An Archaeological Evaluation Report

Produced as part of the Environmental Impact Assessment of Pan Urban Extension, Newport, Isle of Wight

Prepared for Isle of Wight Council Property Services Dept

By Oxford Archaeology
March 2005

Client Name:	Isle of Wight County Council
Client Ref No:	
Document Title:	Pan Urban Extension Archaeological Evaluation Report
Document Type:	Evaluation
Issue Number:	1
National Grid Reference:	SZ 5090 8872
Planning Reference:	
OA Job Number:	2629
Site Code:	IWSMR5623
Invoice Code:	IOWPANEV
Receiving Museum:	
Museum Accession No:	
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Position:	WCA Heritage
Date:	1st April 2005
Document File Location	Server 1\Projects\Newport Pan Urban Extension\IOWPANEV_Report
Graphics File Location	XServer 1\Projects\Newport Pan Urban Extension\ IOWPANEV_Report\current\figures
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Pan Urban Extension
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ARCHAEOLOGICAL EVALUATION

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SUMMARY

In February 2005, Oxford Archaeology (OA) carried out an archaeological field evaluation at land to the east of St Georges Way, Pan, Newport, Isle of Wight on behalf of Isle of Wight County Council. The results, and recommendations for further work, are summarised below.

Pleistocene/ Palaeolithic preliminary test pit evaluation:
The Pleistocene is a geological epoch, often loosely referred to as "The Ice Age". It covers most of the last 2,000,000 years and in fact includes numerous alternating periods of warm and cold climate. The second half of the Pleistocene is associated with the colonisation of Britain and Europe by early humans - at first Neanderthals and later, modern humans. This period is known by archaeologists as the 'Palaeolithic', meaning "old stone age". Flint tools are the only type of artefact that survive in significant numbers from this period, and it is very rare to find them in contexts undisturbed by later erosion.

In spite of these difficulties, it is possible to try and reconstruct the chronology of early human colonisation of the British Isles by understanding the geological context in which flint tools are found, and by comparing the range of plant and animal species found as fossils in deposits of different age. Dating of suitable Pleistocene geological deposits can be carried out directly using a scientific technique called Optically Stimulated Luminescence (OSL). By studying undisturbed flint tool sites in detail, and identifying the range of natural resources available at the time, it is also possible to reconstruct something of the lifestyle of these early hunter-gatherer inhabitants of the British Isles.

The most important Middle Palaeolithic site on the Isle of Wight, and arguably one of the most significant sites of this period in Britain (Shackley 1973) is the site of Great Pan Farm, which is located towards the western edge of the development area (the Middle Palaeolithic is generally associated with the presence of Neanderthals). The dating of the deposits remains the subject of considerable debate. Shackley places the date of the gravels at c. 90,000 to 75,000 before present (Shackley 1981), while Wymer suggests that a date c. 240,000 to 180,000 years before present is more likely (Wymer 1999).

The site was first examined by Poole in 1920 during gravel extraction work (Poole 1925). It was subsequently identified as a raised beach deposit (Shackley 1973 and 1981; Wymer 1996 and 1999) although the present evaluation casts considerable doubt upon that interpretation. By 1924 Poole had identified six distinct layers and had examined 140 flint implements and more than 500 flint flakes. These included 16 Levallois (prepared core) flakes and 64 hand axes, at least one of which is of a form known as 'bout coupé' (a characteristic heart-shaped hand-axe that is associated with Neanderthal remains on several continental European sites (Shackley 1981). The extent of the artefact-bearing gravels, particularly whether they extend east of Pan Lane, is currently uncertain.

The present phase of evaluation comprised fifteen test pits, dug to form north–south and east–west stratigraphic transects across the site. Each test pit was excavated by a mechanical excavator to a maximum of depth of 4m. Excavation stopped at a shallower depth when pre-Pleistocene deposits were reached. The test pits were excavated under the direction of Palaeolithic archaeologist Dr Francis Wenban-Smith and Pleistocene geologist Dr Martin Bates. Suitable deposits were sieved for artefacts, but in this small scale exercise, only a small number of possible flakes were found.

The test pitting exercise has identified three former river terraces[1], forming a staircase, with progressively younger terraces being formed lower down the slope and closer to the present Medina channel (Fig's 3 and 4). These fluvial deposits are buried by a thick blanket of archaeologically sterile colluvium of uncertain age, and overlie varied Tertiary sands, silts and clays. These Pleistocene fluvial deposits (Terraces) are present side-by-side in north-south trending strips across Area 2, encroaching into Area 3. Each strip of fluvial deposits is of importance in its own right, and as a group they are of national importance.

The westernmost terrace (Terrace 1), present at the western edge of Area 2 in the vicinity of St. George's Way, is equivalent to the deposits from which Poole recovered bout coupé hand-axes and Levallois material in the early 20th century.

The middle strip (Terrace 2) is present across the middle of the football training pitch, and has also been shown to contain Palaeolithic remains. One flint waste flake was found in the gravel deposits at the base of the sequence. No artefacts were found in the finer alluvial clayey and silty deposits that overlie the gravel. These are, however, a possible, albeit unlikely, source of undisturbed Palaeolithic remains. Terrace 3 is present in the vicinity of Pan Lane, between test pits 5 and 13. No artefacts were found in the deposits, although the low level of investigation means that Palaeolithic remains may well be present. As for Terrace 2, this area of sediments includes fine-grained sandy and silty horizons that have a low–moderate potential for undisturbed remains.

Terrace 1 probably dates to the middle of the last glaciation, c. 60,000–40,000 BP. Terraces 2 and 3 are progressively older and probably date, respectively, to the last interglacial and the early part of the last glaciation, c. 125,000–60,000, and preceding stages of climatic change c. 250,000–125,000, or even older.

None of the excavated test pits penetrated deposits of the lower terrace, which might be expected to occur between c. 5m and 8m OD. Terrace 1 probably dates, on archaeological grounds, to the middle of the last glaciation, c. 60,000–40,000 BP. This makes it unlikely that the sand-rich horizon found by Shackley represents a raised beach or tidal incursion, since sea-levels would not have reached that height at any time in the last glaciation. The size-distribution of sand grains noted by Shackley does not in fact correspond closely to that of raised beach sediments (Shackley 1975: Fig. 40), and any superficial appearance of the sand grains may reflect their previous derivation from much older raised beach sequences or marine sediments.

Samples for palaeo-environmental remains were taken from two potentially suitable horizons in test pit 1, but laboratory analysis concluded that no organic remains were present in those particular deposits. Samples for OSL dating were also taken from a suitably sand-rich horizon in test pit 1. The samples have been submitted to the laboratory for processing but the results are not available at the time of writing. Otherwise no suitable sediments for biological remains or dating were encountered.

Some evidence for relatively recent agricultural/ settlement activity was noted in the test pits, particularly in TPs 1, 11 and 13. All of these test pits lie alongside field boundaries with adjacent tracks, and the deposits probably represent fill used as surfacing material or resulting from boundary ditch maintenance.

Geophysical Survey:
All accessible areas of the site were investigated by means of a magnetometer survey, supplemented by soil magnetic susceptibility readings. The susceptibility values indicated that conditions in the southern half of the site should be quite favourable for the magnetic detection of archaeological features, but low readings to the north suggested the response there may be more limited.Findings from the survey included a small number of individual magnetic anomalies of a kind which could be associated with the presence of ancient settlement remains (e.g. at J in field 3.2), but the detected features were nowhere sufficiently strong or concentrated to suggest a clearly defined archaeological site. A number of linear features and disturbances were also detected. Some of these clearly represent former field boundaries, and others may be cultivation effects. Strong magnetic disturbances of probably recent origin were seen at various locations, particularly near boundaries and next to the River Medina. Further investigation would be desirable to establish or confirm the archaeological significance of some of the survey findings.

Impact of the development:

Area 1:
This area has been designated as part of the proposed urban development. However, it lies in an area of very high potential for Palaeolithic archaeology. There is therefore a presumption in favour of preservation in situ of these remains. It is intended that the site will be retained as a public open space and educational/ amenity site, to enhance the site and offset the cumulative adverse impacts of the development. The present phase of evaluation has not produced any evidence for prehistoric, Roman or Anglo-Saxon remains, but the potential for medieval settlement in the vicinity of Great Pan Farm remains high.

Area 2:
Archaeological potential in Area 2 is similar to that in Area 1. In light of the known high Palaeolithic potential, substantial development has been avoided. Nonetheless, there are plans for a major access route and drainage running east from St. George's Way, as well as associated services and street furniture. This will cut transversely across deposits of Pleistocene Terraces 2 and 3 and probably impact upon deposits of Terrace 1 in the vicinity of St. George's Way. Any deep excavation work could, without mitigation, have a major adverse impact upon any Palaeolithic or Pleistocene remains that may be present. Considering that this impact will not destroy the entirety of these sediment bodies, there is no reason not to carry out the development as planned, provided appropriate mitigation and recording of the affected sediments takes place.

Terrace 1 deposits are likely to be present between 4m and 8m, with their base at c 4m OD, and can be seen to be present to the west of St. George's Way. It is uncertain how far east these extend, and whether they underlie St George's Way or extend east of it into the sports training ground. The base of the Terrace 2 deposits slopes up from 10.6m OD at TP 1 (where it is 2.6m below ground surface level) to 12.35m OD at TP 3 (where it is 3.7m below ground surface level). Present evidence suggests that the base of the Terrace 3 deposits in this area are unlikely to occur more than 2m below current ground surface level. Further evaluation is required to establish the depths and locations of these deposits in sufficient detail to determine whether there is any construction impact.

The geophysical survey and test pit evidence broadly support the suggestion that post-medieval settlement and agricultural activity within the development area is most likely to be concentrated in the vicinity of Great Pan Farm. It remains likely that occupation of the site extends back to the medieval period, although the documentary and archaeological evidence for this is slight at present, and could be clarified by further archaeological work along the proposed access road. Such evidence would be of moderate local and regional significance if demonstrated, and could contribute to interpretation of the site for educational/ amenity purposes. The geophysical survey results do not support the presence of a deserted medieval village (suggested by Sites and Monuments Record 956).

Area 3:
Mixed housing and urban development is planned in this area, along with associated access, services and street furniture. This is likely to have some impact upon deposits of Pleistocene Terrace 3, which are known to be present c. 1.5m below the ground-surface in the south-west corner of Area 3 (Fig. 4), and may be closer to the ground surface in places. Again this is no reason to alter any development plans, but further evaluation may need to be carried out to improve our current poor understanding of the distribution and depth of Terrace 3 sediments in Area 3 and their Palaeolithic content. This would allow more clarity over any archaeological implications for development in Area 3.

There is no evidence for significant prehistoric, Roman or medieval archaeological remains in this area, either from the desk-based assessment or the present evaluation, other than for post-medieval agricultural land-use. Two probable field boundary ditches, detected by the geophysical survey in field 3.4, appear to pre-date the 1841 Tithe map, although their alignment and spacing conforms with the surrounding post-medieval field pattern, suggesting that they were removed in comparatively recent times. A stream valley that crosses the area is to be retained as a landscape feature.

Area 4:
This area has been designated for substantial housing development. There is no evidence for significant prehistoric, Roman or medieval archaeological remains, either from the desk-based assessment or the present phase of evaluation, other than for post-medieval agricultural land-use. A probable field boundary ditch, detected by the geophysical survey in field 4.3, appears to pre-date the 1841 Tithe map, although its alignment conforms with the surrounding post-medieval field pattern, suggesting that it was removed in comparatively recent times. A stream valley following the southern boundary of the area is to be retained as a landscape feature.

Recommendations for further work
Further evaluation of Pleistocene/ Palaeolithic remains:
With regard to the three Pleistocene terraces identified in the test pit evaluation, there are three areas of uncertainty that require further evaluation, before a detailed mitigation strategy can be determined. These are listed below, along with a recommended strategy for further evaluation:

i) Establish the distribution and archaeological content of Terrace 3 - Further test-pitting following the previous method should be applied at closer intervals (10m is recommended) along the same transect between TP 5 and 6, beyond 13, and north and south of TP 6. Where a good sequence is seen, test pits should be enlarged and stepped to allow direct access for cleaning and recording. Particular attention should be paid to identification and recovery of lithic artefacts in fine-grained upper parts of the fluvial sequence.

ii) Establish the distribution and archaeological content of Terrace 1 - Further test-pitting following the previous method should be applied at closer intervals (10m is suggested) to the west of St. George's Way, and, if feasible, immediately to its east and in the north-west corner of the sports training ground field.

iii) Undisturbed remains in the alluvial silt member of the upper part of Terrace 2 - Test pits should be dug (a) at closer intervals along the TP 1-TP 3 transect down to the top of the fluvial gravels, looking for artefactual remains in the upper fine-grained alluvial member, and (b) in a grid to the north and south of the preliminary test pit transect. If more detailed design information is available when this work is carried out, this exercise should be targeted on the impact footprint.

Further evaluation of later prehistoric, Roman and medieval remain:

It is recommended that targeted evaluation trenching is carried out across the site, at a percentage sample of c.1% with the following specific objectives:

- *Establish the presence/ absence of medieval settlement on the site of Great Pan Farm, to inform subsequent strip, map and sample investigations.*
- *Test the results of the geophysical survey by investigating the magnetic anomalies recorded.*
- *Further investigate areas of cropmarks and earthworks identified by the desk-based assessment.*
- *Recover dating evidence for major episodes of historic landscape development, by cutting sections through existing and recorded boundary features (with due regard to Hedgerow Regulations).*
- *Test starting assumptions that the northern part of the development area has limited archaeological potential.*
- *Trenching will not be carried out in the stream valleys crossing Areas 3 and 4 as these are to preserved as landscape features (but see palaeoenvironmental mitigation recommendations below).*

Mitigation strategy

Paleolithic/ Pleistocene remains - If any undisturbed Palaeolithic/ Pleistocene remains are found, and are subject to construction impact (a low probability) then detailed open area excavation will be required. If somewhat disturbed remains are found, and are subject to construction impact, then more trenches should be excavated, with larger scale sieving for artefact recovery and section recording. This should be followed by monitoring and artefact recovery during construction earthworks. If the construction earthworks result in long exposed sections, then these should be properly cleaned and recorded.

Prehistoric, Roman or medieval remains - At present there is little direct evidence for significant later prehistoric, Roman or medieval remains within the development area, other than the potential for medieval settlement at Great Pan Farm. Any areas affected by construction impacts in the immediate vicinity of Great Pan Farm should be subject to strip, map and sample investigation, followed by more detailed recording if significant remains are found.

Palaeoenvironmental evidence: Substantial impacts in the vicinity of the River Medina, and to the two streams crossing Areas 3 and 4, have been largely avoided in the outline development proposal. However if this situation changes, paleoenvironmental sampling of any alluvial deposits affected should form part of any mitigation strategy.

1 INTRODUCTION

1.1 Location and scope of work

1.1.1 Isle of Wight Council are progressing an Environmental Impact Assessment of the Pan Urban Extension (PUE) development site near Newport, Isle of Wight. As part of the EIA process, a desk-based assessment (DBA) on the proposal site was produced in October 2004 (WCA Heritage Pan/04/EIA/F) in response to a brief issued by the Isle of Wight County Archaeological Service (IWCAS 2004). Following the DBA, Oxford Archaeology were commissioned to carry out a preliminary investigation of Palaeolithic* and Pleistocene* potential prior to larger scale trial trenching and stage II of the EIA. The work was carried out in conjunction with Palaeolithic archaeologist Dr Francis Wenban-Smith (Dept. of Archaeology, University of Southampton), who is the principal author of this report, and Quaternary geology specialist Dr Martin Bates (Dept. of Archaeology, University of Wales, Lampeter). The preliminary investigation concentrated upon Areas 2 and 3 of the overall PUE site area (cf. Section 1.2), reflecting areas of development impact and Palaeolithic/Pleistocene potential as identified in the DBA. Fieldwork took place from 21st to 25th February 2005.

1.1.2 OA were also commissioned to undertake a geophysical survey of the development area, to investigate the potential for Roman, Saxon and medieval occupation and land use. The geophysical survey sub-contractor was Bartlett-Clark Consultancy, who carried out the fieldwork between 22nd February and 2nd March.

1.2 Topography and geology

1.2.1 The site is located to the Southeast of Newport, Isle of Wight, and is centred at SZ 509 887 (Fig. 1). The site is divided into four areas that together occupy 31.8 hectares. For purposes of identification in this report the area is divided into Areas 1-4, as used in the desk-top assessment. The fields within each area have been labelled 2.1, 2.2, etc. The Stage IIa preliminary evaluation of Pleistocene deposits is focused upon Areas 2 and 3. The geophysical survey covers the whole site.

1.2.2 The fields are mainly pasture, but two of them (2.3 and 3.1) were arable at the time of the evaluation, and there is a tree nursery in Area 3.2. Most of the site was accessible for the magnetometer survey, with the exception of small areas of steeply sloping or obstructed ground. Some of these areas were included in the susceptibility survey.

1.2.3 Area 2, where most of the Palaeolithic test pits were located, consists partly of arable fields (immediately to the west of Pan Lane) and partly of the football club training ground, with close-cropped turf (immediately to the south of the main football ground). The ground surface slopes down from *c.* 25m OD at the south-east corner to *c.* 11m OD at the north-west corner. The training ground itself is level, and has been dug into the natural ground slope at its south-east corner and built up in the north-west corner.

1.2.4 Area 3, to the east of Pan Lane and south of the more northerly of the two small streams that enters the Medina from the east, consists entirely of undulating arable fields. The highest ground is to the south and east of the area, reaching c. 30m OD, creating a basin that slopes down to the north and west, feeding the two westward-draining streams.

1.2.5 The site lies immediately to the north of the boundary between the Cretaceous deposits of the southern part of the island and the Tertiary sediments of the northern part. It overlies a zone of varied Eocene sands and clays, attributed in BGS mapping to the Bagshot Beds (British Geological Survey 1976) but almost certainly also including deposits of the Bracklesham Group and Barton Formation, that extend in an east–west band *c.* 500m thick dipping almost vertically downward to the north, overlying the Cretaceous Chalk ridge that outcrops 200m to the south of the site.

1.3 Archaeological and historical background

1.3.1 Quaternary deposits of the Isle of Wight are poorly understood and have received only minimal attention from Quaternary specialists in the last 50 years. Exceptions to this are the marine deposits on the east of the island at Bembridge (Preece *et al.* 1990) and the recent work at Priory Bay (Wenban-Smith 2003). Consequently deposits of the Medina and other sequences inland and along the north-east coast of the island are poorly understood. A number of key points can be articulated:

- With the exception of Bembridge and Priory Bay no Quaternary sediments have been independently dated in the Isle of Wight
- Environments of deposition of many of the sediments remain to be determined
- Few sites contain faunal or floral remains (exceptions being the site at Bembridge (Preece *et al.* 1990) and Newton (Munt & Burke 1986).

1.3.2 Pleistocene deposits that might contain Palaeolithic remains are not presently mapped within Areas 2 and 3 of the site. However, immediately to the north of Area 2, there is an extensive spread of deposits mapped as Medina Terrace 1, occupying a level area of ground with a surface height of approximately 7.5m OD. The nationally important Palaeolithic site of Great Pan Farm is known to occur just to the north of the development area (Poole 1924; Shackley 1973 & 1975; Wessex Archaeology 1993, map IOW 2, find-spot 2). Background work carried out as part of the Stage IIa evaluation has established that the Great Pan Farm Palaeolithic site was located in a gravel quarry at SZ 5035 8850, under the north-east corner of the football ground. Poole recovered substantial quantities of Middle Palaeolithic* artefacts from fluvial clays, sands and gravels in this quarry, including *bout coupé* handaxes*, Levallois flakes* and cores, and an elephant or mammoth tooth.

1.3.3 Shackley subsequently provided a more detailed record of the same deposits investigated by Poole (reference). She recorded sections of fluviatile sands and gravels between *c.* 4m and 8m OD that included a greenish clayey sand similar to a deposit reported by Poole as containing organic remains. Although Shackley found no organic remains she did interpret the deposit as representing a fossil raised beach* from a Pleistocene high sea-level incursion, possibly equivalent to the last

[Ipswichian] interglacial* at *c.* 125,000 years BP [Before Present], based on the size-distribution of the sand grains and their appearance under a microscope.

1.3.4 It is possible that the deposits investigated by Poole and Shackley are a southward extension of Medina Terrace 1 beyond their current mapped extent. There has been no direct dating of the deposits, although on archaeological grounds they are most likely to date to the last [Devensian] glaciation*. *Bout coupé* handaxes such as those recovered from Great Pan Farm are typically associated with the late Neanderthal* occupation of Britain in the middle of the Devensian glaciation, between 60,000 and 40,000 years BP. Levalloisian technology is also present on the site. This is known from both the Devensian and from an earlier climatic warm stage associated with the Wolstonian complex and dating to between *c.* 250,000 and 200,000 BP. Given the reported fresh condition of both handaxes and Levallois material, it is possible that they have not been derived and that both elements are associated with the Medina Terrace 1 deposits, and that these date from the last glaciation.

1.3.5 The river terrace deposits might be expected to continue southward upstream along the flanks of the present Medina channel at similar levels OD, towards, and possibly into, Area 2 of the development site. There remain a number of key questions:

- How far do the deposits extend?
- What palaeo-environmental evidence do they contain?
- Are there changes in lithic industrial expression through the sequence?
- Are there palaeo-landsurfaces with undisturbed evidence in the sequence?
- What was the mode of formation of the different horizons in the sequence?
- What are the dates of the different horizons recorded in the sequence?
- Are there other, higher terraces flanking the Medina channel, and if so what is their age?

1.3.6 The archaeological background and potential for Holocene, prehistoric, Roman and medieval activity are considered in detail in the Desk-based Assessment (WCA Heritage Pan/04/EIA/F), and are summarised briefly below:

1.3.7 The land west of Pan Lane is assessed as having moderate to high potential for a wide range of heritage features, and this potential is likely to extend into the development area.

1.3.8 There are no known Mesolithic, Neolithic or Bronze Age finds from the development area, although the Medina may have attracted human activity during these periods. The Isle of Wight is an important area for study of the Bronze Age, and there is evidence of a prehistoric trackway to the south of the site, as well as palaeoenvironmental evidence for a cleared agricultural landscape.

1.3.9 There is little evidence for Iron Age activity in the vicinity, although the Roman Villa at Newport was situated on, or close to, a late Iron Age predecessor. The lack of Roman finds recorded east of the Medina may indicate that the River acted as a boundary to the core agricultural lands of the Roman villa. However, Areas 1 and 2, lying immediately east of the Medina, may still be expected to produce evidence, at least for agricultural land-use, in the Roman period. Two other Roman villa sites are located to the west of the southern end of the development area, indicating a well

developed landscape of villa estates in the Roman period, to the west and south of the development area.

1.3.10 There is no evidence for the Anglo-Saxon or medieval land-use of the site before the Domesday Survey of 1086, which mentions settlements at both Pan (Lepene) and Shide (Side). Great Pan Farm is tentatively identified in the SMR as a Deserted Medieval Village (SMR 956) quoting unidentified medieval documentary sources located by M Beresford, which refer to a watermill, 12a of meadows and 6 tenants at a settlement called Penna.

2 EVALUATION AIMS

2.1 The primary objectives of the preliminary Palaeolithic/Quaternary field evaluation were:

- To establish whether Quaternary deposits associated with the previous Palaeolithic finds at the site are present in Areas 2 and 3
- To establish the distribution and depth across Areas 2 and 3 of any such deposits
- To assess the Palaeolithic and Quaternary significance of any such deposits
- More specifically, the work also aimed to:
- Develop an understanding of the stratigraphic sequence and likely 3-dimensional geometry of any Quaternary sediments
- Interpret the mode of formation of different Quaternary units encountered
- Establish correlations of any Quaternary units found with those recorded in previous work by Poole and Shackley
- Determine the presence and potential of lithic artefactual evidence in the sediments, and in particular whether recognisably Middle Palaeolithic elements such as Levallois technology or *bout coupé* handaxes are present
- Determine the presence of, or potential for, undisturbed primary context Palaeolithic occupation surfaces in the sediments
- Determine the presence and potential of biological palaeo-environmental evidence in the sediments
- Interpret the depositional and post-depositional history of any artefactual or biological evidence found
- Assess in local, regional, national and international terms, the archaeological and geological significance of any Quaternary deposits encountered, and their potential to fulfil current research objectives, including their potential for dating

2.2 The aim of the geophysical survey was to provide data on the potential for Roman, Saxon and medieval occupation and land use, and to further define the undated features recorded by the walkover and aerial photographic research.

3 PALAEOLITHIC/ PLEISTOCENE TEST PIT RESULTS

3.1 Scope of fieldwork

3.1.1 Fifteen test pits were dug following the protocols outlined below. The overall aim of the test pit distribution (Fig. 2) was to achieve orthogonal north–south and east–west stratigraphic transects across the site, with the main east–west axis transverse to the presumed course of any palaeo-Medina deposits present. Test pits 7 and 12 were brought in from the corners of the fields to avoid overhead telegraph wires.

3.2 Fieldwork methods and recording

3.2.1 Each test pit was dug by a tracked 20 ton 360° mechanical excavator with a 5–foot wide toothless ditching bucket. Each test pit was one bucket-width wide, 3–4m long and up to 4m deep. Excavation ceased at a shallower depth when pre-Quaternary deposits were reached. Each test pit was taken down in horizontal spits of 5–10cm, respecting the interface between sedimentary units, under guidance of the Palaeolithic and Quaternary specialists (Francis Wenban-Smith & Martin Bates) who recorded and numbered the sequence of sedimentary units following standard descriptive practices. Test pits were entered at the maximum safe depth (usually *c.* 1.2m, but less if loose sands/gravel were present) to record the upper stratigraphy. Beyond this depth, recording took place without entering the trench.

3.2.2 Spit-samples of at least 150 litres were numbered and set aside at regular 25cm intervals as excavation progressed. When sand and gravel deposits were encountered, 100 litres from each spit-sample was dry-sieved on site through a 1cm mesh for recovery of lithic artefacts and faunal remains. When more cohesive clay and silt-rich sediments were found, excavation proceeded in shallower spits of 5cm, looking carefully for the presence of any archaeological evidence, and the spit samples were also investigated by hand (using archaeological trowels) for any archaeological evidence. Each test pit was dug in turn, and backfilled level with the pre-existing ground surface immediately following excavation and the completion of recording.

3.2.3 Samples for assessment for micro-biological palaeo-environmental remains were taken from two potentially suitable horizons in test pit 1. Samples for OSL* dating were also taken from a suitably sand-rich horizon in test pit 1. Otherwise no suitable sediments for biological remains or dating were encountered.

3.2.4 A representative section from each test pit was drawn at 1:20, and photographed in black and white (print) and colour (slide and digital) once excavation reached its full depth, and at appropriate stages in the course of excavation when features of interest were revealed.

3.2.5 Each test pit was tied into OS mapping and surveyed in with a total station giving an immediate record of its position in the landscape and the ground surface height.

3.2.6 Finds were recovered by hand during the course of the excavation and bagged by context.

3.3 Stratigraphy and distribution of sediments

3.3.1 Four discrete groups of deposit (I–IV) were found to be present on the site overlying the bedrock (Table 1). Of particular significance is the presence of three sets of fluvial sediments at different elevations. Lowest was a group equivalent to sediments mapped as Terrace 1 by the British Geological Survey, with a bedrock bench height at *c.* 4.5m OD. No test pits were dug into these sediments, but they were seen to be present at the western side of Area 2. A second group of fluvial sediments overlies bedrock at 10–12m OD, seen in TPs 1–3. A further group of deposits rests on a bedrock bench at 19–21m OD. This pattern is interpreted to reflect the presence of 3 distinct terrace-like features, present within the site boundaries where Terrace 1 (the lowest terrace, correlated with Poole's deposits) is associated with the youngest set of deposits and Terrace 3 (at the highest elevation) is associated with the oldest events. Terrace 2 is of intermediate age. Plateau Gravel of uncertain age and origin was also found in TP 8, beyond the southern boundary of Area 3. Detailed sediment descriptions and attributions for the sequences in each test pit are provided in Appendix 2, alongside section diagrams. Summary diagrams are given for (a) north–south and east–west stratigraphic transects (Fig. 3) and (b) the likely spatial distribution of Pleistocene fluvial sediment bodies in the site area (Fig. 4).

Major deposit group	*Subsidiary distinctions*	*Test pits present*
IV — Topsoil/ploughsoil	Topsoil	1–3
	Ploughsoil	4–15
III — Made ground/features	Made ground	1
	Features/pits	11
	Uncertain whether made ground or large feature	13
II — Colluvium	Colluvium	1–6, 10–13
I — Pleistocene fluvial deposits	Terrace 1	-
	Terrace 2	1–3
	Terrace 3	5–6
Plateau Gravel	-	8
Bedrock	Eocene sands/clays	1–15

Table 1. Sediment groups

Eocene bedrock

3.3.2 Bedrock was attained in all 15 test pits. The bedrock consisted of varied sands and clays exhibiting steeply northward dipping bedding in places (eg. TP 2). The sediments exhibit a wide range of colours, varying between reddish-yellow, yellowish-brown, olive, green, gray, very dark gray. This probably reflects differences in the mineral composition of the sediments and it is likely that many of these units are non-calcareous thus influencing the likely potential for overlying sediments to preserve microfossil material.

Plateau Gravel

3.3.3 Gravelly clay or gravels with clay matrix were present as a thin spread in TP 8. These have been mapped locally as Plateau Gravel and the BGS mapping shows that TP 8 lies at the north-west end of a substantial spread extending southwards and capping St. George's Down. Although little information is available on these deposits and an extensive trawl of literature has not been undertaken, the presence of several quarries to the south suggests a substantial thickness of gravel is present in places. There has been no record of Palaeolithic finds from these deposits. The origin of the Plateau Gravels is likely to vary between areas and the use of the term Plateau Gravel does not imply a single origin for deposits mapped under this term. In places such gravel deposits are likely to have derived from older fluvial sediments. Elsewhere they may have resulted from the degradation and contamination of gravel lags through time. In some instances Plateau Gravels may be of considerable antiquity and may date to the early Pleistocene, Pliocene or even earlier.

I — Pleistocene fluvial deposits

3.3.4 The subdivision of the test pits into two groups based on bedrock bench elevation has already been discussed above. No test pits were dug in the lowest group of fluvial sediments overlying the lowest bedrock bench (Terrace 1) at 4.5m OD. Each bench is overlain by sands and gravels ascribed (at least in part) to a fluvial origin. Fluvial sediments were most extensively developed in association with the bedrock bench at 10–12m OD (Terrace 2). Here basal flint-rich gravels in TPs 1–3 are overlain by finer grained sands and clay-silts. The basal gravels suggest deposition in high energy fluvial systems, perhaps braided channels formed during cool to cold climate periods. The overlying finer grained sediments suggest a shift towards slower flowing water and perhaps interglacial floodplain systems. Similar sediments are found associated with the higher bedrock bench of Terrace 3 (TPs 5, 6 and 13) although a simple fining upwards sequence cannot be observed here. It is possible that disruption of the primary fluvial sediments by weathering, colluviation and solifluction may have disturbed the sequences in Terrace 3.

II — Colluvium

3.3.5 Sediments ascribed to slope wash processes (colluvium) are found in all trenches. These deposits include a wide range of sediment grain sizes from gravels to clays. Considerable variation in sediment type is noted and this is likely to reflect both sediment sources as well as processes of sediment deposition. It is difficult to ascribe the sequences to events in either the Pleistocene or Holocene and, indeed to either cold stage solifluction or warm stage slope wash processes. Given the location of the site it is likely that a combination of processes, perhaps even with some locally deposited fluvial sediments on the lower flanks of the hills, may be included.

III — Made ground/features/pits

3.3.6 Some evidence for recent activity associated with the made ground was noted, particularly in TPs 1, 11 and 13. All of these TPs lie alongside field boundaries with adjacent tracks, and the deposits probably represent fill used as surfacing material or

resulting from boundary ditch maintenance (See section 4.2 below). Deposits 1102 and 1103 are fills of a shallow, straight-edged feature, one edge of which was visible in the section of TP11. Its extent is unknown, but the feature lies next to Great Pan Lane, coinciding with an area of recent disturbance detected by the geophysical survey extending from the south-east of Great Pan Farm. The fills incorporated 16th century pottery and post-medieval tile fragments, which may provide an indication of activity of this date on the site of the Farm. However, it is possible that the finds derive from imported rubble used to surface the Lane.

IV — Topsoil/ploughsoil

3.3.7 This was present across all trenches.

Discussion

3.3.8 The sequences present at the site do not appear to be directly comparable with those previously described by Poole and Shackley. The height differences of the bedrock benches in the test pits indicate that the sediments evaluated all lie at elevations above those previously examined. The pattern of sediment distribution present may be accommodated within the currently accepted framework for fluvial sediment aggradation, tectonic uplift and periodic downcutting that has been observed in many river valley systems surrounding the Channel (Bridgland 2000; Bridgland *et al.* 2004). The evidence of the current research therefore suggests that 3 terraces are present within the study area and vicinity:

- Terrace 1. This sequence of fluvial sediments was observed by Poole and lies between 4 and 7.5m OD. No test pits were examined in this terrace.
- Terrace 2. The deposits underlying this terrace lie between 11 and 16m OD. Test pits 1–3 were dug through these deposits.
- Terrace 3. The deposits underlying this terrace lie between 19 and 23m OD. Test pits 5, 6 and 13 were dug through these deposits.

3.3.9 The evidence therefore suggests accumulation of the sequences over a number of phases of climatic change in the Pleistocene. The sedimentary sequence of Terrace 2 (coarse basal gravels to fine sands and silts) suggest cold to warm stage climatic changes and, when coupled with the evidence for downcutting between benches (usually occurring during periods of lowered sea levels in cold stages), this implies that the sequences formed over a number of cold/warm/cold cycles in the Pleistocene. Based on the assumption that the lowermost terrace dates to the middle of the last cold stage (cf. Sections 1.3 and 4.4) this would suggest that the higher sequences associated with terraces 2 and 3 probably belong to earlier parts of the Devensian, the last interglacial or to pre-last interglacial periods.

3.3.10 The terrace distribution does not exhibit a clear surface morphology and this appears to be a result of periodic episodes of colluviation/solifluction that has smoothed out the surface topography and buried the fluvial sequences.

4.2 Archaeological evidence

3.3.11 Sieve sampling and artefact recovery is summarised below (Table 2). In total 800 litres of fluvial gravel from Terrace 2 was sieved, and 300 litres from Terrace 3. One sample of 100 litres of colluvial gravel was sieved (from test pit 1) and 200 litres of the Plateau Gravel (from TP 8). The only probable Palaeolithic artefact found was a single waste flint flake (Fig. 5), recovered from the Terrace 2 fluvial gravel at the base of the sequence in test pit 3. It is unpatinated and in reasonably fresh, but not mint, condition. It is of medium size (a little over 5cm long), quite thick and has several dorsal removals. It is technologically undiagnostic.

3.3.12 Two other possible flint flakes were also found from this deposit in TP3, which was a very coarse flint gravel with many sharp-edged clasts, reflecting high energy deposition and substantial production of natural flint flakes, making it difficult to reliably isolate any of human origin. On balance these were thought to be natural, but were retained in the site archive.

Test pit	*Deposit group*	*Phase*	*Context*	*Sample/s*	*Vol. (lit.)*	*Artefacts/faunal remains*
1	II — Colluvium	-	107	1.1	100	-
	I — Fluvial terrace deposits	T2	109	1.2	100	-
			110/111	1.3	100	-
			111	1.4	100	-
2	I — Fluvial terrace deposits	T2	205	2.1	100	-
3	I — Fluvial terrace deposits	T2	307	3.1	100	-
			307/308	3.2	100	-
			308	3.3	100	One flint waste flake
				3.4	100	-
6	I — Fluvial terrace deposits	T3	604	6.1	100	-
				6.2	100	-
				6.3	100	-
8	Plateau Gravel	-	802	8.1	100	-
			803	8.2	100	-

Table 2. On-site sieving summary, sampling and artefact recovery

3.3.13 Some evidence for relatively recent agricultural/ settlement activity was noted in the test pits, particularly in TPs 1, 11 and 13. All of these test pits lie alongside field boundaries with adjacent tracks, and the deposits probably represent fill used as surfacing material or resulting from boundary ditch maintenance. At the edge of TP 11 a large, shallow, straight-edged feature was recorded, one edge of which was visible in section. Four sherds of 16th century pottery and five fragments of post-medieval tile were recovered from fill 1102, a yellow clayey deposit containing numerous large cobbles. The extent of the feature is unknown, but it lies next to Great Pan Lane, coinciding with the southern edge of an extensive area of recent disturbance, detected by the geophysical survey extending from the south-east of Great Pan Farm. The 16th century pottery may provide an indication of activity of

this date on the site of the Farm. However, it is also possible that the finds have been brought into the area mixed in with rubble used to surface Pan Lane.

4.3 Biological/palaeo-environmental evidence

3.3.14 The only test pit with any sediments that appeared to have any potential for biological/palaeo-environmental remains was TP 1. Two samples were taken from gray/olive sandy clay-silts at different horizons within the Terrace 2 fluvial deposits present (Table 3). No mammalian or molluscan remains were seen in the field in the sediment, but it was still thought worth carrying out more detailed investigations off site in view of the fine-grained nature of the sediment, and the potential importance of identifying any palaeo-environmental remains. Samples were sent for processing to John Whittaker of the Natural History Museum, who sieved the samples and looked for any sign of small vertebrate, molluscan or ostracod* remains. Nothing was found (Appendix 3).

Test pit	*Deposit group*	*Phase*	*Context*	*Sample/s*	*Vol. (lit.)*	*Palaeoenvironmental remains*
1	I — Fluvial terrace deposits	T2	108	4	0.05	-
			111	5	0.05	-

Table 3. Palaeo-environmental sampling

4.4 Dating

3.3.15 No direct dating evidence was found. The clayey sand bed (context 108) within the fluvial terrace deposits of Terrace 2 in TP 1 is potentially suitable for OSL dating, due to its sand content. Since this layer was near enough the ground surface for safe access, two samples for OSL dating were taken and have been sent for analysis to Jean-Luc Schwenninger at the Research Laboratory for Archaeology and History of Art, University of Oxford — results will not, however, be available until April 2005.

3.3.16 Other horizons potentially suitable for OSL dating are:

- Context 307 in test pit 3, also from Terrace 2
- Contexts 604 and 606 in test pit 6, from Terrace 3
- Context 1304 in test pit 13, from Terrace 3

3.3.17 As discussed in Section 1.3, it is most likely, on archaeological grounds, that Terrace 1 of the Pleistocene fluvial sequence dates to the middle of the last glaciation, *c.* 60,000–40,000 BP. This is compatible on geological grounds with the likelihood that the Medina channel cut by the climatic changes at the end of the last glaciation *c.* 15,000–10,000 BP lies beneath the present alluvium. It is likely therefore that Terraces 2 and 3 date to phases of climatic change preceding the middle of the last glaciation. Fine-grained deposits overlying the gravels of Terrace 2 have tentatively been attributed to an interglacial climatic phase, which would suggest a date of between *c.* 150,000 and 125,000 BP for the Terrace 2 sediments, corresponding with downcutting and gravel aggradation at the end of the cold phase before the last interglacial followed by fine-grained alluvial aggradation during the interglacial itself. If this was the case then Terrace 3 would be even older, and could date any time from the last major Anglian glaciation *c.* 425,000 BP until *c.* 150,000 BP.

However it should be emphasised that these dates for Terraces 2 and 3 are very speculative. All that can be said with confidence is that they almost certainly predate the middle of the last glaciation, and that Terrace 3 is older than Terrace 2.

3.3.18 OSL is a proven technique for achieving sufficiently reliable dates to distinguish between different major climatic phases of the Pleistocene on this timescale, and attempting OSL dating on suitable terrace sediments, should they be affected by development, should be a priority for mitigation.

3.4 Discussion and interpretation

3.4.1 A staircase of three Pleistocene fluvial terraces was shown to be present. These fluvial deposits are buried by a thick blanket of archaeologically sterile colluvium of uncertain age, and overlie varied Tertiary sands, silts and clays. The lowest of the terraces (Terrace 1) is present at the western side of Area 2. This terrace corresponds to that from which Poole recovered *bout coupé* handaxes and Levallois material in the early 20th century.

3.4.2 The middle terrace (Terrace 2) is present across the football training pitch, with fluvial gravel and alluvial deposits found in test pits 1, 2 and 3. One flint waste flake was found in the gravel deposits at the base of the sequence. No artefacts were found in the overlying alluvial deposits, which are, however, a possible, although unlikely source of undisturbed Palaeolithic remains (cf. Section 5.5).

3.4.3 The highest terrace (Terrace 3) is present in the vicinity of Pan Lane, between test pits 5 and 13. No artefacts were found in the deposits, although the low level of investigation means that Palaeolithic remains may well be present. As for Terrace 2, this area of sediments includes fine-grained sandy and silty horizons that have a low–moderate potential for undisturbed remains (cf. Section 5.5).

3.4.4 Terrace 1 probably dates to the middle of the last glaciation, *c.* 60,000–40,000 BP. Terraces 2 and 3 are progressively older and probably date, respectively, to the last interglacial and the early part of the last glaciation, *c.* 125,000–60,000, and preceding stages of climatic change *c.* 250,000–125,000, or even older.

3.4.5 No palaeo-environmental remains were present in any deposits.

Stratigraphy, correlation and dating

3.4.6 A staircase of three Pleistocene fluvial terraces was present, with progressively younger terraces being formed lower down the slope and closer to the present Medina channel (Fig's 3 and 4). These fluvial deposits are buried by a thick blanket of archaeologically sterile colluvium of uncertain age, and overlie varied Tertiary sands, silts and clays.

3.4.7 The lowest, and youngest, of the terraces (Terrace 1) is present under St. Georges Way and in the small field to its west, at the western margin of Area 2. This terrace corresponds to the deposits from which Poole recovered *bout coupé* handaxes and Levallois material in the early 20th century, and in which Shackley later found a sand-rich horizon tentatively ascribed to a raised beach. It is possible that the eastern

margin of this terrace may be present in Area 2, immediately to the east of St. George's Way, in the corner of ground to the west of the access track to the football training pitch. None of the excavated test pits penetrated deposits of this lower terrace, which might be expected to occur between *c.* 4m and 8m OD. Terrace 1 probably dates, on archaeological grounds, to the middle of the last glaciation, *c.* 60,000–40,000 BP. This makes it unlikely that the sand-rich horizon found by Shackley represents a raised beach or tidal incursion, since sea-levels would not have reached that height at any time in the last glaciation. The size-distribution of sand grains noted by Shackley does not in fact correspond closely to that of raised beach sediments (Shackley 1975: Fig. 40), and any superficial appearance of the sand grains may reflect their previous derivation from much older raised beach sequences or marine sediments.

3.4.8 The middle terrace (Terrace 2) is present across the football training pitch, with fluvial gravel and alluvial deposits found in test pits 1, 2 and 3 between *c.* 10.5m and 13m OD. Gravel deposits approximately 1m thick occur at the base of the sequence and these are overlain by clayey/sandy alluvial deposits that are present in a strip *c.* 40–50cm thick between TP 1 and TP 3, between 1 and 2m below the present ground surface. The fluvial deposits most likely date to the last interglacial and the early part of the last glaciation, *c.* 125,000–60,000 BP. The Terrace 2 fluvial deposits are overlain by a body of colluvial deposits of uncertain age that thickened eastward.

3.4.9 The highest, and oldest, terrace (Terrace 3) is present in the vicinity of Pan Lane, between test pits 5 and 13. The deposits consist of clays, silts, gravelly sands and fine to coarse fluvial gravels between *c.* 20m and 22m OD. The base of the sequence is highly contorted, and marked by pockets of flint gravel and a lag deposit of larger flint nodules. The greater antiquity of this terrace means it has been prone to a longer history of climatic change, and so has been more distorted than the other two. The top of the fluvial deposits occurred *c.* 1m beneath the ground surface in TP 5 and 6, at the eastern side of Area 2, and 1.5m below the ground surface in TP 13 at the western edge of Area 3. This latter result may be atypical however, since there was an unusually large thickness of topsoil overlying, which may represent fill of a very substantial pit of relatively recent age (ie. any time from the Romans). Terrace 3 is likely to date before the last interglacial, most likely in the time range 250,000 to 125,000 BP, but possibly as old as 400,000 BP.

Lithic artefacts: recovery and depositional history

3.4.10 One artefact was found in the basal fluvial gravel of Terrace 2. It was in reasonably fresh condition despite the high energy depositional environment suggesting it is contemporary with formation of the deposit. The artefact is a technologically undiagnostic waste flake, from moderately early in the reduction of a flint nodule, although not the very beginning since there are several flake scars from previous removals.

Biological/palaeo-environmental evidence

3.4.11 No palaeo-environmental remains were present in any deposits.

Presence/potential for undisturbed remains

3.4.12 The most likely contexts for any undisturbed Palaeolithic remains are in the finer-grained parts of the fluvial terrace deposits, namely:

- Within, and at the base of, the fine-grained alluvial clay-silt/sand deposits that overlie the gravel in the Terrace 2 sequence
- Within the sandy and gravelly clay-silts that constitute Terrace 3 deposits in test pit 13
- Within the clay and sandy clay-silts at the base of the Terrace 3 fluvial gravel in test pit 6. The base of Terrace 3 deposits are unlikely to be more than 2m below current ground surface level. Their base slopes up from c. 20m OD at TP 5 to c. 21m OD at TP 13. Nowhere along here does the depth of overlying deposits exceed 2m.

3.4.13 No remains were identified at these horizons during test pitting, but any such remains are likely to be patchily distributed and unlikely to be identified by such a limited investigation, unless they are very dense and widespread. Consequently the potential for finding any undisturbed remains in these deposits can be assessed as low to moderate.

3.4.14 The Terrace 2 alluvial deposits are present in a strip *c.* 40–50cm thick between test pits 1 and 3 between 1m and 2m below the present ground surface. The finer-grained Terrace 3 sediments are present more than 1.5m beneath the ground surface between test pits 6 and 13. If any impact is planned in these places at these depths then it would be advisable to carry out further more closely spaced evaluation in the footprint of any impact to check for areas of undisturbed activity.

4 GEOPHYSICAL SURVEY RESULTS

4.1 Potential for archaeological remains prior to the survey

4.1.1 The site offers a number of archaeological possibilities, although there are few previously confirmed findings from within the survey area itself. The most significant archaeological site in the immediate vicinity is a former gravel quarry at Great Pan Farm, where a large collection of paleolithic flints was recovered during gravel extraction in the 1920s. An early prehistoric site would not present any features detectable by magnetometer surveying, although the backfilled gravel pit itself might well be detectable, depending on the nature of the fill.

4.1.2 The gravel pit was probably located near Great Pan Farm within Area 1 of the study area (as described in the desk based assessment), although it perhaps extended into Area 2. Area 1 is to be preserved in situ in large part, and was consequently excluded from the geophysical survey.

4.1.3 The site is additionally described in the desk based assessment as offering moderate potential for Iron Age and Roman findings, and moderate to high potential for medieval and post medieval remains. The scheduled Shide Roman villa is located some 600m south west of Great Pan Farm, and other Roman and Iron Age findings are recorded nearby. There are none, however, in areas which fall within the survey.

4.1.4 There is similarly no recorded Anglo Saxon activity within the proposed development area, but Great Pan Farm may be the site of a medieval settlement. It has also been proposed that ditched medieval crofts may be present next to Staplers Road at the northern end of the proposed development, although these may not necessarily lie within the survey area.

4.1.5 Other potential findings from the survey as noted in the brief include ponds or marl pits and ploughed-out boundaries.

4.2 Geophysical survey procedure

4.2.1 The magnetometer survey followed standard procedures for work of this kind with readings collected along transects 1m apart using Bartington 1m fluxgate magnetometers. A detailed magnetometer survey was specified for the project because the ground cover at the site makes it unsuitable for fieldwalking. A recorded magnetometer survey also offers far more complete recovery of available archaeological evidence than could otherwise be achieved. Alternative geophysical procedures based on initial magnetometer scanning or sampling, or a preliminary magnetic susceptibility survey, require that much of the site must be excluded from consideration on the basis of minimal evidence, with a consequently increased risk that significant archaeological findings will remain undetected. This is of particular relevance in this case, given the potential difficulty of detecting some categories of archaeological features on clay soils.

4.2.2 The magnetometer responds to cut features such as ditches and pits when they are silted with topsoil, which usually has a higher magnetic susceptibility than the

underlying natural subsoil. It also detects the thermoremanent magnetism of fired materials, notably baked clay structures such as kilns or hearths, and so responds preferentially to the presence of ancient settlement or industrial remains.

4.2.3 The results of the survey are shown as graphical (x-y trace) plots at 1:1250 scale in figures 7-10, and as grey scale plots at 1:2000 scale in two overlapping sections in figures 11-12. An interpretation of the findings is shown superimposed on figures 7-10, and is reproduced separately to provide a summary of the results on figures 14-15. Individual magnetic anomalies of potential interest are outlined where possible in red, but it is difficult to achieve a complete or rigorous categorisation when many of the detected features are weak, and not clearly distinguishable from background variations. Some potential but uncertain linear features are indicated schematically by broken red or green lines.

4.2.4 The survey plots show the magnetometer readings after standard treatments which include adjustment for irregularities in line spacing caused by variations in the instrument zero setting, and slight linear smoothing. Additional 2D low pass filtering has been applied to the grey scale plot to reduce background noise levels.

4.2.5 The survey grid was set out and located at the required national grid co-ordinates by means of a sub-1m accuracy GPS system. OS co-ordinates of map locations can be read from the AutoCAD version of the plans which can be supplied with this report. The survey plans which are included in this report are based on a digital site plan supplied to us by the client.

4.2.6 The magnetometer survey was supplemented by a background magnetic susceptibility survey with readings taken at 16.6m intervals (36 readings/ha) using a Bartington MS2 meter and field sensor loop. The results are presented as a plots of shaded squares of density proportional to the readings on figure 13. The plots as reproduced show the initial readings, and the values after treatment with a median filter. This calculates the median of each group of immediate neighbours, and emphasises broad trends in the data. Susceptibility surveying provides a useful complement to a magnetometer survey, and indicates the strength of response which is likely to be obtained. It can also be used to provide a broad indication of previously occupied or disturbed areas in which burning associated with past human occupation has enhanced the magnetic susceptibility of topsoil, although the readings may be affected by a number of non-archaeological factors, including geology and land use.

4.3 Geophysical survey results

Area 2

4.3.1 These fields lie between the River Medina and Pan lane, and may include part of the site of the 1920s gravel quarry, although the quarry perhaps lies further to the north. Magnetic disturbances of probably recent origin limit the value of the survey data in fields 2.1 and 2.2.

4.3.2 Field 2.1 is strongly disturbed (and is therefore plotted in figure 7 at a lower sensitivity than the remainder of the survey). This could be consistent with the

presence of a former quarry which has been filled with 20th C debris, but the site could also have been levelled or landscaped (perhaps with imported rubble, etc.) for some other purpose.

4.3.3 Field 2.2 is a football field, parts of which could not be surveyed because of magnetic interference from floodlights and fences. The original ground surface could well have been lost here through landscaping, but it was hoped to test for the presence of strong magnetic disturbances which could relate to the infilling of the former quarry. The level of magnetic disturbance, except at the edges of the pitch near the floodlights, is in fact only moderate, and much less than in field 2.1. Any gravel pit here must have been filled mainly with magnetically sterile earth rather than urban rubbish.

4.3.4 There is a gap in the magnetometer survey corresponding to a pond in the centre of field 2.3. A nearby group of high readings (labelled A on figure 14) represents some visible rubble. An east-west group of high readings at B probably represents a former trackway. A number of linear markings are visible, particularly in the grey scale plot, and are indicated in the interpretation by broken green lines (e.g. C). These could be cultivation effects, possibly indicating traces of ridge and furrow. Other such features on different alignments could well be field drains. One slightly stronger linear feature is shown in red at D. It is rather discontinuous, but could perhaps be a ditch, boundary or drain.

Area 3

4.3.5 The large arable field 3.1 gave high (20+) susceptibility readings, and conditions appear to be well suited for magnetometer surveying. Findings, other than a pipe and disturbances representing metal in the north west corner near to the adjacent scrapyard, include various linear features, as in field 2.3. These are particularly strong at the north of the field (e.g. E), and are again likely to be cultivation effects.

4.3.6 The linear features marked in red at F and G are rather fragmented, but could perhaps indicate traces of former hedge lines or other boundaries. The linear feature at H is a diffuse curving negative anomaly perhaps indicating an extant gully or hollow. The linear features at the west of the field at I are also isolated and inconclusive.

4.3.7 Groups of distinct magnetic anomalies occur at several locations towards the north of field 3.1, and are each labelled J. These features perhaps more nearly resemble magnetic anomalies of the kind to be expected from a group of silted pits than others in the survey. Magnetic susceptibility values are also higher here than in most of the survey. These findings could be consistent with the presence of medieval or prehistoric settlement remains, but the features remain rather weak and isolated, and could also be natural or non-archaeological. Further investigation would be needed to clarify their significance.

4.3.8 Magnetic disturbances from electricity poles are marked on the interpretation by brown cross hatching.

4.3.9 Part of the tree nursery in field 3.2 could be surveyed by locating magnetometer transacts between the lines of trees, but the remainder was too overgrown. A band of

disturbed readings at K follows the line of a trackway still extant to the west, and merges with a spread of bonfire debris in the centre of the field.

4.3.10 Field 3.3 gave minimal findings. A few weak magnetic anomalies are outlined, but are unlikely to be significant. The median filtered plot of the susceptibility survey shows a distinct anomaly towards the north east of the field, but there is no corresponding increase in magnetometer activity.

4.3.11 Some weak linear markings which could again be cultivation effects are indicated in green in field 3.4. A rather stronger sequence of disturbances at L could be a former boundary.

Area 4

4.3.12 Field 4.1 contains strong recent disturbances, some of which lie within a football pitch. The ground here could perhaps have been levelled or landscaped.

4.3.13 There are similar disturbances near the western boundary of field 4.2, and around a spring or bog next to an electricity pole at M. There could perhaps be some linear cultivation markings in this field, but the evidence is less distinct than in the arable fields in Areas 2 and 3. The rather stronger anomalies outlined in red at N are mostly linear, but fragmentary.

4.3.14 Field 4.3 contains possible cultivation effects aligned in at lest two directions. The irregular north-south alignment of anomalies (P) could perhaps be a former boundary.

4.3.15 Disturbances as shaded at the west of field 4.4 include magnetic interference around a trough. An anomaly at Q is isolated. Features outlined at R follow the approximate north-south alignment of nearby cultivation effects or field drains.

4.3.16 Findings in field 4.5 include strong magnetic disturbances on a visible low mound at S, and an extant bank at T. magnetic anomalies in the south east corner of the field at U are on sloping ground. A visible pond or hollow was detected at the north of the survey at V.

4.3.17 Susceptibility values rise on the higher ground to the east of field 4.6, and there are some relatively distinct cultivation effects in this field. The anomalies indicated in red at W are perhaps too isolated to be archaeologically significant.

Conclusions

4.3.18 The survey has identified a number of linear disturbances probably indicating former boundaries, as well as possible cultivation effects or field drains, but has not detected any distinct concentrations of magnetic anomalies of a kind which would suggest the presence of a substantial archaeological site.

4.3.19 Modern landscaping or other disturbances appear to have affected the magnetometer response in fields 2.1, 2.2 and 4.1. It is unlikely that the survey detected the backfilled 1920 gravel quarry, unless the quarry is located near the river in field 2.1.

Recent magnetic interference is otherwise mainly confined to the edges of the survey near to houses and other modern buildings.

4.3.20 The most distinct of the possible former boundaries detected by the survey are perhaps those at D in field 2.3, F and G in field 3.1, and P in field 4.3. Trackways of probably recent date were seen at B in field 2.3 and K in field 3.2. Other distinct linear anomalies were seen at H in field 3.1 and R in field 4.4, but they could well relate to former cultivation.

4.3.21 Findings of potential archaeological significance from the survey include the groups of magnetic anomalies labelled J in field 3.1. Features of this kind could perhaps be associated with ancient settlement remains, as could W in field 4.6. The magnetic anomalies at both locations are rather too weak and isolated to provide confirmation of the presence of archaeological features on the basis of the survey results alone, but they could perhaps be investigated further during future trenching.

4.4 Reliability of geophysical survey results

4.4.1 The magnetic susceptibility values from this site (figure 13) suggest that conditions should be quite favourable for magnetometer surveying on the Bagshot Beds in the southern part of the site, where the readings ($> 20 \times 10^{-5}$ SI) contrast with much lower readings ($< 5 \times 10^{-5}$ SI) to the north. Clay soils are not necessarily the most favourable for magnetometer survey, although they vary, and some response can usually be achieved. Such features as silted ditches may be difficult to detect in soils where there is little variation in composition or properties between the fill and natural subsoil, and where magnetic susceptibility values are low. There should usually, however, be at least some features within a former settlement or industrial site which are magnetically detectable.

4.4.2 The susceptibility readings from the north of the site may be depressed in part by the presence of thick turf, which offers less direct contact between the measuring coil and the ground surface than would be possible in the arable fields to the south. Conditions in the northern half of the survey area may not in fact be any less suitable for magnetometer surveying than the areas investigated in a previous magnetometer survey nearby. Our survey of a 7.5 km pipeline route to the north of Newport in 2000 was located mainly on clay soils of the Hamstead Beds [1]. Continuous recorded magnetometer and susceptibility surveys along the route produced findings which included areas of enhanced magnetic susceptibility readings associated with clusters of magnetic anomalies. This suggests that soils of this kind offer a least the potential for detecting significant archaeological sites.

4.4.3 Geophysical survey techniques are not usually successful in detecting sites that comprise entirely discreet features, such as, for example, some types of Neolithic or Saxon settlement site which consist entirely of pits or post-holes, or dispersed cemeteries. In general however, the survey has successfully detected linear boundaries that appear to pre-date the 1841 Tithe Map, in both the northern and southern parts of the site, suggesting that any sites including distinct linear features or enclosures would have been detected successfully, if present. Late Iron Age/ Roman or early medieval settlements would normally fall into this category.

5 CONCLUSIONS

5.1 Significance, potential and priorities for further investigation

5.1.1 Palaeolithic remains found at the site consist of a sequence of three Pleistocene fluvial terrace deposits. The lowest terrace has produced *bout coupé* handaxes and Levalloisian material probably dating to the last glaciation. Sites of this period are rare in Britain, and the fresh condition of the material suggests a low level of disturbance. The second terrace has produced one artefact (in reasonably fresh condition, suggesting minimal disturbance) from sieving almost $1m^3$ of gravel, and also contains a fine-grained alluvial deposit overlying the gravel that has low–moderate potential for the presence of undisturbed remains. The third terrace has not produced any artefacts, albeit from a very limited investigation, but also contains finer-grained sediments with some potential for the presence of undisturbed remains, as well as gravels.

5.1.2 Besides the importance of the separate remains in each terrace, their importance is enhanced as a group. The deposits can be regarded as of national importance, and can make a significant contribution to national and regional research priorities in the Palaeolithic (Table 4). The deposits in Terrace 1 are already recognised as of national importance in their own right on the basis of the evidence already found.

5.1.3 The deposits in Terraces 2 and 3 are also of potential importance despite the low level of proven finds. Besides the low to moderate potential for undisturbed remains in the finer grained deposits of Terraces 2 and 3, any artefactual remains from the more disturbed sand/gravel units can also play a significant role in Palaeolithic research. Patchy distribution of artefacts in sand/gravel bodies means that artefact recovery may be richer in other parts of the deposit. These sand/gravel deposits are a relatively tightly defined space-time envelope within the great stretches of time in the Pleistocene. Therefore, especially if they can be dated, they provide the potential to explore changes in hominid presence and lithic technology/typology in the Isle of Wight leading up to the last glacial occupation represented in Terrace 1.

5.1.4 This is of importance for understanding of both the regional and the national Palaeolithic picture. Within the Isle of Wight, although several areas of Pleistocene fluvial deposit have been mapped, no chronologically successive terrace sequences such as found here have previously been recognised. The terraces at Pan present the first opportunity to look at the regional sequence of hominid settlement and cultural development. The Pan terraces present the opportunity to contribute to research at the national level, in conjunction with other regional sequences, as identified in the Thames Valley, East Anglia and (to a certain extent) in the eastern Solent Basin. A key question for the Palaeolithic is whether similar patterns of change are present in these different regions, or whether the sequence of settlement and cultural change varies contemporarily at the regional level. Investigation of sequences such as those found in the present test pit evaluation provides an important opportunity to investigate these issues.

5.1.5 Research potential and priorities for further investigation of the fluvial terrace deposits are summarised below (Table 4). In order to investigate the high potential deposits of Terrace 1 in the vicinity of St. George's Way it would be advisable to dig a stepped trench with a mechanical excavator, perhaps in the small field to the west of St. George's Way. This would: (a) create sections through the deposits, (b) create bulk sediment samples for sieving and (c) allow close access to the sections for cleaning, recovery of *in situ* artefacts, recording and any sampling (for instance OSL sampling). A useful supplement to this would be a surface artefact collection exercise focused on gravel banks along the course and sides of the present Medina channel in the site area — if artefacts are abundant in the deposits through which the present stream channel is cut then several could be expected to have eroded out and to be found in this way.

Nature of evidence present	*National/regional research framework objectives*	*Priorities for investigation*
• Fluvial sand/gravel (Terraces 1, 2 and 3) • Alluvial sand/silt (Terraces 2 and 3) • Slightly disturbed and fluvially transported artefacts	• Develop regional/national framework of cultural change • Dating artefact-bearing deposits within regional, national and international Quaternary frameworks • Behaviour of Archaic (pre-anatomically modern) hominids a) at specific sites, b) across the wider landscape • Patterns of colonisation, settlement and abandonment through the Pleistocene • Developing a regional framework of Pleistocene landscape history	• Identification of any Terrace 1 deposits in potential impact areas • Improved understanding of distribution and depth of Terrace 3 sediments in Area 3 • Identification of any undisturbed artefactual evidence in fine-grained alluvial sediments of Terraces 2 & 3 • Further sieving of terrace deposits to (a) broaden artefact sample for Terrace 2 and (b) establish presence/prevalence in Terrace 3 • OSL dating of Terraces 1, 2 and 3

Table 4. Palaeolithic remains, research potential and priorities for investigation

5.2 Impact of the development

Area 1

5.2.1 This area has been designated as part of the proposed urban development. However, it lies in an area of very high potential for Palaeolithic archaeology. There is therefore a presumption in favour of preservation in situ of these remains. It is intended that the site will be retained as a public open space and educational/ amenity site, to enhance the site and offset the cumulative adverse impacts of the development.

5.2.2 The present phase of evaluation has not produced any evidence for prehistoric, Roman or Anglo-Saxon remains, but the potential for medieval settlement evidence in the vicinity of Great Pan Farm remains high.

Area 2

5.2.3 Archaeological potential in Area 2 is similar to that in Area 1. In light of the known high Palaeolithic potential, substantial development has been avoided. Nonetheless, there are plans for a major access route and drainage running east from St. George's Way, as well as associated services and street furniture. This will cut transversely across deposits of Pleistocene Terraces 2 and 3 and probably impact upon deposits of Terrace 1 in the vicinity of St. George's Way. Any deep excavation work could, without mitigation, have a major adverse impact upon any Palaeolithic or Pleistocene remains that may be present. Considering that this impact will not destroy the entirety of these sediment bodies, there is no reason not to carry it out, provided appropriate mitigation and recording of the affected sediments takes place (See Section 5.3 below).

5.2.4 Terrace 1 deposits are likely to be present between 4m and 8m, with their base at c 4m OD, and can be seen to be present to the west of St. George's Way. It is uncertain how far east these extend, and whether they underlie St George's Way or extend east of it into the sports training ground. The base of the Terrace 2 deposits slopes up from 10.6m OD at TP 1 (where it is 2.6m below ground surface level) to 12.35m OD at TP 3 (where it is 3.7m below ground surface level). Present evidence suggests that the base of the Terrace 3 deposits in this area are unlikely to occur more than 2m below current ground surface level. Further evaluation is required to establish the depths and locations of these deposits in sufficient detail to determine whether there is any construction impact (See Section 5.3 below).

5.2.5 The area lies close to the River Medina, which may have acted as a focus for settlement in all periods. There is substantial evidence for Late Iron Age and Roman settlement on the west side of the Medina and that potential may extend east of the river.

5.2.6 The geophysical survey and test pit evidence broadly support the suggestion that post-medieval settlement and agricultural activity within the development area is most likely to be concentrated in the vicinity of Great Pan Farm. It remains likely that occupation of the site extends back to the medieval period, although the documentary and archaeological evidence for this is slight at present, and could be

clarified by further archaeological work along the proposed access road (See Section 5.3 below). Such evidence would be of moderate local and regional significance if demonstrated, and could contribute to interpretation of the site for educational/ amenity purposes. The geophysical survey results do not support the presence of a deserted medieval village, as suggested by SMR reference 956.

Area 3

5.2.7 Mixed housing and urban development is planned in this area, along with associated access, services and street furniture. This is likely to have some impact upon deposits of Terrace 3, which are known to be present *c.* 1.5m below the ground-surface in the south-west corner of Area 3 (Fig. 4), and may be closer to the ground surface in places. Again this is no reason to alter any development plans, but further evaluation may need to be carried out to improve our current poor understanding of the distribution and depth of Terrace 3 sediments in Area 3 and their Palaeolithic content (See Section 5.3 below). This would allow more clarity over any archaeological implications for development in Area 3.

5.2.8 There is no evidence for significant prehistoric, Roman or medieval archaeological remains in this area, either from the desk-based assessment or the present evaluation, other than for post-medieval agricultural land-use. Two probable field boundary ditches, detected by the geophysical survey in field 3.4, appear to pre-date the 1841 Tithe map, although their alignment and spacing conforms with the surrounding post-medieval field pattern, suggesting that they were removed in comparatively recent times A stream valley that crosses the area is to be retained as a landscape feature. Area 4

5.2.9 This area has been designated for substantial housing development. There is no evidence for significant prehistoric, Roman or medieval archaeological remains, either from the desk-based assessment or the present phase of evaluation, other than for post-medieval agricultural land-use. A probable field boundary ditch, detected by the geophysical survey in field 4.3, appears to pre-date the 1841 Tithe map, although its alignment conforms with the surrounding post-medieval field pattern, suggesting that it was removed in comparatively recent times. A stream valley following the southern boundary of the area is to be retained as a landscape feature.

Palaeoenvironmental potential

5.2.10 Substantial impacts in the vicinity of the River Medina have been largely avoided. However if this situation changes, paleoenvironmental sampling of any alluvial deposits affected should form part of any mitigation strategy (Areas 1 and 2). Otherwise, on present evidence, the highest palaeoenvironmental potential lies in the two stream valleys that cross the development area (Areas 3 and 4). As both are to be retained as landscape features there is unlikely to be any direct construction impact to alluvial deposits associated with these streams. However, permanent or temporary crossing points may result in localised impacts. If any impacts are identified at the detailed design stage, a targeted sampling exercise should be carried out to inform local historic landscape reconstruction.

5.3 Recommendations for further work

5.3.1 Two clearly distinct categories of further work can be identified - Further evaluation and mitigation. These will have quite distinct aims and objectives, and consequently methods, and the carrying out of further evaluation is not intended to serve as mitigation of deposits already known to exist. The focus will be on gathering sufficient information, to establish appropriate mitigation, should there be impact. The precise nature and degree of mitigation will depend upon the level and location of impact, although very general indication can be given of methods that are likely to be suitable for mitigation.

Further evaluation of Pleistocene/ Palaeolithic remains

5.3.2 With regard to the three Pleistocene terraces identified in the test pit evaluation, there are three areas of uncertainty that require further evaluation, before a detailed mitigation strategy can be determined. These are listed below, along with a recommended strategy for further evaluation:

5.3.3 i) Establish the distribution and archaeological content of Terrace 3 - Further test-pitting following the previous method should be applied at closer intervals (10m is recommended) along the same transect between TP 5 and 6, beyond 13, and north and south of TP 6. Where a good sequence is seen, test pits should be enlarged and stepped to allow direct access for cleaning and recording. Particular attention should be paid to identification and recovery of lithic artefacts in fine-grained upper parts of the fluvial sequence.

5.3.4 ii) Establish the distribution and archaeological content of Terrace 1 - Further test-pitting following the previous method should be applied at closer intervals (10m is suggested) to the west of St. George's Way, and, if feasible, immediately to its east and in the north-west corner of the sports training ground field.

5.3.5 iii) Undisturbed remains in the alluvial silt member of the upper part of Terrace 2 - Test pits should be dug (a) at closer intervals along the TP 1-TP 3 transect down to the top of the fluvial gravels, looking for artefactual remains in the upper fine-grained alluvial member, and (b) in a grid to the north and south of the preliminary test pit transect. If more detailed design information is available when this work is carried out, this exercise should be targeted on the impact footprint.

Further evaluation of later prehistoric, Roman and medieval remains

5.3.6 It is recommended that targeted evaluation trenching is carried out across the site, at a percentage sample of c.1% with the following specific objectives:

- Establish the presence/ absence of medieval settlement on the site of Great Pan Farm, to inform subsequent strip, map and sample investigations.
- Test the results of the geophysical survey by investigating the magnetic anomalies recorded.
- Further investigate areas of cropmarks and earthworks identified by the desk-based assessment.

- Recover dating evidence for major episodes of historic landscape development, by cutting sections through existing and recorded boundary features (with due regard to Hedgerow Regulations).
- Test starting assumptions that the northern part of the development area has limited archaeological potential.

5.3.7 Trenching will not be carried out in the stream valleys crossing Areas 3 and 4 as these are to preserved as landscape features (but see palaeoenvironmental mitigation recommendations below).

Mitigation strategy

5.3.8 The mitigation strategy depends upon (i) the results of further evaluation and (ii) the level of impact, to be determined when more detailed design information is available. The following recommendations are intended as a guide for planning purposes and are subject to modification in the light of further evaluation results.

5.3.9 *Paleolithic/ Pleistocene remains* - If any undisturbed Palaeolithic/ Pleistocene remains are found, and are subject to construction impact (a low probability) then detailed open area excavation will be required. If somewhat disturbed remains are found, and are subject to construction impact, then more trenches should be excavated, with larger scale sieving for artefact recovery and section recording. This should be followed by monitoring and artefact recovery during construction earthworks. If the construction earthworks result in long exposed sections, then these should be properly cleaned and recorded.

5.3.10 *Prehistoric, Roman or medieval remains* - At present there is little direct evidence for significant later prehistoric, Roman or medieval remains within the development area, other than the potential for medieval settlement at Great Pan Farm. Any areas affected by construction impacts in the immediate vicinity of Great Pan Farm should be subject to strip, map and sample investigation, followed by more detailed recording if significant remains are found.

5.3.11 *Palaeoenvironmental evidence* - Substantial impacts in the vicinity of the River Medina have been largely avoided in the outline development proposal. However if this situation changes, paleoenvironmental sampling of any alluvial deposits affected should form part of any mitigation strategy (Areas 1 and 2). Otherwise, on present evidence, the highest palaeoenvironmental potential lies in the two stream valleys that cross the development area (Areas 3 and 4). As both are to be retained as landscape features there is unlikely to be any direct construction impact to alluvial deposits associated with these streams. However, permanent or temporary crossing points may result in localised impacts. If any such impacts are identified at the detailed design stage, it is recommended that a targeted sampling exercise should be carried out on suitable deposits, to inform local historic landscape reconstruction, including radiocarbon dating, analysis of pollen, waterlogged plant remains and any other preserved environmental indicators.

Appendix 1 GLOSSARY OF TECHNICAL TERMS

BOUT COUPÉ HANDAXE. Distinctive finely made handaxe, thinned and shaped all around, with a rounded point and a distinctive, flattened butt end retaining clear angles between the butt and the sites

GLACIATION. The formation, advance and retreat of glaciers and the results of these activities — associated with periods of prolonged cold although not always glacial conditions, and periods of lowered sea levels [cf. Table 1].

INTERGLACIAL. Period of sustained warmth between glaciations, usually associated with a return of sea levels to those approaching modern levels [cf. Table 1].

LATE PLEISTOCENE. The youngest sub-division of the Pleistocene (qv), representing the period between the peak of the last interglacial *c.* 125,000 BP and the end of the last glaciation *c.* 10,000 BC [cf. Table 1].

LEVALLOIS TECHNOLOGY. A distinctive form of lithic technology involving careful preparation (usually radial) of one surface of a large flint core before removal from that surface of a substantial flake of predetermined shape.

MARINE ISOTOPE STAGES. Cold and warm stages of Pleistocene (qv) climatic history inferred from changing proportions of O^{18} and 0^{16} in (a) deep sea foraminifera from continuous ocean floor sediment sequences and (b) water trapped in continuously accumulated ice sheets from Greenland and the Antarctic [cf. Table 1].

MIDDLE PALAEOLITHIC. The middle sub-division of the Palaeolithic (qv) period, associated with the presence of Neanderthals (qv) and defined by any or all of: the presence of Levalloisian core-working technology, the manufacture and use of numerous standardised flake tools and the presence of *bout coupé* handaxes.

NEANDERTHAL. An extinct form of early human that was present in England and Europe between *c.* 350,000 and 30,000 BP, distinguished by a squat strong body, a jutting facial region, receding chin and large brow ridges. Brain size was similar to, or larger than, modern humans. Neanderthals were rapidly replaced by anatomically modern humans in middle of the last ice age — the precise details of how and why this took place remain murky, but it is clear that modern humans are not evolved from Neanderthals but from an older African lineage, and that Neanderthals became extinct without giving rise to any descendant human species.

OSL DATING. OSL (or Optically Stimulated Luminescence) dating is a form of dating based on measurement of the residual potential of sand grains to emit light on heating — this is dependent upon how long since the grain was last exposed to daylight, and consequently can be used to date the formation of the sediment.

OSTRACODS. Ostracods are tiny aquatic bivalved crustaceans with calcitic shells. Different species have very specific habitat requirements, and so, if present, they can provide valuable palaeo-environmental indications.

PALAEOLITHIC. The earliest period of the human prehistoric past, starting with the first use of stone tools and finishing at the end of the last glaciation *c.* 10,000 BP. Sub-divisions of the Palaeolithic are based on the presence and appearance of different types of stone tools.

PLEISTOCENE. The last 1.6–2 million years (often synonymous with the ice ages) excluding the Holocene [cf. Table 1]. The Pleistocene is characterised by an alternating series of cold periods [glaciations (qv)] and warm periods [interglacials (qv)]

TERRACE DEPOSITS. A terrace is a segment of floodplain or erosional surface abandoned by river incision, terrace deposits consist of a variety of fluvial and colluvial/solifluction deposits relating to the history of sediment accumulation associated with the floodplain/floodplain edge prior to downcutting and formation of the geomorphological feature known as the terrace.

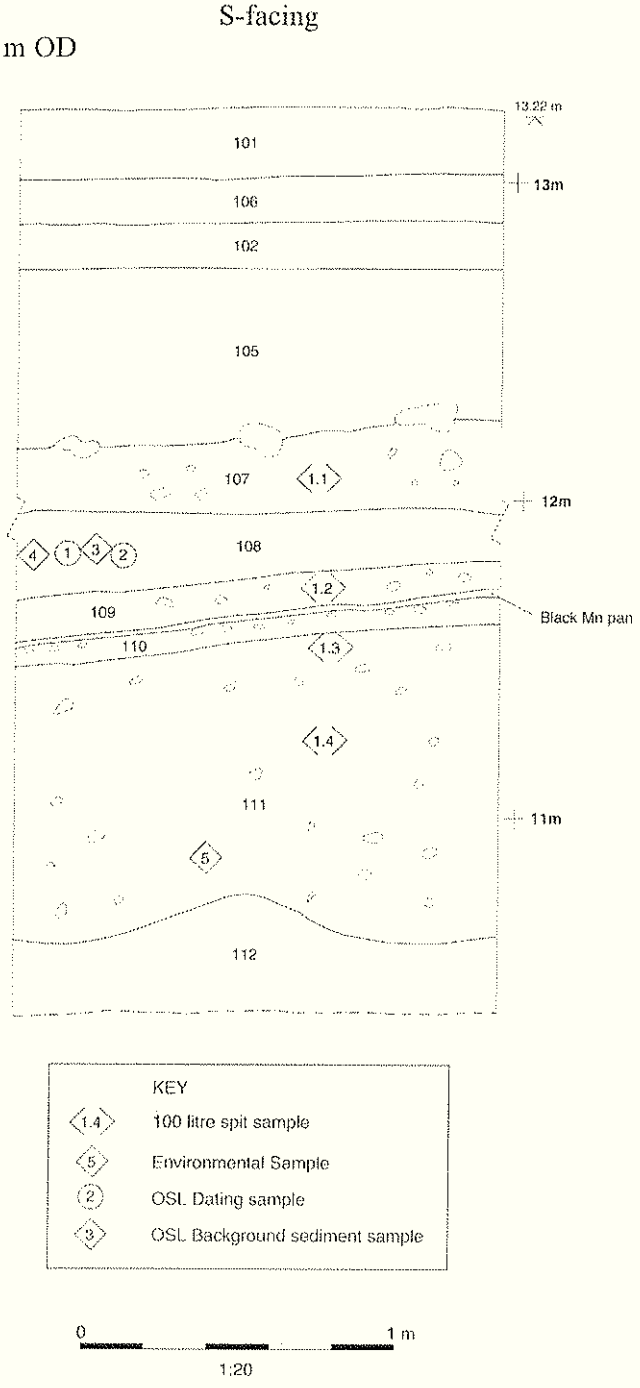
RAISED BEACH. A deposit formed as part of a beach during an interglacial (qv) period but now elevated above modern sea levels by tectonic activity.

Epoch	*Age (kBP)*	*MI Stage*	*Traditional stage (Britain)*	*Climate*
Holocene	Present 10,000	1	Flandrian	Warm — full interglacial
Late Pleistocene	25,000	2	Devensian	Mainly cold; coldest in MI Stage 2 when Britain depopulated and maximum advance of Devensian ice sheets; occasional short-lived periods of relative warmth ("interstadials"), and more prolonged warmth in MI Stage 3.
	50,000	3		
	70,000	4		
	110,000	5a–d		
	125,000	5e	Ipswichian	Warm — full interglacial
Middle Pleistocene	190,000	6	Wolstonian complex	Alternating periods of cold and warmth; recently recognised that this period includes more than one glacial–interglacial cycle; changes in faunal evolution and assemblage associations through the period help distinguish its different stages.
	240,000	7		
	300,000	8		
	340,000	9		
	380,000	10		
	425,000	11	Hoxnian	Warm — full interglacial
	480,000	12	Anglian	Cold — maximum extent southward of glacial ice in Britain; may incorporate interstadials that have been confused with Cromerian complex interglacials
	620,000	13–16	Cromerian complex and Beestonian glaciation	Cycles of cold and warmth; still poorly understood due to obliteration of sediments by subsequent events
	780,000	17–19		
Early Pleistocene	1,800,000	20–64		Cycles of cool and warn, but generally not sufficiently cold for glaciation in Britain

Table 1. Pleistocene framework and Marine Isotope Stage

APPENDIX 2 TEST PIT SUMMARIES

Test pit 1



IV — TOP SOIL

101 TOP SOIL AND TURF.

III — RECENT MADE GROUND

106 MADE GROUND. Firm brown/dark y'sh-brown sandy clay-silt with angular to sub-angular flint pebbles [resulting from adj. pipeline laying?]

102 STONY LOAM. Dark grayish-brown clay-silt/sand with common small pieces of CBM and charcoal [resulting from adj. pipeline laying?]

II — COLLUVIUM

105 SANDY CLAY-SILT. W-compacted y'sh-brown/dark y'sh-brown sandy cl-silt, softer and increasingly sandy towards base with remnant fine bedding; contains occ. sub-angular flint nodules/pieces up to 10cm size

107 GRAVEL. Reddish-brown matrix-supported structureless flint gravel, poorly sorted, clasts 1–10cm and occ. larger, gen. sub-ang and mod. rolled; matrix is cohesive clay-silty m–c sand

I — PLEISTOCENE FLUVIAL DEPOSITS, T2

108 CLAYEY SAND. Greenish-gray with orange-brown mottles clayey fine sand with clay-rich patches, mod. soft and cohesive; occ. ang. to sub-ang. flint clasts 2–12cm size at basal junction

109 SANDY GRAVEL. Y'sh-brown matrix-supp sandy flint gravel, mod. soft and loose, mod. to poorly sorted, m–vc clasts, sub-ang. & abraded, in sl. silty f–c sand matrix

110 SAND CAPPED WITH GRAVEL. Orange-brown med. sand with freq. m-c flint peb's (sub-ang. & abraded) lying flat in upper 2cm, capped by *c.* 10–20mm thick black Mn pan

111 GRAVEL. Strong brown/y'sh-red matrix-supp. sandy flint gravel, mod. soft and loose, poorly sorted, c–vc clasts and common flint nodules/pieces 10–15cm, sub-ang. & abraded, in sl. silty c–vc sand and vf gravel matrix

TERTIARY BEDROCK

112 CLAY\SAND. Mod. to w-compacted greenish-gray and dark gray clay

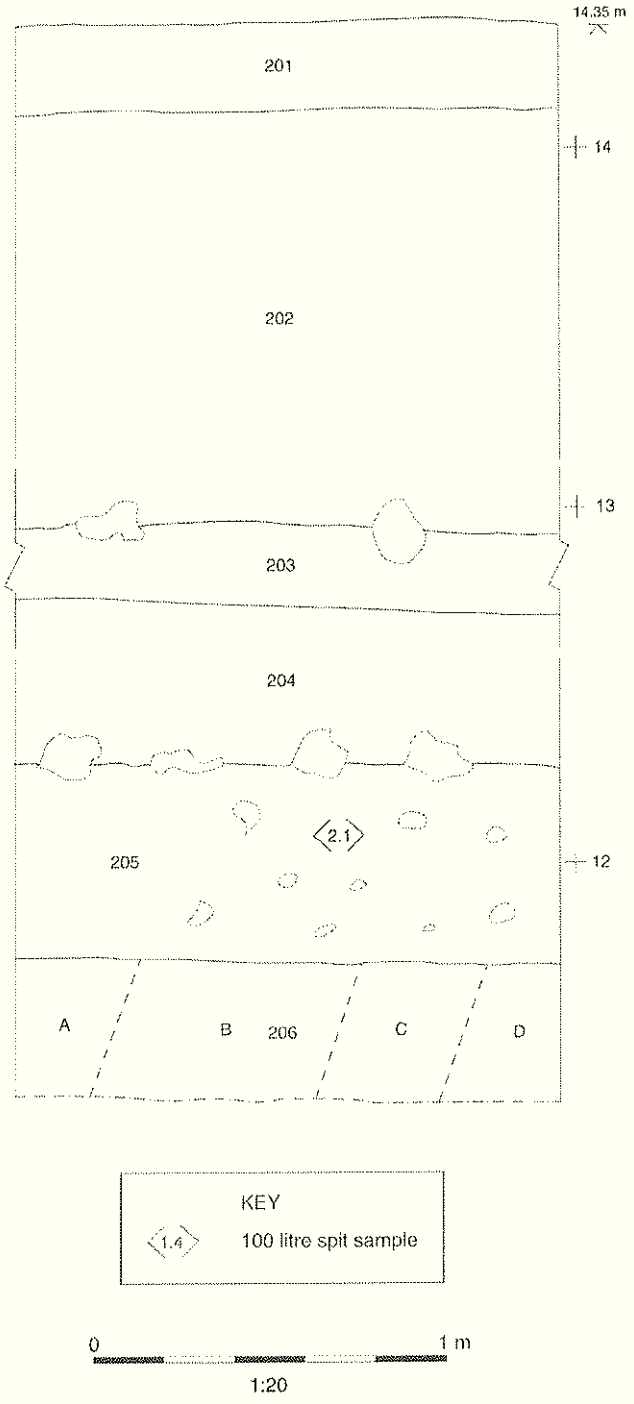
Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
107	1.1	100	-	-
108	1–2 [OSL]	0.5	-	-
	3 [OSL]	0.05	-	-
	4	0.05	-	-
109	1.2	100	-	-
110/111	1.3	100	-	-
111	1.4	100	-	-
111	5	0.05	-	-

Test pit 2

W-facing

m OD



IV — TOP SOIL

201 TOP SOIL & TURF. Two fresh condition lithic artefacts of late prehistoric period (probably Neolithic) found at base of topsoil.

II — COLLUVIUM

202 SILT/SAND. Mod. compacted yellowish-brown sandy clay-silt, friable and slightly cohesive; more sandy and less silty in central part of deposit; increasingly clay-silty again in bottom 20cm

203 GRAVELLY SILT/SAND. Y'sh-brown clay-silty sand, mod. compacted, with mod. common vf–c flint peb's and occasional flint nodules 15–20cm (ang. to sub-ang., mod. abraded)

I — PLEISTOCENE FLUVIAL DEPOSITS, T2

204 GRAY CLAY. Slightly sandy clay with occ. angular/sub-angular sharp edged flint pieces/nodules (8–15cm) towards base; gen. pale olive/light gray with strong brown/yellowish-red mottling at top

205 COARSE SANDY GRAVEL. Mod. soft and loose, poorly sorted c–vc flint gravel with common flint nodules/pieces 10–15cm in strong brown/yellowish-brown m–c sand matrix; clasts angular/sub-angular, often with fresh sharp edges

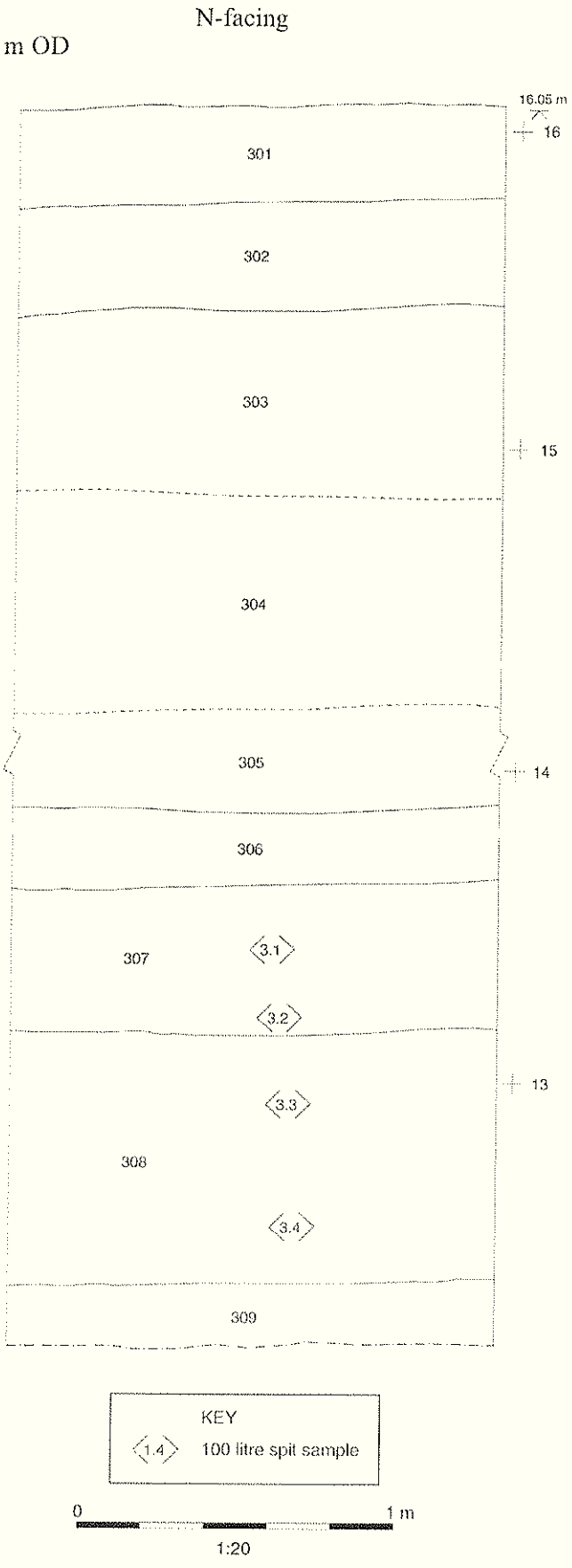
TERTIARY BEDROCK

206 CLAYS/SILTS/SANDS. Parallel beds 30–50cm thick sands/silts/clays dipping *c.* 75° to north; bed colour varying: very dark gray, mid-brown, yellowish-red, light gray

Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
201			Two fresh flints, one flake and one core, prob. Neolithic	
204	2.1	100	-	-

Test pit 3



IV — TOP SOIL

301 TOP SOIL.

302 LOAMY SUB-SOIL. Dark y'sh-brown cl-silt/sand, mod. compacted, light and friable

II — COLLUVIUM

303 CLAY-SILT. Y'sh-brown sandy cl-silt, mod. compacted and friable

304 SILTY SAND. Y'sh-brown silt/vf sand, mod. compacted

305 CLAYEY SILT. Y'sh-brown clayey silt, mod. to w-compacted

306 STONY CLAY-SILT. Y'sh-brown clay-silt, w-compacted, with mod. common m–vc flint clasts (ang. sub-ang., some with sharp edges and frost-fractured)

I — PLEISTOCENE FLUVIAL DEPOSITS, T2

307 GRAVELLY SAND. Yellowish-red/brownish-yellow f–m sand, greenish in places, mod. soft, with mod. common flint clasts 2–10cm (ang. to sub-ang.)

308 GRAVEL. Strong brown/reddish-yellow (with sub-horiz. black Mn pan) matrix-supp. sandy flint gravel, mod. soft, poorly sorted, m–vc clasts (ang. to sub-ang., sharp to mod. abraded) and mod. common flint nod's 6–16cm in m–vc sand matrix

TERTIARY BEDROCK

309 SANDY CLAY. Olive/grayish-brown brecciated clay, sandy in places, mod. to w-compacted

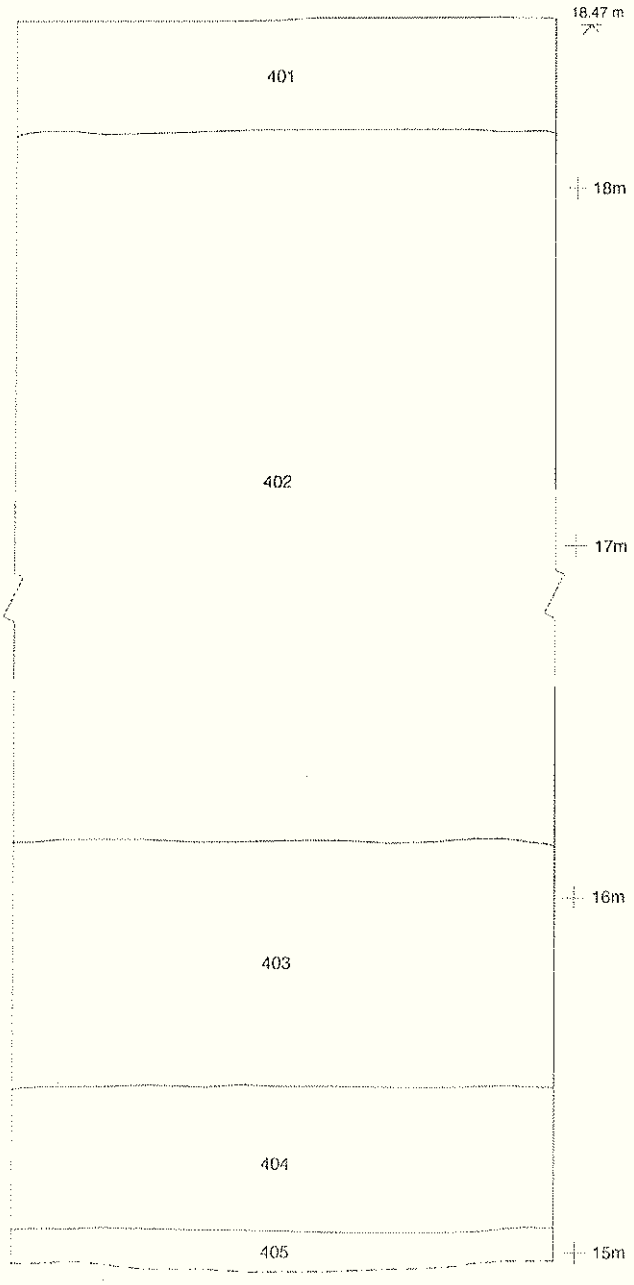
Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
307	3.1	100	-	-
307/308	3.2	100	-	-
308	3.3	100	One fresh flint flake	-
	3.4	100	-	-

Test pit 4

N-facing

m OD



IV — PLOUGH-SOIL

401 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

II — HOLOCENE COLLUVIUM

402 STONY CLAY-SILT. Strong brown/y'sh-brown clay-silt, slightly sandy (vf–f) in places, w-compacted, with freq. flint peb's and cob's (2–15cm), ang. to sub-ang.

403 CLAY-SILT WITH OCCASIONAL FLINTS. Y'sh-brown/orange-brown silt, mod. to w-compacted, with occ. flint cob's (sub-angular)

TERTIARY BEDROCK

404 SANDY CLAY. Olive/y'sh-brown sandy clay, w-compacted, massive and structureless

405 CLAY. Mottled gray/olive/y'sh-red clay, w-compacted

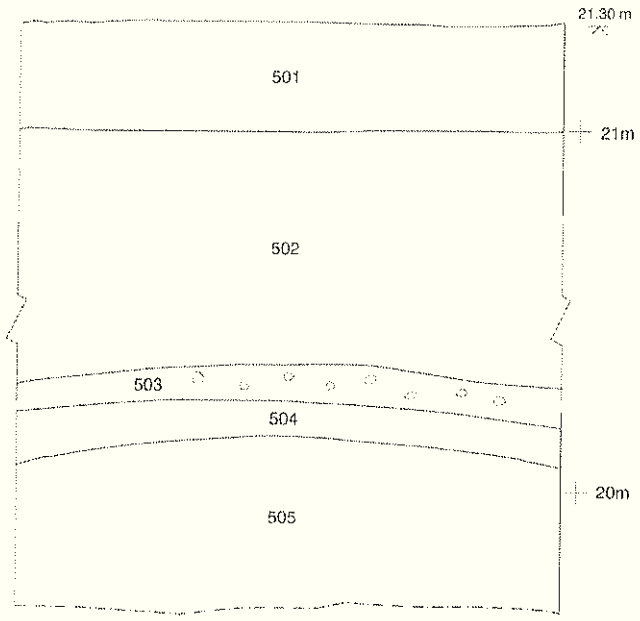
Archaeological sampling and finds

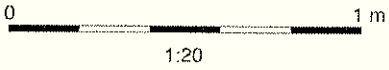
None

Test pit 5

N-facing

m OD





I — PLOUGH-SOIL

501 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

II — COLLUVIUM

502 CLAY. Olive/greenish-gray with reddish-brown streaks/mottles clay, mod. to w-compacted, cohesive and massive

I — PLEISTOCENE FLUVIAL DEPOSITS, T3

503 GRAVELLY CLAY-SILT. Strong brown/y'sh-brown/reddish-yellow sl. sandy cl-silt, mod. to w-compacted, with mod. common f–vc flint gravel

504 SANDY CLAY-SILT. Strong brown/y'sh-brown/reddish-yellow sl. sandy cl-silt, mod. to w-compacted

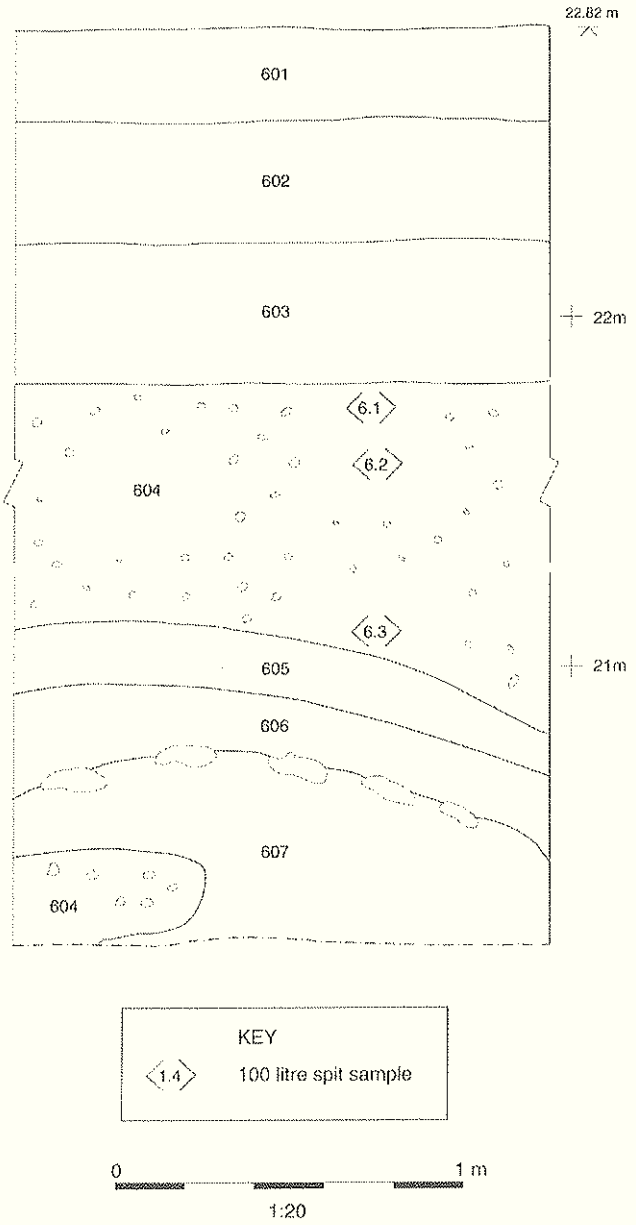
TERTIARY BEDROCK

505 CLAY. Olive/gray clay, with strong brown/y'sh-brown mottles

Test pit 6

N-facing

m OD



IV — PLOUGH-SOIL

601 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

602 SUB-SOIL. Dark grayish-brown sandy clay-silt, friable and mod. cohesive, with mod. common sub-ang. flint peb's 2–8cm

II — COLLUVIUM

603 STONY CLAY-SILT. Dark yellowish-brown clay-silt, structureless and w-compacted with mod. common flint pebbles (1–8cm), angular to sub-angular

I — PLEISTOCENE FLUVIAL DEPOSITS, T3

604 GRAVEL. Dark y'sh-brown matrix-supp. clayey flint gravel, mod. to w-compacted, mod. to poorly sorted, clasts m–vc and occ. small flint cob's 8–16cm (ang. to sub-ang.) in cohesive sl. sandy cl-silt matrix with common grit/vf gravel

605 CLAY. Gray (with strong brown mottles) clay, w-compacted, massive and structureless

606 SANDY CLAY-SILT. Y'sh-brown/strong brown/reddish-yellow sandy (f) cl-silt, cohesive and mod. compacted, with intermittent layer of large sub-angular flint nodules (cream/orange stained/patinated) at basal junction

TERTIARY BEDROCK

607 GLAUCONITIC SAND. Dark greenish-gray f–m sand, mod. compacted

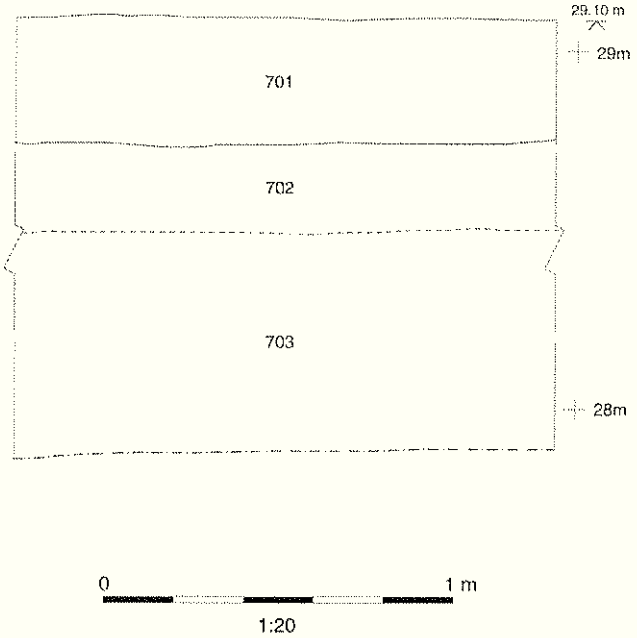
Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
604	6.1	100	-	-
	6.2	100	-	-
	6.3	100	-	-

Test pit 7

S-facing

m OD



IV — PLOUGH-SOIL

701 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm and one late prehistoric flint waste flake

TERTIARY BEDROCK

702 SANDY CLAY-SILT. Dark y'sh-brown, fading downward to y'sh-brown, sl. sandy clay-silt, mod. to w-compacted and cohesive

703 ARGILLACEOUS SAND. Mottled gray/brownish-yellow/yellowish-red fine sand, sl. clay-silty in places, well-compacted; occ. vertical fissures/root intrusions c. 15mm diameter infilled with dark y'sh-brown sub-soil and occ. iron-stained nodular concretions 2–3cm diameter

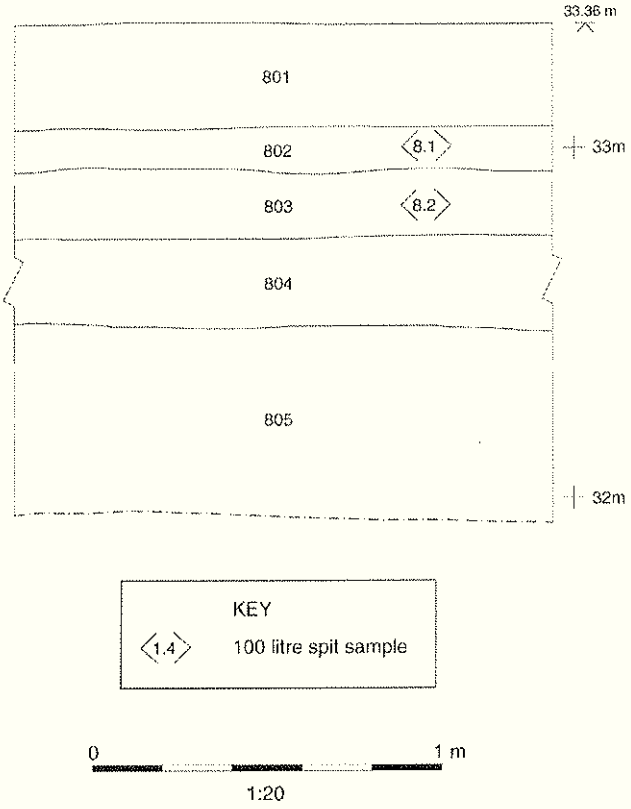
Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
701	-	-	One mod. fresh flint flake — late prehistoric	-

Test pit 8

S-facing

m OD



IV — PLOUGH-SOIL

801 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with frequent flint peb's and small cob's, angular to sub-angular and mod. abraded, and occ. cbm

PLATEAU GRAVEL

802 FLINT GRAVEL. Strong brown matrix-supp. clay-silty flint gravel, mod. to w-compacted and cohesive, poorly sorted, clasts m–c, occ. larger, and gen angular

803 GRAVELLY CLAY. Strong brown with gray mottles sl. silty clay with mod. common f–m angular flint peb's, w-compacted

TERTIARY BEDROCK

804 SILTY CLAY. Strong brown with gray mottles sl. silty clay with lens of f–m flint gravel

805 ARGILLACEOUS SAND. Orange/reddish-yellow sand with gray clayey lenses WNW–ESE across base of trench and dipping almost vertically north

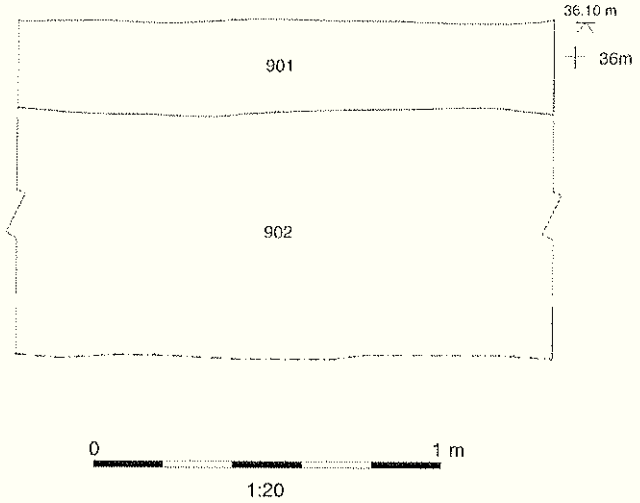
Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
802	8.1	100	-	-
803	8.2	100	-	-

Test pit 9

S-facing

m OD



IV — PLOUGH-SOIL

901 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

TERTIARY BEDROCK

902 SILTY/SANDY CLAY. Mottled y'sh-red/strong brown/gray sl. silty clay with occ. sandy lenses

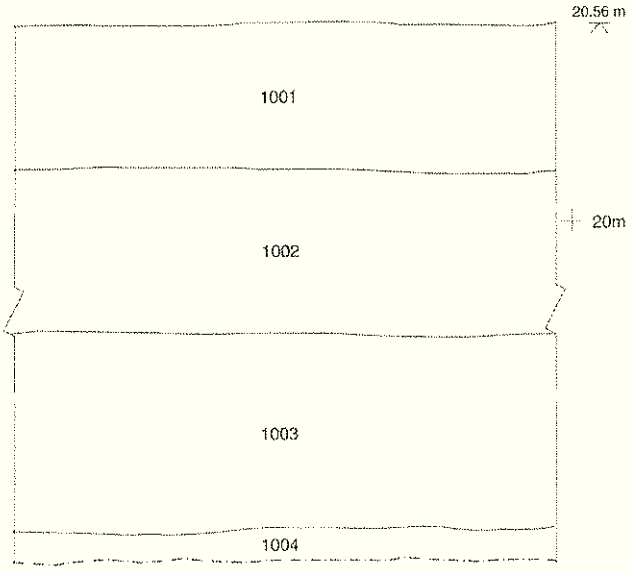
Archaeological sampling and finds

None

Test pit 10

N-facing

m OD



IV — PLOUGH-SOIL

1001 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

II — COLLUVIUM

1002 STONY CLAY-SILT. Y'sh-brown clay-silt with occ. c–vc ang. to sub. ang. flint peb's, mod. to w-compacted

1003 GRAVELLY LOAM. Y'sh-brown/grayish-brown sl. sandy clay-silt with mod. common f–c flint gravel (ang. to sub-ang), mod. compacted

TERTIARY BEDROCK

1004 CLAY. Gray with strong brown mottles clay

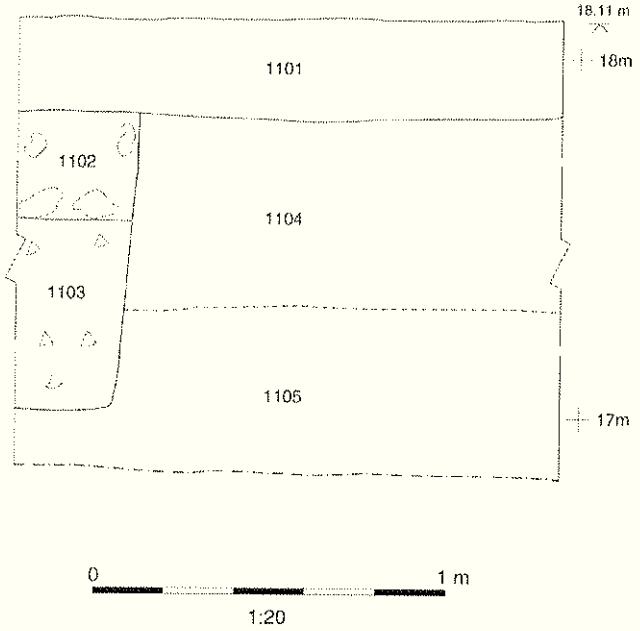
Archaeological sampling and finds

None

Test pit 11

E-facing

m OD



IV — PLOUGH-SOIL

1101 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm, and moderately fresh lithic waste flake of probable late prehistoric date

III — FEATURE

1102 COBBLE LAYER. Large flints (5–15cm) and pieces of post-med. cbm in y'sh-brown clay

1103 CHALK-RICH CLAY. Y'sh-brown clay with ang. to sub-ang. chalk peb's, cohesive and mod. compacted

II — COLLUVIUM

1104 CLAY WITH CHALK PEBBLES. Y'sh-brown clay with common chalk peb's (ang. to sub-ang.) and occ vc flint peb's (sub-ang), mod. compacted and very cohesive

TERTIARY BEDROCK

1105 CLAY. Gray with strong brown mottles clay, mod. to w-compacted

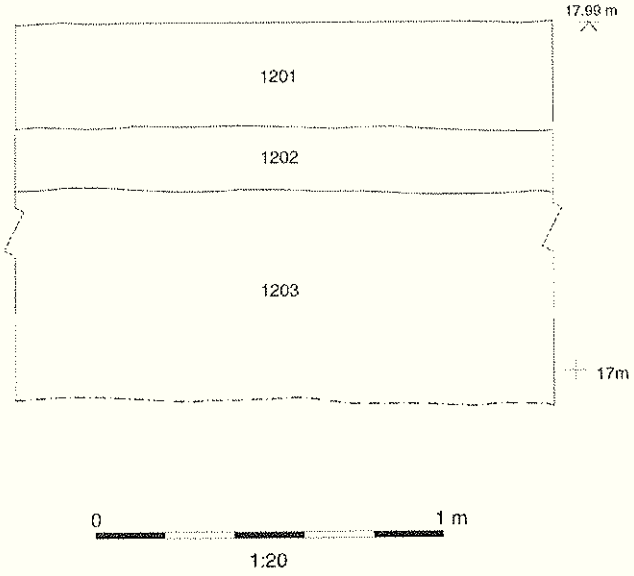
Archaeological sampling and finds

Context	*Samples <>*	*Vol. (lit.)*	*Lithic artefacts*	*Biological evidence*
1101	-	-	One mod. fresh flint flake — late prehistoric	-
1102	-	-	Four sherds of pot and five fragments of CBM— prob. 16th Century	-

Test pit 12

S-facing

m OD



IV — PLOUGH-SOIL

1201 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

II — COLLUVIUM

1202 STONY CLAY. Y'sh-brown/brownish-yellow clay with mod. common c–vc flint peb's and small cob's (sub-ang.), mod. compacted and very cohesive

TERTIARY BEDROCK

1203 CLAY. Olive/brownish-gray with strong brown/y'sh-red streaks/mottles clay, mod. to w-compacted and very cohesive

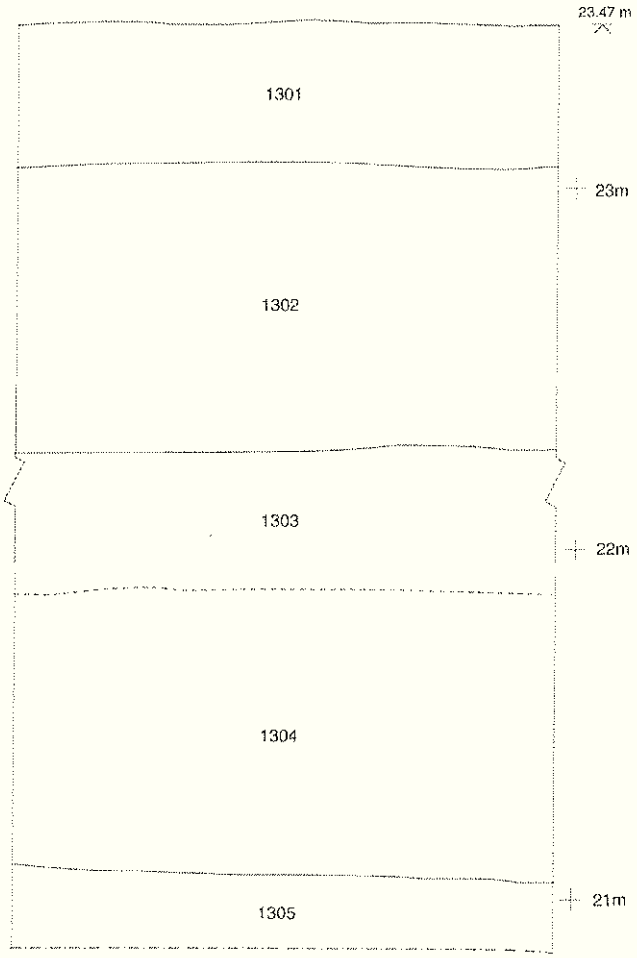
Archaeological sampling and finds

None

Test pit 13

S-facing

m OD



IV — PLOUGH-SOIL
1301 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

III — MADE GROUND/FEATURE?
1302 SUB-SOIL. Brown humic loam with occ. m–vc flint peb's and cbm, mod. soft and friable

II — COLLUVIUM
1303 GRAVELLY CLAY-SILT. Dark olive with reddish/y'sh-brown mottles silty clay with mod. common f–vc flint peb's (sub-ang), w-compacted

I — PLEISTOCENE FLUVIAL DEPOSITS, T3
1304 CLAY-SILT. Dark olive/grayish-brown silty clay with occ. patches/lenses of f–m flint gravel (sub-ang.) with some sand, w-compacted

TERTIARY BEDROCK
1305 SILTY SAND. Bands of olive/brownish-gray/grayish-brown fine sand with clay-silt lenses

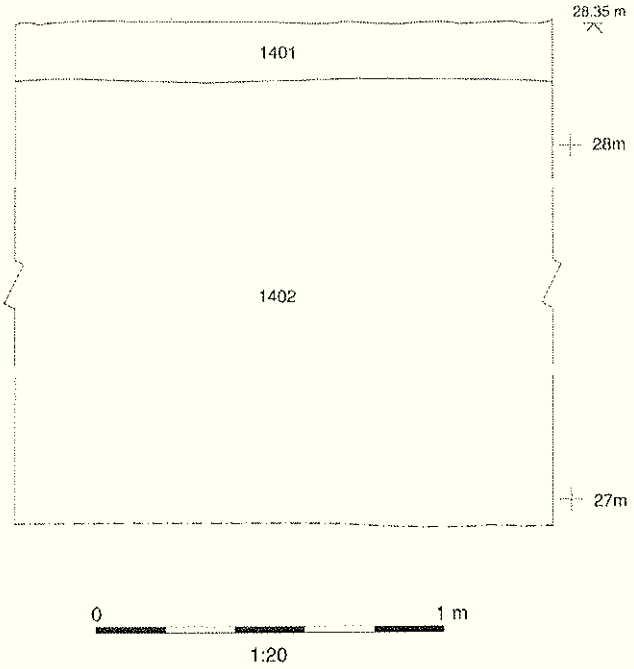
Archaeological sampling and finds

None

Test pit 14

S-facing

m OD



IV — PLOUGH-SOIL
1401 PLOUGH-SOIL. Brown, humic sl. sandy clay-silt with occ. flint and chalk peb's, occ. cbm

TERTIARY BEDROCK
1402 CLAY. Mottled strong brown/gray clay, w-compacted

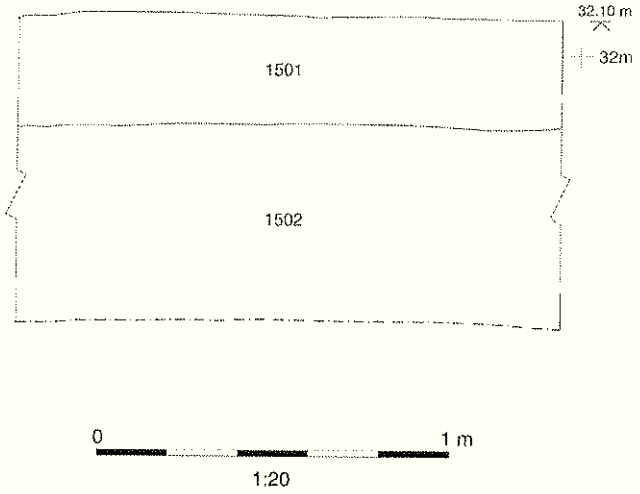
Archaeological sampling and finds

None

Test pit 15

N-facing

m OD



APPENDIX 3 PALAEOENVIRONMENTAL REPORT

MICROPALAEONTOLOICAL REPORT ON SAMPLES FROM GREAT PAN FARM, ISLE OF WIGHT (IWSMR5623)

John E. Whittaker
The Natural History Museum, London

INTRODUCTION

Two samples were provided in February 2005 by Dr F.F. Wenban-Smith (University of Southampton, in conjunction with Oxford Archaeology) from site IWSMR5623, Great Pan farm, near Newport, IOW. It was hoped the samples would yield some organic remains, possibly ostracods, and thus aid an environmental interpretation.

SAMPLES

Sample no.	*Context*	*Description*	*Weight processed*
4	108	Sandy clay overlying Pleistocene fluvial gravel	190g
5	111	Sandy clay at base of gravel, possibly from underlying Tertiary deposit	338g

The samples were processed in the usual way. Each was placed in a ceramic bowl and dried in an oven. Boiling water was then poured over them, with a little sodium carbonate added to help remove the clay fraction. They were left to soak overnight. They were then washed through a 75 micron sieve with hot water, the remaining residue being decanted back into a ceramic bowl before final drying in the oven.

RESULTS

Unfortunately both samples were completely barren, not just of calcareous matter but also of anything of an organic nature. There were not even any reworked microfossils in sample 5, to indicate derivation from a recognisable Tertiary deposit. The only component worthy of note in both samples were huge numbers of small iron spherules which may give some indication of the provenance of these deposits.

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8th March 2005

APPENDIX 4 GEOPHYSICAL SURVEY: SUMMARY OF FINDINGS

This list notes the more significant findings from the magnetometer survey. The grading (1-4) given alongside each entry refers to the reliability of the geophysical evidence rather than the archaeological significance of the findings.

Grade 1: Distinct magnetic anomalies of probable archaeological origin.
Grade 2: Magnetic anomalies possibly including natural or recent disturbances, but which could in part be archaeologically significant.
Grade 3: Weak or isolated features; not necessarily archaeologically significant.
Grade 4: Strong magnetic anomalies of probably recent or natural origin.

Area. Field	Feature	Comments	Grade
2.1		Field shows strong magnetic disturbance: could perhaps form part of 1920s quarry, or ground near river has been levelled or infilled.	3-4
2.2		Areas of disturbed readings around football pitch. Interference from floodlights to E and W of pitch. Disturbances to N are probably too weak to represent backfilled quarry.	4
2.3	A	Area of high readings from visible rubble.	4
2.3	B	Disturbances on line of trackway.	4
2.3	C	Linear markings – recent ploughing or ridge and furrow ?	2
2.3	D	Linear features: boundary or drain ?	3
3.1	E	Linear features – ploughing or ridge and furrow ?	2
3.1	F, G	Possible fragmentary linear features – boundaries ?	3
3.1	H	Weak negative linear feature – gulley / hollow ?	3
3.1	I	Isolated linear feature.	3
3.1	J	Dispersed groups of possible (weak) pit-like features. Further testing needed to confirm whether archaeological.	1-2
3.2	K	Disturbed readings represent former trackway and bonfire.	4
3.4	L	Disturbances may indicate former boundary.	1-2
4.2	M	Spring / bog, with neighbouring electricity pole.	4
4.2	N	Possible weak linear features.	2-3
4.3	P	Possible boundary.	2
4.4	Q	Isolated pit-like magnetic anomaly.	3
4.4	R	Linear anomalies: possible cultivation effects ?	2-3
4.5	S	Recent magnetic disturbances on low mound.	4
4.5	T	Disturbances on line of visible bank.	3
4.5	U	Magnetic anomalies in corner of field on sloping ground.	2-3
4.5	V	Magnetic disturbances around pond / hollow.	4
4.6	W	Weak linear feature and possible pit-like magnetic anomaly.	2-3

APPENDIX 5 BIBLIOGRAPHY AND REFERENCES

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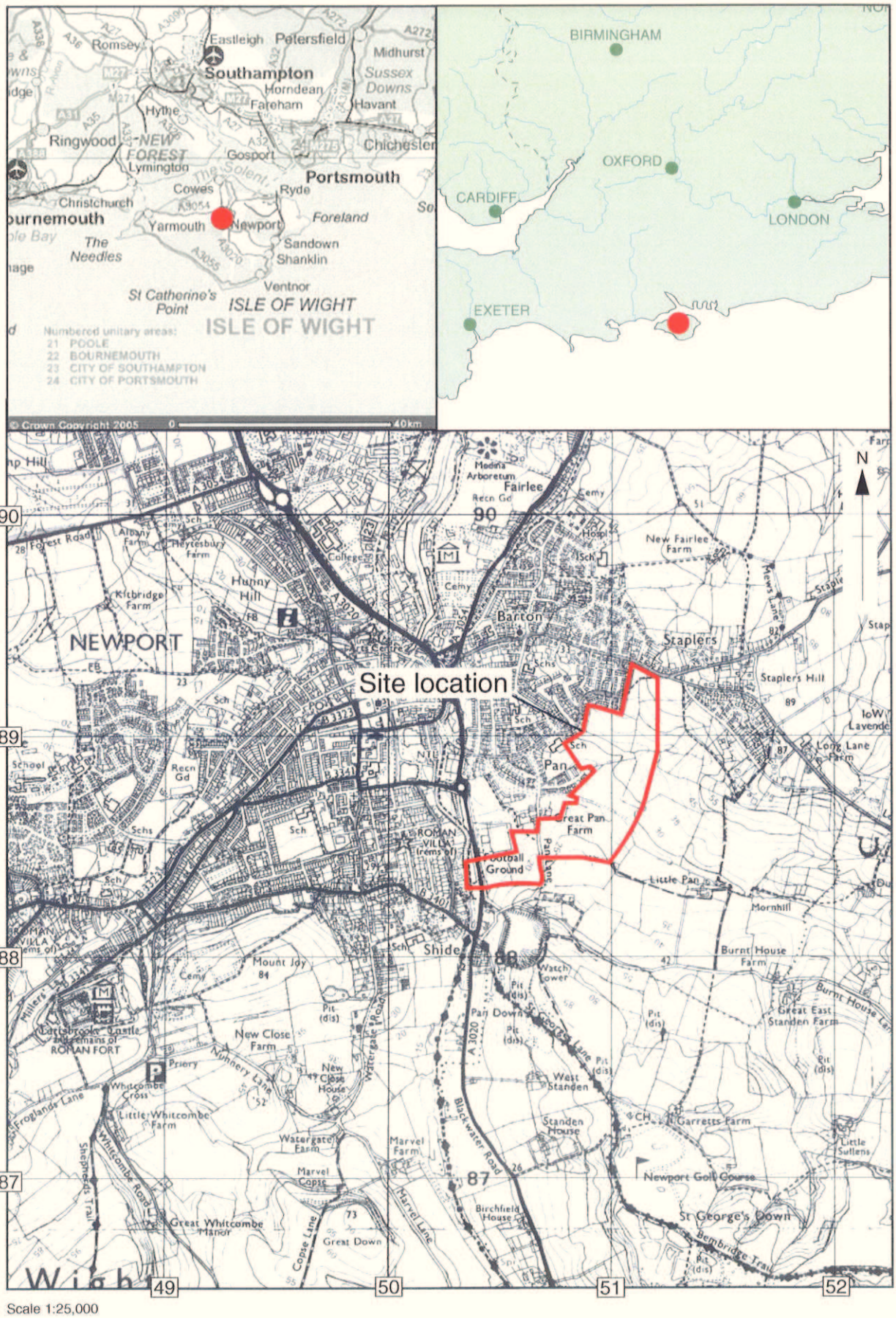
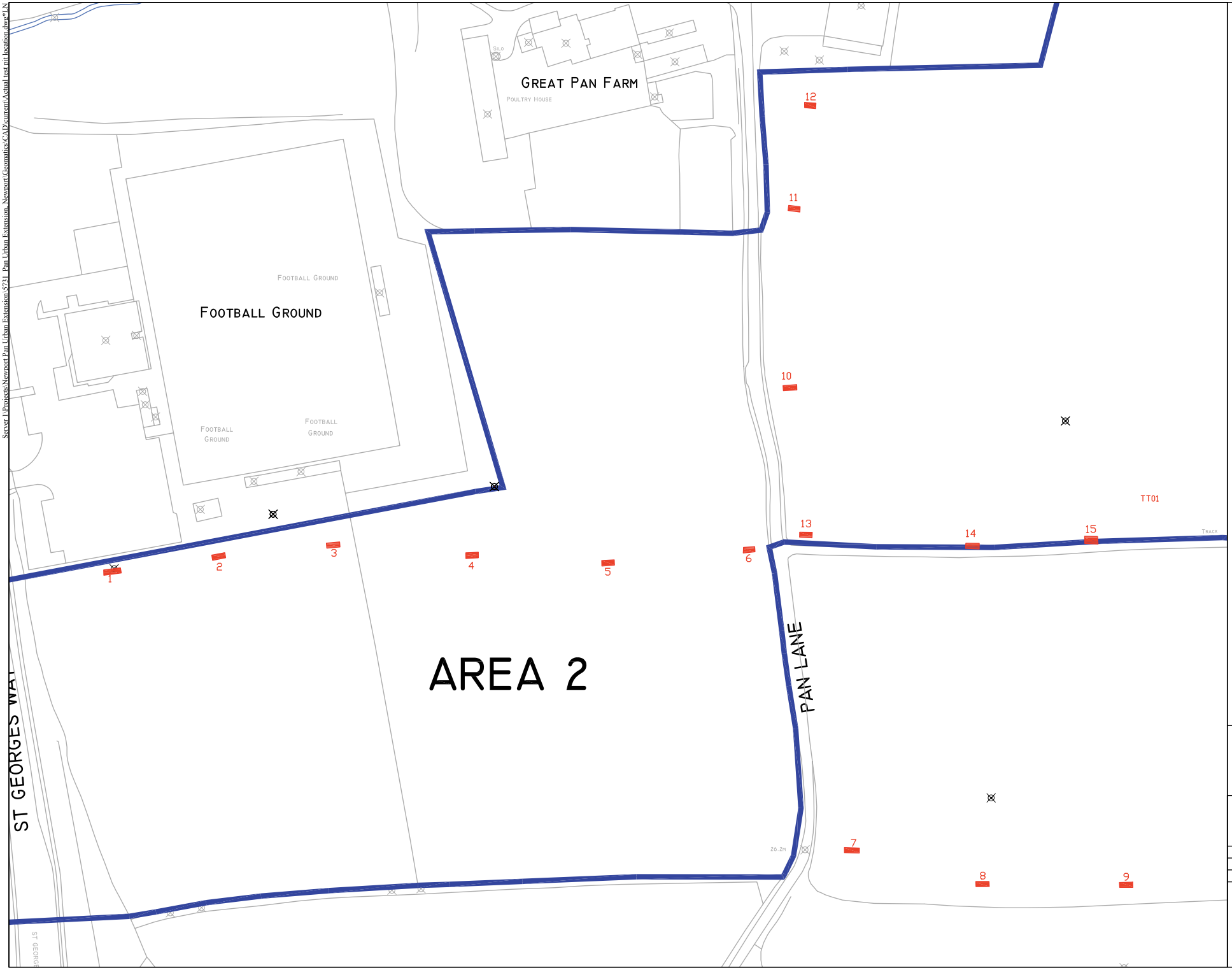
APPENDIX 6 SUMMARY OF SITE DETAILS

Site name: Pan Urban Extension
Site code: IWSMR5623
Grid reference: SZ 5090 8872
Type of evaluation: Geophysical Survey and 15 Palaeolithic/ Pleistocene Test Pits
Date and duration of project: 21st February – 3rd March 2005
Area of site: 32 hectares
Summary of results: In February 2005, Oxford Archaeology (OA) carried out a field evaluation at land to the east of St Georges Way, Pan, Newport, Isle of Wight on behalf of Isle of Wight County Council. The evaluation comprised 15 test pits in the southern part of the development area, designed to investigate Pleistocene/ Palaeolithic deposits, and a geophysical survey of the whole area. The test pits indicated three separate areas of Pleistocene fluvial deposits (terraces), from which a small number of possible struck flints were recovered. No palaeo-environmental remains were present. One test pit encountered a large, shallow, feature of uncertain shape and extent, which contained 16th century finds. The geophysical survey showed slight traces of linear features or cultivation trends, but no obviously significant archaeological remains.
Location of archive: The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES, and will be deposited with the Isle of Wight Museums Service in due course, under the site code IWSMR5623.



Scale 1:25,000

Figure 1: Site location



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Tel: 01865 263800 Fax: 01865 793496
email : mail@oxfordarch.co.uk
web : www.oxfordarch.co.uk

IWSMR5623

Pan Urban Extension

Drawing No.	OA1
Date printed	25 / 02 / 05
Drawing title	

Test Pit Locations

CHECKED BY:

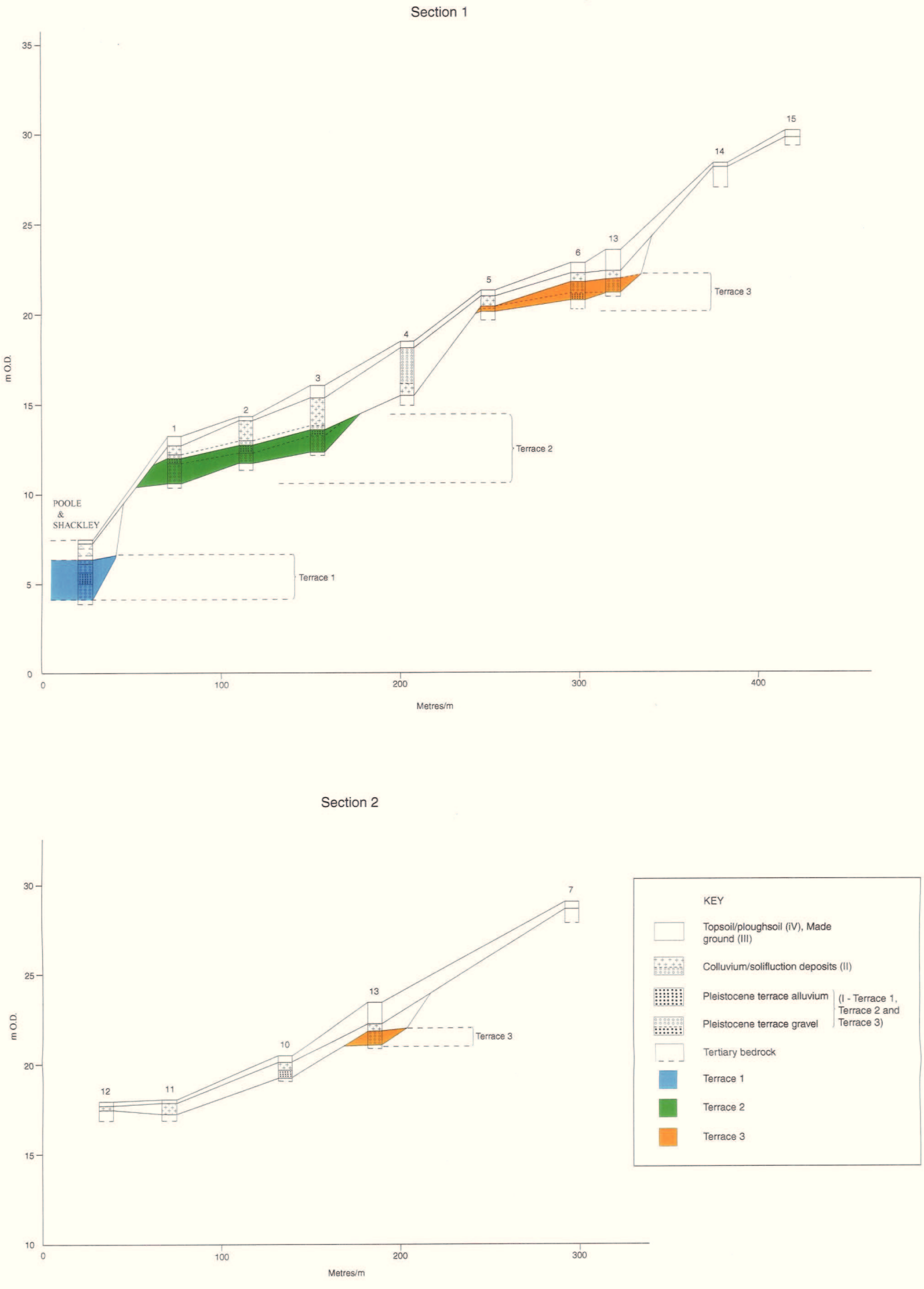
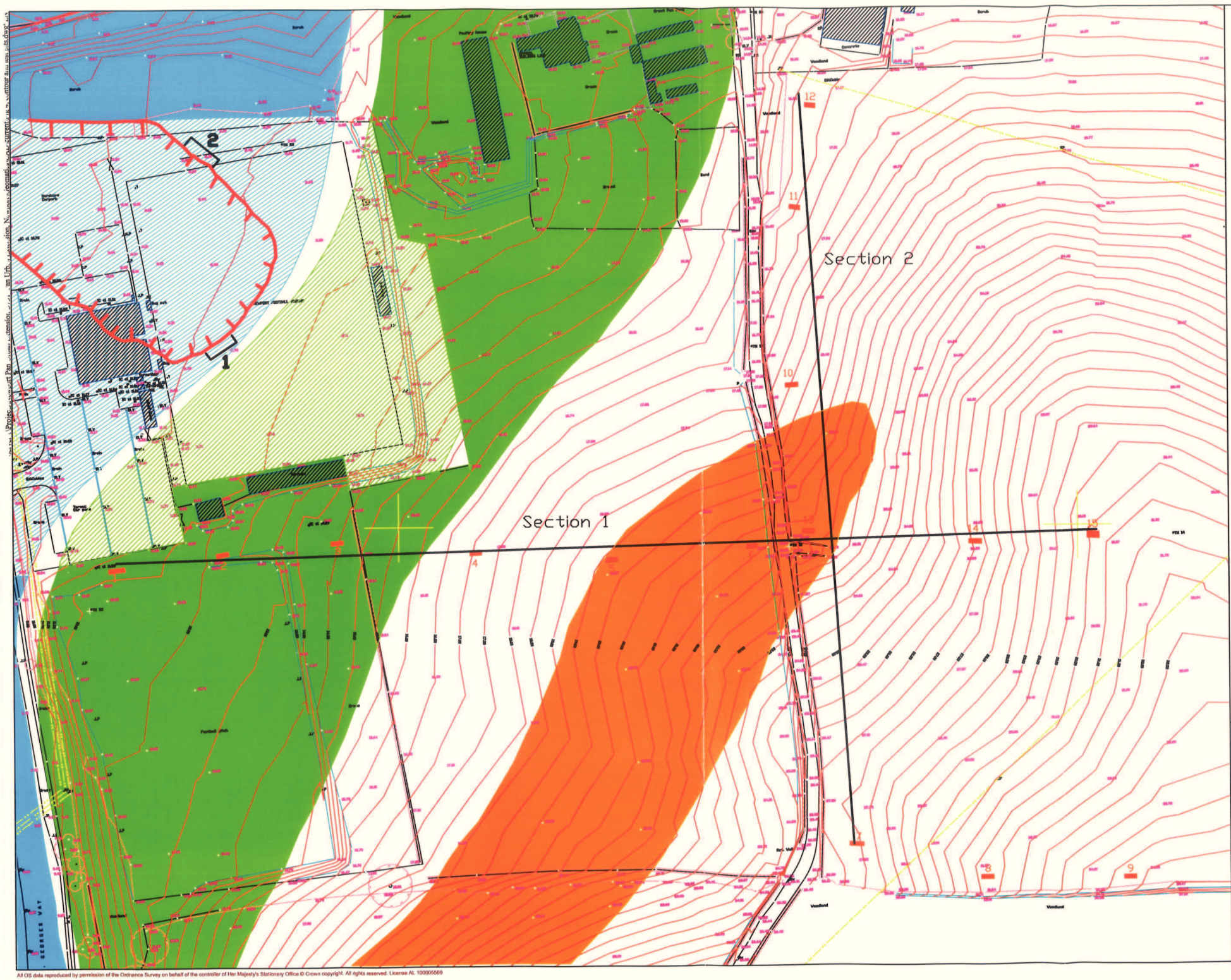


Figure 3: Section 1 (W - E) and Section 2 (N - S)



Oxford Archaeology
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email : mail@oxfordarch.co.uk
web : www.oxfordarch.co.uk

IWSMR5623

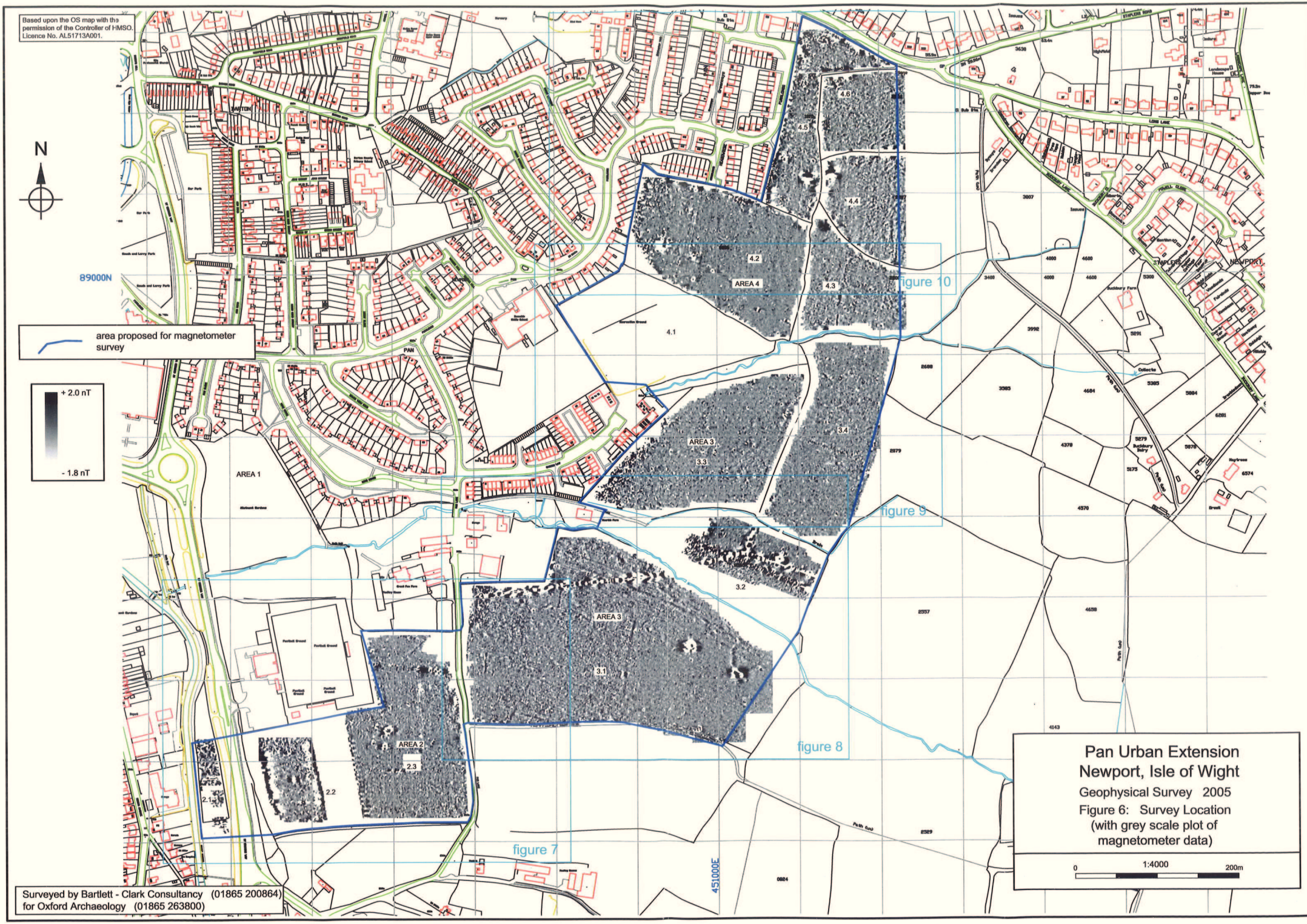
Pan Urban Extension

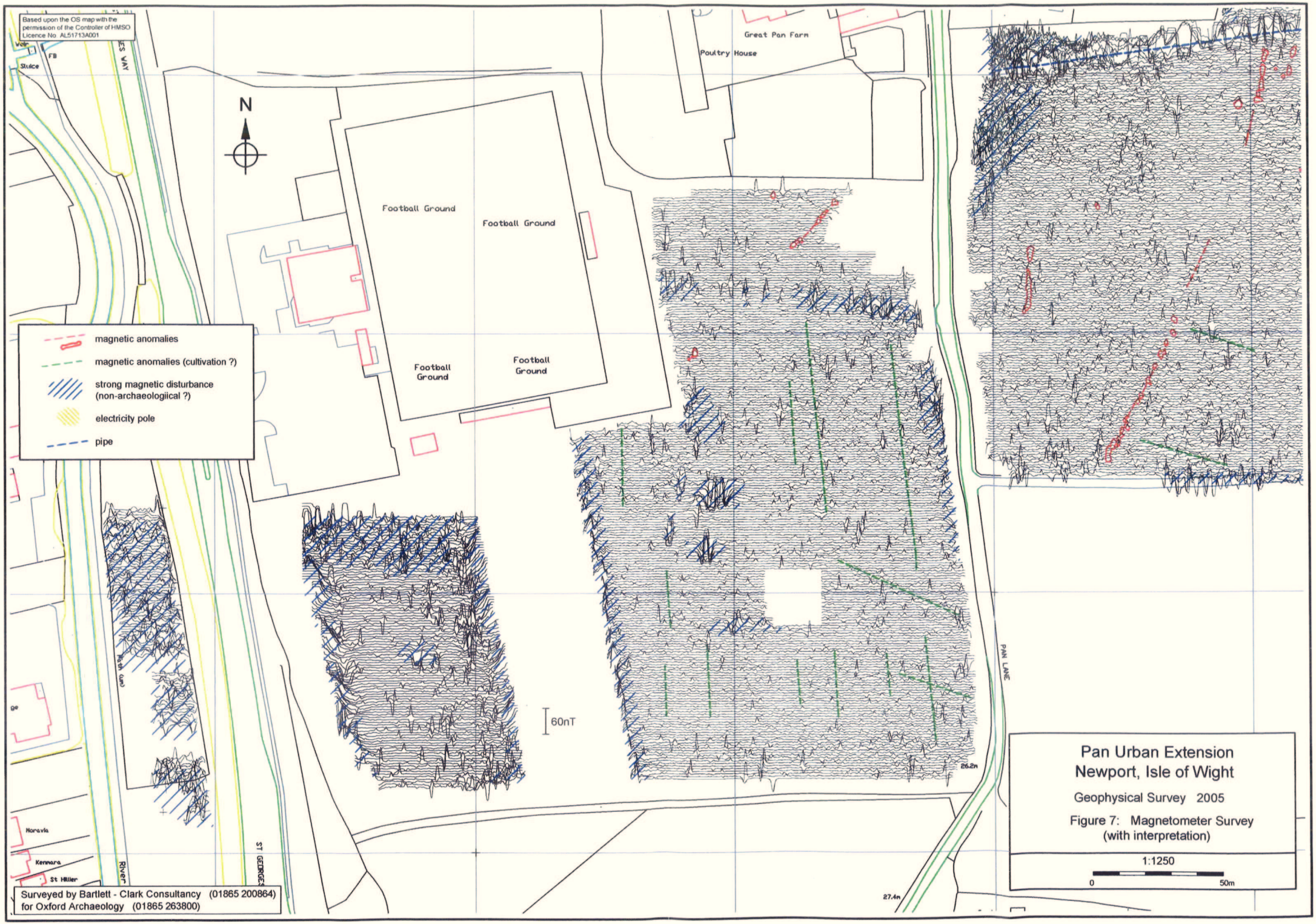
Drawing No.	DRAWING ID
Date printed	07 / 03 / 05
Drawing title	

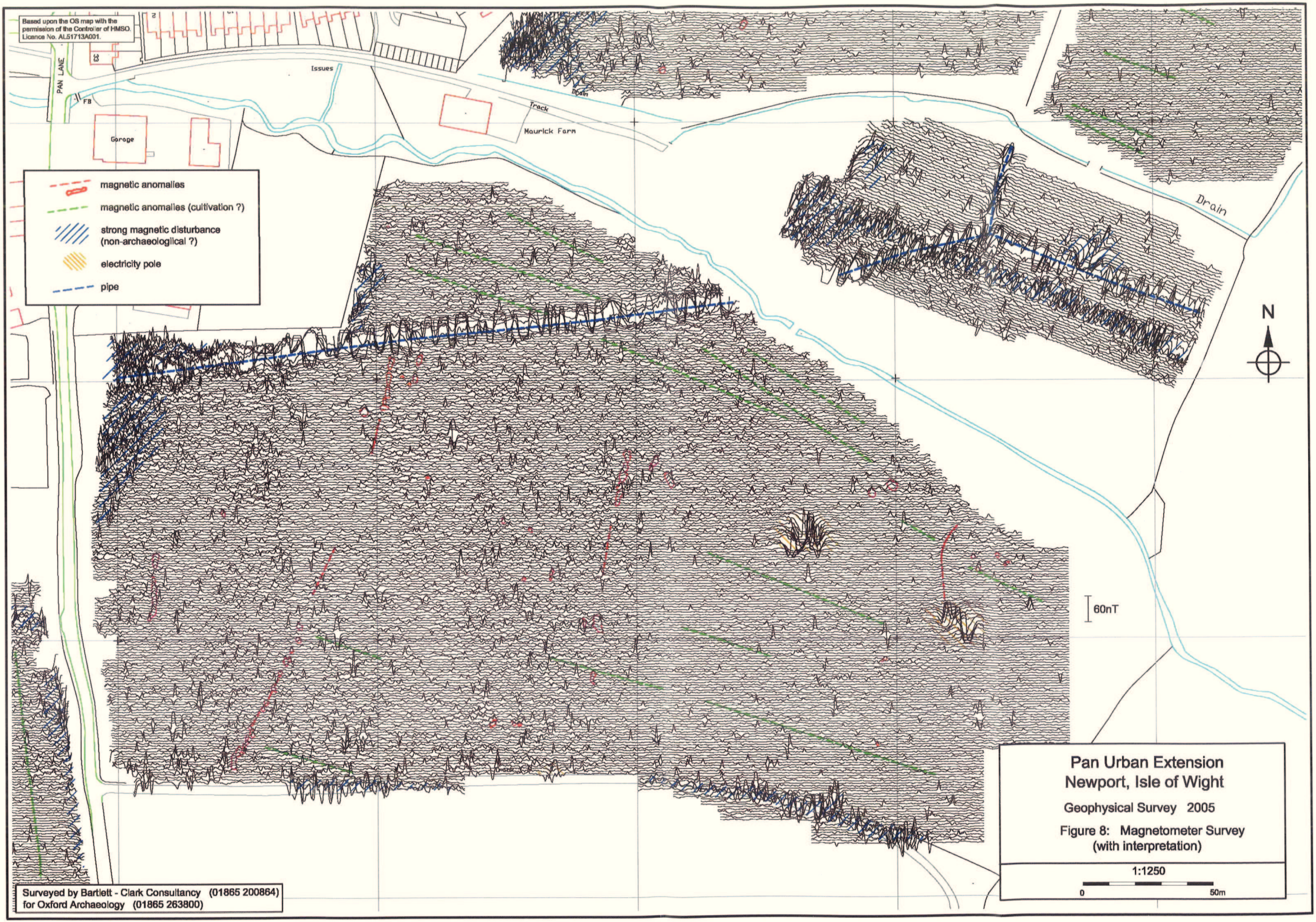
Figure 4

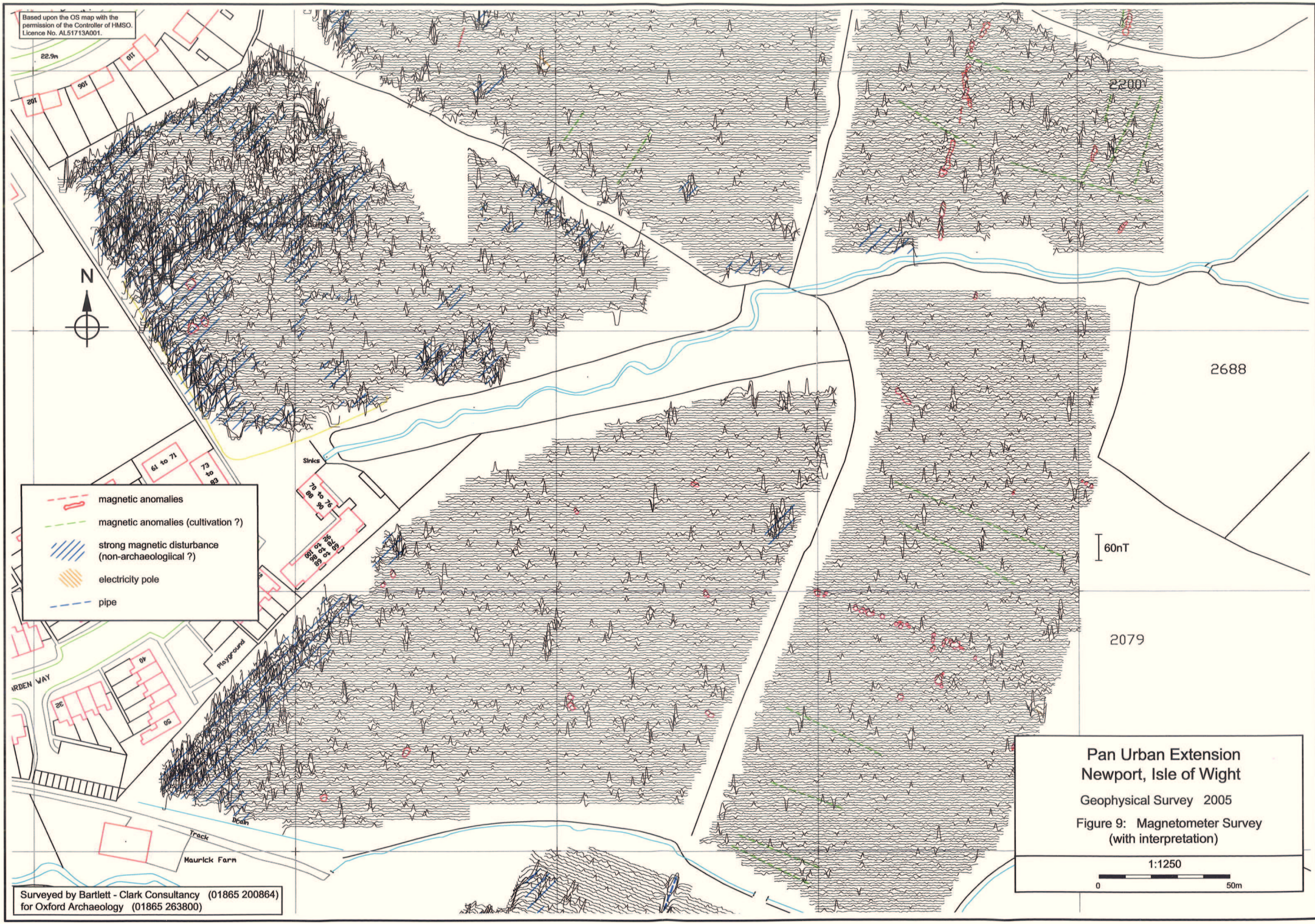
CHECKED BY:

Figure 5: Flint waste flake from Terrace 2 fluvial gravel, test pit 3

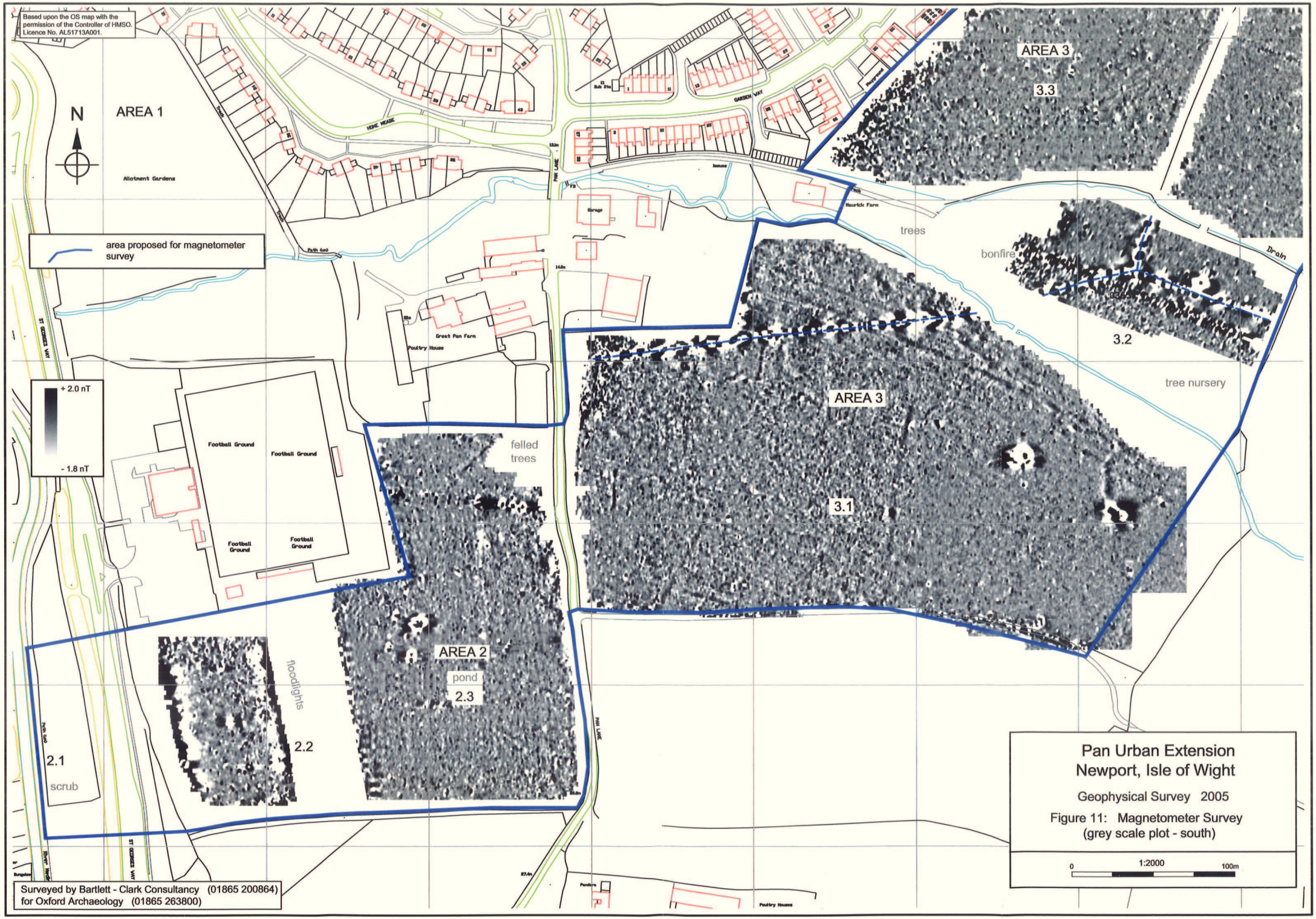

Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
N
89000N
area proposed for magnetometer survey
+ 2.0 nT
- 1.8 nT
AREA 1
AREA 2
AREA 3
AREA 4
2.1
2.2
2.3
3.1
3.2
3.3
3.4
4.1
4.2
4.3
4.4
4.5
4.6
figure 7
figure 8
figure 9
figure 10
451000E
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 6: Survey Location
(with grey scale plot of
magnetometer data)
0
1:4000
200m
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)


Based upon the OS map with the permission of the Controller of HMSO Licence No: AL51713A001
Great Pan Farm
Poultry House
N
Football Ground
Football Ground
Football Ground
Football Ground
magnetic anomalies
magnetic anomalies (cultivation ?)
strong magnetic disturbance (non-archaeologiical ?)
electricity pole
pipe
60nT
PAN LANE
ST GEORGES
River
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 7: Magnetometer Survey (with interpretation)
1:1250
0
50m
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)

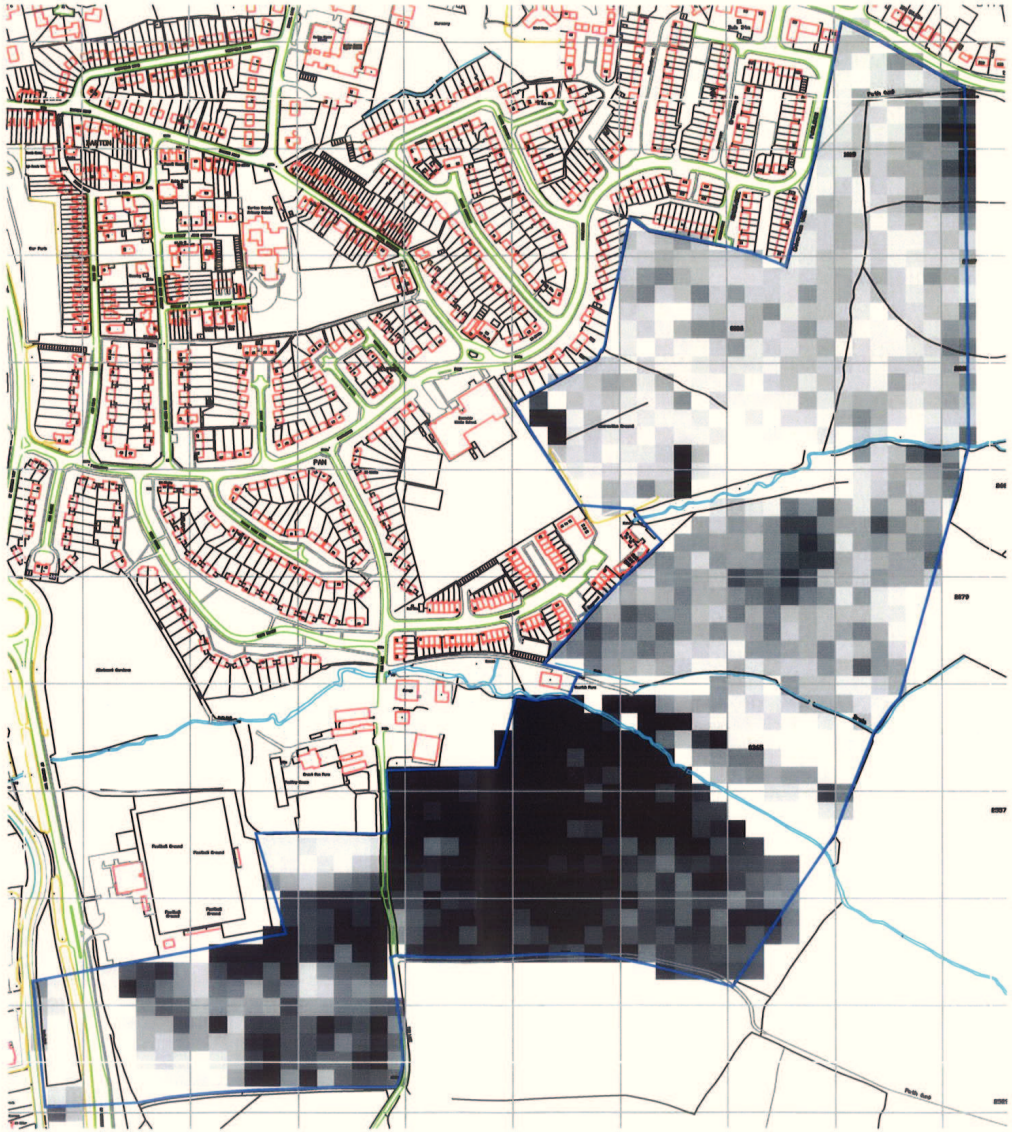

Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
PAN LANE
FB
Garage
Issues
Track
Maurick Farm
Drain
Drain
magnetic anomalies
magnetic anomalies (cultivation ?)
strong magnetic disturbance (non-archaeological ?)
electricity pole
pipe
N
60nT
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 8: Magnetometer Survey (with interpretation)
1:1250
0
50m
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)


Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
22.9m
101
90
102
110
N
2200
2688
2079
60nT
Sinks
61 to 71
73 to 83
70 to 74
88 90
92 94 96 98
magnetic anomalies
magnetic anomalies (cultivation ?)
strong magnetic disturbance (non-archaeologiical ?)
electricity pole
pipe
Playground
ARDEN WAY
40
38
50
Drain
Track
Maurick Farm
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 9: Magnetometer Survey
(with interpretation)
1:1250
0
50m

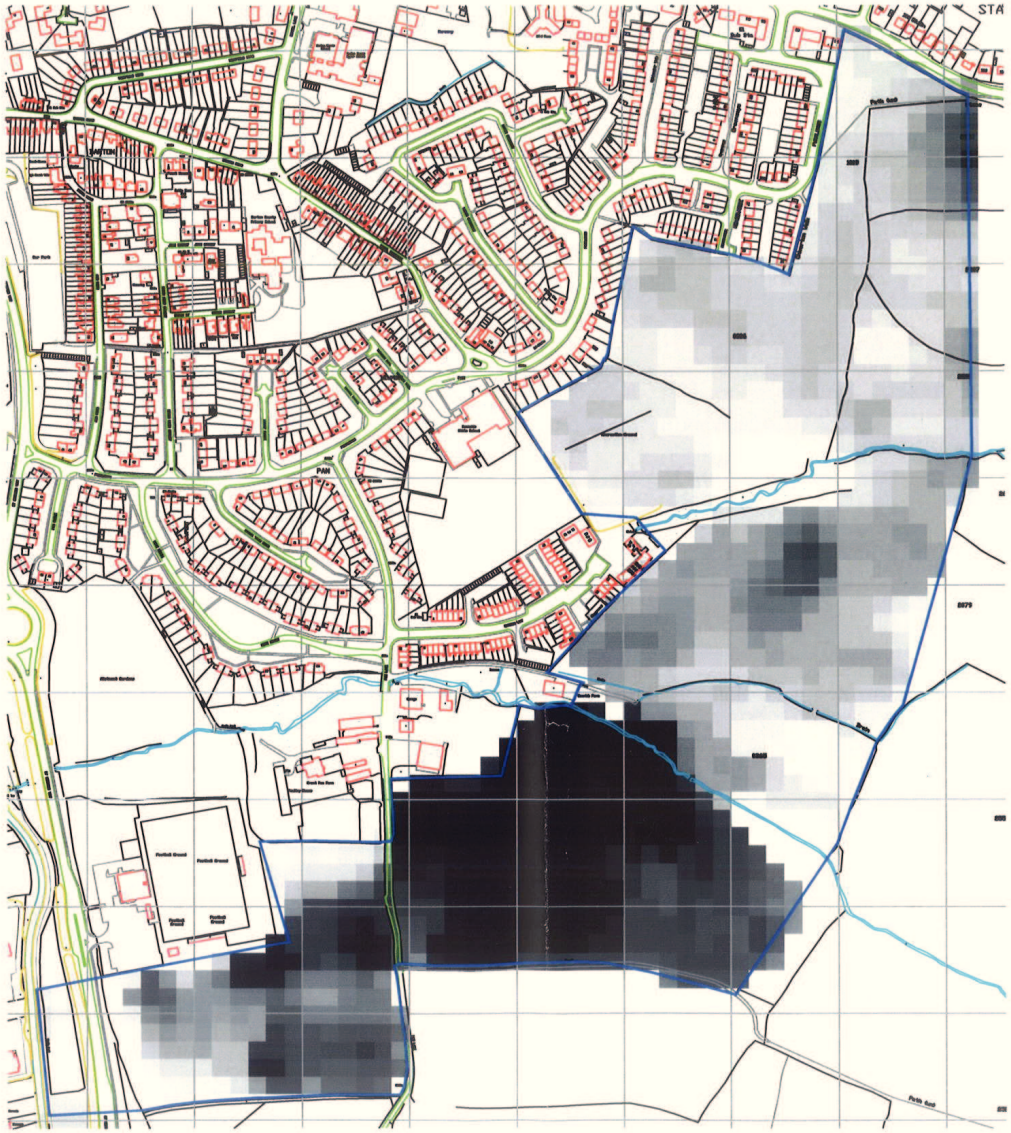

Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
N
magnetic anomalies
magnetic anomalies (cultivation ?)
strong magnetic disturbance (non-archaeological ?)
electricity pole
pipe
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 10: Magnetometer Survey (with interpretation)
1:1250
0
50m
El Sub Sta
PAN
Greenways
FURRLONGS
MEADOWSIDE
55.9m
60nT
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)


Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
N
AREA 1
Allotment Gardens
area proposed for magnetometer survey
+ 2.0 nT
- 1.8 nT
AREA 3
3.3
trees
bonfire
Drain
3.2
tree nursery
AREA 3
3.1
felled trees
Football Ground
Football Ground
Football Ground
Football Ground
AREA 2
pond
2.3
floodlights
2.2
2.1
scrub
Great Pan Farm
Poultry House
Maurick Farm
Garage
Poultry Houses
PAN LANE
GARDEN WAY
HOME MEADE
ST GEORGES WAY
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 11: Magnetometer Survey
(grey scale plot - south)
0
1:2000
100m
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)


Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
N
area proposed for magnetometer survey
+ 2.0 nT
- 1.8 nT
AREA 4
AREA 3
4.1
4.2
4.3
4.4
4.5
4.6
3.4
slope
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 12: Magnetometer Survey
(grey scale plot - north)
0
1:2000
100m
Surveyed by Bartlett - Clark Consultancy (01865 200864)
for Oxford Archaeology (01865 263800)



(i) Initial data



(ii) Data x median filter

25 x 10^{-5} SI (volume susceptibility)

0

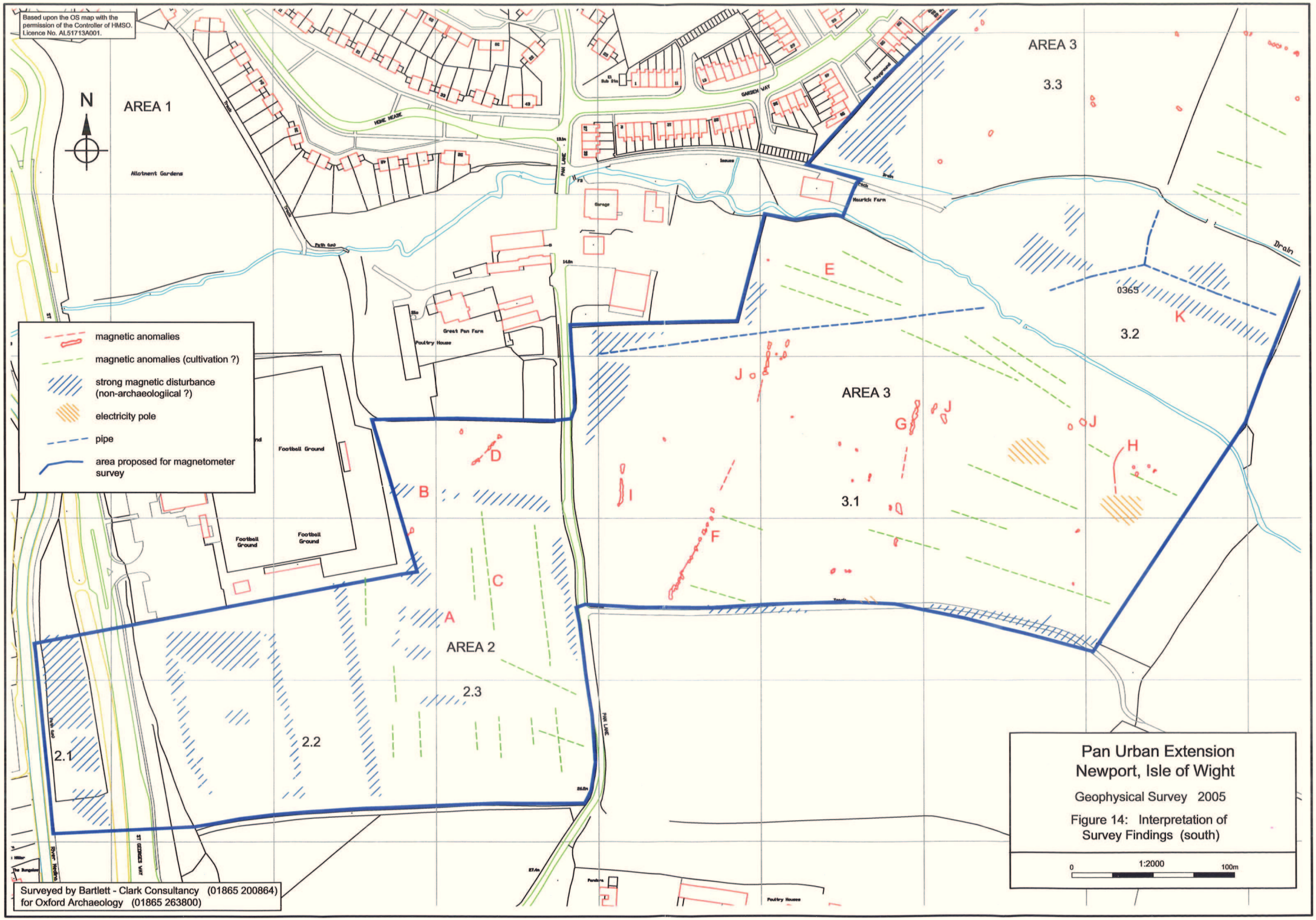
Surveyed by Bartlett - Clark Consultancy (01865 200864) for Oxford Archaeology (01865 263800)

Pan Urban Extension Newport, Isle of Wight

Geophysical Survey 2005

Figure 13: Magnetic Susceptibility Survey

0 1:5000 200m


Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
N
AREA 1
AREA 3
3.3
AREA 3
3.2
AREA 3
3.1
AREA 2
2.3
2.2
2.1
magnetic anomalies
magnetic anomalies (cultivation ?)
strong magnetic disturbance (non-archaeological ?)
electricity pole
pipe
area proposed for magnetometer survey
A
B
C
D
E
F
G
H
I
J
K
Allotment Gardens
Football Ground
Football Ground
Football Ground
Great Pan Farm
Poultry House
Hourick Farm
Garage
Drain
0365
PAN LANE
HOME MEADE
GARDEN WAY
ST GEORGES WAY
Pumping Station
Poultry Houses
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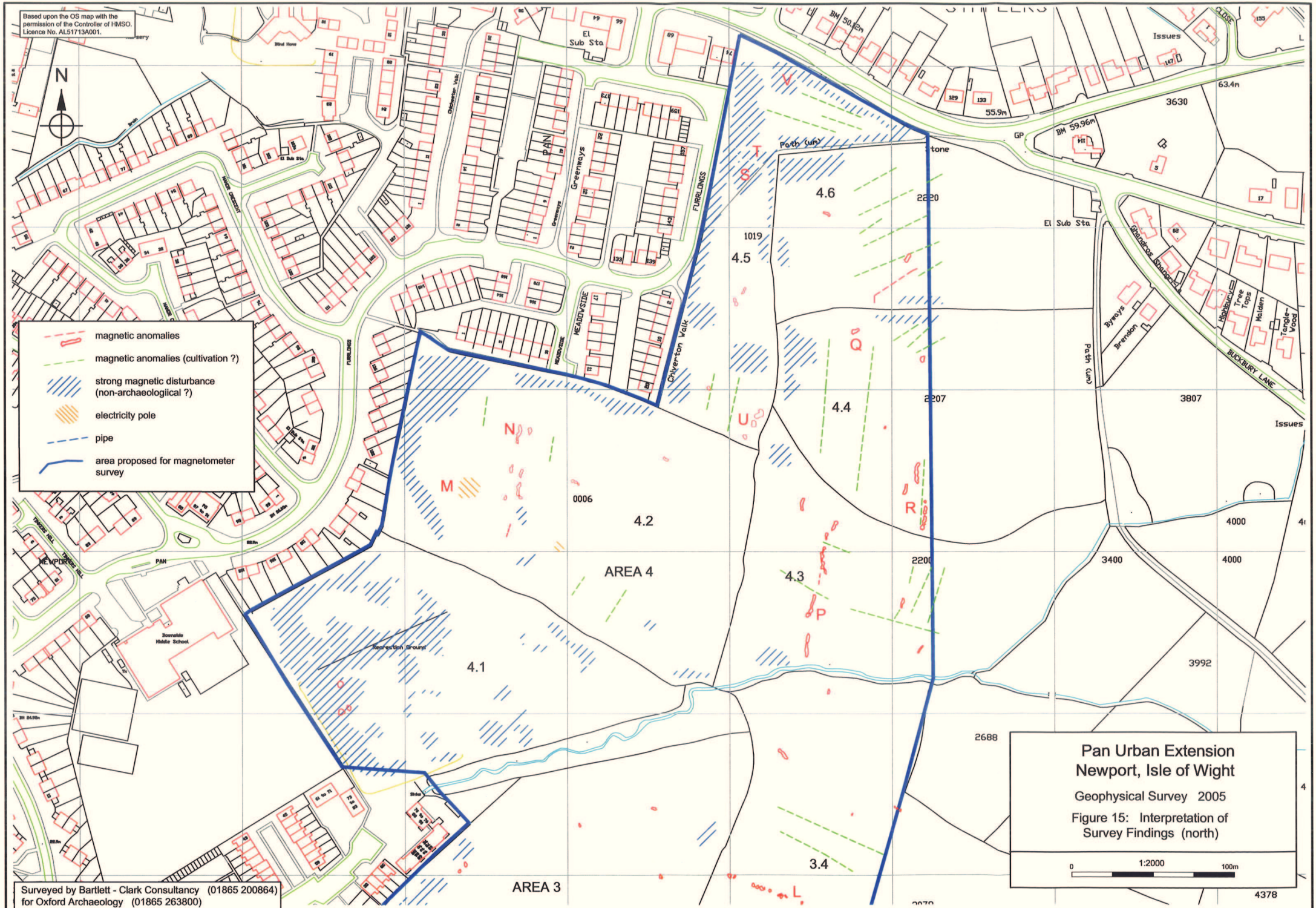
Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 14: Interpretation of Survey Findings (south)
0
1:2000
100m


Based upon the OS map with the permission of the Controller of HMSO. Licence No. AL51713A001.
N
magnetic anomalies
magnetic anomalies (cultivation ?)
strong magnetic disturbance (non-archaeologiical ?)
electricity pole
pipe
area proposed for magnetometer survey
AREA 4
AREA 3
4.1
4.2
4.3
4.4
4.5
4.6
3.4
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Pan Urban Extension
Newport, Isle of Wight
Geophysical Survey 2005
Figure 15: Interpretation of Survey Findings (north)
0
1:2000
100m

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