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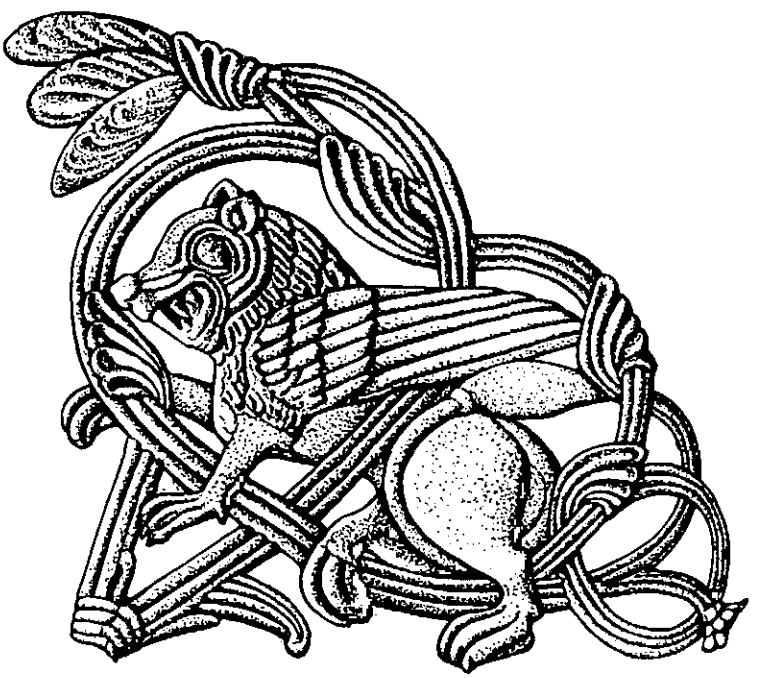

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EVALUATION OF THE PROPOSED ENVIRONMENTAL RECYCLING AREA AT WELLINGTON QUARRY, WELLINGTON, HEREFORDSHIRE

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Robin Jackson, Derek Hurst, Laura Jones and Elizabeth Pearson

With a contribution by David Jordan

Illustrated by Carolyn Hunt

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Archaeological Service,
Worcestershire County Council,
Woodbury Hall,
University College Worcester,
Henwick Grove,
Worcester WR2 6AJ

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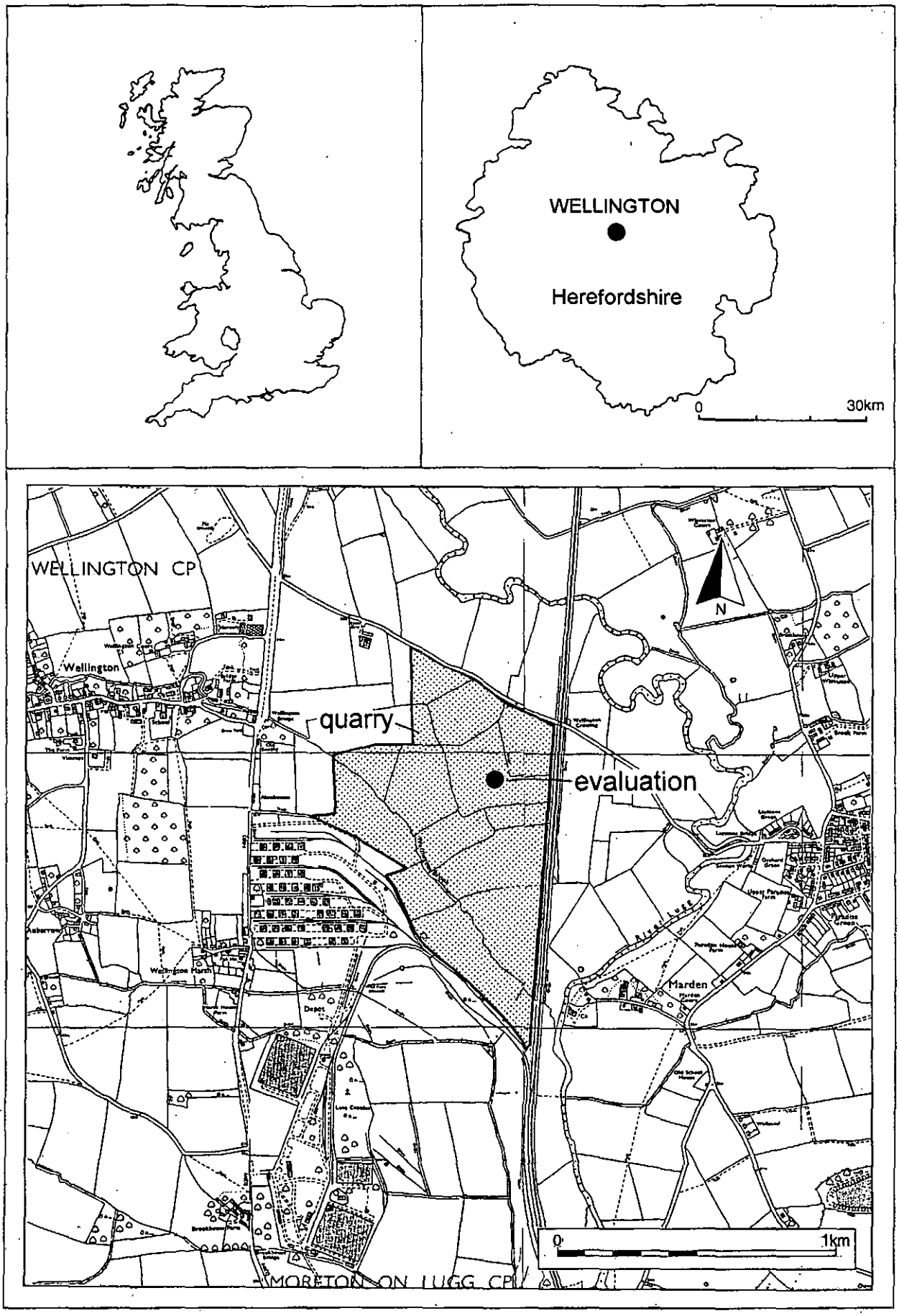

Figure 1: Location of Site

Evaluation of the proposed environmental recycling area at Wellington Quarry, Wellington, Herefordshire

Robin Jackson, Derek Hurst, Laura Jones and Elizabeth Pearson
With a contribution by David Jordan

Part 1 Project summary

An archaeological evaluation was undertaken at Wellington Quarry, Wellington, Herefordshire (centred on NGR SO 508 479; Fig 1) on behalf of Lafarge Redland Aggregates Limited who intend to construct an environmental recycling area at the site. The proposed location of this will affect an area known to include significant late Iron Age and Romano-British occupation deposits buried beneath a later alluvial accumulation. The aim of the project was to determine the depth of these significant deposits and enable the recycling area to be designed in such a way as to ensure that important archaeological remains were not damaged.

The evaluation confirmed the presence of Iron Age activity and of significant Romano-British deposits surviving within this part of the site. Although only very limited areas were investigated, it was evident that a complex of well preserved ditches and other cut features (postholes and pits) were present. The ditches are interpreted as boundary features defining enclosures and trackways, one of which may represent the north-eastern side of a sub-rectangular enclosure, initially identified through geophysical survey in 1989.

These deposits provide further evidence for the Romano-British settlement and included debris from both copper and ironworking as well as waterlogged remains. This area of activity lies only a short distance to the south-east of a Romano-British stone building which may represent the remains of a villa. Amongst the finds assemblage from the evaluation, box flue tile (a type used in the construction of Roman heating systems) and the base of an amphora (large storage vessel for olive oil or wine) provided further evidence of the relatively high status of the Roman settlement which was probably the centre of a villa estate. The evaluated area may be identified as an industrial area focussed on one or more enclosures located on the periphery of the main occupation area of the site.

These features were preserved beneath a buried soil which probably represents a modified Roman (or possibly earlier) ground surface. Analysis suggests that this soil continued to accumulate and develop through into the medieval period when it was affected by ploughing. This latter process gave rise to the characteristic earthworks known as ridge and furrow, the development of which reflects medieval open field cultivation and which had caused differential truncation of Roman deposits and features.

The ridge and furrow was overlain and infilled by a further phase of alluvial material possibly representing a renewed period of overbank flooding during the late medieval or post-medieval period. This had apparently also been affected by ploughing at one time and was itself sealed by fine flood laminae which probably reflect a further previously unrecognised phase of post-medieval alluviation. These deposits were in turn overlaid by the modern subsoil and ploughsoil horizons themselves probably developed from alluvial deposits.

The late medieval to early post-medieval alluvium and subsequent deposits provided a minimum of 600mm of deposits overlying the late Roman to medieval ploughsoil and an average of an additional 200mm overlying the significant features and deposits sealed below that ploughsoil. As a result of previous heavy plant movement across these soils in this area, it was possible to observe the impact of such activity upon buried remains and overlying deposits. This has allowed recommendations to be made regarding the design and construction of the proposed plant which will enable significant deposits to be preserved *in situ*.

Part 2 Detailed report

1. Background

1.1 Reasons for the project

An archaeological evaluation was undertaken at a gravel extraction site at Wellington Quarry, Marden Lane, Marden, Herefordshire (centred on NGR SO 508 479; Fig 1), on behalf of Lafarge Redland Aggregates Limited (the client) who intend to construct an environmental recycling area within part of the site currently used for soil storage and car parking.

This proposed development lies within an area which has been identified as forming the 'core' of a Romano-British settlement site, the wider surroundings of which have also produced extensive evidence of significant early prehistoric activity (Clarke *et al* 1988; Edwards 1989; Shelley 1989; Edwards 1990; Brown 1992; Fagan *et al* 1993; AS 1995a; AS 1996; Jackson, Pearson and Ratkai 1996; Napthan *et al* 1997; Harrison, Jackson and Napthan 1999). These remains are interleaved with and sealed by a complex sequence of alluvial deposits which have also been the subject of considerable study both in their own right and in relation to the archaeological deposits within them (Dinn and Roseff 1992; Dinn 1992; Dinn 1996; Dinn and Moran 1996). The site is registered on the Herefordshire County Sites and Monuments Record as a site of archaeological interest (HSM 5522).

The importance of deposits within the 'core' has already been recognised, having been described by English Heritage as of 'demonstrable national significance' (Dr A Streeten, Inspector of Ancient Monuments, correspondence dated 26 August 1988) while the overall importance of the site has recently been addressed by the commissioning by English Heritage of an assessment of the results of work undertaken at the quarry between 1986 and 1996 (Jackson and Edwards 2000).

As a result of the recognised importance of the 'core' area, the client has agreed to remove this part of the site from the permitted area of quarrying in order to ensure the preservation of significant deposits *in situ*. The proposed development will affect part of this 'core' area, however, the importance of archaeological deposits in the area is acknowledged and the evaluation has been requested in order provide information which will enable the environmental recycling plant and associated storage areas to be designed in such a way as to ensure that there will be no damage to important archaeological remains.

1.2 Project parameters

The project conforms to the *Standard and guidance for archaeological field evaluation* (IFA 1999) and to the *Requirements and guidelines for archaeological projects in Herefordshire.*

The project also conforms to a project proposal (including detailed specification) produced by the Service (AS 2000).

1.3 Aims

Significant deposits were anticipated to exist in the evaluation area. These were considered likely to be of Romano-British or earlier date.

In particular the project had the following aims:

- establish the character, date, depth, extents, survival and condition of significant deposits across the proposed development area;

- contribute to the overall development of an understanding of the range and character of former activity and landuse at the site.

The principal objectives of the evaluation were to:

- assess the state of preservation and significance of any archaeological deposits which identified;

- make recommendations to support the design and implementation of a mitigation strategy to ensure the preservation *in situ* of significant archaeological deposits within the proposed development area.

2. Methods

2.1 Documentary search

There has been a considerable amount of previous archaeological investigation at Wellington Quarry, as well as ongoing work elsewhere in the quarry. As a result it was not felt necessary to undertake any new searches of the County Record Office and SMR. Instead the archives held by the Service were consulted, including the following sources:

- Clarke *et al* 1988
- Edwards 1989
- Gater and Gaffney 1989
- Shelley 1989
- Edwards 1990
- Brown 1992
- Dinn and Roseff 1992
- Dinn 1992
- Fagan *et al* 1993
- AS 1995a
- AS 1996
- Dinn 1996
- Dinn and Moran 1996
- Jackson, Pearson and Ratkai 1996
- Napthan *et al* 1997
- Harrison, Jackson and Napthan 1999
- Jackson and Edwards 2000 (as amended)

2.1.1 Fieldwork strategy

A detailed specification has been prepared by the Service (AS 2000). Fieldwork was undertaken between 3/7/00 and 10/7/00.

Two adjoining trenches, amounting to just over 175m² in area, were excavated over the site area of *c* 0.5ha, representing a sample of approximately 3.5% (Trenches 1 and 2; Figs 2, 3 and 4). The trench locations and sample size vary from those originally specified (three separate trenches and a sample of 4%; AS 2000) due to on-site constraints in the form of soil storage bunds and sub-surface cabling and water supplies. At the project design stage, the presence of the latter was not notified to the Service and, due to their presence within a car parking area, it was not possible to excavate a trench in the north part of the evaluation area. The widths and lengths of the other two trenches was revised to partially compensate for the loss of the northern trench. Their location was also slightly revised to accommodate soil storage bunds which were more substantial and slightly differently located to those shown on the plans provided at the project design stage.

Deposits considered not to be significant were removed using a 360° tracked excavator, employing a toothless bucket and under archaeological supervision. In this case machining was undertaken to the interface between a late medieval/post-medieval alluvial horizon and a buried soil of Iron Age/Roman through to medieval date. The latter was more clearly identified along the length of Trench 1 than in Trench 2 and was left substantially intact across both trenches. Exposure of this deposit was variable principally as a result of the development of medieval ridge and furrow within it which had created an undulating surface. One area at the northern end of Trench 2 was selected for deeper machine excavation of a box trench to establish the full alluvial sequence overlying the natural sand and gravel (Fig 4).

Subsequent excavation was undertaken by hand. Clean surfaces were inspected and selected areas of the Iron Age/Roman to medieval buried soil were removed to reveal earlier deposits sealed beneath it (Slots 1-7; Figs 3 and 4). Selected areas of these deposits were then excavated to retrieve artefactual material and environmental samples, as well as to determine their nature. Deposits were recorded according to standard Service practice (AS 1995b). Within the box trench, specialist analysis was undertaken of the depositional sequence by David Jordan based upon a field visit and upon soil samples taken (Appendix 1).

The following techniques were considered for use but due to the presence of soil bunds and alluvial overburden or due to previous survey were not considered to be appropriate for this project; geophysical survey, fieldwalking and topographic/earthwork survey.

2.1.2 Structural analysis

All fieldwork records were checked and cross-referenced. Analysis was effected through a combination of sedimentary, structural, artefactual and ecofactual evidence, allied to the information derived from other sources.

2.2 Artefacts

2.2.1 Artefact recovery policy

All artefacts from the area of salvage recording were retrieved by hand and retained in accordance with the service manual (AS 1995b as amended).

2.2.2 Method of analysis

All hand retrieved finds were examined. A primary record was made of all finds on *pro forma* sheets. Artefacts were identified, quantified and dated. A *terminus post quem* was produced for each stratified context. The date was used for determining the broad date of phases defined for the site.

Pottery was examined under x20 magnification and recorded by fabric type and form according to the fabric reference series maintained by the Service (Hurst and Rees 1992; Hurst 1994).

2.3 Environment

2.3.1 Sampling policy

The environmental sampling policy was as defined in the Service Recording System (AS 1995b). Large animal bone was hand-collected during excavation and samples of 10 or 20 litres were taken from five contexts of Roman or Iron Age date.

2.3.2 Processing and analysis

The samples were processed by flotation followed by wet sieving using a Siraf tank. The flot was collected on a 300µm sieve and the residue sorted on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds. The residues were fully sorted by eye and the abundance of each category of environmental remains estimated. The flots were fully sorted using a low power EMT light microscope and remains identified using modern reference collections housed at the Service.

2.4 The methods in retrospect

The methods adopted allow a high degree of confidence that the aims of the project have been achieved. Although some variation in trench layout was required, in conjunction with information from previous programmes of work in the immediate vicinity these have enabled the projects aims and objectives to met.

One consequence of the project's tightly focussed design to ensure preservation of important deposits has been that it has been possible to achieve only limited understanding of the nature and complexity Roman occupation deposits recorded. This was due to the very limited removal of the Iron Age/Roman to medieval buried soil which overlies them.

3. Topographical and archaeological context

3.1 Topography and geology

The quarry is located between the villages of Marden and Wellington, 7km north of Hereford (Fig 1). It is situated on the broad floodplain of the River Lugg, occupying a flat area to the west of the current course of the river. The Wellington Brook runs across the west side of the site and joins the Lugg a short distance to the south. Slight undulations may reflect former courses of either the Lugg or the Wellington Brook. The solid geology is of Lower Old Red Sandstone, overlain by deep drift deposits of fluvioglacial gravels which in turn are overlain by deep Holocene alluvial deposits (Brandon 1982; Brandon 1989).

The proposed recycling plant and storage bays will cover an area of *c* 5000m². This area was under pasture prior to quarrying, and recently has been used as a soil storage, car parking and vehicle turning area within the quarry. The northern half of the proposed development, encompassing most of the northern bund along with the car parking and vehicle turning area (Fig 2), will affect part of the site previously capped with a compacted gravel handstanding. This was laid in 1988 to protect much of the archaeological 'core' area from plant movement and has not been disturbed by the current evaluation due to inaccessibility (the bunds) or constant usage and the presence of services (car park and vehicle turning area).

3.2 Archaeological background

Investigations in the vicinity
Prior to quarrying, only limited archaeological fieldwork had been undertaken in the vicinity. However, both prehistoric and Roman finds are known from the area and are recorded on the Herefordshire County Sites and Monuments Record.

Evidence of earlier prehistoric activity is limited to cropmarks showing three ring-ditches to the north-west of the quarry (HSM 7054, 7591 and 7592) and flint finds from the village of Marden (HSM 8416).

Later prehistoric activity is represented by the Iron Age hillfort at Sutton Walls, some 2km to the south-east. This was partially excavated in the 1940s and 1950s (Kenyon 1953; HSM 912) and produced extensive evidence of Iron Age occupation and also of subsequent Roman

activity which continued through until the 3rd century AD. To the west of the quarry, at St Donat's Farm, Burghill, a cropmark enclosure has recently been dated to the late Iron Age and Roman periods (Jackson *et al* 1999). Several other undated cropmark enclosures in the vicinity are liable to be of similar date (HSM 5523, 8576 and 10857), while unstratified Roman pottery has been reported from both Wellington (HSM 6897) and Marden (HSM 6543 and 6545). Lastly a Roman road runs to the south of the site.

A study of the nearby parish of Marden has investigated the medieval and earlier settlement of the vicinity from an historical perspective (Sheppard nd). Wellington parish has been mapped by the Herefordshire Field Names Survey (Makin and Gwatkin nd).

Investigations within the quarry

Archaeological investigations by the Archaeological Service of Worcestershire County Council (formerly the Field Section of Hereford and Worcester County Archaeological Service) have been undertaken at the quarry since 1986. The work has followed successive seasons of sand and gravel extraction and has largely comprised programmes of salvage recording undertaken during topsoil and overburden removal prior extraction. However, evaluation has also been undertaken of the area now occupied by the quarry plant and also of extensions to the north and south of the originally permitted area. The site has also formed the principal study area for the Herefordshire Valleys Survey, an English Heritage funded research project to assess survey techniques and the archaeological potential of the alluviated areas of the Herefordshire valleys (Dinn 1996; Dinn and Moran 1996).

These investigations have revealed an extensive spread of significant remains dating from the Early Neolithic to the medieval period which are indicative of a long period of exploitation of the area. Periods of activity include evidence for seasonal occupation during the Neolithic; two possible ring-ditches; a wealthy Beaker burial; Iron Age occupation; a high status Roman stone building and widespread associated activity; and a pair of medieval corn drying ovens and areas of ridge and furrow earthworks.

These deposits are associated with a deep and complex alluvial sequence, the deposition of which has influenced periods of occupation and within which deposits are interleaved. This sequence has also contributed to the excellent conditions of preservation at the site and includes important palaeoenvironmental remains which provide evidence of the changing environment of both the immediate area and this part of the Lugg Valley.

The proposed development area

Although lying within an extensively investigated site, the area to be affected by the proposed development has previously only partially been examined by both auger and geophysical survey (Fig 2). This work has indicated that one corner of an enclosure and a number of ditches possibly defining a trackway lay towards the south end of the proposed area for the recycling plant. The closest observations of buried remains were from a number of small sample box trenches to the west and limited observation of an area to the east during quarrying (Fig 2).

These previous investigations indicate that the proposed development site lies on the eastern side of an area identified as the 'core' of late Iron Age and Romano-British activity. Evidence in this 'core' area includes Iron Age deposits and finds indicative of occupation, while (as mentioned above) geophysical survey has identified a sub-rectangular enclosure and associated ditches. These latter features are undated but are likely to be of Iron Age or Romano-British date. The main period of occupation relates to an extensive Romano-British settlement which included a rectilinear stone building, associated with fragments of box-flue tile indicating a hypocaust heating system. This was clearly a building of some pretension and status, and has been identified as a villa (Taylor 1987; Clarke *et al* 1988). Areas of associated domestic and industrial activity spread to the east and south of the settlement focus, with complex occupation deposits having been recorded. These are buried across much of the area by a surviving Roman to post-Roman ploughsoil, a later alluvial accumulation and a recent topsoil and subsoil horizon.

The area of the evaluation has been suggested as lying within part of a larger open field within the medieval field pattern and known as 'Stanberrow' (Makin and Gwatkin nd; fig 5).

4. Analysis

The results of the structural analysis are presented at the end of the main report text (Table 1). The trenches and features recorded are shown in Figs 3, 4, 5 and 6. A schematic section (Fig 7) shows the relationship of features to the wider depositional sequence which is summarised below and is described in detail within Appendix 1.

A summary of the artefacts recovered can be seen in Table 2, further details being presented in Tables 3 and 4. The assemblage retrieved from the excavated area amounted to 343 finds weighing 14025g. The artefacts came from one unstratified context and eleven stratified contexts. Material ranged from the earlier prehistoric to medieval period in date. Quantifications exclude a small amount of material recovered from environmental samples. These have been scanned and contain no further classes of artefact or additional dating information.

Material	Total	Weight (g)
Iron Age pottery	29	192
Roman pottery	182	12200
Medieval pottery	1	10
Tile	2	142
Fired clay	58	340
Stone	21	595
Iron	3	22
Slag	45	510
Flint	4	14

Table 2: Artefacts -quantification by material type

Environmental remains comprised animal bone and both waterlogged and charred plant remains. These were recovered from Romano-British contexts and are summarised in Tables 5 and 6.

4.1 Phase 1 Natural deposits

Natural deposits comprising sand and gravel were recorded in the base of the box trench excavated at the northern end of Trench 2. These lay at 1.45-1.50m below current ground surface and represent undisturbed Devensian fluvioglacial gravel (Appendix 1; Fig 7; Unit 11).

4.2 Phase 2 Earlier prehistoric activity and alluvial deposits

4.2.1 Deposits

The excavation of the box trench at the north end of Trench 2 in conjunction with deposits revealed in the sides of Romano-British features provided limited evidence of the earlier depositional sequence. This is described in some detail within Appendix 1 but in summary comprised five depositional units (Units 6-10; Appendix 1; Fig 7) overlying natural deposits and pre-dating the principal phases of human activity represented within the evaluation area (Phases 3 and 4). The first three units (Units 8, 9 and 10) are interpreted as resulting from soil formation from the first truly stable dry surface which can probably be placed in the Boreal (earlier Mesolithic) stage. The two subsequent units are interpreted as alluvial deposition probably resulting from overbank flooding (Unit 7) and a channel migration deposit (Unit 6).

Phase 3 and Phase 4 features were cut into the latter deposit which can be equated to context 2004.

4.2.2 Artefacts

Apart from the depositional units described above, evidence of earlier activity was restricted to artefacts recovered as residual material in later contexts.

Flint
Three pieces of residual worked flint were identified within the assemblage. Two pieces were recovered during machine excavation of the trenches and are thus unstratified (context 2000). These are identified as a burnt broken flake and a fragment of miscellaneous debitage. The remaining piece was from context 2002, a late medieval or early post-medieval alluvial horizon (Soil Units 3 and 4). This is identified as a snapped blade flake and was clearly residual.

Unidentified fabrics of possible earlier prehistoric date
Six sherds from a Phase 5 context (2010) could not be identified either in terms of fabric or date. Four are adjoining sherds of a coarse, reduced fabric, the remaining two are of a similar fabric but oxidised. Neither can be paralleled within the Service fabric type series although this includes many fabric types known from Herefordshire. The four adjoining pieces appear to be thickening towards one end, suggesting them to be nearing the base of a large vessel. There are also faint finger marks in the form of wiping, which on one sherd in particular appear to form a diagonal pattern. The size, profile and possible decoration of the sherds may indicate that they may be from a large urn, possibly of earlier Bronze Age date. However, in the absence of parallel fabrics, more diagnostic form sherds or more distinctive decoration, it is not possible for either fabric to be assigned to a particular period or vessel group, although an earlier prehistoric date is probable.

4.3 Phase 3 Iron Age

4.3.1 Deposits

Although Iron Age features have previously been recorded at Wellington in this vicinity, the evaluation produced no stratified features or deposits of this date. However, Iron Age pottery was recovered as residual material from later contexts and is discussed below.

4.3.2 Artefacts

There was a total of 29 sherds of Iron Age pottery weighing 192g. There was a range of fabric-types present:

Palaeozoic limestone tempered ware (Group B1; fabric 4.1)
Sandstone tempered ware (Group E; fabric 5.2)
Malvernian ware (Group A; Peacock 1968; fabric 3)
Mudstone tempered ware (Group D; fabric 9)
Droitwich briquetage (fabric 2)
Cheshire VCP (fabric 140)

The palaeozoic limestone tempered ware was the commonest type by weight followed by the Malvernian ware. However, the size of the assemblage was too small for much significance to be attached to any more detailed analysis of the data. Condition of the Iron Age pottery was generally good.

It is not possible to be very definite about dating of the ceramics. However, it can be tentatively suggested that they belong to the end of the middle Iron Age, with perhaps some continuation into the later Iron Age.

This is only a small assemblage, and so only limited comment is possible. It was entirely residual as it was all found in association with Romano-British deposits (Phase 4). Broadly the assemblage is typical of the area for the middle Iron Age period. The palaeozoic limestone tempered and Malvernian ware pottery were the most common types. The range of fabrics is considerable given the small size of the assemblage.

Fabric Number	Total	Weight (g)
2	2	20
3	8	38
4.1	8	88
5.2	1	8
9	1	2
140	7	36

Table 3: Quantification of Iron Age pottery by fabric type

Fabric 2 = Droitwich organic briquetage
Fabric 3 = Malvernian ware (Group A; Peacock 1968)
Fabric 4.1 = Palaeozoic limestone tempered ware (Group B1)
Fabric 5.2 = Sandstone tempered ware (Group E)
Fabric 9 = Mudstone tempered ware (Group D)
Fabric 140 = Cheshire VCP

None of the pottery was precisely local. Instead the site was supplied by a number of regional producers to the south and east, except for the Cheshire salt containers (fabric 140), which were supplied from a source to the north. Wellington is within the areas of all the distribution plots for the fabrics represented in the current assemblage (*viz* palaeozoic limestone tempered ware, *cf* Morris 1982 fig 3.3; mudstone tempered ware, *cf* Morris 1982, fig 3.2; Malvernian ware, *cf* Morris 1982, fig 3.4; Droitwich briquetage, organic fabric 2, *cf* Morris 1985; Cheshire VCP, *cf* Morris 1985, fig 10). A single sherd of palaeozoic limestone tempered ware has been illustrated (Fig 8).

A similar range of pottery and briquetage was also found at Ivington Camp 4km to the north of Wellington (Dalwood, Hurst and Pearson 1997) and at Sutton Walls just over 2km to the south-east (Kenyon 1953). This suggests that both the hillforts and lowland sites had access to the same supply routes for manufactured goods being brought into this region.

The assemblage of Iron Age pottery was not of any special significance, though it is of interest as it underlines the potential of the Wellington site for Iron Age pottery studies which has already been identified from earlier work at the quarry (Jones 2000), It also constitutes a useful addition to the overall picture of pottery supply based on data from other sites in the region.

4.4 Phase 4 Romano-British activity

4.4.1 Deposits

Features of Romano-British date were recorded in both Trenches 1 and 2 (Figs 3 and 4) and included boundary or drainage features in the form of ditches (contexts 2011/2/3, 2019/20, 2021/22, 2023/33/34, 2025/6/7 and 2029/30) and a gully or slot (contexts 2031/2), a pit (contexts 2007/8/9) and a further pit or posthole (contexts 2005/6). Associated pottery suggested a 1st to 3rd century AD date for this activity (see below).

The linear features were predominantly on north-west to south-east or north-east to south-west alignments, although some slight variation did occur suggesting more than one phase of activity. The alignments and the identification of a corner (context 2019/20; Fig 4) suggested that these features defined broadly similar enclosures, with the alignment, spacing and fill characteristics within two of the ditches (2026 and 2034) indicating perhaps a double-ditched

enclosure. Clay clods concentrated to one side within the upper fill sequences of several of the ditches (eg 2012; Fig 5) may indicate the presence of external or internal banks which have been slighted to infill the features upon disuse.

Little evidence of activity within the enclosures was identified although the recovery of metalworking debris from several of the ditches in Trench 1 suggests that at least localised small-scale industrial activity was present. Both ironworking and copperworking appear to be represented (see below). The gully or slot may indicate the presence of a structure perhaps representing an eavesdrip gully or beam slot for a timber building of rectilinear form.

Further internal activity was represented by a small pit (contexts 2007/8/9) located just inside one of the enclosure ditches. This slightly cut the ditch fill but its location suggests that it respected the ditch. The feature had clearly been excavated specifically to contain a large amphora, the base of which survived (Fig 9) completely filling the pit apart from a thin band of fill around its outside. The internal fill (2007) included many sherds broken into the vessel, the disposition of which suggested that the vessel had been empty when buried. This vessel had evidently been reused following consumption of its original contents. This reuse can be interpreted in a number of ways, including for a specialised industrial function, as an animal feeder or maybe for some ritual activity.

The small pit or large posthole recorded at the end of Trench 2 is of uncertain function.

These features were mostly revealed following removal in narrow slots (Slots 1-7) of the Phase 5 soil (2003, 2015 and 2024) and many further features are liable to have been present sealed beneath that deposit.

4.4.2 Artefacts

Material dating to the Roman period forms the largest proportion of the evaluation assemblage and consists primarily of pottery. Although some of this was residual in later contexts, the assemblage as whole is considered here.

Pottery

A total of 12.2kg of pottery could be identified as Roman in date. All sherds were grouped and quantified according to fabric (Table 4). The general level of preservation was poor with highly abraded surfaces and softening of the fabric, particularly amongst the oxidised sherds. Only a small number of diagnostic sherds were present and therefore, a number of contexts can only be dated to a general period. However, those that were of recognisable forms indicate dates ranging from the 1st to early 3rd centuries AD across the site. The assemblage is notable for its limited range of forms and lack of fine wares such as samian which might be expected from a location in close vicinity to a villa and which have been in greater evidence from other assemblages from the 'core' area.

The majority of the assemblage consists of locally produced Severn Valley ware with a small proportion of sherds identified as Malvernian and Black-Burnished ware I fabrics. In addition, two types of mortaria fabric were identified. The first is represented by an unstratified, large rim sherd (context 2000). It is made of fabric 37.4, thought to originate from south-west England and dated to pre-160 AD. Traces of a cream slip are present on the underside of the flange and the interior surface despite being highly abraded, with evidence of burning on the flange.

The second mortarium is represented by two adjoining fragments of fabric 32 from an enclosure ditch fill (context 2023). This is a fabric type commonly found on sites in this region. However, it is not possible to date the vessel due to the poor condition of the sherds, although the general production span for this vessel type is between the 2nd to 4th centuries AD. This context contained a further 21 sherds of Roman pottery including a thick, everted rim of Severn Valley ware from a large storage vessel. This form can be paralleled with forms identified at *Ariconium* (Willis 2000, fig 24.5) and dated to between 30 and 200 AD. On the

basis of these sherds and the assemblage as a whole, it would appear that the *terminus post quem* of this context need not be later than the early 3rd century.

The rim of a small Black-Burnished ware I beaker was recovered from a pit/posthole (context 2005). These vessels are a comparatively rare form and even more unusual in this area due to Severn Valley ware tankards being readily available locally and meeting the demand for drinking vessels. Other pottery within the context consisted of a fragment of fabric 12 as well as five sherds of residual Iron Age pottery. Based on these sherds it would seem likely that this feature dates between the late Iron Age and early Roman period. A single burnt pebble identified as a pot-boiler would also be consistent with this date.

A large number of sherds from a near complete Dressel 20 amphora (fabric 42.1) were retrieved from contexts 2010 and 2007 (Fig 9). Upon excavation, this appeared to have been stood within its own pit (cut 2009) with only the upper half visible above the surface. It would appear that the sherds within context 2010 had broken away from this upper portion as a result of being clipped by ploughing. This is supported by marks noted on the vessel whilst *in situ*. Unfortunately, the rim and handles of this vessel were not recovered. From the positioning of this vessel, it would appear that it had been reused following consumption of its original content, which is liable to have been olive oil (Peacock and Williams 1986, 136). This form of amphora can be dated between the 1st and mid 3rd centuries AD and was the principal form in Britain between the late 1st and early 3rd centuries (*ibid* 136). The medieval ploughsoil (context 2010) contained a further six sherds of Roman date, including the base of an early tankard form dating between the mid 1st and early 2nd centuries.

Other notable forms and sherds within the assemblage include the carinated body sherd of a small 'Belgic type' bowl in Severn Valley ware (from context 2002), an unusual early form dating to the 1st century AD. However, this context is a layer of alluvium of probable late medieval to post-medieval date which has been reworked by ploughing. Amongst the other nine sherds of Roman pottery is a Black-burnished ware body sherd decorated with obtuse lattice and therefore of a later date of the 3rd century onwards.

Context 2024 contained a relatively large assemblage of 26 sherds identified as Roman in date. However, no sherds were diagnostic and the context, although probably Iron Age or Roman in origin, is believed to have had a long period of formation and use as a ploughsoil through into the medieval period (see Soil Unit 5; Appendix 1). Similarly undiagnostic Roman pottery was also recovered from two Phase 4 ditch fills (context 2011 and 2033) as well as from a later medieval/post-medieval alluvial deposit (context 2014).

Fabric Number	Total	Weight (g)
3.2	1	14
12	124	1023
12R	2	76
22	11	49
32	2	8
37.4	1	94
42.1	Many sherds from one vessel	10902
98	4	34

Table 4: Quantification of Roman pottery by fabric type

Fabric 3.2 = Roman Handmade Malvernian
Fabric 12 = Oxidised Severn Valley ware
Fabric 12R = Reduced Severn Valley ware
Fabric 22 = Black-burnished ware I
Fabric 32 = Mancetter-Hartshill mortaria
Fabric 37.4 = SW mortaria
Fabric 42.1 = Dressel 20 Amphora
Fabric 98 = Miscellaneous Roman wares

Four fabrics could not be identified within the county fabric series and were therefore grouped under the heading of miscellaneous. These included two sherds of greyware from contexts 2014 and 2024 and two sherds of oxidised ware from context 2000.

Ceramic building material
The only stratified tile within the assemblage is a single piece of combed box-flue tile from context 2023. The only other piece of tile from the site was a highly abraded, undiagnostic and unstratified fragment (from context 2000), identifiable by fabric as Roman.

The presence of box-flue tile indicates the presence of a hypocaust in the vicinity. The most likely location for the building associated is within the nearby villa complex.

Fired clay
A total of 58 pieces of fired clay weighing 340g were retrieved from the site. The largest group came from context 2024 and included a number of pieces with grooved impressions on the surfaces. A further six pieces were identified from context 2025 directly below and five more from the disturbed ploughsoil context 2014. There does not appear to be a forthcoming explanation for these markings although an industrial function seems likely. The nine pieces of cuprous fuel ash slag within the same context and fragments of crucible from context 2025 support this possibility. It is possible that the fragments may have been part of a metalworking mould although there are too few to be certain, and few display reduction along the inside of the grooves.

Another unusual fragment of fired clay was retrieved from context 2002. The piece has vitrification towards the centre although the outer surfaces are far less highly fired. Once more, there is no forthcoming explanation for this.

The remaining pieces are all undiagnostic fragments.

Although this assemblage of fired clay forms an interesting group, there is very little potential for further analysis. This is due in part to the poor condition and small fragments and also to the feature from which they were retrieved being only partly excavated.

Metalworking slag and waste
Industrial waste amounted to 45 pieces of slag from both iron and copper working. Slag associated with the production of copper was confined to contexts 2024 and 2025 and predominantly of a fuel ash type. A single fragment of possible crucible was also identified amongst the assemblage from context 2025, although the ceramic body of this piece would appear to have fully vitrified and is no longer visible. Further small globules of slag were identified within the environmental sample from this context. Slag associated with iron smithing was retrieved from contexts 2011 and 2023 and includes a number of possible hearth bottoms.

Stone
A total of nineteen pieces of burnt red sandstone were identified. The majority were small fragments although seven pieces from contexts 2010, 2014 and 2024 may have been used as tile. Two heat shattered stones were retrieved from contexts 2005 and 2011. Such finds are often indicative of late Iron Age or early Roman activity and known to have been most commonly used as pot-boilers.

Other finds
Three iron nails were identified within contexts 2023 and 2024.

4.4.3 Environmental remains

Hand-collected animal bone
A total of 60g of animal bone was hand-collected from three contexts (2000, 2011 and 2023) of which 2011 and 2023 were of Phase 4 date. These remains included several cattle teeth,

sheep or goat teeth and a small number of poorly preserved bone fragments which showed signs of waterlogging. This assemblage is considered to be too small to merit analysis.

Context	Sample	Description	Date	Volume (L)
2005	1	Pit/large posthole	Rom/IA	10
2007	2	Fill of amphora	Roman	20
2011	3	Enclosure ditch	Roman	10
2033	4	Enclosure ditch	Roman	10
2025	5	Enclosure ditch	Roman	10

Table 5: summary of environmental remains

Wet-sieved samples

One of the sampled fills (context 2033; Table 6) was particularly rich in elderberry seeds (*Sambucus nigra*) making up approximately 90% of the flot and which survived as a result of waterlogged conditions at the base of an enclosure ditch. Other plant remains which survived included common nettle (*Urtica dioica*), also abundant, blackberry/bramble (*Rubus fruticosus* agg) and hemlock (*Conium maculatum*). One small charred grass seed was also noted. Pig teeth and bone, including fragments of jaw bone, were recovered from the residue.

Environmental remains were poorly preserved in the remaining samples (contexts 2005, 2007, 2011, and 2025). Small fragments of animal bone survived in contexts 2007 and 2011, a beetle wing case and a charred, indeterminate cereal grain were recorded in context 2007, and unidentifiable plant stem fragments in context 2005.

Botanical name	Family	Common name	Habitat	2033
Charred plant remains				
Gramineae sp indet culm node	Gramineae	grasses (small)	AF	+
Waterlogged plant remains				
Rubus fruticosus agg	Rosaceae	blackberry/bramble	CD	++
Conium maculatum	Umbelliferae	hemlock	BC	+
Urtica dioica	Urticaceae	common nettle	CD	+++
Sambucus nigra	Caprifoliaceae	Elder	BC	++++
Key:				
A= cultivated ground		+ = 1-10		
B = disturbed ground		++ = 11-50		
C = woodlands, hedgerows, scrub etc		+++ = 51-100		
D = grasslands, meadows, and heathland		++++ = 100+		
E = Aquatic/wet habitats				
F = cultivar				

Table 6: plant remains from context 2033

Overview

The abundance of elderberry seeds in context 2033 is of interest. This may be a localised concentration of naturally dispersed seeds from shrubs growing *in situ*, perhaps on neglected overgrown waste land, particularly as they were found in association with blackberry/bramble, common nettle and hemlock which also grow well in such conditions and, moreover, on nitrogen-rich soils. However, it is also possible that these remains represent waste from activities such as wine-making, dyeing and tanning, all processes for which elderberries were historically used. References to their use in the Middle Ages are known, and it is likely that these practices are a continuation of a long-standing tradition. Roach (1985) states that "In the Middle Ages blackberry juice was added to that of mulberries, elderberries and bilberries to

make a blue dye, and the juice and wine made from it were added to grape wines to sweeten them". The presence of a small quantity of relatively well preserved pig teeth and bone indicates some disposal of domestic waste in this deposit.

The remaining samples show comparatively poor preservation of environmental remains, probably as these deposits were not waterlogged. The small quantity of bone recovered is not unusual as preservation is generally poor elsewhere at Wellington Quarry, possibly because of slightly acidic soil conditions. Good preservation of bone is restricted to deep, waterlogged palaeochannel deposits.

4.5 Phase 5 Late Roman to medieval activity

Phase 4 deposits were sealed by a buried soil which was present in varying depths across the whole of Trenches 1 and 2 (context 2003, 2015 and 2024; Soil Unit 5; Fig 6). Analysis (Appendix 1; Unit 5) suggests that this may have been a surface soil for a prolonged period of time. It is believed to have originally formed as a late Iron Age or Roman ground surface which continued to accumulate and develop throughout the Roman and post-Roman periods into the medieval period when it was partially reworked by ploughing. The latter led to the formation of ridge and furrow with some truncation of the soil in the furrows and redeposition on the ridges. The ridge and furrow was east to west aligned and each ridge/furrow lay approximately 3.00m apart (contexts 2014/2015 and 2016; Slot 7; Figs 4 and 6).

A single unstratified pottery rim sherd could be identified as of a 12th to 13th century date and has a fine micaceous fabric typical of types from Herefordshire.

4.6 Phase 6 Later medieval/post-medieval activity

The Phase 5 soil and ridge and furrow earthworks were overlaid and infilled by a further alluvial deposit (2002b; Soil Unit 4; Appendix 1; Figs 6 and 7). This probably reflects a renewal of overbank flooding in the late medieval or post-medieval period. Some reworking of this appears to have occurred probably through ploughing, prior to the deposition of another alluvial deposit (context 202a; Soil Unit 3; Appendix 1; Figs 6 and 7). The latter survived as a series of fine flood laminae and clearly resulted from overbank flooding. The survival of the laminar structure suggests that the alluviation continued rapidly above them, to form the soil which now seals them and which has been reworked by Phase 7 activity.

4.7 Phase 7 Modern activity

Modern activity was restricted to a subsoil/topsoil horizon (context 2001; Soil Units 1 and 2) extending across the entire evaluation area. This deposit probably accumulated as result of the continuation of the flooding and alluviation represented by the Phase 7 laminar alluvial deposit (Soil Unit 3), although it has been reworked (probably through ploughing).

This upper horizon had also been affected by compaction/compression resulting from the movement of heavy machinery across the area during the establishment of soil storage bunds. This had given rise to a horizontal, platy structure which was recorded to a total depth of between 0.25 and 0.30m below the modern ground surface. Such compaction is considered unlikely to affect archaeological features except where they occur close to the modern surface.

5. Discussion

5.1 Earlier prehistoric activity and alluvial deposits (Phase 2)

No features or occupation deposits relating to pre-Roman activity were recorded within the evaluation area.

A range of sedimentary deposits overlay the Devensian fluvioglacial gravels. Analysis of these has shown that they result from a number of episodes of alluvial deposition interspersed with soil formation within periods of lesser alluviation or stability (Appendix 1). These accumulated over a long period of time and can be broadly equated to deposits observed across much of the quarried area (*cf* Dinn and Roseff 1992). However, in common with much of the previously examined area, potential evidence of channel migration (Soil Unit 6) was recorded and indicates localised complexity in the sequence.

The presence of residual flint and probable earlier prehistoric pottery was not unexpected since such material has been recorded previously in the 'core' area. Neither previous work nor the current evaluation have extended into earlier deposits in this area and it is uncertain whether these artefacts derived from earlier prehistoric features (which have subsequently been disturbed) or whether they derive from the alluvial deposits. Whatever the case, since areas of earlier prehistoric activity have been recorded across much of the quarry, it is likely that deposits of this date are present within the evaluation area sealed within the pre-Roman alluvium (context 2004; Soil Unit 6).

5.2 Iron Age activity (Phase 3)

No Iron Age deposits were identified, although, residual pottery of this date was recovered from a range of later features and deposits. This material has been discussed above and can be dated from towards the end of the middle Iron Age and possibly into the later Iron Age. Patchy evidence for Iron Age activity has been recorded previously at Wellington Quarry (Jackson and Edwards 2000) and clearly represents occupation during this period, although the current assemblage suggests somewhat earlier activity than has been recorded previously. Much of this material has been residual in Roman features, however, some has been recovered from ditches which probably represent contemporary enclosure and field boundaries.

Overall it appears that similar areas were occupied during both periods suggesting that the Roman settlement developed from an Iron Age predecessor without any notable break in occupation. Similar continuity of occupation has recently been suggested for the nearby farmstead enclosure at St Donat's Farm, Burghill (Jackson *et al* 1999) and has also been identified at another local site, Sutton Walls hillfort (Kenyon 1953). Of particular interest in the evaluation assemblage is the presence of middle Iron Age pottery and the indication that both hillforts and lowland settlements had similar supplies of manufactured goods (ceramics) at this time.

5.3 Romano-British activity (Phase 4)

The evaluation has confirmed the presence of Romano-British deposits within an already defined core area of occupation (Fig 10). Although only small areas of Roman deposits were revealed, several enclosure ditches and a number of internal features were identified. One of these, the ditch recorded in Slot 4 (context 2030) may represent the north-east side of the enclosure identified in 1989 through geophysical survey (Fig 10). These features demonstrate that complex Romano-British deposits are well preserved across this part of the site and included waterlogged remains in the base of one of the ditches.

The area in which this activity was recorded lies to the south-east of the Roman stone founded building which probably represents a villa (Fig 10). The recovery of an amphora within the ceramic assemblage supports the impression that the site was of a relatively high status and that it had a wide range of contacts and a degree of romanisation not common to rural sites. The recovery of a combed box-flue tile fragment supports previously recorded evidence for a hypocaust system associated with the main building. Otherwise, however, the evaluation was notable for the limited range of forms and fine wares and this may reflect its function within the wider settlement complex. The enclosure ditches produced metalworking waste indicative of both iron and copper alloy working. Similar material has been previously recorded from

other features to the south of the stone founded building, and these suggest that these enclosures may represent industrial/production compounds on the periphery of the main occupation area.

Dating evidence was consistent with material from previous work at the quarry and suggested that Roman occupation in this part of the settlement lasted from the 1st through to the early 3rd century. It is probable that this reflects a continuity of the Iron Age occupation discussed above and in this respect the site reflects the situation others in the immediate vicinity such as that at St Donat's Farm (Jackson *et al* 1999) and at Sutton Walls (Kenyon 1953), as well as the more general pattern across Roman Britain.

A soil accumulation which sealed the Roman deposits (context 2003) probably represents the contemporary groundsurface but as a result of continued accumulation and later reworking has been modified in such a way that features are now sealed below it. This soil has been widely observed previously (Fig 10), however, this represents the first occasion on which analysis has enabled a fuller understanding of its development

5.4 Post-Roman, medieval and post-medieval activity (Phases 5-7)

Although the focus of interest lies in the evidence for Roman and earlier activity, important information has also been recorded relating to post-Roman, medieval and post-medieval site formation processes and activities. These are of interest in their own right as evidence of continuing landuse and utilisation of this part of the Lugg Valley and also for their influence on the survival and preservation of earlier deposits.

As discussed above, evidence was recorded of a soil horizon sealing Roman deposits but which had formed as a Roman or possibly an Iron Age ground surface. Analysis suggests that this continued to accumulate and be modified over a long period of time through into the medieval period. At this time it was reworked extensively by ploughing which led to the formation of ridge and furrow earthworks. Similar medieval arable cultivation features have previously been recorded at Wellington Quarry and these clearly represent part of the open field system associated with the medieval settlement at Wellington. Examination of the 1843 tithe and work undertaken as part of the Herefordshire Field Name Survey (Makin and Gwatkin nd) suggests that the evaluation area lies within the south-eastern corner of an open field known as Stanbarrow, a fieldname which in itself is evocative of earlier activity.

Subsequent to the formation of the ridge and furrow, the area appears to have been subjected to extensive overbank flooding probably from the later medieval or early post-medieval period through until the recent past. Although some reworking is evident in the lower parts of this accumulation (Soil Unit 4), its upper elements included an undisturbed laminar accumulation (Soil Unit 3), the survival of which suggests that rapid alluviation continued above laying down the reworked and compacted sediments which form the modern topsoil and subsoil (Soil Units 1 and 2).

6. Significance

In considering significance, the Secretary of State's criteria for the scheduling of ancient monuments (DoE 1990, annex 4), have been used as a guide.

These nationally accepted criteria are used to assess the importance of an ancient monument and considering whether scheduling is appropriate. Though scheduling is not being considered in this case they form an appropriate and consistent framework for the assessment of any archaeological site. The criteria should not, however, be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case.

The value of the site can be considered against the following criteria: period, rarity, group value, diversity, survival/condition, fragility/vulnerability, documentation, potential and amenity value.

The evaluation has recorded evidence of earlier prehistoric and Iron Age activity and of Romano-British occupation deposits within the evaluation area. The *survival/condition* of these deposits is especially good and has been demonstrated to include stratified relationships, horizontal surfaces, well preserved plant remains, localised waterlogged deposits and a range of artefacts. Bone preservation was poor and pottery surfaces were highly abraded.

Iron Age and Romano-British activity in this part of Wellington Quarry was associated with ditched enclosures, which during the Romano-British period appear to have been associated with metalworking. Numerous lowland enclosures of similar date have been identified across Herefordshire and the Marches through aerial photography (*cf* Whimster 1987). However, in this area, in contrast with the relative wealth of excavated evidence from hillfort sites and Roman urban centres, few of these rural lowland sites have been investigated through excavation. Furthermore the enclosures at Wellington Quarry are associated with a wider rural settlement complex including the probable site of a villa. Although elsewhere in England such complexes are not rare and many have been investigated, considerable regional variation has been identified (Hingley 1989). Since few such sites have been identified and even fewer have been investigated in this region, the site as a whole and the evaluation area can be determined as having a moderate *period* value and a high *rarity* value, and is particular significant in local and regional terms.

Deposits recorded within the evaluation area can be associated with other elements of a Romano-British settlement, including a stone building, burials, disposal areas, one or more enclosures, elements of the surrounding field system and other localised occupation or activity areas. These Romano-British remains are not only extensive in their own right but lie within a wider site which has produced well preserved evidence of repeated human exploitation from the Early Neolithic through until the medieval period and which includes highly important palaeoenvironmental remains. The *diversity* and *group value* of the site are therefore considered to be high.

A minimum of 600mm of deposits has been recorded overlying the Iron Age/Roman buried soil with an average of an additional 200mm of the latter deposit overlying the significant Iron Age and Roman features below. Significant deposits are therefore *vulnerable* to any extensive groundworks or associated activities which have an impact exceeding 600mm.

The evaluation adds to an already extensive and important body of information relating to Roman and earlier occupation at Wellington Quarry. In particular, the high status and extent of the settlement suggest that it may not be a typical site but one which will provide important information relating to Roman rural elites in the region. The evidence for rural industry/production is also significant since previous work on Roman rural sites (both regionally and nationally) has tended to focus on the occupation core at the expense of industrial areas. The site therefore has a high *potential* for supporting the development of an understanding of the economic basis of these settlements as well as the wider understanding of the rural economy.

The Iron Age and Roman ceramic assemblages from this area are of limited *potential* as a single group. However, this increases in value if considered in the context of the whole site. The forms and fabrics, although narrow in range should be added to the overall series for the site as part of the detailed analysis proposed in the assessment of material recovered from the quarry between 1986 and 1996 (Jones 2000). The metalworking slag and waste have similar *potential* importance within the context of the site as a whole but are of limited potential on their own. The unidentified fabrics of possible earlier prehistoric date are of some *potential* significance should further more diagnostic material in comparable fabrics emerge, however, at present no further work is recommended.

The recovery of residual flint and possible earlier prehistoric pottery suggests that the area has *potential* for the survival of earlier prehistoric deposits sealed beneath the investigated horizons as have been observed in other areas of the quarry.

The *potential* for further analysis of the soil sequence is also high and should be incorporated in any longer term analysis or synthetic study of the main quarry area.

Documentation of the site is extensive with the evaluation area documented through this report supported by the reports from other areas of the quarry which have been the subject of archaeological investigation.

Lastly the *amenity value* of the site is considered to be high since the proposed restoration works will include recreational facilities and it is envisaged that considerable numbers of people will make use of these. There is thus the scope for presentation of the results of the archaeological work at the quarry through display panels and site reconstructions.

In conclusion, since important, complex and well preserved deposits have been identified through the evaluation and since deposits within the immediately adjacent area of the site have already been recognised by English Heritage as of 'demonstrable national significance' (Dr A Streeten, Inspector of Ancient Monuments, correspondence dated 26 August 1988), deposits within the evaluation area are considered to be of both regional and national significance.

7. Recommendations

The client has requested that recommendations are made to guide the design of the proposed recycling plant in such a manner that the preservation of significant archaeological deposits *in situ* is ensured.

In the light of the results of the evaluation the following conclusions can be drawn:

- The buried soil (context 2003; Soil Unit 5) and underlying deposits are considered to be of archaeological significance and can be equated with deposits already recognised as of national significance.

- A minimum of 600mm of deposits has been recorded overlying the buried soil with an average of an additional 200mm of the latter deposit overlying the Iron Age and Roman features below.

- In the area of trenching, only the upper 250-300mm of deposits have been affected by compaction/compression caused by previous heavy plant/vehicle movement across this area during the establishment of soil storage bunds. Significant archaeological deposits have not been effected by this compaction/compression and are unlikely to be except in any areas where deposits are close to the modern surface.

- It is likely that the observed compaction/compression occurred during relatively dry weather since plant and vehicle movement is usually restricted to such conditions. In addition such activity is likely to have occurred over relatively short periods of time. The impact of any movement across the area is likely to be greater in wet conditions or when it occurs over a long period of time.

- It is likely that significant archaeological deposits within the northern half of the proposed development area (the area to the north of Trench 2) will have been protected by the gravel capping previously established for this purpose. Although some compaction/compression of the overlying deposits may have resulted, this area has been in use for in excess of ten years and further compaction/compression is likely to be limited as a result of the proposed change in use.

- The potential for the local hydrology being altered should be considered since this would affect the preservation of waterlogged deposits.

As a result of these observations the following measures are recommended to ensure that damage to significant buried deposits is avoided:

- Works associated with construction of the environmental reprocessing area should only be undertaken during relatively dry weather.
- Groundworks affecting the proposed development area as a whole (eg levelling, soil stripping) should not exceed 300mm below existing groundsurface.
- Any localised disturbance such as may be required to establish drainage should not exceed 800mm below existing ground surface.
- The existing capping should be left intact as far as possible.
- A similar protective gravel capping should be laid across the remainder of the development area where plant and vehicle movement is limited.
- In areas beyond the existing gravel capping where heavy plant or vehicle movement is likely to occur, a concrete platform or other protective barrier, such as hardcore/gravel capping over terram (or similar), should be laid to provide additional protection of deposits and to reduce the potential for compaction through heavy or long periods of use.
- A strategy to monitor hydrological change should be considered.

The recommendations above are those of the Service and may vary from those of any archaeological curator or advisor to the planning authority.

8. Publication summary

The Service has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, the Service intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication.

An archaeological evaluation was carried out at Wellington Quarry, Marden, Herefordshire (centred on NGR SO 508 479) on behalf of Lafarge Redland Aggregates Limited. The evaluation confirmed the anticipated presence of Iron Age activity and significant Romano-British deposits sealed within a complex alluvial sequence.

Although only very limited areas were investigated, it was evident that a complex of well preserved ditches and other cut features (postholes and pits) were present. These included waterlogged remains and evidence of both ironworking and copperworking. This activity falls within an area previously identified as forming the core of an Iron Age and Romano-British settlement and lies only a short distance to the south-east of a Romano-British stone building. Amongst the finds assemblage, box flue tile and the base of an amphora provided further evidence of the relatively high status of the Roman settlement which was probably the centre of a villa estate. It is suggested that the deposits identified represent enclosed compounds associated with an area of industrial activity on the periphery of the main occupation area.

These features were associated with a surviving Iron Age and Romano-British ground surface which had continued to accumulate and be reworked through into the medieval period. Reworking meant that this soil sealed the Romano-British deposits. During the medieval period, ploughing had considerably modified this deposit leading to the formation of ridge

and furrow within an open field. Subsequently, renewed overbank flooding during the later medieval and post-medieval period had led to the deposition of alluvial deposits which sealed and preserved the earlier soil and ridge and furrow earthworks. Further phases of flood lain deposits, some of which had been modified by ploughing and others of which were undisturbed, overlaid these horizons. In the recent past the upper elements of these had been reworked to form the modern ploughsoil and had suffered compaction as a result of plant movement associated with quarrying activities.

9. The archive

The archive consists of:

6	Fieldwork progress records AS2
4	Photographic records AS3
1	Drawing number catalogue AS4
1	Context number catalogue AS5
3	Colour transparency film (62 slides)
3	Black and white photographic films (53 prints)
	Context finds sheets AS8
5	Sample records AS17
1	Sample number catalogue AS18
18	Abbreviated context records AS40
7	Scale drawings
1	Box of finds
1	Computer disk
1	report

The project archive is intended to be placed at:

Herefordshire Heritage Service
Herefordshire Museum and Art Gallery
Hereford
HR4 9AU
Tel Hartlebury (01299) 250416

10. Acknowledgements

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11. Personnel

Project design, fieldwork supervision and report preparation was undertaken by Robin Jackson with the assistance on-site of Darren Miller and Paul Williams. Trench location and site survey was undertaken by Simon Griffin. Finds analysis was undertaken by Laura Jones

with the exception of the Iron Age pottery which was analysed by Derek Hurst. Environmental analysis was undertaken by Elizabeth Pearson and illustration by Carolyn Hunt. David Jordan undertook soil analysis and reporting.

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13. Abbreviations

HSM	Numbers prefixed with 'HSM' are the primary reference numbers used by the Herefordshire County Sites and Monuments Record.
NMR	National Monuments Record.
SMR	Sites and Monuments Record.

Table 1 Trench descriptions

Maximum dimensions:

Trench 1	Aligned east to west	Length: 39m	Width: 2.4m
Trench 2	Aligned north to south	Length: 34.5m	Width: 2.4m

Main deposit description

Context	Classification	Description	Max. depth/Minimum depth below ground surface (b.g.s)
2000	Arbitrary	Machine cut and unstratified finds collected during machining and from spoil heaps	N/A
2001	Topsoil/subsoil	Light brown, silty clay loam topsoil/subsoil horizon topped with turfline. Affected by machine compaction. Same as Soil Unit 1	0.15-0.25m
2002a	Alluvium/layer	Upper part of reddish brown, silty clay loam alluvial deposit. Friable and blocky structure with evidence of compaction. Probably deposited over a long period of time and subject to transformation by later activity. Same as Soil Unit 2	0.15-0.30m/0.15m
2002b	Alluvium	Lower part of deposit described above. Comprised a thin band of laminar material (representing undisturbed alluvial horizon) equivalent to Soil Unit 3. Overlay a deep deposit of fine compact material (Soil Unit 4) infilling over the ridge and furrow earthworks. Sealed 2003	0.20-0.30m/0.35m
2003	Soil	Grey brown, charcoal flecked, silty clay loam extending across site. Seals Roman features and earlier alluvium. Included Roman finds. Interpreted as continuation of soil horizon of Iron Age or Roman origin. Medieval ridge and furrow modification of the upper part of this allied to soil analysis of its structure indicates that this was a long lived soil which continued to accumulate and develop over a long period of time. Same as Soil Unit 5	0.10-0.25m/0-60m
2004	Alluvium	Yellow brown, silty clay alluvial deposit. Orange mottled. Surviving to variable depths and cut by Iron Age and Roman activity. Overlaid by 2003. Overlies possible turfline. Same as Soil Unit 6	0.25-0.65m/0.75m

Features/Other deposits

2005	Fill (of 2006)	Greyish-yellow brown, silty clay loam fill of pit or posthole. Moderately charcoal flecked with occasional small sandstone fragments and pebbles	o.52m/not recorded
2006	Cut (filled by 2005)	Apparently sub-circular cut feature. Large posthole or small pit 0.80m + in diameter. Only south side observed in a slot excavated through 2003	0.52m/not recorded
2007	Fill (of 2009)	Fill within base of amphora set into a small pit 2008/2009. Mid grey brown silty clay loam with charcoal fleck and some burnt pebble. Included many sherds broken from the sides of the amphora, mostly laying down the sides and across the base of the intact portion of the vessel which had been disturbed by medieval ploughing. Intact vessel base measured 0.50m in diameter	0.17m/0.76m

2008	Fill (of 2009)	Thin skim of mid grey brown, silty clay loam below the amphora in the base and up the sides of pit 2009	0.01m/0.76m
2009	Pit	Circular pit revealed in Slot 5. Cut into 2004 containing amphora base which fitted it more or less precisely. On edge of enclosure ditch 2020, the fill of which (2019) it had clipped but which basically it respected. Evidently cut for insertion of the vessel into the ground. Possible interpretations include animal feeder, industrial function or possibly ritual association (?offerings)	0.18m/0.76m
2010	Arbitrary layer	Spit of material comprising base of 2002 and remnants of 2003. Removed in Slot 5 to reveal pit 2009 and enclosure ditch 2020	0.10m max/0.66m
2011	Fill (of 2012)	Greyish brown, charcoal flecked, silty clay loam fill in upper part of ditch 2012 and overlying silting fill 2013. Probably represents deliberate infilling. Patches of reddish clay may indicate slumped/slighted bank from N of ditch	0.67m/0.74m
2012	Cut	V-shaped ditch cut revealed in Slot 1. Having steep sloping sides and a cleaning slot to base. On an ENE to WSW alignment. Lower fill 2013. Upper fill 20111. Enclosure ditch/drainage feature	0.72m/0.74m
2013	Fill (of 2012)	Fine greyish yellow, silt fill at base of ditch 2012	0.05m/1.40m
2014	Alluvium	Same as 2002b. Recorded in Slot 7 within furrow(s) 2016. Apparently originating as an alluvial accumulation but subsequently subject to ploughing (see D Jordan)	0.40m/0.35m
2015	Ploughsoil/layer	Same as 2003. Number allocated to this deposit within area of ridge and furrow 2016 within Slot 7	0.11m/0.58
2016	Cut	Ridge and furrow revealed in Slot 7 at northern end of Trench 2. Filled/overlain by 2014 and truncating 2015	N/A/0.58m
2017	'Fill' (of 2018)	Originally felt to be an earlier fill within an earlier cut of ditch 2012 but revealed as weathered layer equivalent to 2004	N/A
2018	'Cut'	Originally felt to be an earlier cut of ditch 2012 but revealed to result from weathering of sides of 2012	N/A
2019	Fill (of 2020)	Mid grey brown silty loam fill. Only observed in plan but having rare charcoal flecking, occasional gravel, pottery and patchy yellow brown clay clods towards its southern limit. Cut by 2009	N/A/0.76m
2020	Cut	Corner of N-S/E-W aligned enclosure/drainage ditch revealed in plan in Slot 5. Only upper fill 2019 was observed, however, clay clod inclusions to S side suggested presence of an external bank which had slumped or been slighted into the ditch	N/A/0.76m
2021	Fill (of 2022)	Yellowish grey silty loam fill of ditch 2022. Charcoal flecked bands and lenses indicated several episodes of infilling at disuse. Includes a primary silting deposit to base Only observed in section in box trench at north end of Trench 2	0.70m/0.75m

2022	Cut	N-E to S-W aligned enclosure/drainage ditch observed in sections of box trench at north end of Trench 2. May represent the return of one of the ditches recorded in the Trench 1	0.70m/0.80m
2023	Fill (of 2034)	Upper fill of ditch 2034. Firm yellowish grey silty clay loam with some reddish brown mottling. Slight stone and charcoal flecking. Became wetter and clayier towards the centre of the feature but no real difference in fill. Overlaid waterlogged fill 2033. Probably represents a secondary fill representing disuse and backfilling of ditch	0.70m/0.80m
2024	Layer/ploughsoil	Soil layer within Slot 3. Same as 2003	0.12m/0.75m
2025	Fill (of 2026)	Mid greyish brown clay silt fill. Partially observed in plan in top of ditch 2026. Contained abundant fired clay fragments and rare small to medium sized stones. Probably a secondary fill representing disuse and infilling. Below later fill 2027	N/A/0.82m
2026	Cut	N-W to S-E aligned, apparently substantial enclosure/drainage ditch. Partially observed in plan in Slot 3. Having two fills at least, 2025 overlying 2027	N/A/0.82m
2027	Fill (of 2026)	Mid brown grey silty clay fill. Partially observed in plan in top of ditch 2026. Contained rare small stones. Overlaid earlier fill 2025	N/A/0.82m
2028	Arbitrary cut	Arbitrary cut which was revealed to represent the interface between two fills within 2026	N/A
2029	Fill (of 2030)	Firm mid brown grey clay silt fill of enclosure ditch 2030. Only partially excavated but probably a secondary or tertiary fill representing infilling and disuse	0.10m+/0.78m
2030	Cut	N-W to S-E aligned enclosure/drainage ditch recorded within Slot 4. Only partially excavated	0.10m+/0.78m
2031	Fill (of 2032)	Yellow brown silty clay intermixed with mid brownish grey clay silt within shallow gully 2032	0.14m/0.80m
2032	Cut	E-W aligned gully or slot recorded in Slot 4. Having a flat base and single fill 2031. May be associated with a structure - ?cill beam slot or eavesdrip/drainage feature	0.14m/0.80m
2033	Fill (of 2034)	Dark grey silty clay fill of ditch 2034. Charcoal flecked with decayed stone fragments. Below upper fill 2023. Organic and apparently waterlogged. Only partially excavated to retrieve environmental sample	0/70m/0.80m
2034	Cut	N-W to S-E aligned enclosure/drainage ditch recorded within Slot 2. Only partially excavated but apparently substantial	0.70m/0.80m

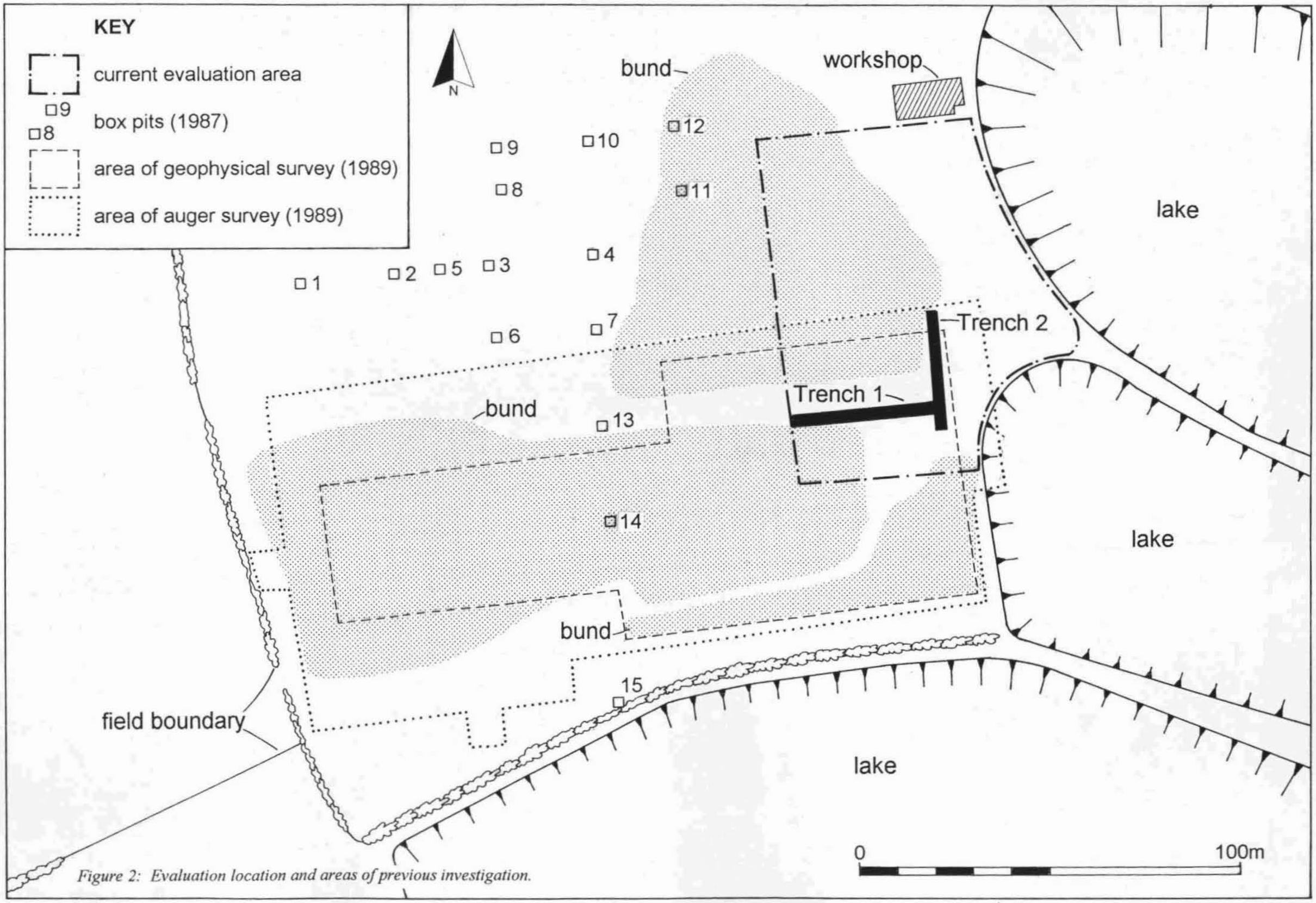


Figure 2: Evaluation location and areas of previous investigation.

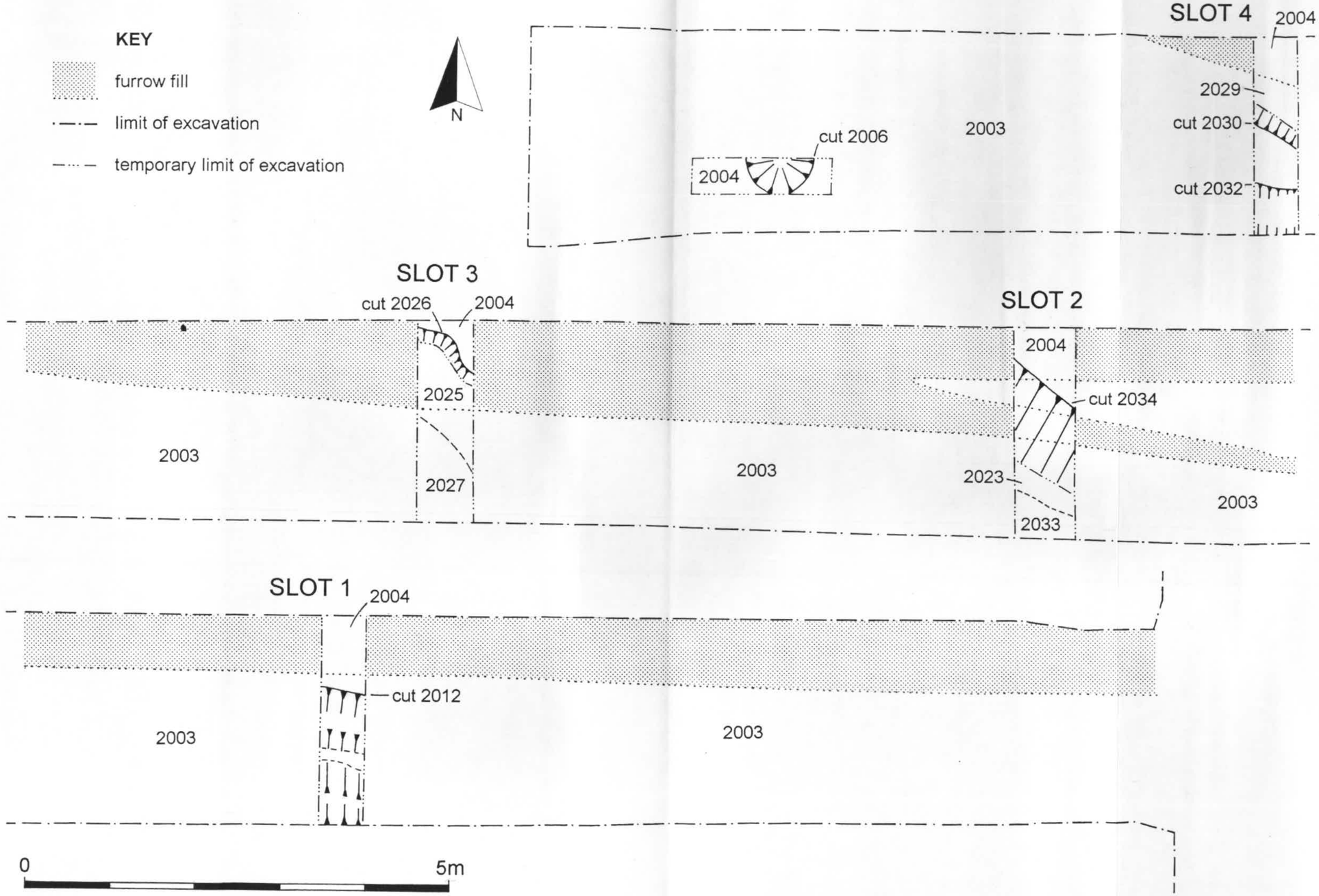


Figure 3: Plan of Trench 1.

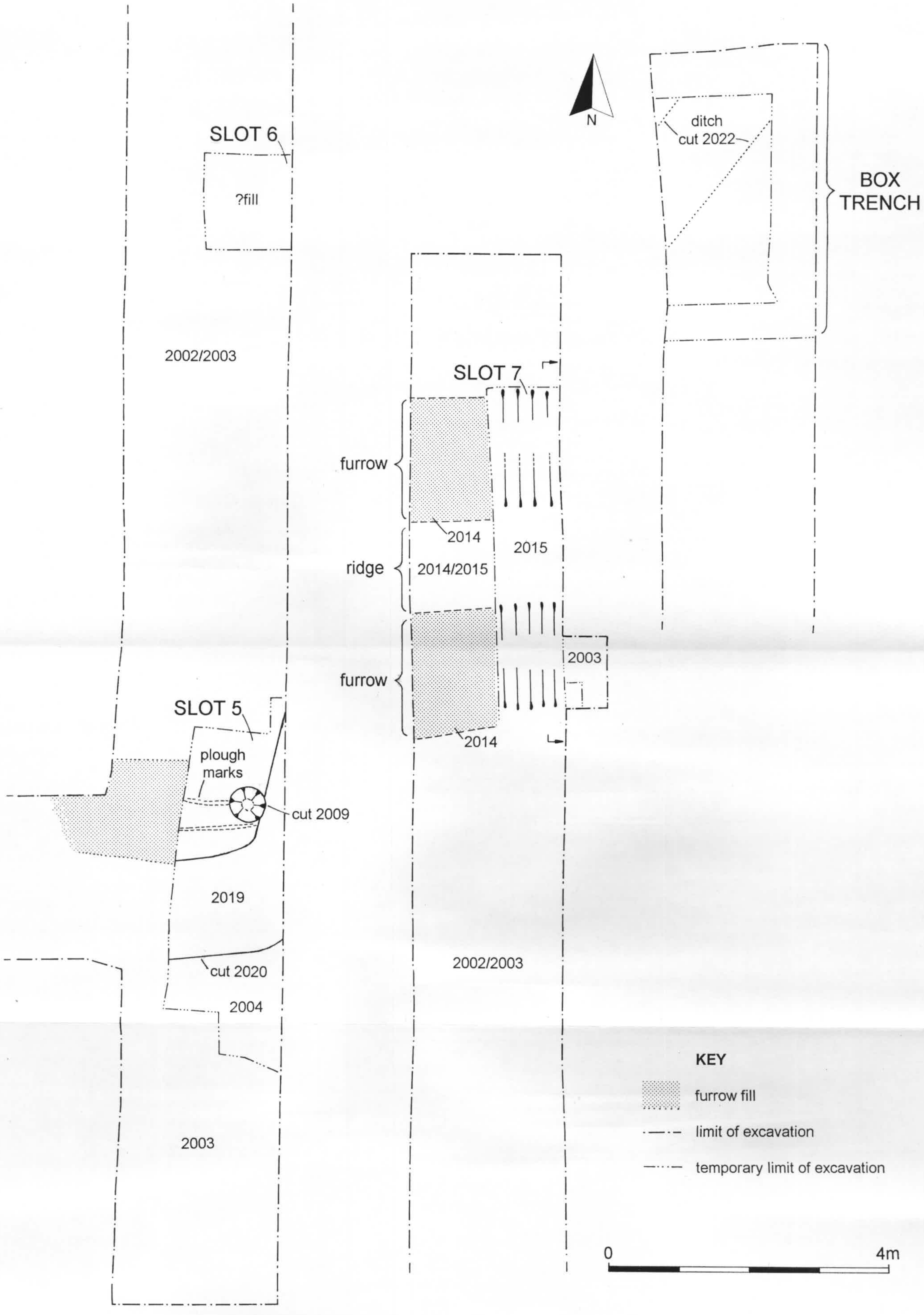
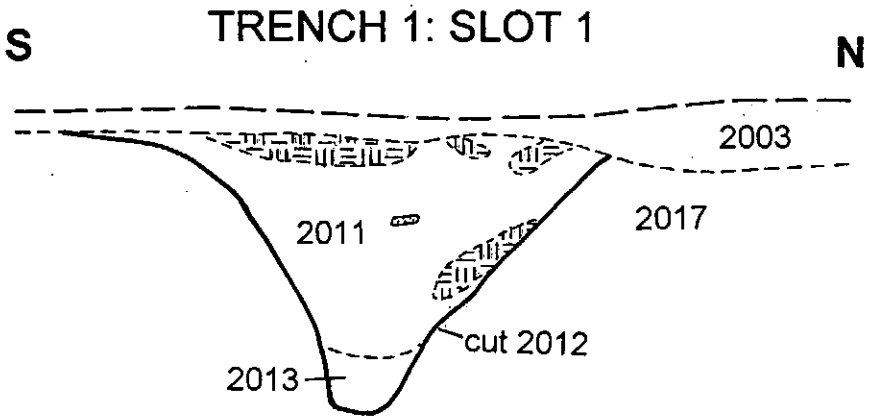


Figure 4: Plan of Trench 2.



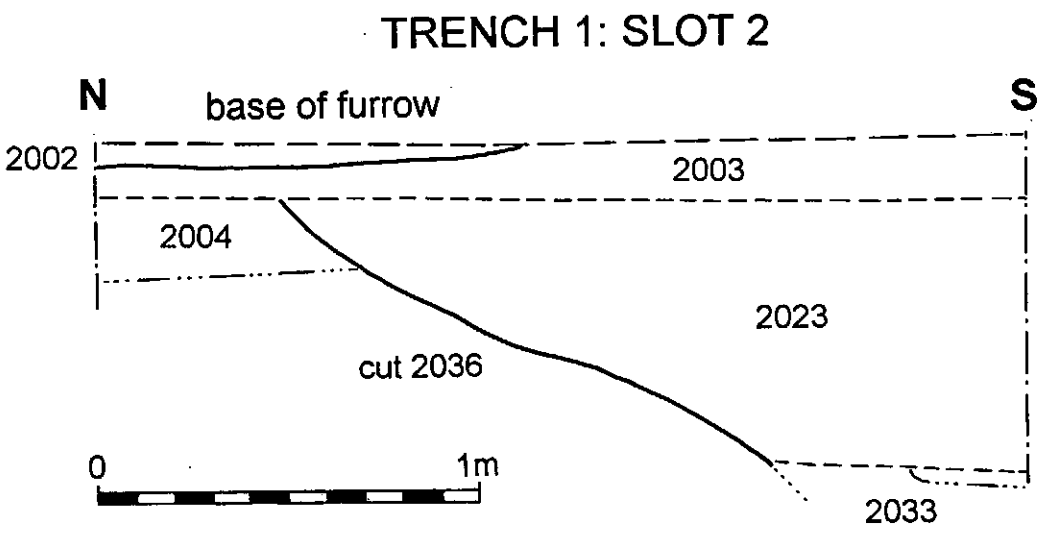
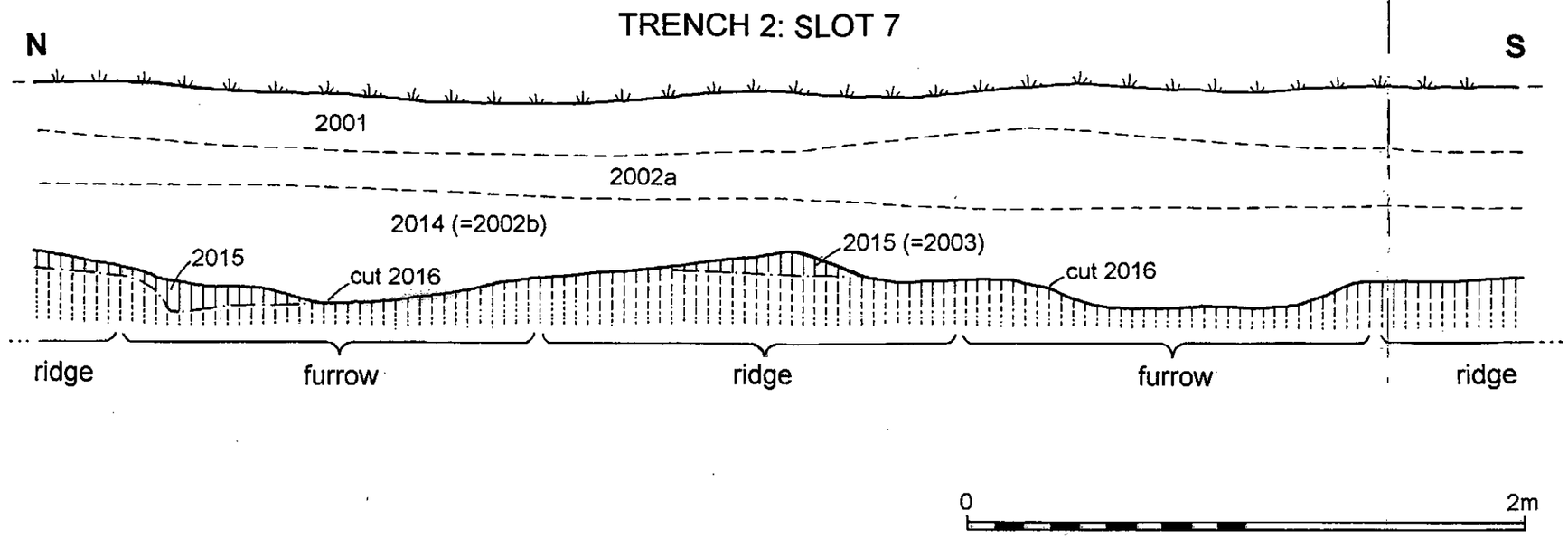


Figure 5: Trench 1: sections.



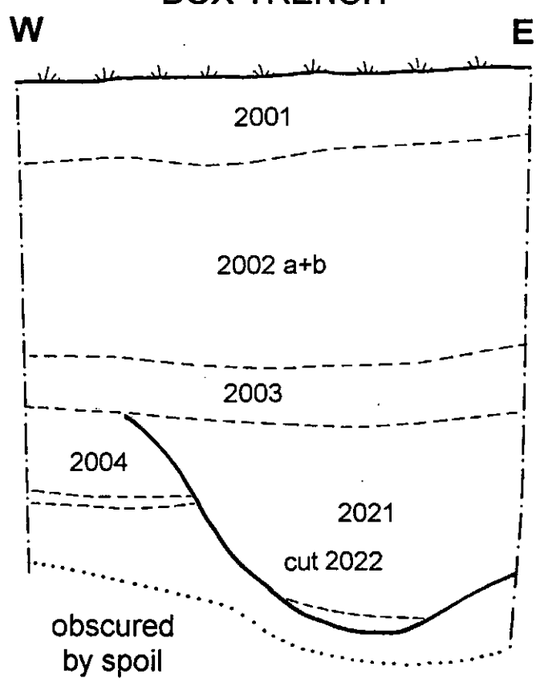


Figure 6: Trench 2: sections.

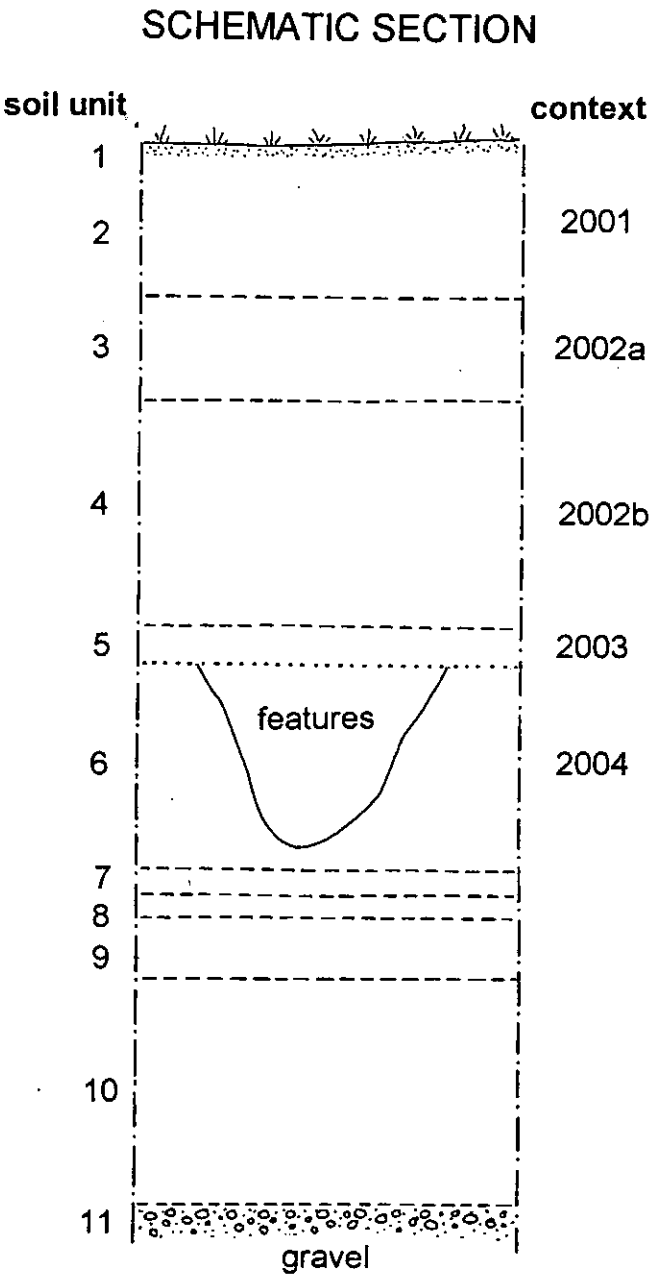


Figure 7: Schematic section.

Figure 8: Iron Age pottery sherd.

Figure 9: Amphora within pit

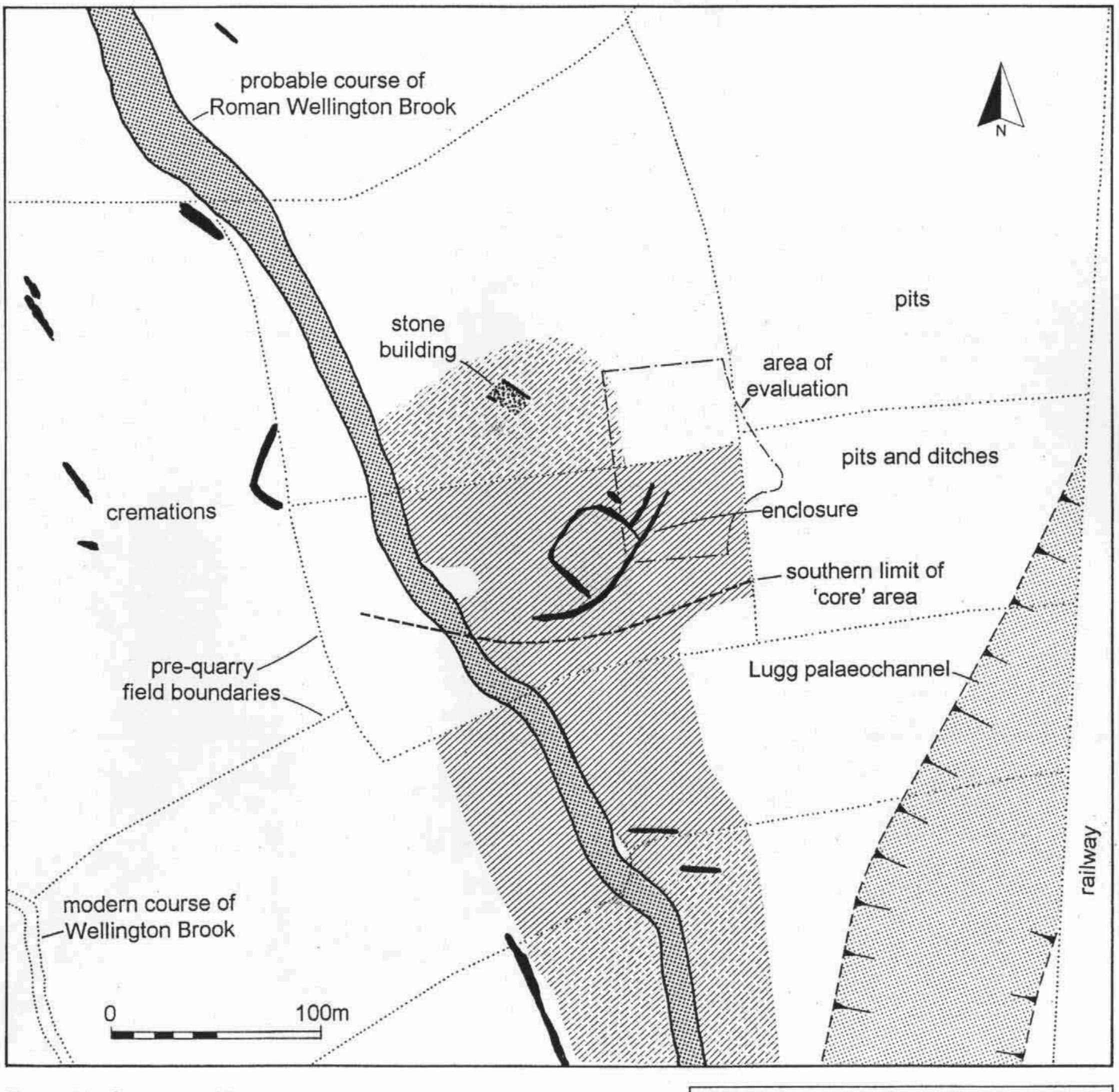


Figure 10: Summary of Romano-British settlement at Wellington.

Appendix 1

TERRA NOVA

Wellington Quarry, Hereford, Roman Villa Site, The Soils

17 July 2000

Summary

Soils, archaeological strata and alluvial deposits were examined in section and plan during excavation near to the site of a Roman Villa at Wellington Quarry, Herefordshire. This interesting and important assemblage contains well-preserved evidence for the sequence of alluvial deposition and human activity from the late glacial through to the post-Medieval period. It includes the mineralised remains of former organic surface soil horizons and evidence of past soil-forming processes as well as unusual soil structures probably created by Medieval ploughing. There is evidence for alluvial episodes represented by fine flood laminae which survive surprisingly close to the modern surface. These may constitute evidence for previously unrecognised post-Medieval alluviation. The threat to archaeological strata posed by compaction due to quarry plant traffic is also considered.

Terra Nova

Llwynfedwen, Libanus, Brecon, LD3 8NN, Great Britain
Tel/fax 01874 636345 Mobile 0797 11 66 380

Aims

This brief study was undertaken to evaluate the alluvial deposits, soils and archaeological strata revealed in excavations near to the site of a Roman Villa at Wellington Quarry, Herefordshire. The project aimed to broadly identify the origins of the units revealed during excavation and relate them to those found elsewhere in the quarry. It also aimed to identify geoarchaeological threats which might affect the units and assess what steps might be taken in mitigation if required.

Background

Wellington Quarry (OS grid reference SO 507 480) lies in the middle-lower reaches of the Lugg valley at a height of 55m above Ordnance Datum. The valley floor is filled with Devensian fluvioglacial gravel overlain by a depth of between about 1.5 and 3 metres of fine-grained Holocene alluvium. This excavation took place on shallower alluvium overlying a slight rise in the gravel and near to the site of a Roman villa.

The alluvium, and archaeological remains within it, has been studied since 1985 as quarrying has advanced. The villa and its surroundings have been protected and are now being reassessed in advance of the introduction of new plant.

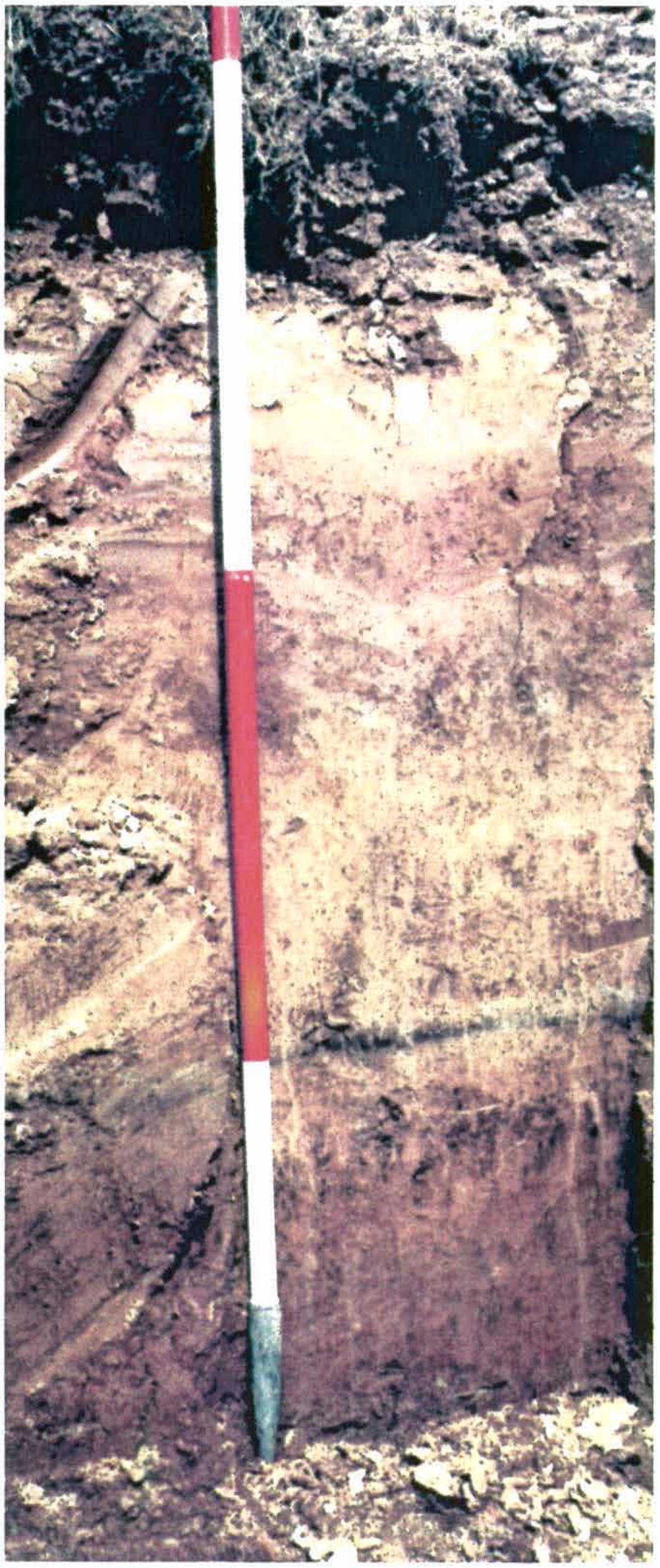
The study

The site was visited on 6 July 2000 and observations were made from cleaned sections and plan excavations. Two Kubiena tins were taken of intact soil for thin-section preparation and analysis. Two large, overlapping monoliths, covering a total depth of 1.66m below the surface, were taken in plastic boxing from a representative section.

The monoliths were cleaned, examined and sub-sampled in the laboratory. Measurements were made of low-frequency magnetic susceptibility and calcium carbonate content and the strata described according to standard criteria (Hodgeson, 1976).

The deposits

The Holocene Lugg valley deposits at Wellington Quarry are almost all clay loams and typically display three units in section. The lowest 20%, overlying the fluvioglacial gravels, is mid red-brown. The middle 40% is mid grey-brown and the top 40% is also mid red-brown - though slightly browner and less red than the base. The red colours all show a purple tinge, the result of hematite which comes, indirectly, from the underlying Raglan mudstones.



Unit

1

2

3

4

5

6

7

8

9

10

11

The whole section

At this site the gravels (Unit 11) were moderately weathered and were overlain by about 30cm of mid red-brown clay loam, increasingly sandy towards the base and with abundant iron/manganese mottles and concretions towards the top (Unit 10). Over this was 8cm of slightly greyer, and very slightly coarser clay loam (Unit 9) showing the remains of root pores and former fissures, now filled with grey and grey-brown silty clay. These fissures seemed to have descended from two 3cm thick closely spaced strata - a dark, iron/manganese oxyhydroxide-rich silty clay (Unit 8) with a mid blue-grey clay above (Unit 7). Both of these show fine internal lamination.

Detail of the lower part of the section

These are overlain by 27cm of mid grey brown silty clay loam with abundant iron/manganese oxyhydroxide mottles, clay-filled fissures and former worm and root pores throughout (Unit 6).

This grades over 5cm into a darker grey-brown clay loam (Unit 5), containing Roman pottery, the top of which undulates where it has been re-formed as medieval rig-and-furrow. The furrows are filled with up to 30cm of mid red-brown clay loam (Unit 4) which shows inclined former blocky peds, separated by irregular fissures filled with slightly coarser, mid grey-brown silty clay loam.

Overlying this was 15 to 20cm of mid red-brown clay loam (Unit 3) showing very well-preserved fine, silty laminae. These were slightly disrupted by former fissures and pores - now filled with mid red-brown clay loam - descending from the modern ground surface or only a few centimetres below.

Above were 20cm of blocky - sometimes platy (horizontally compacted), mid red-brown clay loam (Unit 2) and root-mat (Unit 1) representing modern cultivation and plant growth.

Low-frequency magnetic susceptibility and Carbonate content are both low but rise slightly at the base and top of the profile. It is notable that neither varies much with the obvious stratigraphy and even the soil texture is less variable than immediate appearances suggest.

This complex sequence of deposits and soils represents a valuable record of the environment and land-use at the site through the Holocene. The sequence is unusually informative and the furrow fills and overlying laminae are of particular interest.

Unit 11 is undisturbed Devensian fluvioglacial gravel. It is largely derived from the local Devonian formation but includes a proportion of rocks from the north and west, most of which are harder and have probably been rounded by earlier episodes of erosion and deposition. The Devonian rocks are highly weathered but remain intact and still contain their soluble weathering products - a sign that they have not been subject to strong downward drainage or lain above the water table for much of the time since deposition.

The lowest sands of Unit 10 appear to represent alluvial deposition in moderate or slow-flowing water - though subsequent soil-formation has destroyed any fine depositional detail - and this whole unit may have been deposited in the slowing backwaters of the early Flandrian valley. The red colour here may be due to the original Devonian hematite preserved as fine grain coatings and colloidal hematite particles within the clay fraction.

Unit 9 is similar and may represent the upper part of the same deposit after substantial weathering. The lack of red, colloidal hematite and the slightly coarser texture suggest that fine clay has been washed downward to accumulate in Unit 10 - a process which implies that soil formation was occurring from a surface not far above.

Unit 8, though apparently mostly mineral, appears dark in colour because of the mixture of sesquioxides with a small amount of amorphous organic matter. The relatively abrupt boundary with Unit 9 and the slight evidence of stratification suggest that this and the lighter clay of Unit 7 are essentially strata rather than soils. However, many of the cracks running down though Unit 9 appear to begin at Unit 8 which implies that there was a stable, drying surface here for a sufficient period for the cracks to form and soil formation to begin. Thus the sequence of Units 8, 9 and 10 may represent soil formation from the first truly stable dry surface, which probably places it in the Boreal (earlier Mesolithic) stage.

Unit 7, although broken-up by later cracking from higher ground surfaces, contains fine alluvial laminae. This suggests that it was laid down from overbank flooding. Its colour indicates that it was deposited in anaerobic conditions and has remained substantially reduced by long-term waterlogging since deposition. The survival of the laminae indicates that deposition continued above.

Unit 6 is slightly coarser, lacks flood laminae and may therefore be a channel migration deposit, although there is no direct evidence for this. The slight accumulation of clay above Unit 7 suggests that some fine matter has descended by downward elluviation but this, and other evidence of post-depositional alteration, is probably not sufficient to explain the coarser texture of the substantially deeper Unit 6. It is thus more likely that the lighter colour and coarser texture are due to the parent material originally deposited and the process of deposition itself. Slight variations in mottling and crack patterns suggest that there may have been periods of slower deposition but the process appears to have remained substantially the same throughout.

Unit 5 is substantially more organic and grades into Unit 6, with festoons of downward infiltration which suggest that it may have been a surface soil over a prolonged period. Substantial cracks, reaching down through the deposits beneath, also suggest a long period of stability.

The Unit contains Roman pottery but, although it probably includes the Roman ground surface, almost certainly continued to accumulate and develop until it was remodelled into rig-and-furrow by medieval ploughing. It would clearly be wrong, in such a case, to refer to the Unit as belonging to a particular period since it subsumes a number of episodes of soil development - although most have been reincorporated into the later soil by cultivation and pedogenesis. From its field appearance Unit 5 was almost certainly cultivated, although a rig section was not recovered for analysis and this cannot now be confirmed micromorphologically. It probably, however, represent a long phase of surface stability, without substantial alluviation, which allowed the Roman villa to be constructed and which continued into the Medieval period.

The top of a rig (left) and the base of a furrow (right) with post-medieval alluvia in section

Unit 4 is much less organic and may represent the renewal of overbank flooding in the late- or post-medieval period. The slightly redder sediment is due to hematite, which does not form as a weathering product under British conditions and thus must be derived from the parent material, representing a change in alluvium source upstream.

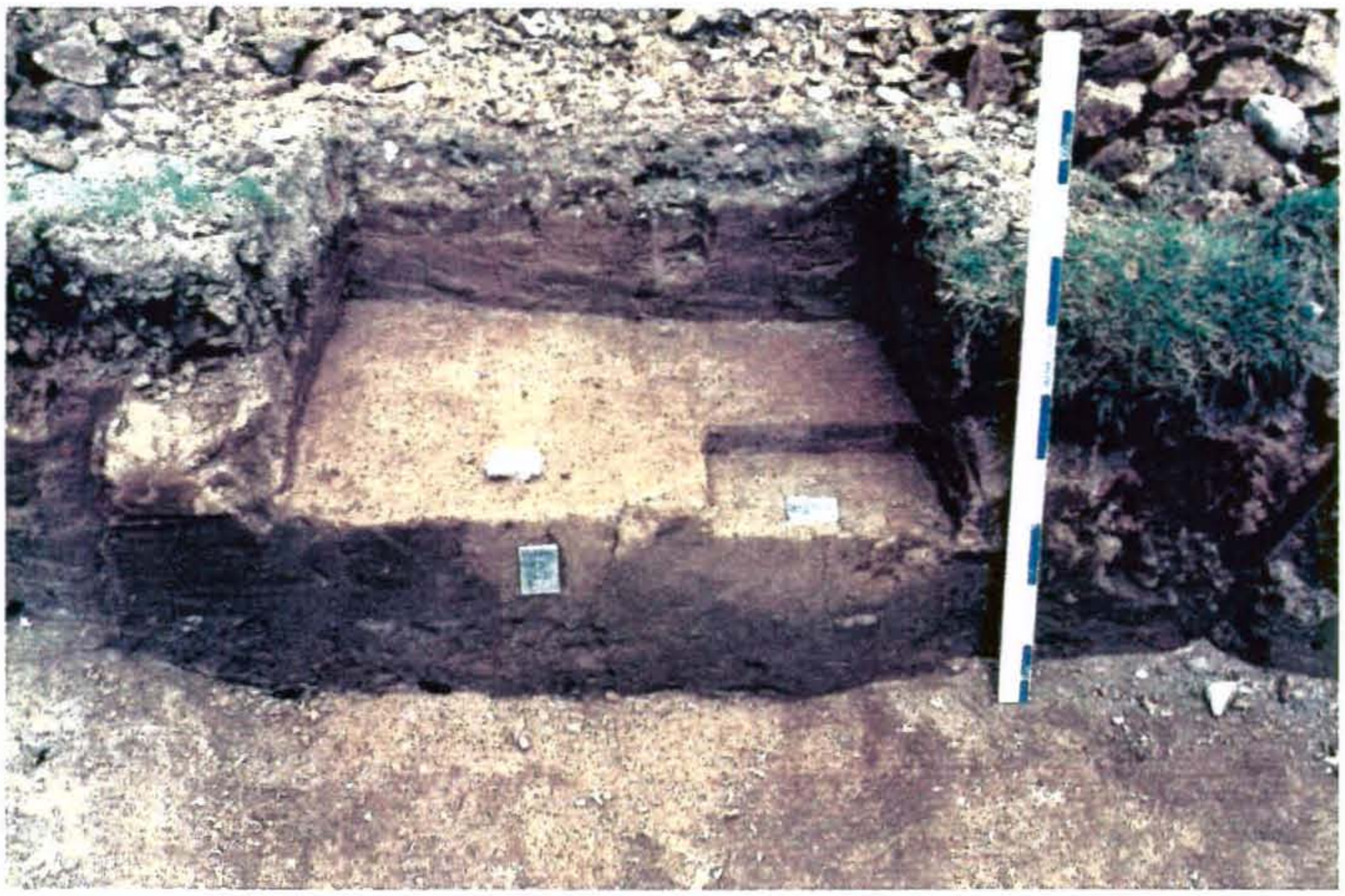
The unit appears to contain substantial, relic, oriented peds separated by elluviated, coarser silty matter - a structure which may be the result of ploughing.

Unit 3 is, like Unit 4, the result of overbank flooding for which evidence survives as a series of very fine flood laminae. Their survival suggests that alluviation continued rapidly above which suggests that this alluvial phase must have finished close to the current ground surface.

Units 2 and 1 may therefore derive from the same late- or post-medieval alluvial phase as Unit 3 but lack laminae only because of later soil formation. Unit 2 was found to have a well-developed horizontal, platy structure over large areas. This usually results from considerable compaction, especially when the soil was wet, and may be the result of heavy trucks, full of soil running across the area when the nearby topsoil bunds were being constructed. The compaction does not reach the level of the medieval archaeological features, which retain a blocky structure throughout. Some care may, however, be required to reducing the impact of heavy traffic where archaeological features approach the modern surface. An appropriate load-bearing capping and the avoidance of working under wet conditions - when the soil is much more susceptible to compaction - might be considered.

For this reason the site might best be protected from damage due to new plant development if it is covered with a load-bearing concrete platform although there is a danger that this might alter the local hydrology, and caused renewed waterlogging and weathering high in the profile. A strategy to monitor such hydrological change is recommended, whatever solution is adopted.

The poor state of pottery recovered from these soils has been noted elsewhere and was observed on this site. This is clearly of wider interest if the effect has significantly reduced ceramic distributions over wide areas, thus mimicking a lower concentration of human activity than was, in fact, the case. No firm conclusions could be reached on site but it was observed that pot fragments had become finely exfoliated and were weathering in thin layers as a result. A closer study, including thin section microscopy - to observe structure and mineralogical changes - and EDXRA electron microscopy - to observe variations in chemical composition - may enable conclusions to be reached on the process involved.



Kubiena tin samples being taken from Unit 4 for micromorphological study

Conclusions

This is a most interesting and, potentially an important sequence of deposits which, though here exposed over only a small area, has the potential to add a great deal to our understanding of the valley and its archaeology. Any future excavations should take this potential fully into account and a fuller study of the deposits is recommended.

There is potential, moreover, to provide an approximate sequence of dating and these initial comments suggest that the currently accepted scheme may need to be revised. A period of stability from the pre-Roman Iron Age to the later medieval period and a subsequent phase of substantial alluviation are unexpected and are unlikely to be solely the effect of the local topography. Further work on other sections would be required to clarify the matter.

A further study of the existing samples, including a micromorphological study of the strata from new thin sections, is recommended. It will be essential to accompany this with a full reconsideration of other evidence from the original studies around the site, including a comparison with the thin sections made by Dr Roseff as part of her important contribution to local research.

Hodgson, J.M., 1976 "Soil survey field handbook", Soil Survey Technical Monograph No 5, Soil Survey, Harpenden

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	5-25cm depth Unit 2
Soil Munsell colour	7.5YR 4/4
Texture	Clay loam
Moisture	Moist
Mottles	None
Mottle abundance	-
Mottle size	-
Mottle colour	-
Roots	Yes
Root type	Fibrous
Root abundance	Common
Root size	Fine
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	11 SI
Organic matter - humose	Slight
Peds	Yes
Ped size	Medium
Ped shape	Angular blocky
Ped grade	Strong
Voids	Yes
Fissures	Yes
Fissure size	Medium
Macropores	No
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes
Packing density	Medium
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented (slight sesquioxide cementation?)
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	Clay
Coated grains	No
Coated peds	Few - clay
Uncoated grains	No
Elluviation	Slight
Illuviation	Slight
Fragig	No
Concretions - Fe, Fe/Mn	No
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	25-40cm depth Unit 3
Soil Munsell colour	7.5 YR 5/4
Texture	Clay loam
Moisture	Moist
Mottles	None
Mottle abundance	-
Mottle size	-
Mottle colour	-
Roots	Yes
Root type	Fibrous
Root abundance	Few
Root size	Fine
Stones (+ stone relics)	No
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	10 SI
Organic matter - humose	No
Peds	Yes
Ped size	Medium
Ped shape	Angular-blocky to prismatic
Ped grade	Moderate
Voids	Yes
Fissures	Yes
Fissure size	Very fine
Macropores	No
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes
Packing density	High
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented (slight sesquioxide cementation?)
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	Clay
Coated grains	Sesquioxide
Coated peds	Clay
Uncoated grains	None
Elluviation	Slight
Illuviation	Clay
Fragig	No
Concretions - Fe, Fe/Mn	None
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	40-65cm depth Unit 4
Soil Munsell colour	5YR 5/3
Texture	Clay loam
Moisture	Moist
Mottles	Yes
Mottle abundance	<5%
Mottle size	2-5mm
Mottle colour	5YR 3/1
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	9 SI
Organic matter - humose	No
Peds	Yes
Ped size	Medium
Ped shape	Prismatic
Ped grade	Weak
Voids	Yes
Fissures	Yes
Fissure size	Very fine
Macropores	No
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes - mostly filled
Packing density	High
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented (slight sesquioxide cementation?)
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	Clay
Coated grains	Sesquioxide
Coated peds	Clay
Uncoated grains	No
Elluviation	No
Illuviation	Clay
Fragig	No
Concretions - Fe, Fe/Mn	Fe/Mn
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	65-70cm depth Unit 5
Soil Munsell colour	7.5YR 5/4
Texture	Clay loam
Moisture	Moist
Mottles	None
Mottle abundance	-
Mottle size	-
Mottle colour	-
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	7 SI
Organic matter - humose	No
Peds	Yes
Ped size	Medium
Ped shape	Prismatic and slightly horizontal platy
Ped grade	Weak
Voids	Yes
Fissures	Yes
Fissure size	Very fine
Macropores	None
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes - relic
Packing density	High
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	Clay
Coated grains	-
Coated peds	Clay
Uncoated grains	-
Elluviation	None
Illuviation	Clay
Fragig	No
Concretions - Fe, Fe/Mn	None
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	70-97cm depth Unit 6
Soil Munsell colour	10YR 5/3
Texture	Clay loam
Moisture	Moist
Mottles	Yes
Mottle abundance	5%
Mottle size	2-5mm
Mottle colour	7.5YR 3/2
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	8 SI
Organic matter - humose	No
Peds	None
Ped size	-
Ped shape	-
Ped grade	-
Voids	None
Fissures	-
Fissure size	-
Macropores	-
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes - relic
Packing density	High
Soil strength	Moderately strong
Failure type	Semi-deformable
Cementation	Uncemented
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	Clay
Coated grains	-
Coated peds	Clay
Uncoated grains	-
Elluviation	Yes
Illuviation	Slight
Fragig	No
Concretions - Fe, Fe/Mn	Fe/Mn
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	97-100cm depth Unit 7
Soil Munsell colour	10YR 5/3
Texture	Clay loam
Moisture	Moist
Mottles	None
Mottle abundance	-
Mottle size	-
Mottle colour	-
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	8 SI
Organic matter - humose	No
Peds	None
Ped size	-
Ped shape	-
Ped grade	-
Voids	None
Fissures	Relic
Fissure size	Medium
Macropores	-
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes - relic
Packing density	High
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	None
Coated grains	-
Coated peds	-
Uncoated grains	-
Elluviation	Yes
Illuviation	Slight
Fragig	No
Concretions - Fe, Fe/Mn	None
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	100-103cm depth Unit 8
Soil Munsell colour	10YR 4/2
Texture	Clay loam
Moisture	Moist
Mottles	None
Mottle abundance	-
Mottle size	-
Mottle colour	-
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	8
Organic matter - humose	No
Peds	None
Ped size	-
Ped shape	-
Ped grade	-
Voids	None
Fissures	Relic
Fissure size	Medium
Macropores	-
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes - relic
Packing density	High
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	None
Coated grains	-
Coated peds	-
Uncoated grains	-
Elluviation	None
Illuviation	None
Fragig	No
Concretions - Fe, Fe/Mn	Fe/Mn - abundant
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	103-111cm depth Unit 9
Soil Munsell colour	7.5YR 5/4
Texture	Clay loam
Moisture	Moist
Mottles	Yes
Mottle abundance	<5%
Mottle size	2-5mm
Mottle colour	7.5YR 4/2
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	8 SI
Organic matter - humose	No
Peds	None
Ped size	-
Ped shape	-
Ped grade	-
Voids	None
Fissures	Relic
Fissure size	Medium
Macropores	None
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Yes - relic
Packing density	High
Soil strength	Moderately strong
Failure type	Semi-deformable
Cementation	Uncemented
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	None
Coated grains	-
Coated peds	-
Uncoated grains	-
Elluviation	None
Illuviation	Slight
Fragig	No
Concretions - Fe, Fe/Mn	Fe/Mn
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	111-140cm depth Unit 10
Soil Munsell colour	5YR 4/4
Texture	Clay loam
Moisture	Moist
Mottles	Yes
Mottle abundance	10%
Mottle size	2-10mm
Mottle colour	7.5YR 4/2
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	None
Stone size	-
Stone shape	-
Stone abundance	-
Stone lithology	-
Magnetic susceptibility	7
Organic matter - humose	No
Peds	None
Ped size	-
Ped shape	-
Ped grade	-
Voids	None
Fissures	-
Fissure size	-
Macropores	-
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	Few - relic
Packing density	High
Soil strength	Very firm
Failure type	Semi-deformable
Cementation	Uncemented
Stickiness	Moderately sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	None
Coated grains	-
Coated peds	-
Uncoated grains	-
Elluviation	None
Illuviation	None
Fragig	No
Concretions - Fe, Fe/Mn	Fe/Mn
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-

Soil sample, horizon or context description form

Site name *Wellington Quarry* **Site code** WQ00/RV **Sample location** *Monolith 1*

Sample or context no.	140+cm depth Unit 11
Soil Munsell colour	5YR 4/3
Texture	Sandy clay loam
Moisture	Moist
Mottles	Yes
Mottle abundance	10%
Mottle size	2-10mm
Mottle colour	7.5YR 4/2
Roots	None
Root type	-
Root abundance	-
Root size	-
Stones (+ stone relics)	Yes
Stone size	2-50mm
Stone shape	Sub-rounded to sub-angular
Stone abundance	Common to abundant (stratified)
Stone lithology	Mixed - fluvioglacial sources, mostly local Devonian
Magnetic susceptibility	6 SI
Organic matter - humose	No
Peds	None
Ped size	-
Ped shape	-
Ped grade	-
Voids	None
Fissures	-
Fissure size	-
Macropores	-
Pore size	-
Pore % volume	-
Burrows	No
Worm holes	None
Packing density	Moderately high
Soil strength	Moderately firm
Failure type	Semi-deformable and brittle (depending on strata texture)
Cementation	Uncemented
Stickiness	Slightly sticky
Plasticity	Moderately plastic
Coats - clay, sand, org, Ca	None
Coated grains	-
Coated peds	-
Uncoated grains	-
Elluviation	None
Illuviation	None
Fragig	No (slightly fragic at depth?)
Concretions - Fe, Fe/Mn	Fe/Mn
Pan	No
Pan continuity	-
Artefacts - % volume	None in this sample
Ceramic fragments	-
Charcoal	-
Wood	-
Building stone	-
Other	-