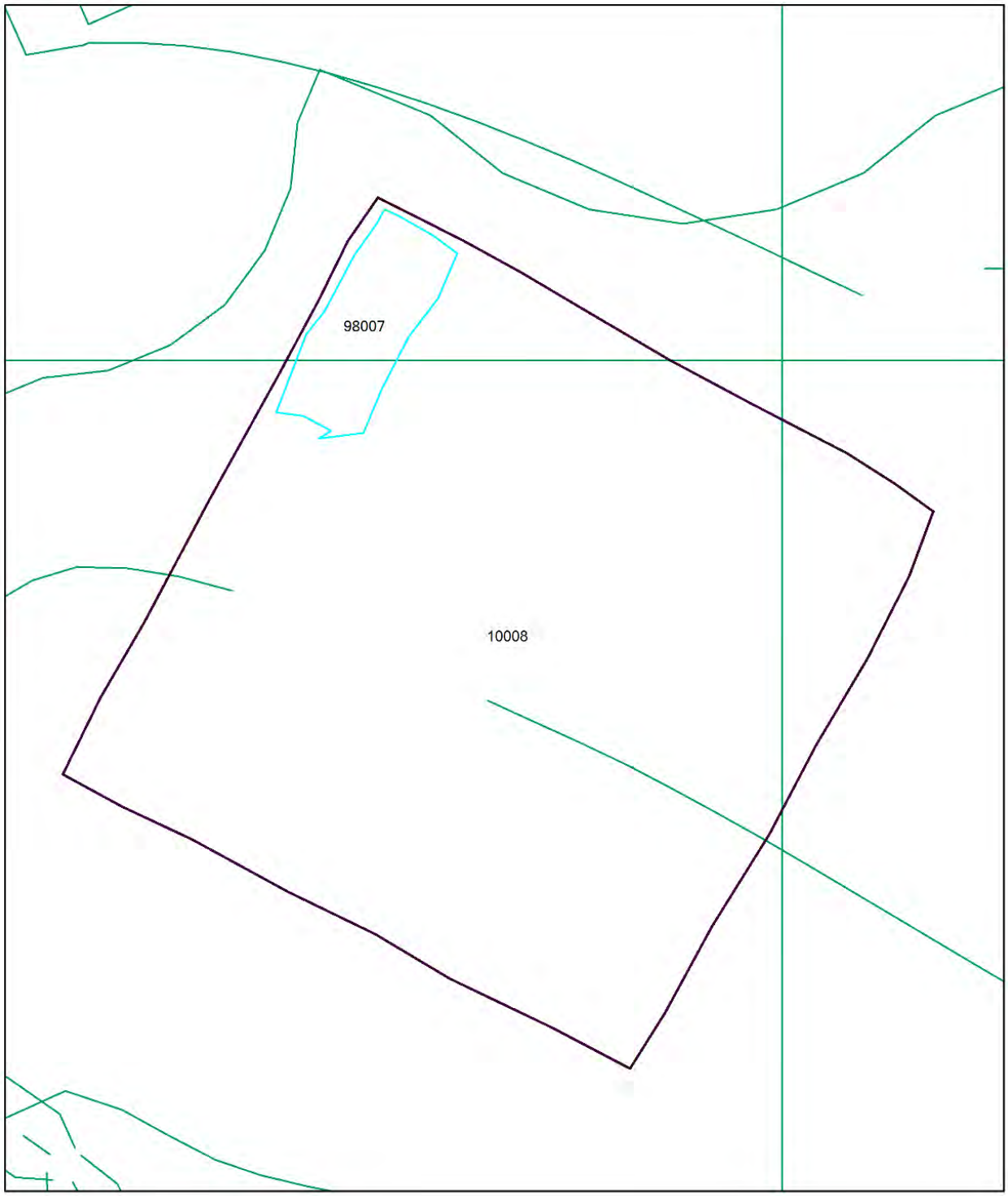


Figure 41 - Harris matrix trench 8

Stratigraphic narrative

The earliest deposit in trench 8 was (98009); this was a gravel deposit with a light yellow sandy matrix. Only a small portion of the deposit was revealed but it was clear of finds and was thought to represent clean natural gravel laid down in a riverine context. Above this was (98008) a 0.07m thick gravelly brickearth. It had a mottled orange/yellow brown colour with frequent gravel and a sandy loam texture. No finds were recovered.



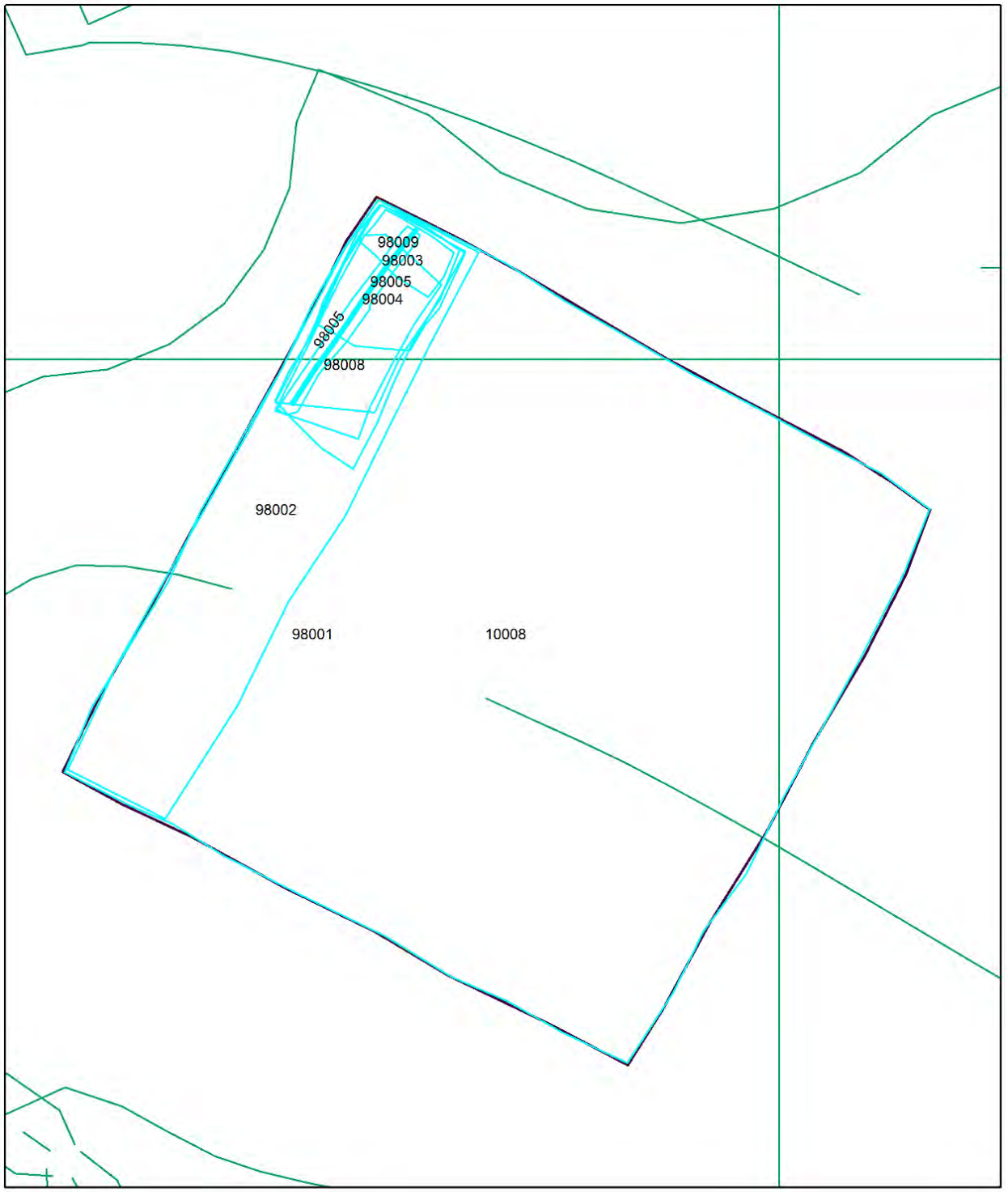
ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:40

0 0.9 1.8 2.7 Metres

N

Figure 42 - trench 8 features.



ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:40

0 0.9 1.8 2.7 Metres

N

Figure 43 - trench 8 deposits.

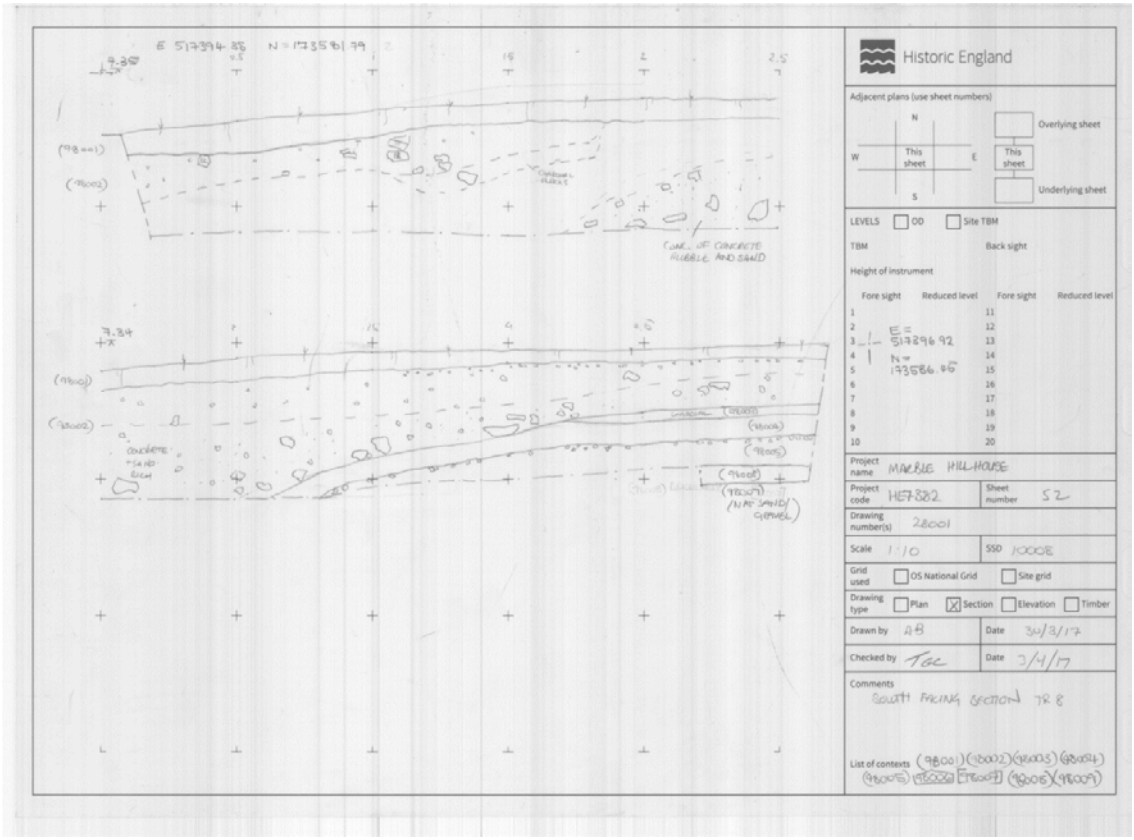


Figure 44 – Section 28001. South facing section from trench 8.

(98008) was then cut by a slot [98007] that contained a field drain (98006). The edges of the cut were not observed but it is believed that they must lie outside of the limits of the excavated slot meaning that it must have been at least 0.9m wide. A 1.9m long stretch of ceramic field drain (98006) had then been placed within this cut feature.

Figure 45 – Field drain (98006) in trench 8. Scales 1m. Photo 7286.

Two different types of tile were used in its construction. S-shaped black glazed roof tiles were used for its base. These were found to be identical to tiles used for the roof of Marble Hill House. On top of these were placed U-shaped tiles of a standard field drain design. The S-shape tiles forming the base of the drain were commonly found broken and pieces of the same type of tile were found wedged into gaps in the base. Surrounding the drain and representing the probable top fill of the drain cut was (98005). It contained frequent gravel, had a mottled orange/yellow brown colour and had a loamy sand texture. It had the consistency of a deposit formed by mixing brickearth/gravel and contained fragments of ceramic building material and glass adding to the idea that it is backfill.

Figure 46 – The s-profiled roof tile structure with the field drain (98006). Scale 0.5m. Photo 7287.

Figure 47 – West facing section showing the buried soil (98004) overlying the field drain (98006). No evidence of cut [98007] can be identified in the section. Scale 0.5m. Photo 7290.

The cut for the grotto sloped down to the west similar to the cut identified in trench 3. As the aim for this trench was to identify the margin of the grotto it was not excavated further than encountering fill (98004) a 0.095m thick, very dark greyish brown (10YR 3/2) clay loam. This covered the eastern end of the trench outside of the grotto as well. Finds included pottery, ceramic building material and stone.

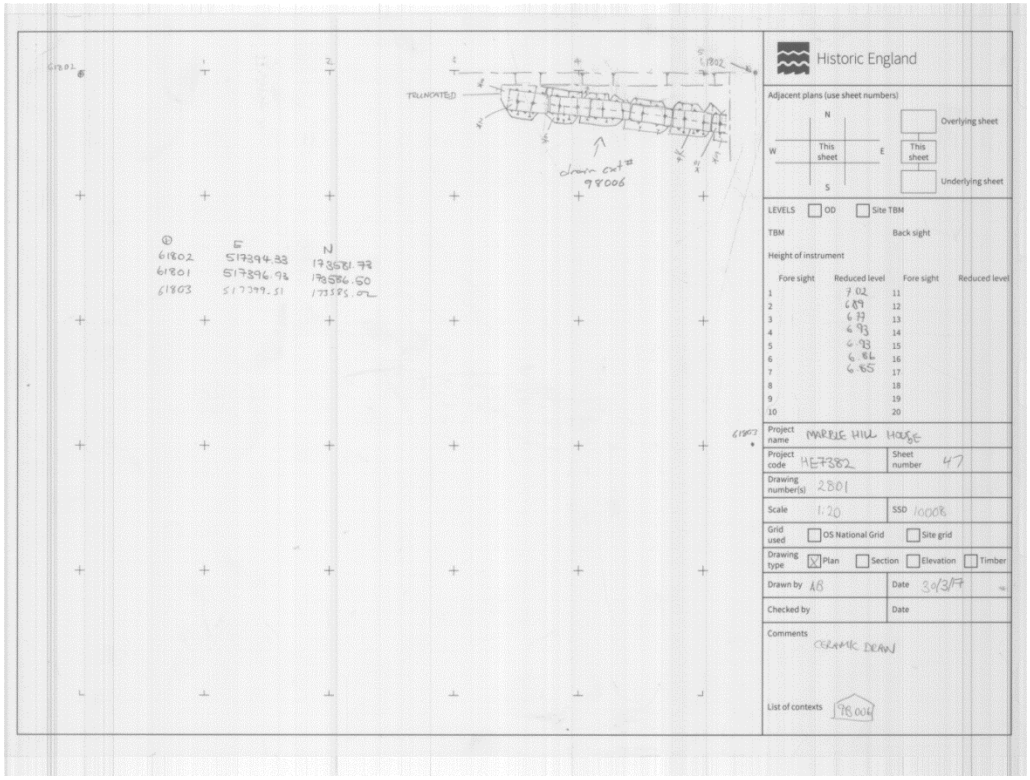


Figure 48 – Plan 2801. Field drain in trench 8. Sheet 47.

Overlying this buried soil in one localized patch outside of the grotto cut was (98003) a thin 0.045m localised patch of burnt material. It had a black colour (10YR 2/1) and contained clay pipe, ceramic building material, pottery, glass and metal. Covering the entirety of (98003) and (98004) was (98002) which

represented several combined layers of rubble backfill. This was over 0.6m thick in the area of the grotto but still attained a thickness of about 0.2m outside of the grotto. These layers contained varying amounts of rubble but all contained concrete and had a sandy matrix with patches of dark grey brown, mid-reddish brown and yellow brown. Finds included ceramic building material, concrete, metal, clay pipe, animal bone, marine shell, pottery and glass.

The final layer in trench 8 was (98001) which represented the 0.15m thick, dark greyish brown (10YR 4/2) topsoil.

Material culture

This section covers the index for material culture recovered from trench 8. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 5 - index for material culture recovered from trench 8.

Context	Type
98001	Ceramic - Building material
98001	Pottery - Post Medieval
98001	Pottery - Post Medieval
98001	Industrial Debris - Slag and Glass
98001	Ceramic - Building material
98001	Glass
98002	Ceramic - Building material
98002	Ceramic - Building material
98002	Ceramic - Building material
98002	Pottery - Post Medieval
98002	Pottery - Medieval
98002	Pottery - Post Medieval
98002	Clay Pipe
98002	Shell - marine
98002	Clay Pipe
98002	Bone - Animal
98002	Glass
98002	Glass
98002	Ceramic - Building material
98003	Ceramic - Building material
98003	Clay Pipe
98003	Pottery - Post Medieval
98003	Glass
98004	Ceramic - Building material
98004	Pottery - Post Medieval
98004	Stone - Other
98004	Ceramic - Building material
98005	Ceramic - Building material
98005	Ceramic - Building material
98005	Glass
98005	Ceramic - Building material

Interpretation

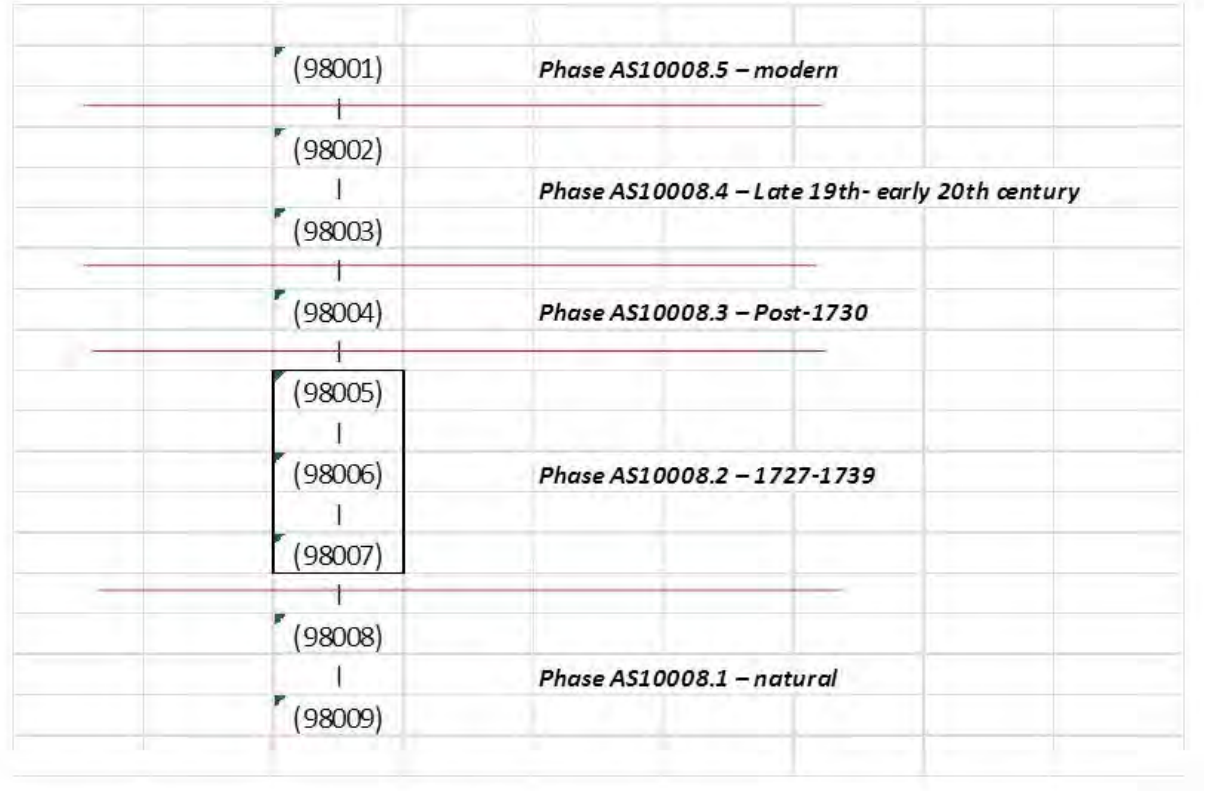


Figure 49 – Phased Harris matrix for trench 8.

Phase AS10008.1 – natural

The earliest material here was (98009) a sandy gravel that was laid down in a fluvial environment. This was topped by (98008) a gravelly brickearth that also appears to have had a non-anthropogenic origin and to have predated the origin of the grotto.

Phase AS10008.2 – 1727-1739

It is not entirely clear whether the field drain was dug before, after or in unison with the grotto. The nature of the interface between the two however led the excavator to believe that the drain was earlier than the grotto. If correct this allows a small window for the drains construction between the erection of the house (whose materials it utilizes) between 1727 and 1729 and the start of the grotto construction which may be as late as 1739 but may have started earlier.

The underlying geology in this area is mainly gravel and it is hard to see why a field drain would be needed here. It is possibly draining a damp spot on the terrace possibly caused by a localised deposit of clayey brickearth or possibly a garden water feature, although the drain itself would not have been part of the water feature. On the 1752 plan there are two features that are hard to make out but may be seats, rocks or trees one of which appears to be on the right alignment but apart from these there does not appear to be anything significant.

Phase AS10008.3 – early-mid 18th century

Even though the field drain appears to be earlier than the grotto the time gap between them is very small. The earliest of the grotto fills that was investigated in this excavation was (98004) which seems to be a buried soil of similar character to that revealed in trench 3. This is best thought of as a well-developed buried soil 'A' horizon. It is believed that this layer represents the original surface of the grotto after it had undergone the first phase of landscaping. As this extends out from the grotto itself and up on to the top of the grotto surrounding it indicates that when the grotto was backfilled, the material spread out over the lip of the grotto as well.

Phase AS10008.4 – Late 19th- early 20th century

(98003) is a patch of burnt material and charcoal but there is no evidence of burning observed in the buried soil below (98004) and it is therefore not considered to be an in-situ deposit from a bonfire. Most likely it is a spread of material that results from the cleaning out a fire installation and later dumped at this location. Likewise the range of finds would link it more with the rubble deposits (98002) above than the buried soil below. It was clear that when the grotto was backfilled this was the result of several different fill events defined by slightly different material that we have grouped under deposit (98002). It is possible that this might have been split between 19th century backfilling of the grotto and 20th century backfilling of a depression caused by settling. An initial impression of the material just under the topsoil was that it seemed to have an early 20th century character.

Phase AS10008.5 – modern

The final phase is marked by topsoil (98001) which is assigned to the modern period.

Trench 9 (SSD10009) – Grotto

SSD	10009		
Contexts	99001-99062		
Samples	59001-59004		
Small Finds	3010, 3022-3029, 39001, 39002, 39003		
Drawings	Sheet 8-10, 12, 25-27, 39, 42-46	Plans 2901-2908	Section 29001-29020

Sheet #	Number of drawings on sheet	Drawing numbers
8	1	2901
9	1	2902
10	1	2903
12	2	2906, 29003
25	6	29004, 29005, 29006, 29007, 29008, 29009
26	1	29001
27	1	29001
39	2	2905, 29002
42	6	29015, 29016, 29017, 29018, 29019 (+24002)
43	3	29010, 29012, 29020
44	2	29011, 29014
45	1	2908
46	1	2908

Trench 9 was position to the south east of the grotto to target an area where geophysical survey indicated a possible nodal point in a series of linear features. Prior to the excavations it was thought that these could represent gravel paths showing up against background brickearth geology. The topsoil was stripped by machine to the point where archaeological features became visible.

Stratigraphic narrative

The earliest deposit identified in this trench was gravel forming the natural river gravel terrace. The first point that natural underlying geology became visible was a series of narrow, parallel linear features that

were originally interpreted as plough scars before it became apparent that they were narrow baulks of natural gravel between larger bedding trenches. These were numbered (99008), (99009), (99010), (99011), (99012) and (99013). Later natural geological deposits were numbered (99042), (99043) and (99044) all from section drawings. The natural geology was highly variable representing graded sands and gravels deposited in a fluvial environment although at the interfaces with the cut archaeology in trench 9 was mostly represented by coarse gravels with a sandy matrix.

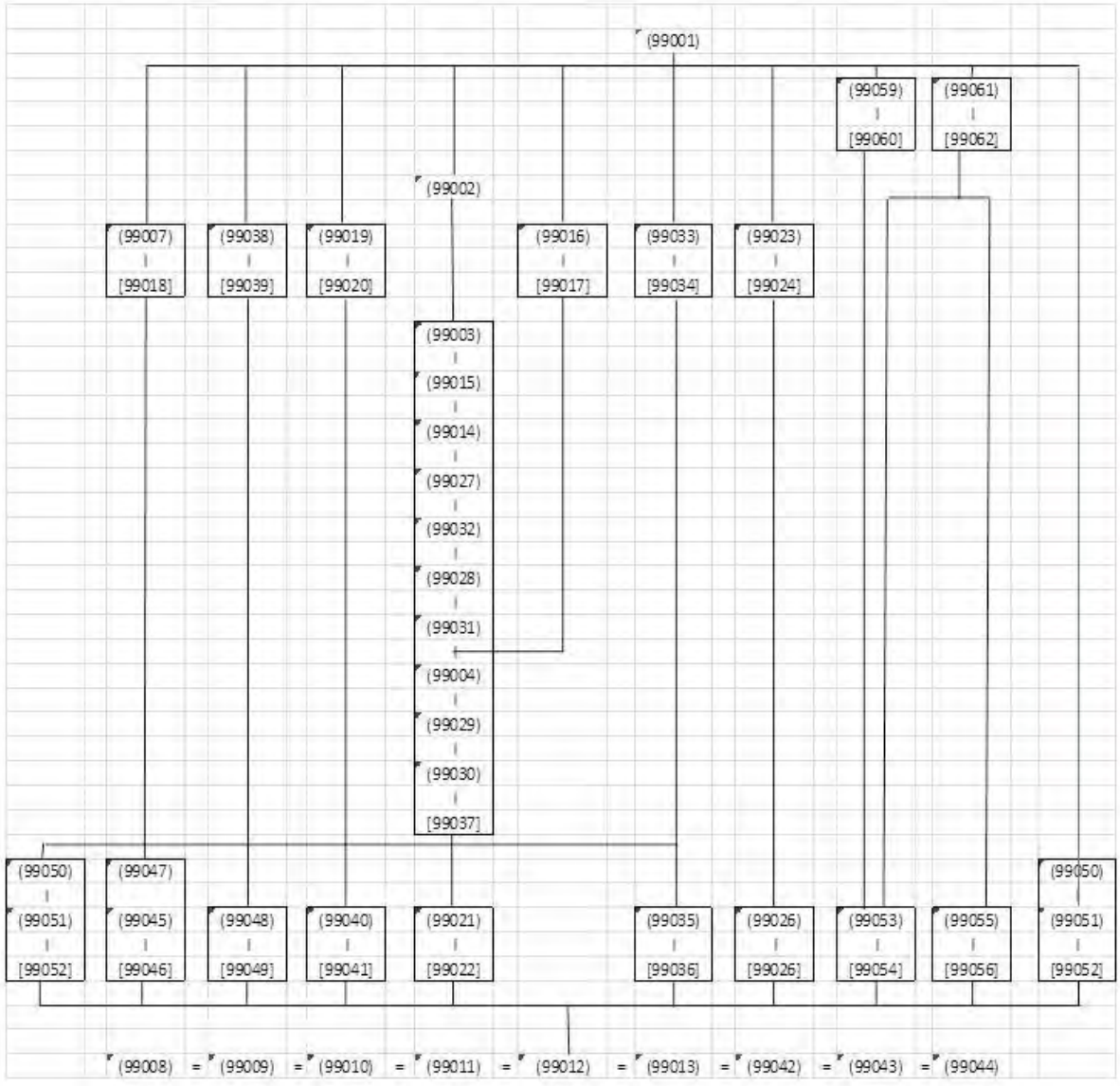


Figure 50 - Harris matrix trench 9.

Ten linear features interpreted as bedding trenches were identified and excavated across trench nine. These will be described from south west to north east. These were all parallel edged features orientated north west to south east. They all cut the underlying natural geology.

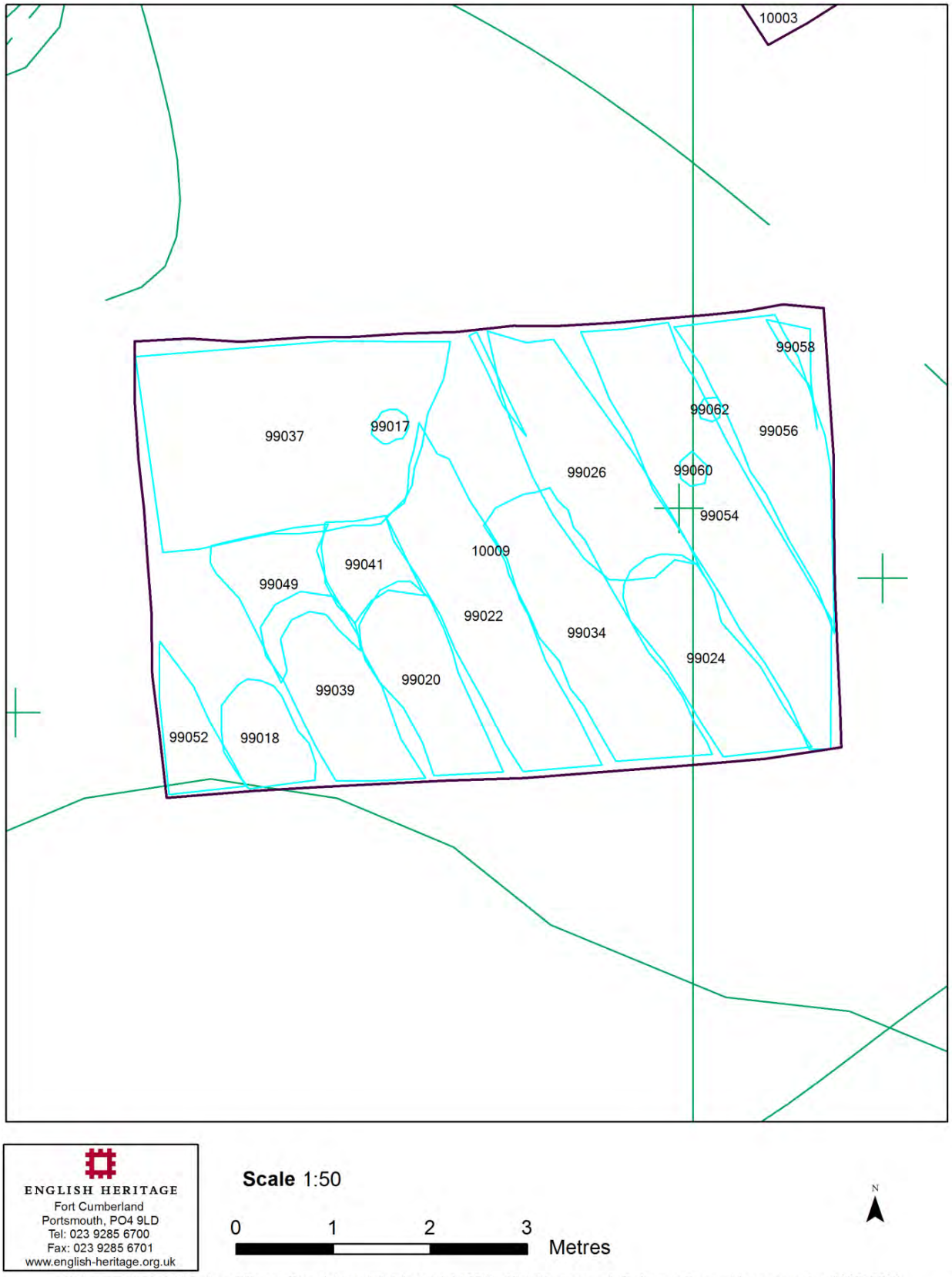


Figure 51 - trench 9 features.

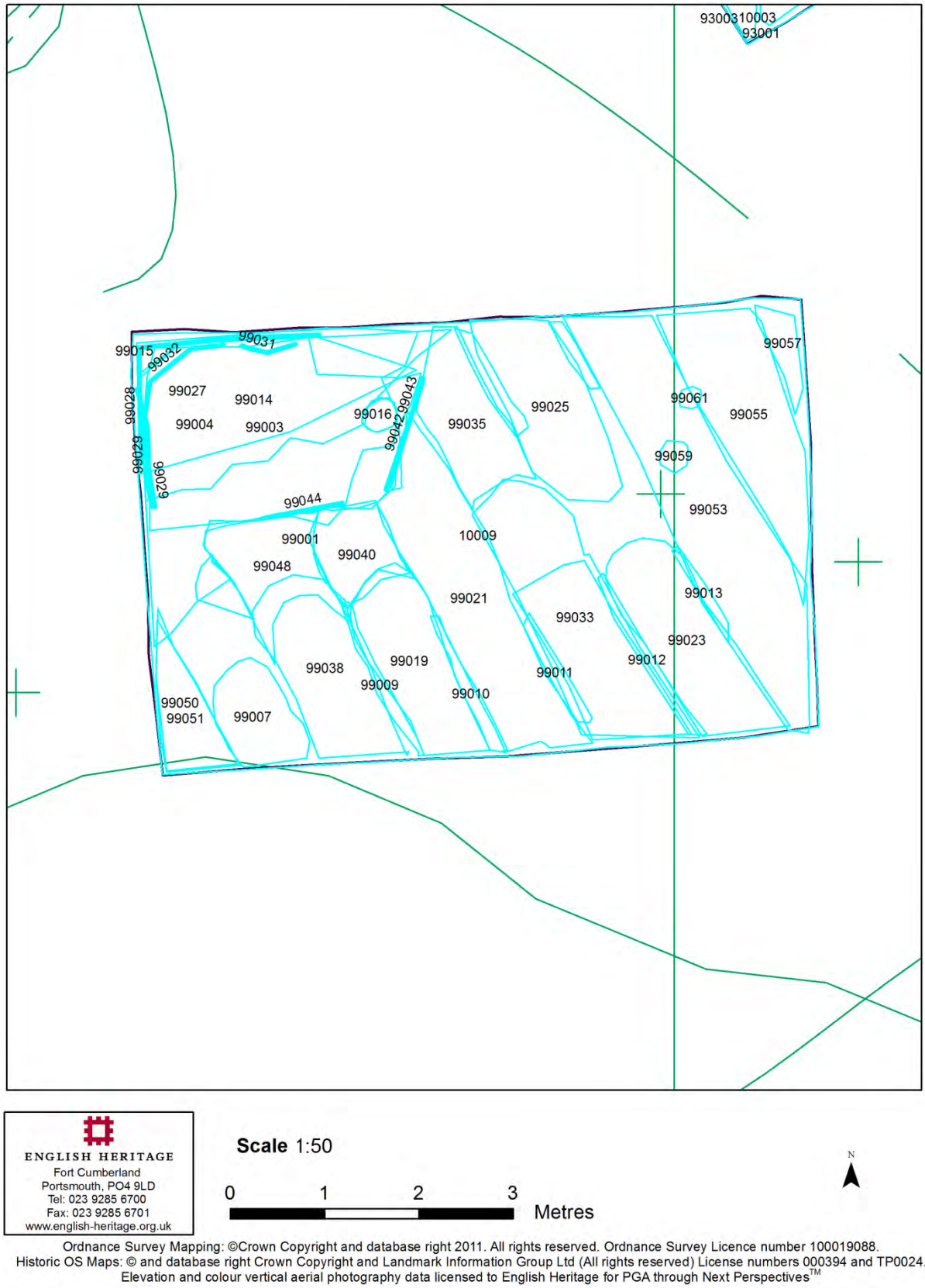


Figure 52 - trench 9 deposits.

Cut [99052] was situated in the south west corner of trench 9. It was linear in plan, measuring at least 1.9m long and more than 0.76m wide with its southern end and western side, continuing out from the southern margin of the trench. Its edges were straight with steep sides descending to a concave base. It had two fills, (99050) and (99051). (99051) was the primary fill. It contained a moderate amount of pebbles with a mid-

grey brown (10YR 4/3), sandy silt loan textured matrix. It was a maximum of 0.19m thick and contained pottery, clay tobacco pipe and ceramic building material. (99050) was the secondary fill which has a consistency of redeposited brickearth. It was a dark grey brown mottled with patches of light orangey brown (10YR 3/1 + 10YR 6/6) with a silty loam texture. Inclusions included small pebbles (20%) and occasional flecks of charcoal. It had a sudden, horizontal interface with (99051), leading the excavator to posit that it represented a capping deposit or levelling layer representing the decommissioning of the feature. It contained no finds.

The next cut was [99046]. This was 0.9m wide and seen running for at least 1.9m long. It had straight steep edges descending to a concave base. It had two fills (99045) and (99047). (99045) was the primary fill, mid grey brown colour with patches of brown (10YR 4/2 + 10YR 5/4) and a sandy silt loam texture. 20-25% of the deposit was constituted by small rounded –angular pebbles with occasional small to medium flecks of charcoal. Finds included bone, metal, coal, shell, clay tobacco pipe and ceramic building material. Part of this deposit was covered by (99047) a dark grey brown colour with light orangey brown patches (10YR 4/2 + 10YR 5/6) and a sandy silt loam texture. No finds were recovered from this fill. This did not cover the entire feature but it was not apparent whether this was the actual case or whether a more extensive coverage had been removed during machine reduction. (99045) was cut by [99018] a bedding trench of similar plan to [99046] but set further to the south east. Its north west end had a rounded terminal end with sharp sides 0.8m apart that descended to a concave uneven base. It had a single fill (99007) that was 0.16m thick. It was a mid-brown colour (10YR 3/4) with a loamy sand texture. It contained moderate amounts of angular and subangular pebbles and finds included pot, bone, a metal nail, clay pipe, shell and a copper alloy pin (small find number 39002).

Bedding trench [99049] was 1m wide and 1.05m in the trench. It had sharp sides descending to a concave flat base. It had a single 0.17m thick fill (99048) which was dark yellowish brown (10YR 3/4) with a sandy texture and consisted of about 70% pebbles. No finds were recovered. Bedding trench [99039] appears to have superseded [99049], cutting (99048) and representing a retreat to the south east. This later cut had a clearly rounded terminal end. It was 0.85m wide and more than 2.4m long. It had sharp sides descending to a concave flat base. It had a single fill (99038) which was very dark grey (10YR 3/1) with a sandy loam texture and about 30% pebbles. It contained ceramic building material, clay tobacco pipe, shell and pot. Sample <59003> was taken from this deposit to try to identify seeds and other archaeobotanical data.

Bedding trench [99041] was 0.85m wide and 0.85m long. It had sharp sides descending to a concave flat base. It had a 0.12m thick single fill (99040) which was a dark grey colour with light orangey brown patches (10YR 3/1 + 10YR 5/6) and a sandy loam-sandy silt loam texture. It contained small pebbles (20%) with finds including pot, metal, clay tobacco pipe and ceramic building material. It was cut at its southern end by second phase bedding trench [99020]. This later cut had a clearly rounded terminal end. This was 0.86m wide and extended beyond the southern limit of excavation. It had sharp sides descending to a concave flat base and a rounded terminal end at its north west margin. It had a single fill (99019) which was a 0.16m thick deposit with a mottled brown / dark grey brown colour (10YR 3/1) and a sandy silt loam texture. There were frequent small pebbles and occasional flecks of charcoal. Finds included bone, shell, glass, metal and ceramic building material.

Bedding trench [99022] was at least 4.05m long, extending beyond the southern limit of excavation. It was 0.87m wide with sharp sides descending to a concave flat base. It had a single 0.13m thick fill (99021). It was a mid-greyish brown colour (10YR 3/2) with a sandy silt loam texture, frequent small sized gravel and moderate small charcoal flecks. Finds included bone, shell and ceramic building material. No evidence was

observed for a second phase bedding trench but (99021) was cut at its northern end by the large cut [99037].

Bedding trench [99036] was at least 1.8m long, extending beyond the northern limit of excavation. It was 0.76m wide with sharp sides descending to a flattish base. It had a single 0.14m thick fill (99035). This was a gravelly fill with a dark grey brown colour (10YR 3/1) and a sandy silt loam texture. Finds included bone, shell and ceramic building material. At its southern margin it was cut by a later phase of bedding trench [99034]. It had a rounded terminal end and sharp sides descending to a concave base. It was at least 3.32m long, extending beyond the southern limit of excavation and was measured at 0.85m wide. It had a single 0.24m thick fill (99033). This was a dark grey brown colour (10YR 3/1) with a sandy loam texture. It contained 10-15% gravel along with glass, metal, shell and ceramic building material.

Bedding trench [99026] was at least 3m long, extending beyond the northern limit of excavation. It was 1.0m wide with sharp sides descending to a concave flat base. It had a single 0.17m thick fill (99025). This was a very gravelly fill with a grey brown colour (10YR 5/2) and a silt loam texture. Finds included pot, clay pipe and ceramic building material. At its southern margin it was cut by a later phase of bedding trench [99024]. It had a rounded terminal end and sharp sides descending to a concave flat base. It extended beyond the southern limit of excavation and was measured at 0.74m wide. It had a single 0.16m thick fill (99023). This was a mid-yellowish brown in colour (10YR 3/4) with a sandy loam texture. It contained moderate gravel along with pot, bone, metal, clay tobacco pipe, shell and ceramic building material.

Bedding trench [99054] was at least 2.06m long, extending beyond the northern and southern limits of excavation. It was 0.9m wide with sharp sides descending to a flattish base. It had a single 0.17m thick fill (99053). This was a greyish brown colour (10YR 3/4) with a loamy sand texture. Finds included pot, shell and ceramic building material. No later recut was observed.

Bedding trench [99056] was at least 1.66m long, extending beyond the northern and southern limits of excavation. It was 1.0m wide with sharp sides descending to a flattish base. It had a single 0.22m thick fill (99055). This was a greyish mid-brown colour (10YR 3/4) with a loamy sand texture. Finds included pot, bone, metal and ceramic building material. No later recut was observed.

Bedding trench [99058] was at least 1.08m long, extending beyond the northern, southern and eastern limits of excavation. Only a width of 0.3m was exposed in the trench. It had sharp sides but the base was not exposed. It had a single fill (99057) which was at least 0.12m thick fill. It was a greyish mid-brown colour (10YR 3/4) with a loamy sand texture. Only pot was recovered from the fill.

After the bedding trenches, the next major feature of trench 9 is a large cut [99037] in the north west corner. This feature cut bedding trenches [99052], [99046], [99049], [99041], [99022] and [99036]. It had regular straight sides descending vertically and continued outside of the limits of the excavation. It was at least 1.6m deep although the base was not reached before excavation stopped for safety concerns.

The lowest fill reached by the excavation was (99030) a pale yellow (2.5Y 8/3) sandy gravel, with very low percentage of silt in the matrix that was at least 0.6m thick. It had aligned distributions of clasts / gravel suggesting that it had resulted from a series of smaller episodes of deposition. No finds were recovered.

Above this was fill (99029), a yellowish brown (10YR 5/4) compacted loam, with a sandy silt loam texture. It had undulating upper and lower boundaries with a maximum thickness of 0.1m although there was some variation. There was no apparent worm sorting, and some possible weak sandy laminations. Finds included ceramic building material, pottery and marine shell.

Figure 53 – East facing section across [99037] in trench 9. Scales 2m. Photo 7169.

(99004) was the next fill. This was a 0.6m thick, pale yellow (2.5Y 8/3) deposit of compacted sandy gravel, banked up against the sides of cut [99037]. There was very little clay/silt in the matrix, and the gravel clasts showed no arrangement or related distribution. Finds included ceramic building material, slag, marine shell and clay tobacco pipe.

Figure 54 – South facing section across [99037] in trench 9. Scales 1m and 2m. Photo 7172.

On the eastern edges of the feature was fill (99031) although it did not spread across the whole of the feature. It was a 0.2m thick, yellowish brown (10YR 5/6) colour with a sandy silt loam texture. It was

distinctly paler with a more 'clayey' texture than comparable sandy silt loams in the fill sequence. This appears to be result of carbonate formations within the deposit, resulting in paler colours and a stronger 'cemented' fabric texture. Some weakly nodular small carbonate/limey fragments may also be present.

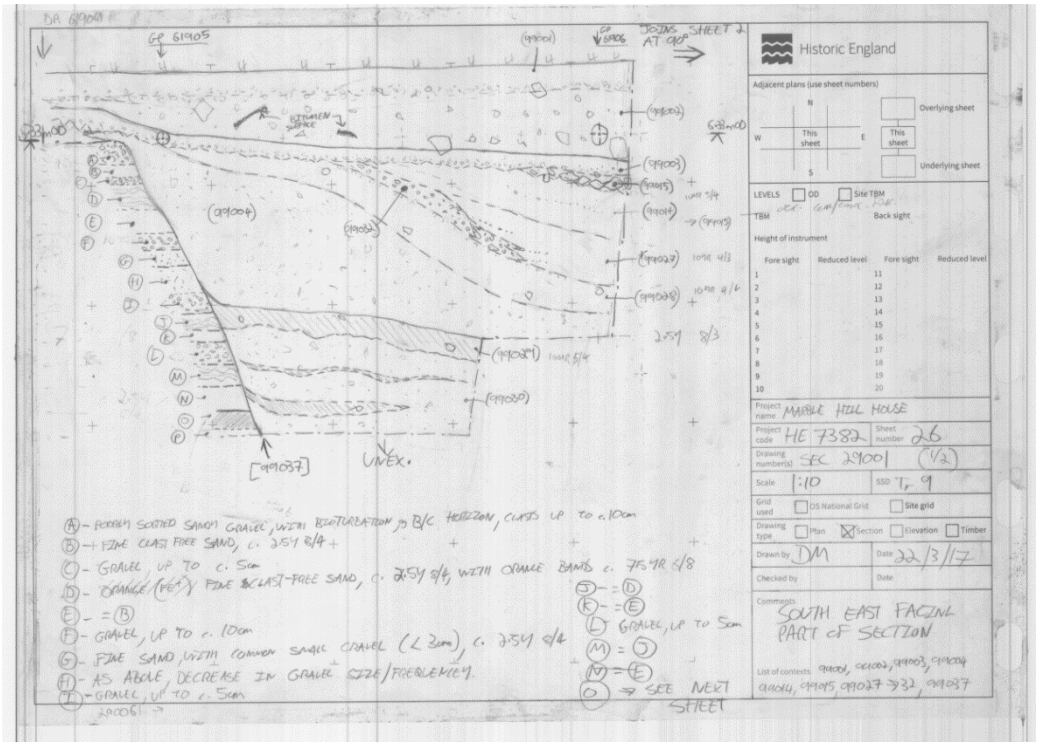


Figure 55 – Section 29001. East facing section of [99037]. Sheet 26.

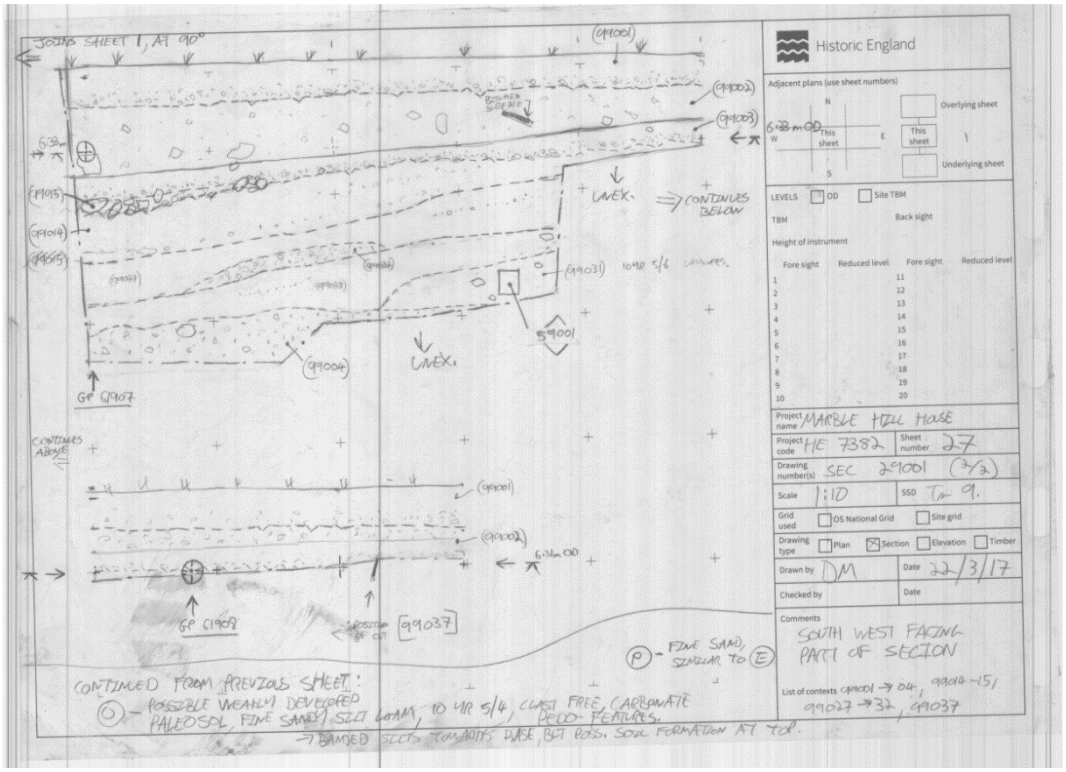


Figure 56 – Section 29001. South facing section of [99037]. Sheet 27.

Above both (99004) and (99031) was (99028). It was a 0.2m thick, dark yellowish brown (10YR 4/4) deposit with a sandy silt loam texture. It is somewhat mixed, with what appears to be some rather coarse mixing of

sub-soil and top soil fragments, with some clusters of sand/gravel also present. Variable weak stone/gravel lenses suggest tip lines, rather than worm sorted stone-lines. Finds included animal bone, glass, slag and pottery.

Next came (99032) a discontinuous 2.5m x 1m, 0.1m thick patch of gravel with a brown (10YR 4/3), sandy silt loam matrix that exhibited tip lines. It only contained fragments of clay tobacco pipe. Above this was (99027) a 0.2m thick continuous deposit. It was brown (10YR 4/3) with a sandy silt loam texture with a limited range of ceramic building material recovered.

This was overlain by (99014) a mottled deposit of mid to pale yellowish brown / beige colour (mostly 10YR 5/4). It was a continuous deposit up to 0.45m thick with a sandy silt loam texture. There was evidence for bioturbation. It contained a wealth of anthropogenic material including ceramic building material, worked stone, pottery, animal bone, glass, clay tobacco pipe, marine shell and mortar / plaster. Its boundary with (99003) above it was uneven and apparently broken by bioturbation and in the north west corner by (99015), a rubble interface. (99015) covered an area of 0.6m x 0.3m and attained a maximum thickness of 0.15m. It consisted of a lens of gravelly material that commonly included fragments of red brick (up to quarter/half bricks), with attached soft white limey mortar and occasional roof slate fragments. It sloped down towards the north west and out of the limit of excavation and it may represent the tip of a much larger deposit.

(99003) was situated over (99015), (99014), (99032), (99028) and (99004). It was a 0.07m thick dark greyish brown (2.5Y 4/2) layer with a sandy silt loam texture. Its boundary with these deposits was broken and irregular whilst its upper boundary with (99002) was sharp and smooth. Like the other deposits in this group it sloped downwards to the north west. A range of ceramic building material, glass, worked stone, pot, marine shell and clay tobacco pipe were recovered from (99003) but all were quite well sorted and moderately small in size.

On top of this sits (99002) a 0.3m thick deposit with a strong brown colour (7.5YR 5/8) and a sandy silt loam texture. It contained moderately well sorted, small to medium, flinty gravel, with occasional mixed debris (brick/tile/concrete/'tarmac') throughout but not dominating it. Also present are very rare rounded small chalk lumps (10cm), occasional glass and metal/iron slag (<10cm), and a fragment of probable Ryegate Stone.

Apart from features interpreted as bedding trenches and a recut of the grotto, three small circular features were also identified. Cut [99017] was sub-circular to oval in shape measuring 0.30m by 0.38m with a depth of 0.06m. It was bowl shaped with sharp edges at the top descending to a concave but uneven base. It cut fill (99004) of the large cut [99037]. It had a single fill (99016) that was a very dark greyish brown (10YR 3/2) with a loamy sandy texture. There were frequent subangular gravel up to 10mm and infrequent stones 30-50mm. Only glass was recovered from this fill.

[99060] cut deposit (99053), the fill of bedding trench [99054]. It was roughly circular, 0.3m in diameter and cut 0.08m into the fill of the bedding trench (although it would originally have been cut from ground surface level). It had sharp sides descending to a bowl shaped base. It had a single fill (99059), a very dark grey (10YR 3/1) deposit with a sandy silt loam texture. The only recorded find was shell.

[99062] was a small, 0.25m diameter circular cut that went through the fills of bedding trenches [99054] and [99056]. It had sharp edges that descended 0.08m to a bowl shaped base. It had a single fill (99061) a very dark grey (10YR 3/1) fill with a sandy silt loam texture containing coal, metal, ceramic building material and marine shell.

The latest layer on the site was (99001) topsoil. It was 0.3m thick with a dark greyish brown colour (10YR 4/2) with a silt loam texture. It covered the entire trench and was removed by machine. A wealth of finds were recovered from this layer including, human bone, animal bone, ceramic building material, pot, stone, clay tobacco pipe and glass.

Material culture

This section covers the index for material culture recovered from trench 9. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 6 - index for material culture recovered from trench 9.

Context	Type
99001	Ceramic - Building material
99001	Bone - Human
99001	Bone - Animal
99001	Pottery - Medieval
99001	Pottery - Post Medieval
99001	Clay Pipe
99001	Stone - Other
99001	Ceramic - Building material
99001	Ceramic - Building material
99001	Pottery - Post Medieval
99001	Ceramic - Building material
99001	Ceramic - Building material
99001	Glass
99003	Shell - marine
99003	Ceramic - Building material
99003	Pottery - Post Medieval
99003	Ceramic - Building material
99003	Industrial Debris - Slag and Glass
99003	Stone - Other
99003	Clay Pipe
99003	Stone - Other
99003	Ceramic - Building material
99003	Ceramic - Building material
99003	Glass
99003	Glass
99004	Clay Pipe
99004	Shell - marine
99004	Ceramic - Building material
99005	Shell - marine
99005	Clay Pipe
99005	Bone - Animal
99007	Ceramic - Building material
99007	Shell - marine
99007	Bone - Human
99007	Pottery - Post Medieval
99007	Coal

99007	Industrial Debris - Slag and Glass
99007	Pottery - Medieval
99007	Clay Pipe
99007	Ceramic - Building material
99009	Mortar and Plaster
99009	Clay Pipe
99009	Pottery - Post Medieval
99009	Ceramic - Building material
99009	Glass
99014	Ceramic - Building material
99014	Ceramic - Building material
99014	Bone - Animal
99014	Ceramic - Building material
99014	Shell - marine
99014	Mortar and Plaster
99014	Stone - Other
99014	Clay Pipe
99014	Bone - Animal
99014	Glass
99015	Ceramic - Building material
99015	Ceramic - Building material
99015	Industrial Debris - Slag and Glass
99015	Mortar and Plaster
99016	Ceramic - Building material
99016	Glass
99021	Ceramic - Building material
99021	Bone - Animal
99021	Shell - marine
99021	Clay Pipe
99021	Ceramic - Building material
99021	Ceramic - Building material
99021	Bone - Animal
99021	Stone - Other
99021	Ceramic - Building material
99021	Pottery - Post Medieval
99023	Ceramic - Building material
99023	Ceramic - Building material
99023	Ceramic - Building material
99023	Pottery - Medieval
99023	Clay Pipe
99023	Bone - Animal
99023	Shell - marine
99023	Bone - Human
99023	Shell - marine
99023	Pottery - Post Medieval
99023	Clay Pipe

99023	Pottery - Post Medieval
99023	Bone - Animal
99023	Pottery - Post Medieval
99023	Glass
99023	Ceramic - Building material
99025	Pottery - Post Medieval
99025	Ceramic - Building material
99025	Bone - Animal
99025	Shell - marine
99025	Clay Pipe
99025	Ceramic - Building material
99025	Industrial Debris - Slag and Glass
99025	Pottery - Post Medieval
99025	Ceramic - Building material
99027	Pottery - Post Medieval
99027	Mortar and Plaster
99028	Pottery - Post Medieval
99028	Bone - Animal
99028	Industrial Debris - Slag and Glass
99028	Glass
99028	Stone - Other
99029	Ceramic - Building material
99029	Pottery - Post Medieval
99029	Shell - marine
99033	Shell - marine
99033	Bone - Animal
99033	Ceramic - Building material
99035	Ceramic - Building material
99035	Ceramic - Building material
99035	Clay Pipe
99035	Pottery - Post Medieval
99038	Ceramic - Building material
99038	Clay Pipe
99038	Pottery - Post Medieval
99038	Shell - marine
99040	Clay Pipe
99040	Pottery - Post Medieval
99045	Ceramic - Building material
99045	Ceramic - Building material
99045	Ceramic - Building material
99045	Shell - marine
99045	Clay Pipe
99045	Bone - Animal
99051	Pottery - Post Medieval
99051	Clay Pipe
99051	Ceramic - Building material

99051	Stone - Other
99053	Pottery - Medieval
99053	Clay Pipe
99053	Shell - marine
99053	Bone - Animal
99053	Ceramic - Building material
99053	Ceramic - Building material
99055	Ceramic - Building material
99055	Pottery - Post Medieval
99055	Pottery - Post Medieval
99055	Clay Pipe
99055	Shell - marine
99055	Bone - Animal
99055	Industrial Debris - Slag and Glass
99055	Ceramic - Building material
99061	Ceramic - Building material
99061	Shell - marine
99061	Coal

Interpretations

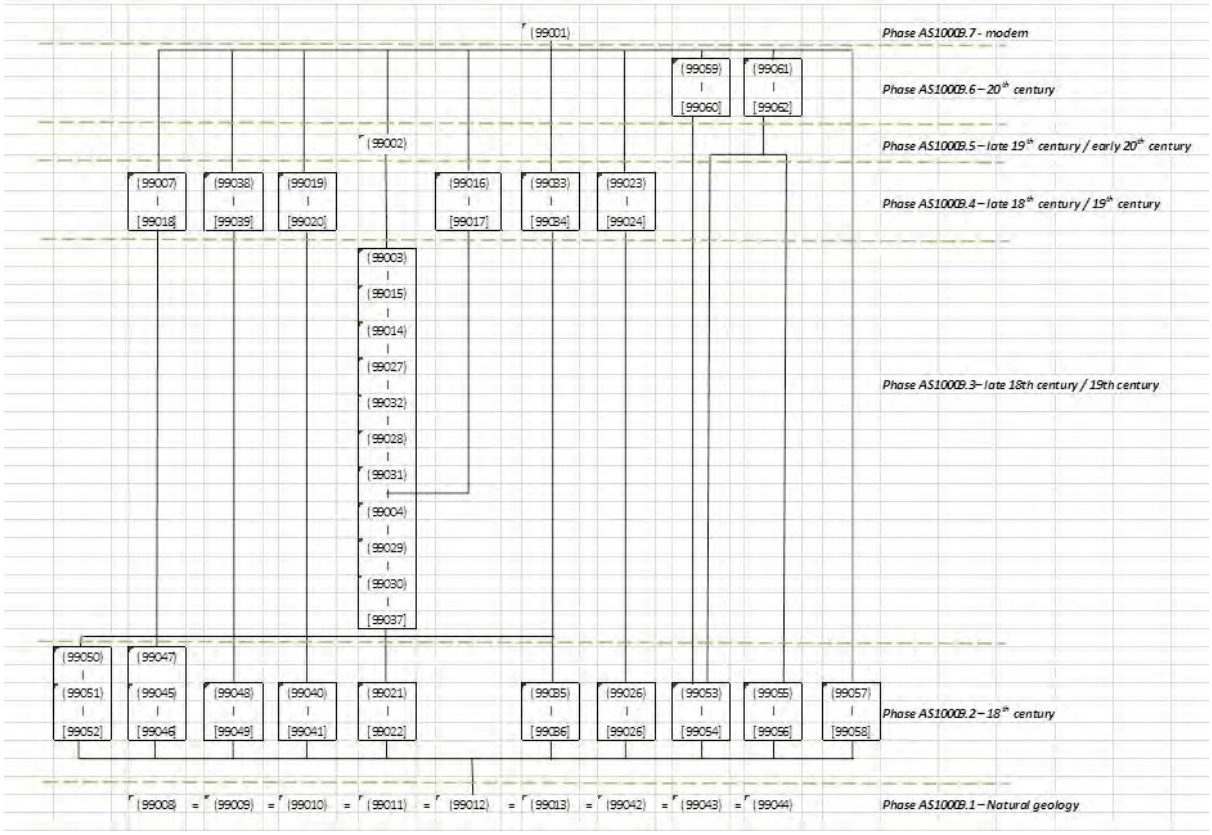


Figure 57– Phased Harris matrix for trench 9.

Phase AS10009.1 – Natural geology

The earliest material in trench 9 were a mix of natural sands and gravels which were variously numbered (99008), (99009), (99010), (99011), (99012), (99013), (99042), (99043) and (99044).

Phase AS10009.2 – 18th century

There were two clear phases to the bedding trenches. [99052], [99046], [99049], [99041], [99022], [99036], [99026], [99054], [99056] and [99058] all represent the original layout of planting to the south east of the grotto. It is notoriously difficult to date planting beds as they usually continue is use with periodic introduction of fresh artefactual material during manuring. Spatially they would fit with the initial construction of the grotto. The original terminal ends for these beds either lay outside of the limits of excavation or had been removed by cut [99037].

Figure 58 – Trench 9 post-excavation facing east. The cut for the grotto [99037] can be seen in the bottom corner. The sectioned bedding trenches can be seen in parallel rows. Scales 1m. Photo 7301.

Phase AS10009.3– late 18th century / 19th century

Cut [99037] represents the next phase of activity and marks out the edge of one of the grotto's phases. The relationship with the first and second phases of bedding trenches is key to understanding [99037]. If it represented an unchanged edge of the grotto / quarry then the implications are that the bedding trenches represent a pre-grotto pre-house phase of planting. This would be problematic with what we know of the site's agricultural history prior to its development. If we consider that [99037] is the margin of a later phase of enlarged grotto this would make sense of an original planting plan being cut and for the need to create a later a second phase of planting beds offset from the first.

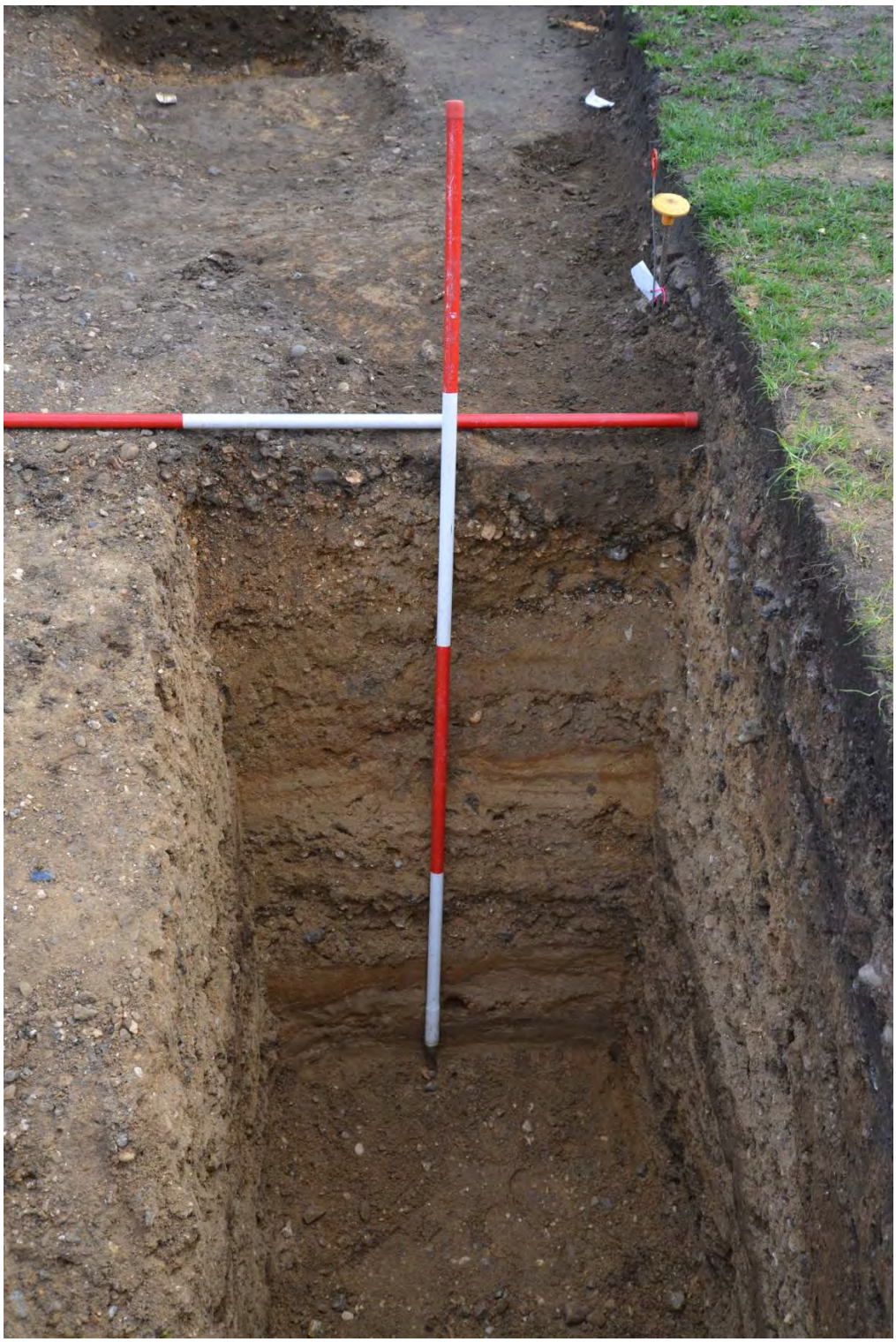


Figure 59 – southern edge of [99037] showing the natural bands of sand and gravel and the cut through the end of bedding trenches [99046] and [99049] (top). Scales 2m. Photo 7173.

The earliest deposits within [99037] are very sandy / gravelly. (99030), (99029) and (99004) appear to result from material being banked against the wall of the cut. The sharp vertical nature of the cut itself would argue against their being derived from collapse of the edge itself over an extended period of time and so we must assume that they represent a deliberate act of backfilling. Trample lines were observed in these deposits but no evidence for worm sorting or bioturbation implying that backfilling was manual but took only a relatively short time to complete.

(99031) was a localised deposit located towards the eastern side of [99037] but in an area where excavation was not extended fully to the edge of the feature. The presence of the carbonates in the deposit make it distinct from the other loam fills and this may have derived from material related to the grotto or grotto features such as lime mortar, shell/coral that had been dumped in the (unexcavated portion of the) deposit.

Although (99028) and (99027) are also probably derived from dumped material they are distinctly different from earlier fills. Both are noticeably loamy and relatively gravel free. They do not show significant amounts of bioturbation and do not appear to represent in-situ soil formation. (99014) may have originally been similar in consistency but shows signs of bioturbation that may have led to its alteration and formation as a soil 'B' horizon. Above this (99003) represents a buried soil 'A' horizon probably indicating a vegetated (shallow rooting) surface such as grass with bioturbation into the underlying layer that may have taken 40-50 years to form.

In summary after cut [99037] is made, a series of sand / gravel dumps are made to form a slope upon which loams are deposited with the probable intention of forming soil to support planting. Why would a deep vertical cut be made only for it to be immediately backfilled and re-landscaped into a gentle slope? If the plans involved a shallow slope why go to the extra work of removing and then redepositing material rather than just create a shallow sloping cut (as observed in trenches 3 and 4) in the first place? A regular observation by the excavators during its exposure was that [99037] looked and felt like a 'robber' cut. That is, it was created to rob-out some pre-existing feature. This would present a likely interpretation that would resolve this quandary. [99037] was cut to remove some vertical feature or structure related to an earlier phase of the grotto to then facilitate re-landscaping to more gentle slope. This may have taken the form of a supporting wall along the edge of a pathway descending down into the grotto. This interpretation of the excavated evidence may be supported by the 1752 plan, but if actual traces of a revetting wall or pathway remain they will be situated at the base of the original grotto cut, something that was beyond the limitations of this phase of excavation.

Phase AS10009.4 – late 18th century / 19th century

After the edge of the grotto was recut and re-landscaped the bedding trenches we set back and recut to take into account the extended grotto boundary. This accounts for the creation of features [99018], [99039], [99020], [99034] and [99024]. No recut was observed for bedding trench [99022] even though it is truncated by [99037]. It is plausible that with the reworking of the planting plan in this area, that [99022] ceased to function as a planting bed but was instead allowed to return to grass, providing a break between two sections of beds.

Cut [99017] could have been either a posthole or small planting pit. There was no evidence for post packing or a post pipe, but more importantly because the feature is so shallow it is best interpreted as a planting feature. As this feature cuts a fill of the re-landscaped grotto it could relate to any period after phase AS10009.2, however, it has been placed in phase AS10009.3 because its situation on the lip of the re-landscaped grotto is taken to imply a degree of contemporaneity with it. This is purely hypothetical though.

Phase AS10009.5 – late 19th century / early 20th century

It may have taken 40-50 years for (99003) to form as a developed 'A' horizon (although it does not appear as thick as the buried soil 'A' horizon (93004) in trench 3) in the re-landscaped portion of the grotto. It implies that some time had lapsed before (99002) was dumped onto the surface burying (99003). This

depositional episode appears to infill the grotto and level the ground. The presence of bitumen and tarmac within (99002) has been taken to suggest a late 19th / early 20th century date for this event.

Phase AS10009.6 – 20th century

Assessing the function and phases of features [99060] and [99062] is problematic. Neither has evidence of post-pipes and would be relatively shallow to support very substantial posts. However, they are relatively isolated as planting features. [99060] occupies a central setting in bedding trench [99054] whilst [99062] cuts bedding trenches [99054] and [99056]. It is accepted that in either case they may represent late additions to the layout of the planting beds but their asymmetrical relationships with these would imply differential functions. The similar size and depth of the features along with their proximity to each other make it tempting to conclude that they are associated. If this is true then their relationship with the underlying bedding trenches suggests that they probably post-date the abandonment of the bedding trenches. For this reason [99060] and [99062] are phased after the backfilling of the grotto.

Phase AS10009.7 - modern

The final phase is represented by topsoil (99001).

Phase 3

Trench 10 (SSD10010) – Grotto

SSD	10010		
Contexts	90001-90040		
Samples	50001-50008		
Small Finds	30001		
Drawings	Sheet 69, 71, 72, 75, 76	Plans 2051	Section 20051, 20053-6

Sheet #	Number of drawings on sheet	Drawing numbers
69	2	20054, 20055
71	1	2051
72	1	20056
75	1	20053
76	1	20051

Trench 10 was one of two trenches placed around the grotto during the third phase of excavation. It was placed to the north, between the grotto and the wooded area. The area was covered by geophysical survey but even after the results of the second phase it was not clear how they should be interpreted. If the 1752 plan were accurate, the footprint of this trench would fall on the grotto chamber and produced a section through the middle of the original grotto and the posited mound. As there was evidently a geospatial error with the 1752 plan in this area what would actually be revealed whether completely outside the grotto or completely inside the grotto was unknown.

The trench was machined to a level at which the underlying archaeology was clear. Where large cuts were identified machine sondages were cut to create sections from which sequences could be identified.

Stratigraphic narrative

The earliest layer was (90007) a loose sand with about 50% gravel. It had a brownish yellow colour (10YR 6/6) and was considered to be natural fluvially deposited gravel.

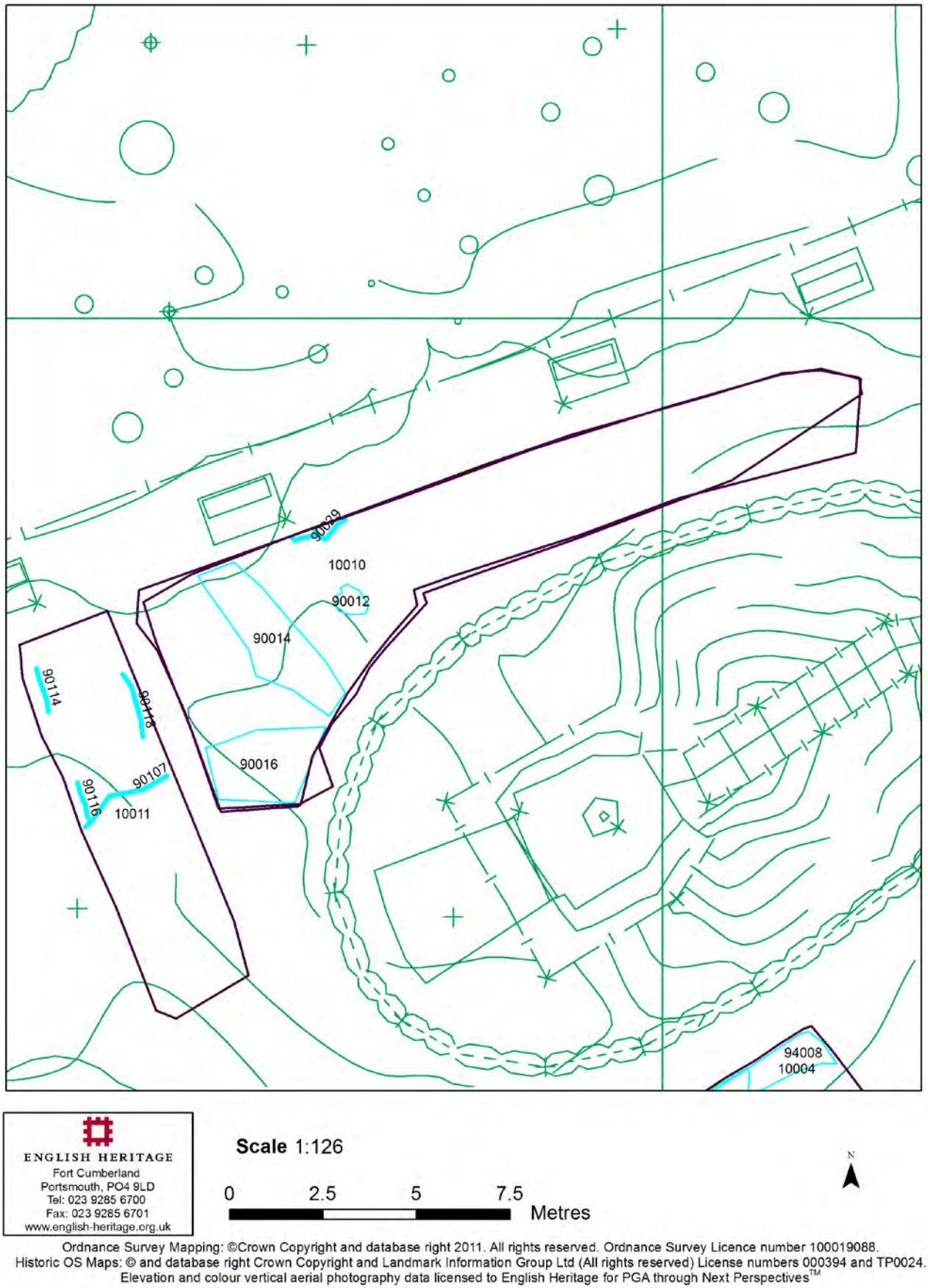


Figure 60 – Features in trench 10.

The natural gravel was cut by large feature [90016] which was observed in the south western portion of the trench measuring 4.7m (east-west) by 2.2m (north-south) but extended beyond the southern and western

margins of the trench and was thought to be part of a much larger feature that was traced into trench 11a and 11b ([90107], [90108], [90141]). It was only partially excavated to a depth of 0.9m by machine and the base was not exposed. The south facing edge had a straight, near vertical profile that cut natural (90007). [90016] had a single fill (90020), a sandy gravel with a yellowish brown colour (10YR 5/4). No finds were recovered from it but it was not fully excavated.

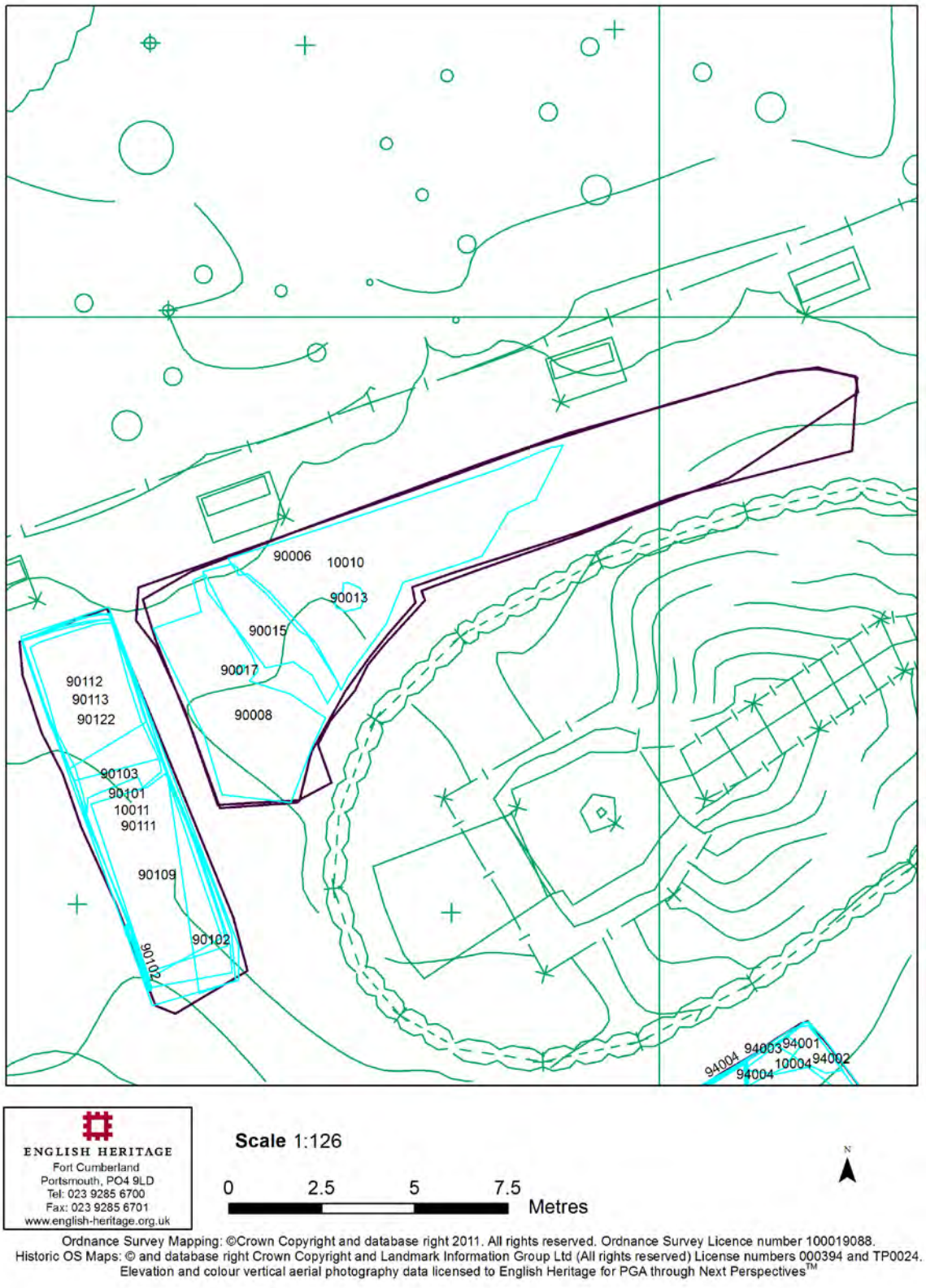


Figure 61 – Deposits in trench 10.

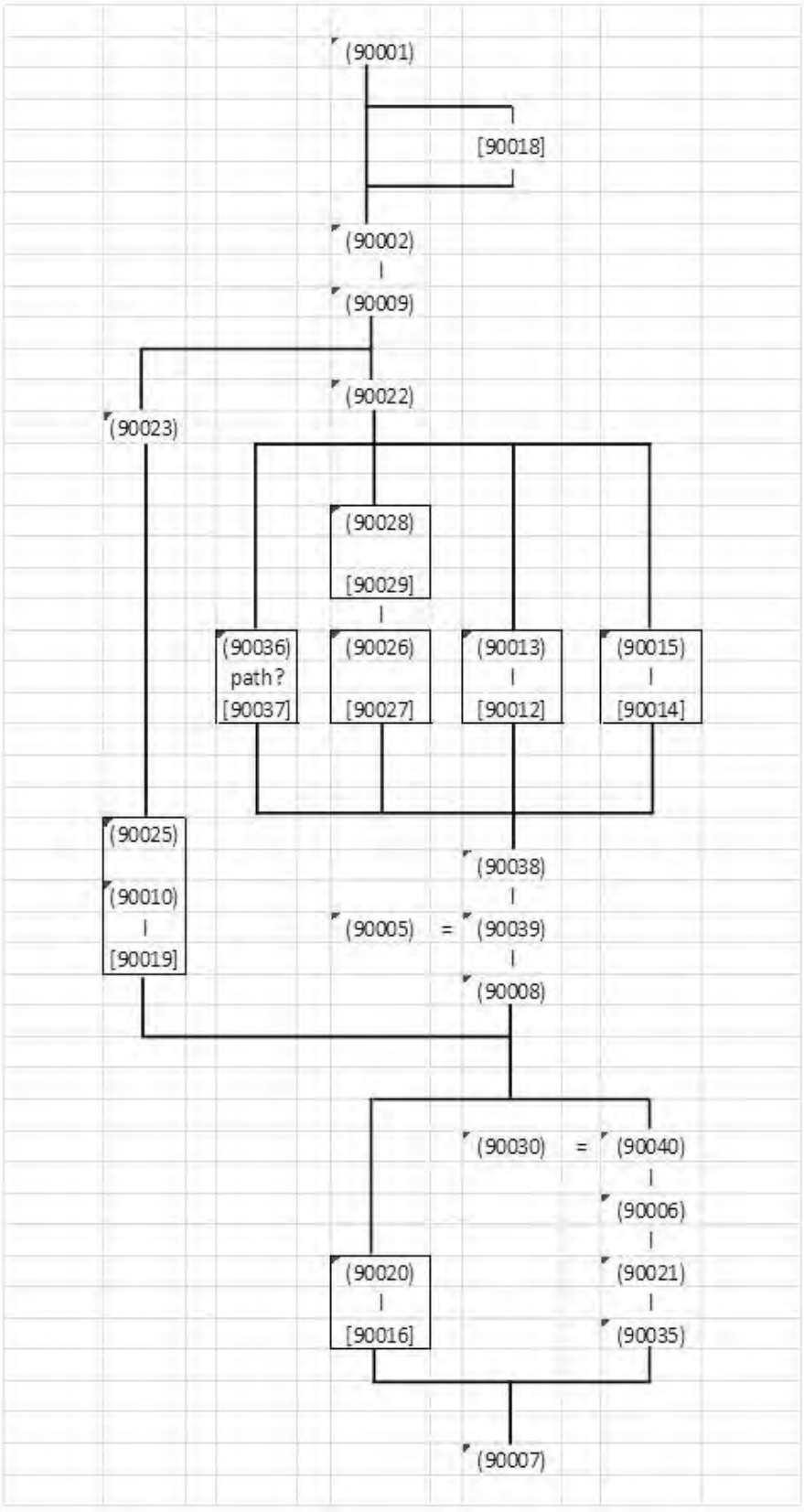


Figure 62 – Harris matrix trench 10.

On top of (90007) to the north of [90016] sat (90035) a mid-brownish grey gravel with a sandy silt loam matrix with lens of Calcium Carbonate (CaCO) cemented gravel. This layer was mostly machined away and it was observed in the south facing section and east section with a maximum thickness of 0.12m. No finds were recovered from it but this may have mostly been due to its removal by machine. Overlying this was

(90021) a yellowish brown coloured layer (10YR 5/4) with grey mottles. It was up to 0.2m thick. Its texture is apedal (no soil structure) and rather sandy (overall a silty fine/mid sand. Re-precipitated CaCO is common in fine veins, without any of the larger granular/chalky fragments as seen above it in (90006) and (90030). Layer (90006) up to 0.1m thick with a light yellowish brown colour (10YR 6/4) and silt loam texture with up to 50% calcareous mortar inclusions. The CaCO forms are diffuse and patchy (rarely up to c.10cm). Some streaky forms contain hard smallish nodules that are also present near the base as are small patches of quite granular CaCO. This layer tapers as it approaches the edge of large cut [90016] suggesting some contemporaneity as an associated surface. (90030) is up to 0.15m thick and a yellowish brown colour (10YR 5/4) with a silt loam texture. It contained frequent rounded/sub-rounded clods of dense lime-like material (dense, pale 'chalk white' to yellowish white, with very limited gritty inclusions and no visible shell).

Figure 63 – Calcium carbonate inclusions within (90030). Photograph 8373.

This layer also contained charcoal and fragments of ceramic building material. (90040) is more of a very dark greyish brown (10YR 3/2) but appears to be otherwise identical to (90030).

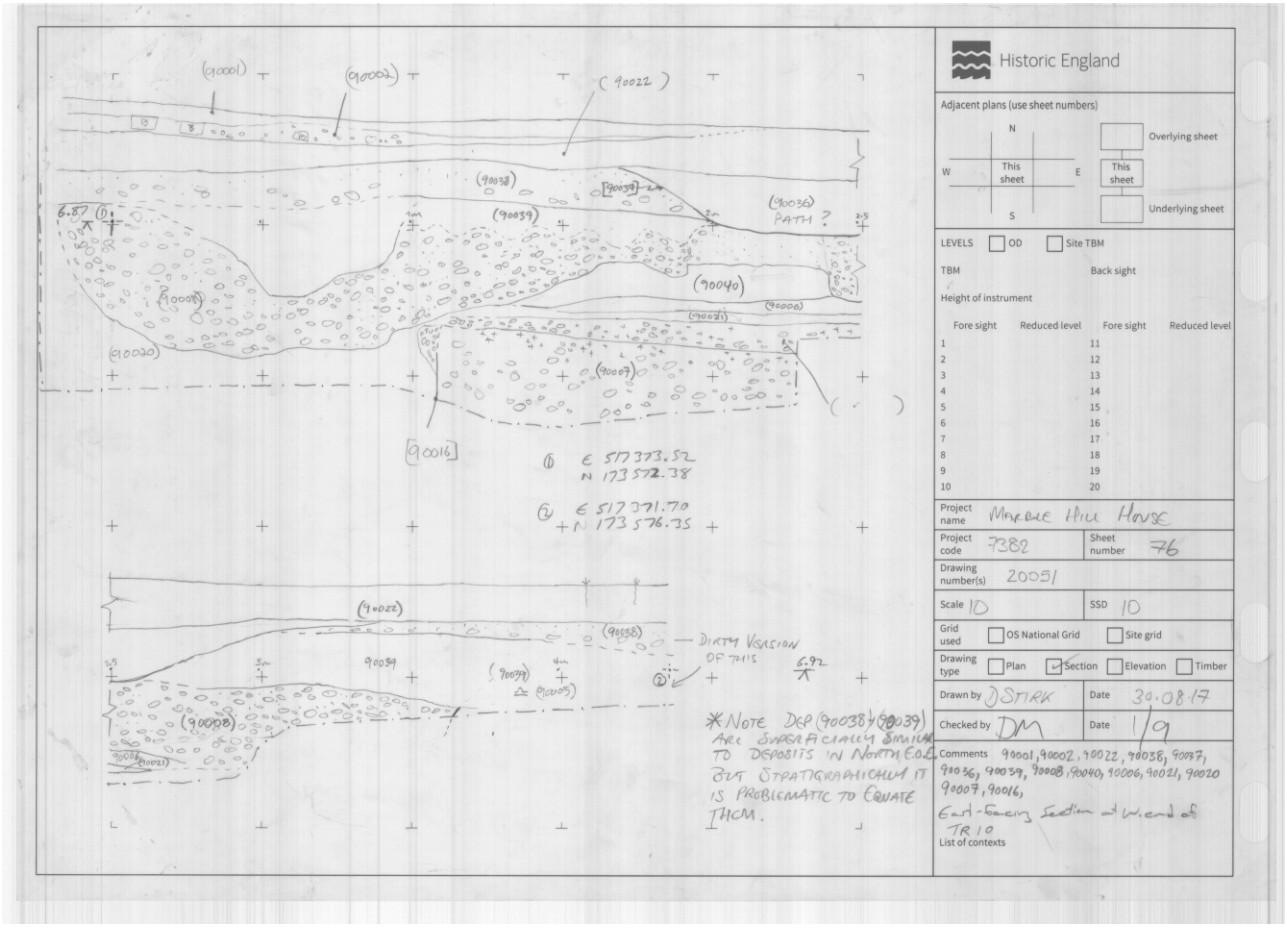


Figure 64- East facing section 20051.

Lying above (90020) the fill of [90016] and the surface layers to the north (90040) was (90008) a 0.9m thick pale yellow (2.5Y 7/3) sand containing about 50% gravel. It was observed in the western edge of trench 10 with a width of 3.8m but it did not reach the northern edge of the trench so its length cannot be ascertained. It has a very irregular upper surface with (90039) in the western end of the trench. In the northern trench edge it was numbered as (90005) and descended directly onto (90030). It had a light yellowish brown colour (10YR 6/4) with a sandy silt loam texture. It was up to 0.32m thick and contained frequent small pebbles and occasional flecks of charcoal. (90039) had a diffuse upper boundary with (90038) a 0.14m thick and 5m wide layer with a dark grey (10YR 4/1) colour and sandy silt loam texture with frequent small and medium pebbles and flecks of mortar.

Five features were found to be cutting this layer. [90037] was only seen in the east facing section. It was 1.6m wide and 0.2m deep. It had gently sloping straight sides descending to a flat base. It had a single fill (90036) a very dark grey (10YR 3/1) deposit with a sandy silt loam texture. It contained frequent small pebbles and frequent flecks and small pieces of charcoal.

[90027] was seen in the south facing section, 0.65m wide and 0.43m thick. It had sharp vertical sides and a flat base. It was allocated a single fill (90026) with a brown (10YR 4/3) colour although the upper part was distinctly lighter than the lower. It was a sandy silt loam with frequent flecks of coal and charcoal and occasional small pebbles. Finds included small pieces of ceramic building material, pot, bone, clinker and shell.

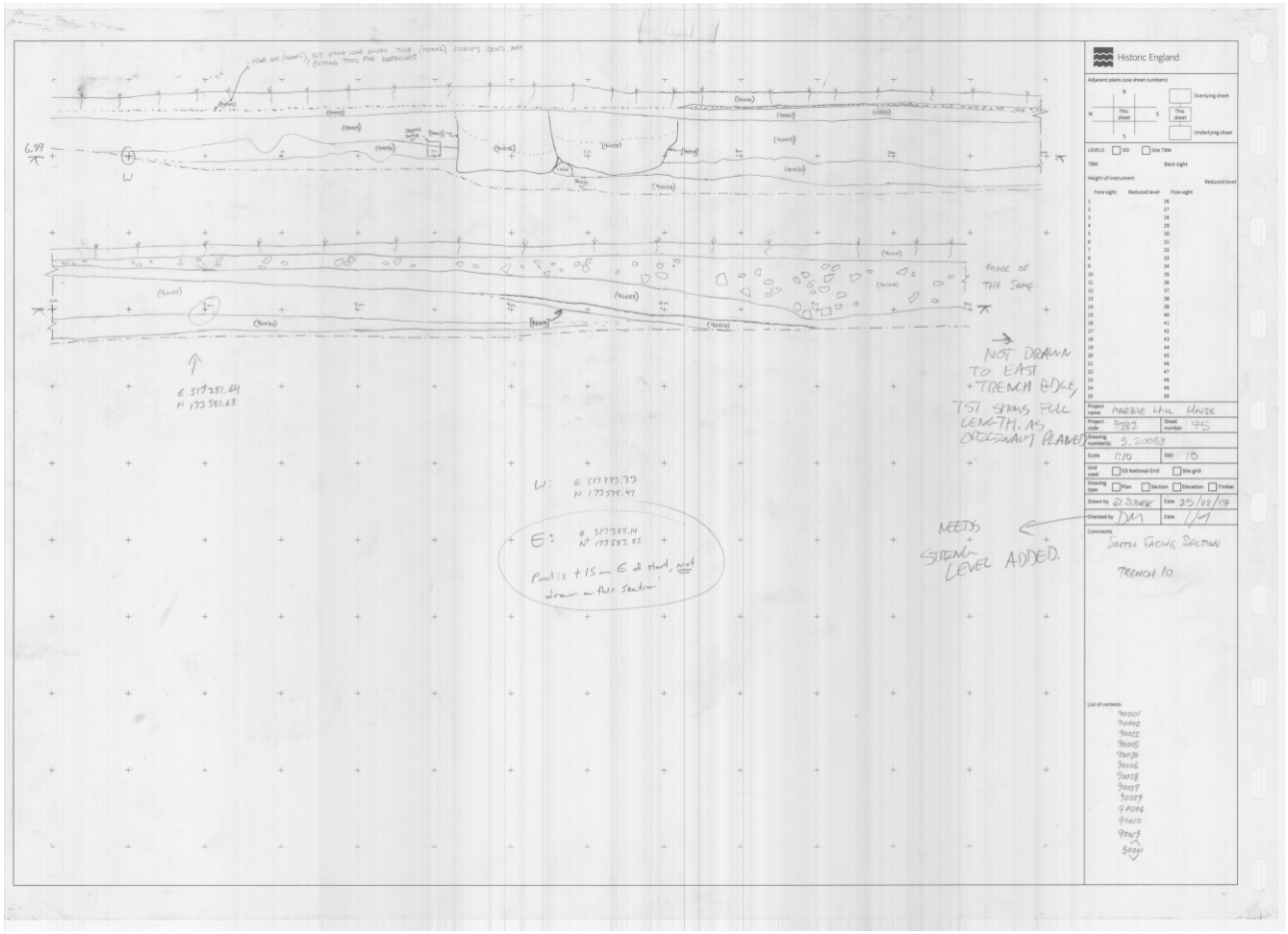


Figure 65 – south facing section 20053.

The eastern edges of [90027] was cut by [90029] which was observed in the south facing section of the trench but the excavator suggests that it was clipped by the machine and did not extend far into the trench. The majority of it must extend beyond the limit of excavations to the north. It was observed at 0.82m wide and 0.43m thick. It had steeply sloping sides descending to an uneven concave base. It was allocated a single fill (90028) with a brown (10YR 4/3) colour although the upper part was distinctly lighter than the lower. It was a sandy silt loam with moderate flecks and small pieces of chalk. Finds included small pieces of ceramic building material, worked flint and clinker.

[90014] was a linear feature revealed during machining running north-south. It was about 1.27m wide and only about 0.05m deep. It had gradual, irregular sides and an uneven, slightly concave base. It had a single fill (90015) but was not excavated.

Cut [90012] was a sub-circular – irregular shaped feature 0.83m in diameter situated in the centre of trench 10. It was revealed during machining with a depth of 0.05m but it is unlikely to have been much deeper than 0.1-15m. It had gradual irregular sides and an uneven slightly concave base. It had a single fill (90013) a mid/dark brown sandy silt loam.

[90019] represents the cut for the grotto hollow. It was observed in the middle of the trench sloping down in an easterly direction. It extended beyond the limit of excavations to the north and south of the trench whilst the eastern end of the feature was not observed. It was not excavated but a sondage was machine was cut to investigate its stratigraphy in section. The earliest fill of the grotto hollow was (90010). This was a 0.24m thick, dark greyish brown (10YR 4/2) layer with a sandy silt loam texture. It contained occasional pebbles although the base was more mixed than higher up. Overlying this was (90023), a 0.3m thick dark

yellowish brown (10YR 4/6) loamy layer. Towards its base were flecks of charcoal and pieces of ceramic building material. Within (90010) was (90025) a void which evidently resulted from the rotting of a post parts of which were still visible in the section.

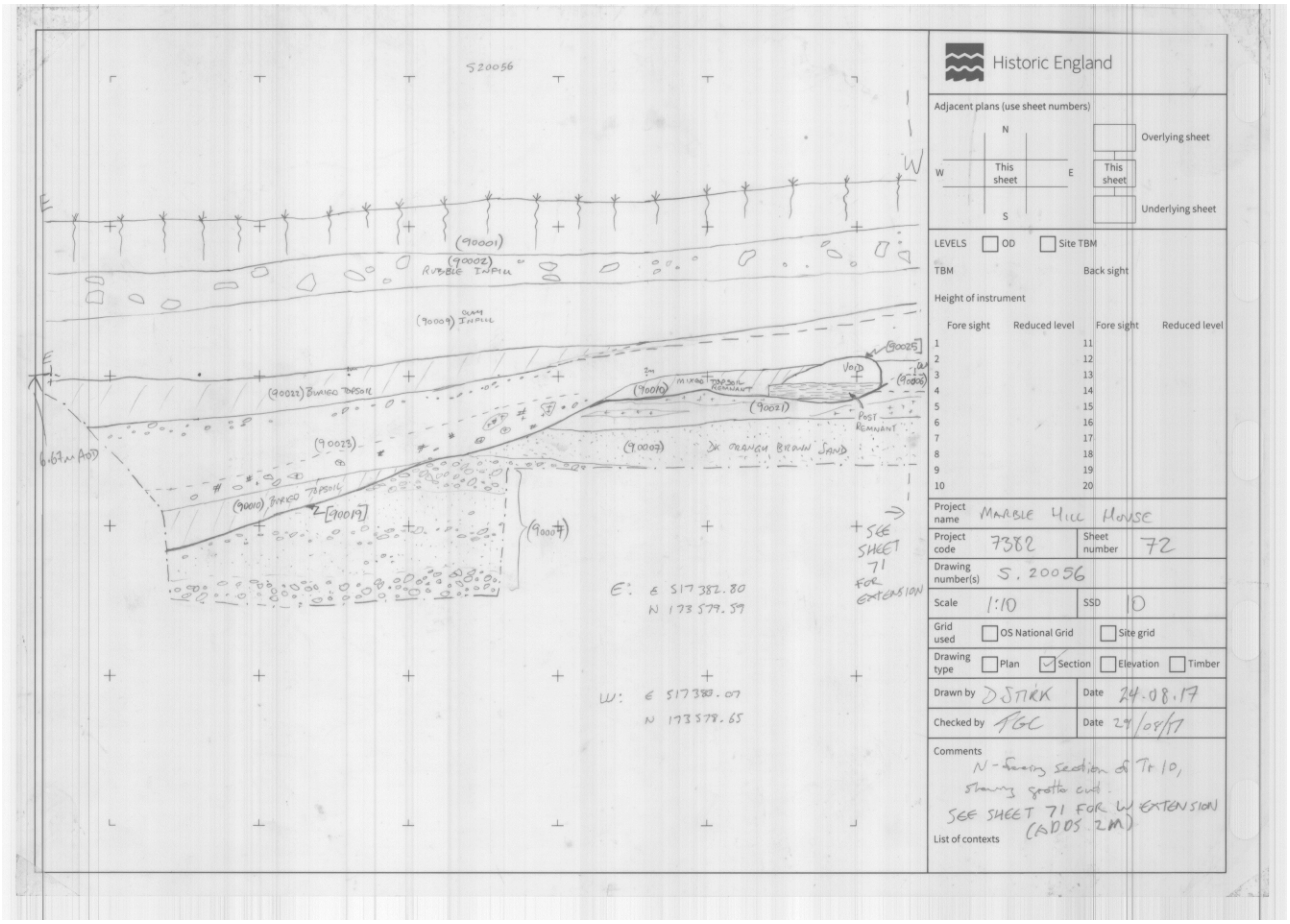


Figure 66 – North facing section 20056.

(90022) was an extensive layer present across the western end of the trench and observed dipping down into the grotto. It was 0.16m thick with a very dark greyish brown colour (10YR 3/2) and a sandy silt loam texture. It contained occasional pebbles

On the southern edge of the trench and evidently concentrated in the area of the grotto hollow was layer (90009). It was up to 0.25m thick but tapered to the west. It was a yellowish brown colour (10YR 5/4) with a sandy silt loam texture. It contained frequent small pieces and flecks of charcoal, small and medium pieces of ceramic building material, occasional small pieces of shell and (about 30%) small pebbles.

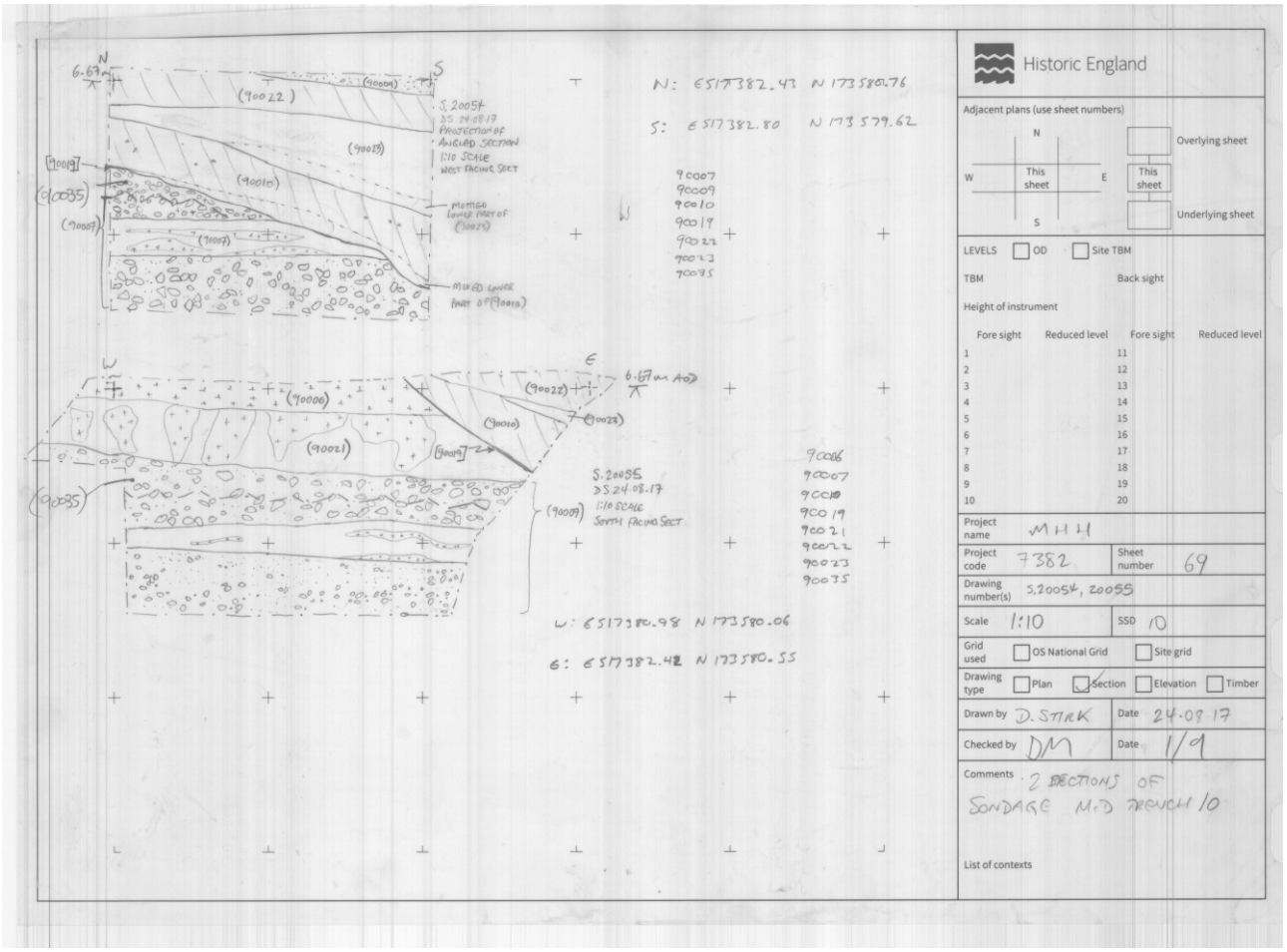


Figure 67 – south facing section 20055 and west facing section 20054.

Layer (90002) had a more extensive spread and was visible in west, north and south sections. It was thickest in the area of the grotto hollow where it reached a maximum thickness of 0.4m. It contained frequent small pieces and flecks of charcoal, small and medium pieces of ceramic building material and frequent amounts of small and medium pebbles. It recognisably contained more rubble than (90009). Its matrix very dark greyish brown colour (10YR 3/2) with a sandy silt loam texture. Initial visual inspection of the material appeared to indicate a predominantly late 19th century – early 20th century date.

[90018] was a large cut at the eastern end of trench 10 covering an area of 4.4m x 2.2m. It had an irregular edge filled with large poorly consolidated modern building material including concrete, bricks, pipes etc. There were large voids in the material and very little soil matrix.

(90017) was a concrete surround for a post. It was sealed by the modern topsoil.

The final deposit was (90001) represents the top soil and was present across the entire trench. It was 0.17m thick with a very dark greyish brown colour (10YR 3/2) with a sandy silt loam texture.

Material culture

This section covers the index for material culture recovered from trench 10. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 7 - index for material culture recovered from trench 10.

90002	Ceramic - Building material
90002	Ceramic - Building material
90002	Pottery - Post Medieval
90002	Ceramic - Building material
90002	Clay Pipe
90002	Shell - marine
90002	Industrial Debris - Slag and Glass
90002	Glass
90002	Pottery - Post Medieval
90020	Glass
90020	Bone - Animal
90020	Shell - marine
90026	Ceramic - Building material
90026	Pottery - Post Medieval
90026	Clay Pipe
90026	Clinker
90026	Flint - Burnt
90026	Bone - Animal
90026	Shell - marine
90028	Ceramic - Building material
90028	Clinker
90030	Mortar and Plaster
90030	Mortar and Plaster

Interpretations

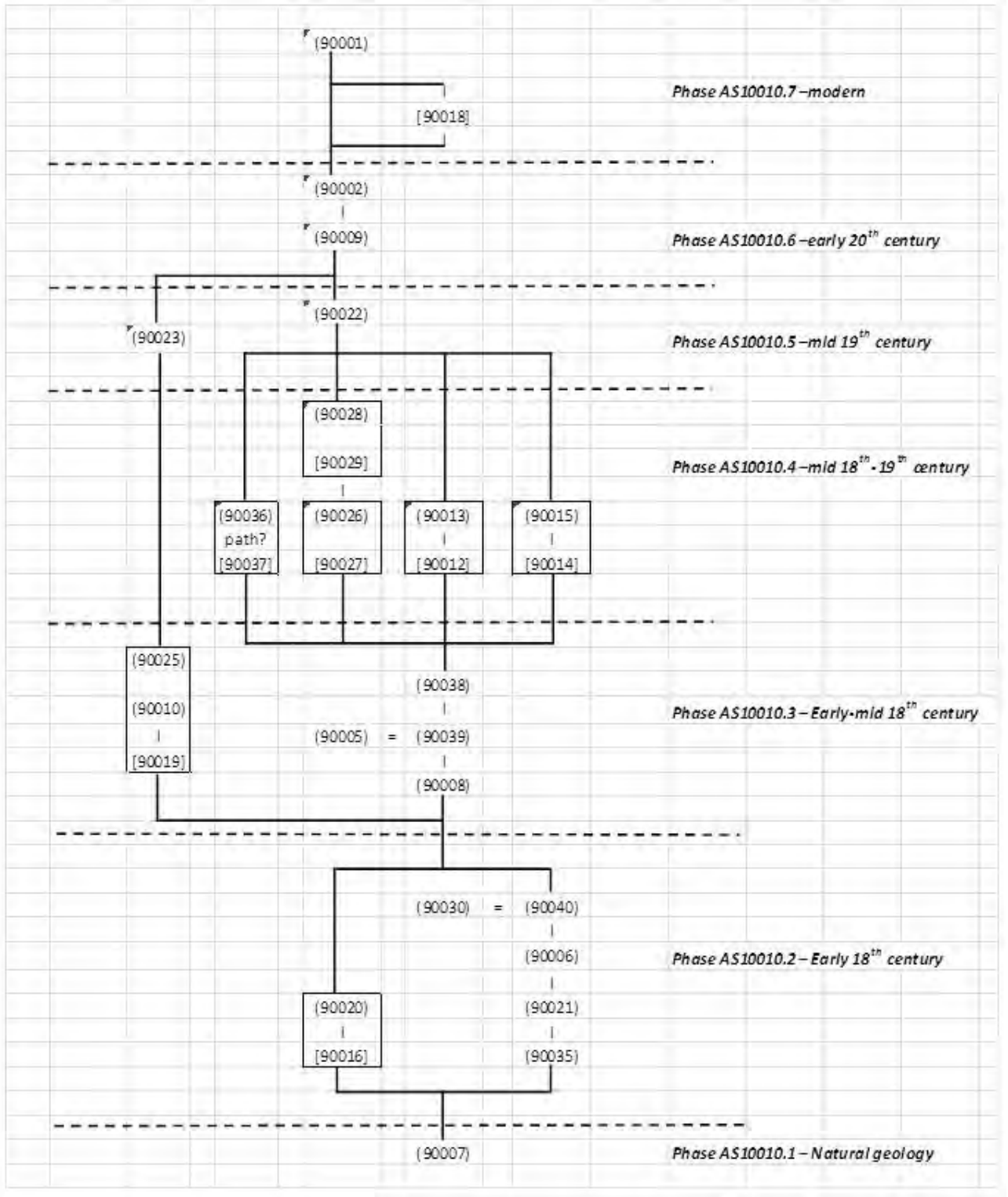


Figure 68 – phased Harris matrix for trench 10.

Phase AS10010.1 – Natural geology

The natural underlying geology was represented by (90007). This was sandy gravel laid down in a fluvial environment.

Phase AS10010.2 – Early 18th century

The first anthropogenic activity in trench 10 was the cutting of feature [90016]. It appears to be part of a very large feature that extended west into trenches 11a and 11b. Feature [99037] in trench 9 is morphologically very similar and may be part of the same pre-grotto feature however the nature of its fills is distinctly different and its cutting relationship to other features means it is currently interpreted as an early phase of the grotto.

Figure 69 – Feature [90016] and the southern part of section 20051. Scales 2 x 1m. Photograph 8350.

The feature represent by [90016] is almost definitely a quarry that was dug to extract a certain grade of sand or gravel. Whilst this was open, activity appears to have been taking place on the adjacent surface to its north. The whole sequence of layers (90035), (90021), (90006), and (90030) / (90040) appear to be linked in their origin. These taper out as they reach the edge of the feature suggesting that the processes that created them were guided spatially by the open quarry. Finds were recovered from these layers support the notion that they are not naturally occurring. The presence of CaCO in a variety of concentrations and forms is taken to suggest that there was a significant CaCO input when they were being laid down. The observation of sands that had possibly been affected by heat adds credence to the interpretation that a large area to the north west of the grotto was being used for the preparation of mortar and perhaps the processing of lime associated with the construction of the house. Samples taken for specialist testing may help to throw more light on this.

[90016] has near vertical edges. The natural gravel that it cuts however would quickly weather to a sloped profile if it was left open to the elements for any extended period of time unless it was revetted. No evidence for revetment has been observed although deposit (90035) appears to tumble over the edge of cut [90016] and onto fill (90020). It is possible that this indicates that material from (90035) eroding into [90016] as (90020) was being deposited. However it is possible that (90035) had been deposited onto some

form of revetting upon which it was resting, revetting that has since disappeared leaving no other visible trace.

On the current balance of evidence, the sharp vertical edges of [90016] lead us to conclude that it was backfilled shortly after its initial excavation. It is possible that only a very specific element such as sand or small gravel was being extracted through sieving. It is tempting to link the quarrying to the adjacent industrial processes.

Phase AS10010.3 – Early-mid 18th century

Overlying both the backfilled quarry and the industrial surface to the north was (90008) had the consistency of a prepared builders aggregate. This lies under the later landscaping layers and so must still be relatively early. One interpretation is this this material is associated with the construction of the grotto chamber but this is speculative as no direct relationship exists.

(90039) / (90005) was a loamy made ground layer. It has a different structure to the natural topsoil with more frequent larger cracks and voids, creating a larger scale ped structure of irregular weak 'clods', which quickly fragment to smaller more granular forms. This structure likely reflects incomplete homogenisation of the layer by bioturbation. This suggests that the whole layer was deposited at once as a landscaping layer (i.e. without phase of vegetative growth during up-building), and immediately overlain by turf, which then became the active surface-solum. (90038) the layer immediately above (90039) was very similar to this but with more topsoil inclusions and probably represents an interface between topsoil and the underlying landscaping layers resulting from bioturbation.

The general nature in which the overburden was reduced and the grotto hollow itself investigated meant that it was unclear at what level [90019] was cut from. It certainly cut (90006) but it would make most sense to have occurred at the point at which the area was being landscaped. (90010) is interpreted as a buried soil and probably results from landscaping and represents the original surface of the grotto hollow. A post (90025) was evidently lying on the surface when it was buried.

Phase AS10010.4 –mid 18th-19th century

After the landscaping of the area had taken place a number of features were cut around the grotto hollow. The purpose of feature [90037] is not certain. The excavators interpreted it as a possible pathway. The alternative interpretation would be as a planting bed but the gently sloping sides make this unlikely.

Figure 70 – Bedding trenches [90027] and [90029]. Scales 2m and 0.5m. Photograph 8301.

The two nearby features [90027] and [90029] did have morphology more in keeping with planting beds although there was some chronological depth between them as illustrated by their intercutting relationship. Feature [90012] was shallow but was most likely a planting feature for a small shrub.

Figure 71 – Planting feature [90012]. Scale 1m. Photograph 8159.

Linear feature [90014] was not excavated and its purpose is not clear. It was evidently not a constructed path but could have been either a small, poorly developed hollow way or a shallow planting bed.

Figure 72 - Linear feature [90014] running across the trench above concrete post setting (90017). Scales 2 x 1m. Photograph 8156.

The ages of [90037], [90014], [90012], [90027] and [90029] are unknown but they are clearly created after landscaping of the area association with the construction of the grotto hollow and went out of use sufficiently far back for natural processes of bioturbation to have removed any traces of them from the topsoil layers.

Phase AS10010.5 –mid 19th century

(90023) lies over the topsoil (90010) associated with the first phase of the grotto. It, along with (90022), represents the abandonment of the grotto and its initial backfilling with loamy material. Across trench 10 (90022) covers the cut features and dips into the grotto hollow. It has a well-defined turf line and this layer probably formed the ground surface after the first episode of grotto backfilling which is thought to have taken place by the mid-19th century.

Phase AS10010.6 –early 20th century

Layers (90009) and (90002) represent a further episode of grotto backfilling. The material appeared from initial inspection to have a late 19th / early 20th century date. If we assume that this dates the event to the early 20th century we might associate it with the levelling of the hollow on the 1906 map.

Phase AS10010.7 –modern

The final two contexts relate to the modern period. The first of these is the large irregular feature [90018] recorded at the eastern end of trench 10. This was located in an area where gardeners had noted grass

rarely grew and suspected that there might be some form of underlying structure. In truth the feature contained an irregular jumble of large pieces of modern looking masonry. The size of the feature appears to be too large to represent an area of subsidence that was backfilled with hard-core but an alternate explanation cannot be put forward.

Concrete posthole (90017) was considered to be a modern support for an interpretation board for the grotto.

Topsoil (90001) is the most recent deposit identified in trench 10.

Trenches 11a and 11b (SSD10011 & 10111) – Grotto

SSD	10011 & 10111		
Contexts	90101-90119, 90121-90132, 90134-90152, 90154-90155, 90157-90159		
Samples	50101-50108		
Small Finds	3030, 3031, 3036, 30101-30103		
Drawings	Sheet 57, 58, 62, 63, 70, 77	Plans – 2151, 2152	Section 20151-20155

Sheet #	Number of drawings on sheet	Drawing numbers
57	2	2151, 20151
58	1	20152
62	1	2152
63	1	20153
70	1	20154
77	1	20155

Trench 11 was intended to be one of two trenches placed around the grotto during the third phase of excavation. The area was covered by geophysical survey but even after the results of the second phase it was not clear how they should be interpreted. If the 1752 plan were accurate, the footprint of this trench would fall outside of the grotto. Because of the geospatial error with the 1752 plan it was unclear whether this is in fact true. A doming of the ground running from the grotto however suggested that to the contrary at least part of the grotto would be revealed within the trench. Another possibility was that part of the line of the 1980's excavations would be discovered.

Due to a delay in the receipt of permission to work under trees at Marble Hill and limitations placed upon the excavations by the supply of an inappropriate machine by the plant hire company, trench 11 was broken into two separated trenches (11a and 11 b) with a much smaller footprint than was originally intended. This repositioning meant that the trench fell outside of the area of tree coverage allowing some excavation to start before permission was received. Trench 11a was opened by machine revealing a large cut feature which was excavated by machine. This was then recorded and backfilled before trench 11b was opened, again by machine.

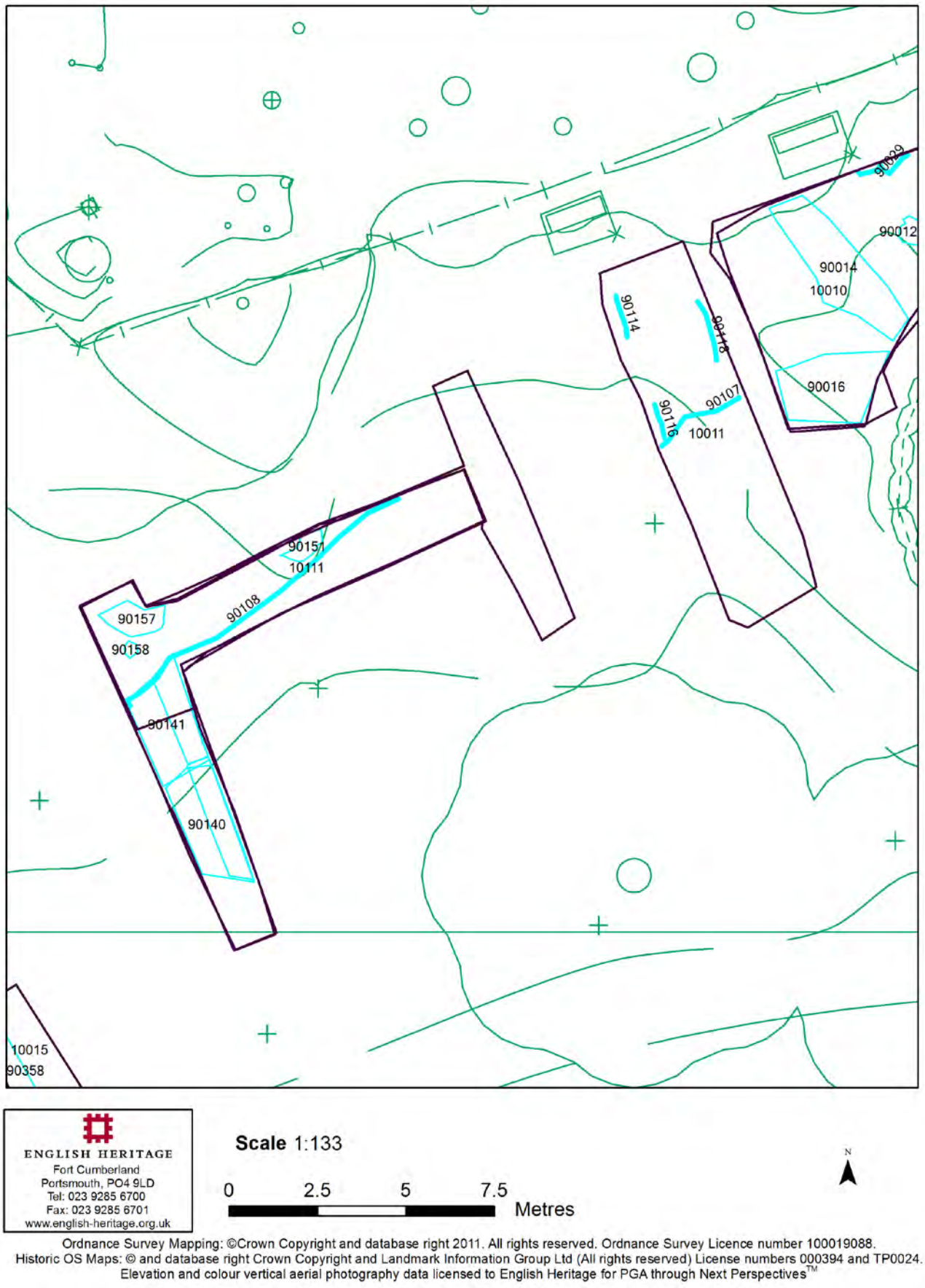


Figure 73 – Features in trench 11.

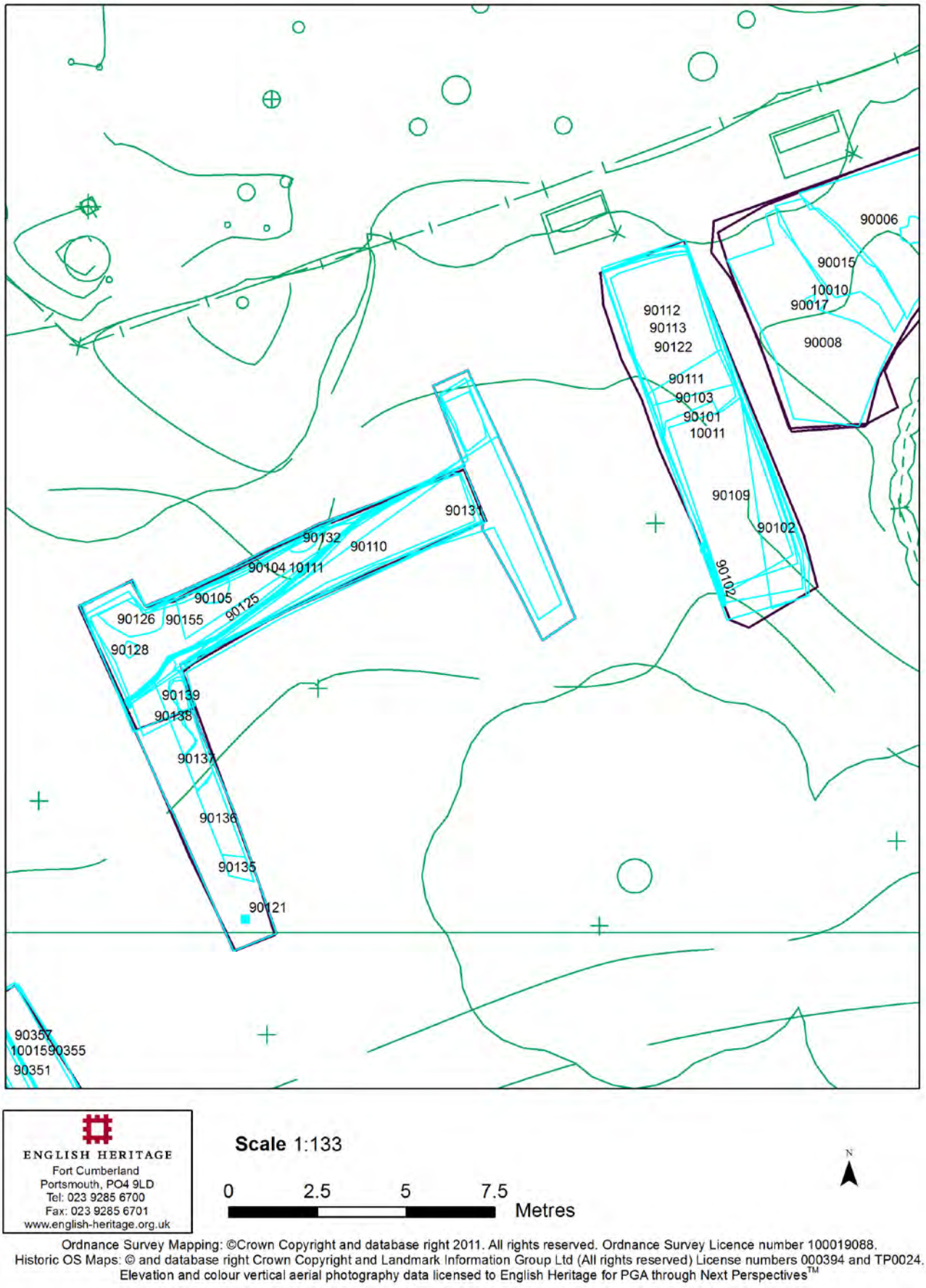


Figure 74 – Deposits in trench 11.

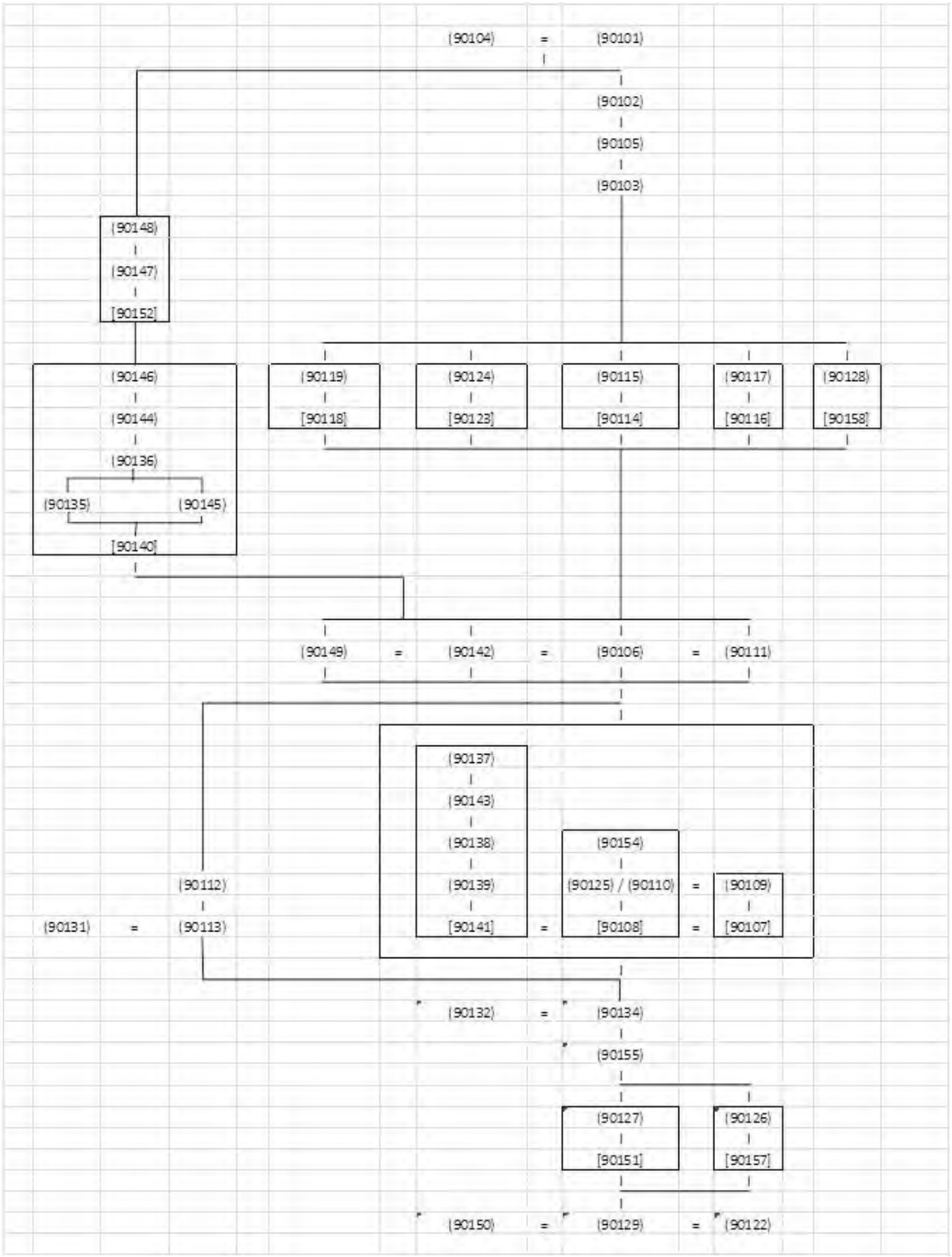


Figure 75- Matrix for trench 11.

Stratigraphic narrative

The earliest deposits pertained to natural gravels labelled (90150), (90129) and (90122) depending upon their position in the trenches. These undoubted related to fluvial gravels of the river terrace. These were constituted mainly by gravel with a sandy matrix a light olive brown (2.5Y 5/3) colour. The earliest features in trench 11 were a pair of shallow scoop like features [90151] and [90157] situated along the northern edge of trench 11b.

[90157] was the western-most of these features. It had extended under the northern edge of the trench making its shape difficult to confirm. When it was giving a hard clean it appeared to have more than one facet of mortary deposit within it. The observable part was 1.82m long and 0.25m deep. It had gradual concave sides and an irregular base. It had a single fill (90126) that consisted of weakly cemented gravel. It had a light greyish brown colour (10YR 6/2) with a sandy loam texture. It contained cemented gravel at the base and some patches visible in plan, with loosely spread re-deposited natural gravel overlying and constituting the main 'fill'.

Figure 76 - Feature [90157]. Photo 8333.

[90151] was situated 4m to the east. It was sub-circular in shape measuring 1.1m in diameter and 0.25m deep. It had gently sloping concave sides with a bowl-shaped profile. It had a single fill (90127) which seemed to be comprised of natural gravel infiltrated and weakly cemented by what appeared to be a prepared pre-modern construction lime-mortar.

Figure 77 - Feature [90151]. Photo 8337.

Overlying these features was context (90155) which was observed in the south facing section of trench 11b. It attained a maximum thickness of 0.1m and had a brown colour (10YR 5/3) with a sandy loam texture. It extended over an area of at least 2.57m wide by 12.67m long but extended beyond the northern limit of the excavation. Finds included pot and ceramic building material.

Above (90155) sat a layer (90134) which was also numbered (90132) in other places but was essentially the same material. It was up to 0.18m thick and extended throughout the northern part of trench 11 and into and throughout trench 10. It had a pale yellow (2.5Y 7/4) colour and a sandy loam matrix with frequent re-precipitated Calcium Carbonate. It contained no gravel or other obvious inclusions but was patchy with the colour approaching purplish-brown in places. The interface between (90155) and (90134) was quite irregular however the upper boundary of (90134) was regular and flat.

[90158] was a small circular feature situated in the north west corner of trench 11b neighbouring feature [90157]. [90158] measured 0.65m in diameter and was 0.25m deep. It was bowl shaped with gently sloping sides to a rounded base. It was revealed by machine and it was unclear whether it pre or post-dated (90155). A lack of CaCO in the fill led to the conclusion that it was on balance most likely to post-date (90155). It had a single fill (90128) with a light greyish brown colour (10YR 6/2) and a sandy loam texture.

Layers (90155) and (90134)/ (90132) were cut by the major feature that dominated Trench 11 (a and b). This extended at least 25m from the edge of the terraced area in the west to trench 10 and the area of the grotto in the east. In the various parts of trench 11 it was numbered [90107] trench 11a, [90108] trench 11b central and eastern end and [90141] trench 11b west end. The feature was aligned east / west getting deeper as it progressed to the east with a base 0.95m below the topsoil at the west end of trench 11b to 1.1m below the surface at the east end and 1.25m at the west side of trench 11a. It had a flat base without any evidence of a trampled surface. The edges appeared to be near vertical and in some places there

appeared to be a gravel overhang which was observed in sections 20151, 20154 and 20155. In trench 11a [90107] was cut 0.86m down from what was believed to be the old ground surface level and observed to have a single fill (90109). It was at least 4m wide and 2.5m long, extending beyond the limits of excavation to the east, west and south. It was up to 0.86m thick. It appeared to be a mixed deposit with a dark yellowish brown (10YR 4/6) colour with a sandy silt loam texture but with large paler CaCO enriched loamy patches. Finds included broken clay tobacco pipes, ceramic building material, vitrified clay and glass shards and slag.

Figure 78- Large cut feature [90107] with its single fill (90109). West facing section from trench 11a. Photo 8072.

In trench 11b the cut [90108] was 0.6m into the old ground surface at the east end of the trench and 0.5m at the west end (cut [90141]). At the eastern end of the trench its primary / sole fill was numbered (90125/90110). It was also a mixed deposit but mostly with a light reddish brown colour (2.5YR 6/4) with a sandy loam texture. It also contained fragments of ceramic building material, clay tobacco pipe, animal bone, marine shell, pottery, burnt flint and charcoal.

In the central part (eastern end of trench 11b) there was also an upper fill numbered (90154) which was 0.45m thick and extended across the feature and beyond the limit of excavation. It was a light yellowish brown colour (10YR 6/4) with a sandy loam texture and had a mixed character.

At the western end of trench 11b, the fills of the cut, labelled [90141], had a different character. The primary fill was (90139). It was 0.43m thick and at least 3.31m wide with a brown (7.5YR 4/4) colour and a sandy clay loam texture. Finds include animal bone, pot, marine shell, ceramic building material and metal. At its northern margin was (90138) a relatively soft fill 0.57m wide by 0.57m thick, constituted mostly by gravel. It had a strong brown colour (7.5YR 4/6) with a silty clay textured matrix. Finds included bone, pot and metal.

Overlying (90139) was (90143) a 2.3m wide 0.28m thick deposit rich in gravel with a brown coloured (7.5YR 4/4) matrix with a silty clay texture which contained no finds. On top of this was (90137) a relatively compact deposit that had to be excavated with a mattock. It was 0.9m wide and 0.15m thick, containing almost no inclusions apart from charcoal and finds of pottery and clay pipe. It had a grey colour (7.5YR 5/1) with a sandy clay texture.

In the field, the top fill of [90141] was thought to be (90142). It does however bear significant similarities with (90149) to the south of it and with (90111) and (90106) elsewhere in trench 11. Whilst this may be a the top fill of cut [90141], on balance it is considered more likely to relate to more widespread activities that took place after the feature had been backfilled. It will therefore be discussed later with the group of contexts with which it is grouped.

Next to the cut [90107] we see deposits being laid down that do not extend beyond the edges of the feature and even taper off as they approach the edge. It suggests that these may have been created before [90107] had been backfilled and hence be earlier than its fills. The main fills of [90107] - (90110/90125)/ (90020) also appear to incorporate lumps of material of a similar character to these deposits.

The earliest of these layers are (90131) / (90113). This was a hard compact layer up to 0.21m thick extending over at least 25m and into trench 10 where it was numbered (90006)/ (90030). It had a very pale brown colour (10YR 7/3) with a sandy silt loam texture. It contained frequent fragments of mortar and CaCO flecks.

Figure 79 - Context (90113) illustrating it's a very pale brown colour and frequent fragments of mortar and CaCO flecks.

Overlying this was (90112) a 0.32m thick, dark yellowish brown (10YR 4/6) deposit with a sandy silt loam texture. It extended for at least 20m into trench 10 where it was identified as (90005). Its boundaries were irregular and at times indistinct. It also contains CaCO although in smaller and less numerous visible formations. There are some rare very small (<2cm) 'granular' / nodule forms are present, but generally CaCO is in more diffuse vein/streak forms. The fabric is very similar in colour and composition to the basal pale layer (although less consistent, and quite patchy in places). There may have been some losses of CaCO though dissolution in the upper portion of the soil profile. Other inclusions are rare but include gravel, stone, charcoal/coal fragments and ceramic building materials.

(90111) was the first of the deposits that covered both the large cut feature [90107] and its margins. It was located in trench 11a in trench 11b it was numbered (90106) (in trench 10 it was called (90005)). At the western end of trench 11b it is thought to be represented by the pair of contexts (90142) and (90149). It was up to 0.15m thick with a light olive brown colour (2.5Y 5/4) with a sandy silt loam texture. In the west it was slightly thicker, up to 0.35m thick and a browner colour (7.5YR 4/3). It had a larger scale ped structure of irregular weak 'clods', which quickly fragment to smaller more granular forms. Finds included pot, glass slag and ceramic building material.

After [90107] was backfilled and the area landscaped using (90111), a number of small shallow features were cut. These were only observed in section after the trench 11a had been excavated by machine. These were [90114], [90118], [90123] and [90116]. [90114] and [90118] were located on opposing sides at the northern part of trench 11a and may have been one extended large feature. [90123] and [90116] were also similarly opposed and again may have formed a single extended feature. [90114] was recorded in the east facing section of trench 11a, was about 0.4m thick and 2.6m wide with concave sides sloping to a rounded u-shaped base. It cut layers (90111), (90112) and (90113) and was under (90103). It is possible that it originally cut from higher up through (90103) but the cut has been removed by later natural bioturbation. It had a single fill (90115). This had a light yellowish brown (10YR 6/4) and a sandy silt loam texture.

[90118] was seen in the west facing section of trench 11a, facing feature [90114]. It too appeared to cut down from layer (90103) probably for the same reasons as [90114]. It was about 0.35m thick and 2.67m wide with concave sides sloping to a rounded u-shaped base. It had a single fill (90119). It had a dark greyish brown colour (10YR 4/2) and a sandy silt loam texture.

[90123] was observed in the west facing section of trench 11a. It too appeared to cut down from layer (90103) probably for the same reasons as [90114]. It was about 0.3m thick and 1m wide with gentle concave sides sloping to a rounded u-shaped base. It had a single fill (90124). It had a very dark grey colour (10YR 3/1) and a sandy loam texture.

Figure 80- Feature [90123]. West facing section of trench 11a. Photo 8105.

[90116] was recorded in the east facing section of trench 11a. It cut layers (90111) and (90112) and the excavators posited whether they could identify a cut through (90103) but could not be certain the character of its single fill (90117) being very similar to (90103). Whilst it is possible that this feature is later than the others it has been included with them as it is considered broadly contemporary. It measured 1.3m wide and 0.34m thick. (90117) had a dark greyish brown colour (10YR 4/2) and a sandy silt loam texture. Finds only consisted of animal bone.

At the western end of trench 11b the fills of the large cut feature [90141] and the later landscaping deposit (90142) / (90149) were cut by the large feature [90140]. This feature appears where a large blob shaped feature appears as a very high resistance feature (r14) on the resistivity survey heading to the north east of the part excavated.

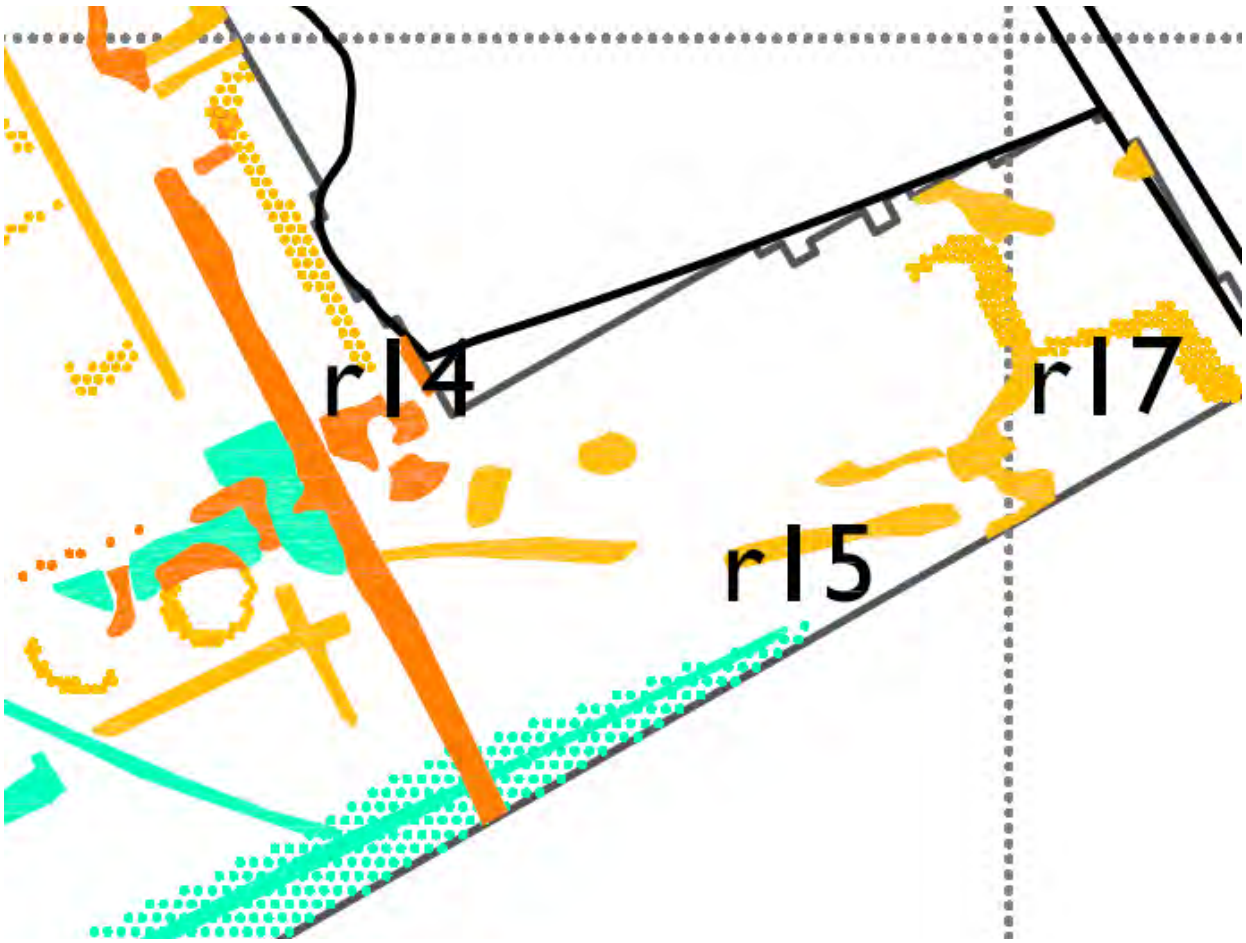


Figure 81- Extract of the Graphical summary of significant magnetometer and earth resistance anomalies, December 2015 showing anomaly r14.

The cut measured 4.8m wide in section and 1.08m deep. It had steep rounded sides descending to a rounded base and contained five fills (90135), (90145), (90136), (90144) and (90146). It had two primary fills (90145) on the northern and (90135) on the southern side which did not meet. (90145) was 2.13m wide and 0.4m thick with a brown colour (7.5YR 4/4) and a silty clay texture. It contained small fragments of ceramic building material. It had a rounded upper profile. (90135) was 1.8m wide and 0.28m thick with a dark brown colour (7.5YR 3/2) and a silty clay texture. It contained pot, animal bone, and ceramic building material. It had a rounded upper profile whilst the lower margin contained noticeably more gravel. The gap between these two primary deposits was filled by (90136). This was up to 1.78m wide and 0.47m thick. It had a dark brown colour (7.5YR 3/3). Together these three fills formed a relatively horizontal interface with later fills. Stratigraphically the next fill was (90144). This was 0.6m wide and 1.69m thick with a strong brown colour (7.5YR 4/6) and a sandy clay texture. It contained pot. Last came (90146). This was 3.04m wide and 0.6m thick with a dark grey colour (7.5YR 4/1) and a sandy silt loam texture. It contained pot. It was very similar to (90136) but contained more pebbles.

Cutting fills (90144) and (90146) was feature [90152]. It was 1.54m wide and 0.58m deep with an asymmetrical profile with a steep northern edge and gentler southern edge. Sides and base were rounded. It contained two fills (90147) and (90148). The primary fill (90147) was 1.54m wide and 0.34m thick. It had a grey colour (7.5YR 6/1) and a sandy clay texture. It was very fine grained with no pebbles or stones. Pot was recovered from it. (90148) was 1.19m wide and 0.24m thick with a grey colour (7.5YR 5/1) and a sandy clay texture like (90147) it contained few pebbles .

Figure 82– Feature [90152] and its stoneless fills (90147) and (90148) (photo 8287).

(90103) was a layer observed in trench 11a and numbered (90106) in trench 11b. It covered the entire trenches and extended beyond its limits. It was about 0.15m thick. It had a very dark grey (10YR 3/1) with a sandy silt loam texture.

Overlying this was another extensive layer (90105) a stoney horizon/stone line 0.05m thick, beneath the worm-sorted topsoil. Its boundaries were indistinct in places and blended with similar turf/stone-line horizons from earlier buried surface soils around the grotto. In the southern portion of trench 11a a rubble filled lens was numbered (90102). This appeared to bury the previous turf line (which was included in context (90103) in this area. It was up to 0.35m thick and 5.1m wide in the west facing section of trench 11a but had thinned out to only 0.08m thick and 0.7m wide in the east facing section. It is believed that it would continue to thicken eastwards towards the grotto. It contained very frequent small to medium pieces of ceramic building material, chalk, small sub-angular stones, concrete fragments, including some slag, part-vitrified fragments of kiln lining, and occasional broken pieces of medium/large flint nodules.

The final layer was (90101) / (90104) which represented the current turf/topsoil. It was about 0.15m thick, dark greyish brown coloured (10YR 4/2) fine sandy silt loam with very few inclusions, and notably stone free.

Material culture

This section covers the index for material culture recovered from trench 11. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 8 - index for material culture recovered from trench 11.

90102	Industrial Debris - Slag and Glass
90102	Ceramic - Building material
90102	Pottery - Post Medieval
90102	Glass
90102	Bone - Animal
90102	Ceramic - Building material
90104	Shell - marine
90104	Ceramic - Building material
90106	Stone - Other
90106	Pottery - Post Medieval
90106	Ceramic - Building material
90106	Shell - marine
90109	Clay Pipe
90109	Ceramic - Building material
90109	Ceramic - Building material
90109	Coal
90109	Bone - Animal
90110	Ceramic - Building material
90110	Ceramic - Building material
90110	Clay Pipe
90110	Coal
90110	Coal
90110	Clinker
90110	Stone - Other
90110	Pottery - Post Medieval
90110	Shell - marine

90110	Bone - Animal
90112	Ceramic - Building material
90112	Clay Pipe
90112	Stone - Other
90112	Pottery - Post Medieval
90112	Glass
90112	Coal
90112	Shell - marine
90113	Clay Pipe
90117	Bone - Animal
90125	Bone - Animal
90125	Shell - marine
90125	Ceramic - Building material
90125	Ceramic - Building material
90125	Clay Pipe
90125	Ceramic building material - tile
90125	Pottery - Post Medieval
90125	Flint - Burnt
90125	Coal
90125	Metal - copper-alloy
90135	Shell - marine
90136	Pottery - Post Medieval
90136	Ceramic - Building material
90136	Clay Pipe
90136	Shell - marine
90137	Ceramic - Building material
90137	Ceramic - Building material

90137	Pottery - Post Medieval
90137	Clay Pipe
90137	Bone - Animal
90137	Shell - marine
90138	Pottery - Post Medieval
90138	Clay Pipe
90138	Ceramic - Building material
90138	Pottery - Post Medieval
90138	Ceramic - Building material
90138	Shell - marine
90138	Bone - Animal
90138	Ceramic - Building material
90138	Glass
90139	Clay Pipe
90139	Pottery - Post Medieval
90139	Bone - Animal
90139	Shell - marine
90139	Bone - Animal
90139	Pottery - Post Medieval
90139	Bone - Animal
90144	Pottery - Post Medieval
90144	Bone - Animal
90144	Shell - marine
90145	Ceramic - Building material
90147	Pottery - Post Medieval

Interpretations

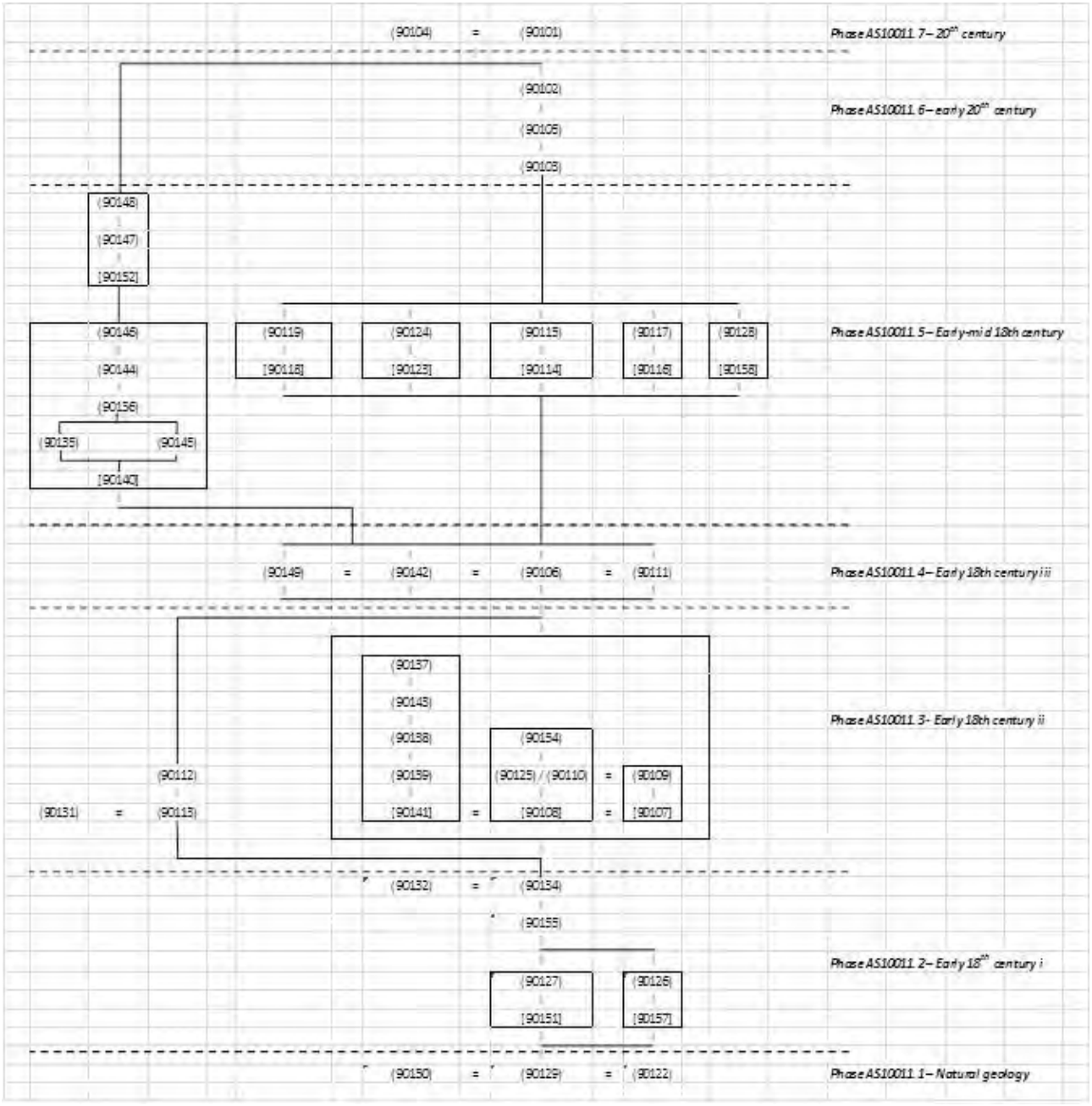


Figure 83 - Phased matrix for trench 11.

Phase AS10011.1 – Natural geology

The natural underlying geology was represented by (90150), (90129) and (90122). These were sandy gravels that were laid down in a fluvial environment.

Phase AS10011.2 – Early 18th century i

The earliest recorded features are [90157] and [90151] which are shallow scooped depressions filled with cemented gravel deposits. These had evidently been laid directly onto the natural gravel possibly indicating that the area had been stripped of topsoil to the natural prior to the start of anthropogenic deposition

recorded in trench 11. The features appear in an area where the resistivity survey suggested a feature of high resistance measuring 3m x 5m. It was not clear if these features fulfilled some structural purpose but on current evidence it seems most likely that they resulted from spillages of (perhaps very wet drips and liquid) mortar making materials into shallow depressions in the reduced gravel surface. This would imply that the area was associated with mortar production or lime slaking. At the end of the activity that created them, loose surface gravel was raked across them to create layer (90155). Hand-specimens were recovered of the cemented gravels (90126) (sample <50108>) and (90127) (sample <50107>) for inspection and possible sampling. Detailed macro-photographs were also taken of the material in-situ. These should be able to shed light on the exact nature of these fills / features.

It is possible that sandy layer (90134) containing frequent re-precipitated patches of Calcium Carbonate may have formed a later working surface upon which these industrial processes took place possibly indicating heating for lime slaking.

Phase AS10011.3 - Early 18th century ii

Feature [90107] ([90108], [90141]) was completely unexpected either from historical sources or geophysical survey. It appears earlier than the sequence of grotto construction. Its vertical sides in most places suggest that it was either revetted or backfilled relatively shortly after it had been excavated. Revetment could have been formed by planking or sandbags and may have been removed shortly before the structure was backfilled. The slight overhang of natural gravel observed in trench 11a may be indicative of sandbags having been left in-situ in places but the evidence is speculative rather than conclusive. A range of dating evidence has been recovered including two coins from the base of the feature and these will provide terminus ante-quem dates.

There is no evidence of trampling or surface formation at the boundary between the underlying natural gravels and primary fills. It implies that there was either some form of artificial surface that would prevent wheel ruts forming such as planks or / and that after the gravel was extracted the feature was backfilled relatively rapidly before soil had the chance of ingress. Primary fill (90109) in trench 11a and the eastern part of trench 11b (90125/90110) is a very mixed blotchy deposit suggesting that a mix of materials went into its formation and that it represents a single act of rapid deposition.

At the western end of trench 11b, (90139) the primary fill of cut [90141] had a similar nature to the primary fills elsewhere but there was also evidence for collapse of gravelly material (90138) from the side into the feature. The strange profile of this deposit possibly indicating that the collapse happened as [90141] was being backfilled.

Next to the feature, CaCO rich layer (90113) tapers towards the edge of the feature and the primary fills contain clods of this material mixed with a more extensive brown loamy fill. Taken together this suggests that (90113) was being laid down whilst [90107] was open. There were variations in the concentrations of CaCO material within (90113) and it is probable that this relates directly to the formation processes behind (90113) rather than later taphonomic processes. We currently interpret these early features to be related to the construction of the house with a quarry to extract sand and gravel and a working surface where mortar was prepared.

Phase AS10011.4 – Early 18th century iii

(90111) represents an extensive layer that is present over much of the phase 3's trenches around the grotto. It appears to be a landscaping layer made to restore the area and make it more amenable to

vegetation. The brown loamy landscaping layer has a somewhat different structure to more naturally formed topsoils on site, with more frequent larger cracks and voids. This likely reflects incomplete homogenisation of the layer by bioturbation. This suggests that the whole layer was deposited at once (i.e. without phase of vegetative growth during up-building), and immediately overlain by turf, which then became the active surface-solum. Bioturbation and homogenisation in the newly man-made 'sub-soil' is therefore restricted compared to the 'natural' soils on, for example on the terraces. Towards the west of Tr11B this layer becomes indistinct and eventually blends with the loam and soil on the terrace area. To the east, in the east end of Tr10 it extends to the edge of the grotto hollow, where it is cut/overlain by the final turf banks of the grotto hollow.

Phase AS10011.5 – Early-mid 18th century

After the area had been landscaped using (90111) features [90114], [90118], [90123] and [90116] were cut. These were probably only two linear features [90114] with [90118] and [90123] with [90116]. Given the nature of their location and spatially and stratigraphically they most likely represented bedding trenches for planted features.

[90140] is a very large pit-like feature that stratigraphically appears to fit with post landscaping planting features. The nature of the feature is a mystery although one explanation does seem possible. This has [90140] as a very large planting feature for a semi-mature tree. With such an explanation the basal fills (90145), (90135) and (90136) result from material collapsing into the hole when the tree was being inserted and (90144) and (90146) being material backfilled around the root system.

The fills of [90152] were distinctly different than those of [90140] with very few stones and what appeared to be a much higher humic content. The profile of the feature lends itself well to that of a tree throw and the fills could therefore result from a build-up of humic material within the tree throw hollow suggesting that the hole remained open for some time. An alternative is that the humic stone free fills represent a void under the tree or hollow within it that slowly accumulated with humic material.

It is unclear where [90158], the circular feature in the north west of trench 11b, sits within the phasing. It is possible that based upon its spatial location it belongs to Phase AS10011.2 with the CaCO rich features. Its fill however is very different and more like the planting features excavated in trench 9. If it is indeed a planting feature it is best placed in Phase AS10011.5.

Phase AS10011.6 – early 20th century

This phase contains the most recent natural soil layers along with one final landscaping event. Layer (90103) represents a developed topsoil, with turf surface where it is buried under (90102). It is the lower part of an active surface loam showing a worm sorted stone layer above – (90105). The presence of (90105) indicates there has been minimal intrusive disturbance to most of the parkland surface in 'recent' times. The rubble layer (90102) has been identified in other trenches around the grotto and represents a final act backfilling the grotto hollow although the grotto hollow itself did not extend as far as trench 11a. It is probably of early 20th century date.

Phase AS10011.7 – 20th century

All the site is covered by the modern topsoil and turf-line (90101).

Trench 12 (SSD10012)

SSD	10012		
Contexts	90201-90222		
Samples	-		
Small Finds	3032-3035, 30201-30204		
Drawings	Sheet 67, 78-82	Plans 2251-2253	Section 20251-20252, 20254-20256

Sheet #	Number of drawings on sheet	Drawing numbers
67	3	20251, 20252, 20256
78	1	2252
79	1	2253
80	1	20255
81	1	20254
82	1	2251

Trench 12 was positioned to investigate the location of the arbour. In particular it aimed to locate the actual position of the arbour, its construction techniques and any associated features such as paths. The arbour was thought to consist of four arced quadrants in a location currently within lightly wooded undergrowth. The location prevented prior geophysical survey but an earthwork survey suggested the presence of a slight bank just inside the fenced area. The woodland location meant that prior permission was required from Richmond Borough Council and that the excavation would need to be conducted by hand.

As permission to excavate within the wooded area was received late and as there were constraints with resources trench 12 was opened late and not fully excavated by the close of the phase. We have therefore at best a partial understanding of the archaeology in this area. A target area was plotted although the actual area needed to take account of the position of trees, their roots and fallen trees and a tree throw. This resulted in a dog-legged outline to the actual trench on the ground.

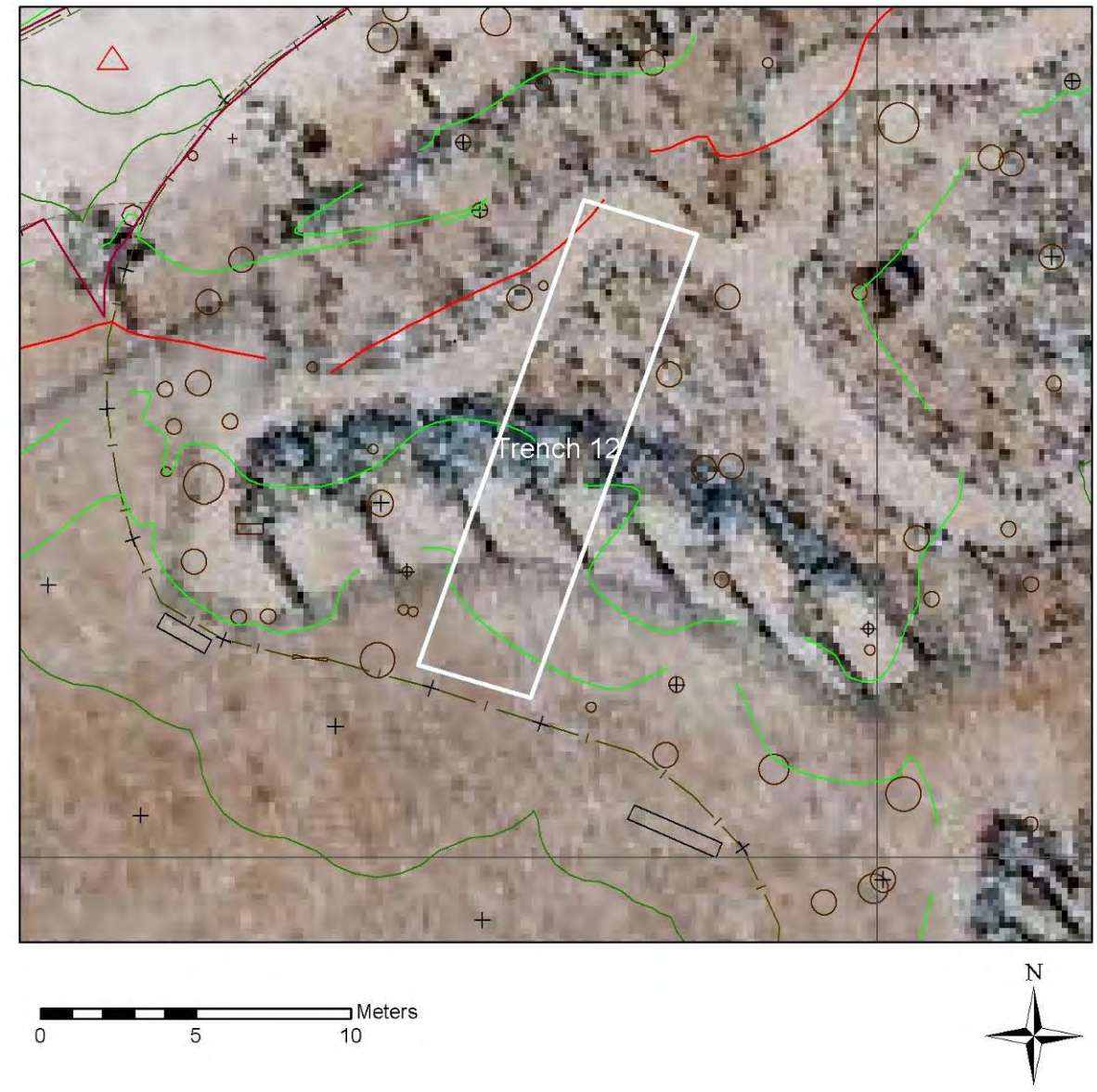


Figure 84 – Planned location of trench 12 in relation to 1752 plan.

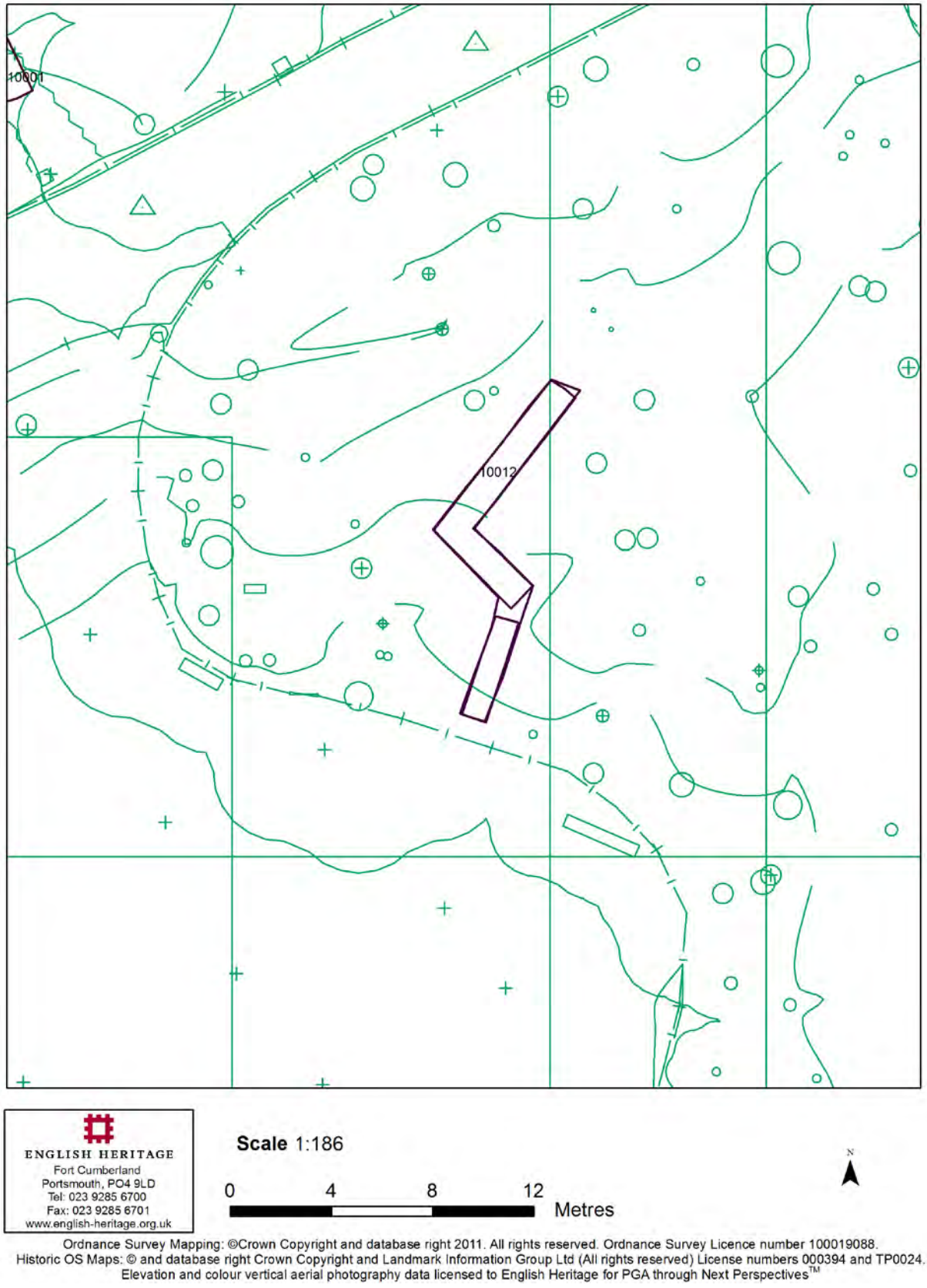


Figure 85 – Actual layout of trench 12 as positioned to avoid trees, tree roots and tree throws.

Stratigraphic narrative

The doglegged outline of the trench meant that resources were spread out and focused on the archaeology of each of the three areas (north, centre and south). The stratigraphic narrative for trench 12 will look at the archaeology in each of these areas. The whole sequence will be drawn together in the interpretive section.

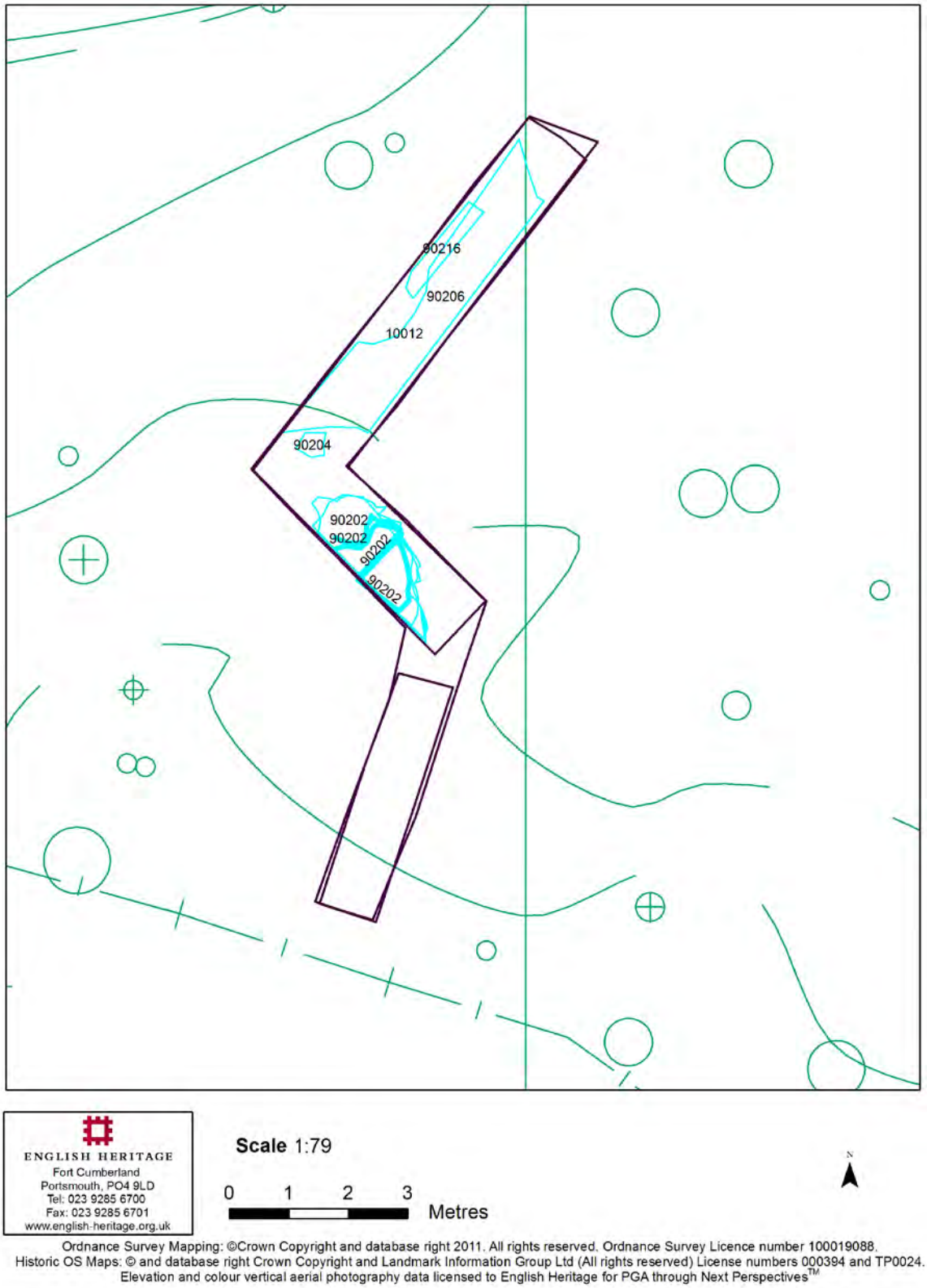


Figure 86 – Features in trench 12.

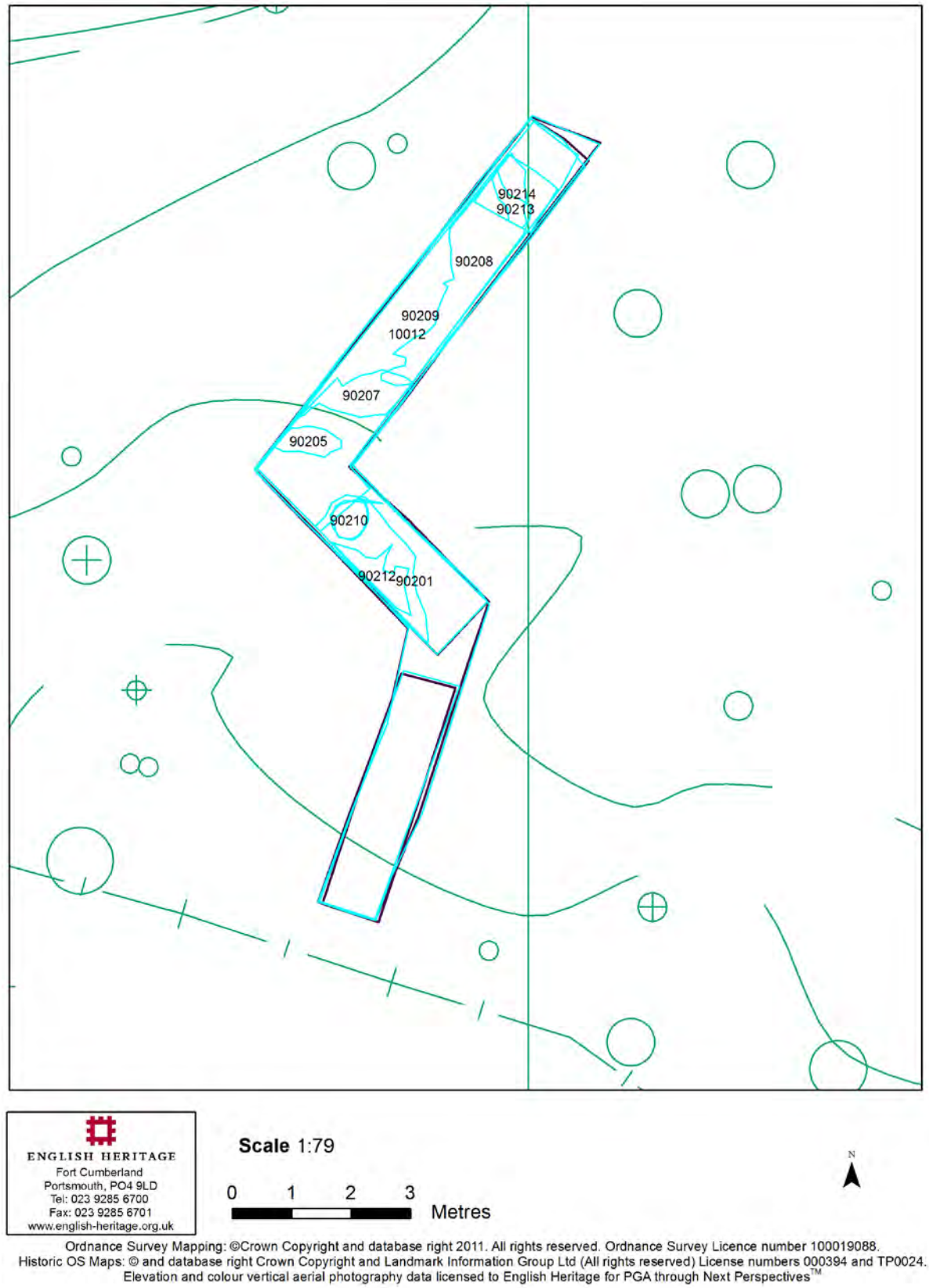


Figure 87 – Deposits in trench 12.

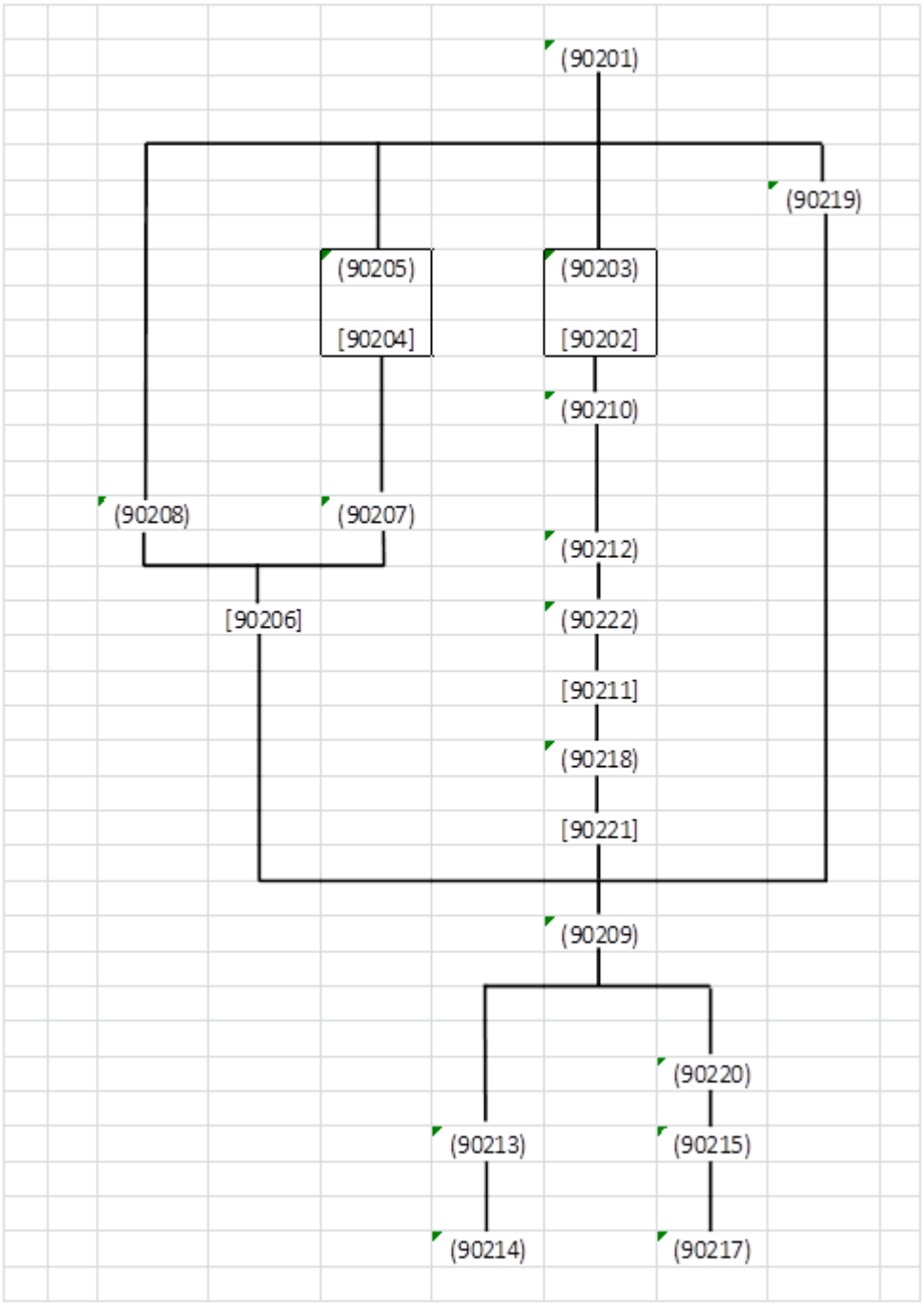


Figure 88 - Matrix for trench 12.

It was not clear that natural underlying geology was reached anywhere in trench 12. The southern portion of the trench was excavated in search of the inner edge of the arbour but no features were identified in this area. The layers consisted of brickearth-like deposit that contained fragments of ceramic building material throughout and hence was considered as redeposited. The earliest layer that was encountered was (90217). An area of 5.7m x 0.8m was revealed but no edge was reached and it extended beyond the limits of excavation in all directions. It was a very compacted gravel with a red (2.5YR 4/6) silty clay matrix. It was the most compact surface experienced during any of the excavations with a very sharp interface with the overlying layers. Tools such as mattocks, spades and trowels were able to make no ingress into the deposit.

Overlying (90217) was (90215). This was a 0.2m thick layer that covered the entire portion of the southern part of the trench. It had a dark yellowish brown (10YR 4/6) colour and a sandy silt loam texture. It was very dense and compact and required mattocking. It contained small pieces of ceramic building material. On top of this was (90220). This was a wedge of material that only extended 2.3m and disappeared to the south. It attained a maximum thickness of 0.23m. It was differentiated mostly by colour with a dark yellowish brown (10YR 4/4) colour and a sandy silt loam texture. No finds were recovered from it.

(90209) was found throughout the northern and central portions of the trench but faded out towards the south of the southern portion. It was wedge shaped attaining a maximum thickness of about 0.5m in the northern part of the trench. It had a very dark grey (5YR 3/1) colour and a silty clay texture. It contained a few small pebbles and ceramic building material, architectural stone, marine shell, pottery, roof tile, clinker, burnt flint, clay tobacco pipe, glass and animal bone.

Above this was subsoil (90219) a thin irregular layer that sat as an interface between topsoil (90201) and the underlying brickearth. At its thickest it attained 0.24m. It was a dark greyish brown colour (10YR 4/2). There was lots of rooting and occasional pieces of ceramic building material.

The whole sequence was topped by (90201) the topsoil for trench 12. It was up to 0.1m thick with a very dark grey colour (5YR 3/1) and a silt loam texture. Lots of material was observed in this layer such as ceramic building material, glass, pot, stone and metal illustrating the preponderance for people using the woodland to dispose of rubbish.

The trench was not reduced as low in the centre and north of the trench. In the centre, the earliest feature was a brick structure that evidently had several phases of brickwork. The earliest of these was a brick drain (90218) which was constructed from unfrogged bricks with a tiled base. The area revealed in the trench was 0.6m long, 0.4m wide and 0.3m deep. It had a north east – south west orientation. It was speculated that this had been placed within construction cut [90221] (see section 20255) however the excavator was uncertain and the high positioning of the cut is contradictory with the bricks lying under context (90209).

Figure 89 – The drain and wall facing south. Scale 1m. Photo 8380.

Added on to the bricks of 90218 were a further set of frogged bricks that made the line of a wall running north west – south east. This structure was numbered [90211].

Overlying this was (90222) a loose rubble fill (considered by the excavator to be filling construction cut [90221]. It was 0.25m wide and 0.3m deep and contained large quantities of small gravel and ceramic building material. Its matrix had a yellowish brown (10YR 5/6) colour with a silt loam texture.

Next to this was (90212) which had a diffuse boundary with (90222) but on the whole may have been a later fill although they may have been near contemporary. It filled both phases of drain. It covered an area of 1.7m by 0.8m and was up to 0.2m deep. It consisted of mixed rubble, CERAMIC BUILDING MATERIAL & Mortar with a pale greyish matrix probably mostly derived from decaying mortar. Where a relationship was established, (90212) appeared to underlie (90209).

Figure 90 – Barrel hoop and tree throw [90202] facing south west. Scales 1m and 2m. Photo 8184.

On top of (90209) was found an iron barrel hoop filled by (90210). It had a 0.7m diameter and the deposits was up to 0.10m thick. It had a dark greyish brown colour (10YR 4/2) with a silt loam texture. It contained pottery and ceramic building material.

(90222), (90212), (90210) and (90209) were all cut by [90202] an irregular sub-circular feature with gradual sides and an irregular base. It measured 2.7m by 1.1m and was up to 0.27m deep. It extended beyond the limit of excavation to the south. It had a single fill (90203) with a black colour (5YR 2.5/1) and a silt loam texture. It contained pot, glass, metal and ceramic building material. Topsoil (90201) was very thin in this area especially over the tree throw where it was only 0.03m thick.

In the northern part of the trench a sondage [90216] measuring 1.05m by 1.2m was cut to a depth of 0.8m at the northern end. The lowest deposit observed was (90214) a brickearth that contained some compact gravel. Only the top of this layer was reached and it was unclear if this was as homogenous as layer (90217) in the south of the trench. The gravel was set in a brickearth matrix with a yellowish red colour (5YR 4/6) and a silty clay texture. No finds were observed or recovered from it. Sitting on top of this was (90213) a more friable thin layer of gravel measuring 0.65m by 1.1m. It had a reddish brown colour (5YR 5/4) and a silt loam texture. These were covered by the brickearth (90209) that had the same characteristics as identified elsewhere although it was exhibited that this represented the same deposit throughout the entire trench.

Figure 91 – Gravel and rubble deposit (90207) and tree throw [90204] facing northeast. Scales 1m and 2m. Photo 8202.

A gravel rich layer was located on top of this (90208) which was interpreted as being within a cut [90206]. (90208) measured 1.2m by 4.9m and was up to 0.25m thick. It had a very dark grey colour (5YR 3/1) with a silty clay texture. There were frequent amounts of ceramic building material and other finds included glass. This was butted by (90207) which although similar to (90208) contained more frequent quantities of ceramic building material. It measured 1.04m by 0.6m, had a very dark grey colour (5YR 3/1) and a silty clay texture.

At its southern end (90207) was cut by [90204] a sub-circular feature measuring 0.87m by 1.04m. It was not excavated but contained fill (90205). This had a black colour (5YR 2.5/1) with a sandy loam texture.

(90205), (90208) and (90207) were all covered by topsoil (90201).

Material culture

This section covers the index for material culture recovered from trench 12. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 9 - index for material culture recovered from trench 12.

90201	Clay Pipe
90201	Bone - Animal
90201	Pottery - Post Medieval
90201	Industrial Debris - Slag and Glass
90201	Pottery - Post Medieval
90201	Glass
90201	Flint - Burnt
90201	Pottery - Post Medieval
90201	Shell - marine
90201	Ceramic building material - tile
90201	Ceramic - Building material
90201	Ceramic - Building material
90201	Flint - Burnt
90201	Charcoal
90201	Pottery - Post Medieval
90201	Stone - Other
90201	Coal
90201	Ceramic - Building material
90201	Pottery - Post Medieval
90203	Ceramic - Building material
90203	Pottery - Post Medieval
90203	Pottery - Medieval
90203	Ceramic - Building material
90203	Stone - Other
90203	Ceramic - Building material
90203	Flint - Burnt
90203	Glass

90203	Clay Pipe
90203	Industrial Debris - Slag and Glass
90203	Industrial Debris - Slag and Glass
90203	Mortar and Plaster
90203	Ceramic - Building material
90208	Mortar and Plaster
90208	Ceramic - Building material
90209	Ceramic - Building material
90209	Stone - Architectural
90209	Shell - marine
90209	Pottery - Post Medieval
90209	Ceramic - Building material
90209	Ceramic - Building material
90209	Roof tile
90209	Clay Pipe
90209	Flint - Burnt
90209	Clinker
90209	Glass
90209	Stone - Other
90209	Bone - Animal
90211	Ceramic - Building material
90212	Stone - slate
90212	Stone - Other
90212	Ceramic - Building material
90212	Ceramic - Building material
90212	Ceramic - Building material
90223	Pottery - Post Medieval

90223	Industrial Debris - Slag and Glass
90223	Glass

Interpretations

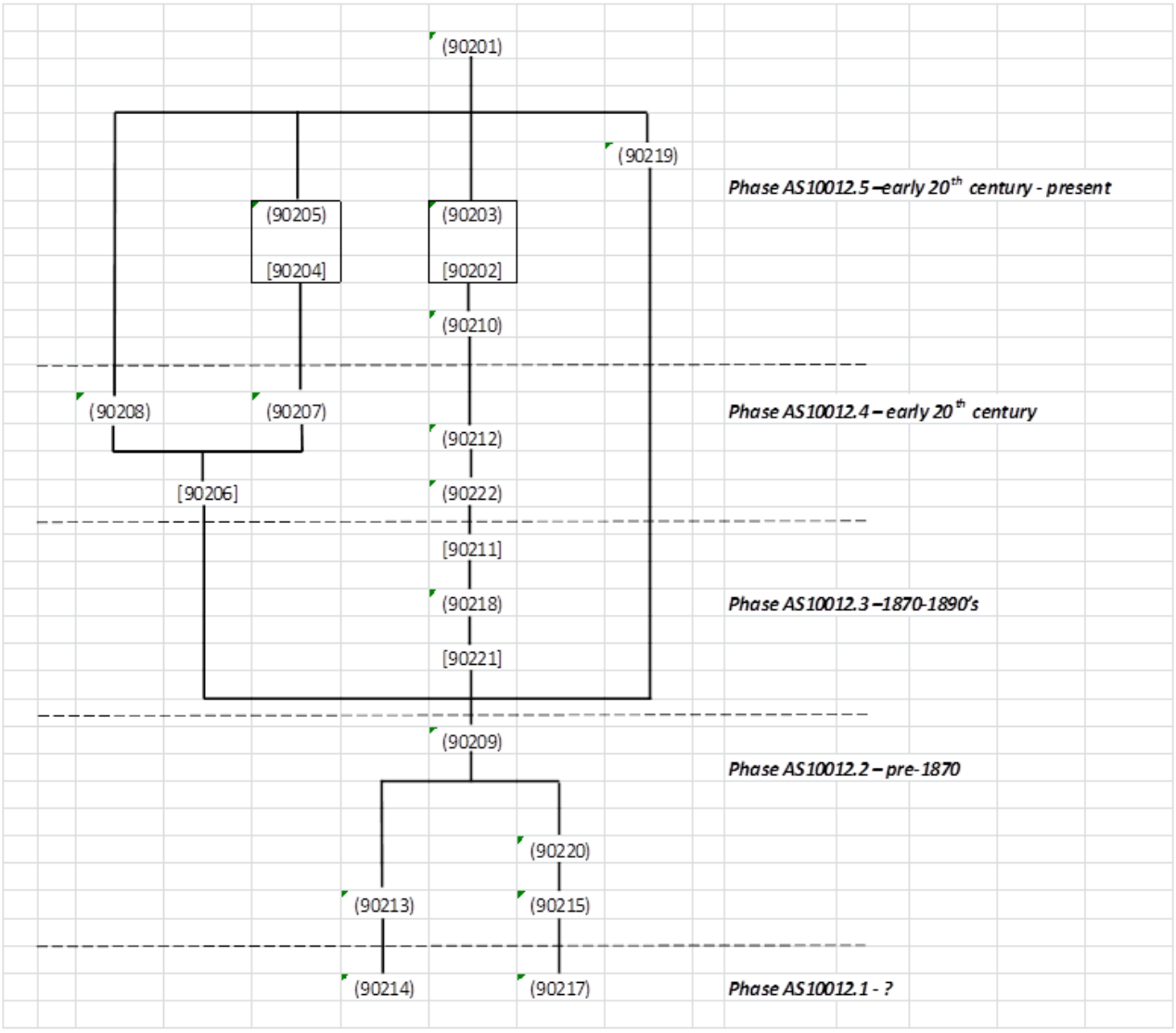


Figure 92 – Phased matrix for trench 12.

Phase AS10012.1 - ?

(90217) appears to be the earliest layer in trench 12 but its nature is far from clear. It is possible that this represents the natural gravel in this area although it was much more compact than any of the natural gravels encountered elsewhere on the site; exceedingly so. It sharp interface and level top have the character of a very well prepared metalled surface that we might expect of a path or roadway. We would be happier in this interpretation if edges were found to show that it represented a feature. Its nature is currently unknown but may be resolved in future excavations. The possibility that layer (90214)

represented a continuation of (90217) to the north does not resolve the question either way as the underlying natural geology encountered elsewhere has shifted so rapidly, an extensive deposit may just as well represent a laid surface as a natural one.

Phase AS10012.2 – pre-1870

Layers (90215) and (90220) in the south and (90213) in the north have been separated out as they may represent deliberate dumped deposits. Small pieces of ceramic building material were regular observed in (90215) supporting this notion.

The substantial bulk of brickearth in the trench was numbered (90209) although it was not exhibited to be the same deposit throughout. The mass was through scrutiny subdivided in the southern portion of the trench and may have been made up from earlier and later components in the central and northern portions. In the central portion (90209) is recorded as overlying at least a small portion of (90212) therefore lending it a relatively late date although the brickearth that the drain and glasshouse foundations cut into were not numbered. When phasing the sequence it seems more cognitively honest to phase (90209) as earlier rather than later. This would place it with the other brickearth layers and possible landscaping activity.

Phase AS10012.3 –1870-1890's

The first of the phases that can be positively dated is that related to the brick structures [90221], (90218) and [90211]. This structure is located in the position of a glass house on the 1st and 2nd editions of the Ordnance Survey map of the area dated 1881 but not on the 1871 6 inch map. This would suggest a construction date for the glass house within the 1870's although there does appear to have been some renovation at a later date.

Phase AS10012.4 – early 20th century

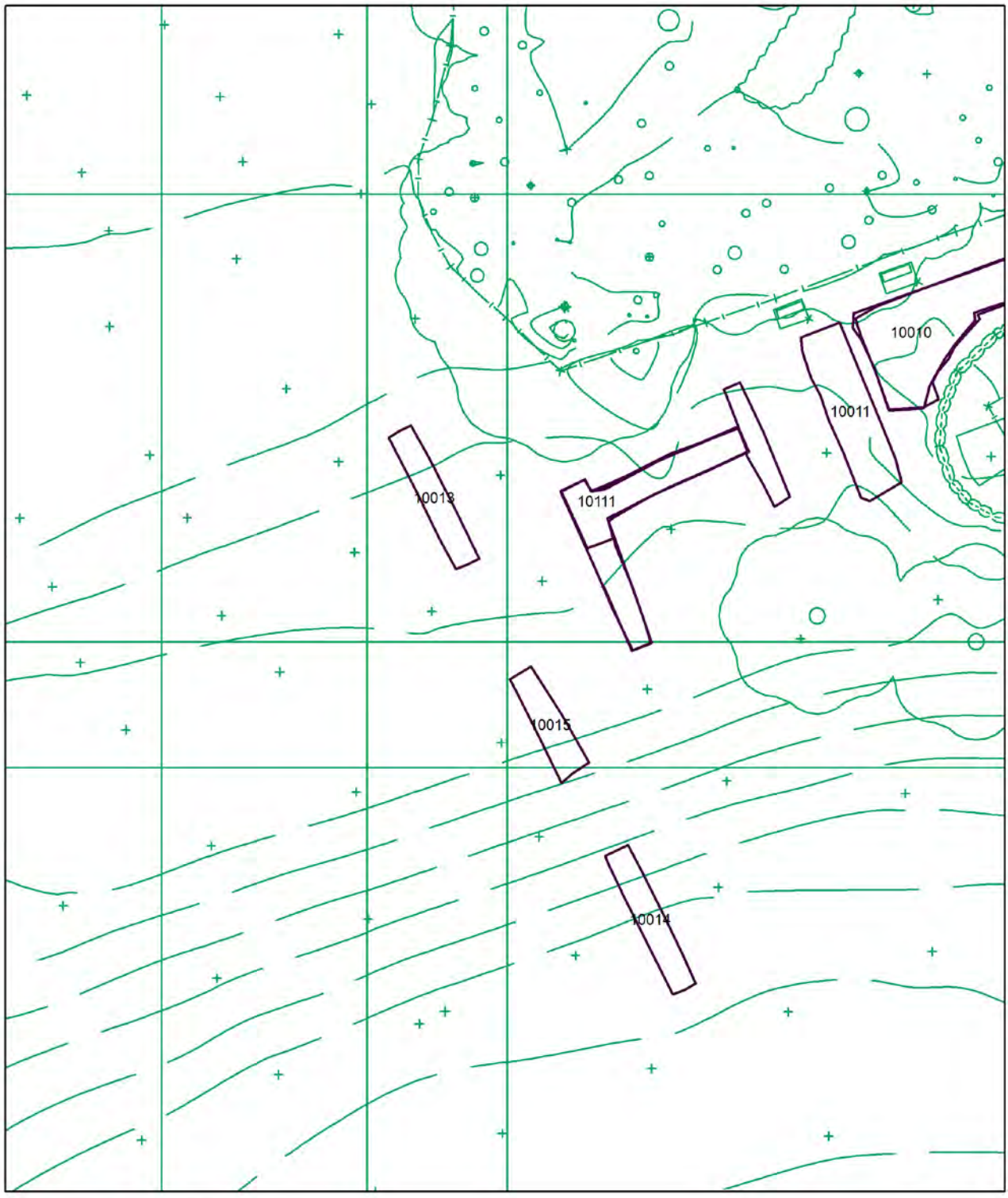
Deposits (90222) and (90212) are best interpreted as relating to the destruction of the glasshouse during the early 20th century.

In the northern part of the trench deposits (90208) and (90207) were recorded by the excavators as potentially relating to a laid pathway [90206]. Whilst this is possible, it was located at a very shallow depth and taking into account the irregular margins of the deposits it seems more likely that they are spreads of demolition material also associated with the destruction of the green house.

Phase AS10012.5 –early 20th century - present

Post demolition of the structure the area seems to have been used for dumping rubbish including a part of a barrel within which a mix of organic rich material (90210) accumulated. It seems unlikely to have been a full barrel and it is unclear if the tree represented by tree throw [90202] was deliberately planted within it before outgrowing it or if this was fortuitous. Very little time appears to have elapsed between these occurrences and they are phased together.

[90204] also appears to represent a tree throw and is also phased to this relatively recent period along with subsoil (90219) and topsoil (90201).



ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:315

0 7 14 21 Metres

N

Figure 93 – location plan for trenches 13, 14 and 15 across the central terraces.

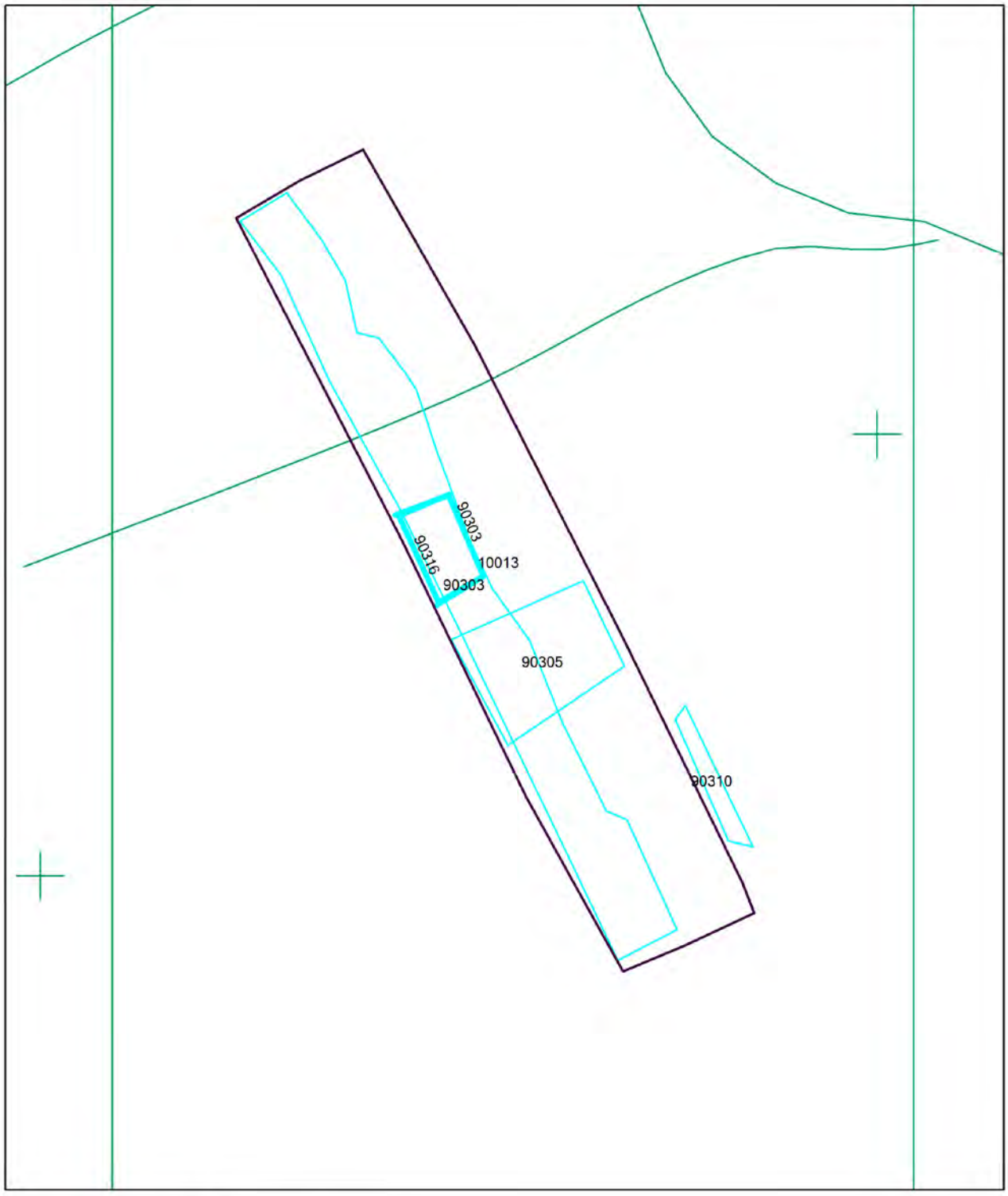
Trench 13 (SSD10013)

SSD	10013		
Contexts	90301-90317		
Samples	-		
Small Finds	-		
Drawings	Sheet 55, 59, 60, 61	Plans 2351	Section 20351-20354

Sheet #	Number of drawings on sheet	Drawing numbers
55	3	20351, 20352, 20353
59	1	20354
60	1	2351
61	1	2351

One of the major goals of the phase 3 project was to ascertain landscaping of the central terraces. Principally what was the nature of the original 18th century landscaping of what was presumably a natural gentle slope and whether there were later episodes of landscaping that created the profile that we see today. To answer these questions three trenches were placed over breaks of slope that define the terraces as seen today. These were trenches 13, 14 and 15. To assist in the sequencing of the landscaping events each of the trenches was placed in such a way as to catch the edge of a large drain that runs from the house down to the river. This drain is associated with the construction of the house although some later (modern) interventions are known to have been associated with the drain. Positioning of the trenches in this way would allow the comparison of two section s in each trench, one of which would exhibit the full palimpsest of landscaping whist the section would show the 18th century drain fill and any later episodes of landscaping that cut this or added to the profile.

Trench 13 was positioned over the top edge of the terraces. It was 9m long by 1.5m wide. It was machined down to 'natural' gravel although a number of features were observed higher up. These were later recorded in section.



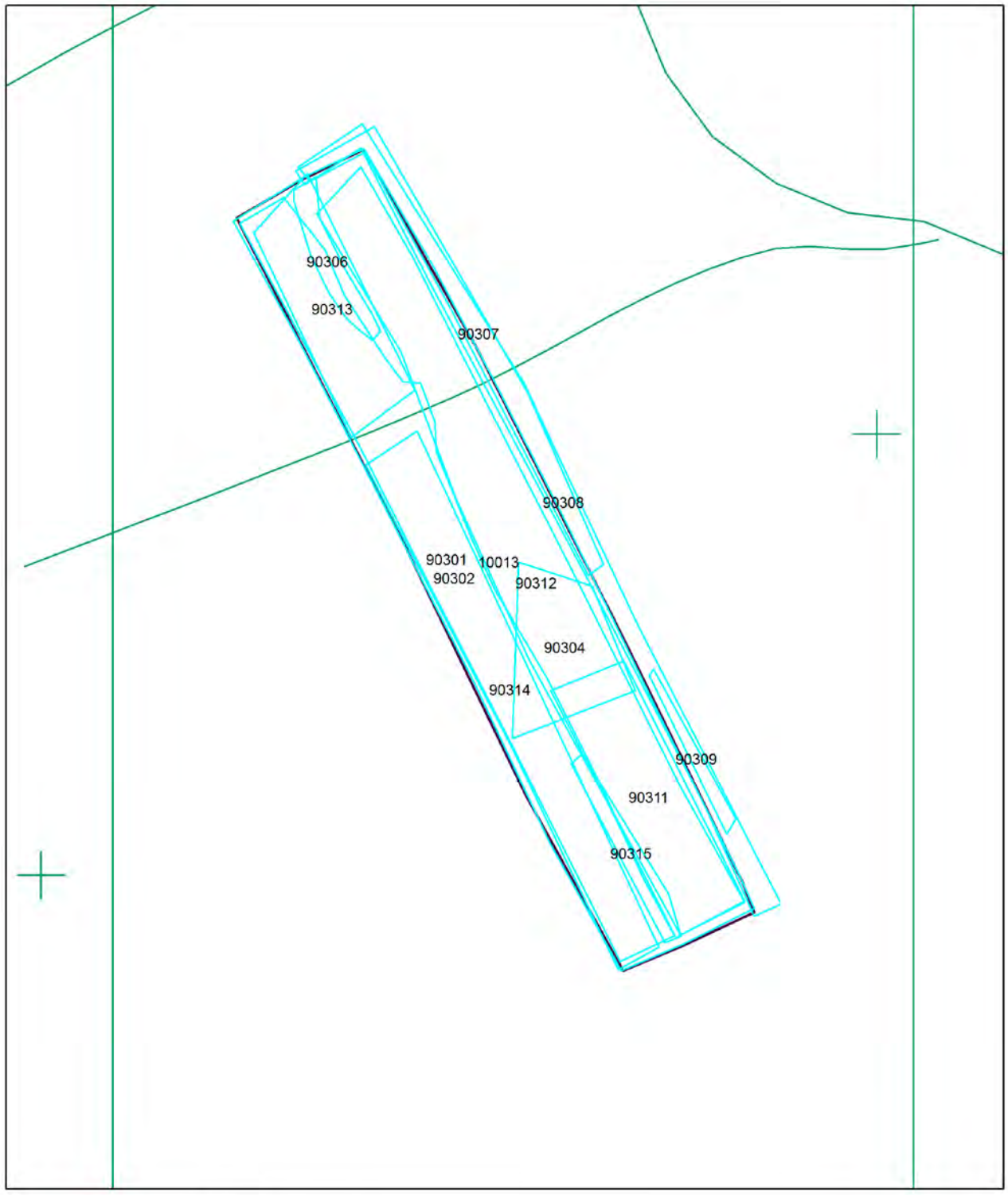
ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:55

0 1 2 3 Metres

N

Figure 94 – Features in trench 13.



ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:55

0 1 2 3 Metres

N

Figure 95 – Deposits in trench 13.

Stratigraphic narrative

The earliest deposit in trench 13 was (90312). This was loose pebbles and gravel with a sandy matrix with a light yellowish orange colour. It measured the entire 9m length of the trench and at 0.75m wide covered approximately half the width of the trench although it extended beyond the limits of the excavation.

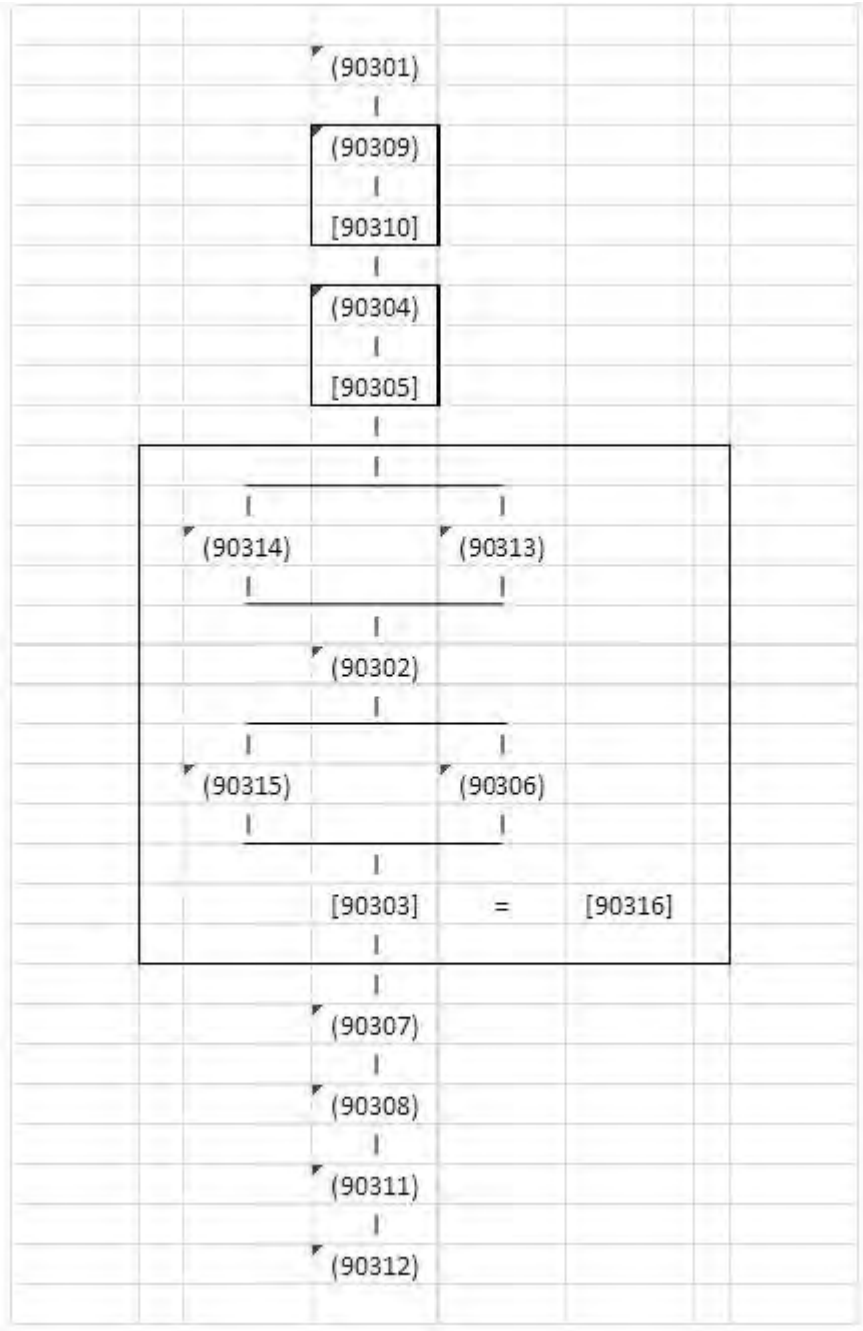


Figure 96- Harris matrix Trench 13.

Overlying this was (90311). This was a 0.15m thick loose gravel with a mix of pebbles and pea-grit sized material in a yellowish orange sandy matrix. This was revealed in the southern 4.5m half of the trench and was about 0.75m wide but extended beyond the limit of the excavation. On top of this was (90308) a 0.6m thick light yellowish brown (10YR 6/4) compacted gravel observed in section and which extended beyond the limits of excavation. Next was a brickearth-like deposit (90307) that was recorded in section. It was 0.35m thick and covered an area of 0.75m by 5m, extending beyond the limits of the trench. It was a yellowish brown (10YR 5/4) colour with a clay loam texture with occasional pebble inclusions.

(90307), (90311) and (90312) were cut by a large feature [90303] that ran the entire length of the trench (9m). A 1.2m wide section of the feature was revealed in the trench although it extended beyond the limits of excavation to the north, west and south. A section placed into the feature [90316] revealed that it had a sharp vertical edge. It was excavated to a depth of 1.2m before excavation was stopped due to safely reasons. Five fills were observed in this feature (90306), (90302), (90315), (90314) and (90313). (90306) was recorded as 1.6m long and 0.22m wide in plan and 0.21m deep in section and was identified in the northern part of the trench edging the feature. It had a light yellowish brown (10YR 6/4) colour with a sandy / silty consistency. It was not recorded as present in slot [90316]. In the southern part of the trench a similar linear fill (90315) was identified but this one was in contrast a gravel rich deposit with a dark grey colour. It ran for a length of 1.1m, was 0.1m wide and had a thickness of at least 0.82m.

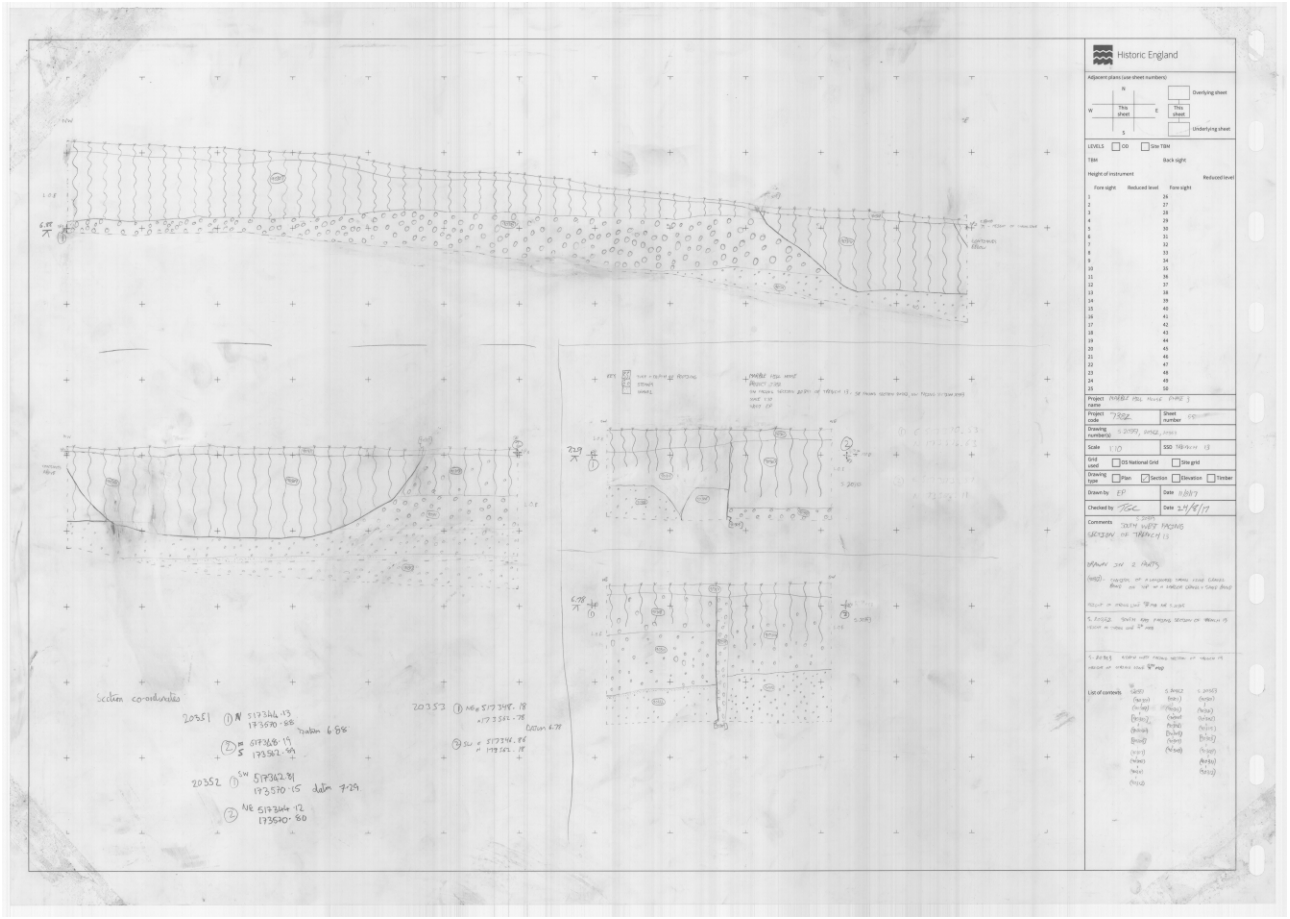


Figure 97 – section 20351. East facing section trench 13.

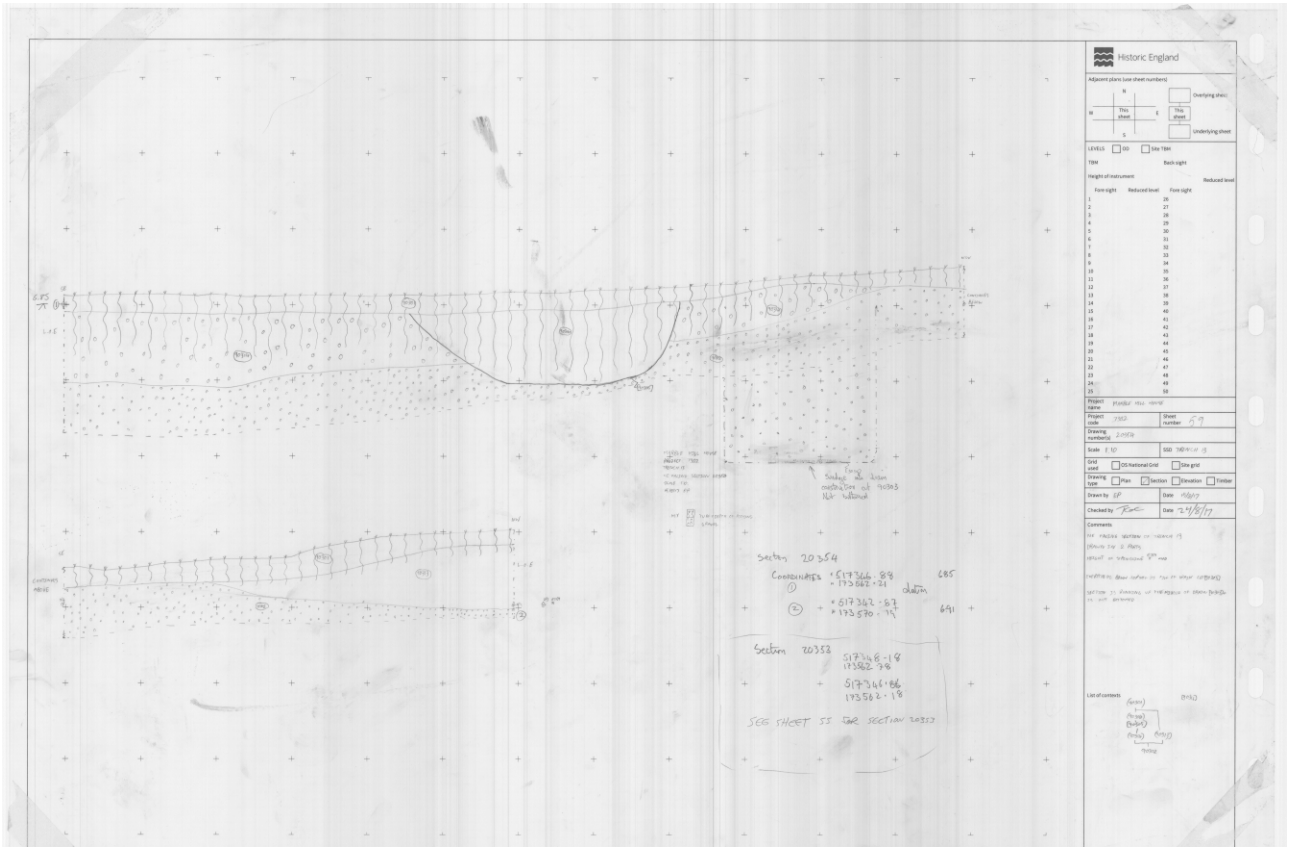


Figure 98 – Section 20354. East facing section trench 13.

The main fill of [90303] was (90302). It ran the entire length of the trench (9m) and a 0.68m strip was revealed in the trench although it extended beyond the limits of the excavation to the north, south and west. It was excavated to a depth of 1.2m although probing suggests it may continue to a depth of 2m. The deposit consisted mostly of gravel (90%) in a matrix with a silt loam texture and a mixed orangey grey colour. Finds included ceramic building material and clay tobacco pipe.

Figure 99- Trench 13 facing north showing drain [90303] (left hand side). Photo 8022.

(90314) and (90313) were the top fills of [90303] but they did not meet. (90314) was located in the southern part of the trench, was 0.5m thick, 0.9m wide and 5.5m long. It mostly consisted of gravel with a sandy silt matrix. It had a Dark grey colour and sandy silt loam texture. (90313) was located in the northern part of the trench and was 0.3m thick, 0.9m wide and 2m long. It had a dark yellowish brown colour (10YR 4/4) with a sandy clay loam texture. It was mostly constituted by gravel with a sandy matrix.

Feature [90305] was observed in both east and west facing sections. It cut the fills of long linear feature [90303]. It was 1.3m wide and 0.42m deep with steep sides and a flat base. It had a single fill (90304) with a very dark greyish brown colour (2.5Y 3/2) with a silt loam texture. It contained frequent pebbles and gravel and brickearth lenses. Finds included glass, pottery, industrial debris and ceramic building material.

Figure 100- Features [90303] and [90310]. West facing section trench 13. Photo 8035.

Feature [90310] was observed to cut (90304) in the west facing section but not seen in the east facing section. It was 2.62m wide and 0.65m deep with concave sides descending to a bowl shaped base. It had a single fill (90309) with a very dark brown colour (10YR 2/2) and a sandy loam texture.

All features were covered by layer (90301) which formed the topsoil. It had a dark brown colour (10YR 3/3) with a silt loam texture. It varied in thickness from 0.05m to 0.25m thick.

Material culture

This section covers the index for material culture recovered from trench 13. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 10 - index for material culture recovered from trench 13.

90302	Ceramic - Building material
90302	Clay Pipe
90304	Glass
90304	Pottery - Post Medieval
90304	Industrial Debris - Slag and Glass
90304	Ceramic - building material
90306	Shell - marine

90306	Coal

Interpretation

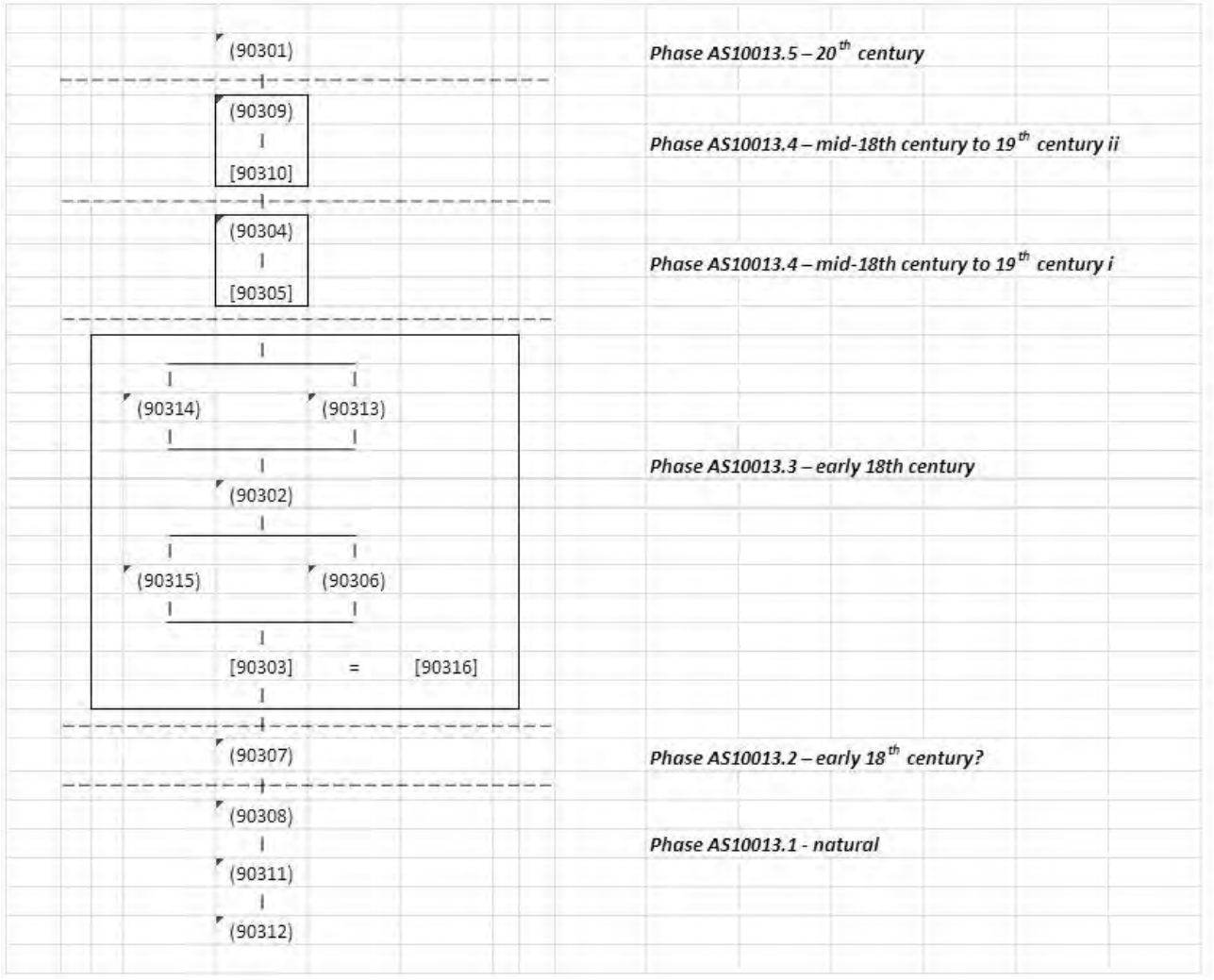


Figure 101- Phased Harris matrix trench 13.

Phase AS10013.1 - natural

The natural in trench 13 was formed by a series of gravels that constituted the river terrace. The earliest of these that was uncovered was (90312) followed by (90311), (90308).

Phase AS10013.2 – early 18th century?

Above these gravels was (90307) a brickearth like layer that may have formed a subsoil layer or have been part of the original landscaping of the garden in the early 18th century. It is unclear whether it is natural or artificial. It attained a much greater thickness in the northern part of the trench possibly indicating that this part of the slope was artificially raised prior to the drain ([90303]) being cut.

Phase AS10013.3 – early 18th century

The major feature in the trench was [90303] which formed the cut of the drain running from the house to the river. Deposits (90306) and (90315) were considered as primary fills of this cut feature by the excavators and it was questioned whether this could be evidence of the feature having been recut and backfilled at a later date. The fill of the drain along trenches 13, 14 and 15 however was consistently identical to that of (90302) excavated in trench 13 and although hints of a similar deposit to (90306) and (90315) were possibly observed in other trenches it was considered highly unlikely that the whole structure had been recut. An attempt was made to reveal the top of the drain to record the brickwork and ascertain whether it had been replaced or repaired at a later date but it was found to be a depth that exceeded safety protocols. Probing possibly revealed that a hard structure may have been located at a depth of 2m below the surface. Overall, whilst it cannot be ruled out that the drain was recut / replaced at a later date, there was insufficient evidence to prove this and it seemed almost certain that the structure and fills dated from the early 18th century and were generally contemporary with the construction of the house.

Phase AS10013.4 – mid-18th century to 19th century i

Feature [90305] would appear to be a planting feature probably associated with an Italianate garden. It corresponds with features indicate on the geophysical and aerial surveys. That this feature cuts the drain fills indicates that it falls mid-18th century onwards but might theoretically be best placed in the 19th century.

Phase AS10013.5 – mid-18th century to 19th century ii

Feature [90310] also appears to be a planting feature associated with the gardens. It cuts the fill of [90305] and is hence later indicating a shift in the planting pattern in the garden over time. It is also only relatively dated falling between the mid-18th century and the 19th century but is probably best placed in the 19th century.

Phase AS10013.6 – 20th century

Topsoil (90301) formed the final layer in trench 13.

Trench 14 (SSD10014)

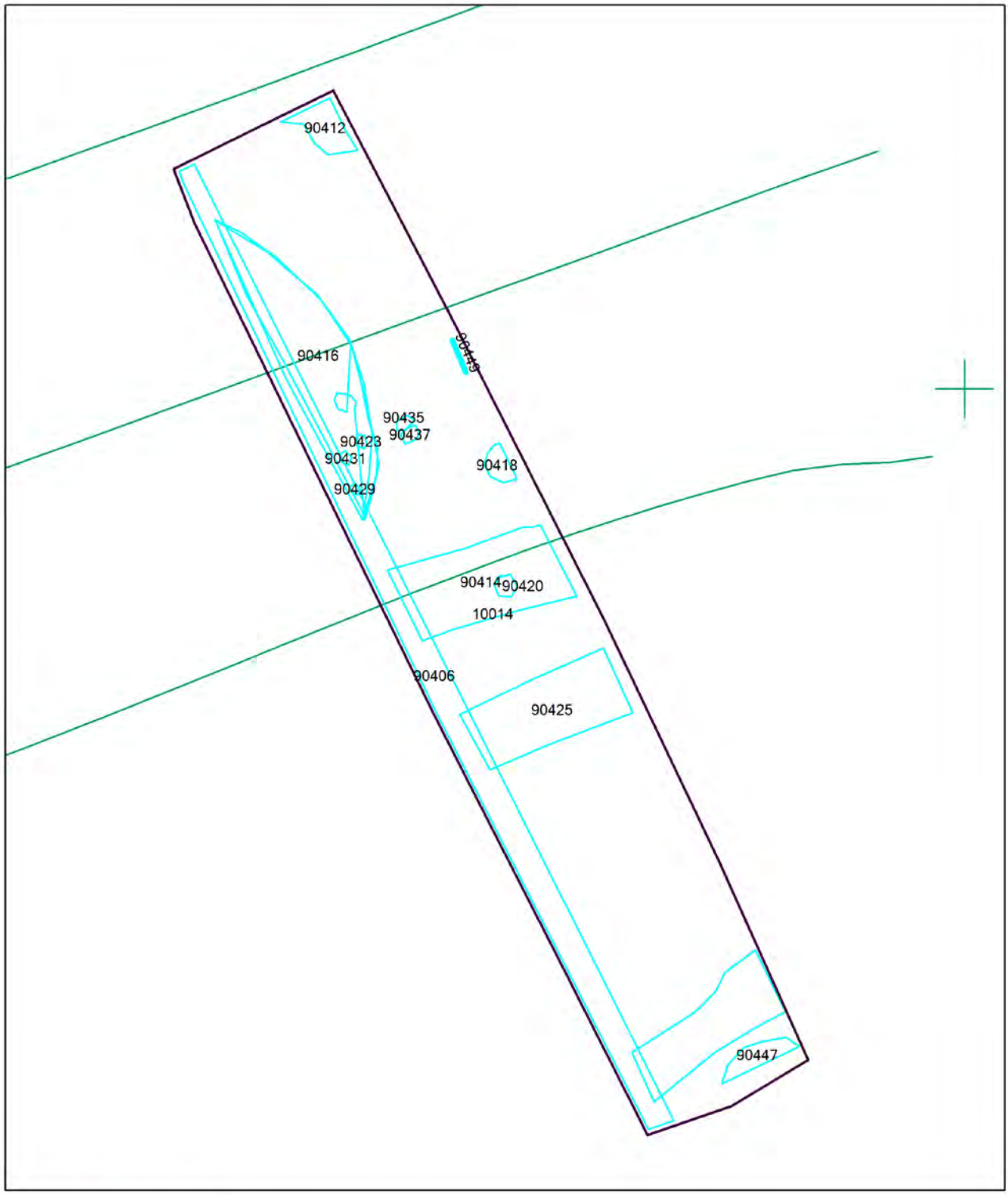
SSD	10014		
Contexts	90401-90451		
Samples	50401-50410		
Small Finds	-		
Drawings	Sheet 53, 54, 56, 64, 65	Plans 2451	Section 20451-20463

Sheet #	Number of drawings on sheet	Drawing numbers
53	1	20451
54	1	20452
56	10	20453, 20454, 20455, 20456, 20457, 20458, 20459, 20460, 20461, 20462
64	1	20463
65	1	2451

Trench 14 was one of the three trenches that were placed to investigate the profile of the terraces. It was the lowest of the three, situated across the final break of slope with a portion of the flat lawn that runs to the river. It was placed over the edge of the drain that runs from the house to the river. It was also situated across a series of linear features that showed up on the geophysical surveys. The trench was excavated by machine down to the natural with features then excavated by hand. Many of the features were identified the day the trench was machined and cleaned, however there was torrential rain the following day followed by hot dry conditions. This meant that some features which were identified under the initial ideal conditions became hard to trace in following days and ephemeral features became very difficult to excavate with certainty.

Stratigraphic narrative

A series of soil layers were observed and recorded in trench 14 after the trench was opened by machine. A large number of features were cut through these layers but at different levels. The earliest deposit observed was (90433) a natural brickearth-like deposit with a yellowish red colour (5YR 4/6) and a sandy silt loam texture.



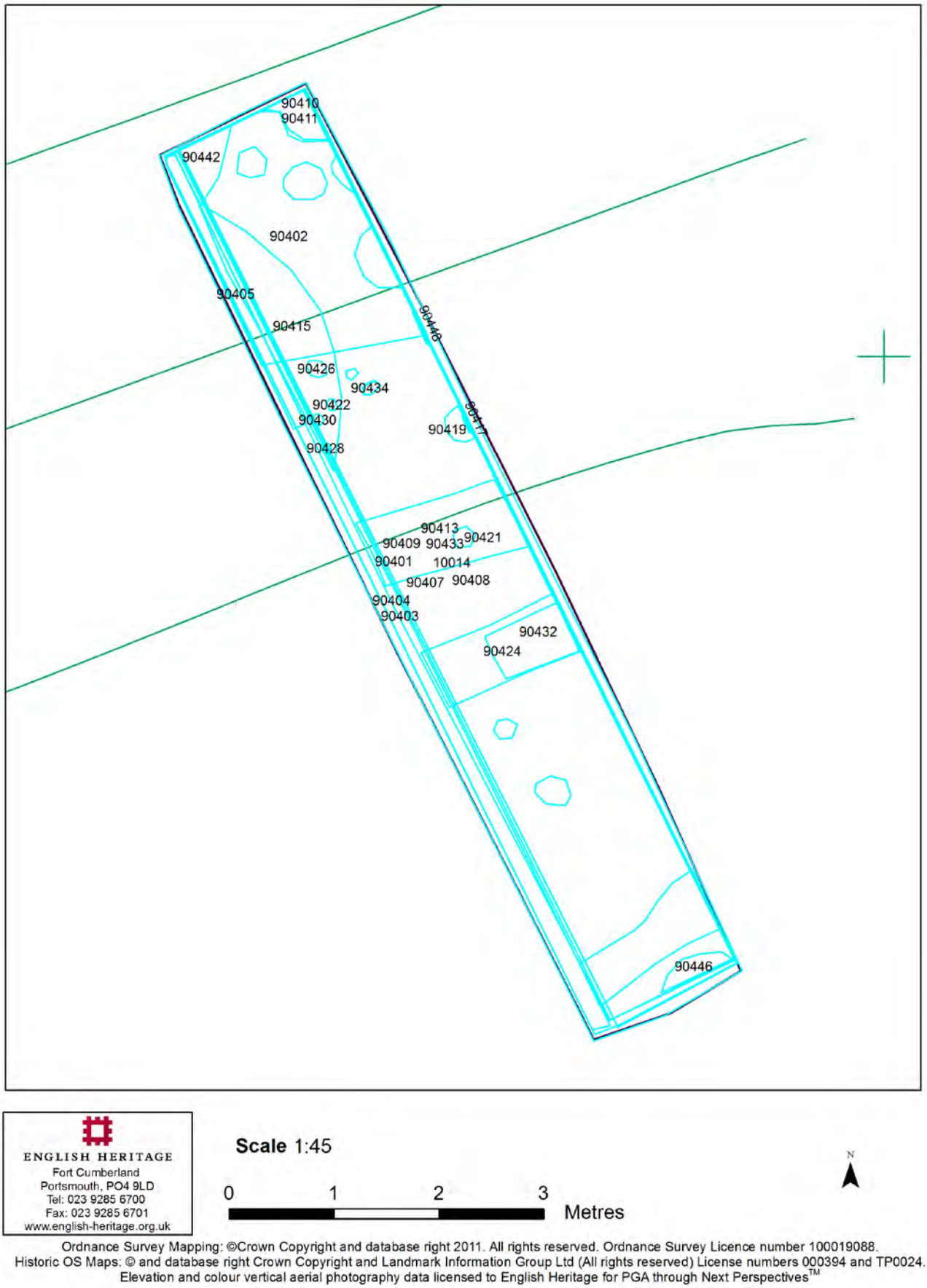
ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:45

0 1 2 3 Metres

N

Figure 102 – Features in trench 14.



ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:45

0 1 2 3 Metres

N

Figure 103 – Deposits in trench 14.

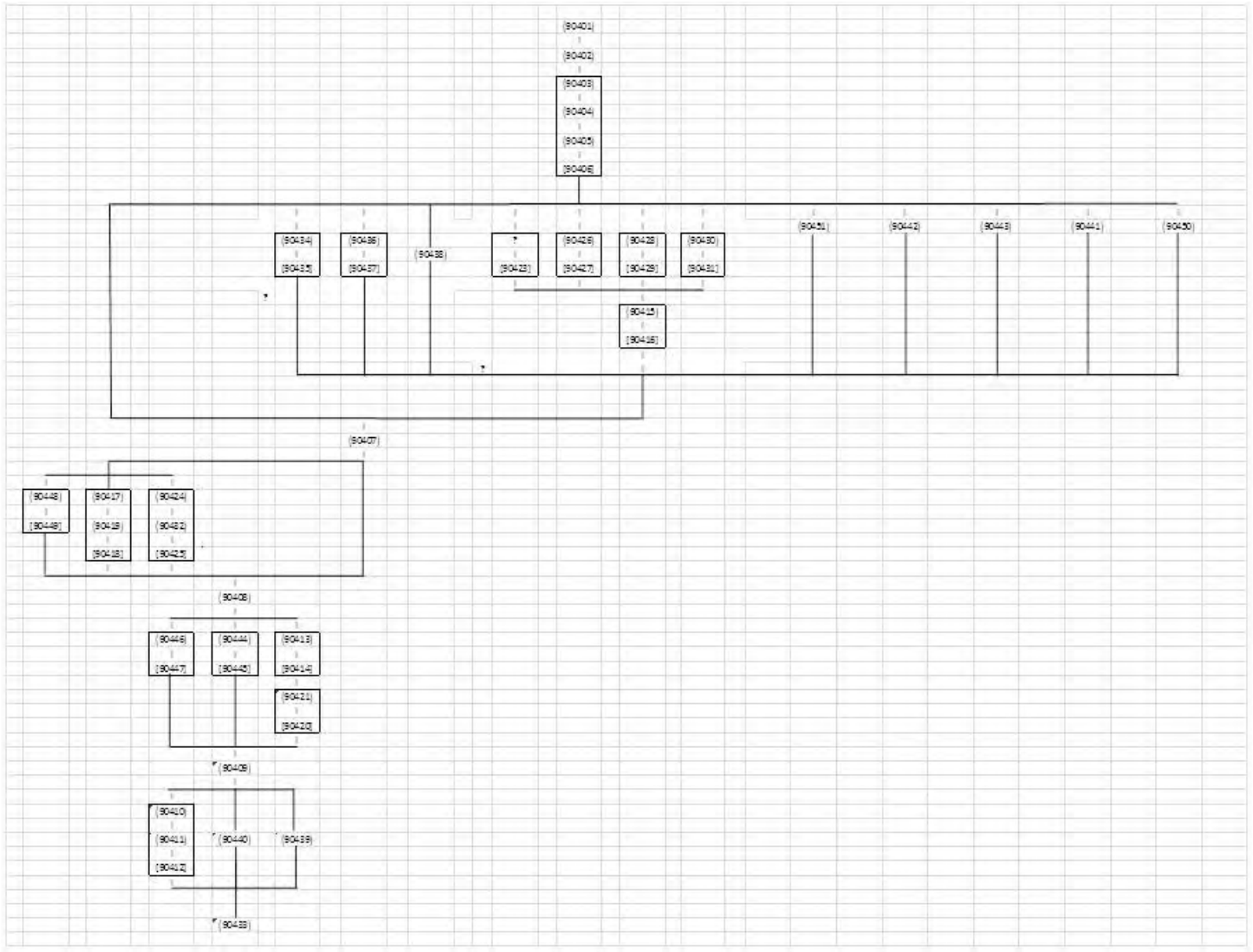


Figure 104 – Harris matrix for trench 14.

Three features were observed to cut (90433) but sealed by deposit (90409). (90440) was observed in section but not excavated. It was 0.39m wide and had a reddish brown coloured feature (5YR 4/4) with a sandy clay loam texture. (90439) was recorded but not excavated. It was seen the west facing section. Where it appeared in the base it seemed to be circular in plan and was at least 0.63m wide. It had a reddish brown coloured fill (5YR 4/4) with a sandy silt loam texture.

[90412] was an irregular shaped feature in the north east corner of the trench measuring 0.5m by 0.59m but extending beyond the limits of excavation. It had shallow sloping concave sides with an uneven base. It contained two fills (90411) and (90410). The primary fill (90411) had a dark reddish grey colour (5YR 4/2) with a silt loam texture. It contained occasional amounts of pebbles and flecks of charcoal along with a single fragment of worked flint. It measured 0.53m by 0.47m and was 0.25m thick. Above this was (90410) a dark reddish grey colour (5YR 4/2) with a sandy silt loam texture. It measured 0.59m by 0.52m and was up to 0.06m thick.

Stratigraphically soil layer (90409) came next. It was machine excavated and recorded in section. It had a reddish brown colour (5YR 4/4) and was up to 0.2m thick. It was thickest at the northern end of the trench and thinned to the south. Burnt flint was recovered from this layer when the section was cleaned for recording. A quantity of burnt flint observed on the spoil heap after the trench had been machined is thought to be derived from this layer.

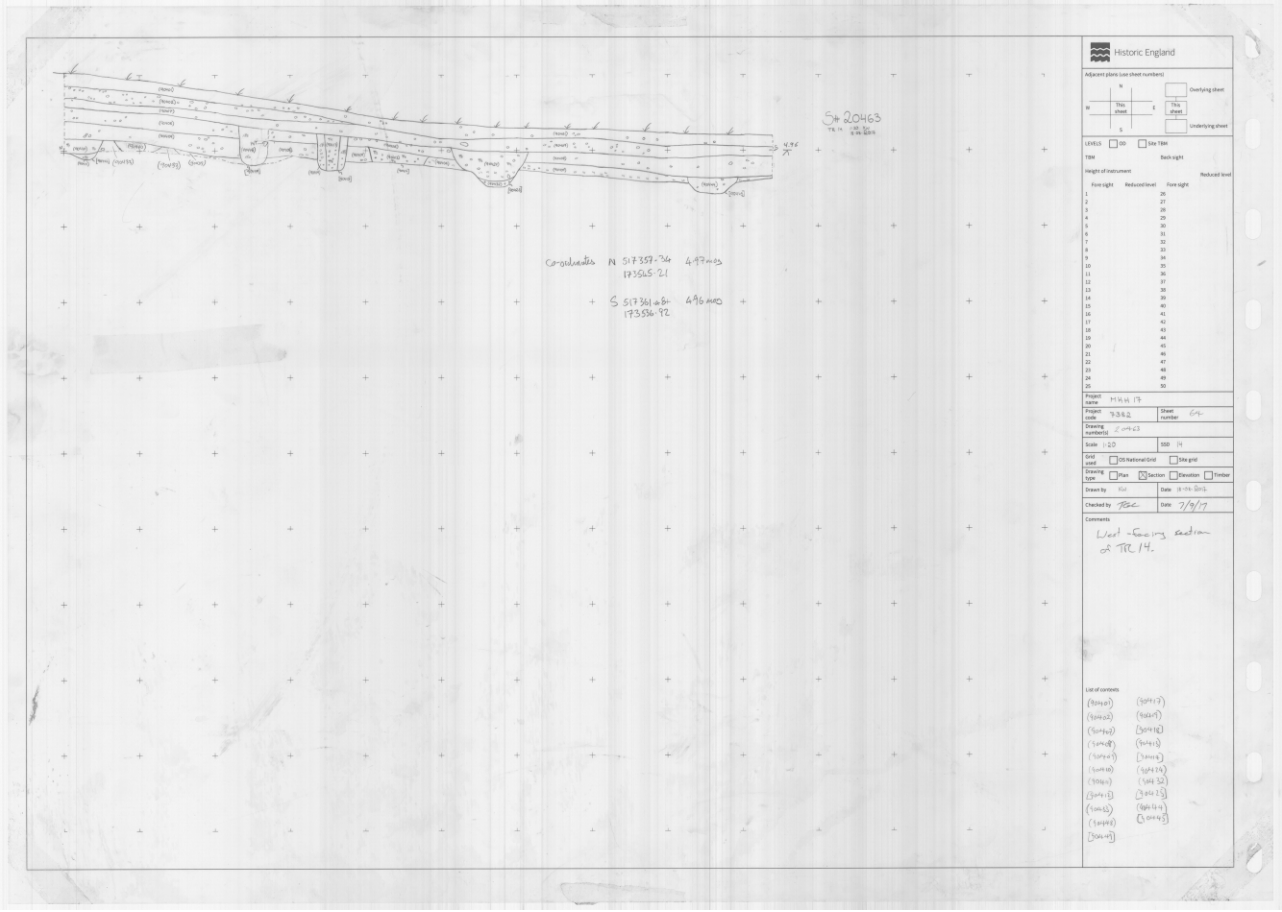


Figure 105 – Section 20463. West facing section trench 14.

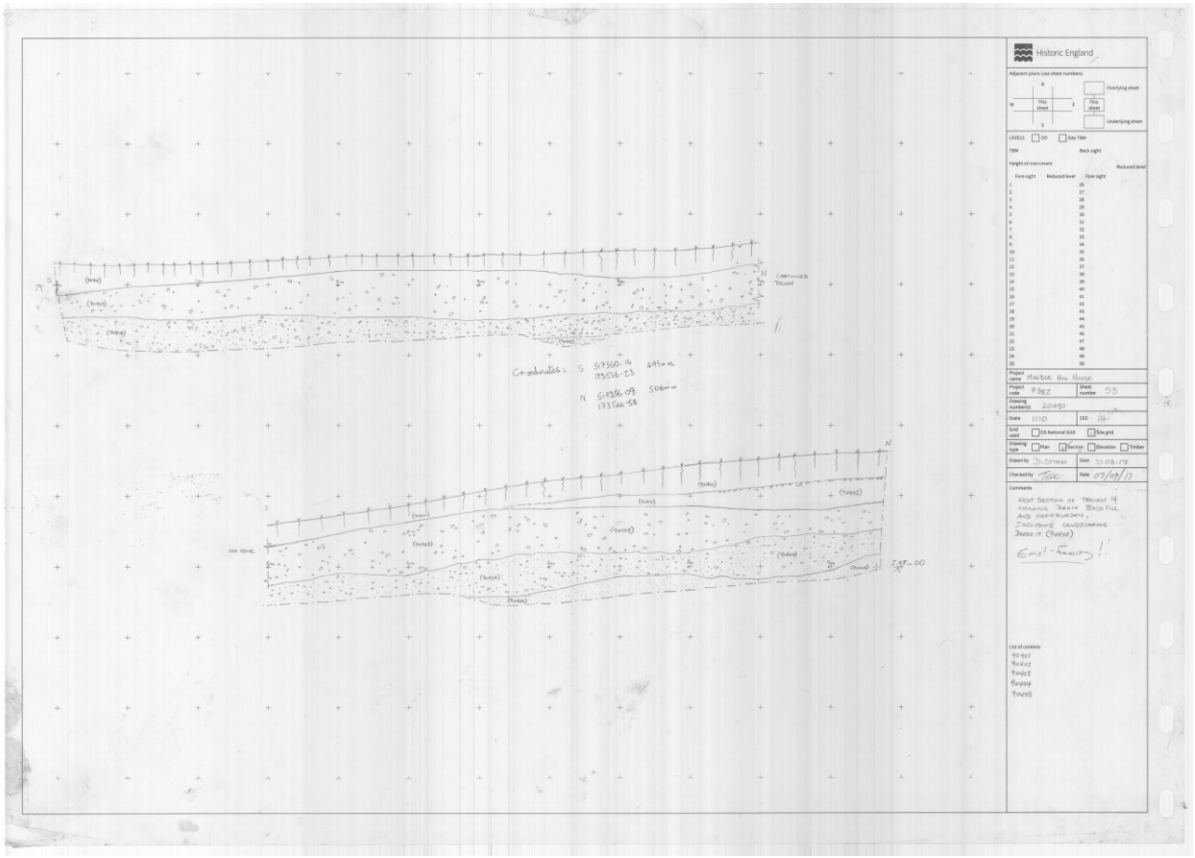


Figure 106 – section 20451. East facing section trench 14.

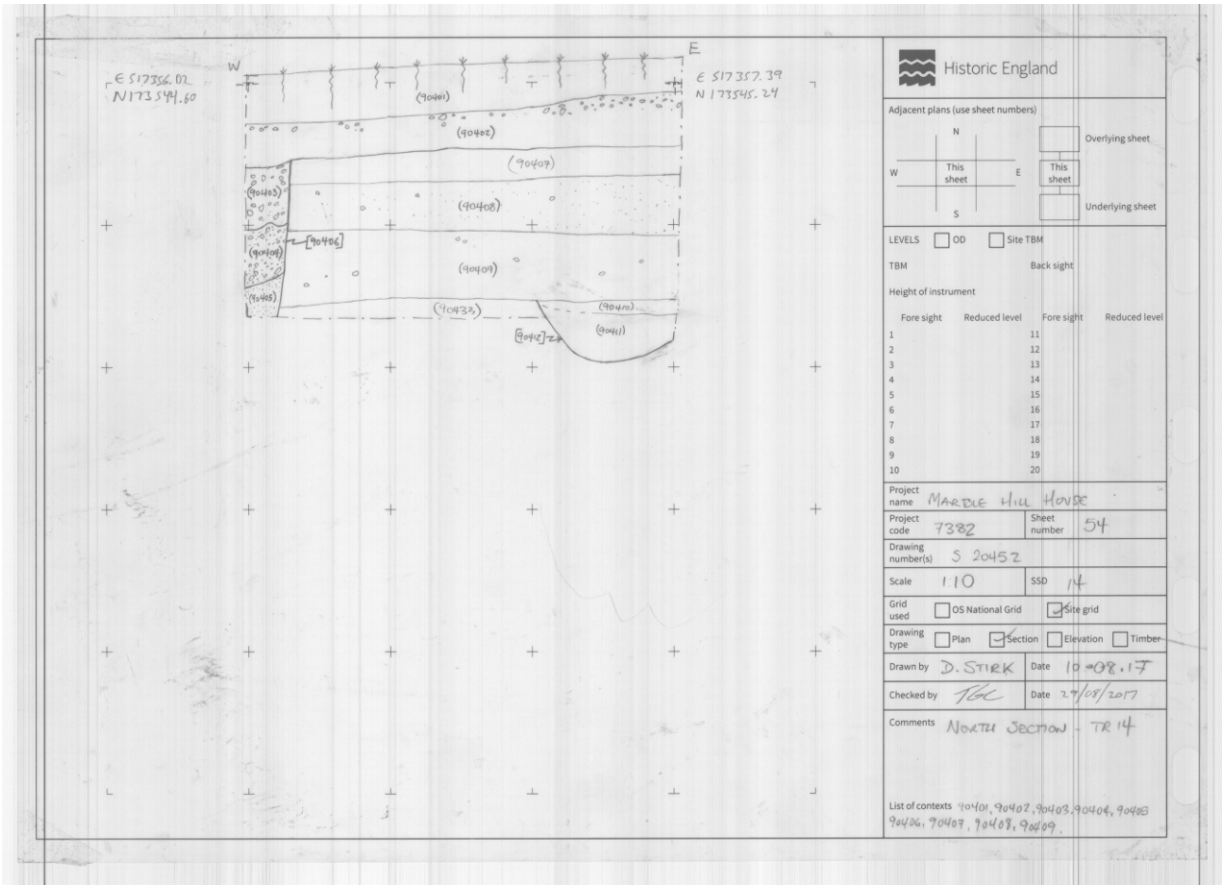


Figure 107 – Section 20452. South facing section trench 14.

Two features [90447] and [90445] were observed to cut (90409) but be sealed by layer (90408). [90447] was an oval shaped feature with a single fill (90446). It was surveyed but not excavated. It was observed to be at least 0.71m wide but ran beyond the southern limits of the excavation. (90446) had a reddish brown colour (5YR 4/4) with a sandy silt loam texture.

[90445] was a linear feature running east-west. It measured 0.64m wide and 0.19m deep, extending beyond the limits of the trench. It had concave sides sloping to a flattish base with a bowl shaped profile.

The lower part of its fills were siltier and slightly darker, but was recorded all as one fill (90444). It had a reddish brown colour (5YR 4/4) and contained burnt flint and charcoal flecks.

Another linear [90414] also running east-west was found to the north of [90445]. It was 0.72m wide and 0.25m deep with gradual concave sides sloping to a flat base. It had a single fill (90413) which had a dark reddish brown colour (5YR 3/4) with a silty clay texture which contained occasional flecks of charcoal. It was observed to cut the deposit (90421), a fill of [90420]. [90420] was oval shaped measuring 0.18m by 0.2m with a concave sides and a rounded base at a depth of 0.25m. It had a single fill (90421) with a very dark grey colour (5YR 3/1) with a sandy silt loam texture. It contained flecks of charcoal and pieces of either ceramic building material or daub. It is believed that this feature had been heavily truncated by linear feature [90414].

Figure 108 – ditch [90414] showing post hole [90420] in its base. Photo 8050.

Layer (90408) extended across the entire trench except where cut and was 0.2m thick. It had a yellowish red colour (5YR 5/6). It varied in thickness with a flattish base but undulating top.

Feature [90416] was left by machining as a large feature shallow feature with a flattish uneven base. It measured 0.54m by 2.95m and although most of the feature had been removed by cut [90406], it had a

slightly oval shape. The remaining depth varied from 0.12-0.2m. Its single fill (90415) had a dark reddish brown colour (5YR 3/2) with a sandy silt loam texture. It contained occasional flecks of charcoal, occasional pieces of what appeared to be burnt clay (daub?), burnt and worked flint.

Four small sub-circular features were identified in the base of [90416] and were thought to be contemporary. [90423] was oval shaped measuring 0.09m by 0.11m with a v-shaped profile to a depth of 0.09m. It had a single fill (90422) with a dark reddish brown colour (5YR 2.5/2) and a sandy silt loam texture. [90427] was oval shaped measuring 0.08m by 0.13m with a v-shaped profile to a depth of 0.08m. It had a single fill (90426) with a dark reddish brown colour (5YR 3/2) and a sandy silt loam texture. [90429] was circular measuring 0.09m in diameter with a v-shaped profile to a depth of 0.09m. It had a single fill (90428) with a dark reddish brown colour (5YR 3/2) and a sandy silt loam texture. [90431] was circular measuring 0.11m in diameter with a v-shaped profile to a depth of 0.12m. It had a single fill (90430) with a dark reddish brown colour (5YR 3/2) and a sandy silt loam texture.

Figure 109 – Part excavated feature [90416]. Photo 8120.

Three small sub-circular features were identified to the east of [90416]. (90438) was not excavated by was 0.11m in diameter with a reddish brown colour (5YR 4/4) and a sandy silt loam texture. [90435] was oval shaped measuring 0.12m by 0.16m with a v-shaped profile to a depth of 0.1m. It had a single fill (90434) with a dark reddish brown colour (5YR 3/2) and a sandy silt loam texture. [90437] was oval shaped measuring 0.14m by 0.17m with a v-shaped profile to a depth of 0.17m. It had a single fill (90436) with a dark reddish brown colour (5YR 3/2) and a sandy silt loam texture.

Two larger sub-circular features [90418] and [90449] were identified in section. [90418] was circular, 0.44m in diameter and 0.44m deep. It was circular with steep sides descending to a flat base. It had two fills. (90419) had a reddish brown colour (5YR 4/4) and a sandy silt loam texture. It formed an outer ring in the feature and contained flecks of charcoal. (90417) formed a central deposit in the feature. It had a dark reddish brown colour (5YR 2.5/2) with a sandy silt loam texture. It contained flecks of charcoal and pieces of either ceramic building material or daub.

[90449] was observed in the west facing section with only a thin sliver in the base of the trench. It was 0.37m wide with a u-shaped profile descending to a depth of 0.55m. It had a single fill (90448) with a dark reddish brown colour (5YR 3/2) and a sandy silt loam texture. It produced the only piece of pot recovered from trench 14.

In addition to [90445] and [90414], one other linear feature which ran east west across the trench was found. [90425] lay about 0.5m to the south of [90414]. It was 0.99m wide and up to 0.48m deep. It had steeply sloping concave sides and a flat base. Two fills were identified. The primary fill was (90432), occupied the lower 0.13m of the ditch. It had a dark reddish grey colour (2.5YR 3/1) and a silty clay texture with a few small pebble inclusions. It had a darker colour to the secondary fill (90424) which occupied the top 0.34m of the ditch. This had a dark reddish brown colour (5YR 3/3) and silty clay texture. It contained flecks of charcoal which were concentrated towards its base with the primary ditch fill.

Deposits (90451), (90442), (90443), (90441) and (90450) were unexcavated but believed to represent discrete features cutting (90433). These were identified in plan and lacked stratigraphic associations although the excavators believed that they had probably been sealed by (90407). (90451) was surveyed in as a sub-circular feature measuring **about** 0.22m in diameter. No other information was recorded. (90450) was surveyed as a sub-circular shaped feature roughly 0.3m in diameter. No other information was recorded. (90442) was situated in the north west corner of the trench and extended beyond the limits of excavation to the north and was cut by [90406] to the west. It was at least 0.44m wide by 0.79m long and had a curve to its outline suggesting that it may have originally been sub-circular in shape. It had a reddish brown coloured feature (5YR 4/3) with a sandy silt loam texture. (90443) was surveyed as a sub-circular shaped feature roughly 0.3m in diameter. It had a reddish brown coloured feature (5YR 4/4) with a sandy silt loam texture. (90441) was surveyed as a sub-circular shaped feature roughly 0.39m in diameter. It had a reddish brown coloured feature (5YR 4/3) with a sandy silt loam texture.

Layer (90407) was dark reddish grey (5YR 4/2) with strong brown mottling with a sandy silt loam texture. It covered the extent of the trench except where cut by later features and contained fragments of clay tobacco pipes.

The drain running between the house and river [90406] only occupied a thin 0.18m thin sliver of the western side of the trench. It had vertical sides and seen to have three fills in the portion exposed in the trench. The lowest of the fills was (90405). It was 0.1m thick had a reddish brown colour (5YR 4/3) with a sandy silt loam texture with abundant gravel inclusions. Above this was (90404) a sandy, yellow (10YR 7/6)

deposit 0.23m thick with about 30% gravel. The top fill of the drain was (90403) a 0.23m thick, reddish brown (5YR 4/3) sandy loam containing about 40% gravel inclusions.

At the northern end of the trench was deposit (90402). It was 0.18m thick in the northern edge of the trench but it thinned out to nothing after a distance of 4.3m. It was a dark reddish grey (5YR 4/2) sandy silt loam with frequent small gravel inclusions. It covered the entire width of the trench including the fills of the drain cut.

The final deposit was (90401) which represented the topsoil and turf. It was a 0.21m thick sandy silt loam with a dark reddish grey colour (5YR 4/2). It covered the entire length and width of the trench.

Material culture

This section covers the index for material culture recovered from trench 14. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 11 - index for material culture recovered from trench 14.

90405	Shell - marine
90407	Clay Pipe
90409	Flint - Burnt
90411	Flint - Worked
90415	Fired Clay and Daub
90415	Flint - Worked
90415	Flint - Burnt
90422	Flint - Worked
90444	Flint - Worked
90448	Pottery - Prehistoric
90452	Flint - Worked
90452	Flint - Burnt

Interpretations

Phase AS10014.1 - natural

The earliest deposit observed was (90433) a brickearth-like deposit. No anthropogenic material was found and it is believed that this deposit was derived from natural alluviation during riverine inundation.

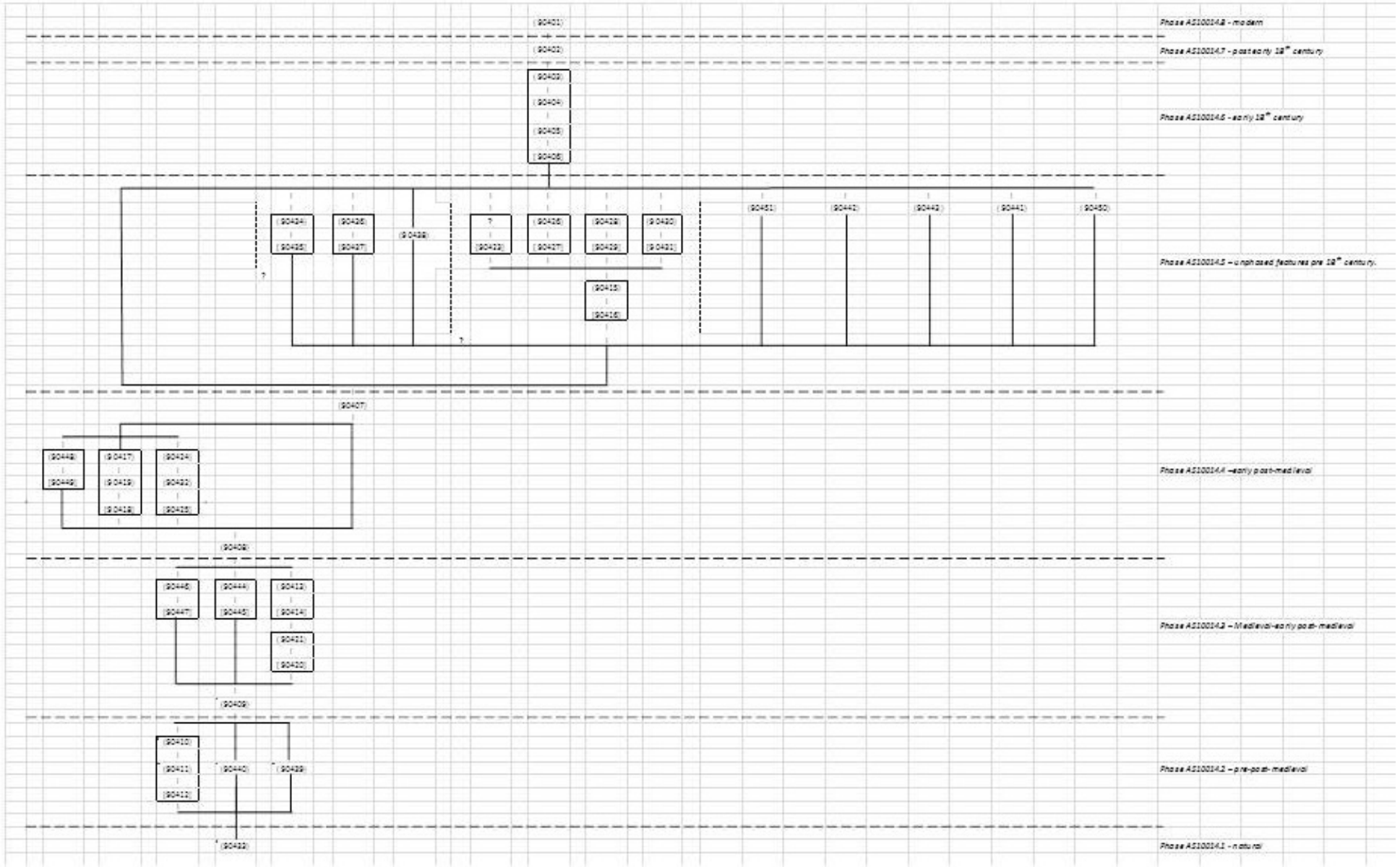


Figure 110 – Phased Harris Matrix for trench 14.

Phase AS10014.2 – pre-post-medieval

The earliest features were deposits (90440) and (90439) and feature [90412] which were observed in section to be sealed by layer (90409). (90440) and (90439) were the size and shape of large post holes however the irregular nature of [90412] may indicate that it is a tree throw rather than true anthropogenic feature.

Phase AS10014.3 – Medieval-early post-medieval

(90409) is a soil that probably resulted from a mixture of colluvium and alluvium. [90447] and [90445] both cut (90409) and were sealed by (90408). [90447] was unexcavated but for size and shape it could have been either a small pit or a tree throw. [90445] and [90414] shared a similar alignment to the other pre-18th century linear feature in this trench and were probably relict field boundaries delimiting the wetter land to the south from the drier land to the north. The repetition of boundary ditches suggest some time depth to this boundary and these may stretch back to the early Post-Medieval period or even the medieval period. Posthole [90420] obviously predates ditch [90414] but cannot be confidently joined to any other excavated features to form a structure. It is possible that it too was originally associated with the field boundary.

Phase AS10014.4 –early post-medieval

The Phase AS10014.3 features are sealed by layer (90408) which is interpreted as another soil that again probably accumulated through on-going colluviation and alluviation. Three features can be shown in section to cut layer (90408); linear feature [90425] and postholes [90449] and [90418]. [90425] like [90445] and [90414] probably represents a field boundary although this is the last such structure observed in this trench. It is possible that this boundary is of post-medieval date and may have fallen out of use in the early 18th century. Features [90449] and [90418] appear to be postholes and a faint post-pipe was observed in [90418] indicating that it had rotted in situ. The only pottery recovered from this trench was found in fill (90448) but based on the stratigraphic evidence it would appear that these features were of post-medieval date. These were sealed by soil (90407) which is hypothesised as the early 18th century topsoil.

Figure 111 – Post-hole [90418] with possible post-pipe. Photo 8056.

Phase AS10014.5 – unphased features pre 18th century.

There are a large number of features for which we lack stratigraphic relationships to accurately phase them. We are confident that they cut from at least the level of (90407) but some may actually fall in an earlier phase.

Feature [90416] was slightly irregular and may be associated with the small circular features in its base [90423], [90427], [90429] and [90431]. These were interpreted by the excavator as stakeholes and if these two assumptions are correct then it would seem likely that [90416] represents a structure. A possible interpretation could be an Anglo-Saxon *grubenhaus*. The base cuts for these house structures are usually filled with the detritus from the house's occupation and are usually used as rubbish dumps after they have been abandoned (Hamerow 1993:13). The principal fill of [90416] did not produce very much material at all and hence this seems an unlikely interpretation. A more likely solution is that [90416] is the lowest part of a tree throw and that [90423], [90427], [90429] and [90431] are root holes. If this is correct then (90438), [90435] and [90437] may also be interpreted as root holes.

Deposits (90451), (90442), (90443), (90441) and (90450) were unexcavated but believed to represent discrete features cutting (90433). The excavators believed that they had probably been sealed by (90407) but may have even been sealed by lower layers, perhaps even (90409). Based on their size and shape in plan (90451), (90450), (90443) and (90441) are good candidates for postholes and may be associated with the other excavated examples. (90442) was larger and may have been a tree throw.

Phase AS10014.6 - early 18th century

The drain running between the house and river only occupied a thin 0.18m thin sliver of the western side of the trench. It had vertical sides and seen to have three fills in the portion exposed in the trench. These were (90405), (90404) and (90403). There were no obvious signs that the drain cut had been opened up after its initial construction and backfilling.

Phase AS10014.7 - post early 18th century

(90402) seals the backfill of the drain indicating that it is a later episode of deposition. It had a maximum thickness exposed in the trench of 0.18m but lensed out downslope so was much thinner for most of its length. It is possible that this is colluvium representing downslope creep but was not observed in any of the other trenches and hence is thought to result from a minor act of landscaping after the construction of the 18th century drain although its precise date, whether mid-18th century or 20th century, is unknown.

Figure 112 – south facing section trench 14. Presumed landscaping deposit (90402) is the second layer from the top, sitting on top of the gravel layers of the drain backfill. Photo 8019.

Figure 113 – east facing section of trench 14. Presumed landscaping deposit (90402) is the second layer from the top, sitting on top of the gravel layers of the drain backfill on the right-hand side. Photo 8013.

Phase AS10014.8 - modern

The final phase is a modern phase and consists of (90401), the topsoil and turf layer.

Trench 15 (SSD10015)

SSD	10015		
Contexts	90351-90358		
Samples	-		
Small Finds	-		
Drawings	Sheet 66,74	Plans -	Section 20361, 20362

Sheet #	Number of drawings on sheet	Drawing numbers
66	1	20361
74	1	20362

Trench 15 was the middle of the three trenches tasked with investigating the central terracing. It was placed across the central break of slope and the drain that runs from the house to the river. . The trench was excavated by machine down to the natural. No features were excavated by hand.

Stratigraphic narrative

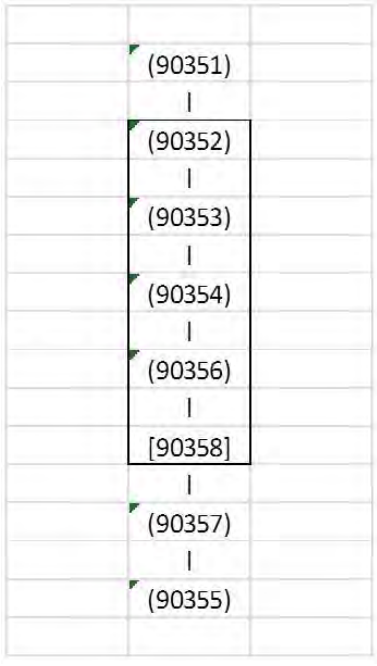
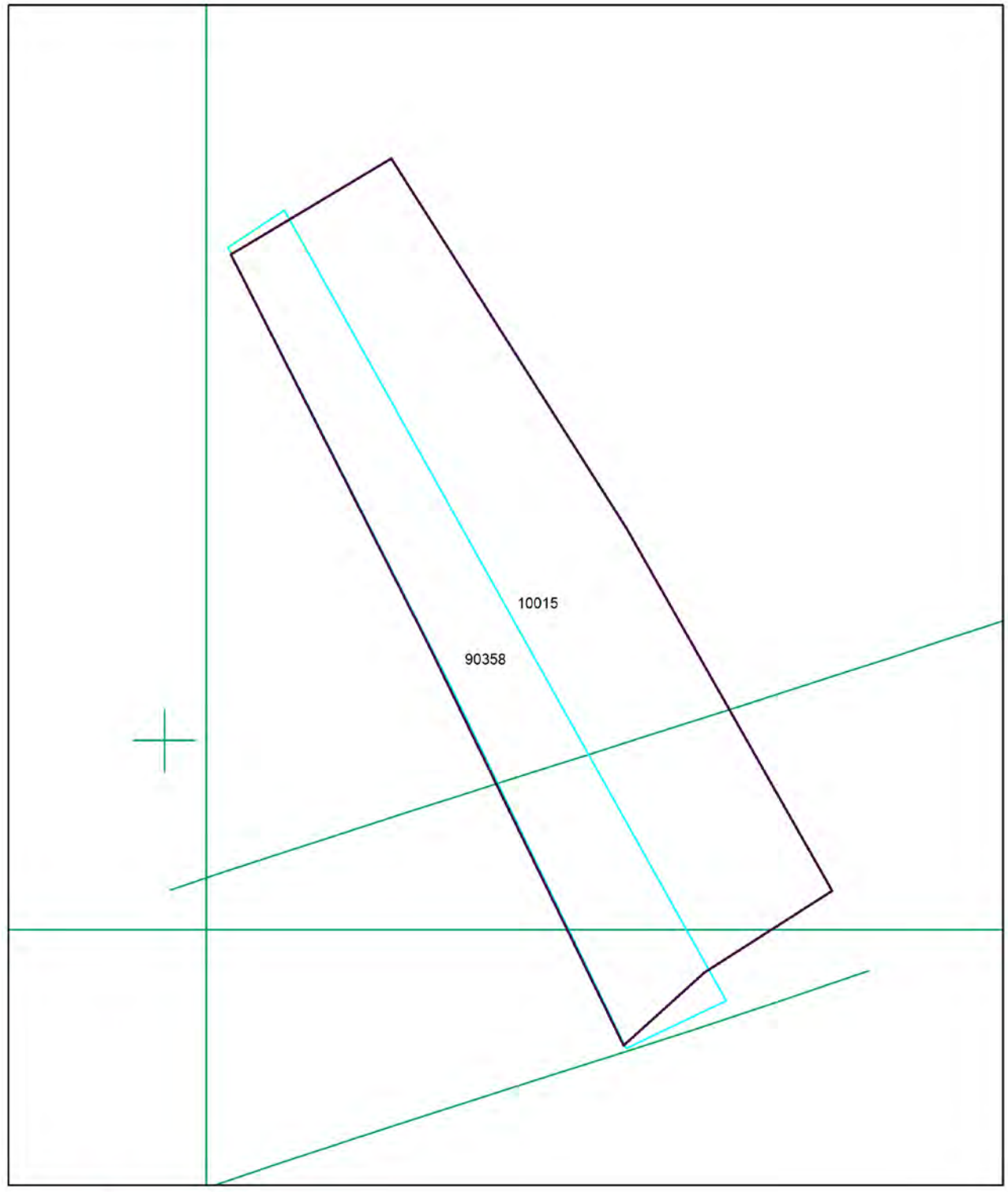


Figure 114 - Matrix for trench 15.

The earliest deposit in trench 15 was (90355) a gravelly deposit with a brown coloured (7.5YR 4/2) sandy matrix. It was considered to be a natural gravel formation.



ENGLISH HERITAGE
Fort Cumberland
Portsmouth, PO4 9LD
Tel: 023 9285 6700
Fax: 023 9285 6701
www.english-heritage.org.uk

Scale 1:41

0 0.9 1.8 2.7 Metres

N

Figure 115 – features in trench 15.

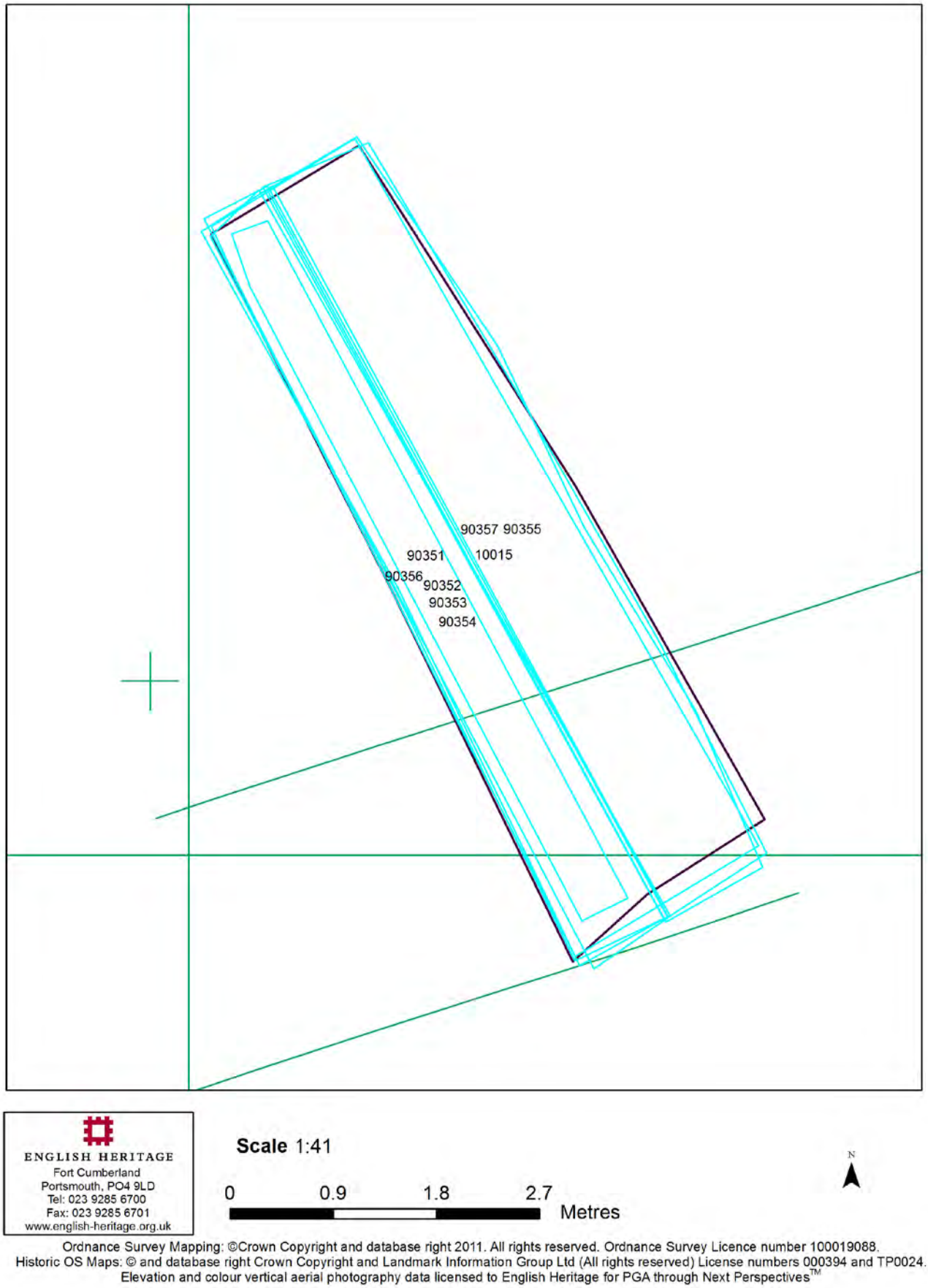


Figure 116 – Deposits in trench 15.

Overlying this was deposit (90357) a 0.46m thick deposit with a brown colour (7.5YR 4/4) and a sandy silt loam texture. It contained some gravel, flecks of charcoal and ceramic building material.

Figure 117 – northern half of the east facing section from trench 15. Photo 8176.

Figure 118– southern half of the east facing section from trench 15. Photo 8175.

Both of these deposits were cut by [90358] a linear feature observed in the western side of the trench running north-south. A width of 0.34m was observed but this extended beyond the trench edge. It cut at least as deep as the top of (90355) – 0.6m but evidently descended deeper. It had sharp near vertical sides. It was seen to contain at least four fills (90356), (90354), (90353) and (90352). The lowest was (90356) a 0.09m thick deposit with a dark brown colour (7.5YR 3/4) and a sandy silt loam texture. It contained few inclusions other than a small quantity of pebbles. Above this was (90354) a 0.14m thick deposit with a strong brown colour (7.5YR 4/6). It had a higher quantity of gravel and was only loosely constituted. Next came (90353), a brown (7.5YR 4/4) 0.18m thick deposit with a sandy silt loam texture. The top fill was constituted by (90352) a 0.17m thick deposit constituted mostly by gravel with a dark brown (7.5YR 3/3) matrix and a sandy silt loam texture.

The final deposit was topsoil (90351). It was a 0.14m thick deposit with an olive-reddish brown colour (5Y 4/3) with a sandy silt loam texture.

Material culture

This section covers the index for material culture recovered from trench 15. It details the kind of material culture recovered from each context prior to post-excavation analysis.

Table 12 - index for material culture recovered from trench 15.

90351	Pottery - Post Medieval
90359	Ceramic - Building material
90359	Pottery - Post Medieval
90359	Glass
90359	Clay Pipe
90359	Ceramic - Building material
90359	Flint - Burnt

Interpretations

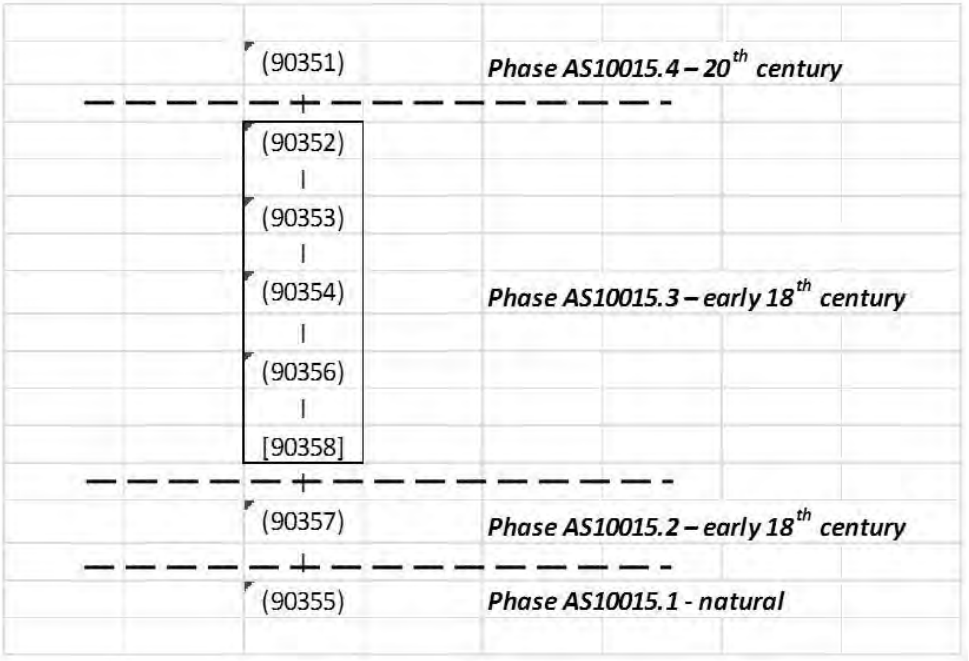


Figure 119 - Phased matrix for trench 15.

Phase AS10015.1 - natural

The earliest phase in trench 15 was (90355) a naturally formed river gravel terrace deposit.

Phase AS10015.2 – early 18th century

The earliest anthropogenic deposit was (90357) which constitutes an early phase of landscaping on the terraces. It is unlikely that the whole of this material was redeposited onto bare gravel and closer inspection of the base of the deposit would probably allow identification of an original topsoil / subsoil formation on which the landscaping material was deposited but this could not be observed at the time. The landscaping is only evident in the west facing section of the trench and hence indicates that it occurred prior to the creation of the drain running from the house and can therefore be allocated to the early 18th century.

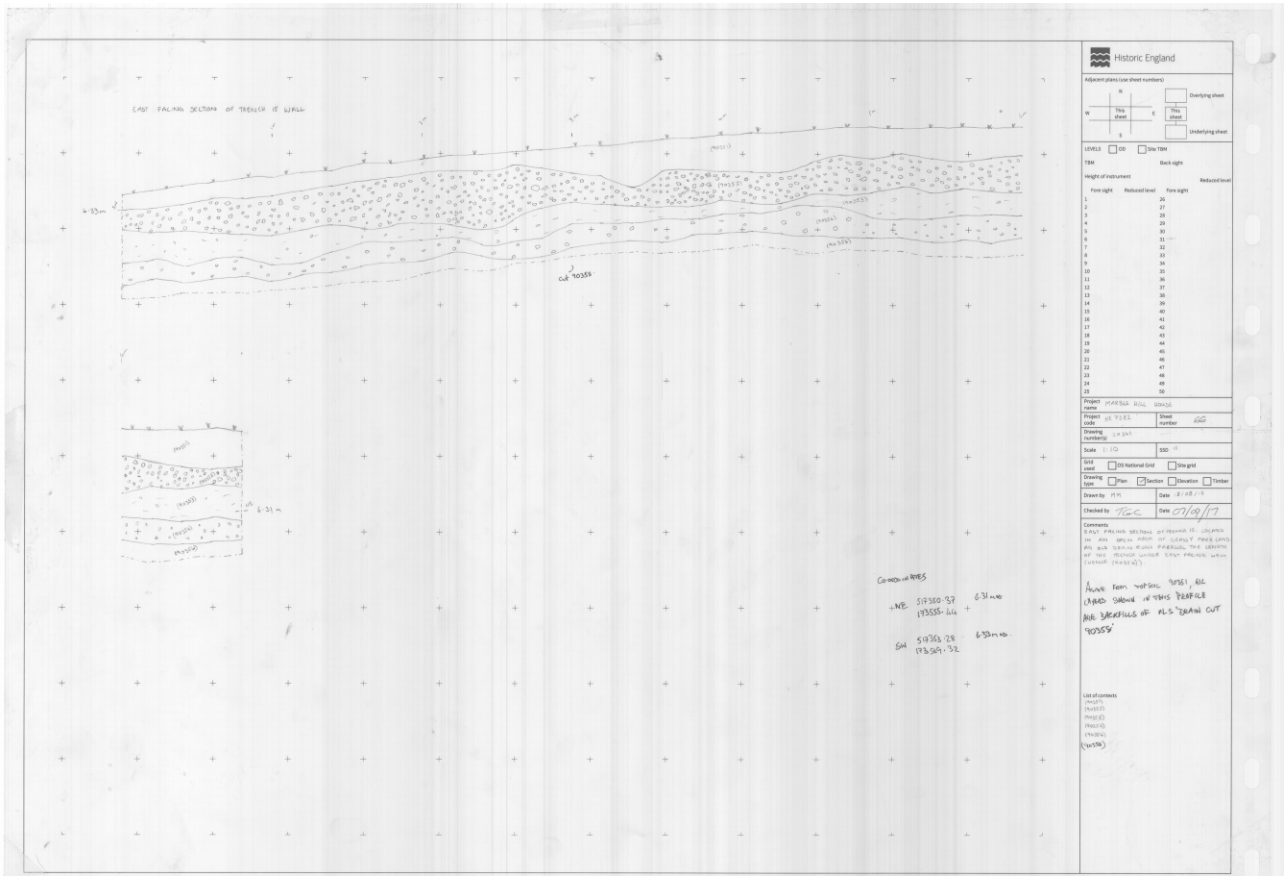


Figure 120 – Section 20361. East facing section trench 15.

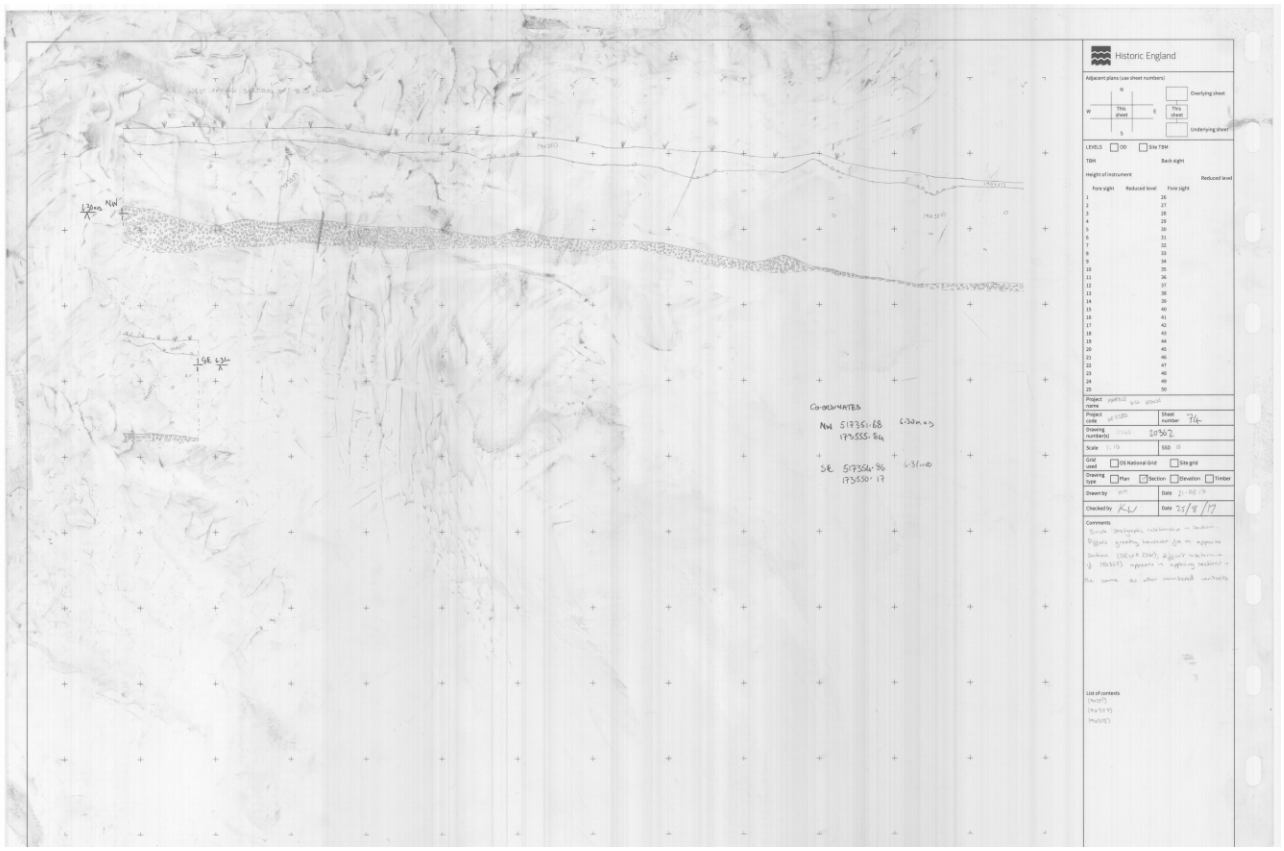


Figure 121 – Section 20362. West facing section of trench 15.

Phase AS10015.3 – early 18th century

Feature [90358] represented the cut for the drain that connected the house with the river. It contained more fills that observed in other trenches but it seems possible that this results from the greater thickness of landscaping deposits that predated the drain.

Phase AS10015.4 – 20th century

The final phase in trench 15 was top soil (90351).

Summary

With post-excavation assessment of the material culture and environmental samples yet to be conducted all results are contingent upon the final work. With further phases of work interpretations are likely to shift as we develop a more nuanced understanding of the site and its archaeological remains. We have however already been able to make some interesting observations.

Ninepin Alley

The earliest layers encountered during the excavations in trench 5 appear to indicate the presence of a pre-18th century agricultural soil (95013) showing evidence for occasional manuring probably relating to the use of the area as fields. This soil is buried by a levelling deposit of clean brickearth (95012). This deposit was metalled with stones to form a hard wearing surface (95015) with patches of denser metalling [95002] and [95004] either for decorative purposes or to support heavy objects such as large planting pots. Within this metalled surface was a large cut feature [95006] filled with clay. This type of material is alien to the site and was not encountered anywhere else during the excavations. The most likely interpretation for this combination of features is the Ninepin Alley which is depicted on the 1752 plan. The central clay filled feature must therefore be interpreted as the playing area although the obvious weathering of the clay and later patching suggests that such a surface was ill suited to the London climate. Perhaps this represents an early attempt at replicating continental equivalents?

Evidence suggests that a reasonably mature tree had stood here and fallen relatively recently, leading to a large tree throw [95008] in the eastern part of the trench. This has obliterated some of the structure of the alley. This was identified during the earthwork survey as a shallow oval depression (Alexander 2017).

The boundary of the alley lay outside of the limits of excavation and its dimensions are unknown. The shape of the central playing area appears to have a curve to it and may be more lozenge shaped than depicted on the 1752 plan although the positioning of the alley on the map is accurate. The geophysical survey of this area was only partial but showed a horseshoe shaped feature. Excavation shows that this was picking up the metalled surface of the bowling alley.

Icehouse Seat

The strategy for trench 7 to the south of the icehouse shifted during the field work from trying to find the seat to trying to understand the construction of the bank behind the icehouse. What the excavations show is that this area has been substantially raised by the addition of a large thickness of brickearth. This evidently results from several episodes of dumping that also incorporate the construction of a probable gully boundary [97009]. The bank is not obvious on the 1752 plan that shows the icehouse and seat. This does raise questions of when these episodes of landscaping are dated and where in the sequence the creation of the icehouse seat sits. If as the 1752 plan is interpreted in such a way as to suggest the landscaping took place after the creation of the seat it means that any remains of the seat will be quite deeply buried. Safe excavation would require opening a larger area to allow for the probable depth of remains.

The grotto

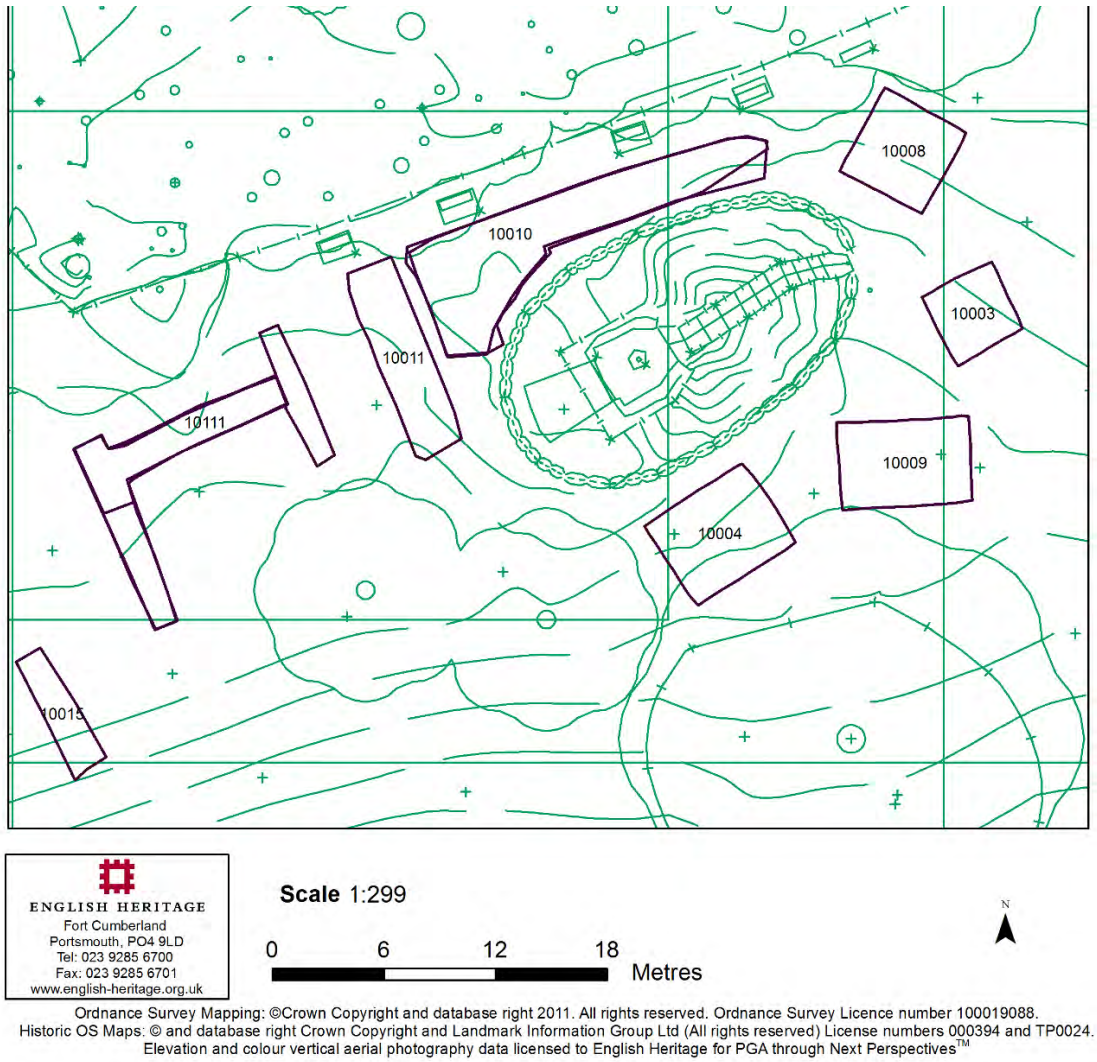


Figure 122 - Phase 2 and 3 trenches around the grotto

The aims to locate the path network around the grotto were modified during the excavations as it became clear that the geophysical surveys were picking up a halo of rubble backfilling the grotto. Instead we were able to pick up evidence for a sequence of development in and around the grotto itself.

The trenches around the grotto have revealed a long and complex history. An initial attempt to reconcile the phases of each trench is recorded in Table 7. The earliest activity is associated with the construction of a quarry the western margin of which appears to be near the start of the terraces. The eastern end was not ascertained but appeared to reach the area where the grotto was later to be constructed. It is currently believed to date to the early 18th century. To the north of the quarry, and contemporary with it, there is evidence for a construction surface involving mortar. It is hypothesised that the construction surface is related to the construction of the house although the association of the quarry with the house is less certain.

There is then a phase with landscaping over the working surface and the excavation of the grotto hollow. Evidence for the laying out of planting features around the hollow was also uncovered and we assume that this probably took place shortly after the construction of the hollow.

Trench 3 shows that this large hollow then undergoes landscaping (deposits (93016), (93011) and (93010)) that culminates with the development of the soil horizon (93004) with the addition of probably contemporary planting features inside of the hollow ([93013] and [93015]).

The grotto exhibits some evidence for redesign or alteration. In trench 9 the cut for the hollow [99037] is vertical rather than sloped with evidence for substantial deposition. Whilst it is possible that this represents landscaping of the initial quarry cut (in the third phase of excavations to the west of the grotto the quarry consistently had vertical edges) it is deemed more likely that this represents a later alteration to the grotto. This is based upon the nature of the filling deposits and the evidence showing that planting beds ([99052], [99046], [99049], [99041], [99022], [99036], [99026], [99054], [99056] and [99058]) considered to be contemporary with the earliest garden phases are cut by the remaining grotto hollow edge. Further evidence indicates that these planting beds remained in use and had new ends established offset from this new edge ([99018], [99039], [99020], [99034] and [99024]). The vertical nature of [99037] and its replacement with a sloping edge has been taken as evidence that it was cut to remove some earlier structural element of the grotto. The 1752 plan shows a structure in this general area and it is possible that the excavations provide evidence for the removal of this structure. Accounts describe a 'rustic grot' which disappears from later reports and it is tempting to like this structure with the 'rustic grot'.

Elsewhere around the grotto further planting features were identified in trenches 4 and 10 that were stratigraphically later indicating that there was a dynamic changing pattern of planting over the history of this area.

The OS 1st edition map of the area shows that the grotto had been backfilled by 1881. An initial fill was observed with material that suggests a late 19th century date although assessment of the fills may provide greater finesse for this event. Whatever the date, the backfilling appears to have started subsiding and by the early 20th century a shallow depression was mapped on the 1906 metropolitan map. A smaller lens of backfill material was identified in trenches 10 and 11 relating to levelling of this depression. The lack of the hollow later in the 20th century photos and maps shows that this episode of levelling must have taken place after the grounds had passed into public ownership. It is possible that this later material was also picked up in trench 8 but firmer dating of the material recovered from all of the backfill contexts will help to resolve whether we are able to identify two phases of backfilling.

More 20th century features were identified around the grotto most interesting of which was the large irregular feature at the eastern end of trench 10 filled with modern masonry.

Grotto Phase	Trench 3	Trench 4	Trench 8	Trench 9	Trench 10	Trench 11	Comments
15	***Phase AS10003.6 - modern***	***Phase AS10004.5 - modern***	***Phase AS10008.5 – modern***	***Phase AS10009.7 - modern***	***Phase AS10010.7 –modern***	***Phase AS10011.7 – 20th century***	Modern period - typically relates to top soil.
14	***Phase AS10003.5 – mid-late 20th century***						Relatively modern bedding trench, trench 3.
13				***Phase AS10009.6 – 20th century***			20th century planting features trench 9.
12					***Phase AS10010.6 –early 20th century***	***Phase AS10011.6 – early 20th century***	Rubble infill of grotto after probable subsidence of initial backfill. Probably post 1906.
11	***Phase AS10003.4 – late 19th – early 20th century***	***Phase AS10004.5 - late 18th century to late 19th century***	***Phase AS10008.4 – Late 19th- early 20th century***	***Phase AS10009.5 – late 19th century / early 20th century***	***Phase AS10010.5 –mid 19th century***		Initial backfill of the grotto.
10				***Phase AS10009.4 – late 18th century / 19th century***			Recutting of bedding trenches trench 9.
9		***Phase AS10004.4 – late 18th century to late 19th century***		***Phase AS10009.3– late 18th century / 19th century***			Recutting of the southern edge of the grotto. Removal of 'rustic grot'?
8		***Phase AS10004.3 - late 18th century to early 20th century***					Construction of planting bed in trench 4
7	***Phase AS10003.3 – mid 18th - early 20th century***						Construction of gravel path in trench 3.

Grotto Phase	Trench 3	Trench 4	Trench 8	Trench 9	Trench 10	Trench 11	Comments
6		***Phase AS10004.2– Early –mid 18th century***		***Phase AS10009.2 – 18th century***	***Phase AS10010.4 –mid 18th-19th century***	***Phase AS10011.5 – Early-mid 18th century***	Construction of long linear bedding trench, trench 4 and initial phase of bedding trenches in trench 9, planting features in trench 10, linear bedding trenches in trench 11. Contemporaneity probable but not proven.
5	***Phase AS10003.2 – Early-mid 18th century***	***Phase AS10004.1 – Early-mid 18th century***	***Phase AS10008.3 – early-mid 18th century***		***Phase AS10010.3 – Early-mid 18th century***		Construction of the grotto.
4			***Phase AS10008.2 – 1727-1739***				Construction of the field drain.
3.2					***Phase AS10010.2 – Early 18th century***	***Phase AS10011.4 – Early 18th century iii***	Fill of quarry and landscaping.
3.1						***Phase AS10011.3 - Early 18th century ii***	Quarry cut.
2						***Phase AS10011.2 – Early 18th century i***	Scooped features with cemented gravel in trench 11
1	***Phase AS10003.1 – natural geology***		***Phase AS10008.1 – natural***	***Phase AS10009.1 – Natural geology***	***Phase AS10010.1 – Natural geology***	***Phase AS10011.1 – Natural geology***	Natural underlying geology.

Table 13 – Possible of combined phasing of the grotto trenches.

The terrace trenches

Three trenches were excavated to investigate the terraces. Trench 13 at the top of the slope, trench 15 in the middle and trench 14 at the bottom. The main research questions to be answered was how much landscaping had taken place, what was the form and when it taken place had.

The principal evidence for sequencing was the drain cut and fills that was revealed in each of the trenches. The attempt to reveal the structure of the drain itself was abandoned when it became clear that it was at a depth that would be unsafe to excavate. As might be expected there was some variation in the consistency of the fills observed in the trenches but in general they appear to be a mix of topsoil, brickearth and gravels, that is a mix of the material excavated to construct the drain. We assume that the drain was constructed at the same time as the house and there was no evidence for the drain being recut. Garden features assigned 19th century dates clearly cut the fills of the drain proving that it is an earlier feature. We feel that it is therefore reasonable to assign a date to the drain of the 2nd quarter of the 18th century. On this basis layers of material considered to represent landscaping are sequenced as to whether they are cut by the drain (pre- 2nd quarter of the 18th century) or if they overlie the fills of the drain cut (post-2nd quarter of the 18th century).

At the top of the terraces in trench 13, layer (90307) was observed in the northern part of the trench with a maximum thickness of 0.35m. It extended for a length of *c.* 5m and was interpreted as the original landscaping associated with the upper edge of the terraces. It was however cut by the drain. It shows that some degree of landscaping took place prior to the construction of the drain. We are unable to say how much time had elapsed between this episode of landscaping and the drain cut but it may only have been a matter of years.

In the middle trench 15 was deposit (90357). This was recorded as 0.46m thick. It contained regular finds of small pieces of ceramic building material and charcoal indicating that it had an anthropogenic formation process. More detailed examination would probably reveal that this layer could be further split. Part of it undoubtedly represents an agricultural soil that had received manure input however it was questioned whether some of the layer had been redeposited during a landscaping event. Deposit (90357) was clearly cut by the drain again suggesting that any landscaping had taken place before the construction of the drain.

At the bottom trench 14, (90402) a thin (up to 0.18m thick) deposit was seen in the upper 4.3m stretch of the trench. It overlies the fills of the drain cut and hence is a later event. It is possible that this is colluvium resulting from soil creep down the slope but this was not observed in any of the other trenches and it is thought to be a deliberate act of landscaping at the very end of the terrace slope.

Where trench 14 extended off of the terrace significant amounts of pre18th century archaeology was encountered. Burnt flint was found throughout these features and although not datable this material is commonly recovered from prehistoric contexts. The presence of so much archaeology at the base of the slope means that any development in this area would require significant remedial archaeological intervention.

Overall the trenches revealed that the underlying gravel was already slightly terraced possible due to natural processes associated with the river. These appear to have been drawn upon when the initial landscaping took place. The evidence from trench 13 and possibly trench 15 shows that most of this had already taken place before the drain was constructed indicating that the landscaping was one of the first things that took place with the grounds. In effect the form of the terraces as we see them today results from that early 18th century event rather than later redevelopment.

The arbour

Trench 12 was the last trench to be opened due to delays in securing permission to excavate under the tree canopies and because it need to be opened by hand. This meant that the trench was not fully excavated. The presence of the glass house structure had previously been unsuspected but was later confirmed through cartographic research. Its alignment was such that it might respect what could have been a residual arbour structure or features that themselves had been influenced by the position of the earlier arbour. The discovery of the remains of the glasshouse did however mean that we did not reach the levels where we might have expected to have found traces of the arbour structure.

It is unclear whether natural geology was reached in this trench and it is possible that everything excavated related to landscaping of the area. Small pieces of ceramic building material were observed in (90215) but not collected. We were unable to decide if this had resulted from natural processes such as root and worm action rather than anthropogenic action. Layer (90217) could represent natural but it was very compact and unlike the natural gravels encountered elsewhere on the site. This does raise the possibility that it is a buried metalled surface relating to an early phase of the gardens.

3. Artefacts

Introduction

This report summarises the material culture assemblage retrieved from the excavations at Marble Hill House (Project 7382) during March 2017 and August 2017, and also provides information on the finds elements of the Site Archive Completion procedure. Artefacts recovered during the first phase of excavations are detailed in the phase one SAC report (Wooldridge and Forward 2016).

The purpose of this procedure is to ensure that all the necessary records and other products associated with a site archive have been created and checked, ensuring that all records are ordered, indexed, adequately documented, internally consistent, secure, quantified and conformant to standards required by the archive repository. (Procedures for Excavation and Assessment, Procedure 9 Site Archive Completion, Historic England Archaeological Projects internal document 2008)

Site Archive Completion finds methodology

All finds records were entered by Kathryn Price and Tom Cromwell onto the Mable Hill database at Fort Cumberland. Kathryn Price boxed the finds assemblages as necessary, and created a box list within the database. Metalwork was sent to Karla Graham the conservator for the project to assess and undertake conversation measures and x-ray finds where required.

Table 14 – boxes and their material contents.

Box number	Material	Size
6	Cu Small Finds	Stewart
7	Iron	Stewart
8	Coins	Stewart
9	Lead	Stewart

10	Drainpipe CBM	Standard
11	Tile CBM	Standard
12	Human Remains	Skull
13	Brick CBM	Standard
14	Brick CBM	Standard
15	Tile CBM	Standard
16	Pottery Medieval and Post-medieval	Standard
17	Pottery Medieval and Post-medieval	Standard
18	Flint Burnt &Worked	Skull
19	Brick CBM	Standard
20	Brick CBM	Standard
21	Clay Tobacco Pipe	Standard
22	Brick CBM	Standard
23	Brick CBM	Standard
24	Brick CBM	Standard
25	Tile CBM	Standard
26	Stone-Architectural and Other	Skull
27	Slate	Skull
28	Mortar	Skull
29	Animal Bone	Standard
30	Shell	Standard
31	Wood	Stewart
32	Industrial Waste	Standard
33	Pottery Medieval and Post-medieval	Standard
34	Glass & Glass Slag	Standard
35	Glass & Glass Slag	Standard
36	Pottery (Prehistoric ???)	Stewart

37	Small Finds	Standard
38	Flint Nodules	Standard
39	Pottery Medieval and Post-medieval	Standard

Small finds

Table 15 - Individual small finds from Marble Hill excavations.

Small Finds number	Context number	Description
3003	95009	Medieval Floor Tile
3004	95007	Pottery Rim Sherd Roman
3005	94011	Peg tile with round nail hole - fragment of peg tile which has a complete intact visible round peg hole.
3006	94011	Shell marine perforated - Shell has a perforated hole in the centre.
3007	93010	Painted plaster?
3008	97010	Architectural stone fragment
3009	95005	Peg Tile half round hole
3010	99038	Peg Tile half round hole
3011	95007	Peg hole half diamond hole
3012	93002	Roman Tile Fragment
3013	95003	Clay pipe with inscription
3014	94006	Peg Tile with half found nail hole
3015	93004	Fe nails and object
3016	93007	Fe object
3017	93011	Fe Nails
3018	95009	Fe nails and object
3019	95011	Fe nail
3020	97004	Fe nails

3021	98003	Fe nails and object
3022	99007	Fe nails
3023	99021	Fe nails and object
3024	99032	Fe nail
3025	99033	Fe nail
3026	99040	Fe nail
3027	99045	Fe nails
3028	99053	Fe nail
3029	99055	Fe Nails and Object
3030	90102	Painted plaster
3031	90102	Glass Kiln Fragment and Slag
3032	90233	Glass Vessel
3033	90233	Glass Vessel
3034	90233	Glass Vessel
3035	90233	Glass Vessel
3036	90125	Cu Fragment
3037	N/A	Roof Tile EXAMPLE
30001	90026	Pottery Westerwald Blue
30101	90110	Coin
30102	90110	Fe key
30103	90138	Coin
30201	90201	Pb fragment
30202	90203	Fe barrel fragment discarded
30203	90203	Fe nails and object
30204	90212	Pb object
34001	94006	Thimble
35001	95001	Coin

38001	98002	Fe discarded
38002	98003	Padlock
39001	99001	Coin
39002	99007	Pin Cu
39003	99057	Buckle Cu

Small finds are contained in the boxes shown on Table 14.

Table 16 – Boxes containing small finds.

Small finds - material	Box number
Cu Small Finds	6
Iron	7
Coins	8
Lead	9
Glass & Glass Slag	34, 35.
Small Finds	37

Bulk finds

Table 17 - Bulk finds from Marble Hill excavations.

Bulk finds - material	Box number
Brick CBM	13, 14, 19, 20, 22, 23, 24.
Stone-Architectural & Other	26
Tile CBM	11, 15, 25.
Drainpipe CBM	10
Slate	27
Mortar	28
Industrial Waste	32

Glass & Glass Slag	34, 35.
Clay Tobacco Pipe	21
Flint Burnt &Worked	18
Flint Nodules	38
Pottery (Medieval & Post-Medieval)	16, 17, 33, 39.
Pottery (Prehistoric??)	36
Shell	30
Wood	31
Human Remains	12
Animal Bone	29

Summary of assemblages

A medium sized assemblage of material was collected from the phase two and three excavations totalling 34 boxes. Even after a selective recovery and active discard policy ceramic building material still formed the bulk of finds. The majority of this material may have been brought on to site to deliberately backfill features such as the grotto and so will have little relationship with the 18th century park but dating of this material will provide valuable insights into the timing of the decommissioning of features such as the grotto. A good range of pottery was also recovered although the majority of this material was of relatively modern date. As an assemblage however it should been useful in dating the backfilling of certain key features.

Assessments

The author envisages that the following will undertake the assessments:

Internal EH specialists

Animal bone – Poly Baker

Pottery – Duncan Brown

Glass – Sarah Paynter

Architectural Stone – Matt Canti and Artefact Specialist

Metal – Karla Graham

External specialists

Ceramic Building Material – Ian Betts

4. Conservation

5. Environmental Archive Statement

Table 18 - Table of all samples taken during phase 2 and 3

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
50001	**90030**	*Landscaping layer? 0.15m thick and a yellowish brown colour (10YR 5/4) with a silt loam texture. It contained frequent rounded/sub-rounded clods of dense lime-like material (dense, pale 'chalk white' to yellowish white, with very limited gritty inclusions and no visible shell).*	Specialist	1	Ascertain nature of mortary lumps-anthro/natural	Yet to locate sample - Missing? If located, this would be a priority for assessment.
50002	**90021**	*Mortary / calcareous layer. A yellowish brown coloured layer (10YR 5/4) with grey mottles. It was up to 0.2m thick. Its texture is apedal (no soil structure) and rather sandy (overall a silty fine/mid sand. Re-precipitated CaCO is common in fine veins, without and of the larger granular/chalky fragments as seen above it in (90006) and (90030).*	Specialist	1	Taken to provide background readings if Mag Sus analysis is undertaken	Hold in reserve in case it is required. No action currently required.
50003	**90007**	*Natural sandy gravel laid down in a fluvial environment.*	Specialist	1	Taken to provide background readings if Mag Sus analysis is undertaken	Hold in reserve in case it is required. No action currently required.
50004	**90005**	*Landscaping layer. A light yellowish brown colour (10YR 6/4) with a sandy silt loam texture. It was up to 0.32m thick and contained frequent small pebbles and occasional flecks of charcoal. A loamy made ground layer. It has a different structure to the natural topsoil with more frequent larger cracks and voids, creating a larger scale ped structure of irregular weak 'clods', which quickly fragment to smaller more granular forms. This structure likely reflects incomplete homogenisation of the layer by bioturbation. This suggests that the whole layer was deposited at once as a landscaping layer (i.e. without phase of vegetative growth during up-building), and immediately overlain by turf, which then became the active surface-solum.*	Specialist	1	Taken to provide background readings if Mag Sus analysis is undertaken	Hold in reserve in case it is required. No action currently required.
50005	**90001**	*Top soil and was present across the entire trench. It was 0.17m thick with a very dark greyish brown colour (10YR 3/2) with a sandy silt loam texture.*	Specialist	1	Taken to provide background readings if Mag Sus analysis is undertaken	Hold in reserve in case it is required. No action currently required.

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
50006	**90006**	*Mortar like layer. Up to 0.1m thick with a light yellowish brown colour (10YR 6/4) and silt loam texture with up to 50% calcareous mortar inclusions. The CaCO forms are diffuse and patchy (rarely up to c.10cm). Some streaky forms contain hard smallish nodules that are also present near the base as are small patches of quite granular CaCO. This layer tapers as it approaches the edge of large cut [90016] suggesting some contemporaneity as an associated surface.*	Specialist	10	CaCO formation - specialist descriptions and notes would be useful, guidance on possibilities for further analysis (e.g. composition of mortar) and value to overall archaeological narratives to be considered at this stage.	This would be a priority for assessment.
50008	**multiple CXTs**		Specialist core or monolith	1	Micro-analysis	Yet to locate sample - Missing?
50101	**90109**	*Fill of quarry. At least 4m wide and 2.5m long, extending beyond the limits of excavation to the east, west and south. It was up to 0.86m thick. It appeared to be a mixed deposit with a dark yellowish brown (10YR 4/6) colour with a sandy silt loam texture but with large paler CaCO enriched loamy patches. Primary fill (90109) in trench 11a is a very mixed blotchy deposit suggesting that a mix of materials went into its formation and that it represents a single act of rapid deposition.*	Floatation	40	-	Did not meet sampling criteria - Discarded
50102	**90135**	*Fill of planting feature. 1.8m wide and 0.28m thick with a dark brown colour (7.5YR 3/2) and a silty clay texture. It contained pot, animal bone, and ceramic building material. It had a rounded upper profile whilst the lower margin contained noticeably more gravel. [90140] is a very large pit-like feature that stratigraphically appears to fit with post landscaping planting features. The nature of the feature is a mystery although one explanation does seem possible. This has [90140] as a very large planting feature for a semi-mature tree.*	Floatation	20	-	Did not meet sampling criteria - Discarded
50103	**90137**	*Fill of quarry. A relatively compact deposit that had to be excavated with a mattock. It was 0.9m wide and 0.15m thick, containing almost no inclusions apart from charcoal and finds of pottery and clay pipe. It had a grey colour (7.5YR 5/1) with a sandy clay texture.*	Floatation	20	-	Did not meet sampling criteria - Discarded

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
50104	**90139**	*Fill of quarry. Primary fill was (90139). It was 0.43m thick and at least 3.31m wide with a brown (7.5YR 4/4) colour and a sandy clay loam texture.*	Floatation	20	-	Did not meet sampling criteria - Discarded
50105	**90138**	*Fill of quarry. A relatively soft fill 0.57m wide by 0.57m thick, constituted mostly by gravel. It had a strong brown colour (7.5YR 4/6) with a silty clay textured matrix.*	Coarse-sieve	10	A coin was recovered from this context and sample was kept for sieving for recovery of finds.	
50106	**90136**	*Fill of planting feature. Up to 1.78m wide and 0.47m thick. It had a dark brown colour (7.5YR 3/3). [90140] is a very large pit-like feature that stratigraphically appears to fit with post landscaping planting features. The nature of the feature is a mystery although one explanation does seem possible. This has [90140] as a very large planting feature for a semi-mature tree.*	Floatation	40	-	Did not meet sampling criteria - Discarded
50107	**90127**	*Comprised of natural gravel infiltrated and weakly cemented by what appeared to be a prepared pre-modern construction lime-mortar.*	Specialist	1	CaCO formation - specialist descriptions and notes would be useful, guidance on possibilities for further analysis (e.g. composition of mortar) and value to overall archaeological narratives to be considered at this stage.	This would be a priority for assessment.
50108	**90126**	*(90126) consisted of weakly cemented gravel. It had a light greyish brown colour (10YR 6/2) with a sandy loam texture. It contained cemented gravel at the base and some patches visible in plan, with loosely spread re-deposited natural gravel overlying and constituting the main 'fill'.*	Specialist	1	CaCO formation - specialist descriptions and notes would be useful, guidance on possibilities for further analysis (e.g. composition of mortar) and value to overall archaeological narratives to be considered at this stage.	
50401	**90411**	*Primary fill of possible tree throw. (90411) had a dark reddish grey colour (5YR 4/2) with a silt loam texture. It contained occasional amounts of pebbles and flecks of charcoal along with a single fragment of worked flint. It measured 0.53m by 0.47m and was 0.25m thick.*	Floatation	30	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
50402	**90413**	*Fill of ditch. A dark reddish brown colour (5YR 3/4) with a silty clay texture which contained occasional flecks of charcoal.*	Floatation	40	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	
50403	**90417**	*Central fill of posthole. It had a dark reddish brown colour (5YR 2.5/2) with a sandy silt loam texture. It contained flecks of charcoal and pieces of either ceramic building material or daub. This may be a post pipe.*	Floatation	10	For recovery of organic remains and environmental data from possible prehistoric feature. Sample possibly includes friable artefacts such as daub that would benefit from recovery under controlled condidtions. Feature is at least pre-18th century.	
50404	**90421**	*Fill of posthole. A very dark grey colour (5YR 3/1) with a sandy silt loam texture. It contained flecks of charcoal*	Floatation	10	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	
50405	**90415**	*Fill of feature that is probably a tree throw. A dark reddish brown colour (5YR 3/2) with a sandy silt loam texture. It contained occasional flecks of charcoal*	Floatation	40	For recovery of organic remains and environmental data from possible prehistoric feature. Sample possibly includes friable artefacts such as daub that would benefit from recovery under controlled is at least pre-18th century.	
50406	**90422**	*Fill of small feature that was originally interpreted as a stake hole but may be a root hole. A dark reddish brown colour (5YR 2.5/2) and a sandy silt loam texture.*	Floatation	1	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
50407	**90424**	*Secondary fill which occupied the top 0.34m of the ditch. This had a dark reddish brown colour (5YR 3/3) and silty clay texture. It contained flecks of charcoal which were concentrated towards its base with the primary ditch fill.*	Floatation	40	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	
50408	**90426**	*Fill of small feature that was originally interpreted as a stake hole but may be a root hole. A dark reddish brown colour (5YR 3/2) and a sandy silt loam texture.*	Floatation	2	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	
50409	**90434**	*Fill of small feature that was originally interpreted as a stake hole but may be a root hole. A dark reddish brown colour (5YR 3/2) and a sandy silt loam texture.*	Floatation	3	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	
50410	**90444**	*Fill of ditch. It had a reddish brown colour (5YR 4/4) and contained burnt flint and charcoal flecks.*	Floatation	40	For recovery of organic remains and environmental data from possible prehistoric feature. Feature is at least pre-18th century.	
53001	**93004**	*Buried soil. Covered an area of 4.14m by 2.9m with a thickness of 0.1m. It was a dark greyish brown colour (10YR 3/2) with a sandy silt loam texture. This was a very distinct layer that stood out from all the others. A very distinct band running down the slope. It is believed that this represents a thick well developed buried soil 'A' horizon and of all the layers posited as buried soils in different trenches this was the thickest. It is believed that this layer represents the original surface of the grotto after it had undergone the first phase of landscaping.*	Floatation	40	For recovery of organic remains and environmental data from organic rich layers that probably represents a buried soil in the grotto.	
54001	**94011**	*Fill of a bedding trench. Very dark greyish brown (10YR 3/2) with a silt loam texture.*	Floatation	10	For recovery of organic remains and environmental data from a bedding trench in an effort to inform on planting regimes.	

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
54002	**94012**	*Fill of a bedding trench. A dark brown colour (10YR 3/3) and a silt loam texture. Appeared to be a linear feature aligned WNW-ESE.*	Floatation	10	For recovery of organic remains and environmental data from a bedding trench in an effort to inform on planting regimes.	
55001	**95007**	*Fill of bowling alley. A 0.09m thick, very dark grey (10YR 3/1) silty clay that covered a 1.61m by 2.21m area in the northern part of [95006]. It does not appear to be associated with the original construction of the ninepin alley but has the character of material brought on to site to backfill or patch up the playing area of the ninepin alley. It is possible that (95014) had been worn away in some areas and required patching for the alley to remain a useful feature or was deliberately removed in areas (possibly to aid drainage) after the alley had fallen out of use.*	Coarse-sieved	10	For recovery of finds	Sieved on site
55002	**95014**	*Fill of bowling alley. 0.13m thick, and appeared to be a compact clay-like deposit with a silty clay loam texture. It was light pink in colour (2.5YR 6/2) containing a moderate number of small rounded pebbles. Deliberately laid fills, possibly as part of a laid surface for the ninepin alley playing area. (95014) is a clean and homogenous clay except for cracks and root holes where gravel and humic soil has filtered in from above. There is little in the way of humic components and it is not a dumped deposit, or a turned-over bedding trench fill.*	Coarse-sieved	10	For recovery of finds	Sieved on site
55003	**95009**	*Fill of tree throw. A very dark grey / black (10YR 2/1), sandy loam with frequent small and medium rounded subangular pebbles. The fill itself extended south outside of the limits of the cut as recorded probably indicating that it had been truncated or masked by soil processes forming the 'A' soil horizon.*	Coarse-sieved	70	For recovery of finds	Sieved on site

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
57001	**97004**	*Top fill of gully [97009] was (97004). This was only identified in the south facing section and not the north facing one. It may therefore represent quite a localized fill. It was a dark blackish brown (10YR 2/2) deposit with a sandy texture, pebble and charcoal inclusions. It was 1.0m wide and up to 0.08m thick. It appeared have been derived from burnt material. Probably results from a single dumping event. The excavator thought that the material had the consistency of hearth sweepings and this sounds like a reasonable interpretation.*	Coarse-sieved	?	For recovery of finds	Sieved on site
57002	**multiple CXTs**		Specialist core or monolith	1		Did not meet sampling criteria - Discarded
59001	**99031**	*Fill in grotto. A 0.2m thick, yellowish brown (10YR 5/6) colour with a sandy silt loam texture. It was distinctly paler with a more 'clayey' texture than comparable sandy silt loams in the fill sequence. This appears to be result of carbonate formations within the deposit, resulting in paler colours and a stronger 'cemented' fabric texture. Some weakly nodular small carbonate/limey fragments may also be present. A localised deposit located towards the eastern side of [99037] but in an area where excavation was not extended fully to the edge of the feature. The presence of the carbonates in the deposit make it distinct from the other loam fills and this may have derived from material related to the grotto or grotto features such as lime mortar, shell/coral that had been dumped in the (unexcavated portion of the) deposit.*	Specialist core or monolith	1		Did not meet sampling criteria - Discarded
59002	**99051**	*(99051) was the primary fill of a bedding trench. It contained a moderate amount of pebbles with a mid-grey brown (10YR 4/3), sandy silt loan textured matrix. It was a maximum of 0.19m thick*	Floatation	10	For recovery of organic remains and environmental data from a bedding trench in an effort to inform on planting regimes.	
59003	**99038**	*Fill of a bedding trench. It was very dark grey (10YR 3/1) with a sandy loam texture and about 30% pebbles.*	Floatation	10	For recovery of organic remains and environmental data from a bedding trench in an effort to inform on planting regimes.	

Sample No.	Context	Context description	Type	Volume (l)	Sample purpose	Note
59004	**99033**	*Fill of a bedding trench. 0.24m thick fill (99033). This was a dark grey brown colour (10YR 3/1) with a sandy loam texture. It contained 10-15% gravel*	Floatation	10	For recovery of organic remains and environmental data from a bedding trench in an effort to inform on planting regimes.	

6. Tabulated quantification of the site archive

6.1 Record Numbers Allocated All phases

Table 19 showing the list of record numbers to be used for allocation off-site

RECORD TYPE	RECORD NUMBERS USED	PHASE	SSD	COMMENTS
Site Subdivision				
Site Subdivision	10001-10002	1		
Site Subdivision	10003-10009	2		
Site Subdivision	10010-10015, 10111	3		
Contexts				
Contexts	91001-91019	1	Trench 1	
Contexts	92001-92002	1	Trench 2	
Contexts	93001-93021	2	Trench 3	
Contexts	94001-94016	2	Trench 4	
Contexts	95001-95021	2	Trench 5	
Contexts	97001-97010	2	Trench 7	
Contexts	98001-98010	2	Trench 8	
Contexts	99001-99062	2	Trench 9	
Contexts	90001-90040	3	Trench 10	
Contexts	90101-90119, 90121-90132, 90134-90152, 90154-90155, 90157-90159	3	Trench 11	
Contexts	90201-90222	3	Trench 12	
Contexts	90301-90317	3	Trench 13	
Contexts	90401-90451	3	Trench 14	
Contexts	90351-90358	3	Trench 15	
Structural Groups				
Structural Groups				
Small Finds				
Small Finds	3001-3002	1		
Small Finds	3003-3029, 34001, 35001, 38001, 38002, 39001-39003	2		
Small Finds	3030-3037, 30001, 30101-30103, 30201-30204,	3		
Samples				
Samples	53001	2	Trench 3	
Samples	54001-54002	2	Trench 4	
Samples	55001-55003	2	Trench 5	
Samples	57001-57002	2	Trench 7	
Samples	59001-59004	2	Trench 9	
Samples	50001-50008	3	Trench 10	
Samples	50101-50108	3	Trench 11	
Samples	50401-50410	3	Trench 14	

Plans				
Plans	2101	1	Trench 1	
Plans	2301-2314	2	Trench 3	
Plans	2401-2402	2	Trench 4	
Plans	2501	2	Trench 5	
Plans	2801-2808	2	Trench 8	
Plans	2901-2908	2	Trench 9	
Plans	2051	3	Trench 10	
Plans	2151, 2152	3	Trench 11	
Plans	2251-2253	3	Trench 12	
Plans	2351	3	Trench 13	
Plans	2451	3	Trench 14	
Sections				
Sections	21001	1	Trench 1	
Sections	23001-23005	2	Trench 3	
Sections	24001-24002	2	Trench 4	
Sections	25001-25005	2	Trench 5	
Sections	27001	2	Trench 7	
Sections	28001	2	Trench 8	
Sections	29001-29020	2	Trench 9	
Sections	20051, 20053-6	3	Trench 10	
Sections	20151-20155	3	Trench 11	
Sections	20251-20252, 20254-20256	3	Trench 12	
Sections	20351-20354	3	Trench 13	
Sections	20451-20463	3	Trench 14	
Sections	20361, 20362	3	Trench 15	
Grid Pegs				
Grid Pegs	6601-6605	1		Survey stations and fixed points
Grid Pegs	60001-60002	1	Trench 1	
Grid Pegs	61301-61304	2	Trench 3	
Grid Pegs		2	Trench 4	
Grid Pegs	61501-61504	2	Trench 5	
Grid Pegs	61801-61803	2	Trench 8	
Grid Pegs	61901-61904	2	Trench 9	
Grid Pegs	60011, 61006-61010	2		Survey stations and fixed points
Grid Pegs	62001-62002	3	Trench 10	
Grid Pegs	62101-62106	3	Trench 11	
Grid Pegs	620019-620026	3	Trench 12	
Grid Pegs	620301-620302	3	Trench 13	?
Grid Pegs	62401-62402	3	Trench 14	
Grid Pegs	60021-60023, 60034-60035	3		Survey stations and fixed points
Grid Pegs	602205-602208	3		Photo targets

Photographs				
Photographs	6001-6085	1		Camera 2
Photographs	7001-7339	2		Camera 1
Photographs	7501-7604	2		Camera 2
Photographs	7104	2		Finds
Photographs	8001-8408	3		Camera 1
Photographs		3		Finds

6.2 List of X-rays

6.3 Spot dating

6.4 Drawing Sheets Index

Table 20 showing the list of drawings created during excavation

Sheet #	Number of drawings on sheet	Drawing numbers
1	1	21001
2	1	2101
3	1	2302
4	1	2303
5	1	2304
6	1	2305
7	1	2306
8	1	2901
9	1	2902
10	1	2903
11	1	2308
12	2	2906, 29003
13	1	25005

14	1	25005
15	1	25004
16	3	25001, 25002, 25003
17	1	2501
18	1	2501
19	1	2501
20	1	2501
22	1	2401
23	1	23005
24	1	2307
25	6	29004, 29005, 29006, 29007, 29008, 29009
26	1	29001
27	1	29001
28	1	2312
29	1	2311
30	1	2310
31	1	2313
32	1	23004
33	2	23001, 23002
34	1	2309
35	1	2314
36	1	2402
37	1	24001
38	1	23003
39	2	2905, 29002
40	1	2301
41	1	27001
42	6	24002, 29015, 29016, 29017, 29018, 29019
43	3	29010, 29012, 29020

44	2	29011, 29014
45	1	2908
46	1	2908
47	1	2801
48	1	2802
49	1	2803
50	1	2804
51	1	2805
52	1	28001
53	1	20451
54	1	20452
55	3	20351, 20352, 20353
56	10	20453, 20454, 20455, 20456, 20457, 20458, 20459, 20460, 20461, 20462
57	2	2151, 20151
58	1	20152
59	1	20354
60	1	2351
61	1	2351
62	1	2152
63	1	20153
64	1	20463
65	1	2451
66	1	20361
67	3	20251, 20252, 20256
68	1	20363
69	2	20054, 20055
70	1	20154
71	1	2051

72	1	20056
73		void
74	1	20362
75	1	20053
76	1	20051
77	1	20155
78	1	2252
79	1	2253
80	1	20255
81	1	20254
82	1	2251

6.5 The 'paper archive'

All prompt sheets and other site paper records will be retained while work on the project is in progress.

Non-digital records - the 'paper archive'		
The following permatrace records are currently regarded as part of the archive to passed to Archaeological Archives for accessioning. No paper prompts or indexes will be passed to Archaeological Archives, as all information from these has been entered into Intrasis, which is the primary site record.		
Site Drawings		
A3 Permatrace sheets	2	

6.6 Box List

The box list is provided in section 3 above.

Bibliography

Alexander, M. and Carpenter, E. (2017). *Marble Hill House, Twickenham, Greater London.* Historic England Research Report number 5/2017.

Hamerow, H. (1993). *Excavations at Mucking. Volume II: The Anglo-Saxon settlement.* London: English Heritage.

Linford, N.T., Linford, P.K., Payne, A.W. and Pearce, C. (2016). *Marble Hill Park, Twickenham, London: Report on Geophysical Surveys, December 2015 and February 2016.* Historic England Research Report number 19/2016

Valdez-Tullett, A. S. (2017a). *Project Design: HE7382 - Marble Hill Park, Twickenham, London: Archaeological Evaluation Phase 2.* Historic England Internal Report.

Valdez-Tullett, A. S. (2017b). *Project Design: HE7382 - Marble Hill Park, Twickenham, London: Archaeological Evaluation Phase 3.* Historic England Internal Report.

Wooldridge, K. and Forward, A. (2016). *Evaluation of the grounds at Marble Hill House, Twickenham, London Borough of Richmond. Site Archive Completion Report.* Historic England Internal Report.