

Channel Tunnel Rail Link

Assessment of Historic and Cultural Effects

Supplementary Fieldwork Report

Part 1 of 2

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LIST OF CONTENTS

1	Introduction	1
2	Archaeological Surface Collection Survey	
	<i>Summary</i>	3
2.1	INTRODUCTION	3
2.1.1	Background	3
2.1.2	Methodology	4
2.1.3	Field Conditions	5
2.2	RESULTS	7
2.2.1	General	7
2.2.2	Pottery	8
2.2.3	Struck Flint	14
2.2.4	Other Finds	20
2.2.5	Principal Areas of Archaeological Potential	22
2.3	CONCLUSIONS	32
3	Archaeological Walkover Survey	
	<i>Summary</i>	33
3.1	INTRODUCTION	33
3.1.1	Purpose and Background	33
3.1.2	Location and Coverage	33
3.1.3	Methodology	34
3.1.4	Historic woodlands	35
3.1.5	Structure of the Report	36
3.2	SITE DESCRIPTIONS	36
3.2.1	Scalers Hill and Ashenbank Wood	36
3.2.2	Cobham Park	38
3.2.3	Cole Wood	41
3.2.4	Temple, Clay Pond, Broad Oak and Great Woods, Head Barn Wood and Merrals Shaw	42
3.2.5	Bridge and Syle Woods	43
3.2.6	Donkey Shaws and Park Wood West	44
3.2.7	Boxley Valley	45
3.2.8	Park Wood East	47
3.2.9	Horish Wood	48
3.2.10	Honeyhills Wood	48
3.2.11	Longham Wood	49
3.2.12	Ash Shaw and The Chestnuts	50
3.2.13	Warren and Coombe Wood	51
3.2.14	Hurst Wood	52
3.2.15	Grange Alders and Oak Banks	54
3.2.16	Bargrove Wood	55

3.3	CONCLUSIONS	56
3.1	Summary of Environmental Features	56
3.2	Options for Further Mitigation	56
4	MONITORING OF GEOTECHNICAL INVESTIGATIONS	
	<i>Summary</i>	61
4.1	INTRODUCTION	61
4.1.1	Scope	61
4.1.2	Objectives	62
4.2	GEOTECHNICAL METHODOLOGY	62
4.2.1	Trial Trenches and Observation Pits	62
4.2.2	Trial Pits	63
4.2.3	Boreholes	63
4.3	ARCHAEOLOGICAL METHODOLOGY	63
4.3.1	Trial Trenches and Observation Pits	63
4.3.2	Trial Pits	64
4.3.3	Boreholes	64
4.4	PROGRAMME	65
4.4.1	Phase I Shallow Contract Ground Investigations	65
4.4.2	Phase I & II Deep Contract Ground Investigations	65
4.4.3	Contract C Phase I Former Industrial and Waste Disposal Sites	66
4.5	RESULTS	66
4.5.1	Geological Zones	66
4.5.2	Stratford Geosegment	67
4.5.3	Barking, Dagenham/Hornchurch, Rainham, Wennington Geosegment	68
4.5.4	Ebbsfleet Valley Geosegment	72
4.5.5	North Downs Crossing Geosegment	74
4.5.6	Hollingbourne Geosegment	75
4.5.7	Westwell/Sevington Geosegments	76
4.6	CONCLUSIONS	77
4.6.1	Reliability of Results	77
4.6.2	Summary of Results by Geographical Location	78
4.6.3	Achievement of Objectives and Recommendations for Future Work	81
5	BIBLIOGRAPHY AND SOURCES	83

List of Tables

Table 1	Summary of sherd count by period
Table 2	Summary of the main landscape features recorded during the walkover survey

List of Maps

Map 1	Purfleet - fieldwalking scatters
Map 2	Ebbsfleet - fieldwalking scatters
Map 3	Northfleet - fieldwalking scatters
Map 4	Singlewell - fieldwalking scatters
Map 5	Henhurst - fieldwalking scatters
Map 6	Nashendon Farm - fieldwalking scatters
Map 7	Nashendon Valley - fieldwalking scatters
Map 8	Boarley Farm - fieldwalking scatters
Map 9	Boxley - fieldwalking scatters
Map 10	Woodcut Farm - fieldwalking scatters
Map 11	Sandway - fieldwalking scatters
Map 12	Hurst Wood - fieldwalking scatters
Map 13	Newlands - fieldwalking scatters
Map 14	Westwell Leacon - fieldwalking scatters
Map 15	Parsonage and Yonseas Farms - fieldwalking scatters
Map 16	Sevington - fieldwalking scatters
Map 17	Littlestock Farm - fieldwalking scatters
Map 18	Sellindge Converter - fieldwalking scatters
Map 19	Harringe Court - fieldwalking scatters
Map 20	Westenhanger - fieldwalking scatters
Map 21	Saltwood Tunnel - fieldwalking scatters
Map 22	Scalers Hill, Ashenbank Wood & Cobham Park (west side) - copy of field notes
Map 23	Cobham Park (east side) & Cole Wood (west side) - copy of field notes
Map 24	Cole Wood (east side), Temple, Clay Pond and Broad Oak Woods - copy of field notes
Map 25	Temple Wood (east side), Clay Pond, Head Barn Wood & Merralls Shaw - copy of field notes
Map 26	Bridge Woods & Syle Woods - copy of field notes
Map 27	Donkey Shaws - copy of field notes
Map 28	Park Wood West, Boxley Valley & Park Wood East - copy of field notes
Map 29	Horish Wood & Honeyhills Wood (west side) - copy of field notes
Map 30	Honeyhills Wood (east side) - copy of field notes
Map 31	Longham Wood - copy of field notes
Map 32	The Chestnuts, Ash Shaw & Warren/Coombe Wood - copy of field notes
Map 33	Hurst Wood - copy of field notes
Map 34	Grange Alders, Oak Banks & Bargrove Wood - copy of field notes

List of Figures

Fig. 1	Extract from 1758 estate map of Cobham Park showing Temple, Clay Pond, Broad Oak and Great Woods, Head Barn Wood and Merralls Shaw
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- Fig. 2 Sketch plan of brick building (OAU No. 1854) in Boxley Valley
Fig. 3 Extract from Boxley Park estate map of 1769 showing the site of a possible earlier farmstead
Fig. 4 Extract from 1678 estate map of Calehill showing Hurst Wood
Figs 5-47 Route window maps of St Pancras Terminus and 1 - 39 indicating locations of fieldwalking, geotechnical monitoring and walkover surveys

List of Plates

- Plate 1 Linear bank (OAU No. 1965) in Bridge Wood
Plate 2 Site of brick building with staddle stones on top (OAU No. 1854) in the Boxley Valley
Plate 3 Earthworks (OAU No. 1966) in Honeyhills Wood
Plate 4 Bank and ditch (OAU No. 1967) in Longham Wood
Plate 5 Former wood bank in Hurst Wood

List of Appendices

- Appendix 1 Fieldwalking Record Sheet
Appendix 2 Walkover Survey Record Sheet

Channel Tunnel Rail Link

Historic and Cultural Effects
Supplementary Fieldwork Report

Chapter 1

Introduction

Channel Tunnel Rail Link

Historical Channel Tunnel
Engineering and Construction Report

Channel

Construction

INTRODUCTION

This volume presents the results of archaeological fieldwork carried out to date along the CTRL route. Three principal types of survey have been undertaken:

- a surface collection survey of available arable land designed to plot the distribution of artifacts found on the surface of fields
- a systematic walkover survey of selected areas mainly of woodland and some parkland landscapes with potential for the existence of visible archaeological features not readily assessed from public rights of way
- a monitoring operation of three phases of geotechnical ground investigations

As explained in sections 6.2.2 and 7.5.2 of Volume 1 of the Assessment of Historic and Cultural Effects Final Report this is part of an on-going strategy of archaeological fieldwork designed to assess and record the archaeology of the CTRL route. The surface collection survey work has been undertaken at various stages, in some places on previous route proposals rather than the present route. Results from certain locations, which are adjacent to but not within areas that will now be affected by the CTRL, have also been included where they provide information relevant to the immediate context of the route.

The overall coverage represented by these specific pieces of fieldwork is shown on the route window mapping which forms the last section of this report. The detailed mapping for each of the survey reports is bound separately in Part 2 of this volume.

Channel Tunnel Rail Link

Historic and Cultural Effects
Supplementary Fieldwork Report

Chapter 2

Surface Collection Survey

Channel Tunnel Rail Link

History and Current Status
Engineering Project Report

Chapter 1

Summary Collection Survey

The Channel Tunnel Rail Link (CTRL) is a railway line connecting the Channel Tunnel to the British railway network. It was built to allow high-speed trains to travel between London and the continent of Europe. The line is 42 miles long and has 15 stations. It was opened in 1993 and has since become a major transport link between the UK and Europe.

The CTRL is a single-track railway line, which means that there is only one track in each direction. This is unusual for a railway line of this length and capacity. The line is built on a viaduct, which is a raised platform for the tracks. This allows the line to cross over other roads and railways without the need for bridges or tunnels.

The CTRL is owned and operated by the Channel Tunnel Rail Link Limited (CTRL Ltd). The company is a subsidiary of the Channel Tunnel Group, which is a joint venture between the UK and French governments. The CTRL Ltd is responsible for the day-to-day operation of the line, including the scheduling of trains and the maintenance of the tracks.

The CTRL is a key part of the Channel Tunnel's infrastructure. It allows high-speed trains to travel between London and the continent of Europe in just over an hour. This has made the Channel Tunnel a major transport link between the UK and Europe, and has helped to boost trade and tourism between the two regions.

The CTRL is also a major employer. It employs over 1,000 people, including train drivers, engineers, and support staff. The line is a vital part of the UK's transport infrastructure, and its continued operation is essential for the country's economy.

2 ARCHAEOLOGICAL SURFACE COLLECTION SURVEY

SUMMARY

Surface collection surveys were undertaken in 1990, 1991 and 1993 over 290 hectares as part of the major study to assess the likely impact of the construction and permanent landtake of the CTRL on the cultural heritage. Some forty scatters of possible archaeological significance were found of which seventeen have been highlighted for further work, comprising six flint scatters, two prehistoric flint and pottery scatters, seven multi-period sites, one Roman site and one Roman and medieval site. The finds analysis was principally carried out on the pottery sherds and flintwork to a simple identification level to provide basic chronological and statistical information. More detailed study will be required on the assemblages from the identified sites as part of any future work which may be undertaken.

2.1 INTRODUCTION

2.1.1 BACKGROUND

Surface collection surveys were carried out in 1990, 1991 and 1993. The combined results of the surface collection surveys form part of the major study undertaken by the OAU to assess the likely impacts of the construction and operation of the CTRL on the cultural heritage presented in the Assessment of Historic and Cultural Effects Final Report supporting the Environmental Statement. Continuing patterns of crop rotation mean that additional areas will need to be covered as part of the on-going process of mitigating the impact of the CTRL (see Environmental Statement paras. 4.7.21-22 and Assessment of Historic and Cultural Effects Final Report sections 6.2.2 and 7.5.2).

This phase of the study attempts to judge the possible scale of the archaeological resource not recorded in existing sources and to identify particular areas of high potential.

Surface collection survey (or 'fieldwalking') is an established archaeological technique used to identify unknown sites, to define areas of archaeological potential, and to interpret past patterns of human settlement and activity. However, it is not an infallible method for extracting such information since the evidence, in the form of artefacts available for surface collection, is much conditioned by factors such as the intensity of past activity, the depth of soil accumulation, and the history of subsequent land use. Period biases can also result from the poor survival of certain categories of artefacts such as Saxon pottery, with the consequence that some periods may be under-represented.

This report presents the results from areas subjected to surface collection survey directly affected by or adjacent to the final route as set out in the Bill now before Parliament. It incorporates sections from the 1990/1991 survey of the Eastern Section, 1991 Route and the 1993 North of Ashford Route, where relevant. The report should be read in conjunction with the set of finds distribution plots by period on Maps 1 to 21 in the accompanying map volume. OAU numbers (eg OAU No. 1777) refer to the main text and gazetteer in volumes 1 and 3 of the Assessment of Historic and Cultural Effects Final Report.

2.1.2 METHODOLOGY

2.1.2.1 General

The methodology used in 1993 was the same as that applied in 1990/1991. All available arable areas of landtake were subjected to surface collection surveys using a systematic linear transect sampling method to a standard specification. Arable areas not covered by the 1990/1991 survey, or added to the landtake as a result of route refinement were surveyed (where access was permitted) in 1993. In 1994, after the completion of the Environmental Statement, another group of arable fields, which also had never been previously available or were added to the landtake as a result of further route refinement, were subjected to a surface collection survey, as part of the ongoing programme of investigation referred to above, and will be reported in due course.

The specifications established for both the initial survey, which was carried out during October and November 1990, and the subsequent survey undertaken in autumn 1991, were also applied to the 1993 survey, which took six weeks to complete.

2.1.2.2 Areas Covered and Sampling Transects

The survey was based on a corridor approximately one hundred metres wide, *ie* fifty metres either side of the route centre line. Provision for areas of construction sites meant that, in some instances, areas extending up to four hundred metres either side of the centre line were examined. These construction areas were accessible for the 1990/1991 survey but not for the 1993 work. Field numbers were assigned to the land parcels to be surveyed by the OAU. The use of OS field numbers is problematic because of the scale of the area covered. The parcels covered in the 1990/1991 survey have been allocated numbers based on chainages (see below), while the numbering allocated for the 1993 survey was based on assigning blocks of 100 for each landholding (allowing automatic correlation of finds with ownership). The field numbers therefore became the primary identification unit for individual survey sites. Artefacts were collected within fields by walking twenty-metre units along transects twenty metres apart. 1:2500 Ordnance Survey base maps were used in the field. These were used to locate transects on the ground within each land parcel by measuring intersections within field boundaries from fixed points.

For the purposes of the 1990/1991 survey, points at twenty-metre intervals along each transect, related to the chainage shown on the digital mapping of the engineering centre line for the route, were located by using the above method and used as fixed starting points. For the 1993 survey, transects were walked parallel to the centre line of the route but not related to chainage. In both cases the start and finish points of each transect were measured in, normally with reference to field boundaries, and the transect was walked, with each twenty metre unit being measured cumulatively using a fixed length of rope to avoid the variation in individual pace. Sighting poles were set up at the opposite end of a land parcel (or at the limit of vision) to ensure that the pre-determined transect lines were followed on the ground.

2.1.2.3 Field Conditions

For the 1990 survey, a field logbook was used to record variations within and between each land parcel including the following:

- i) Land parcel number and ownership
- ii) Soil/crop conditions
- iii) Slope/topography
- iv) Lighting/weather conditions
- v) Time of day and date
- vi) Summary of finds/initial interpretation

For the 1993 survey, a standardized OAU Fieldwalking Record Sheet (Appendix 1) was used to record the above.

2.1.2.4 Collection Criteria

Guidelines were devised on what artefacts were to be collected and in most instances were rigidly adhered to (see section 2.2.1.1 below). The collection strategy was designed to be inclusive rather than exclusive, *ie* total recovery was aimed at, irrespective of the date of the material in question. This was intended to avoid problems caused by the fieldworkers exercising selective bias against certain types of object or objects thought to be modern. For example, subjective assessment of date and consequent on-the-spot discard in the field could have resulted in imbalances in the recovered quantities of categories such as tile and pottery.

The major artefact categories collected and recorded were pottery, ceramic and stone building materials, other fired clay, plaster/mortar, flint, burnt flint, glass, metal objects, slag, clay pipe, shell, bone and coal/charcoal. The only items which were not recovered, or which if recovered were not subsequently recorded, were 20th century plastic, bakelite and asbestos, large metal objects derived from modern agricultural machinery, and post-medieval brick and tile where this material occurred in large quantities. In the latter case representative samples were kept and a note made in the field of the presence and location of dense scatters of such material.

2.1.2.5 Analysis

The finds were processed at the Oxford Archaeological Unit while the project was in progress, and the rapid identification and quantification was entered directly onto computer (IBM Compatible PC using dBase IV). The results have been plotted using the FastCAD graphics program. Details of methods used for particular artifact categories are given in the relevant sections of the description of Results below.

2.1.3 FIELD CONDITIONS

2.1.3.1 Access

Access was arranged by the client. About two hundred and ninety hectares have been covered during the 1990/1991 and 1993 surveys. A substantial proportion of the remaining areas to be walked consists of construction sites and feeder stations, upon which no final decision had been taken at the time of the 1993 survey, areas affected by any station development, and route refinements at Pepper Hill and Ashford subsequent to the original survey work. A further ninety-nine hectares have been fieldwalked in late 1994 (see 2.1.2.1 above) covering some, but not all, of the remaining arable fields along the route identified in the Environmental Statement.

2.1.3.2 Crops

The field survey was conducted when crops were generally absent, or only just showing through. In some cases the crop growth within a single land unit was variable resulting in an inconsistent visibility of the ground surface. Surface visibility was generally good, with at least 70-80% of soil visible.

2.1.3.3 Summary of field conditions

It is possible to broadly classify the survey conditions for each land parcel as 'good', 'fair' or 'poor' by combining the data collected on soil and crop conditions. These are tabulated below indicating which year each field was surveyed. The field numbers are not Ordnance Survey parcel numbers, but are unique reference numbers apportioned by OAU.

Good: soil well or moderately well weathered; crop not through or just through, surface visibility in excess of 85%.

Fair: fair-poor weathering of soil or sometimes compacted by farm machinery; crop conditions variable, surface visibility in excess of 50%.

Poor: ploughed but with poor soil weathering and poor surface visibility owing to advanced state of crop or unploughed with stubble, surface visibility less than 50%.

Field No.	NGR	Map No.	Location	Condition	Year walked
101	5620917276	2	Ebbsfleet	fair	1993
102	5620017297	2	Ebbsfleet	fair	1993
103	5618917268	2	Ebbsfleet	good	1993
104	5618217294	2	Ebbsfleet	good	1993
105	5617117321	2	Ebbsfleet	good	1993
202	5655117041	4	Singlewell	good	1993
203	5652217056	4	Singlewell	poor	1993
301	5947414758	13	Newlands	good	1993
302	5951214752	13	Newlands	good	1993
400	5941014780	13	Newlands	fair	1993
401	5936714799	13	Newlands	good	1993
500	5965514738	14	Westwell Leacon	fair	1993
501	5970714730	14	Westwell Leacon	poor	1993
600	6040514054	16	Sevington	good	1993
601	6037914056	16	Sevington	fair	1993
602	6041714039	16	Sevington	fair	1993
603	6041814029	16	Sevington	poor	1993
701	5728516594	6	Nashendon Farm	fair	1993
702	5732916529	7	Nashendon Valley	fair	1993
801	5632617156	3	Northfleet	fair	1993
901	5664316995	5	Enhurst	fair	1993
2001	5639117130	3	Northfleet	fair	1993
3001	5565317818	1	Purfleet	fair	1993
3002	5568617797	1	Purfleet	fair	1993
309800	5757115946	8	Boarley Farm	fair	1990
310800	5762915908	9	Boxley	fair	1990

311600	5770515847	9	Boxley	good	1990
317400	5818015562	10	Woodcut Farm	good	1990
317900	5823715521	10	Woodcut Farm	good	1990
325100	5879815120	11	Sandway	good	1990
325500	5882715095	11	Sandway	fair	1990
325600	5886515091	11	Sandway	fair	1990
401100	5929514843	12	Hurst Wood	good	1990
406800	5980414620	15	Parsonage Farm	good	1990
408400	5987214490	15	Yonse Farm	fair	1991
415700	6039814016	16	Sevington	good	1990
418700	6065013862	17	Littlestock Farm	good	1990
419300	6077813839	18	Sellindge Con.	fair	1990
420600	6083113804	18	Sellindge Con.	good	1990
421500	6093813785	19	Harringe Court	fair	1990
424400	6122713747	20	Westenhanger	good	1990
427700	6153813695	21	Saltwood Tunnel	fair	1990

2.2 THE RESULTS

2.2.1 GENERAL

2.2.1.1 Recovery of Artifacts

Some inconsistency was apparent in the collection of different types of material by different walkers, a problem which seems to be unavoidable in surface collection surveys. The effect of this on the resulting collections is difficult to assess fully, but it is unlikely that gross imbalances in the data and the distributions derived from it have resulted. The tendency for individual workers to focus their attention on particular artefact types, mainly ceramics at the expense of flint or *vice versa*, was noticeable in one or two cases, though in most instances it was not an obvious problem and mention has been made in the text where relevant.

2.2.1.2 The Finds Scatters

The size of symbols on the plots on Maps 1-21 is calculated according to the statistical significance of the individual finds. The location of Maps 1-21 along the route is shown on Figs 5-47, based on route window mapping.

The plots of artefacts were carefully studied for evidence of concentrations which might indicate the presence of archaeological sites. The criteria which distinguish a significant concentration of artefacts from a random one (*eg* one caused by the distribution of material in manuring) are difficult to define and varied depending on the material and period of the scatter in question. In the case of pottery, such factors as the relative density of material surrounding a "scatter", the extent and compactness of the spread and (where applicable) the association of the material with other artefact categories of the same period or with material of other periods (*eg* a close association between Iron Age and early Roman sites was noted) were all taken into account. The results nevertheless involve an element of subjective judgement. Iron Age pottery is generally less well fired than Roman or Medieval material and therefore tends not to survive well in disturbed ploughsoils, so the occurrence of only two or three sherds in close proximity was

sufficiently distinctive in the overall distribution to be considered significant in indicating the potential presence of sites.

A confidence rating from 1 to 3 (high to low) has been given for all of the scatters of whatever type. This defines the degree of confidence in the identification of a scatter as an area of archaeological potential. Factors influencing the degree of confidence are not only the actual density of finds within a scatter and the date range/material category (section 2.5), but also the topographical conditions which might affect that density. Colluvial and alluvial deposits, for instance, may cover an archaeological site and thus protect it from the effects of modern agricultural practice. The corollary of this is that surface finds will be more rare; this inevitable increases the potential of finds which are recovered under such local circumstances, and may therefore enhance the confidence level of apparently diffuse scatters of finds.

The area of a scatter need not necessarily correspond to the limits of an archaeological site. This might be entirely contained within a part of a scatter, or lie partly beyond the limits of investigation. Each scatter, however, has been assigned an OAU gazetteer number (see section 2.2.5). The areas shown on the accompanying maps (1-21) and on the features mapping in the Assessment of Historic and Cultural Effects Final Report supporting the Environmental Statement, do not represent definable limits to the archaeological interest of the area concerned: they only indicate the area within the limits of the survey corridor which appear to have some archaeological potential, judged on the basis of the finds scatters alone. These areas are intended to indicate areas of archaeological potential as indicated by the finds distributions. Consideration of the full potential of these areas in some cases involves a wider judgement taking into account other forms of information, such as cropmarks or records of previous discoveries. This is presented in the Assessment of Historic and Cultural Effects Final Report.

For the purposes of this report only the pottery and flintwork have been presented and described in detail, since they are both numerically dominant amongst the collected artefacts and the most chronologically informative. Most of the other categories of artefact were either found in insufficient numbers to be significant or, even when found in greater quantities such as shell or tile, were impossible to date accurately. The distribution of these materials is shown on the detailed mapping (Maps 1-21) and described in the text where it is felt that they may further clarify the main pottery and flint distributions. Individual artifacts of other types (eg coins or brooches) are mentioned in the descriptions of scatters where relevant.

2.2.2 POTTERY

2.2.2.1 Introduction

A total of 6820 sherds were recovered during the 1990/1991 and 1993 surveys (Table 1) and will be discussed by major periods. Simple definitions of the periods appear in the glossary of the Assessment of Historic and Cultural Effects Final Report supporting the Environmental Statement. Scatters representing areas of archaeological potential were identified, and confidence levels ascribed to the scatters in order to assess their significance (see section 2.2.5).

Table 1: Summary of sherd count by period

	<i>Sherd count</i>	<i>% of total</i>	<i>% in scatters</i>
Post medieval	5158	76	-
Medieval	1036	15	57
Late Iron Age/Roman	510	7	78
Middle Iron Age	64	1	81
Prehistoric	19	0.3	47
Uncertain	33	0.5	-

Within each category an attempt has been made to classify the pottery by fabric type. This should be regarded as a preliminary identification giving broad classifications to enable the assessment of areas of archaeological significance. The majority of the pottery had been abraded into small sherds with few diagnostic pieces amongst the assemblage.

2.2.2.2 Prehistoric

Only 19 sherds of prehistoric date were collected. For the purposes of this report the term is used to describe the prehistoric period up to but not including the Middle Iron Age.

Within the broad classification of prehistoric pottery three types are present. The first, with a fine-grained micaceous clay matrix tempered with angular flint inclusions ranging from 2 to 5mm in size, is probably early prehistoric. It generally has an oxidized core with a reduced external surface. The second type is a reduced fine-grained micaceous clay matrix tempered with shelly limestone. The third type is the most commonly found, in an oxidised sandy fabric with abundant crushed flint.

There are no well defined scatters of prehistoric pottery but it is considered important to note the occurrence of the few sherds that have been found. With the exception of one example, the 19 prehistoric sherds discussed above are found in a low density spread over Fields 600, 601, 602 and 603 at Sevington, indicating a concentration of activity associated with this group of fields. The one exception is a single sherd in the shelly limestone type found on Field 801 at Northfleet.

Sevington (Map No. 16c)

OAU No. 1820. Field 600. Confidence 1-2

9 flint-tempered/crushed flint sherds

2.2.2.3 Middle Iron Age

For the purposes of this study, and continuity with previous recording, the term Iron Age is applied to hand-made sherds in a Middle Iron Age tradition. Sherds of this type are not

separately identified on the distribution maps (1 - 21) but are included within the general prehistoric category.

The Middle Iron Age pottery consisted largely of fairly coarse, flint-tempered fabrics, with smaller numbers of sand and shell-tempered sherds. Some grog-tempered pottery was also assigned to this period. Very few sherds belonged to identifiable forms. Close dating of this material is very difficult. Most of the flint-tempered sherds may belong to the Middle Iron Age, though a few pieces could have been earlier, and it is not impossible that one or two were of Bronze Age date. Flint tempering was declining in importance in east Kent (eg Canterbury) by the later 1st century BC, though it did not die out altogether. Most of the flint-tempered Iron Age pottery can probably be considered to be 1st century BC and earlier, being largely supplanted by the late Iron Age grog tempered tradition.

Most of the non-flint tempered Iron Age pottery should probably be dated relatively late in the Iron Age. One distinctive sandy fabric rich in mineral glauconite, tends to be characteristic of the Medway valley. Such pottery is usually dated from the later 2nd-mid/late 1st century BC.

81% of the Middle Iron Age pottery (52 out of 64 sherds) occurred in low-density scatters which may indicate the existence of sites.

Boarley Lane/ Farm (west) (Map No. 8c)

OAU No. 1337. Field 309800. Confidence level 2

3 flint-tempered sherds
1 shell-tempered sherd

Boxley Road (Map No. 9c)

OAU No. 1339. Field 311600. Confidence level 1

9 flint/sand/grog-tempered sherds including two 'glauconite rich' sherds

Woodcut Farm south of Snarkhurst Wood (Map Nos 10c & 10d)

OAU No. 1343. Field 317900. Confidence 1

21 sherds in a variety of fabrics

East of Church Lane, Sevington (Map No. 16c)

OAU No. 1353. Field 415700. Confidence level 1

13 flint-tempered sherds

Harringe Court, Sellindge Converter (east) (Map Nos 19c & 19d)

OAU No. 1361. Field 421500. Confidence level 1

5 flint-tempered sherds

2.2.2.4 Late Iron Age and Roman

398 (78%) of a total of 510 sherds cluster into six scatters. Grog-tempered "Belgic type" fabrics thought to be of late Iron Age or early Roman date are included in the Roman pottery category. There are two traditions within this type of pottery: east Kent and west Kent (Patch Grove ware). The majority of sherds found appear to belong to the East Kent tradition. These sherds are iron rich and crudely tempered with grog up to 2mm in size.

Some continuity of settlement through the Iron Age and early Roman periods is suggested by the close proximity in which these types of pottery occur. Examples of this are: OAU No. 1820, which is a low-density spread over Fields 600, 602 and 603, of predominantly late Iron Age pottery with a small percentage of Roman material; and OAU Nos 1339 and 1361 which overlap Middle Iron Age scatters.

All the scatters of Roman material are of 1st-2nd century date. Only one (1359) is likely to have extended into the 3rd century. Later Roman material is conspicuous by its extreme scarcity, and when found the sherds were usually isolated. The main identifiable late Roman wares are Oxfordshire products, with a few sherds of other colour-coated fabrics. Associated coarsewares were not readily identifiable.

Ebbsfleet (Map No. 2c)

OAU No. 1801. Field 104. Confidence level 1

99 sherds including locally produced shell and sand-tempered early Roman coarsewares, greywares, whitewares and finewares including a sherd of red colour-coat and the rim and base of a Samian 18/31 bowl

Boxley Road (Map No. 9d)

OAU No. 1339. Field 311600. Confidence level 1-2

15 sherds, mostly grog tempered

Woodcut Farm, south of Snarkhurst Wood (Map No. 10d)

OAU No. 1343. Field 317900. Confidence level 2-3

26 sherds, mostly grog tempered, in both the east Kent and Patch Grove traditions. Flint tempered, Romanised greyware and samian ware sherds also occur

Sevington, Church Lane and west of Blind Lane (Map No. 16d)

OAU No. 1820. Field 600, 602, 603. Confidence level 1

76 grog-tempered late Iron Age/early Roman sherds
35 Roman oxidized coarseware sherds

OAU No. 1353. Field 415700. Confidence level 1

78 sherds of Roman pottery, mostly grog tempered with a few Romanised oxidised and reduced coarsewares

Sellindge Convertor (south) (Map No. 18d)

OAU No. 1359. Field 420600. Confidence level 1

59 grog-tempered, grey-ware and black-burnished ware (BB2) sherds

Harringe Court, Sellindge Converter (east) (Map No. 19d)

OAU No. 1361. Field 421500. Confidence level 2-3

10 Iron Age/early Roman sherds

2.2.2.5 Medieval

The widespread occurrence of medieval pottery may reflect the dispersal of material through night soiling or manuring. However, approximately half of the medieval sherds have been defined as scatters, where more than 20 sherds were collected within an area approx. 80 x 50 m. 594 (57%) of the 1036 sherds occur in eight scatters.

A limited range of medieval pottery fabric types are present. By far the most common is an iron-rich, quartz-tempered ware which always appears to be poorly fired, though this could be the effect of subsequent abrasion and weathering. A small number of sherds in this sandy fabric have the occasional inclusion of chalk. The best dating evidence for this pottery type is from OAU No. 1818 where the rim forms can be dated as 11th - 12th and mid to late 13th century by comparison with examples from early medieval sandy wares and Tyler Hill products found at Canterbury. It is quite feasible that these sandy wares belong to a broad early medieval tradition of the 11th - 12th century and are not necessarily the products of Tyler Hill.

Other early medieval wares are represented in small numbers by sherds of a corky texture which have lost their chalk or limestone tempering and, though this makes identification difficult, it is possible to see some shell impressions in the voids. The thickness of the sherds and one simple everted rolled rim sherd are an indicator of an early medieval date in the 11th - 12th century for this ware. Occasional shell, chalk and flint tempering are also characteristics of early medieval pottery in Kent.

A few medieval regional imports are found including Mill Green Ware of late 13th-mid 14th century date, Scarborough Ware of early 12th - mid 14th century and Tudor Green Ware of late 14th - mid 16th century date. The absence of wares such as Surrey Whiteware is noticeable and confirms that the majority of the pottery found is local and early medieval in date.

Later medieval pottery is poorly represented in this collection by a few sherds. These are usually harder fired in a fine oxidised fabric with splashed lead glaze on the interior, possibly dating from the later 13th - 14th century and 14th - 15th centuries. Other than these sherds there are very few glazed, decorated or diagnostic sherds in the medieval material collected.

Nashenden Farm (Map No. 6d)

OAU No. 1807. Field 701. Confidence level 2-3

16 sherds of mixed date range including corky textured and sandy early medieval wares (11th - early 13th century), a jug handle in Scarborough Ware (12th -13th century) and later medieval sherds of (14th - 15th century)

Boxley Road (Map No. 9f)

OAU No. 1340. Field No. 310800. Confidence level 1-2

18 sherds

Sandway (Map No. 11d)

OAU No. 1347. Field 325600. Confidence level 1-2

120 sherds, mostly in a moderately fine, iron-rich, quartz-tempered fabric. Most sherds are oxidized and occasionally have a continuous orange lead glaze. One simple rolled rim is the only diagnostic sherd present indicating a probable 12th - 13th-century date for this scatter

Newlands (Map No. 13e)

OAU No. 1818. Field 302. Confidence level 1

73 sherds of predominantly early medieval sandy ware. Several cooking pot rims of 11th - 12th century and mid - late 13th century date are present as well as thumbled bases and rod handles from jugs

Sevington, east of Church Road and west of Blind Lane (Map No. 16f)

OAU Nos 1820 & 1821. Field 601. Confidence level 2-3

70 sherds (1821), mostly of early medieval sandy type including diagnostic rim forms of late 12th and mid to late 13th-century date. Also present are later 14th - 15th century splash-glazed jug sherds

25 sandy ware sherds (1820) of 11th - early 13th century date

OAU No. 1353. Field 415700. Confidence level 1

73 sherds

Sellindge Conventor (south) (Map No. 18f)

OAU No. 1358. Field 420600. Confidence level 1

125 sandy, quartz-tempered sherds of 13th or 14th century date

Harringe Court, Sellindge Converter (east) (Map No. 19e)

OAU No. 1361. Field 421500. Confidence level 2-3

56 sherds, mostly in a soft fired, moderately tempered, iron rich fabric which is usually an oxidized orange colour of early 12th to mid 13th-century date

Westenhanger (Map No. 20e)

OAU No. 1365. Field 424400. Confidence level 2-3

18 badly abraded and generally very small sherds of 12th to late 13th-century date

2.2.2.6 Post Medieval

76% of the pottery found in this study is post medieval in date. The earliest English wares are Metropolitan Slipware (only found in the Purfleet area) dated 1640-1700, fine and coarser earthenwares of 1600-1800 and blackware of 1600-1700. Also belonging to this period are a small number of Rhenish Stoneware imports including Frechen and Westerwald stonewares of mid 16th-18th century and 17th-18th century respectively. A substantial number of late post medieval wares of the 18th and 19th century are also found including sponge decorated and slipped red earthenware, English Stoneware, English Porcelain, Creamware, Pearlware, Staffordshire White salt glazed stoneware, Black Basalt and Transfer Printed Ware.

Post medieval pottery occurs with regularity throughout the route of this study. There are, however, several areas where it is more abundant, but as these are predominantly composed of 18th-19th century wares they might reflect areas of refuse dumping rather than settlement. These areas are in:

- *Ebbfleet area (Map No. 2f)*
Field 102, 103 and 105.
- *Northfleet (A2) (Map No. 3g)*
Field 801 and 2001.
- *Nashenden Farm (Map No. 6f)*
Field 701, concentrating to the east of the field.
- *Nashenden Valley (Map No. 7e)*
Field 702.

- *Boarley Farm (Map No. 8g)*
Field 309800.
- *Boxley (Map No. 9g)*
Fields 311600 & 311800.
- *Sevington (Map No. 16g)*
Fields 600 and 601. General low density spread.
- *Saltwood Tunnel (Map No. 21f)*
Field 427700.

2.2.3 STRUCK FLINT

2.2.3.1 Introduction

This section deals with struck flint and burnt unworked flint from the fieldwalking undertaken in 1990/1991 and 1993. The composition of the assemblage has been summarised below. Relatively few diagnostic retouched pieces were recovered from the fieldwalking. Dating is therefore based on technological traits and the few diagnostic pieces that were recovered. The material was rapidly scanned and recorded. Technical terminology is explained in the glossary in the Assessment of Historic and Cultural Effects Final Report supporting the Environmental Statement.

2.2.3.2 Raw Materials

Both chalk flint and gravel flint were used. The flint was generally heavily battered and plough damaged. Some iron staining and sand glossing was noted. Cortication was variable. Occasionally, pieces were very heavily corticated and in some instances these pieces exhibit two phases of flaking (for example, a tested nodule from Field 2001).

Total Assemblage Composition

Flakes, blades etc	1966
Cores/core fragments	75
Irregular waste	40
Retouched pieces	85
Burnt unworked flint	1480
<i>Total</i>	<i>3646</i>

Retouched Forms

Scraper	52 (23 end and side, 19 end, 4 side, 6 'other' scrapers)
Notched pieces	1
Retouched flake	7
Knife	5
Heavy tool	5 (1 core tool, 1 ? Palaeolithic handaxe, 2 polished flint axe fragments, 1 fragment from a pecked and ground flint quern)
Arrowhead	5 (1 transverse, 2 leaf-shaped, 1 barbed and tanged and a miscellaneous arrowhead)
Misc. retouched pieces	10 (including 1 gun flint and 1 hammerstone)
<i>Total</i>	<i>85</i>

Core Typology

Multi-platform flake	22
Single platform flake	7 (1 blade core)
Opposed platform flake	1 (some blade scars)
Core on a flake	2
Tested nodule	11
Fragmentary cores	32
Total	75

2.2.3.3 Technology and Dating

Diagnostic pieces from the Palaeolithic to the Bronze Age have been identified (details are presented in the descriptions below). However, the majority of the flint is hard-hammer struck and is the product of a non-specific Bronze Age technology. Generally there appears to have been little control exercised during knapping, indicated by the general irregularity of much of the debitage. Multi-platform types and tested nodules are the most common of the classifiable core forms. These types tend to be more frequent in later Neolithic and Bronze Age assemblages.

The production of blades is on the whole rare although there is a good scatter of Mesolithic flint at Newlands (field 400, see below for details). Occasional soft-hammer struck flakes, blades and blade-like flakes do occur, for example at Ebbsfleet (fields 101-105), Sevington (field 601) and the Nashenden Valley (field 702). This material is generally the product of more controlled knapping and may indicate a Mesolithic or earlier Neolithic date. However, it is only possible to date this material more precisely when it is accompanied by diagnostic waste or retouched forms.

Retouched forms are dominated by scrapers, retouched flakes and miscellaneous retouched pieces. The latter are frequently broken forms or are otherwise unclassifiable. Retouched forms which provide good dating are arrowheads (Green 1984: leaf-shaped - earlier Neolithic; transverse - later Neolithic; and barbed and tanged - Bronze Age) although some of these forms occur over a considerable time and there is some overlapping of types. The majority of the scrapers are relatively undiagnostic although by looking carefully at the type of blank used and the position and nature of retouch it is possible to draw some conclusions. Scrapers made on relatively thin blanks with fairly regular and extensive retouch, for example, are generally of Neolithic or early Bronze Age date. Small 'thumbnail' scrapers have traditionally been associated with Beaker flintworking traditions although similar small scrapers do occur in Mesolithic industries. Where possible dates have been suggested, but the problems noted above must be borne in mind.

The scatters of struck flint are described below. The scatters have been given confidence levels (1-3, high to low) according to the nature and size of the scatter and the likelihood that they represent areas of potential for settlement/activity sites. At this stage biases due to field conditions and recovery rates have not been systematically recorded and are only mentioned where they are obvious. Any coincidence in distribution of burnt unworked flint with the scatters of struck flint has been noted as have any concentrations of burnt unworked flint.

2.2.3.4 Flint Scatters

Purfleet, High House (Map Nos 1a & 1b)*Fields 3001 (No OAU No.)*

- 14 flakes
- 3 core (1 multi-platform flake core, 2 core fragments)
- 1 irregular waste
- 1 retouched piece (end and side scraper)
- 5 burnt unworked flints

Field 3002 (No OAU No.)

- 11 flakes
- 1 burnt unworked flint

Ebbsfleet (Map Nos 2a & 2b)*OAU No. 1467. Fields 101 & 102. Confidence level 1*

- 430 flakes
- 26 cores (8 multi-platform flake cores - two of which have some blade scars, 5 tested nodules and 13 fragmentary cores)
- 17 irregular waste
- 31 retouched (7 end and side scrapers, 10 end scrapers, 4 other scrapers, 1 edge trimmed flake on a thermal flake, 1 flake from a pecked and ground flint quern - Bronze Age in date and a ?knife fragment, two miscellaneous retouched pieces, 1 backed knife, 1 backed blade, 2 retouched flakes, 1 ?knife fragment)
- 167 burnt unworked flints

OAU No. 1828. Field 103. Confidence level 2 - for whole field

- 34 flakes (1 soft-hammer struck blade)
- 2 cores (both fragments)
- 5 irregular waste (one used as a hammerstone)
- 12 burnt unworked flints

OAU No. 1801. Field 104. Confidence level 3 - for whole field

- 20 flakes
- 1 core (on a large flake)
- 1 retouched piece (retouched flake)
- 33 burnt unworked flints

OAU No. 1830. Field 105. Confidence level 3 - for whole field

- 14 flakes
- 54 burnt unworked flints

Northfleet (A2) (Map Nos 3a & 3b)*OAU No. 1802. Field 801. Confidence level 1-2*

- 15 flakes
- 1 single platform flake core
- 1 end and side scraper and 1 side scraper
- 49 burnt unworked flints.

OAU No. 1803. Field 801. Confidence level 1-2

- 27 flakes
- 2 cores (2 tested nodules)

1 irregular waste
4 retouched (a core tool, an end scraper, a backed knife and a scraper on a thermal fragment)
22 burnt unworked flints

OAU No. 1804. Field 801. Confidence level 1-2

31 flakes
1 irregular waste
2 retouched pieces (an end scraper and a retouched flake)
47 burnt unworked flints

Singlewell (A2) (Map Nos 4a & 4b)

OAU No. 1805. Field 203. Confidence level 2

14 flakes
4 burnt unworked flints

OAU No. 1806. Field 203. Confidence level 2

16 flakes
2 irregular waste
1 retouched (end scraper)
10 burnt unworked flints

Nashenden Farm (Map Nos 6a & 6b)

OAU No. 1807. Field 701. Confidence level 3

33 flakes
1 retouched piece (misc. retouch, perhaps a knife fragment)
20 burnt unworked flints

Nashenden Valley (Map Nos 7a & 7b)

OAU No. 1824. Field 702. Confidence level 2 - for whole field

41 flakes (1 flake, possibly Palaeolithic)
1 core (fragment)
6 retouched pieces (1 side scraper, 3 end and side scrapers, 1 retouched flake, 1 misc. retouch)
11 burnt unworked flints

Boarley Lane /Farm (west) (Map Nos 8a & 8b)

OAU No. 1337. Field 309800. Confidence level 3

27 flakes
1 core (multi-platform flake)
63 burnt unworked flints

Boarley Lane (east) (Map Nos 9a & 9b)

OAU No. 1813. Field No. 310800. Confidence level 3

27 flakes
1 retouched (1 polished axe fragment)
67 burnt unworked flints

Boxley Road (Map Nos 9a & 9b)

OAU No. 1339. Field No. 311600. Confidence level 3

38 flakes

29 burnt unworked flints

Woodcut Farm south of Snarkhurst Wood (Map Nos 10a & 10b)

OAU No. 1842. Field No. 317900. Confidence level 1-2

29 flakes

1 irregular waste

1 retouched (polished axe fragment)

63 burnt unworked flints

OAU No. 1843. Field No. 317900.

56 flakes

1 core (single platform flake)

1 retouched (knife)

128 burnt unworked flints

Sandway (Map Nos 11a & 11b)

OAU No. 1346. Field No. 325100. Confidence level 1

127 flakes

4 cores (3 single platform - 1 with an abraded platform edge, 1 multi-platform)

3 irregular waste

31 burnt unworked flints

OAU No. 1347. Field No. 325600. Confidence level 3 - for whole field

53 flakes

2 cores (1 single platform, 1 multi-platform)

1 irregular waste

4 retouched pieces (1 broken ? transverse arrowhead, 1 miscellaneous retouched piece, 1 end scraper and 1 ?Palaeolithic handaxe)

37 burnt unworked flints

Hurst Wood (Map Nos 12a & 12b)

OAU No. 1815. Field No. 401100. Confidence level 1-2 (but very small scatter)

9 flakes

25 burnt unworked flints

Newlands Road and east of Newlands (Map Nos 13a & 13b)

OAU No. 1816. Field No 400. Confidence level 1-2

25 flakes

7 cores (1 multi-platform flake, 1 fragmentary single platform flake, 2 tested nodules,

1 opposed platform, 2 fragmentary and 1 core on a flake)

4 retouched pieces (1 end and side scraper, 2 end scrapers - 1 may be Mesolithic)

2 irregular waste

50 burnt unworked flints

East of Pluckley Road and Newlands (Map Nos 13a & 13b)

OAU No. 1817. Field 301. Confidence level 1-2

39 flakes

1 end and side scraper

4 cores (three multi-platform and 1 core fragment)

1 irregular waste

3 burnt unworked flints

OAU No. 1818. Field 302. Confidence level 1-2

23 flakes
 1 core (fragment)
 1 retouched (end and side scraper)
 55 burnt unworked flints

Westwell Leacon Map Nos 14a and 14b*Field 500 (No OAU No.)*

15 flakes
 2 cores (1 multi-platform flake core, 1 core fragment)
 1 irregular waste
 3 burnt unworked flints

Station Road, Parsonage Farm, Westwell (Map Nos 15a and 15b)*OAU No. 1352. Field 406800. Confidence 3*

31 flakes
 54 burnt unworked flint

Sevington Church Lane and west of Blind Lane (Map Nos 16a & 16b)*OAU No. 1820. Field 600. Confidence level 1-2*

47 flakes
 2 cores (both fragments)
 2 retouched (an unfinished leaf-shaped arrowhead and an end and side scraper)
 12 burnt unworked flints

OAU No. 1353. Field 415700. Confidence level 1

29 flakes
 1 core with 2 platforms

Little Stock Farm (Map Nos 17a & 17b)*OAU No. 1355. Field 418700. Confidence level 2-3*

26 flakes
 5 retouched pieces (2 end and side scraper, 1 barbed and tanged arrowhead, 2 miscellaneous retouched pieces)
 29 burnt unworked flints

Sellindge Convertor (west) Station Road to Church Road (Map Nos 18a & 18b)*OAU No. 1822. Field 419300. Confidence level 2*

12 flakes
 14 burnt unworked flints

OAU No. 1823. Field 419300. Confidence level 2.

30 flakes
 42 burnt unworked flints

OAU No. 1356. Field 419300. Confidence level 2.

93 flakes
 1 irregular waste
 3 retouched (a hammerstone, a notched piece and a side scraper)
 89 burnt unworked flints

Harringe Court, Sellindge Converter (east) (Map Nos 19a & 19b)*OAU No. 1361. Field 421500. Confidence level 2-3 - for whole field*

105 flakes

3 retouched pieces (2 end scrapers, 1 broken leaf-shaped arrowhead)

51 burnt unworked flints

Westenhanger (Map Nos 20a & 20b)*OAU No. 1366-7. Field 424400. Confidence level 2-3 for the whole field*

58 flakes

1 retouched piece (1 miscellaneous arrowhead may be part of a leaf-shaped, barbed and tanged or triangular arrowhead)

28 burnt unworked flints

Saltwood Tunnel (Map Nos 21a & 21b)*OAU No. 1368. Field 427700. Confidence level 3*

17 flakes

1 retouched (end scraper)

9 burnt unworked flints

2.2.4 OTHER FINDS**2.2.4.1 Introduction**

Apart from the pottery and flintwork, which were found in considerable quantities and form the basis of the chronological analysis, several other categories of artefact were also collected and identified. Most of this other material is of post-medieval date and does not merit detailed analysis or description.

2.2.4.2 Metalwork***Coins***

Five coins were recovered, of which three are 19th-century including a copper alloy halfpenny and a 1865 farthing. Two Roman coins were also discovered. A silver coin with clearly visible head wearing a radiate crown, dated AD 260-296, is associated with the multi-period scatter (OAU No. 1820) in Field 600 (Sevington). The second coin is approximately 30 mm in diameter and of copper alloy with the figure of a large head with prominent nose partially visible through the corrosion. This coin was found in Field 702 (Nashenden Valley) within a broadly dated group of material but not within any significant scatter of any one date.

Copper alloy

A copper alloy Roman brooch was recovered from Field 420600 and was associated with a Roman pot scatter (OAU No. 1359). Over twenty other copper alloy objects were collected, all of post medieval date.

Iron

About 400 iron objects, including nails, washers, blades, chain links, bolts, hasps, staples and rings and horseshoes of post medieval date were collected.

Lead

Seven pieces of lead were collected, all probably of post-medieval date.

2.2.4.3 Tile

Over 11,500 pieces of tile were collected of which only 77 (0.5%) pieces were identified as Roman. Of these 77 pieces four are *tegulae* and six are fragments of box flue (for use in a hypocaust). Only two significant scatters were located, one west of Boarley Oast (OAU No. 1336), not associated with an obvious Roman pottery scatter, the second south of Sellindge converter station closely corresponding to a significant concentration of Roman pottery (OAU No. 1359).

Six pieces in a distinctive coarse sandy fabric were thought to be of medieval date, but otherwise medieval tile was not identified. The remainder of the tile is post-medieval in date.

2.2.4.4 Clay Pipes

Over 250 fragments of post-medieval clay pipe were collected but very few are diagnostic pieces such as bowl fragments. One bowl is of 17th century type and the remainder of the fragments are thick stems and therefore likely to be of pre-19th century date. One stem stamped "to honour the brave" is 19th-century in date.

2.2.4.5 Glass

Over 1600 pieces of glass were recovered in which the majority are pieces of 18th century or later glass bottles. Window glass is present in small quantities.

2.2.4.6 Stone

In addition to several fragments of stone roof tile, the only significant discoveries were two whetstones, one quern stone and eight mortar fragments, all probably of post-medieval date.

2.2.4.7 Other

The following items were also collected and catalogued:

- slag - uncertain date
- pieces of fired clay - uncertain date
- pieces of shell
- pieces of bone including worked bone objects such as post medieval knife handles
- pieces of coal

2.2.5 PRINCIPAL AREAS OF ARCHAEOLOGICAL POTENTIAL

This section summarises the main areas of archaeological potential indicated by the results for all types of artifact. The areas are dealt with working along the route from west to east. The artifact distribution maps are contained in the accompanying volume to this report, while the location of survey areas along the route are given in the figures at the end of this volume.

2.2.5.1 Purfleet, High House (Figs 16 & 17; Map Nos 1a & 1b)

Flints: No OAU No. given. Fields 3001 and 3002.

The flintwork in fields 3001 and 3002 may well be background scatters. The material from field 3001 includes a wider range of material. The scraper in field 3001 is neatly retouched on a thin blank and may be Neolithic in date. Otherwise the material is fairly undiagnostic. There is no obvious concentration of burnt flint, though some is present. The significance of this material is difficult to judge in isolation. The generally high archaeological potential of the Purfleet chalk outcrop suggests that it could be of greater significance.

2.2.5.2 Ebbsfleet (Figs 19 & 20; Map Nos 2a & 2b)

Flints: OAU No. 1467. Fields 101 & 102. Confidence level 1

Flints: OAU No. 1828. Field 103. Confidence level 2 - for whole field

Flints: OAU No. 1801. Field 104. Confidence level 3 - for whole field

Flints: OAU No. 1830. Field 105. Confidence level 3 - for whole field

A good scatter of both struck and burnt unworked flint was recovered from fields 101-103 on the east side of the Ebbsfleet Valley. Recovery in fields 104 and 105 was rather patchy. The steep slope in these fields may account for the differences in distribution. The material from Ebbsfleet is characterised by unsystematic, generally hard-hammer flaking. Mis-hits and hinge fractures are common. Flakes are frequently squat and thick-butted. Scrapers, mostly rather nondescript types, are the most frequent retouched form. A fragment from a pecked and ground flint saddle quern was recovered from field 101. Examples of flaked-down saddle querns occur in Bronze Age industries of Mildenhall Fen and the post-mining occupation of Grime's Graves, Norfolk (Frances Healy pers. comm.). The technology of this material would be consistent with a Bronze Age date. The relatively high numbers of burnt unworked flint would also be consistent with this date.

A minority of the flint from Ebbsfleet possessed other technological characteristics. There are occasional soft-hammer flakes (for example, in fields 101, 102 and 103) and blade-like flakes or blade fragments (for example, in fields 102 and 105). One or two cores were more regularly worked than the rest in the assemblage (for example one from field 102 which has some blade scars). Some of the retouched pieces also stood out from the collection as a whole (for example, regular scrapers on thin blanks from field 102). This material may be of Neolithic or early Bronze Age date.

Prehistoric finds have been made in the vicinity, the most notable being Neolithic pottery, animal bone and flint found in waterlogged conditions at Ebbsfleet (Kent Scheduled Ancient Monument 268; OAU Nos 1536, 1541). A fragmentary perforated macehead of possible Bronze Age date was found to the west of field 104 (OAU No. 1540). Mesolithic and Bronze Age flint have been recovered from a quarry east of field 105.

Mesolithic and Palaeolithic material has also been found in the area (OAU Nos 1538 and 1539).

Roman Pottery. OAU No. 1801. Field 104. Confidence level 1

A well-defined, dense scatter of 99 sherds northeast of Springhead Nurseries including locally produced shell and sand-tempered early Roman coarsewares, greywares, whitewares and finewares including a sherd of red colour-coat and the rim and base of a Samian 18/31 bowl. The date of the group is 1st-2nd century AD. The well-preserved condition of the sherds, their dense distribution and the lack of late Iron Age material makes this scatter stand out from the other Roman scatters and is a reflection of its location a) close to the course of Watling Street at Gravesend, and b) 300 m to the north of the important Roman religious and settlement site at Springhead (OAU No. 1545 and associated numbers).

2.2.5.3 Northfleet (A2) (Figs 20 & 23; Map Nos 3a & 3b)

Flints: OAU No. 1802. Field 801. Confidence level 1-2

Flints: OAU No. 1803. Field 801. Confidence level 1-2

Flints: OAU No. 1804. Field 801. Confidence level 1-2

This field has good potential although some collection bias was noted. Both struck flint and burnt unworked flint was recovered from the length of the whole field. Three areas of concentrated finds were noted (OAU Nos 1802-4; see above for details). The majority of the assemblage is the product of an unspecific technology using hard hammers. Retouched forms are fairly restricted in type, scrapers being the most frequent form. Scrapers tend to be minimally retouched, often on thick, irregular or thermal blanks. This material would be consistent with a Bronze Age date. Large quantities of burnt and heavily calcined flint (some large pieces up to 350g) were recovered from this field. Burnt and heavily calcined flint is often a feature of Bronze Age industries. A small component of the assemblage was soft-hammer struck. Blades and blade-like flakes were also recovered. One heavily corticated flake has parallel blade scars on its dorsal face. An end and side scraper is neatly retouched on a thin blank; a Neolithic or early Bronze Age date for this piece and one or two other retouched pieces would not be out of place.

This scatter is within approximately 200 m of a Bronze Age site excavated by the OAU at Coldharbour Road, Gravesham (OAU No. 1435). Beaker and Bronze Age pottery and struck flint were found. A middle to late Bronze Age system of ditched enclosures and trackways was also recorded. The flint assemblage consisted of flakes, cores and a range of retouched forms (Bradley forthcoming). A minor element of the assemblage consisted of soft-hammer flakes and one or two more regularly retouched forms.

2.2.5.4 Singlewell (A2) (Fig. 23; Map Nos 4a & 4b)

Flints: OAU No. 1805. Field 203. Confidence level 2

Flints: OAU No. 1806. Field 203. Confidence level 2

This field contains two possible scatters, consisting of both struck flint and burnt unworked flint. A single soft-hammer struck flake was recovered in this scatter.

2.2.5.5 Nashenden Farm (Fig. 26; Map Nos 6a & 6b)

Flints: OAU No. 1807. Field 701. Confidence level 3

This material represents a diffuse scatter of both struck flint and burnt unworked flint. Soft-hammer flakes and a blade-like flake were recovered.

2.2.5.6 Nashenden Valley (Figs 26 & 27; Map Nos 7a & 7b)

Flints: OAU No. 1824. Field 702. Confidence level - 2 for whole field

This material represents a scatter of both struck flint and burnt unworked flint. The distribution appears diffuse, but it should be noted that the finds were made in a dry valley where colluvial deposits would restrict the redistribution of finds into the topsoil by ploughing. Nothing distinctive was recovered. The material would not be out of place in a Neolithic or Bronze Age context. Two end and side scrapers are neatly retouched on thin blanks and may be of Neolithic or early Bronze Age date. Soft-hammer struck flakes and blade-like flakes were also recovered. The latter material would suggest an earlier element to the flintwork although dating is difficult on the basis of a few pieces. A crudely retouched scraper on a thick blank is probably of Bronze Age date. A retouched flake on a thermal fragment may also be of this date. A large flake, possibly from a prepared platform core, may be of Palaeolithic date.

Medieval Pottery: OAU No. 1807. Field 701. Confidence level 2-3

A low density spread of 16 sherds concentrating to the south-east of the field. Mixed in date range containing corky textured and sandy early medieval wares (11th - early 13th century), a jug handle in Scarborough Ware (12th -13th century) and later medieval sherds of (14th - 15th century). To the north of this scatter is the site of Nashenden Farm Manor House (OAU No. 1777) and the site of a medieval chapel at Nashenden Farm (OAU No. 1775).

2.2.5.7 Boarley Lane and Farm (West) (Fig. 28; Map Nos 8a & 8b)

Flints: OAU No. 1337. Field 309800. Confidence level 3

A diffuse scatter of both struck flint and burnt unworked flint was recovered from the S end of the field. Material in the rest of the field was thinly scattered. Three possible Iron Age sherds (below) are associated with this scatter.

Prehistoric Pottery: OAU No. 1337. Field 309800. Confidence level 2

A group of three sherds close to a fourth (outlier or unassociated) c.100m south. Three flint and one shell tempered. These sherds are also associated with a diffuse scatter of struck flint. There are also a few Roman and medieval sherds.

Roman Tile: OAU No. 1336. Field 309800. Confidence level 2

11,581 pieces of tile were collected of which only 77 (0.5%) pieces were identified as Roman. Of these 77 pieces four are *regulae* and six are fragments of box flue (for use in a hypocaust). This is one of only two significant scatters of Roman tile. This one is not associated with an obvious Roman pottery scatter, whereas the other, south of Sellindge Converter Station closely corresponds to a significant concentration of Roman pottery (scatter 1359).

2.2.5.8 Boarley Lane (East) (Fig. 28; Map No. 9f)

Flints: OAU No. 1813. Field No. 310800. Confidence level 3

This material represents a background scatter of both struck flint and burnt unworked flint. The burnt axe fragment was unfortunately too fragmentary to make any observations about the type of implement it had been originally. Two blades may indicate an earlier element to the assemblage.

2.2.5.9 Boxley Road (Fig. 29; Map Nos 9a & 9b)

Flints: OAU No. 1339. Field No. 311600. Confidence level 3

This material represents a diffuse scatter of both struck flint and burnt unworked flint in the S end of the field.

Prehistoric Pottery: OAU No. 1339. Field 311600. Confidence level 1

A well defined cluster of nine sherds, variously flint, sand (including two 'glaucanite rich' sherds) and grog tempered. They include a simple rim and two sherds with overall furrowing, all grog tempered in an East Kent tradition. The cluster partly overlaps with a Roman scatter (below).

Roman Pottery: OAU No. 1339. Field 311600. Confidence level 1-2

Small but well-defined scatter of 15 sherds, partly overlapping an Iron Age scatter (above). Many of the sherds are grog tempered, including the rim of a bead rim jar and corrugated sherds from jars of east Kentish Type. The group dates to the 1st century AD.

Medieval Pottery: OAU No. 1340. Field No. 311600. Confidence level 1-2

A small, compact spread of 18 sherds. Other medieval pot in the area, though locally concentrated, is in general more dispersed than this scatter. The scatter approximates to the area of a group of buildings shown on the OS Surveyor's drawings of c. 1800, and could represent a medieval farm.

2.2.5.10 Woodcut Farm, Area South of Snarkhurst Wood (Fig. 31; Map Nos 10a & 10b)

Flints: OAU No. 1842. Field No. 317900. Confidence level 1-2

Flints: OAU No. 1843. Field No. 317900. Confidence level 1-2

Several small scatters of struck flint were recorded. The burnt unworked flint seems to be more dispersed in this field, possibly reflecting later periods of activity (see below). The polished axe fragment is too small to allow further comment on the original type of implement. The knife would not be out of place in a Neolithic or Bronze Age context.

Prehistoric Pottery: OAU No. 1343. Field 317900. Confidence level 1

An extensive scatter with two nuclei, possibly to be seen as two separate scatters with their centres some 180 m apart, containing a total of 21 sherds. These are in a variety of fabrics: flint, including a fine "Belgic type" flint-tempered sherd, grog, glauconite, and flint and glauconite tempered. The latter may derive from a very local source. Most of the pottery probably falls within the range 1st century BC-1st century AD and is therefore of later Iron Age date.

Roman Pottery: OAU No. 1343. Field 317900. Confidence level 2-3

A linear scatter of 26 sherds with a single piece of tile, partly overlapping with an Iron Age scatter (above). The majority of the sherds are grog tempered, in both the east Kent and Patch Grove traditions. Flint tempered, Romanised greyware and samian ware sherds also occur. The overall date range is 1st-2nd century.

2.2.5.11 Sandway (Fig. 34; Map Nos 11a & 11b)***Flints: OAU No. 1346. Field No. 325100. Confidence level 1******Flints: OAU No. 1347. Field No. 325600. Confidence level 3 - for whole field***

A good, compact scatter (1346) of struck flint and burnt unworked flint. The predominance of single platform flake cores may be indicative of Neolithic flintworking. The presence of edge abrasion on one of these cores shows that careful and controlled knapping was occurring adding weight to a possible earlier Neolithic date for these pieces

A diffuse scatter (1347) of struck flint and burnt unworked flint. The material is mixed in date, including a possible Palaeolithic handaxe and a fragmentary transverse arrowhead which would indicate a later Neolithic date.

Medieval Pottery: OAU No. 1347. Field 325600. Confidence level 1-2

A large and extensive scatter (120 sherds) of variable density east of Pleasant Farm. This may derive from a medieval predecessor of the farm, since the quantity and density of material suggests occupation rather than manuring spreads. A further scatter to the west of the farm is less dense and is thus discounted, though it could perhaps be seen as a continuation of OAU No. 1347. The majority of sherds are in a moderately fine, iron-rich, quartz-tempered fabric. Most sherds are oxidized and occasionally have a continuous orange lead glaze. One simple rolled rim is the only diagnostic sherd present indicating a probable 12th - 13th-century date for this scatter.

2.2.5.12 Hurst Wood (Map Nos 12a & 12b)***Flints: OAU No. 1815. Field No. 401100. Confidence level 1-2 (but very small scatter)***

A very small compact scatter of struck flint. The distribution of burnt unworked flint is slightly more extensive.

2.2.5.13 Newlands Road and east of Newlands (Fig. 36; Map Nos 13a & 13b)***Flints: OAU No. 1816. Field No 400. Confidence level 1-2***

This field represents an area of potential, with the level of confidence increased by the topographical conditions (in a slight valley with some alluvium). Two scatters of struck flint and burnt unworked flint were recovered. There seemed to be some recovery

biases. The majority of this material is of Mesolithic date. Refinement of the dating is not possible as no microliths were recovered. However, a microburin indicates microlith manufacture. A small blade-like blank with steep retouch across the proximal end and down part of one edge with opposed cortical backing and an opposed platform blade core with some blade scars and an abraded platform edge would also seem to be of Mesolithic date. Soft-hammer struck flakes, blades and blade-like flakes and blades were also recovered. The distribution of this material together with the diagnostic waste and the scraper would indicate a Mesolithic scatter. A Mesolithic flint scatter is known in the vicinity of Field 400 at Charing (OAU No. 1078). An end and side scraper on a thin non-cortical blank would perhaps be better placed in a Neolithic or early Bronze Age context. Some of the less diagnostic waste from the field may therefore also be of this date.

2.2.5.14 East of Pluckley Road and Newlands (Fig. 37; Map Nos 13a & 13b)

Flints: OAU No. 1817. Field 301. Confidence level 1-2

Flints: OAU No. 1818. Field 302. Confidence level 1-2

A diffuse scatter of struck flint and a small quantity of burnt unworked material was recovered in Field 301 (OAU No. 1817). The neatly retouched end and side scraper may be of Neolithic or early Bronze Age date.

A good, compact scatter of struck flint and burnt unworked flint. The end and side scraper is made on a core fragment. Blade-like scars on the dorsal face of this core fragment indicate controlled knapping, this together with the type of retouch would indicate a Neolithic or early Bronze Age date. A soft-hammer blade-like flake and a blade-like flake may also indicate an early element to the assemblage.

Medieval Pottery: OAU No. 1818. Field 302. Confidence level 1

A dense and well-defined scatter of 73 sherds in which the early medieval sandy ware is the predominant type. Several cooking pot rims of 11th - 12th century and mid - late 13th century date are present as well as thumb bases and rod handles from jugs. This is one of the better-defined scatters of medieval pottery found in the vicinity of Ashford, but the flint and shell-tempered pottery produced in kilns at Ashford are not present in this collection.

2.2.5.15 Westwell Leacon (Fig. 38; Map Nos 14a and 14b)

Flints: No OAU No. given. Field 500.

This material may well only be a background scatter of struck flint with a few pieces of burnt unworked flint. The relative density between fields 500 and 501 which makes this look like a low level scatter may well relate to survey conditions rather than anything more positive.

2.2.5.16 Station Road, Parsonage Farm (Fig. 38; Map Nos 15a & b)

Flints: OAU No. 1352. Field 406800. Confidence level 3

A background scatter of struck flint with a possible concentration of material, coinciding with area of cropmarks.

2.2.5.17 Sevington (Fig. 41; Map Nos 16a & 16b)

Flints: OAU No. 1820. Field 600. Confidence level 1-2

A scatter of struck flint with a small quantity of burnt unworked flint. Collection in this field appears to have been patchy. The unfinished leaf-shaped arrowhead, the neatly retouched scraper on a thin blank and a blade-like flake would indicate an earlier Neolithic date for at least some of the material from this field. This scatter appears to be associated with the only significant scatter of prehistoric pottery (below).

Prehistoric Pottery: OAU No. 1820. Field 600. Confidence level 1-2

Nine sherds in Field 600 are the only closely grouped collection of earlier Prehistoric sherds, of which five occur in close proximity. Within this group are sherds of the earliest flint-tempered type and the third type with crushed flint temper. Interestingly the pottery scatter roughly corresponds with the possible early Neolithic flint scatter above.

Roman Pottery: OAU No. 1820. Field 600, 602, 603. Confidence level 1

An extensive, well-defined scatter of 111 sherds, of which the majority (76 sherds) are grog-tempered late Iron Age/early Roman, and the minority (35 sherds) are Roman oxidized coarsewares. This scatter overlies prehistoric sherds in the same field and is partially overlain by a medieval scatter (see below). The date of the group is 1st-2nd century AD. Of note is the find of a Roman silver coin of radiate type (AD 260-296) also in Field 600.

Medieval Pottery: OAU Nos 1820 & 1821. Field 601. Confidence level 2-3

A low density spread of 70 sherds (1821) concentrating to the west of the field. The majority of sherds are of the early medieval sandy type including diagnostic rim forms of late 12th and mid to late 13th-century date. Also present are later 14th - 15th century splash-glazed jug sherds. Another small group of 25 sherds (1820) in a well defined area overlie prehistoric and Roman scatters. All of the medieval sherds are of the early medieval sandy type of 11th - early 13th century date, but are otherwise undiagnostic.

Much of the flintwork and prehistoric pottery sherds have a widespread distribution in the eastern half of these fields with a concentration of sherds in Field 600. A large late Iron Age/Roman scatter overlaps this prehistoric scatter and continues to the south into Field 602 and 603. The medieval pottery concentrates in two areas, one in the same locality as the prehistoric scatter and part of the late Iron Age/Roman scatter in Field 600, the second is concentrated mainly along Church Lane, possibly reflecting greater occupation along the lane in the medieval period.

2.2.5.18 East of Church Lane, Sevington, West of Blind Lane (Fig. 41; Map 16)

Flints: OAU No. 1353. Field 415700. Confidence level 1

A small, well defined scatter of worked flint, but no burnt unworked flint was recovered.

Prehistoric Pottery: OAU No. 1353. Field 415700. Confidence level 1

A well defined scatter of 13 sherds of mainly flint tempered pottery, forming part of a multi-period scatter.

Roman Pottery: OAU No. 1353. Field 415700. Confidence level 1

A large scatter of some 78 sherds of Roman pottery. Most of the pottery is grog tempered, but there are a few Romanised oxidised and reduced coarsewares, with a date range mainly of 1st-2nd century. This forms part of a multi period scatter.

Medieval Pottery: OAU No. 1353. Field 415700. Confidence level 1

An extensive scatter, dense in places, containing 73 sherds of pottery. Forms part of a multi-period scatter.

2.2.5.19 Littlestock Farm (Fig. 42; Map Nos 17a & 17b)

Flints: OAU No. 1355. Field 418700. Confidence level 2-3

A diffuse scatter of struck flint and burnt unworked flint, including a barbed and tanged arrowhead of Bronze Age date.

2.2.5.20 Sellindge Converter (west) Station Road to Church Lane (Figs 42 & 43; Map Nos 18a & 18b)

Flints: OAU No. 1822. Field 419300. Confidence level 2

Flints: OAU No. 1823. Field 419300. Confidence level 2

Flints: OAU No. 1356. Field 419300. Confidence level 2

Two diffuse scatters of both struck flint and burnt unworked flint were recovered. The archaeological potential of the scatters is increased by their collection in or on the edge of an alluvial area. A slightly more dense scatter of material was recovered from the south-west end of the part of the field east of a small stream and west of the converter station. The hammerstone is the only example from the whole assemblage although some cores which have areas of battering may have been used as hammerstones. The gun flint is of post-medieval date. A couple of sherds of prehistoric pottery were found in the area west of the converter station, and one at the western end of the area near Park wood Cottage.

2.2.5.21 Sellindge Converter (south), east of Church Lane (Figs 42 & 43; Map No. 18d)

Roman Pottery: OAU No. 1359. Field 420600. Confidence level 1

A quite well defined and dense scatter of pottery (59 sherds) and tile (36 pieces) immediately adjacent to a dense medieval scatter (OAU No. 1358, see below). The confidence level here is increased by the location of the scatter in a dry valley, where colluvial (hill-wash) deposits might be expected to hinder the recovery of finds. The scatter contains grog-tempered sherds, but also grey-wares and black-burnished ware (BB2), one form in the latter probably extending the date range of the site into the 3rd century. The tile includes box flue and probably *pilae* fragments which suggest the presence of a substantial building. Of note is a Roman copper-alloy brooch found associated with this scatter.

Medieval Pottery: OAU No. 1358. Field 420600. Confidence level 1

A dense scatter of 125 sherds immediately adjacent to but only marginally overlapping a Roman scatter (above). The medieval scatter contains very large numbers of sherds in some transects. Various fabric types are present, though all are sandy, quartz tempered

fabrics. One of the fabric types is similar to the early medieval sandy wares found in OAU No. 1818. Other diagnostic sherds are a strap handle from a jug with slashed decoration in a softer fired, iron rich, orange fabric and a fragment from the shoulder of a jug which is highly decorated and well glazed on the external surface. These sherds are likely to be 13th or 14th century in date.

2.2.5.22 Harringe Court, Sellindge Converter (east) (Fig. 43; Map Nos 19a & 19b)

Flints: OAU No. 1361. Field 421500. Confidence level 2-3 - for whole field

There was a diffuse scatter of both struck flint and burnt unworked flint either side of Harringe Lane. The fragmentary leaf-shaped arrowhead is of earlier Neolithic date.

Prehistoric Pottery: OAU No. 1361. Field 421500. Confidence level 1

A group of five flint-tempered sherds, rather widely spread in the field west of Harringe Lane, but nonetheless a coherent group, overlapping a rather less satisfactory Roman scatter (see below).

Roman Pottery: OAU No. 1361. Field 421500. Confidence level 2-3

A handful of late Iron Age/early Roman sherds (10) in a linear pattern beside the existing railway line either side of Harringe Lane. Of dubious significance except that they overlap with Middle Iron Age scatter OAU No. 1361.

Medieval Pottery: OAU No. 1361. Field 421500. Confidence level 2-3

A fairly uniform but not particularly dense scatter of 56 sherds spread across the field east of Harringe Lane. The majority of sherds are in a soft fired, moderately tempered, iron rich fabric which is usually an oxidized orange colour. A few sherds retain their lead glaze. The only diagnostic sherds are from jugs. These include the wide splayed base of a jug which could be from an early medieval baluster jug form and a second sherd with the scar from a large rod handle on the shoulder. It seems probable that these sherds are early 12th to mid 13th-century.

2.2.5.23 Westenhangar (Fig. 44; Map Nos 20a & 20b)

Flints: OAU No. 1366-7. Field 424400. Confidence level 2-3

A diffuse scatter of worked flint. The arrowhead is unfortunately too fragmentary to provide any clear dating evidence, but it is likely to be of Neolithic or Bronze Age date. This scatter of 58 prehistoric worked flints and 28 unworked burnt flints possibly reflects two concentrations, one including the fragmentary arrowhead (OAU No. 1366), the other a sherd of prehistoric pottery (OAU No. 1367).

Medieval Pottery: OAU No. 1365. Field 424400. Confidence level 2-3

A medium-sized scatter of variable density, containing 18 sherds. These sherds are badly abraded and generally very small in size. Some appear to be of the same early medieval sandy type as found in OAU No. 1818, some are a hard fired sandy ware, and others a soft fired oxidized orange ware of which one sherd is part of a jug rim with a rod handle. This scatter is of 12th to late 13th-century date.

2.2.5.24 Saltwood Tunnel (Fig. 45; Map Nos 21a & 21b).

Flints: OAU No. 1368. Field 427700. Confidence level 3

A diffuse scatter of both struck flint and burnt unworked flint.

Pottery: OAU No. 1368. Field 427700. Confidence level 2

Three Middle Iron Age, four Roman, eight medieval and approximately 30 post-medieval pottery sherds occur in a diffuse scatter.

2.3

CONCLUSIONS

The surface collection survey has identified about forty scatters of archaeological material representing 23 areas of potential archaeological significance, as described above. The significance of the clusters of finds which have been highlighted for further investigation have been assessed on the basis of professional judgement rather than statistically, to take account of the differences in survey conditions.

Five of the above scatters relate closely to known sites and confirm the very high archaeological potential of these areas (OAU Nos 1467/1801/1828/1830, Ebbsfleet prehistoric; 1802-4 Coldharbour Road, Gravesend, prehistoric; 1816, Mesolithic flint scatter at Charing; 1801, Watling Street Roman road and Springhead Roman settlement, Gravesend; and probably less significantly 1807, Nashenden Farm and Manor House, medieval). Furthermore a number of sites have a substantial overlap between scatters of different dates and/or material categories. This is most notable at Ebbsfleet (OAU Nos 1467, 1801, 1828 and 1830), Boarley Farm (OAU No. 1337), Boxley Road (OAU Nos 1339 and 1340), Woodcut Farm (OAU Nos 1342 and 1343), Newlands (OAU No. 1818) and Sevington (OAU Nos 1820 and 1353).

In general a high degree of confidence can be attributed to the likely existence of significant remains in some of the areas of archaeological potential identified by the surface collection survey, but it is not a sure guide to the character and significance of subsoil archaeological remains even in the most clear-cut cases. The factors affecting patterns of both deposition and recovery of artifacts are complex, and most of the areas identified as having some potential deserve clarification of whether significant subsoil remains exist. The character, extent and preservation of such subsoil deposits cannot be defined without more detailed field investigation. Nevertheless, the surface collection survey has provided a preliminary indication of the extent and date range of the areas of significance located.

Options for mitigation of potentially significant effects arising from where the CTRL will directly affect those scatters of finds, are set out in the Assessment of Historic and Cultural Effects Final Report, Volume 1.

Any evaluation work will need some reassessment and integration of the analysis of the artefacts from relevant fieldwalking scatters as part of the study of finds from the evaluation. Typological and chronological comparison will be essential for artefacts from the fieldwalking and evaluation stages where the two techniques occur on the same site.

Channel Tunnel Rail Link

**Historic and Cultural Effects
Supplementary Fieldwork Report**

Chapter 3

Walkover Survey

Channel Tunnel Rail Link

Historic and Cultural Effects Supplementary Pathwork Report

Chapter 3

Walkover Survey

3 ARCHAEOLOGICAL WALKOVER SURVEY

SUMMARY

Nineteen areas of woodland, considered to have "ancient" origins, and two areas of parkland were visited by the Oxford Archaeological Unit during May to July 1994. The principal objectives of the survey were to distinguish any early management practices, and to identify any extant historic features which either predated the individual woodlands or formed early boundaries within them. Numerous landscape features were recorded, some of which had previously been noted. Six features or groups of features have been given EFM gazetteer numbers. These, and a further six features or groups of features, require additional study.

3.1 INTRODUCTION

3.1.1 PURPOSE AND BACKGROUND

A walkover survey of selected sites on the Channel Tunnel Rail Link (CTRL) was undertaken during May to July 1994. The work formed part of a data-gathering exercise for the Environmental Assessment of the CTRL, and was linked to the preparation of a specialist report by the OAU on historic and cultural impacts of the railway.

The walkover survey comprised a rapid but reasonably detailed examination of areas of relatively unimproved land not readily visible from public rights of way, and not previously examined fully during work on earlier schemes for the CTRL. The aim was to identify archaeological remains, and their relationship to current and past landuse. This would allow an assessment to be made of the likely impact of the CTRL on such evidence.

3.1.2 LOCATION AND COVERAGE

Nineteen areas were identified for walkover survey on this basis, mainly comprising historic woodland (see Assessment of Historic and Cultural Effects Final Report, Volume 1, section 3.5.1.9). In some cases these areas consist of more than one named wood. The survey also included two areas of parkland.

Three blocks of woodland, comprising Beechbrook Wood, Balls Wood and Lodge Wood, near Ashford could only be viewed from margins and public rights of way. A number of features were noted on the margins of each of the three woods: old coppicing with a wood bank on the north side of Beechbrook Wood; Balls Wood has a hollow way along the south-west side, and a bank and ditch on the east side associated with ancient coppice stools; and Lodge Wood has traces of a bank, again with ancient coppice stools, on its south, east, and west sides.

These features could only be observed, and were not recorded in any more detail. It has been decided that they should be excluded from the description section which follows hereafter. Access to these woods should be pursued further, with a view to undertaking a full walkover survey of them.

The remaining sixteen areas are described in section 3.2 below, and consist of: Ashenbank Wood; Cobham Park; Cole Wood; Temple, Clay Pond, Broad Oak and Great Woods, Head Barn Wood and Merralls Shaw; Bridge and Syle Woods; Donkey Shaws and Park Wood West; Boxley Valley; Park Wood East; Horish Wood; Honeyhills Wood; Longham Wood; Ash Shaw and The Chestnuts; Warren and Coombe Woods; Hurst Wood; Grange Alders and Oak Banks; and Bargrove Wood.

3.1.3 METHODOLOGY

Only the actual areas of land identified as within the safeguarding boundaries were surveyed in detail. In most cases the areas of woodland, parkland and arable affected by the CTRL form only a small proportion of larger blocks of land. Adjacent areas were examined in a more cursory manner if this was considered to be appropriate. Such work was strictly confined to what could be observed marginally from public rights of way and roads, as access arrangements related solely to the safeguarding limits.

It was rarely possible to walk straight transects through the woodland, in contrast to typical general prospection techniques used on arable land (eg fieldwalking). Many areas were so overgrown with weeds and brambles that much of the walking had to be carried out in a more random fashion, picking the best route and often making use of any tracks and paths through the undergrowth. Such ways were often poorly defined and were rarely shown on Ordnance Survey maps. Some areas of woodland were so densely covered with undergrowth that earthworks or other landscape features would have been extremely difficult to identify. Vegetational changes (eg height), however, might be detectable over earthworks in such conditions. No such changes were noted where undergrowth was extreme.

Early cartographic evidence has been consulted to provide additional background information and to build up a temporal picture of the development of the individual areas examined within their respective parishes.

1:5000 plans were used and annotated in the field and form the basis of the accompanying maps (Maps 22 - 34). Colour photographs (Plates 1-5) were taken where appropriate, but in most cases the light levels were either too low or the undergrowth too thick for photography to be practicable or useful. Standard pro-forma Walkover Survey Record Sheets (Appendix 2) were also used to record any additional topographic details, the ground conditions, and a brief descriptive summary of the type of woodland, species present, evidence of management, and any landscape features located.

Pasture was also examined cursorily in the vicinity of the woodland, parkland and pasture areas selected for the walkover survey. Most of the arable land near the survey areas was under crop (eg wheat, peas and oil seed rape) at the time of the survey, giving poor visibility of the ground surface and no attempt was made to examine these areas.

One underlying problem has been the names of the individual woods, since in some instances several wooded areas make up a larger woodland block *ie* Temple, Claypond, Broadoak and Great Wood all form part of Cobham Wood. Different maps also frequently indicate different boundaries. To ensure compatibility with the OAU report on the historic and cultural impacts of the CTRL the existing OAU Gazetteer woodland names have been used. It should be noted that these do not always correspond with the names used in the Ecology Specialist Report (Cobham Research Consultants 1994).

3.1.4 HISTORIC WOODLANDS

The survey mostly covered woodland thought to be of ancient origin, although parkland and pasture were also included. All of the land covered lay within Kent. Sixteen areas, which were visited and examined in detail, form the bulk of this report. As a result of the route refinement at Ashford a further three areas of woodland were examined in a more cursory fashion (see section 3.1.3, below).

A further objective of the walkover survey was to identify land management practices through the survival, for example, of very old coppices or pollards. Unfortunately, since sustainable management practices require both the felling of trees when they reach maturity and the regular coppicing of smaller timber, surviving evidence of early practices is very rare. However, the collapse of the market for coppice products in the early part of the 20th century has led to neglect of many areas of woodland. Consequently some areas, which are particularly overgrown, have remained unmanaged since they were last cut perhaps 60 to 80 years ago.

It is extremely difficult to prove that an existing ecological or landscape feature such as so-called ancient woodland has existed since earliest times. Only very rarely do maps earlier than the mid 17th century survive, and the accuracy of such early maps can be questionable. It is therefore difficult to establish pre-18th century woodland boundaries with certainty. Surviving Anglo-Saxon charters and other medieval written sources frequently refer to natural features such as streams, woodland, or even individual trees as defining points on land boundaries. Unfortunately, such features are often unrecognisable or have not survived within the modern landscape. Features such as banks and ditches were frequently created to define landscape areas, for instance within or around woodland, although it is not always possible to distinguish such boundaries from features that may pre-date the woodland.

Trees have been managed in Britain for a diversity of products since the prehistoric period. It is now widely recognized that much of the original woodland, which grew after the end of the last ice age c. 12,000 years ago, was cleared by the end of the Neolithic period (2,000 BC). Continued clearance throughout the later prehistoric period, population expansion in the Roman period and the intensification of agricultural practices, continued to make considerable inroads into the ancient woodlands that had survived Neolithic clearance.

Domesday records also reveal that more woodland must have been cleared before the 11th century than has been cleared since. Furthermore, by the medieval period nearly every parcel of woodland was very carefully managed for particular purposes and its value was well established. Oliver Rackham (1980), a leading authority on the history of woodland, suggests that greater care has been lavished on the management of woodland in England over the last thousand years because the country retained less woodland than most European countries. Timber, food, foliage for animal fodder, fuel and medicinal products were all harvested on a sustainable basis, employing sophisticated management systems.

More than 5% of Kent is covered by woodland thought to be of possibly 'ancient' origins. However, the provisional register of ancient woodland is based on a broad identification of candidate woods based on the published first edition 1" OS map (in fact surveyed in more detail at c. 2-3" to the mile in c. 1800), with the boundaries derived

from the first edition 6" maps of c. 1870. More detailed study of the historic map evidence shows that the 1870s boundaries often include areas which were not woodland on the 1st edition 1" map; the latter in turn sometimes shows woodland in areas depicted as open space on earlier estate maps. The maps also record areas which at various stages have been cleared of trees.

It is possible that areas of woodland which appear to be of ancient origin on the basis of historical/map evidence actually resulted from later regeneration. Such woods may contain relict landscape features which belong to or predate the woodland. Historic and/or archaeological features such as banks, ditches, mounds, lynchets, quarries *etc* have often survived in good condition within woodland, but they have usually been totally destroyed in the surrounding fields through intensive agricultural practices. The identification of any surviving relict landscape features was therefore the prime purpose of the walkover survey.

3.1.5 STRUCTURE OF THE REPORT

The individual woods and associated areas are systematically described below in a west to east direction along the CTRL route, commencing with Ashenbank Wood near Cobham and ending with Bargrove Wood near Saltwood (see Figs 5 - 47 based on route window mapping).

In each case the area of woodland has been placed in its local setting and the type of woodland and any identifiable management practices have been briefly described. The morphology and any physical changes to the individual woods have been considered against the available cartographic evidence. This is followed, where appropriate, with descriptions of any archaeological/historic landscape features together with their interpretation.

OAU gazetteer numbers have been used where relevant for the main areas of woodland and previously identified historic landscape features and archaeological sites. OAU gazetteer numbers have also been given to those features which are best defined as distinctive or coherent entities rather than merely being incidental to the woodland or other area in which they are found.

3.2 SITE DESCRIPTIONS

3.2.1 SCALERS HILL AND ASHENBANK WOOD (FIG. 24; MAP 22)

3.2.1.1 Location

Scaler's Hill is an area of unimproved grassland and secondary woodland immediately south of the A2 about 1km north of Cobham Village. To the west, there are two fields of improved pasture between the drive to Scaler's Hill House and Henhurst Dale. Ashenbank Wood is situated immediately to the east, between Scotland Lane and Halfpence Lane which forms the western edge of Cobham Park (see below).

3.2.1.2 Status

Scaler's Hill is privately owned and used for commercial recreation eg War Games. It was open heath in the early 19th century according to the 1st edition 1" OS map. The top of the hill is open unimproved grassland; the surrounding secondary woodland is in places very overgrown.

Ashenbank Wood is a Site of Special Scientific Interest (SSSI) owned and managed by the Woodland Trust and comprises areas of sweet chestnut and other mixed broadleaves. The whole wood is included in the draft Ancient Woodland Inventory for Kent. This is based on woodlands shown on the 1st edition 1" OS map, but with boundaries plotted from the 1st edition 6" maps. Reference to the OS Surveyor's drawings for the 1st edition 1" map and an estate map for Cobham Hall of 1758 show that the northern part of Ashenbank Wood around The Mount and as far as Watling Street was then open (shown as heath on the published OS 1st edition 1" map). Much of the northern part of the wood is heavily overgrown, especially extensive areas affected by storm damage north of The Mount, where the absence of a mature canopy has allowed dense brambles and birch scrub to develop. The secondary character of this part of the wood seems to be borne out by the absence of an obviously well developed woodland ground flora, and the spreading character of some of the older trees where still surviving. The Mount (OAU No. 696), is a Grade II brick house of 16th-century origins in Ashenbank Wood.

3.2.1.3 Landscape Features

No features were observed in the improved pasture fields west of the drive to Scaler's Hill House.

The Drive to Scaler's Hill House (OAU No. 979, a large brick house of 1901, designed by Schultz) consists of an avenue of very tall irregularly spaced beeches.

No archaeological features were noted on the top of Scaler's Hill itself.

To the north west, in the area of woodland adjacent to the lane leading to Scaler's Hill House, there is an area of amorphous and fairly pronounced humps and hollows said locally to be the result of an unsuccessful prospection for lignite, apparently in the 1950s. A hollow way shown on 1:10,000 OS maps which could represent the line of Watling Street prior to the adoption of the present A2 in this area was not observed, and may have been disturbed by these workings. However remains of it could survive further east close to Scotland Lane.

Scotland Lane is a good example of an ancient hollow way of local interest forming the western boundary of Ashenbank Wood; the lane marks the line of the road from Cobham Village to Thong. It is up to c. 2.5m deep, unmetalled and is still used as a bridleway. Scotland Lane meets the former line of Watling Street south of the A2 close to a surviving pond labelled 'Sheepwash' on the 1st edition 6" map.

The site of St Thomas's Well (OAU No. 1567) is shown by the OS as being on the northern boundary of cottages of that name. The well is not obviously visible at the point shown, but is said locally to still exist.

At the western end of Ashenbank Wood the gardens of the cottages are more extensive than shown on Map 22. Apart from an air raid shelter close to the drive to The Mount, no obvious archaeological features were noted in the wood, but apart from the narrow paths through the woodland the ground surface was mostly obscured by impenetrable vegetation. A few possible very low banks crossing the paths were seen, which might relate to an earlier phase of different landuse, but they could not be satisfactorily traced or confirmed as real features.

3.2.2 COBHAM PARK (FIG. 24; MAPS 22 AND 23)

3.2.2.1 Location

Cobham Park occupies a substantial area on the south side of the A2, stretching west-east from Halfpence Lane to Cole Wood, just west of Knight's Place, and as far south as Cobham village which lies at its south west corner. The north west corner of the park is crossed by a modern realignment of Brewer's Road, while the present A2 occupies part of the northern boundary of the park, mainly at its eastern end. The north eastern part of the park is occupied by the Cobham and Rochester Golf club.

3.2.2.2 Status

The Park surrounds Cobham Hall, a Grade I listed building set in a hollow more or less in the centre of the Park. The park itself is Registered Grade II* in the English Heritage Register of Historic Parks and Gardens, and Grade I in the KCC Register. The house is currently occupied by a school, and the National Trust have a covenant over the house and park.

The earliest map of the Cobham estate in 1641 shows an 'Old Park' round the house, and a much larger area of new park including most of the estate, and stretching from Cobhambury Wood in the south west to a line east of the course of the present M2. As mapped in 1718, 1749 and 1758 the central core of old parkland round the Hall remained much the same, with changes to the west and south; the northern boundary remained the line of the Roman road, and the east boundary was a sinuous curve just west of Knight's Place. Even this contained woodland, some of which remains today around the Golf Course (OAU 2152-3). The English Heritage Register includes the whole of this central core within the illustrative map.

The landscape was transformed from 1790 by Humphry Repton, who laid out a series of pleasure grounds in the immediate vicinity of the Hall, together with more distant planting. The main areas of work were the pleasure grounds immediately north and south of the Hall. A lodge and gateway designed by James Wyatt or J A Repton was built at Brewers Gate (now demolished; OAU No. 1878), linked to the house by a sweeping drive (OAU No. 2191), still visible as an earthwork, which replaced a 17th-century double avenue following a straight course. The windmill hill was extensively quarried for materials for the landscaping and terraces and was turned into a Wilderness, creating the earthworks which were subsequently thought to be of greater antiquity; the three 17th-century or earlier ponds near the north entrance were enlarged and remodelled (OAU No. 2194). An Engine House (OAU No. 1977) was built to supply water to the house, upgrading a pre-existing conduit system. A dog kennel shown on early 18th-century maps east of the ponds was a poultry yard by the mid-19th century. Also shown

on the 18th-century maps is the Shepherd's Cottage near the north-west corner of the park.

3.2.2.3 Landscape Features

The following description is presented working from west to east.

In the first section, between Halfpence Lane and the link over the A2 for Brewer's Road, west of the site of Brewer's Gate (OAU No. 1878), a bank survives parallel to and south of the old Watling Street, about 14m from the lane, where a listed boundary stone marks the boundary of Shorne and Cobham parishes. Between the bank and the lane there is an amorphous ditch or series of hollows, which in places are larger than would be required to form the bank and may well represent the result of small scale quarrying for road make-up.

The bank itself is about 1m high and has the stumps of some very mature trees upon it. Its west end has been truncated near the modern 'picnic area', and further east, just west of Brewer's Lane it has been partly levelled close to a very large hornbeam growing on the bank. The ground in this area is soft and there are remains of concrete suggesting recent disturbance. Only a slight hollow and bank survive immediately west of Brewer's Road.

This bank might represent part of a park pale, but on 1 to 25" OS plans it is shown as turning south before it reaches the western side of the park. A possible continuation east of Brewer's lane similarly turns south. It may mark the northern end of an area along the western side of the park which is shown as a separate field or paddocks and areas of plantation or woodland on 18th century and earlier maps.

A building is shown in this area on an estate map of 1758 (but not earlier ones), of which there is now no sign, probably as a result of landscaping associated with the modern building and picnic area nearby.

South of the 'picnic area' and west of Brewer's Lane a few very mature parkland trees survive.

Remains of iron fencing c. 1.5m high survive along the south side of the lane itself, corresponding to the 19th century boundary of the park.

In the second section, east of Brewer's Road, there are further groups of mature parkland trees but the south side of the lane is marked by post and rail fencing. Along the northern boundary from the site of Brewer's Gate to a point level with the poultry house (see below), the original boundary of the park has been modified since 1933 by the rebuilding of the lane along the foot of the embankment for the A2. From comparison of the 1933 25" OS map with a recent edition it does not appear to have encroached significantly into the park, but there is no trace of original fencing. The road has narrow concrete edging and the vegetation on the A2 embankment is clearly of recent origin.

Within the park, about 110m east of Brewer's Lane remains of early 19th century iron deer fencing survives, forming a dog leg round the site of Brewer's Gate lodge. The fence was about 2m high with eight bars.

The sweeping curve of Repton's carriage drive linking Brewer's gate to Cobham Hall itself is still clearly visible as an earthwork though not in use.

The deer fencing continues a short way east of the site of Brewer's Gate before heading south alongside the ponds and The Wilderness, approximately on the line of the earlier avenue, to divide Repton's Pleasure Grounds from the western part of the park. There is a gate through the fence west of the western pond, and another where the deer fencing between the Pleasure Grounds and the eastern part of the park starts from the dam between the two ponds. From this point the deer fencing skirts the foot of The Wilderness, with a further gate into the eastern part of the park on the east side of the Wilderness.

The two ponds are irregularly shaped, apparently resulting from their originating partly as an amalgamation and partly as an extension to the three pre-existing squarish 17th century ponds shown on early estate maps. What is now the western of the two seems to have originated as the southernmost (still evident in the square shape of its southern end) and had a long northward addition made. This extends right up to the boundary of the park on the southern edge of the old Watling Street. The northern most tip is divided from the rest by a narrow culverted dam for a path and is not shown on the OS digital base mapping but still contains water though much overgrown. The eastern pond seems to be a more simple amalgamation of the other two 17th century ponds, again retaining something of their shape. It is substantially lower than the western pond, and its eastern end is surrounded by a raised dam, now supporting a path. The amalgamation of the ponds may have been achieved by deepening the upper one and heightening the level of the lower with the raised dam. The ponds are surrounded by a number of very mature Parkland trees, mostly surrounded by more recent secondary (though now quite mature) woodland growth and scrub. The mature trees include very substantial horse and sweet chestnuts, some alder, ash and oak.

On the south east side of the eastern pond an area has been cleared round a very mature parkland oak. Immediately east of this a low bank marks a change in vegetation with woodland type ground flora (abundant dog's mercury) to the east, suggesting some survival of patches of old woodland within this part of the park, which is consistent with the estate and early OS maps, though they do not show woodland as such.

The site of the poultry house east of the ponds is marked by brick rubble, rotten beams and an abundant growth of nettles.

Between the ponds and the site of the poultry house there is a boggy area representing the outfall from the ponds. There is no obvious stream, but a wettish ditch lies close to the poultry house site, with the remains of a small brick built bridge of no particular interest. Remains of another wider bridge over this wet area survive slightly further east opposite a pair of gateposts where traces of the northern boundary of the park resume eastwards.

This third section where the northern boundary of the park survives intact stretches from the poultry house eastwards to the point where the old Watling Street lane has been diverted south alongside the A2 on the edge of the golf course. This section is marked by the survival of the lane as a deep hollow way with simple iron posts and wire fencing marking the boundary of the park. North of the lane, in a narrow sliver of ground next to the A2 is a sometimes prominent bank and hollows visible under an old woodland ground flora. These appear to represent the former southern edge of Brewer's Wood (or

a shaw extending east from it), severed from the main body of the wood by the A2. Also east of the poultry house is a marked lynchet within the edge of the park, about 10m south of this part of the lane, but aligned on the easternmost portion of it where it swings slightly further north. This may have resulted from the use of the area to the south as 'Dog Kennel Field' in the early 18th century, but it is possible that the alignment reflects the original line of Watling Street before the sinuous alignment around Brewer's Gate was established.

The eastern part of the park is now occupied by the Cobham and Rochester Golf Club. This area was not examined in detail as it appears from the adjacent track and from air photographs to be very level and likely to be devoid of interpretable features.

3.2.3 COLE WOOD (FIGS 24 & 25; MAPS 23 AND 24)

3.2.3.1 Location

Cole Wood (OAU No. 2153) is situated to the south of the M2 motorway (which broadly follows the line of the Roman road) and forms part of the east side of the Cobham and Rochester Golf Club. Shorne Ridgeway village lies 1 km to the north. The wood is just within the eastern boundary of Cobham Park (OAU No. 2150), with Cobham Hall 1.5 km to the south-west.

3.2.3.2 Status

The wood consists of mixed broad-leaved species, including ash, oak and some birch, with a predominantly hawthorn understorey. A number of massive sweet chestnuts, with several examples up to 2 m in diameter, are scattered throughout the wood. A greater concentration of sweet chestnuts to the south of the clubhouse may be the remains of a rectangular area of woodland, shown on both the 1641 and 1758 Cobham estate maps, to the west of what was then known as Coal Wood. The size of some of these sweet chestnuts, which may be of record proportions, suggests that they may be survivals of very early landscaping within the Cobham deer park (Milner [1992, 180] states that the record girth for a sweet chestnut is 1.84 m, measured in 1984 at Canford School, Poole). A number of these very large trees had been uprooted, probably during the 1987 storms, and still lay where they fell.

3.2.3.3 Landscape features

The present-day area of woodland to the east of the Cobham and Rochester Golf Club was originally part open parkland and part wood as shown on the 1641 estate map of Cobham Park and the 1758 estate map of Cobham, Cuxton, Shorne and Strood. The original Cole (Coal) wood was sited to the east of the extant wood, on what is now arable land to the north of Knights Place.

The 1880s OS first edition 6" map indicates that the original Coles Wood survived until quite late and interestingly contained a feature referred to as 'Coles Cave'. The area of modern woodland is only shown in the manner of low-intensity tree cover.

Most of the woodland floor is relatively level and featureless, although towards the east side the land rises steeply before levelling off. At the top of the incline an eight rail 7 feet-high metal deer fence forms the original eastern boundary of the deer park.

The south-eastern part of the surveyed area was generally more undulating than elsewhere. It contained several large hollows, up to 20 m across and 1.5 m deep, almost certainly the silted up remains of early quarries.

An elongated pond, between the north edge of the wood and the M2 motorway is clearly shown on the 1758 map, but has probably undergone later alterations and is now fenced.

Three small, low mounds were noted just inside the north edge of the wood. The mounds were 10 x 6 m across and 0.5 m high, 7 m diameter and 0.8 m high, and 10 m diameter and 1 m high. The most easterly one has a c. 100 year old ash tree growing on top.

A low bank, 30 m long, 7 m wide and 1 m high, also survives in a narrow projection of the wood, which is entirely covered by mature hawthorns, between the motorway and the golf club car park. Although this earthwork could have resulted from recent landscaping associated with the golf club, it could equally be a much earlier earthwork.

3.2.4 TEMPLE, CLAY POND, BROAD OAK AND GREAT WOOD, HEAD BARN WOOD AND MERRALS SHAW (FIG. 25; MAPS 24 AND 25)

3.2.4.1 Location

An extensive area of woodland comprising Temple, Clay Pond, Broadoak, Great, and Head Barn Woods and Merrals Shaw lies to the north of Cuxton village and to the west of the M2 motorway, which truncates parts of the woods. The Ecology Specialist report refers to the woods collectively as Cobham Wood, a Site of Special Scientific Interest (SSSI). For the purposes of this report the woodland has been divided into three segments, separated by narrow strips of arable.

3.2.4.2 Status

Temple, Clay Pond, Broadoak and Great Woods (OAU No. 2154) consist almost entirely of sweet chestnut coppice with a few mature oak, ash and beech trees mainly lining various rides through the woodland.

Head Barn Wood (OAU No. 2155) has recently been almost entirely cleared of ash and sweet chestnut coppice, leaving a few scattered mature standard oaks and ash.

Merrals Shaw (OAU No. 2156) also consists mainly of immature sweet chestnut coppice, some clearance of which has recently commenced on the south-east side. A line of very old coppiced ash survives between the north-west edge of the cleared area and the rest of Merrals Shaw. Both the cleared area and this boundary coincide with a rectangular clearing in the west side of the wood shown on the 1758 estate map (Fig. 1). Although no obvious earthwork is evident this is a very good example of how modern management practices have continued to follow those of much earlier periods.

All three areas of woodland are separated by narrow cultivated areas which are also shown on the earlier maps.

3.2.4.3 Landscape Features

Temple, Clay Pond, Broadoak and Great Woods cover a very large area and the survey here was not as comprehensive as in smaller areas. No earthworks were noted although at least eight hollows, ranging from 7 m x 3 m across and 1 m deep to 30 m across and 2.5 m deep were noted. Others may exist in areas of the wood which could not be examined in detail. These hollows are almost certainly small quarries of indeterminate date. The name Clay Pond Wood on the 1758 map seems to confirm this interpretation and gives some indication as to the antiquity of the features.

The entire area of Head Barn Wood affected by the rail route has been cleared and it is therefore possible to be confident that no earthworks exist. The only exception is a slight slope just inside the west boundary which coincides with a curving track shown on the 1758 estate map. Head Barn Wood is not shown on the 1641 estate map.

Merralls Shaw, although shown on the 1641 estate map, covers a much smaller area than the wood shown on the 1758 map. A slight bank, 3.5 m wide and up to 0.6 m high with a slight 'dog-leg' along its length, located towards the north-east side of the wood is almost certainly the original southern boundary of the wood shown on the 1641 map. Another bank and ditch, closer to the north-east side of the wood, is more difficult to interpret.

Two large overgrown chalk pits survive between Merralls Shaw and Head Barn Wood. Both are shown on the 1758 map on the edge of a field called Chalk Hole Field (OAU No. 1983).

3.2.5 BRIDGE AND SYLE WOODS (FIG. 27; MAP 26)

3.2.5.1 Location

The areas of Bridge and Syle Woods (OAU No. 2160) affected by the rail route form only the eastern part of a very extensive area of woodland including Little Monk Wood, Monk Wood, Middle Hill Wood and Buckmore Wood. This large wood, sited to the west of Rochester Airport and the M2 motorway, covers a substantial part of the south side of the Nashendon Valley. The ground slopes quite steeply from west to east and is traversed by several small but pronounced valleys.

For the purposes of the descriptions below the area to the south of the main track is called Bridge Woods and the area to the north Syle Woods. In the Ecology Specialist Report (Cobham Research Consultants 1994) the entire area is referred to as Syle Wood.

A Roman burial (OAU No. 1581) was found in 1913 during road widening to the north-east of Bridge Wood.

3.2.5.2 Status

A substantial part of the north end of Bridge Wood has recently been cleared of coppiced sweet chestnut, leaving widely-spaced semi-mature standard oaks.

Syle Wood contains more over-mature coppiced hazel and hornbeam with some sweet chestnut and ash and occasional standard oaks. Visibility of the ground surface ranged from very good to poor depending on the thickness of the undergrowth. At the time of

Temple, Clay Pond, Broadoak and Great Woods cover a very large area and the survey here was not as comprehensive as in smaller areas. No earthworks were noted although at least eight hollows, ranging from 7 m x 3 m across and 1 m deep to 30 m across and 2.5 m deep were noted. Others may exist in areas of the wood which could not be examined in detail. These hollows are almost certainly small quarries of indeterminate date. The name Clay Pond Wood on the 1758 map seems to confirm this interpretation and gives some indication as to the antiquity of the features.

The entire area of Head Barn Wood affected by the rail route has been cleared and it is therefore possible to be confident that no earthworks exist. The only exception is a slight slope just inside the west boundary which coincides with a curving track shown on the 1758 estate map. Head Barn Wood is not shown on the 1641 estate map.

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Two large overgrown chalk pits survive between Merralls Shaw and Head Barn Wood. Both are shown on the 1758 map on the edge of a field called Chalk Hole Field (OAU No. 1983).

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The areas of Bridge and Syle Woods (OAU No. 2160) affected by the rail route form only the eastern part of a very extensive area of woodland including Little Monk Wood, Monk Wood, Middle Hill Wood and Buckmore Wood. This large wood, sited to the west of Rochester Airport and the M2 motorway, covers a substantial part of the south side of the Nashendon Valley. The ground slopes quite steeply from west to east and is traversed by several small but pronounced valleys.

For the purposes of the descriptions below the area to the south of the main track is called Bridge Woods and the area to the north Syle Woods. In the Ecology Specialist Report (Cobham Research Consultants 1994) the entire area is referred to as Syle Wood.

A Roman burial (OAU No. 1581) was found in 1913 during road widening to the north-east of Bridge Wood.

3.2.5.2 Status

A substantial part of the north end of Bridge Wood has recently been cleared of coppiced sweet chestnut, leaving widely-spaced semi-mature standard oaks.

Syle Wood contains more over-mature coppiced hazel and hornbeam with some sweet chestnut and ash and occasional standard oaks. Visibility of the ground surface ranged from very good to poor depending on the thickness of the undergrowth. At the time of

the survey a prolonged thunderstorm also made walking conditions difficult and low light levels further reduced visibility.

A narrow strip of pasture survives between the north and east sides of the woods and the M2 motorway. A track, which formed the original north boundary of Syle Wood was just visible running across the slope. At the south end a rough-surfaced car park, associated with a go-kart track, has recently been constructed and has slightly encroached over the eastern boundary of Bridge Wood.

3.2.5.3 Landscape Features

The boundaries of these two woods have changed little from those shown on the 1800s OS first edition 1" map. The exception is the triangular area of pasture to the south of Upper Nashenden Farm which was formerly part of Syle Wood. Although there are some earlier maps of Monk Wood (1675, 1822, 1825), these do not clarify any details.

With the recent clearance of Bridge Wood visibility of the sloping ground surface was very good. The only visible earthwork is a low bank (OAU No. 1965) on a north to south alignment running along the slope. At the south end in the cleared area it fades out and at the north end it becomes difficult to define as it is still covered by trees and has been disturbed by animal activity. A recently constructed vehicular track across the bank (Plate 1) emphasises its cross-section.

In Syle Wood to the north another linear bank (OAU No. 1965), 5 m wide and up to 1.5 m high, was located on a north-west to south-east alignment. This earthwork also follows the line of the slope and extends north-west beyond the area affected by the rail route. Like the bank to the south, both ends are difficult to define, although its south-east end may have turned south-west to follow the line of the valley. Several massive c. 300 year old beeches are growing on the bank which, together with a greater incidence of old gnarled coppiced stools of hazel and oak, gives some indication of its relative antiquity.

Both linear banks, which require more detailed surveying, could predate the woodland. It is, however, perhaps more likely that they formed an earlier eastern boundary to the woods which may subsequently have been extended to the east.

A circular pit/pond, 15 m across and 2 m deep, was noted just inside the east side of the wood, probably representing the remains of a small chalk quarry.

3.2.6 DONKEY SHAWS AND PARK WOOD WEST (FIG. 29; MAPS 27 AND 28)

3.2.6.1 Location

Donkey Shaws (OAU No. 2021) and Park Wood West (OAU No. 2022) are two interlinked woods, sited approximately equidistant between Boxley Abbey to the west and Boxley village to the east. The CTRL will severely affect the north end of the historic part of Donkey Shaws but only slightly impinge upon the north end of Park Wood West.

Earlier fieldwalking and metal detector surveys over the fields to the north of Park Wood West have found scatters of prehistoric flintwork, prehistoric, Iron Age, Roman and

the survey a prolonged thunderstorm also made walking conditions difficult and low light levels further reduced visibility.

A narrow strip of pasture survives between the north and east sides of the woods and the M2 motorway. A track, which formed the original north boundary of Syle Wood was just visible running across the slope. At the south end a rough-surfaced car park, associated with a go-kart track, has recently been constructed and has slightly encroached over the eastern boundary of Bridge Wood.

3.2.5.3 Landscape Features

The boundaries of these two woods have changed little from those shown on the 1800s OS first edition 1" map. The exception is the triangular area of pasture to the south of Upper Nashenden Farm which was formerly part of Syle Wood. Although there are some earlier maps of Monk Wood (1675, 1822, 1825), these do not clarify any details.

With the recent clearance of Bridge Wood visibility of the sloping ground surface was very good. The only visible earthwork is a low bank (OAU No. 1965) on a north to south alignment running along the slope. At the south end in the cleared area it fades out and at the north end it becomes difficult to define as it is still covered by trees and has been disturbed by animal activity. A recently constructed vehicular track across the bank (Plate 1) emphasises its cross-section.

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Both linear banks, which require more detailed surveying, could predate the woodland. It is, however, perhaps more likely that they formed an earlier eastern boundary to the woods which may subsequently have been extended to the east.

A circular pit/pond, 15 m across and 2 m deep, was noted just inside the east side of the wood, probably representing the remains of a small chalk quarry.

3.2.6 DONKEY SHAWS AND PARK WOOD WEST (FIG. 29; MAPS 27 AND 28)

3.2.6.1 Location

Donkey Shaws (OAU No. 2021) and Park Wood West (OAU No. 2022) are two interlinked woods, sited approximately equidistant between Boxley Abbey to the west and Boxley village to the east. The CTRL will severely affect the north end of the historic part of Donkey Shaws but only slightly impinge upon the north end of Park Wood West.

Earlier fieldwalking and metal detector surveys over the fields to the north of Park Wood West have found scatters of prehistoric flintwork, prehistoric, Iron Age, Roman and

medieval pottery (OAU No. 1339) and medieval metal artefacts (OAU No. 1238 and 1239).

3.2.6.2 Status

Donkey Shaws contains widely scattered mature standard oaks with coppiced hazel and hornbeam understorey. Although managed in the past the wood is now very overgrown.

Park Wood West mainly contains mature and semi-mature ash together with a lesser number of other broad-leaved species. There is very little evidence of coppicing. A triangular area at the north end of the wood is entirely different, containing very mature conifers mixed with a few mature standard oaks. The very open aspect of this part of the wood has resulted in an impenetrable undergrowth of brambles and nettles up to 1.5 m high with almost zero visibility of the ground surface.

3.2.6.3 Landscape Features

The section of Donkey Shaws affected by the CTRL is part of a longer strip of woodland shown on the 1804 Boxley Abbey estate map and the OS 1880s first edition 6" map. The rectangular area of woodland joining Donkey Shaws and Park Wood West is not shown on either map and is of modern origin.

The east, west and south boundaries of Park Wood West are identical to those shown on the 1800s and 1880s OS maps but the north side has been cleared back to the line of an earlier track. It is not shown on the estate maps for the area.

The ground surface of Donkey Shaws is relatively level. The only earthwork noted was a small dry pond at the north end. This pond is shown on the OS 1880s first edition 6" map.

Visibility within the northern part of Park Wood West was severely affected by the thick undergrowth. Consequently it is impossible to be confident that no features existed, although none were noted.

3.2.7 BOXLEY VALLEY (FIG. 29; MAP 28)

3.2.7.1 Location

Boxley Valley, sited mainly to the south of Boxley village, has been identified as a key area within the Cultural Heritage Study of the CTRL. The route potentially affects a corridor approximately 150 m wide, with the stream off centre to the north, between the Boxley Road to the west and Park Wood East to the east.

3.2.7.2 Status

The part of the valley in question is entirely pasture and has probably been so for the last few centuries. A number of very mature trees, including three particularly fine copper beeches to the east of two fishponds (OAU No. 2088; see below), are scattered in an informal manner across the valley. The field boundaries have changed little when

compared to those shown on the Boxley Park estate map of 1769. A number of historic ponds have also survived in the valley.

Boxley park to the west of the Boxley Road has been subjected to intensive modern agricultural activities, but the area selected for walkover survey to the east of Boxley Road is an important remnant of an earlier parkland landscape.

3.2.7.3 Landscape Features

Two large fishponds (OAU No. 2088) lie to the south of Park House and to the east of the Boxley Road. The ponds are connected by a 5 m-wide seven-stepped stone weir with a fall of approximately 1.8 m from north to south. A rectangular area enclosed within iron railings to the west of the weir is overgrown with elder but appears to contain a small sewage or water filtration plant. A more modern concrete weir on the south side of the triangular pond releases water into the stream to the south-west. The 1769 estate map and the 1880s OS first edition 6" map indicate that the original fishponds consisted of a rectangular and a circular pond, although it is likely that the present configuration was reworked from the earlier ponds.

A rectangular larch plantation has been planted on the north-east side of the triangular pond. An even more recent plantation of c. 15 year old birch, ash, sycamore and field maple with an iron railing fence on its south side lies to the south of this pond. The larch plantation is not considered to be ancient woodland, but a plantation is shown on the site on the 1880s OS first edition 6" map and also on the 1768 estate map.

A slight earthwork is all that remains of an earlier metalled track (OAU No. 1223) immediately north of the point where the stream enters the triangular pond. The track is marked on the 1768 estate map.

The stream flows through a smaller, rectangular pond which lies approximately 100 m east of the triangular pond. The rectangular pond (OAU No. 2196) is also marked on the 1768 map. It is now heavily silted up with low banks to either side. Whether these are the dump of the original spoil from the digging of the pond or from later clearing out is unknown.

A small arched brick bridge and a vertical-sided brick culvert of probable 19th century date survive further east along the stream.

Another historic pond (OAU No. 2134) survives at the junction of a number of field boundaries to the west of Park Wood East. A brick building (OAU No. 1854), at least 30 m long and 10 m wide (Fig. 2) and standing up to four courses high, was recorded to the immediate north of the pond as a slight platform (Plate 2). Six staddle stones of differing types, presumably used to support a later barn/granary, had probably made use of the demolished building as a level base on which to build. Both the OS first edition 1" and 6" maps of the 1800s and 1880s show a range of buildings to the north of the pond, but no structures are shown on the 1768 estate map. This supports the evidence of the bricks which, from their type, are unlikely to date much before the late 18th century. The configuration of the paddocks/yards around the pond on the 1769 estate map (Fig. 3) is, however, indicative of the former site of a farm, which had presumably been demolished by the mid 18th century.

A silted up ditch, on an east to west alignment between the building described above and Park Wood East, coincides with a field boundary shown on the 1768 map.

A particularly useful range of estate maps dating from 1697, 1743, 1768, 1787, 1790, 1804, 1836, and 1837 exist for the Boxley area, but not all of these cover the area concerned. A more detailed examination of the cartographic evidence would undoubtedly clarify some of the points raised in the landscape descriptions above and perhaps even identify other features which no longer survive as visible earthworks.

3.2.8 PARK WOOD EAST (FIG. 29; MAP 28)

3.2.8.1 Location

Park Wood East (OAU No. 2024) is sited on the south side of the Boxley valley, 1 km to the south-east and 1.5 km to the south-west of Boxley and Detling villages respectively. The CTRL affects the extreme northern end of what is a much larger wood, the south end of which has already been cut through by the M20 motorway.

3.2.8.2 Status

The wood has been divided into a series of rectilinear zones by narrow paths and wire fences. Much of the east side and the centre contains conifer plantations mixed with some oak and hornbeam. The east side is more mixed containing birch, hornbeam and sweet chestnut with a very dense hazel understorey. A small projection to the north of the stream contains almost entirely ash and sycamore/field maple. Surface visibility was very good in the conifer plantations but much poorer towards the east end where bramble growth made parts of the wood almost impenetrable. Large rotted coppiced stools were a common feature throughout the wood, which in recent years has clearly undergone a major change in management practice.

3.2.8.3 Landscape Features

The shape of the north end of the wood has remained unaltered since the 18th century as shown on the 1768 estate map of Boxley Park. The 1800s and 1880s OS mapping also indicates that the woodland boundaries have remained very stable and neither show the small projection to the north of the stream. The projection must be a relatively modern feature.

The stream, which forms the northern boundary of the wood, is also the former boundary of Boxley Park (OAU No. 2023). It is a prominent feature in a pronounced cut particularly towards the east side of the wood. The ground slopes gently from south to north and the surface is even with no visible earthworks. A single ditch in the east side of the wood is almost certainly of recent origin. The western boundary of the wood, which has remained unaltered for several centuries, was surprisingly only a very slight ditch.

3.2.9 HORISH WOOD (FIGS 29 & 30; MAP 29)**3.2.9.1 Location**

Horish Wood (OAU No. 2026), abutting the A249 road and 500 m to the south-west of Detling village, lies approximately equidistant between Park Wood East and Honeyhills Wood. The M20 motorway has already cut through the centre of the wood and the CTRL will destroy the north end of what remains. An Iron Age and Romano-British site (OAU No. 1066) was recorded during the excavation of a gas trench to the north of the wood.

3.2.9.2 Status

The wood mainly contains semi-mature and mature ash coppice mixed with mature standard oaks with hazel and hornbeam understorey. It has been poorly managed and erratic clearance is currently taking place resulting in numerous rutted vehicular trackways. Visibility of the surface ranged from good in places to very poor in parts where it was overgrown with brambles.

A large and very marshy clearing on the western side of the wood, containing a few scattered oaks at its south end, is used as a paddock for horses.

3.2.9.3 Landscape Features

The 1804 Boxley estate map clearly shows this wood although it is marked as Harwash Wood. The shape of the wood has changed little since the 1800s and 1880s OS mapping, apart from the encroachment of several houses into its north end.

The woodland floor is generally level and flat with few features apart from a water-filled ditch leading off in a south-east direction from a small pond on the east side of the wood. A small stream also runs in a south-west direction from a particularly wet marshy area in the clearing. No other features of historic or archaeological interest were noted.

3.2.10 HONEYHILLS WOOD (FIG. 30; MAPS 29 AND 30)**3.2.10.1 Location**

Honeyhills wood (OAU No. 2029) is a large area of woodland to the south of Detling village and to the north of Bearsted. The M20 has already bisected the wood and the CTRL will destroy virtually all that remains to the north of the motorway.

The remains of the Thurnham Roman villa (OAU No. 1061, Kent Scheduled Ancient Monument 299) lie just outside the east end of the wood. Two Mesolithic flint scatters (OAU No. 1062 and 1063) have been found on the field surface to the north east of the wood. The wildflower meadow to the west of the wood is called Windmill Field (OAU No. 1271) on the Detling tithe map of 1839, although there is no surface evidence to indicate the former site of a windmill, apart from a large pond.

3.2.10.2 Status

This wood is a good example of gault clay woodland containing over-mature unmanaged coppiced hornbeam, ash, field maple and hazel with occasional silver birch. Although clearance seems to have been very erratic, the woodland floor is relatively clear with little undergrowth obscuring the surface.

The wood is bordered to the north and east by a very large arable field, currently containing a pea crop.

3.2.10.3 Landscape Features

The wood is clearly shown on the 1709 estate map of Thurnham and Detling. The shape of the wood has changed little from that shown on the 1800s OS 1" and 1880s 6" first edition maps, apart from some clearance of woodland to the east of the villa site.

The north and eastern boundary is formed by a very substantial ditch. A 12 m- wide 'halo' of chalk on the field surface surrounds the ditch and may be the remains of a ploughed-out bank or simply spreading of the spoil from the ditch digging.

A number of slight ditches and banks (OAU No. 1966), too numerous to individually describe in detail, were recorded principally in the eastern half of the wood (Plate 3). None of these earthworks are very substantial and it is impossible to establish whether they represent internal woodland divisions or whether they predate the woodland. It is tempting, given the close proximity of the villa site, to suggest that the earthworks are relict Roman features, which have survived within the woodland. It is impossible to substantiate this hypothesis without recourse to evaluation/excavation.

The arable field under the pea crop was not part of the walkover survey. The field surface was examined from the woodland and road margins, however, to assess broadly the spread of potentially archaeological material on the field surface. The crop growth meant that examination could only be very superficial. There were, however, sufficient bare patches to broadly confirm that the greatest finds/tile concentration lay over the known villa site. Deep ploughing and stone clearing had also resulted in the dumping of numerous unworked large limestone blocks in the rough areas around both the wood edge and in the hedge on the north side of the motorway.

3.2.11 LONGHAM WOOD (FIG. 31; MAP 31)

3.2.11.1 Location

Longham Wood (OAU No. 2031) is a well-defined rectangular area of woodland lying approximately 1.5 km to the south of Thurnham village. The extreme south-west end of the wood has already been destroyed during construction of the M20 motorway. The wood is crossed by two modern tracks running north-south and east-west.

3.2.11.2 Status

This wood is actively managed and contains a mixture of broad-leaved species. That part of the woodland to the west of the main north-south track contains more immature

coppiced trees. The larger area to the east contains more mature coppiced hazel, hornbeam and beech, generally on older stools, together with more mature ash and oak standards. Visibility of much of the woodland floor was very good. A triangular more overgrown area on the south-east side of the wood was of totally different character, containing ash, bramble and hawthorn. Very mature willows lined a water-filled channel forming the boundary between the main wood and this area of regeneration.

3.2.11.3 Landscape Features

Longham Wood is shown on the 1781 estate map of Thurnham and Detling, although the wood has been enlarged since the 18th century. The west boundary of the wood, which is now very straight, was originally more sinuous as shown on the 1880s OS first edition 6" map. The triangular area to the south of the water-filled channel is also shown as part of the wood on this map.

No earthworks were noted to the west of the main north-south track. A number of relatively modern ditches and banks, together with several wire fences, were noted either parallel with or at right angles to the north-south and east-west tracks, on their east and south sides respectively.

Two substantial banks and ditches (OAU No. 1967), at right angles to one another and on a totally different alignment to the more recent boundaries, are particularly well preserved. The north-east to south-west bank, 2.5 m wide and 0.4 m high with a ditch on the east side, was traced from where it had been truncated by the motorway cutting to where it extended north-east beyond the track into the area unaffected by the CTRL. A hollow 8 m x 2.5 m across and 0.8 m deep with a mound to one side was also noted. The north-west to south-east earthwork is even more substantial (Plate 4), up to 3.5 m wide and 0.8 m high, with a slight ditch on its south-west side. Two very slight parallel ditches were also noted approximately 25 m to the north and south of this major earthwork. The bank and ditch had been disturbed by the modern track at the north-west end, but the south-east end terminated at a wide, stagnant water-filled channel lying at a right angle to the earthwork. The channel had a steep incline forming its south-east side.

These two substantial banks and ditches and the even larger water-filled channel could represent earlier woodland boundaries on a different alignment to the modern ones. Alternatively they could be relict boundaries of an earlier field system.

3.2.12 ASH SHAW AND THE CHESTNUTS (FIG. 32; MAP 32)

3.2.12.1 Location

Ash Shaw and The Chestnuts are two small areas of detached woodland lying, 400 m and 600 m respectively to the west of Warren Wood (below). They were originally part of a large area of woodland which survives to the south, but have been separated from it by the M20 motorway.

3.2.12.2 Status

Ash Shaw consists of a rectangular plantation of c. 100 year old conifers, many of which have been felled recently, enclosed by a substantial ditch. This is surrounded on its north

and west sides by semi-mature ash on very old coppiced stools mixed with a few mature oaks and field maple, with a predominantly hazel understorey.

The Chestnuts is an even smaller coppice of predominantly ash and maple with hazel understorey.

3.2.12.3 Landscape Features

Ash Shaw and The Chestnuts are remnants of a rectilinear arrangement of small woods, clearly shown on the 1880s first edition 6" OS map, linking Coombe Wood and Warren Wood to other woodland nearer to Leeds Castle.

An irregular, sub-rectangular area in the north corner of Ash Shaw, now wooded but only shown as an indentation in the wood's boundary on the 1880s OS first edition 6" map, is an old quarry. Visibility was generally good in Ash Shaw, apart from in the conifer plantation, and no other landscape features were noted.

A small stand of trees projecting to the north-east of The Chestnuts contained a very low bank which could not be traced into the arable fields at either end. Such a slight feature would be destroyed within a few seasons of intensive ploughing. A pond to the north may explain the derivation of the field name "Pond Mead" (OAU No. 1278), marked on the Hollingbourne tithe map of 1841.

Much of the woodland floor of The Chestnuts was at a lower level than the field surfaces to the east with a steep incline between. Whether this was a natural phenomenon or had resulted from landscaping is difficult to determine. However, towards the base of the incline a curving bank, c. 1.30 m wide and 0.20 m high with a possible ditch to the south-west side was clearly visible. The age of this earthwork (OAU No. 1968) is questionable, but curving banks are much rarer in woodland than linear examples. A large mature oak, at least 250 years old, was growing on the bank indicating that the earthwork is of some antiquity.

3.2.13 WARREN AND COOMBE WOOD (FIG. 32; MAP 32)

3.2.13.1 Location

Warren Wood lies less than 1 km to the north-east of Leeds Castle and 1.5 km to the south of Hollingbourne village. Its south-western side has already been bisected by the M20 motorway in a very wide cutting. A small track known as Hospital Road separates Warren Wood to the south-east and Coombe Wood to the north-west and leads to Warren Wood Cottage (OAU No. 316), an unlisted 18th century building.

3.2.13.2 Status

The part of Coombe Wood to the north-west of Hospital Road which will be affected by the CTRL has been in recent years and replanted with ash, sycamore and sweet chestnut. A number of standard mature oak, birch and particularly conifers remain. Very thick undergrowth resulted in poor visibility of the ground surface.

Warren Wood (OAU No. 2038) is a site of Nature Conservation Interest and consists of mixed broad-leaved woodland partially converted to sweet chestnut coppice. Parts of it have also been recently cleared and replanted resulting in almost impenetrable undergrowth and poor visibility of the ground surface in many places.

3.2.13.3 Landscape Features

The area is marked as the "Warren" on the 1738 estate map of Harrietsham and Hollingbourne. The 1800s OS first edition 1" map and the 1880s 6" edition indicates that the outline of Warren Wood has changed little over the years. However, Coombe Wood was originally smaller covering only the northern part of what is now marked on modern maps as Coombe Wood.

No features were recorded in the area of Coombe Wood to the north-west of Hospital road, although the area was so heavily overgrown that it is difficult to be confident that none exist.

The south-east side of the Hospital Road cutting is very irregular and at least one large hollow was noted immediately to the north of the motorway. These features probably represent post-medieval quarrying activity. Much of Warren Wood was relatively overgrown, but no earthworks or other features were noted where the ground surface was visible.

An open area of pasture between Coombe/Warren Wood and Ash Shaw has been divided by deep drains. No other earthworks were noted.

3.2.14 HURST WOOD (FIG 36; MAP 33)

3.2.14.1 Location

Hurst Wood (OAU No. 2057) is situated approximately 2 km south of Charing village and immediately west of Newlands Stud farm which is built on the site of a 12th century chapel (OAU No. 178) and is associated with several listed buildings. The south end of the wood has already been bisected by the M20 motorway.

A surface scatter of prehistoric flintwork (OAU No. 1815) was found during the 1993 fieldwalking survey on the CTRL to the west of the wood, and a Mesolithic flint scatter (OAU No. 1078) has been recorded to the east of the triangular area of wood (below). Iron Age cremation burials (OAU No. 1140) have also been found in the sandpit to the east of the wood.

3.2.14.2 Status

The area of the woodland affected by the rail route falls into three discrete areas surrounding a rectangular area of pasture on three sides, with the motorway to the south. A triangular area to the south of Hurst Lane and to the east of the pasture contains sparse mature oaks with immature coppiced hazel and more mature coppiced sweet chestnut. The wood is well managed with little undergrowth and good surface visibility.

The wood to the west of the pasture and south of the lane contains similar species of tree but has been less well managed and is much more overgrown.

The affected area to the north side of Hurst Lane contains part of a cleared area, an area of recent regrowth, part of the ancient woodland, and a pine plantation planted on an old sand quarry.

A rectangular pasture, divided on a north-east to south-west axis by a small brook, separates the three areas of woodland.

3.2.14.3 Landscape Features

The 1678 Calehill estate map (Fig. 4) clearly shows Hurst (Herst) Wood as a well-defined wood, surrounded by enclosed fields. Hurst Lane and a boundary on a north-east to south-west alignment to the south of the lane are clearly defined. The brook either did not exist then, was omitted from the map or coincided with the boundary shown on the map. The Charing tithe map of 1841 shows that the pasture to either side of the brook had been cleared by then, and the brook corresponds with the wood boundary to the west. The 1880s OS first edition 6" map indicates that by this period the brook had been rerouted a short distance to the south-east, dividing the pasture into two. By 1841 the woodland boundary adjacent to the sand pit had also contracted and on the 1880s first edition 6" map this area is shown as scrub, presumably associated with the sand pit.

The small triangular area of woodland, which is now isolated from the rest of the wood, is relatively level. No earthworks were noted with the exception of a small depression approximately 8 m - 10 m across and 1.5 m deep, possibly an outlying sand pit.

The area of pine plantation to the north is very undulating, as indicated on the 1880s OS map, and has undoubtedly been planted over the backfilled sand quarry.

Only a small area of original woodland is affected to the north of Hurst Lane. A circular water-filled pond, c. 18 m across, could also be associated with the sand quarrying activities. The remainder of this area is relatively level containing only one earthwork. A low bank, 5 m wide and 0.5 m high with a shallow ditch on its east side, divides the cleared area and the remaining woodland to the east of Hurst Lane. It is not clear whether this feature was created at the time of clearance in the late 19th or early 20th centuries. It is at least possible that it was a pre-existing internal woodland boundary to which the woodland was cleared back.

No earthworks were seen in the largest block of woodland, to the south-west of Hurst Lane. A ditch forming the western boundary is probably of recent origin but is certainly on the line of the original boundary. A bank c. 2.5 m wide and 0.5 m high with an external ditch delineates the present boundary between the south-east side of the wood and the field to the east. A number of much older gnarled coppiced stools of ash, oak and hazel (Plate 5) are growing on top of the bank, suggesting that the earthwork is of some antiquity. A comparison with the 1678 estate map suggests that this bank is the internal boundary shown to the south of Hurst Lane.

The area of pasture is generally level although some slight undulations forming no particular pattern are visible adjacent to the triangular area of woodland.

3.2.15 GRANGE ALDERS AND OAK BANKS (FIG. 46; MAP 34)

3.2.15.1 Location

Grange Alders and Oak Banks (OAU No. 2082) are both Sites of Nature Conservation Interest. They lie in the valley, to the west and east respectively, of a small brook draining in a southerly direction to the east of Saltwood village and immediately to the east of Saltwood Castle. The north ends of both areas of woodland have been disturbed by the cutting for the existing railway and Dollands Moor freight Yard. Bargrove Wood (see section 2.16 below) lies only a very short distance to the east.

3.2.15.2 Status

Grange Alders is an 'L' shaped area of unmanaged and heavily overgrown hazel and ash, some of which has been coppiced. Several large mature oaks survive on its south and west boundaries. Much of the area to either side of a small tributary of the brook was very boggy. The entire area was heavily overgrown with poor surface visibility.

Oak Banks is also 'L' shaped and consists of more mixed broad-leaved woodland including mature oak, ash, sycamore and sweet chestnut. It is very heavily overgrown and totally unmanaged with little evidence of any coppicing.

3.2.15.3 Landscape Features

The OS 1830s first edition 1" map only shows Oak Banks as woodland, with little change in shape up to the present day. Grange Alders is mentioned as a field name on the Tithe map for Saltwood of 1842 (OAU No. 1311) but does not appear as woodland on the OS first edition 1" and 6" maps of the 1830s and 1880s respectively.

Both Grange Alders and Oak Banks are sited on steep valley sides sloping down to the brook between. No landscape features or earthworks were noted in either area, although surface visibility was poor in places. The north-east projection of Oak Banks, separated from the rest of the wood by a wire and railway sleeper fence, contained a much lower area (perhaps the remains of a quarry associated with the construction of the existing railway). This area was almost totally impenetrable although a low bank, c. 30 m long, 5 m wide and up to 0.5 m high, was noted in the north-east corner of the area where visibility was slightly better. Other earthworks may exist but conditions were unfavourable for their recognition.

The land rises very steeply to the south and west of Grange Alders. The slope, which is up to 45° in places, is for the most part covered with rough grass and gauze. No earthworks or lynchets were visible on the slope and the only feature was a modern earth trackway, cut into and following the line of the lower slope. A small triangular field has been formed between the track and the wood. At the time of the survey this had just been cultivated. A rapid survey of the surface, which was even with only a gentle slope to the north-east, produced a single flint core.

3.2.16 BARGROVE WOOD (FIG. 46; MAP 34)

3.2.16.1 Location

Bargrove Wood (OAU No. 2083) is a discrete area of woodland lying approximately 1.5 km north-east of the historic core of the village of Saltwood. The northern edge has been damaged by the existing railway and the Dollands Moor freight yard. More recently two rugby pitches have slightly encroached over its east boundary. The wood is separated from Oak Banks by a narrow strip of arable land. Bargrove farmhouse (OAU No. 259), a 19th century grade II listed building, lies 350 m to the south-east.

3.2.16.2 Status

This wood is well-managed consisting mainly of coppiced hazel and hornbeam of varying ages, some of which is relatively mature, together with scattered standard mature and semi-mature oaks. Some older coppiced stools were noted. Ground visibility was generally very good with little undergrowth.

3.2.16.3 Landscape Features

The shape of the wood has changed little from that shown on the 1830s OS first edition 1" map and the 1880s 6" map. Placename evidence of AD 1313 indicates that the wood may have existed since the medieval period.

The woodland floor is even with a slight slope to the north. Two very small streams meander through the wood. A discontinuous very low bank and outer ditch forming the western boundary of the wood was the only earthwork noted.

3.3 CONCLUSIONS

3.3.1 SUMMARY OF ENVIRONMENTAL FEATURES

During the course of the survey a significant number of previously unknown landscape features were discovered and briefly recorded.

Some features, such as a long linear bank (OAU No. 1965) in Bridge and Syle Woods, several small linear banks and ditches (OAU Nos 1966 and 1967) in Honeyhills and Longham Woods and a curving bank and ditch (OAU No. 1969) in The Chestnuts, may predate their respective woodlands. They have only survived because they have not been subjected to the intense agricultural activities which will have levelled any contemporary earthworks in the arable areas surrounding the woods. Other features are the remains of early woodland banks, representing either the original woodland boundaries or internal divisions (eg examples in Merralls Shaw and Hurst Wood).

In addition a number of features identified on cartographic sources and already registered in the gazetteer (eg the trackway (OAU No. 1223) and ponds (OAU No. 2088, 2134 and 2196) in the Boxley Valley) were noted as surviving landscape features.

The remains of a post-medieval building (OAU No. 1854), probably on the site of a medieval farmstead, was discovered in the Boxley Valley.

Some of the features which were recorded on the field sketches and notes, such as small clay, sand or chalk quarry pits are of little interest and have consequently not been given EFM Numbers.

Only features which are either considered to be of some importance or can be shown to be of considerable age have been summarised in Table 2.

3.3.2 OPTIONS FOR FURTHER MITIGATION

The following areas of surveyed woodland contained either no, or insufficient, earthworks/landscape features to require further work: Donkey Shaws, Park Wood West, Park Wood East, Horish Wood, The Chestnuts, Warren and Coombe Woods, Grange Alders and Oak Banks, and Bargrove Wood.

All of the other areas of woodland or parkland contained historic features considered of sufficient merit to require additional work as outlined below. A distinction is made between those areas or features where specific mitigation is warranted (*Priority 1*) and those where further work (other than general provisions for recording during site clearance and construction) could be considered but would be of less high priority given the overall requirements for archaeological work on the route (*Priority 2*). Priority 1 work represents the options for further mitigation put forward in the Assessment of Historic and Cultural Effects Final Report.

3.3.2.1 Ashenbank Wood

Priority 1: Evaluate or sample trench line of possible Watling Street on line of new access to Scaler's Hill House if possible where not affected by lignite workings;

Locate site of well, establish its state of preservation and whether waterlogged organic deposits of archaeological interest survive; if appropriate investigate structure and deposits further and design planting to leave well visible and accessible from realigned lane to north.

3.3.2.2 Cobham Park

Priority 1: Survey northern boundary of park, including earthworks, vegetation and trees, structural remains such as fencing etc., and correlate with detailed historical research; retain salvageable sections of original fencing for reuse elsewhere.

Sample excavate trenches across possible line of Roman Road, especially if clarified by detailed survey.

Record and preserve the Shorne Cobham Boundary Stone, replacing it in a visible position as close as possible to its present location, if possible elsewhere on the Cobham/Shorne boundary in the vicinity of the Halfpence Lane crossing of CTRL.

3.3.2.3 Cole Wood

Priority 2: The low mounds and bank could be accurately plotted in relation to the former Roman road, the parish boundary and the park boundary. They also need to be surveyed in detail to establish their exact dimensions, preferably after the covering vegetation has died down or been removed. Only then can an informed decision be taken as to whether they require further evaluation/excavation.

3.3.2.4 Temple Wood etc.

Priority 2: At least eight large hollows, thought to be the remains of medieval/post-medieval chalk quarries, were noted. Further survey work could be undertaken to plot accurately the distribution of the quarries within the woodland. Further examination of the cartographic evidence for this complex area of woodland might assist in the interpretation of boundaries or other features. These could then be investigated by more detailed survey.

3.3.2.5 Merralls Shaw

Priority 2: The low bank, thought to be an early woodland boundary shown on a map of 1641, and the other bank/ditch may deserve detailed plotting in relation to the existing boundaries. Their profiles would also need to be accurately surveyed, and excavation of representative cross-sections might be considered if the features are to be substantially affected by the CTRL.

3.3.2.6 Bridge and Syle Woods

Priority 2: Although two relatively well preserved banks (OAU No. 1965) were noted it was impossible to accurately establish their limits. It is likely that they are merely earlier woodland boundaries, and of the two only that in Bridge Wood will be substantially affected. Both might merit surveying to establish their exact alignments and locations within the woods. Excavation of representative cross-sections could be considered for the parts of the bank worst affected by the CTRL.

3.3.2.7 Boxley Valley

The walkover survey revealed the site of one or more former brick structures (OAU No. 1854). This will be avoided by the CTRL

Priority 2: The Boxley Valley has been identified as an area of significant historic landscape interest in the Assessment of Historic and Cultural Effects Final Report and contains a concentration of minor historic landscape features for which reasonable cartographic evidence exists. A more exhaustive analysis of the maps from 1697 to the present day, together with existing air photographs and some survey would help to build up a more detailed record of the changes in the landscape.

3.3.2.8 Honeyhills Wood

Priority 1: A concentration of banks and ditches (OAU No. 1966), both positive and negative, survive in the eastern end of the wood to the north of the motorway. It is possible that these are relict Roman features associated with the nearby Thurnham Roman villa. If this relationship is proved, the features would represent an exceptionally rare survival of earthworks associated with a known villa site. The area to the north and east has been heavily ploughed and no earthworks will have survived. A detailed survey is required to accurately plot the locations and profiles of the features. Sample sections should be excavated across a representative sample of the banks and ditches with the aim of obtaining dating evidence. This would also serve the dual purpose of determining, even if the features are found to be of post-Roman date, whether the Thurnham villa complex extends into the wooded area, since at present its full extent is unknown.

3.3.2.9 Longham Wood

Priority 1: A rectilinear pattern of banks and ditches (OAU No. 1967), bounded by a wide water-filled channel on the south-east side, has been covered by the existing woodland. The surviving features require accurate plotting of their positions within the wood and measured profiles. A more thorough examination of earlier cartographic evidence might determine whether these are earlier woodland boundaries. If this work provides no clarification (it is equally possible that the features predate the woodland) recording during site clearance.

Priority 2: Evaluation/excavation of representative sections could be used to establish their date, function and possibly environmental or landuse context in more detail; if the survey suggests a complex sequence of features this should be given a higher priority.

3.3.2.10 The Chestnuts

Priority 1: A relatively ephemeral curvilinear feature (OAU No. 1968) was noted in this small area of woodland. The earthwork is thought to predate the woodland, although this cannot be proved on the available evidence. A detailed survey of its profile and position within the wood should be a prerequisite of a small evaluation to determine its date in case for example it is an early enclosure. The feature ought to project into the field to the north-west, and an examination of this area would also be worthwhile.

3.3.2.11 Hurst Wood

Priority 2: A low bank on which a number of relatively ancient coppiced stools survive is the remains of a boundary shown on a map of 1678. The excavation of a section through the bank might establish its date of construction.

Most of the earthworks identified during the walkover survey will be directly impacted by the CTRL, and some of them (eg OAU No. 1966 in Honeyhills Wood) may be completely destroyed. The further work suggested in this section should adequately mitigate the construction effects, especially assuming that a general monitoring and recording during construction will be feasible.

Table 2: Summary of the main landscape features recorded during the walkover survey

<i>OAU No.</i>	<i>Location</i>	<i>Description</i>	<i>Interpretation</i>
	Cole Wood	Three low mounds	Uncertain
	Cole Wood	Low bank	Uncertain
	Temple Wood etc	At least eight large hollows	Medieval/post medieval quarries
	Merrals Shaw	Linear bank	Early woodland boundary
	Merrals Shaw	Bank and ditch	Uncertain - possibly associated with above
1965	Bridge Wood	Long linear bank	Possibly predates the woodland
1965	Syle Wood	Long linear bank	Possibly predates the woodland
1854	Boxley Valley	Brick building	Medieval/post medieval farm site
1966	Honeyhills Wood	Linear banks and ditches	Relict earthworks - associated with Thurnham Roman villa?
1967	Longham Wood	Banks and ditches	Either earlier woodland boundaries or much earlier relic field system
1968	The Chestnuts	Curving bank and ditch	Earthwork possibly predating the wood
	Hurst Wood	Bank	Early woodland bank

Channel Tunnel Rail Link

**Historic and Cultural Effects
Supplementary Fieldwork Report**

Chapter 4

Monitoring of Geotechnical Investigations

Channel Tunnel Rail Link

Historic and Cultural Effects Supplementary Fieldwork Report

Chapter 5

Monitoring of Geotechnical Investigations

The following table provides a summary of the geotechnical investigations carried out during the construction of the Channel Tunnel Rail Link.

Investigation	Location	Depth (m)	Findings
1	1.1	1.2	1.3
2	2.1	2.2	2.3
3	3.1	3.2	3.3
4	4.1	4.2	4.3
5	5.1	5.2	5.3
6	6.1	6.2	6.3
7	7.1	7.2	7.3
8	8.1	8.2	8.3
9	9.1	9.2	9.3
10	10.1	10.2	10.3

The results of the geotechnical investigations are summarised in the following table.

Investigation	Location	Depth (m)	Findings
1	1.1	1.2	1.3
2	2.1	2.2	2.3
3	3.1	3.2	3.3
4	4.1	4.2	4.3
5	5.1	5.2	5.3
6	6.1	6.2	6.3
7	7.1	7.2	7.3
8	8.1	8.2	8.3
9	9.1	9.2	9.3
10	10.1	10.2	10.3

The following table provides a summary of the geotechnical investigations carried out during the construction of the Channel Tunnel Rail Link.

Investigation	Location	Depth (m)	Findings
1	1.1	1.2	1.3
2	2.1	2.2	2.3
3	3.1	3.2	3.3
4	4.1	4.2	4.3
5	5.1	5.2	5.3
6	6.1	6.2	6.3
7	7.1	7.2	7.3
8	8.1	8.2	8.3
9	9.1	9.2	9.3
10	10.1	10.2	10.3

4 MONITORING OF GEOTECHNICAL INVESTIGATIONS

SUMMARY

Three separate phases of geotechnical ground investigations, comprising the excavation of pits, trenches and boreholes, were archaeologically monitored throughout 1994. The monitoring programme was not intended to be comprehensive but was targeted on areas considered to be archaeologically sensitive when considered against their archaeological or local topographical context. Four boreholes, three trial trenches, nine observation pits and twenty-six trial pits were monitored on sites ranging from Hackney at the west to Sevington at the east end of the route. No significant archaeological features were observed and no archaeological artefacts were recovered. However, a number Pleistocene and Holocene deposits of probable archaeological potential were identified, including layers of peat and alluvial/colluvial deposits which may seal earlier archaeological deposits. The exercise also successfully determined the depths of later disturbance at a number of sites, allowing the prediction of the levels at which archaeological horizons will have survived.

4.1 INTRODUCTION

4.1.1 SCOPE

The archaeological monitoring of three geotechnical ground investigations (GI), comprising the Phase I Shallow Contract (SI), Phase I & II Deep Contract (DI/DII) and Phase I Former Industrial and Waste Disposal Contract (CI) along the route of the Channel Tunnel Rail Link (CTRL), were undertaken during 1994. The results of these three separately commissioned monitoring exercises have been integrated to form the following report.

In the text cross references are made to archaeological sites as reported in the Assessment of Historic and Cultural Effects Final Report. These are referred to as 'OAU No. ...' as listed in the Gazetteer (Appendix A, Volume 3), shown on features mapping (Volume 2) and in some cases described in more detail (Volume 1 and Volume 4).

Deposit descriptions are based on those made in the field by the archaeological monitor using the OAU's Archaeological Field Manual (Wilkinson 1992). These have been compared with those in the geotechnical logs and in some instances the log descriptions have been included where the archaeological descriptions were insufficiently explicit. There are a number of differences between the stratigraphic interpretations made by the archaeological monitor and the factual logs. Most of these arise in the more detailed interpretation of the superficial deposits, such as former soil horizons, colluvial deposits and made ground which, while of considerable interest archaeologically, are described factually but not fully interpreted in the engineering geological logs.

Figs 5 - 47 at the end of this volume indicate the individual positions of all the observation pits (OP), trial trenches (TT), trial pits (TP) and boreholes (SA) and the more general level of coverage of the geotechnical monitoring along the route.

4.1.2 OBJECTIVES

The principal archaeological aim of monitoring selected geotechnical observation/trial pits and trial trenches during the Shallow and Former Industrial and Waste Disposal Ground Investigations was to identify potentially surviving archaeological deposits, and to make an assessment of their nature, age and degree of preservation. This information was collated with the objective of providing advice in advance of any further archaeological work which may be necessary within the monitored locations.

The geotechnical monitoring operation also provided an important opportunity to assess site conditions and the possible depth of significant archaeology, together with the potential complexity of the stratigraphy, from an archaeological standpoint.

At a secondary level the monitoring operation also attempted to judge the scale of the archaeological resource not recorded in any existing sources. However, for this objective to have been successful it would have been necessary for a totally comprehensive watching brief to have been undertaken of the entire geotechnical programme. Such an operation was not considered to be cost effective for the likely return of information. Consequently the monitoring operation was targeted on those areas either considered to have a high potential for the survival of archaeological remains, or on areas of known archaeological potential where the quality of recorded information was poor.

While the field examination of geotechnical test pits is not entirely dissimilar to the archaeological practice of excavating machine-dug trial trenches, the field monitoring of boreholes is less commonly undertaken. It was, however, decided that a limited monitoring programme would be undertaken during the Deep Contract Ground Investigations to better understand, inspect and establish reference information on the chronostratigraphic horizons and sedimentary levels within which significant archaeological potential existed. In particular, areas of alluvium and peat were identified as a primary archaeological concern to be monitored during the ground investigations.

4.2 GEOTECHNICAL METHODOLOGY

4.2.1 TRIAL TRENCHES AND OBSERVATION PITS

Trial trenches (TT) and observation pits (OP) were the principal component of the Phase I Shallow Contract Ground Investigations. The difference between them from an archaeological stand point was their size. Observation pits were 4 x 1 m in plan and trial trenches were generally larger (up to 15 x 1 m), and both had a maximum depth of 6 m.

The contractors used a JCB or a tracked 360° mechanical excavator with a 0.60 m toothed bucket. The pits were excavated to a depth of 1.20 m initially, and were logged at this depth before excavation recommenced. Thereafter the excavations continued to a depth of up to 6 m unless the pits became unstable and unsafe, in which case excavation was terminated. Bulk and 500 ml samples were taken for analysis by the contractor of all the lithological units identified, and photographic record shots taken of the final excavated pit and the removed spoil. Pits were backfilled immediately after recording was completed.

4.2.2 TRIAL PITS

Trial pits, which were the principal component of the Contract C Former Industrial and Waste Disposal Ground Investigation, were also 4 m long and a bucket width (0.60 m) wide, and excavated to maximum depths of 6 m. They were also excavated and recorded in the same manner as the observation pits.

Since the desktop studies indicated that sites may have been contaminated during former industrial activities or waste disposal, precautions were taken by the contractors to provide adequate protection from these potential hazards. All site staff carried out work in protective clothing. Goggles and face masks were supplied and used when appropriate. All site plant was cleaned after the excavation of each trial pit location, to prevent the spread of any contaminating agents. Decontamination units were installed at each site. Spoil was placed on boards to prevent the spread of contamination and pits were backfilled immediately after recording was complete.

4.2.3 BOREHOLES

Both the Phase I Shallow Contract and Phases I and II Deep Contract Ground Investigations used two types of borehole rigs. Light cable percussion/shell and auger rigs were used to bore drift deposits and shallow holes of variable depths and thereafter a rotary rig continued in solid geological strata. During shell and auger boring bulk samples were taken from loose material such as the coarse drift deposits of sands and gravels and U4/U100 samples (a 4 inch or 100 mm diameter continuous core, sealed by wax in 0.50 m plastic tubes) through silt and clay deposits. After U4/U100 samples had been taken in the field, they were taken back to the contractors site store. Those not sent for testing were extruded, described and photographed.

Before drilling commenced 1 m² inspection pits were excavated to a depth of 1.20 m to identify the presence of any services. Thereafter a shell and auger rig excavated up to 4-12 m, followed by a rotary rig which typically continued to depths of 40 m. Archaeological monitoring was only carried out during the initial inspection pit excavation and during shell and auger drilling.

4.3 ARCHAEOLOGICAL METHODOLOGY

4.3.1 TRIAL TRENCHES AND OBSERVATION PITS

Archaeological monitoring undertaken during both the observation pit and trial trench excavations was carried out so as not to cause unnecessary delay to the scheduled work. All archaeologically identified stratigraphic units were recorded using the OAU recording system, and when possible a sketch section drawn of the stratigraphic sequence in the first 1.20 m of excavation. The depth of deposits below the ground surface (BGL) was recorded and photographs taken of the final pit excavations. All depths referred to in this report are levels below ground surface since it was not practical to take ordnance datums during field observations. Spoil was inspected, time permitting, for archaeological components. Bulk samples were also taken for possible future analysis from spoil or sections, either where it was considered likely that there was environmental potential or where it was thought that they might contain archaeological artefacts. No work has been

undertaken to date on any of these samples. The decision as to whether any of the samples require analysis will be taken in conjunction with those collected during the subsequent geotechnical monitoring operation.

4.3.2 TRIAL PITS

Archaeological monitoring undertaken during the excavation of the trial pits was carried out as rapidly as possible, because of the potentially contaminated nature of the soil. The pits were recorded in exactly the same manner as the observation pits and trial trenches. The spoil was also inspected for archaeological components and bulk samples were also taken from spoil or sections thought to have environmental or artefactual potential. While these samples have been retained for possible future analysis, as discussed above (4.3.1) no processing can be undertaken until information on any chemical contamination is made available.

4.3.3 BOREHOLES

Borehole drilling causes limited damage to the underlying subsoil and provides no opportunity to observe archaeological deposits directly. Nevertheless detailed on-site examination of cores and samples can yield valuable archaeological results. The geotechnical logs also provide a good indication of basic lithostratigraphy. For the Phase I Shallow contract no on-site monitoring of the borehole locations was undertaken on the basis that all geotechnical logs would be made available on request. This allowed resources to be concentrated on monitoring of the more invasive geotechnical pits and trenches. For the Phase II Deep Contract provision was made for monitoring boreholes, but in the event only very few were observed in the field.

Geotechnical analysis requires that the U4/U100 samples are sealed on site, and inspection of the samples by the archaeological monitor was limited to the top and bottom portions which were removed before they were sealed with wax. Each stratigraphic unit identified was described on-site and records of the approximate depths from ground surface were recorded. Where possible samples of the excavated cores were inspected for the presence of archaeological components. Disturbed samples of recovered deposits were made available for collection but no undisturbed sampling had been requested for archaeological purposes under this contract.

Detailed examination of the samples taken during the Deep Contract Ground Investigations could only take place at the point of geotechnical testing (Doncaster), although some cores were extruded on site and photographic records were taken. It was agreed with the Geotechnical Management Unit that the archaeological monitor would be given access to the extruded or bulk samples taken during the Shallow Ground Investigation to take general descriptions.

Drilling with the rotary rig was not monitored as part of the Deep Contract Ground Investigations since Thames alluvium and gravels were identified during the initial shell and auger drilling.

4.4 PROGRAMME

4.4.1 PHASE I SHALLOW CONTRACT GROUND INVESTIGATIONS

A series of boreholes, trial trenches and observation pits were excavated as part of the Phase I Shallow Contract Ground Investigations (SI). Since these investigations could potentially reveal archaeologically significant deposits, a strategy was agreed with URL to monitor those sites thought to be archaeologically sensitive when considered against either their archaeological or local topographical context. Consideration was given to the three techniques (boreholes, trial trenches and observation pits) employed and their differing potential for recovering archaeological information. Priority was given to monitoring the trial trenches and observation pits.

A number of bulk samples from unmonitored boreholes as well as several unmonitored observation pits and trial trenches, taken for geotechnical purposes and stored in the geotechnical contractors storage facility, were briefly scanned to distinguish any with obvious archaeological potential. Out of seventy-five samples from sixteen different locations only Samples D5 and D6 and Samples D7 and D8 from boreholes SA 1208 and SA 1209 respectively, both located at Dagenham Breach (Geosegment BDA) taken from a layer of peat between 2 and 3 m BGL, merit further examination.

The contractors (Exploration Associates) used one geologist to log the trial trenches and observation pits. OAU were not requested by URL to monitor the first phase ground investigations until after the work had commenced. Therefore some pits of archaeological interest were excavated prior to OAU's involvement. A pre-set schedule of work was followed where possible, although difficulties of predicting when access would be gained to a site altered the proposed work programme (see below). In many cases it was not possible to obtain the twenty-four hour notice OAU required before work commenced which resulted in the failure to monitor all designated sites.

Fourteen geological observation pits (OP1214, 1215, 1242, 1249, 1254, 1255, 1256, 1258, 1259, 1304, 1314, 1316, 1319 and 1322) and seventeen geological trial trenches (TT1506, 1508, 1510, 1511, 1513, 1515, 1520, 1521, 1522, 1525, 1540, 1542, 1549, 1550, 1565, 1566 and 1568) were originally selected to be archaeologically monitored. Thirteen pits/trenches (OP1242, 1314, 1316, 1319, TT1506, 1508, 1510, 1511, 1513, 1515, 1522, 1525, and 1550) were excavated without archaeological monitoring prior to OAUs involvement. Logistical problems (particularly with access) led to the abandonment of six pits/trenches (OP1304, TT1540, 1542, 1565, 1566 and 1568). Consequently only twelve pits/trenches (OP1214, 1215, 1249, 1254, 1255, 1256, 1258, 1259, 1322, TT1520, 1521 and 1549) were successfully monitored.

4.4.2 PHASE I & II DEEP CONTRACT GROUND INVESTIGATION

A series of boreholes were excavated along the proposed corridor of the railway tunnels from St Pancras to Barking at the River Thames and on the North Downs Crossing. These were undertaken in two phases of ground investigations. Only Phase II boreholes were chosen for monitoring by OAU.

In the event, as a result of unforeseen logistical problems, only four of the twenty-eight designated boreholes at Hackney, Brooke Bond Depot and Stratford Teardrop were monitored.

4.4.3 CONTRACT C PHASE I FORMER INDUSTRIAL AND WASTE DISPOSAL SITES

A desktop study was carried out by URL consultants into past industrial land-use along the corridor of the Channel Tunnel Rail Link, to identify site specific areas where sub-surface contamination and ground disturbance could potentially be located. Seventeen former industrial and waste disposal sites were identified as a priority for ground investigations. These sites were located along the CTRL corridor from Stratford, London Borough of Newham, to Mersham, Kent. Major concentrations of sites were located on industrial land north and adjacent to the River Thames, and south of the river within the Ebbsfleet Valley, Swanscombe, Kent.

The ground investigations comprised site specific trial pitting and drilling, carried out to identify type and concentration of possible contamination and the extent of man made ground. A total of thirteen sites (047, 278, 282, 292, 293, 297, 302, 578, 579, 398, 413, 414 and 720), as identified in Aspinwall's Final Report on Contaminated Land, were identified by OAU as offering potential for the identification of archaeologically significant deposits, although it was recognized that former industrial activity may have disturbed any archaeology. A selective monitoring strategy was devised to investigate surviving archaeological deposits, with an aim to make an assessment of their nature and preservation. It was not considered cost-effective to monitor all trial pit locations, given the expected poor preservation of deposits, particularly on landfill and extraction sites.

A sample of monitored trial pits from each of the selected sites was thought to provide a good indication of the archaeological potential from each site. The experience of monitoring boreholes during the Phase II Deep Contract Ground Investigations (DII - GI) indicated that the information yielded compared to time spent on-site was not justifiable. No boreholes were therefore monitored during this phase of ground investigations.

In the event two sites were abandoned as access was not granted for Site 047 and work on Site 398 was postponed until initial health and safety tests had been carried out. Logistical problems prevented the monitoring of Sites 278, 292, 578 and 579. Consequently a total of twenty-six trial pits were monitored from the remaining seven sites selected by the OAU.

4.5 RESULTS

4.5.1 GEOLOGICAL ZONES

For ease of reference the monitored pits and boreholes are reported working from west to east along the route of the CTRL. Wherever possible they have been grouped by spatial segments termed *geosegments* (based on the system devised for URL), which are of variable length and complexity and are based on geology primarily with the preferred engineering design as a secondary consideration. Reference has also been made where relevant to *terrain systems/units* defined as the classification of land dependent on characteristic topography, drainage, vegetation etc, correlated to geology and geomorphology.

The monitored pits and boreholes are located in the following GMU geosegments:

Stratford - STD (SA2121, SA2123, SR2127 and SA2128)

Barking/Dagenham - BDA (TP1739, 1741, 1745, 1779 and 1783)

Hornchurch/Rainham, Wennington - HRW (TP1817, 1841, 1843, 1850, OP1214 and 1215)

Ebbsfleet Valley - EBV (OP1249, 1254, 1255, 1256, 1258, 1259, TP1680, 1681, 1887, 1888, 1890, 1900, 1904, 1907, 1909, 1911 and 1912)

North Downs Crossing - NDC (OP1322)

Hollingbourne - HOL (TP1940, 1941, 1943, 1944, 1955 and 1956)

Westwell - AFJ (TT1520 and 1521)

Sevington, Mersham and Smeeth - MER (TT1549).

4.5.2 STRATFORD GEOSEGMENT - STD

4.5.2.1 Hackney, Brooke Bond Depot (Fig. 9)

Location

This site, a disused storage depot, is located on Waterman Road, east of Hackney Wick and south of the Hackney Marshes on the western bank of the River Lea. Two boreholes were drilled (RC2120 and SA2121) of which SA2121 was monitored.

Borehole SA2121: Interpretation

The Thames Gravel, identified at a depth of 10.30 m BGL is overlain by a sequence of three slightly differing alluvial deposits, none of which contained any archaeological components. The alluvium had been sealed beneath made ground up to 8.10 m deep. Building material contained within the made ground suggests that they date to the 20th century. It is likely that any surviving archaeology would be encountered below the made ground from a depth of 8.30 m BGL.

4.5.2.2 Stratford Teardrop (Fig. 9)

Location

The Teardrop site is presently a British Rail freight terminal and is sited north of Stratford town centre, on the boundary of the boroughs of Hackney and Newham. The site sits on alluvium on the eastern embankment of the River Lea. Three of the boreholes proposed for archaeological monitoring on this site were investigated (2123, 2127, 2128).

Borehole SA2123: Interpretation

The Thames Gravel, identified at a depth of 2.90 m BGL, was overlain by a 0.75 m thick alluvium deposit. This had been covered by a 1.85 m thick deposit of made ground beneath the existing concrete surface. No archaeological components were recovered

from the sampled alluvium, which may have been truncated during the construction of the present freight terminal. It is likely that any surviving archaeology would be encountered from a depth of 2.15 m BGL within this area.

Borehole SR2127: Interpretation

The London Clay, identified at a depth of 6.20 m BGL was overlain by a 3 m thick deposit of Thames Gravel. This was overlain by two layers of alluvium up to 1 m thick sealed beneath almost 2 m of made ground. No archaeological components were recovered from within the two sampled layers of alluvium identified. It is likely that the lowermost of the made ground layers, which has a clay matrix, was derived from alluvium similar to those observed below. The alluvium therefore appears to have been truncated in the recent past, possibly during construction work for the freight terminal. It is likely that any surviving archaeology would be encountered from a depth of 2 m BGL.

It should be noted that the archaeological field observations described above do not entirely correlate with the borehole log, which indicates that the 3.70 m thick terrace gravel is directly overlain by a 2.50 m thick deposit of made ground with no intervening alluvial deposit.

Borehole SA2128: Interpretation

The London Clay, identified at a depth of 5.40 m BGL was overlain by a 2.60 m thick deposit of Thames Gravel. This had been covered by two layers of alluvium with a combined thickness of 1.10 m below more recent made ground. The uppermost alluvial deposit, containing a greater organic content than the layer below, may represent an accumulated marshland deposit similar to a deposit observed during field evaluations and excavations at Stratford Market Depot on the Jubilee Line Extension Project (Wilkinson forthcoming). No archaeological components were recovered from either of the alluvium deposits. The earliest layer in the made ground with its silty clay matrix was possibly derived from a layer similar to the underlying alluvium which suggests that the alluvium may have been truncated in this area. It is likely that any surviving archaeology would be encountered from a depth of 1.70 m BGL.

4.5.3 BARKING, DAGENHAM/HORNCURCH, RAINHAM, WENNINGTON GEOSEGMENTS - BDA/HRW

4.5.3.1 Description

Sites 282, 293, 297, and 302 were located on industrial land north of the River Thames between Barking and Rainham. This area lies within the floodplain of the Lower Thames and contains fine-grained silt and clay, with thin seams of sand and gravel, which often contain shell and plant remains. Substantial deposits of peat are interbedded with these sediments. Samples from the peat and organic material present in the alluvium can be dated by radiocarbon, while lenses of sand can be dated by Optical Luminescence Dating (OL). These methods have allowed the deposition of the alluvium to be ascribed with confidence as commencing early in the Holocene (present interglacial). Dated peat horizons (palaeo-landsurfaces i.e. Tilbury IV: Devoy, 1979) have been correlated with sites which exhibit similar sequences within the locality. Well-controlled radiocarbon age estimates are required to make reliable local comparisons.

The Aveley Marshes, consisting of flat grassland, also lie within the floodplain of the Lower Thames in the Borough of Havering and contain similar deposits to those described above.

This group of sites together with those described above at Hackney and Stratford all fall within the major terrain system II forming the Thames flood plain.

4.5.3.2 Archaeological Priorities

Sites 282 and 293 of the CI - GI Contract pass along the edge of the Thames marshes, within the Borough of Barking and Dagenham's Area of Archaeological Importance. Sequences of peat and alluvium have the potential to provide information pertaining to past environments, economy, river and marshland management. The archaeological potential of this area has been demonstrated by the recent discovery of Bronze Age metal causeway (OAU No. 1963) at Pooles Lane, Ripple Road.

4.5.3.3 Monitoring Priorities

Monitoring within this locality was initially concerned with the identification of alluvium and peat deposits which correspond with the above described sequences. Extensive collections of archaeological material have been difficult to obtain from sequences of alluvium and peat, since they are often located below the water-table. Furthermore marsh areas have often been avoided for extensive development and when construction has occurred it is usually undertaken in such a way as to preclude access for archaeological work. Excavated material was examined for the possible recovery of artifacts during the monitoring process, and when appropriate bulk samples were taken from peat deposits. Much of the archaeological and geomorphological research in the area is dependent on detailed lithostratigraphic descriptions and interpretations of well-stratified deposits. Where possible a record was made of the quality of the recovered deposits. Any observed lamination and sand deposits present within the exposed alluvium were noted.

4.5.3.4 Site 282 (Fig. 13)

Location

Site 282 is situated within an area of waste-land, bounded to the east by Dagenham Dock Station and adjacent to the railway to the north. The Exide Battery Plant is to the south and the waste-land continues west. The predominantly flat but undulating ground is vegetated by grasses and small shrubs. Numerous power cables pass overhead from pylons positioned within the site boundary. Three trial pits were monitored on this site: TP1739, TP1741 and TP1745.

Trial Pits TP1739, 1741 and 1745: Interpretations

The top of a sequence of Lower Thames alluvium was identified at the limit of excavations in TP1741 and TP1745 at depths of 3.60 and 2.90 m respectively. This was truncated in both trenches by recent industrial activities. Ground water was observed to settle at an approximate depth of 2.50 m. By contrast excavations at TP1739 revealed 2.10 m of made ground above a well-preserved sequence of Lower Thames alluvium and peat 0.70 and 2.10 m thick respectively. The excavation conditions prevented a detailed inspection of the peat sequence, although it was possible to identify a broad division. The upper layer comprised thin laminations of reeds and grasses superseded by a reddish peat which contained the remains of larger plant/shrub species although no clearly defined

boundary was visible. No significant ground water was observed in TP1739 until the removal of the lower peat onto the sandy river gravel at 5 m BGL. Considering the levels of ground water observed in TP1741 and TP1745 this suggests the ground water is partly confined below the peat. Although TP 1745 falls close to the projected alignment of the Pooles Lane Bronze Age metalled causeway (OAU No. 1963) sited approximately 200 m to the north-east, no trace of the trackway was evident in either this pit or the two others further west.

4.5.3.5 Site 293 (Fig. 13)

Location

Site 293 is a large area owned by Ford of which a 125 m wide strip of flat land adjacent to the mainline railway to the north within the Ford Plant was investigated. It is bounded to the east by Chequers Lane. Two man-made lakes are to the south and Ford warehouses to the west. The ground was predominantly a flat concrete surface. All trial pit locations were within close proximity to the railway sidings and work was supervised by a Railtrack Person In Charge Of Works (PICOW). Two trial pits were monitored at this site: TP1779 and TP1783.

Trial Pits TP1779 and 1783: Interpretations

TP1779 and TP1783 each revealed preserved sequences of alluvium and peat. TP1783 exposed a complete sequence down to river gravel 4.80 m BGL. TP1779, which was excavated to 5.10 m deep, did not expose the river gravel. In both pits the top of the peat, which was 2.80+ and 2.60 m deep respectively, comprised thin laminations of reeds and grasses above a reddish peat containing abundant remains of larger plant/shrub species. The boundary between the peat layers was gradational. A 1.10 to 1.50 m thick deposit of Lower Thames alluvium survived *in situ* above the peat in both trial trenches and was overlain by less than 1 m of made ground. Significant ground water seepage was encountered at a depth of approximately 4.50 metres in both pits.

4.5.3.6 Site 297 (Fig. 14)

Location

Site 297 is a large area owned by Ford of which a 125 m wide strip of flat land adjacent to the mainline railway to the north within the Ford Plant was investigated. It is bounded by Chequers Lane to the west and Manor Way to the east. A quarry and Ford warehouses are to the south. One trial trench was monitored on this site: TP1817.

Trial Pit TP1817: Interpretation

TP1817 exposed a 0.90 m thick deposit of made ground above a sequence of alluvium and peaty clay, 1.40 and 1.80 m thick respectively, above river sand. While the deposits were encountered at approximately the same depths as those observed at Sites 282 and 293, the peat in TP1817 was more clayey and contained pockets of sizeable decomposed wood (large shrub/tree species). It is also impossible to establish whether the alluvium identified above the peat was originally part of the natural sequence and has been truncated or whether it had been redeposited during more recent activity. Ground water was identified at an approximate depth of 4 m.

4.5.3.7 Site 302 (Fig. 14)

Location

Site 302 is owned by Thames Water Utilities. The ground investigation extended over a 125 m strip of waste-land adjacent to the mainline railway to the north and a drainage ditch parallel to the access road of Thames Water Riverside Sewage Treatment Works to the south. It is bounded by Rainham Creek to the east and Manor Road to the west. The area is flat and vegetated by grasses and occasional shrubs. Three trial pits were monitored: TP1841, 1843 and 1850.

Trial Pits TP1841, 1843 and 1850: Interpretations

TP1841 revealed a differing sequence to those observed in TP1843 and TP1850. Inspection of the service drawings for the area identified an E/W-aligned sewage trench running diagonally across the site and close to TP1841. Sandy gravels in TP1841 probably represent fills within the sewage trench although no cut was identified.

TP1843 and TP1850 both revealed peaty horizons. In TP 1843 1 m of made ground overlay a 0.70 m thick layer of peat. This peat level overlay a 0.70 m thick deposit of alluvium, which had sealed another layer of peat at least 0.50 m thick. In TP 1850 a 0.70 m thick deposit of made ground overlay a 0.40 m thick layer of alluvium. The peat, which was recorded at a depth of 1.10 m BGL contained more silt towards the base of the pit which was excavated to a depth of 3 m. The peat observed at this site is noticeably clayey and comparable to that seen at Site 297 (above). The alluvium has been truncated at both TP1843 and TP1850.

4.5.3.8 Aveley Marshes (Fig. 16)

Location

Observation Pits 1214 and 1215 were located within the grounds of the Rainham Rifle Range, in the Borough of Havering on Lower Thames alluvium. The general topography of the area is flat grassland. Both pits were located at the northern end of the Rifle Range adjacent to the railway. This area was considered to be potentially contaminated from previous landuses.

Observation Pits OP1214 and 1215: Interpretations

The observed sequences of these pits, which were approximately 30 m apart, varied significantly considering their close proximity. The sequence observed in OP1214 represents a well-preserved profile through the natural geology: Lower Thames Alluvium interrupted by a preserved horizon of peat 0.30 m thick (identified at 2.50 m BGL), and overlain by disturbed alluvium which contained root activity and the present topsoil.

The profile in OP1215 probably consists entirely of more recent activity: layers of sand probably represent made ground and a 0.25 m thick layer of peat (identified at a depth of 0.35 m) derived from the present marshland environment. More recent activity may have disturbed the upper layers of alluvium, but it is likely that layers below the limit of pit OP1215 (excavated to a depth of 2.50 m BGL) will be preserved intact as in OP1214.

The preserved profile in OP1214 is of most interest from an archaeological perspective, indicating that results obtained from archaeological sampling are likely to be good. However, there is clearly ground disturbance in this area (OP1215) and more importantly both pits are in potentially contaminated ground. The results of the chemical testing will need to be considered in the planning of further investigations.

4.5.4 EBBSFLEET VALLEY GEOSEGMENT - EBV

4.5.4.1 Description

The Ebbsfleet Valley, which is included within the Chalk Lowlands Terrain System IV, now contains little more than a stream which enters the River Thames from the south. At the confluence the Thames cuts through chalk bed-rock and Pleistocene deposits (the Orsett Heath Gravel unit). The Ebbsfleet cuts transversely through Pleistocene deposits which are overlain by Holocene alluvium. Chalk quarries have revealed a complex sequence of predominantly fine-grained Pleistocene sediments, probably representing a mixture of fluvial, colluvial and aeolian deposition, characterised by climatic fluctuations within the Pleistocene and early Holocene periods. These deposits can contain molluscs and artefactual remains moved from their original ground surface, or can bury accumulations of artefacts or faunal remains (Pleistocene land-surfaces) with little disturbance where artefacts are potentially recoverable *in situ*. The water-lain deposits in the Ebbsfleet are noted for the recovery of Mesolithic and Neolithic artefacts (OAU Nos 1536, 1538 and 1541: Kent SAM 208), from depths of c. 1.80 m in the floor of the valley.

4.5.4.2 Archaeological Priorities

Significant Palaeolithic evidence has been obtained from deposits less than 30 m away from trial pit location TP1904 at Site 414, including Baker's Hole excavated in 1909, a Scheduled Ancient Monument (OAU No. 1526: Kent SAM 267 a/b), and an SSSI which contains a preserved sequence of Pleistocene deposits.

Archival sources and SMR records locate the Northfleet Roman villa (OAU No. 1532) within Site 414, close to trial pit locations TP1911, 1912 and 1681.

4.5.4.3 Monitoring Priorities

Pleistocene deposits which are known to contain Palaeolithic artefacts are rare and therefore the archaeological monitoring within this locality placed emphasis on the identification of well-preserved Pleistocene stratigraphy. Extraction has severely depleted the resource, and correspondingly increased the importance of the surviving deposits. Specialist advice was taken on the interpretation of the Pleistocene sequences during trial pit monitoring in this area. The excavated material recovered from the pits was examined for bones and flints, and any molluscs present in deposits were noted. Care was taken to identify any Mesolithic and Neolithic artefacts which may have been present in the Ebbsfleet alluvium.

4.5.4.4 Observation Pits OP1249, 1254, 1255/1255a and 1258 (Fig. 19)

Location

These pits are located in the grounds of the Blue Circle Cement Sports Recreation Centre in the parish of Swanscombe, Kent. A proportion of the area has been extracted and landfilled, and landscaped into terraces above the present course of the Ebbsfleet to the east. Land adjacent to the Ebbsfleet is used predominantly for bowling greens and the terrace above for playing fields.

Interpretation

OP1249 and OP1255/1255A revealed landscaped fill, 4.70 m and 1.60 m in depth (OP1255 was abandoned when a large concrete slab was encountered at a depth of 0.85 m BGL). OP1255A indicated that the fill overlay a 1 m thick head deposit over chalk. No significant deposits were identified at location OP1258, where natural chalk bedrock was recorded at 0.20 m below the present ground surface. A sandy silt head deposit was observed at location OP1254, sloping from 0.50 to 1.40 m deep overlain by a layer of made ground.

4.5.4.5 Observation Pits OP1256 and 1259 (Fig. 19)**Location**

These pits are located in a large undulating arable field adjacent to and west of Springhead Enterprise Park and sewage works, in the Parish of Swanscombe, Kent. Two observation pits were excavated, one adjacent to the present course of the Ebbsfleet (OP1256) and one above on a natural crest (OP1259).

Interpretation

The pits were monitored to a depth of 0.88 m and 2.90 m respectively. OP1256 revealed a mixed alluvium at the monitored limit (Geotechnical logs indicate that the alluvium continued to a depth of 4.40 BGL) below a plough horizon and the present ploughsoil. A supported excavation with provision for pumping would be required to reveal the full sequence of Ebbsfleet alluvium, which is notable for the presence of Mesolithic and Neolithic artefacts.

There is some uncertainty from an archaeological perspective as to the significance of the silty sand deposit identified at the bottom of excavation of OP1259 (Geotechnical Log OP1259; Layer 2). This deposit is best explained as a colluvium, although no indication of its date was ascertained. This was overlain by two plough horizons. Without obtaining a date from the colluvium deposit it is difficult to predict with certainty where significant archaeological deposits are likely to be found in sequence. Surviving archaeological features within this area could be identified either above or below and possibly sealed within the colluvium, between depths of 0.30 or 0.57 m BGL.

4.5.4.6 Site 413 (Fig. 19)**Location**

Site 413 is bounded to the north by Site 414 and to the east by the River Ebbsfleet. The area to the south and west is open fields. The site has a gradual gradient to the south and is presently in use as pasture. Much of the area has been landfilled within the last twenty years, and although maps plotting the extent of landfill have been made, many boundaries are known to be imprecise.

Trial Pits TP1887, 1888 and 1890: Interpretations

TP1890 was excavated entirely through made ground and was terminated at a depth of 2.90 m. Natural geology was encountered at locations TP1887 and TP1888 at depths of 3.10 and 2 m respectively, below levels of made ground. Compact chalk bedrock was identified at TP1887 and it is likely that any overlying solifluction deposits were truncated during landfill and landscaping. TP1888 was close to the present course of the Ebbsfleet and silty sands noted at the limit of excavation are probably associated with

riverine deposits. The geotechnical log indicates that the made ground was only 0.60 m thick overlying a 1.40 m thick deposit of possible alluvium.

4.5.4.7 Site 414 (Fig. 19)

Location

Site 414 situated in the parish of Swanscombe, Kent is separated by a NW/SE-aligned road. The area to the north is located in the grounds of the Blue Circle Cement Sports Recreation Centre. A proportion of this area has been extracted/landfilled and more recently landscaped into terraces above the present course of the Ebbsfleet to the east. Land adjacent to the Ebbsfleet is used predominantly for bowling greens and the terrace above for playing fields. The area to the south is currently being used as a landfill. Eight trial pits were monitored.

Trial Pits TP1680, 1681, 1900, 1904, 1907, 1909, 1911 and 1912: Interpretations

Four of the eight monitored Trial Pits; TP1907, TP1911, TP1909 and TP1680, revealed evidence of recent disturbance, which will have destroyed archaeological deposits. TP1680 was terminated when a concrete slab was encountered at a depth of 1.20 m. TP1907 exposed a modern feature 0.90 m deep cutting natural chalk bedrock. TP1909 revealed a thin layer of cement above natural Chalk bedrock. TP1911 was abandoned at a depth of 1.50 m when a service cable was discovered.

Five Trial Pits; TP1681, TP1900, TP1904, TP1907 and TP1912, revealed levels of surviving Pleistocene sequences below deposits of made ground at depths of 1.20, 0.20, 1.00, 0.90 and 0.80 m respectively. Excavations at TP1681 revealed a series of silty deposits from a depth of 1.20 to 1.50 m BGL. Francis Wenban-Smith (pers. comm.) considers these deposits to be characteristic of Pleistocene deposits observed elsewhere in the area. Similar silt sequences were noted at TP1900, TP1904, and TP1912, which overlay chalk solifluction deposits (Coombe Rock), although the geotechnical logs for TP1904 and TP 1907 do not interpret any of the lithological units as possible Pleistocene deposits between the made ground and the chalk.

4.5.5 NORTH DOWNS CROSSING GEOSegment - NDC

4.5.5.1 Description

The Chalk downs of southern England have been of great significance throughout the prehistoric period. The chalk's permeability creates good drainage conditions which are ideal for most forms of agriculture and for settlement in general. The North Downs are no exception with considerable evidence of occupation throughout the prehistoric, Roman and medieval periods.

4.5.5.2 Monitoring Priorities

Only one Observation Pit (OP1322) was monitored on the North Downs. The pit was within 10 m of the recorded route of a Roman road (OAU No. 1054). Monitoring therefore lay emphasis on establishing any physical evidence of the road and/or any associated human activity.

4.5.5.3 Observation Pit OP1322 (Fig. 28)

Location

This observation pit is located on the edge of the scarp slope of the North Downs. The pit was excavated in a pasture field about 10 m to the east of a hollow way (possibly the route of the Roman road; OAU No.1054), in the parish of Aylesford, Kent.

Interpretation

Natural chalk, located at a depth of 1.45 m BGL, may have been cut by a modern feature which contained at least three distinctive fills. No edge for the feature was visible in section, possibly because it was cut longitudinally by the excavation trench. Modern brick and tarmac were recovered from its lower fills. The uppermost layer, consisting predominantly of redeposited chalk, is most likely to be an upper fill of the same feature. Archaeological deposits are likely to have been destroyed at this specific location.

4.5.6 HOLLINGBORNE GEOSSEGMENT - HOL

4.5.6.1 Description

Eyhorne Street Site 720 is sited south of the village of Hollingborne and has been partially landfilled during construction of the M20 motorway. The underlying geology is the Folkestone Bed sands and the site falls within the Dissected Folkestone Beds Surface terrain system XI. Six trial pits (TP 1940, 1941, 1943, 1944, 1955 and 1956) out of the total of seventeen were monitored as part of the Phase I Contaminated Ground investigations.

4.5.6.2 Archaeological Priorities

Archival sources and SMR records indicate that a post-medieval mansion house and an Anglo-Saxon coin (OAU Nos 1402 and 1067) were located within the bounds of Site 720.

4.5.6.3 Monitoring Priorities

The intensive trial pit and borehole strategy employed by the contractor at this site allows predictions to be made of the extent of landfill.

4.5.6.4 Eyhorne Street - Site 720 (Fig. 31)

Location

Site 720 is bounded by Musket Lane, Hollingbourne, to the north, and the M20 motorway to the south, Eyhorne Street to the east, and the grounds of Musketstone House to the west. The site is divided by a contrast in land-use. The northern area adjacent to Eyhorne Cottage is densely vegetated waste-land with a gradual southwest slope and the southern area, adjacent to the M20 Motorway, is an open pastured field dipping to the west.

Interpretation

More disturbance was identified at the eastern limit of the site (TP1956) than at the western end (TP1940, 1941, and 1944). TP1956 identified 1.90 m of demolition debris of a post-medieval building overlying a sandy head deposit. Trial pit locations to the

west revealed ploughsoil horizons above natural Folkestone beds. It is possible that this break of slope observed at the western end of the site may represent the boundary between landfill and natural ground since TP1943 at the top of the slope revealed a 1.30 m thick deposit of landfill whereas TP1940, 1941 and 1944 at the bottom of the slope identified ploughsoil directly above natural ground. It should be noted that the geotechnical logs for TP1940, 1941, 1942, 1944 and 1955 describe the old plough horizons as made ground.

No archaeological features or finds were located during monitoring. It is suggested however, that these could potentially be identified below ploughsoil horizons between depths of 0.20 and 0.50 m BGL, particularly in the western end of the site where there is less disturbance.

4.5.7 WESTWELL/SEVINGTON, MERSHAM & SMEETH GEOSEGMENTS - AFJ/MER

4.5.7.1 Description

This area coincides with a stretch of proposed railway which runs parallel to the M20 motorway. Three trial trenches were monitored, located on Gault Clay, Atherfield Clay and Hythe Beds. These geological units were found in low lying sites, although Hythe Beds were exposed along the edge of the scarp slopes of the North Downs.

4.5.7.2 Monitoring Priorities

The three trial trenches within this area were scheduled to be 15 metres long. They were intended to locate the precise boundaries between the above described geological units. It was thought that the size of the trenches would be more suitable for making accurate archaeological observations, as well as providing an assessment of the levels of sub-soil within the area.

4.5.7.3 Archaeological Priorities

Trial trench TT1549, immediately east of Ashford, is close to a complex of cropmarks identified in the parish of Sevington (OAU No. 1321) probably representing an Iron Age site.

4.5.7.4 Trial Trenches TT1520 and 1521 (Fig. 38)

Location

These were located in an arable field bounded by Westwell Lane to the south-east and Grove Wood to the west in the parish of Westwell, Kent. The Maidstone to Ashford mainline railway and the M20 motorway are situated to the south-west. A gentle slope was observed rising to the north-east towards the North Downs.

Interpretation

Trench 1520 revealed the top of the natural Gault Clay sequence, 0.80 m BGL, overlain by a ploughsoil horizon below the present ploughed surface. Trench 1521 identified two possible post/stakeholes, cut into the top of a colluvium deposit at a depth of 0.35 m BGL. No artefacts were recovered from the fills of these features, which had been sealed by the present ploughsoil. They may have been truncated by plough action and probably represent activity associated with a more recent event.

4.5.7.5 Trial Trench TT1549 (Fig. 41)

Location

In order to identify the boundary between the Atherfield Clay and Hythe Beds, six 3 m long trenches were excavated at 10 m intervals (sub-divided A, B, C, D, E and F) instead of the proposed 15 metre long trench, of which only Trenches A, B and D were monitored. These were placed in an arable field south of the M20 Junction 10 roundabout, below the embankment of the Sevington road, and west of a tributary of the Great Stour river.

Interpretation

TT1549A and B both revealed Atherfield Clay at 1.75 and 2.40 m respectively BGL. TT1549A, the most southerly positioned trench close to the tributary of the Great Stour, produced evidence of an older high energy water course in the form of a 0.35 m thick deposit of dark brown medium and coarse sandy gravel at a depth of 1.40 m BGL. This was overlain by weathered Atherfield Clay, possibly derived from colluvial wash from the rise to the east, below the present ploughsoil. TT1549B, further away from the water course, also contained a 1.20 m thick deposit of weathered Atherfield Clay at a depth of 0.20 m below the present ploughed surface. A 1 m thick deposit of light brown slightly silty medium and occasionally coarse sand was located between the upper weathered clay and the Atherfield Clay below. The Hythe Beds were identified in TT1549D at a depth of 1.70 m BGL and were overlain by a firm brown sandy clay, probably a colluvium. A possible old plough horizon was located below the present ploughsoil. While the archaeological field observations broadly compare with the geotechnical logged data there is some disagreement as to whether what has been described above as weathered Atherfield clay derived as a colluvial wash, as an alluvial deposit or possibly even a combination of the two processes.

4.6 CONCLUSIONS

4.6.1 RELIABILITY OF THE RESULTS

4.6.1.1 Observation Pits, Trial Pits and Trial Trenches

No artefactual remains were located during monitoring of any of the pits or trenches, due to a general absence of any significant number of archaeological features, the limited time available for access to the 1.20 m deep excavations and the health and safety constraints on entering any pits deeper than 1.20 m. Although every endeavour was made to identify material from the excavated spoil, there was rarely sufficient time for a systematic search to be made and therefore any finds so located would have been opportunistic.

Few archaeological features were identified with the exception of two post/stakeholes seen in section in TT1521 and a modern feature in OP1322. In order to identify ephemeral features such as post holes or small pits/gullies it is important to view excavated layers in plan. Since purposive archaeological trial pits/trenches are excavated using a toothless bucket at least 1.5 metres wide, there is a possibility that in narrower geotechnical pits, excavated with a toothed bucket, small features were either missed or incorrectly interpreted. However, it is unlikely that larger more prominent features, such as wide ditches or large pits, were missed.

The investigation identified Holocene and Pleistocene deposits which exhibited similar characteristics to deposits where archaeological material has been recovered (Wenban-Smith, 1994 pers. com.). Bulk samples retrieved from spoil and sections during monitoring may contain archaeological material.

The investigations identified significant Holocene and Pleistocene deposits where archaeological material could potentially be recovered, and there is a possibility that bulk samples retrieved during monitoring may contain archaeological material.

An attempt has been made to interpret possible depths where significant archaeological levels may be identified. The levels BGL are approximated below a depth of 1.20 m, since observations below this depth were made from outside the trench.

It was recognised that former industrial activity and extraction and landfill may have seriously disturbed potentially significant archaeological deposits at the CI - GI sites. Monitoring of such sites in the Thames floodplain and Ebbfleet valley, however has demonstrated that deposits of high archaeological potential do survive, within the broad areas currently identified as potentially contaminated.

4.6.1.2 Boreholes

Only limited results were achieved during the borehole monitoring. The drilling techniques used are rarely able to recover specifically archaeological data, but overall sequences of deposition can be assessed with specific regard to the potential for preservation of archaeological sites. However, the archaeological interpretation of the logged borehole sequences and inspection of cores by the contractor will allow these to be interpreted archaeologically.

4.6.2 SUMMARY OF RESULTS BY GEOGRAPHICAL LOCATION

4.6.2.1 Hackney/Stratford (Stratford)

Greenish-grey fine-grained silt alluvium deposits were identified in the four boreholes monitored, east and west of the River Lea. No archaeological components were recovered from these deposits, but it is noted that similar deposits were identified during excavations of an Iron Age and Roman site at Stratford Market Depot carried out by OAU on behalf of the Jubilee Line Extension Project (Wilkinson forthcoming) about a mile south and adjacent to the River Channelsea. These excavations revealed archaeological features cut into greenish-grey silts.

There is some evidence (make-up layers with a silt/clay matrix) that the alluvium deposits have been truncated by more recent activity, although significant depths of alluvium undoubtedly remain intact. While it is possible that later prehistoric and more recent deposits high in the alluvium sequence have been damaged, it would be difficult from such a small sample to predict the extent and implications of the evident truncation. Although truncation was observed during the excavation of the Stratford Market Depot Site, significant Roman and Iron Age deposits had remained undisturbed. While there is known potential for the survival of archaeological remains within the Stratford Teardrop site the results of the borehole monitoring are inconclusive.

The occurrence of 8.3 m of made ground in Borehole SA2121 and the observed present topography on the western bank of the River Lea along Waterman Road shows that this area has been significantly built up over the last century and that any surviving archaeology within this area would be encountered at depths of over 8 m. This would cause severe logistical problems for any evaluation or excavation work.

4.6.2.2 **Thames Floodplain** (Barking, Dagenham/Hornchurch, Rainham, Wennington)

Only one of the nine trial pit locations monitored in this area displayed a completely disturbed sequence: TP1841, which identified the fills of a sewage trench running across Site 302. Locations TP1741 and 1745 (Site 282) identified made ground, but alluvial deposits survived at depths of 3.60 and 2.90 m respectively.

Peat deposits were identified in six of the nine monitored trial pits (TP1739, 1779, 1783, 1817, 1843 and 1850) from all four sites (282, 293, 297 and 302) monitored in this area. Generally peat was observed below alluvium deposits, but this depended on the extent of truncation at each location. Two peat horizons which 'sandwiched' an alluvial layer, were identified at TP1843 (Site 302). Potentially significant alluvium and peat deposits were located between approximately 1 m and 1.5 m BGL, with the exception of the locations which revealed significant depths of made ground.

The preservation of alluvium was good, although complete undisturbed sequences were not identified, due to the truncation of upper layers observed in all trial pits. Possible dewatering was identified at TP1739 (Site 282), which may have an affect on the preservation of peat within this area, but this was not observed at any of the other locations and there is a strong potential for good preservation of organic material. The well-condition of the alluvium and peat deposits identified at all investigated sites confirms the broad potential for well preserved archaeological and biological remains, though no new specific locations of high archaeological potential were identified. A purposive sampling strategy could produce valuable results.

4.6.2.3 **Aveley Marshes** (Hornchurch, Rainham, Wennington)

No artefactual remains were recovered from either of the two monitored pits at the Rainham Rifle Range on Aveley Marshes. OP1214 identified a well-preserved sequence through the Lower Thames alluvium and peats, whereas OP1215 (only excavated to 2.50 m) identified more recent disturbance to the upper layers of alluvium. The possibility of contamination in OP1214 suggests that any future archaeological sampling strategy, through the well-preserved Holocene deposits, would have to take into consideration the problem of potential contamination.

Total depths of potentially significant archaeological deposits can not be given precisely from the results of monitoring in this area. However, Thames alluvium was identified only 0.40 m below the present ground surface (OP1214). Significant peat horizons were identified at a depth of 2.50 m BGL in OP1214.

4.6.2.4 **Ebbsfleet Valley**

No archaeologically significant finds were recovered from monitoring, but contrasting sequences observed offer a useful reference for possible future work within the area. OP1254 revealed a sandy loam deposit, characteristic of Pleistocene sands in the area.

OP1249 and OP1255 exposed made ground at depth of 4.7 m and 1.6 m, representing landscaped landfill. Excavations at OP1258 cut through natural chalk bedrock.

Disturbed Ebbsfleet alluvium was identified at a depth of 0.34 m BGL in OP1256 close to the present course of the Ebbsfleet. Excavations at OP1259 revealed a layer of colluvium at a depth of 0.30 m BGL. It is difficult to ascertain at what depth significant archaeological deposits may be revealed close to OP1259. It is suggested that these would be discovered above or immediately below the colluvium deposit, at a depth of 0.30 or 0.57 m BGL. Any future work within the vicinity of OP1256 and OP1259 would have to take into consideration problems that may arise from waterlogged ground, and the masking of archaeological features due to colluviation.

At Site 413 Coombe Rock was recovered at 2 m BGL in TP1888. This was the only potentially significant archaeological deposit identified at this site. All other locations identified depths of former landfill, and natural chalk bedrock was only identified at location TP1887.

At Site 414, four of the eight monitored trial pits (TP1911, 1907, 1909 and 1680) revealed evidence of recent disturbance, but five trial pits (TP1681, 1900, 1904, 1907 and 1912) identified surviving Pleistocene sequences. No evidence associated with the Northfleet Roman villa or industrial site (OAU no.1532) was identified from trial pits closest to its cited location (TP1911, 1912 and 1681), although only TP1912 contained undisturbed stratigraphy. No archaeological material was recovered from pit excavations, but it is possible that analysis of bulk samples taken during monitoring may identify artefactual evidence.

The top levels of potentially significant archaeological deposits of Holocene and/or Pleistocene date varied between approximately 0.40 and 1.20 m BGL.

4.6.2.5 North Downs

It was hoped that this location (OP1322) might reveal evidence of the adjacent route of a Roman Road. Unfortunately the pit cut a more recent feature (containing brick and tarmac) longitudinally.

The potential for archaeological deposits cannot be estimated from the results of this pit.

4.6.2.6 Hollingborne

Natural Folkestone Bed sand deposits were identified at approximately 1 m BGL in all monitored trial pit locations, unless they had been truncated (TP1956 and 1943). More disturbance was identified at the eastern limit of the site (TP1956) than at the western end (TP1940, 1941, and 1944). The western end of the site dips sharply to the east. It is possible that the break of slope may represent the boundary between landfill and natural ground.

No archaeological features or finds were located during monitoring, although it is suggested that these could be identified between a depth of 0.20 and 0.50 m BGL, particularly in the western end of the site.

4.6.2.7 Westwell

No significant archaeological information was retrieved from TT1520, where the natural sequence was overlain by the present ploughsoil. TT1521 revealed two small possible post/stake holes immediately below the present ploughsoil. No finds were obtained from these, and the area is not affected by the CTRL proposals.

4.6.2.8 Sevington

TT1549A close to the tributary of the Great Stour produced evidence of a possible former channel associated with the previous extent of the river course, overlain by weathered Atherfield Clay (possible colluvium). Further away from the water course 1549B and 1549D revealed possible colluvium below ploughsoil and 1549D exhibited two ploughsoil horizons. No archaeological features were identified in these trenches although it is possible that hillwash within this area could mask archaeological horizons.

4.6.3 ACHIEVEMENT OF OBJECTIVES AND RECOMMENDATIONS FOR FUTURE WORK

4.6.3.1 As outlined in section 4.1.2, the task had two basic objectives:

Objective 1: identify potentially surviving archaeological deposits, and to make an assessment of their nature, age and degree of preservation.

Objective 2: assess site conditions and the possible depth of significant archaeology, together with the potential complexity of the lithostratigraphy, from an archaeological standpoint.

A third objective originally considered, to consider the possible density of previously unrecorded archaeology, was considered impracticable at the density of sampling and level of resources available.

4.6.3.2 Objective 1

The only possible archaeological features observed were off route at Westwell, and no finds were recovered from any of the sites. Overall this might seem somewhat surprising considering the relative ubiquity of material from the surface collection survey (see report above), but the areas investigated in terms of the percentage of ground surface sampled was extremely small. While the presence of archaeological finds or features could have been significant at least as an indicator of potential, the sample is far too small for the absence of material to be reliable as evidence that these areas are lacking in potential. If anything the general stratigraphy recorded confirms in a more general way that several of the areas monitored have general potential for well preserved archaeology.

The monitoring of any further geotechnical ground investigations is likely to prove most worthwhile where rather denser patterns of larger trenches are used. It is possible that positive indications of archaeological horizons could be identified from cores taken from boreholes, but whether any more detailed examination of these cores is worthwhile will depend on their availability and potential in the light of a fuller geoarchaeological review of the results of the ground investigations, which is now under way.

4.6.3.3 Objective 2

The monitoring of the geotechnical investigations for site conditions and general lithostratigraphy was more successful in that some valuable insights have been obtained concerning the depths and character of superficial deposits. These will need to be considered where further work is proposed, and will be worth including in a more general geoarchaeological assessment of the CTRL route now under way.

There are several cases where, if further work proceeds, such as at Ebbsfleet, some issues relating to the interpretation of superficial deposits and their possible origin have been identified, which may be addressed during future fieldwork.

In general the archaeological recording of deposits and the geotechnical logs agree reasonably well though there are certainly some differences in the interpretation of the terminology. These differences arise from the different perspectives and objectives being pursued. However, the more detailed interpretation offered by the archaeologist, as compared with the contractor's brief to provide general but unambiguous interpretation of the superficial deposits, provides an alternative view on the development of the site. This provides an important basis where prediction of the type and form of the superficial materials and the processes of deposition are relevant for geoarchaeological or engineering geomorphological purposes.

Channel Tunnel Rail Link

Historic and Cultural Effects
Supplementary Fieldwork Report

Chapter 5

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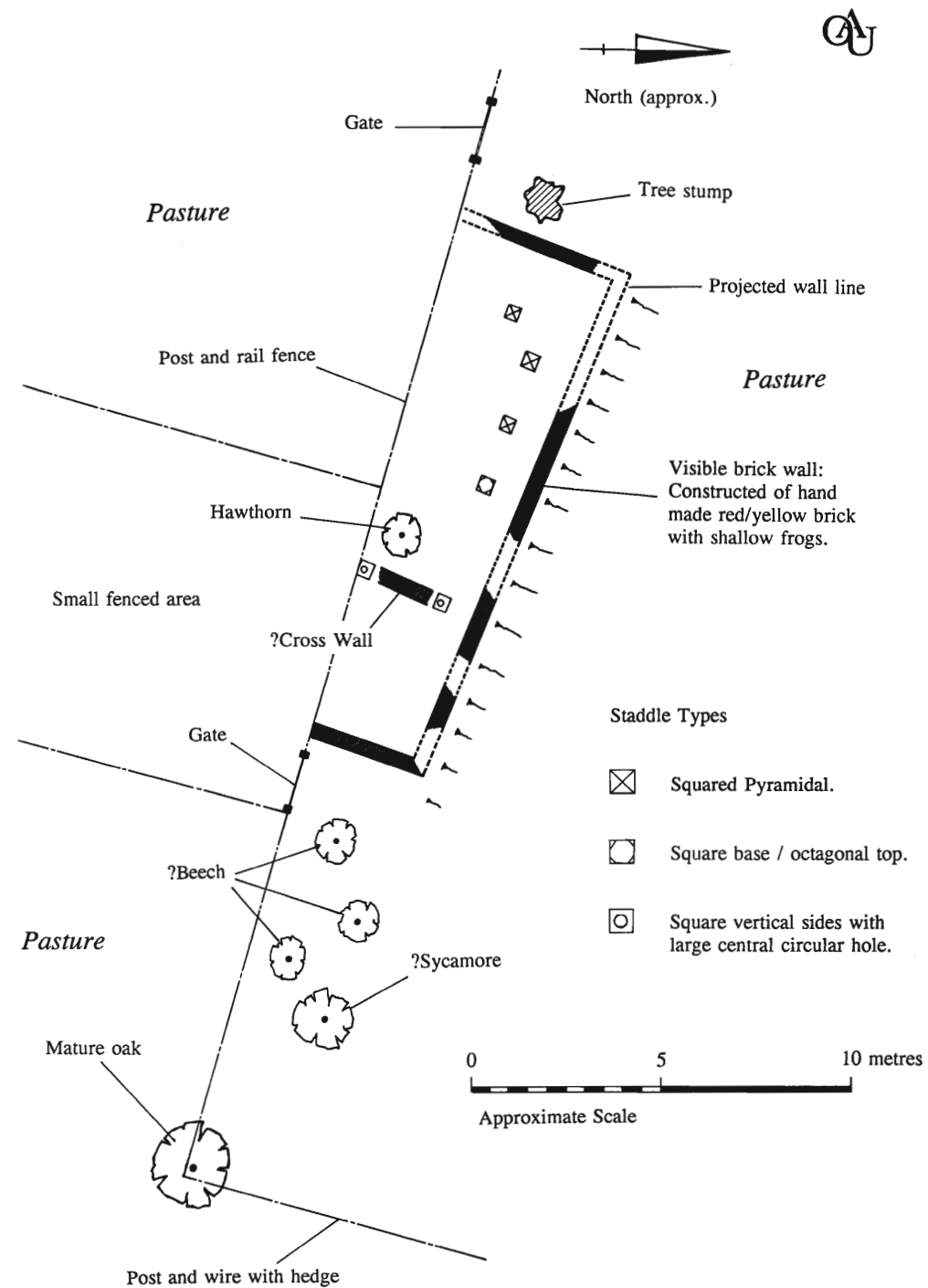
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Figures, Plates & Appendices



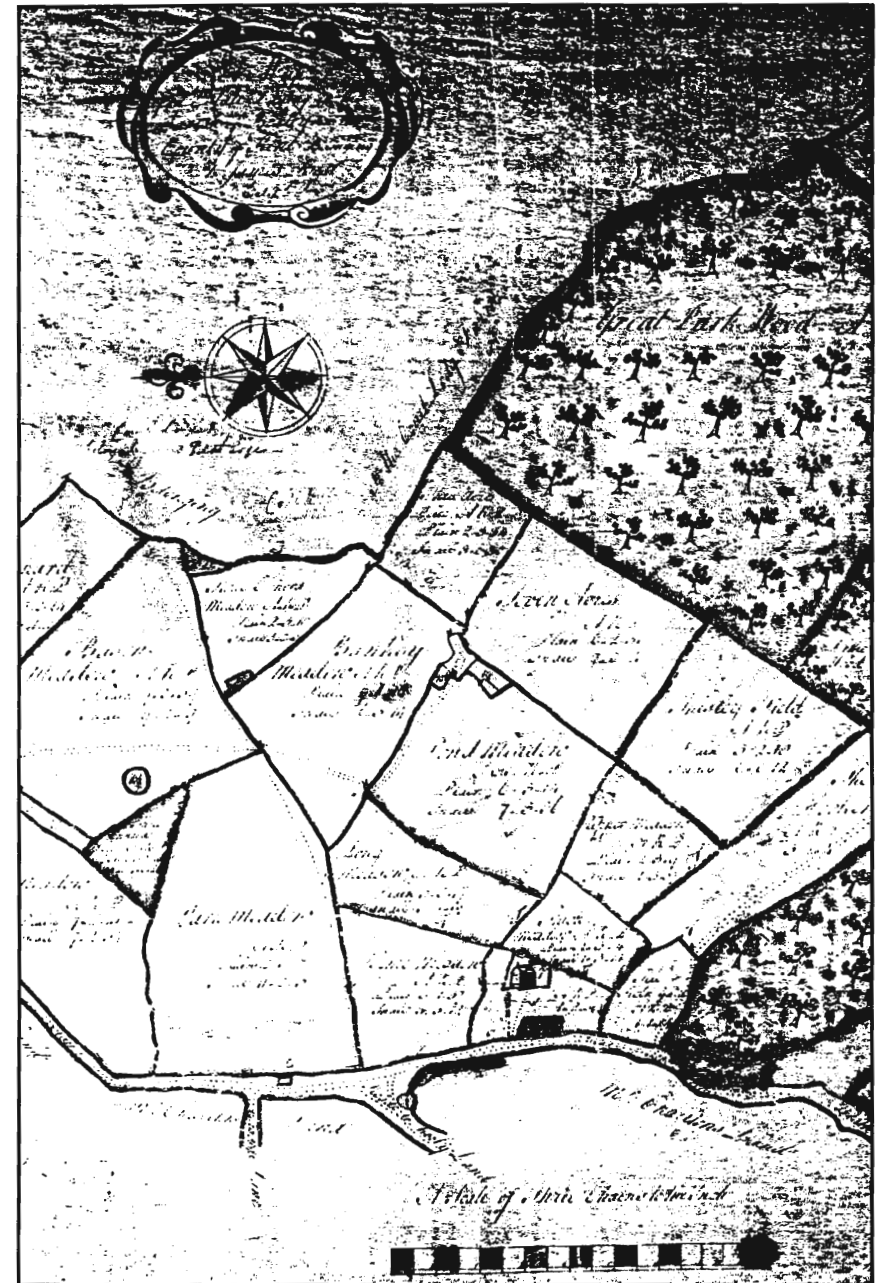
Extract from 1758 estate map of Cobham Park showing Temple, Clay Pond, Broad Oak, Great and Head Barn Woods and Merralls Shaw

Figure 1



Sketch plan of brick building (OAU No. 1854) in Boxley Valley

Figure 2



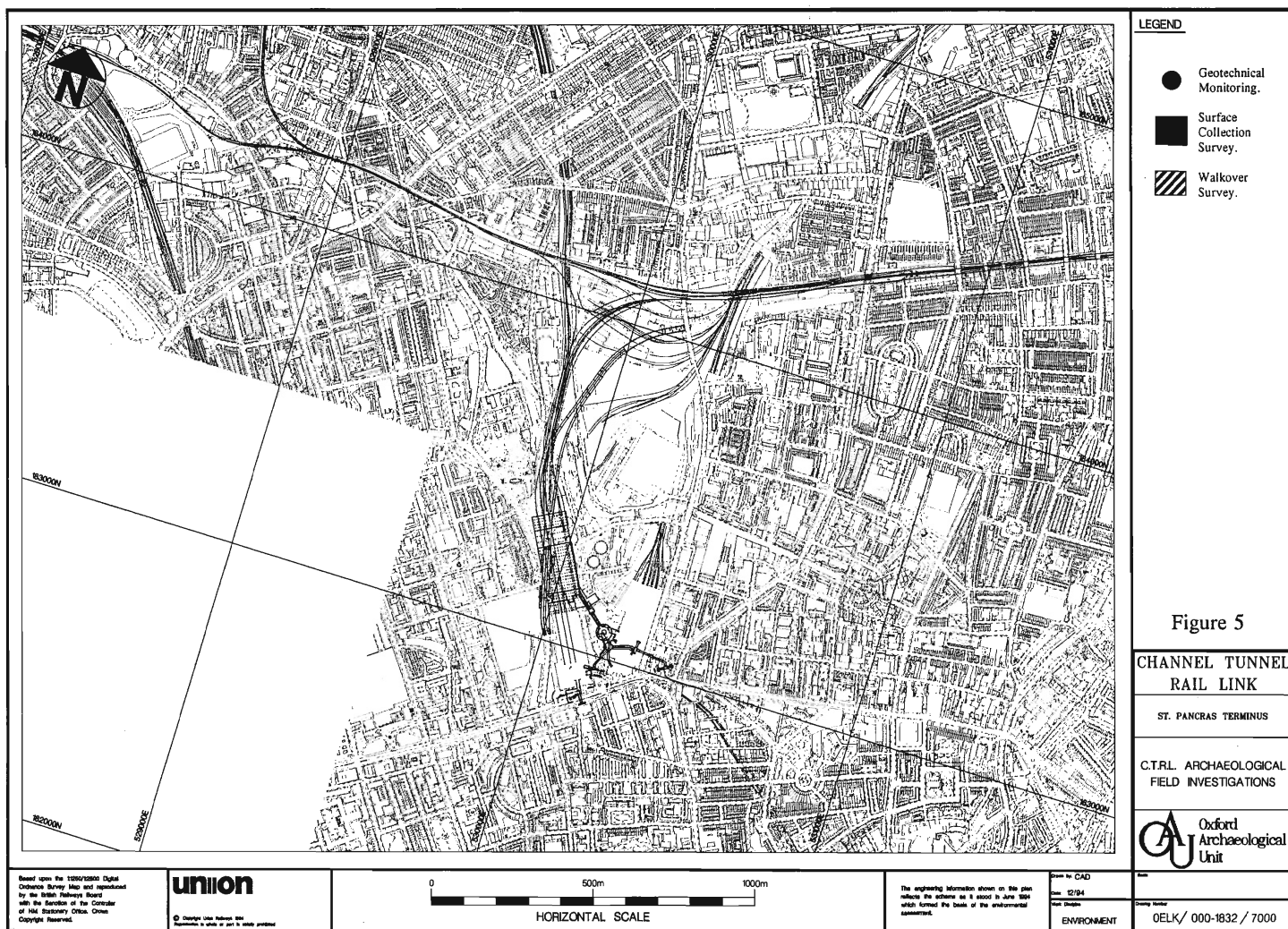
Extract from Boxley Park estate map of 1769 showing the site of a possible earlier farmstead

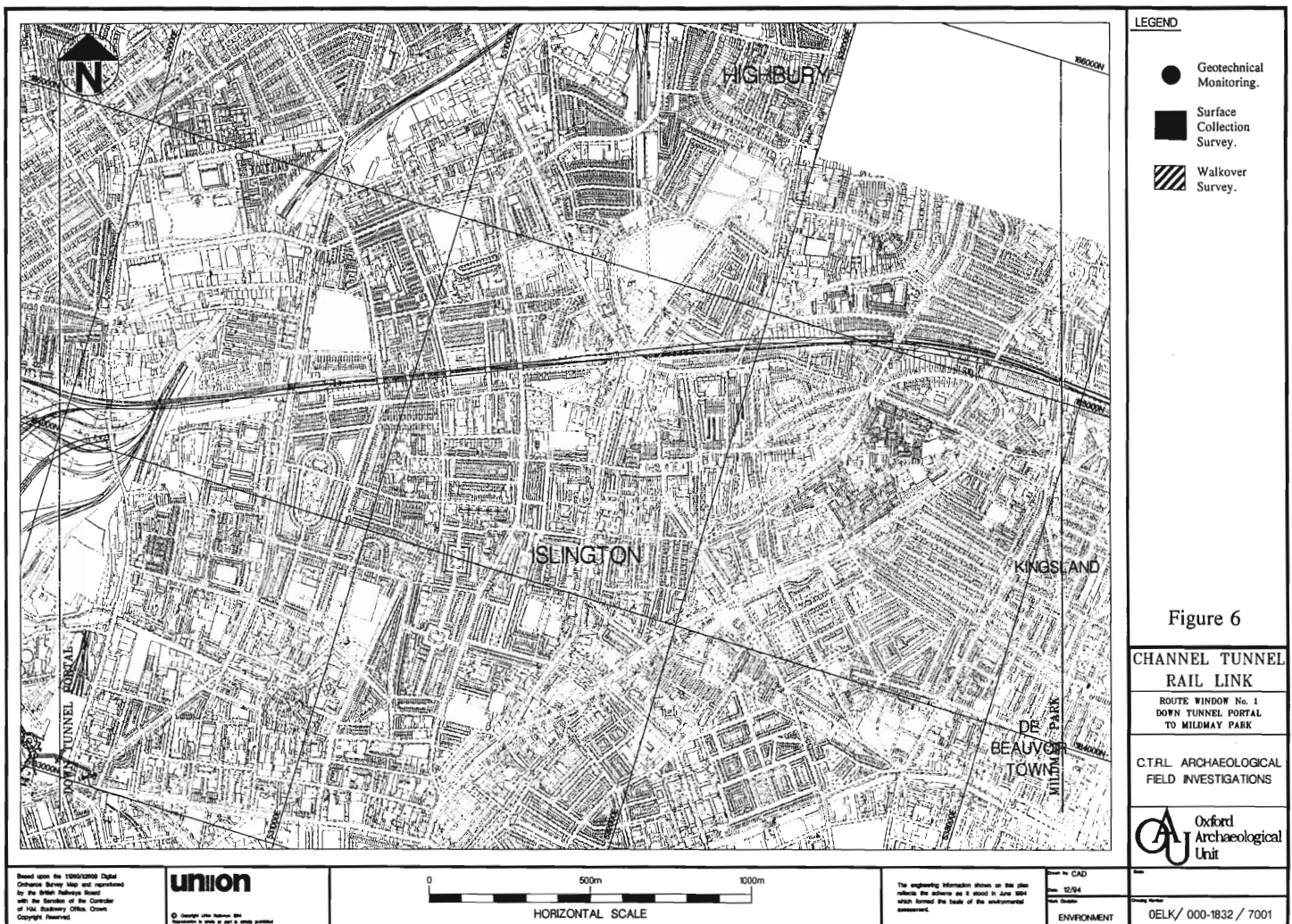
Figure 3

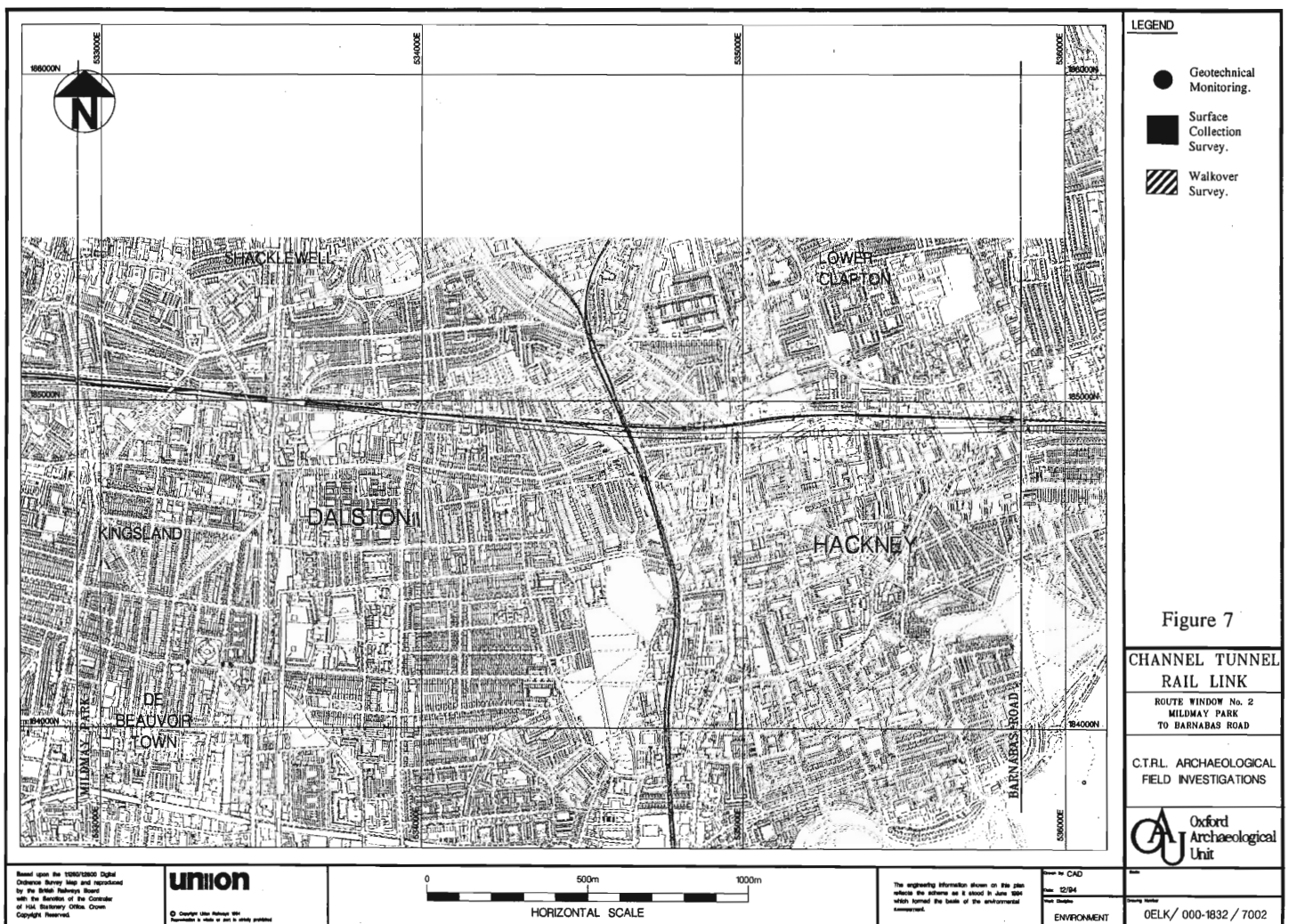


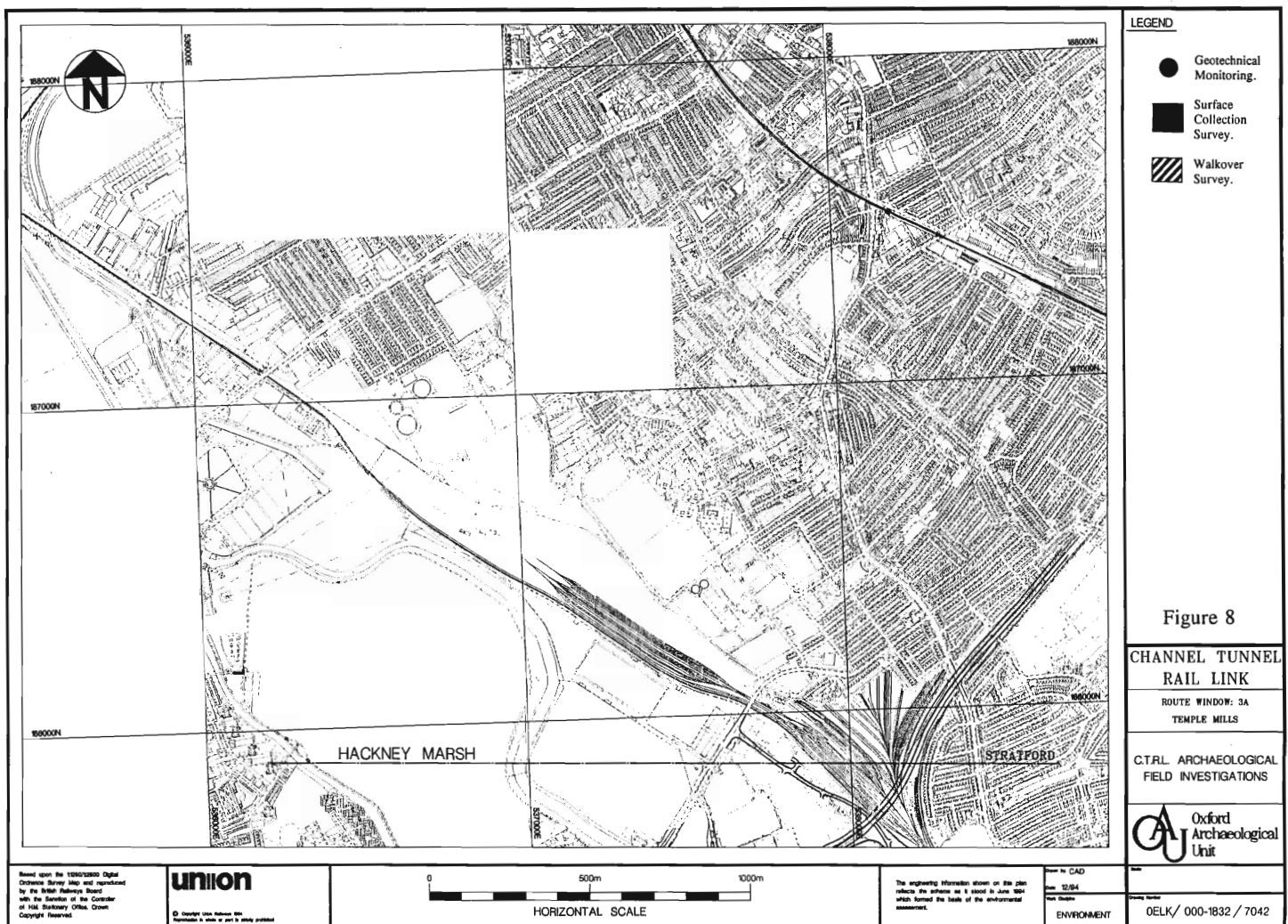
Extract from 1678 estate map of Calehill showing Hurst Wood

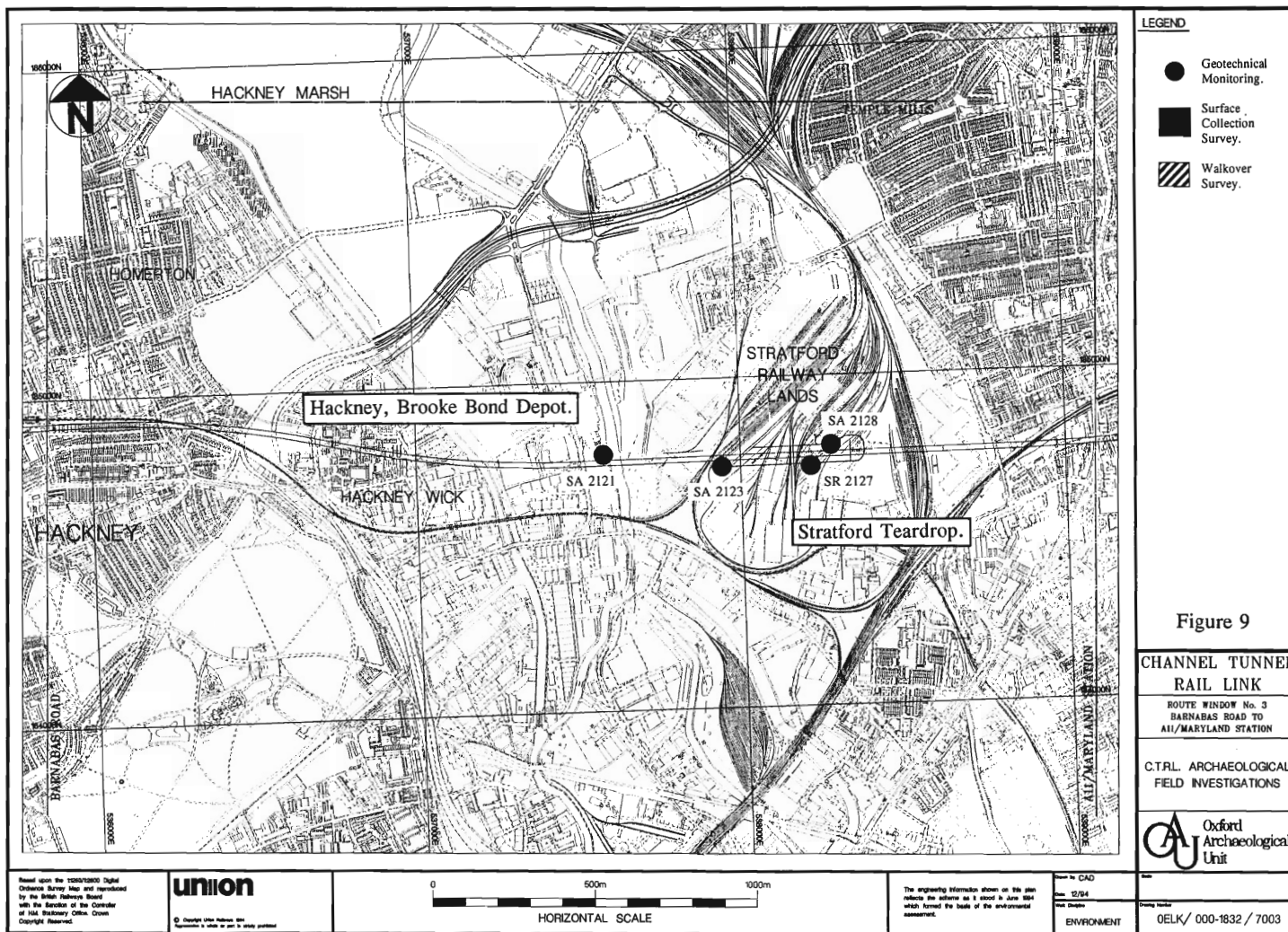
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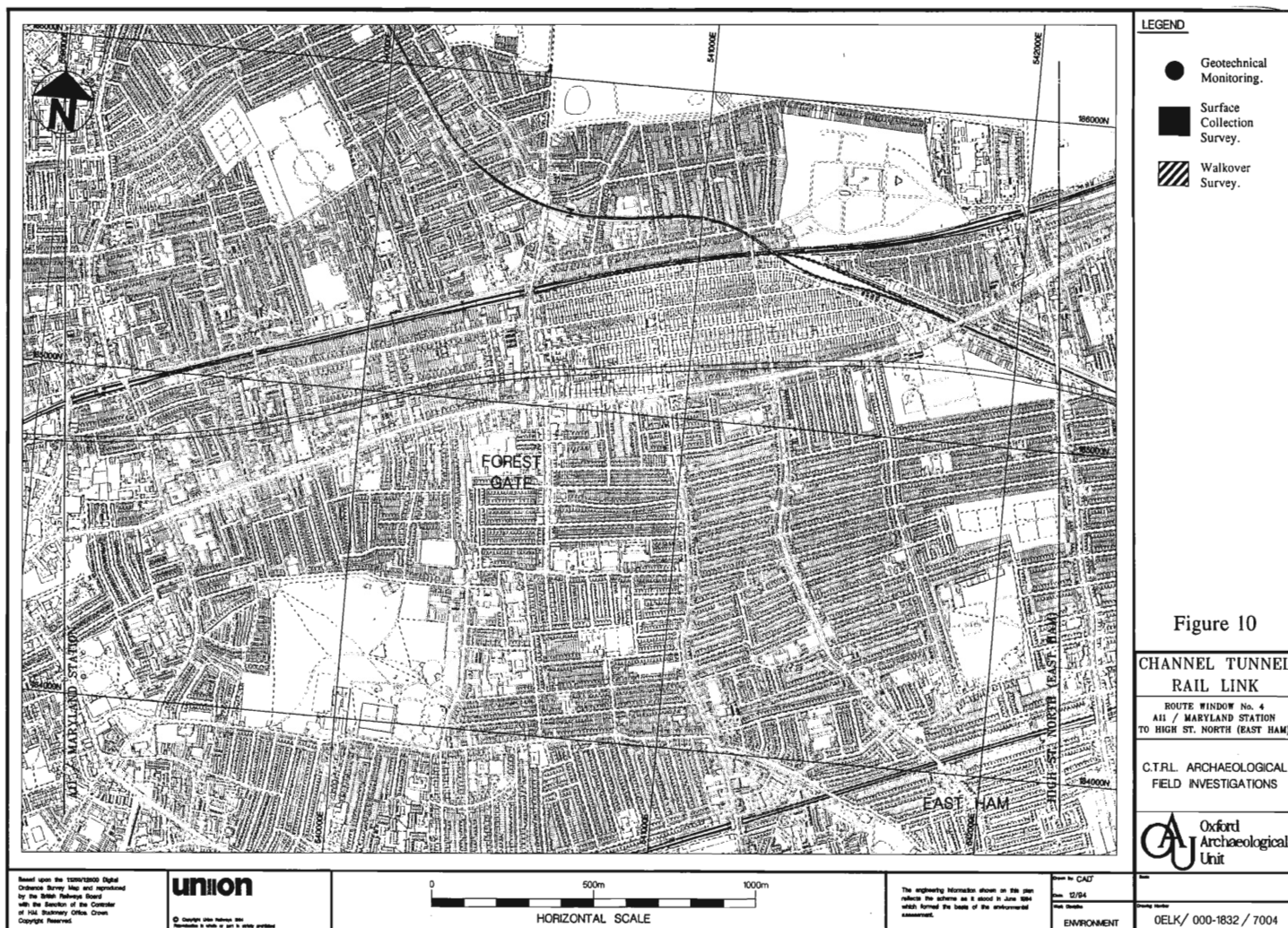


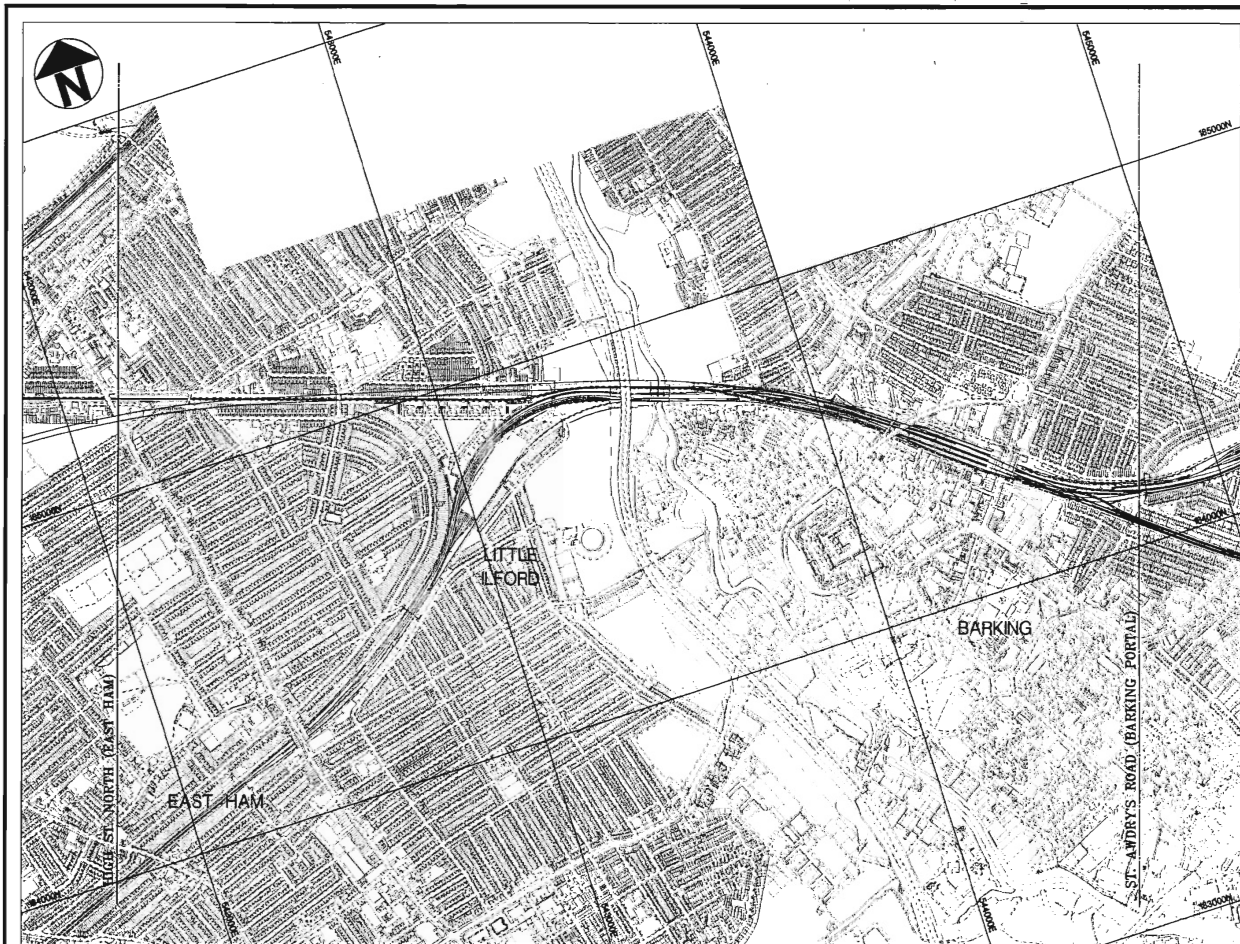









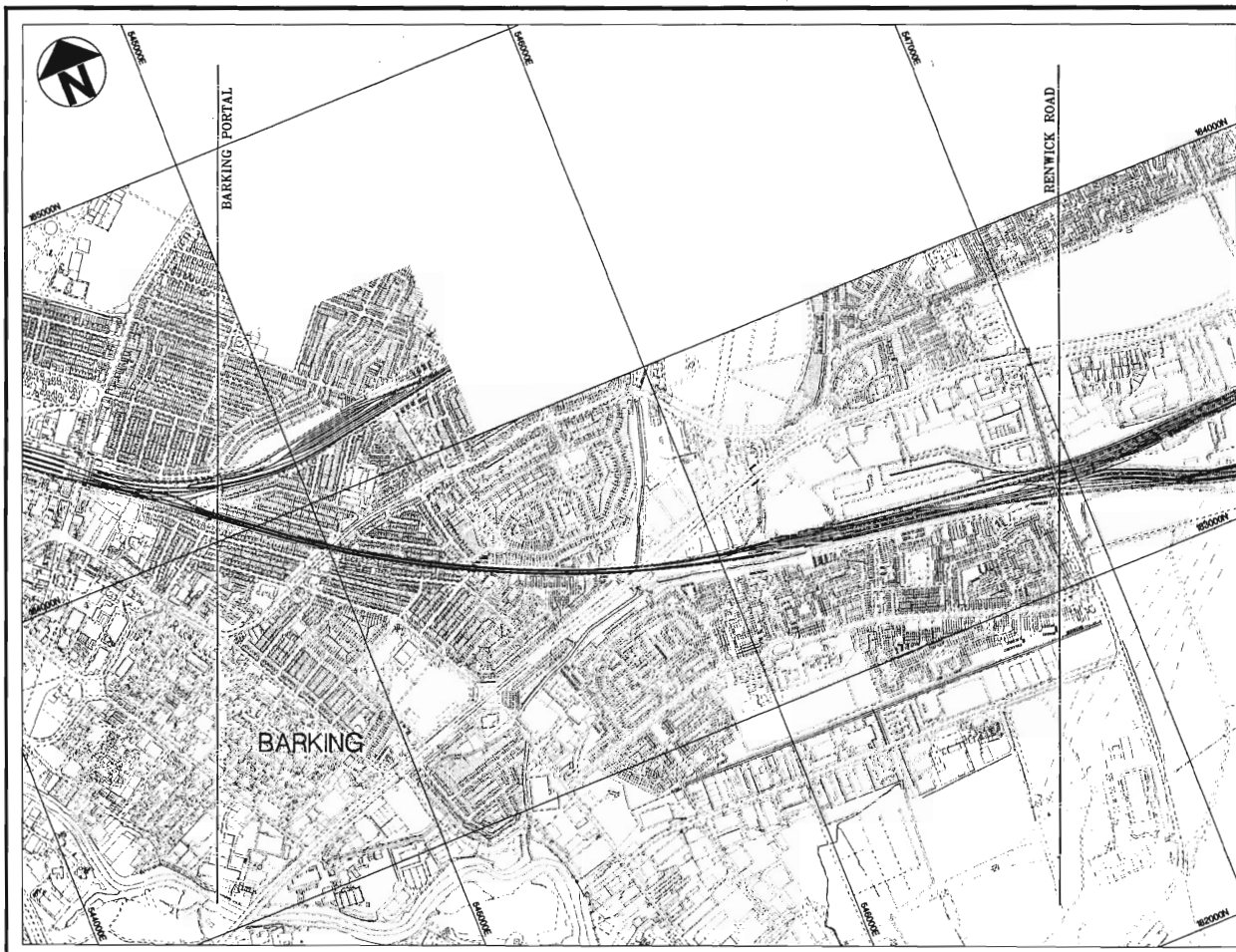




- LEGEND**
- Geotechnical Monitoring.
 - Surface Collection Survey.
 - ▨ Walkover Survey.

Figure 11

CHANNEL TUNNEL RAIL LINK	
ROUTE WINDOW No. 5 HIGH ST. NORTH (EAST HAM) TO ST. ANDREW'S ROAD (BARKING PORTAL)	
C.T.R.L. ARCHAEOLOGICAL FIELD INVESTIGATIONS	
	
Drawn by: CAD	Date: 12/94
Check: DAB	Drawn: DAB
ENVIRONMENT	0ELK/ 000-1832 / 7005



- LEGEND**
- Geotechnical Monitoring.
 - Surface Collection Survey.
 - ▨ Walkover Survey.

Figure 12

**CHANNEL TUNNEL
RAIL LINK**
ROUTE WINDOW No. 6
BARKING PORTAL
TO RENWICK ROAD

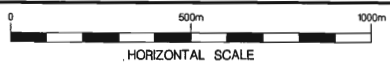
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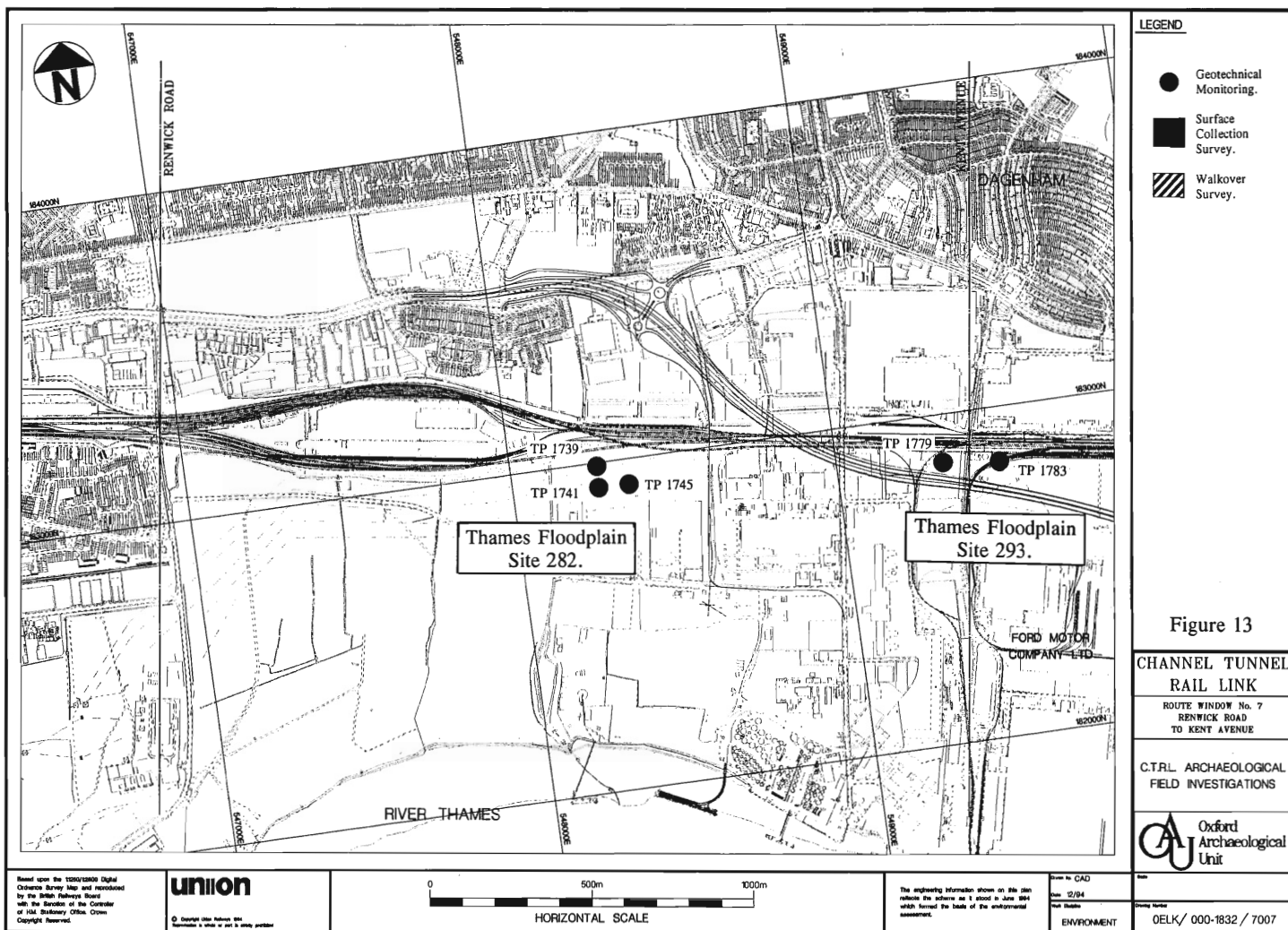
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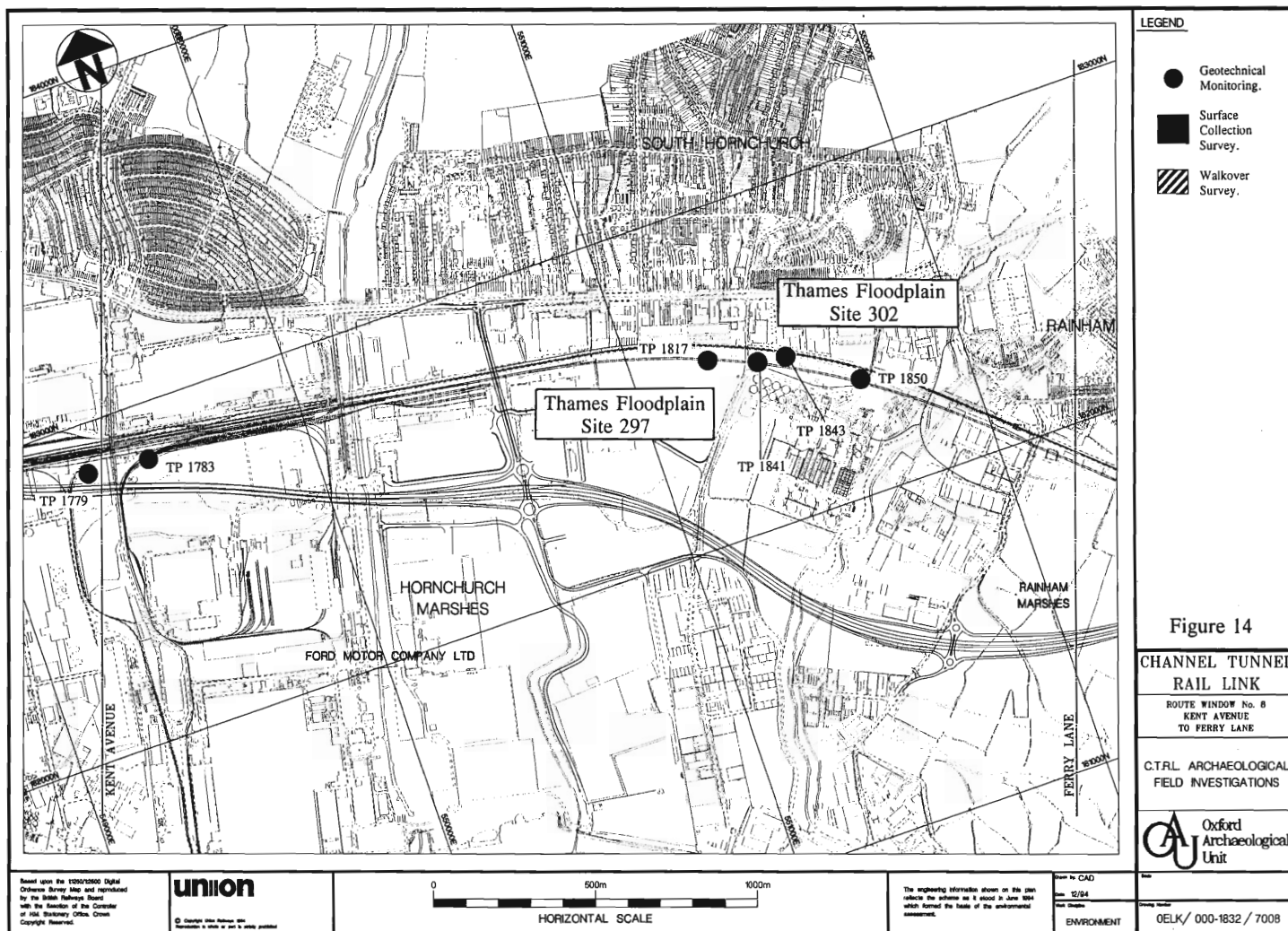


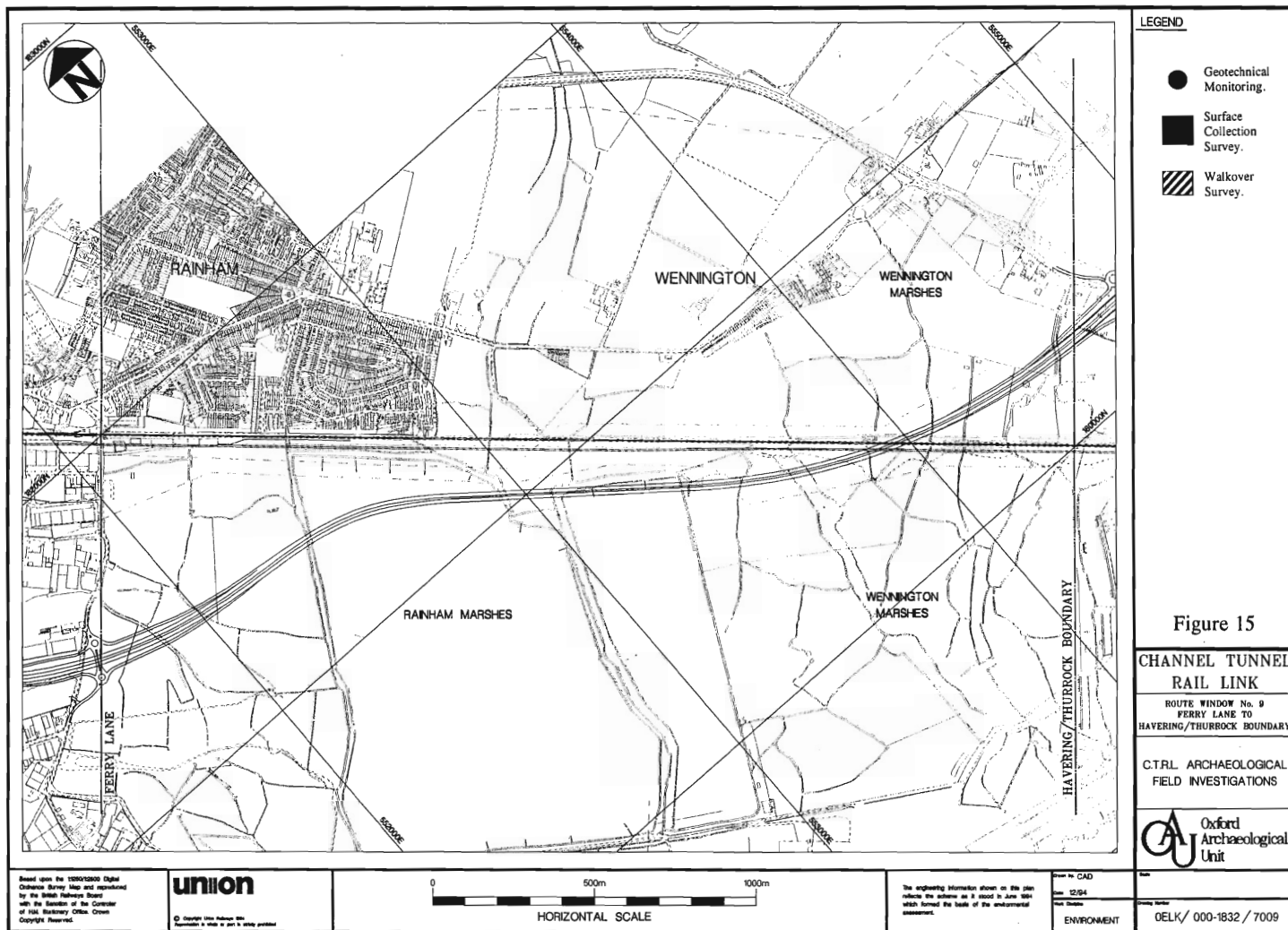
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which formed the basis of the environmental
assessment.

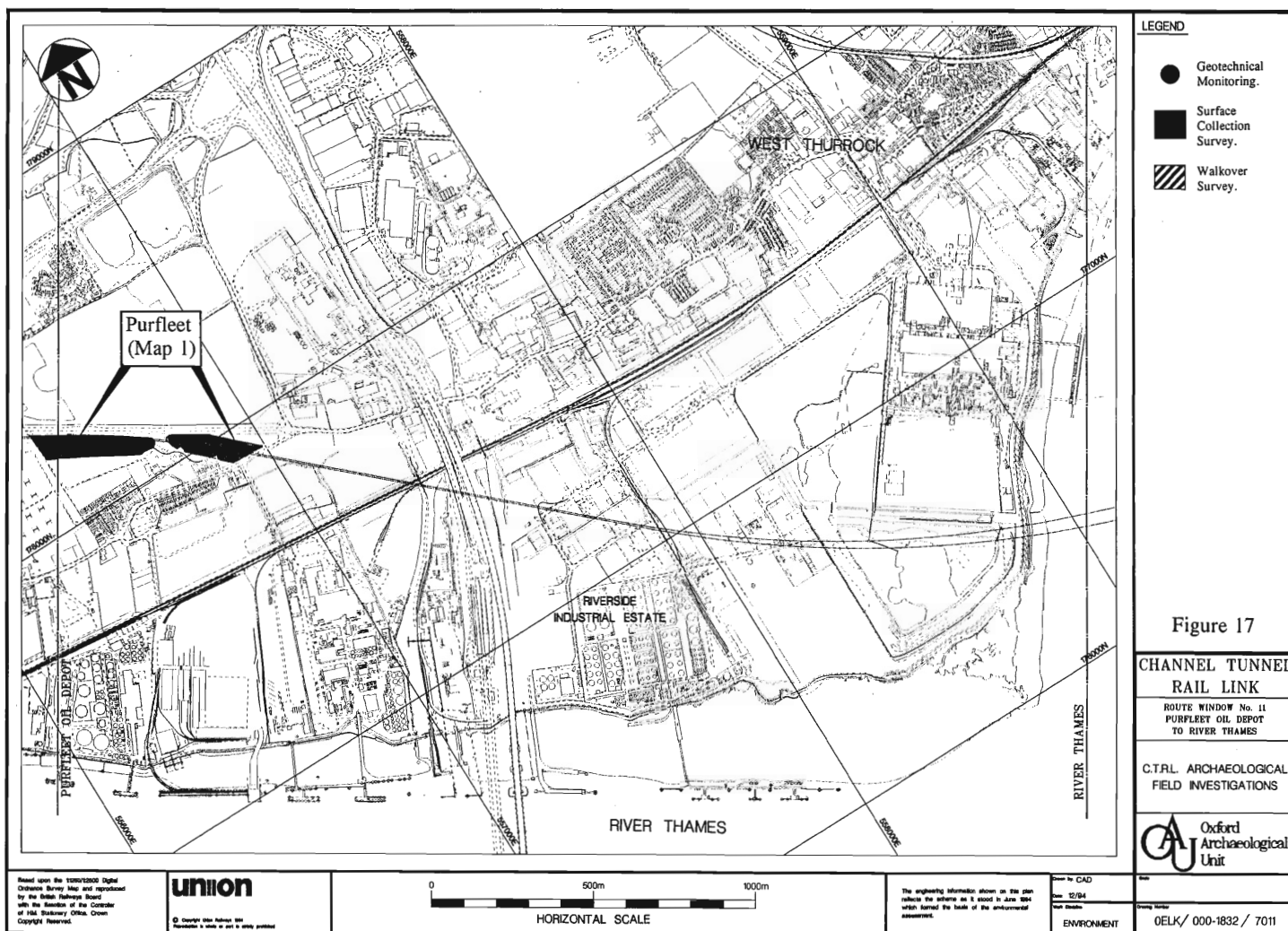
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ENVIRONMENT

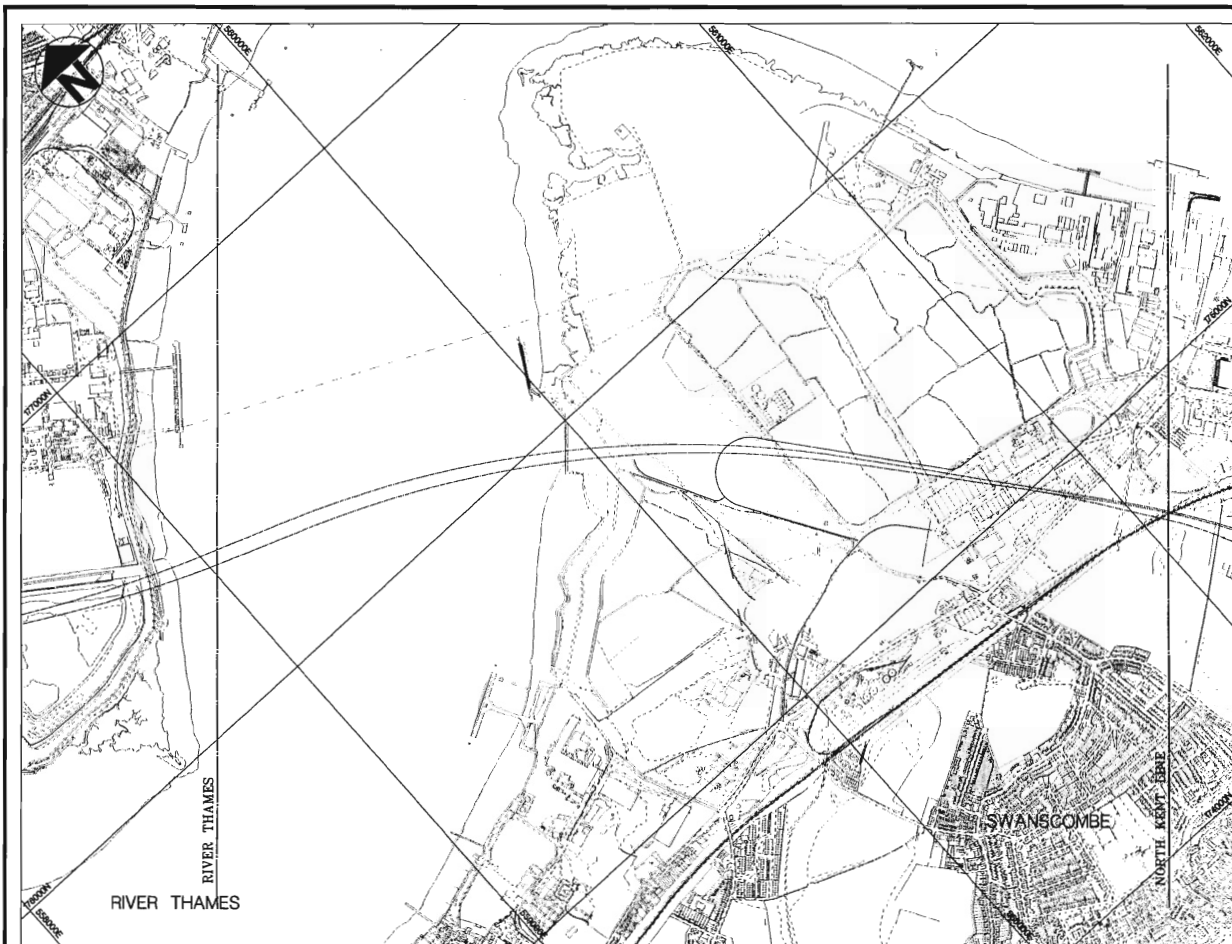
Drawn by
OELK/ 000-1832 / 7006











- LEGEND**
- Geotechnical Monitoring.
 - Surface Collection Survey.
 - ▨ Walkover Survey.

Figure 18

**CHANNEL TUNNEL
RAIL LINK**

ROUTE WINDOW No. 12
RIVER THAMES
TO NORTH KENT LINE

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FIELD INVESTIGATIONS



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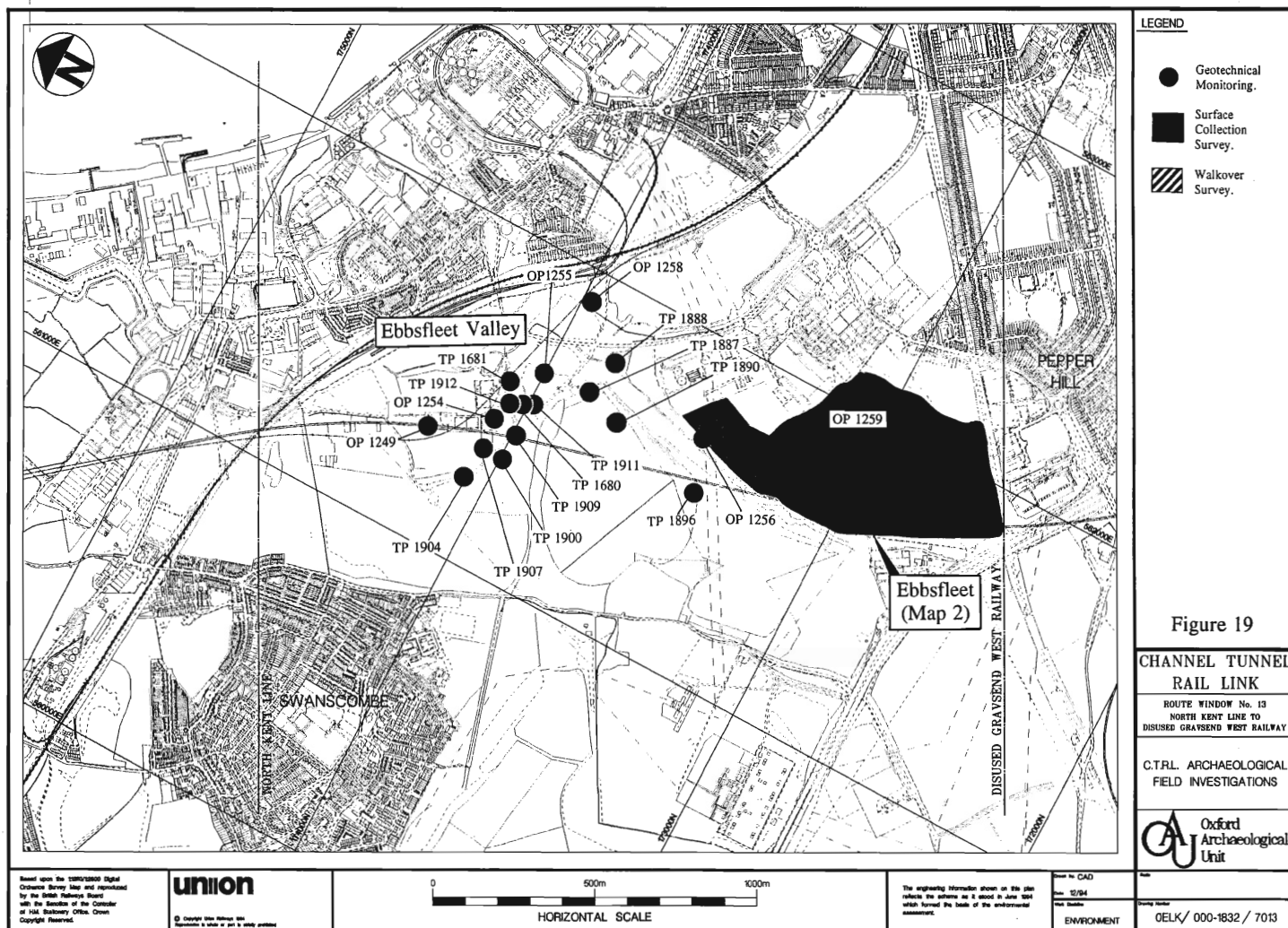
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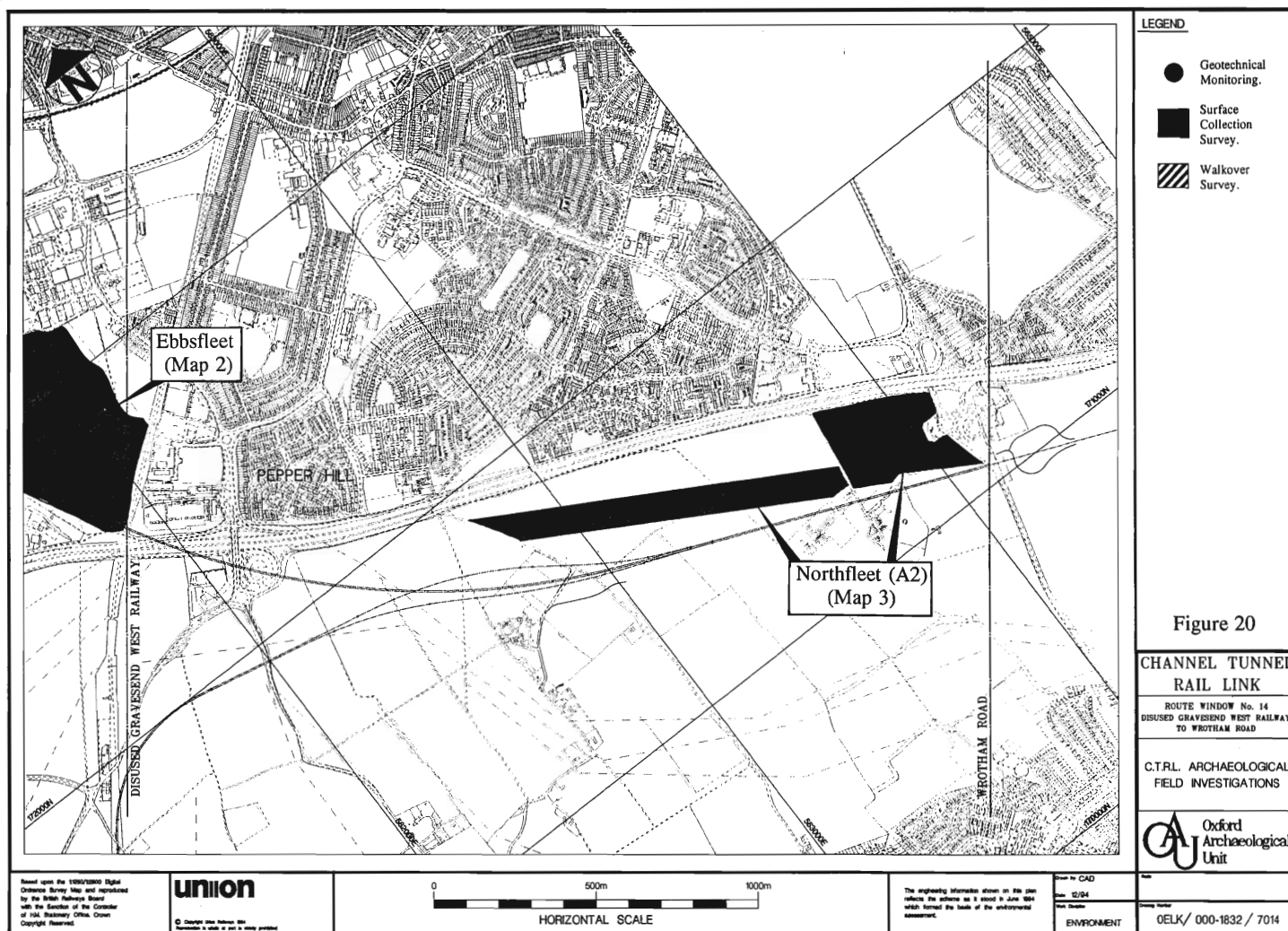
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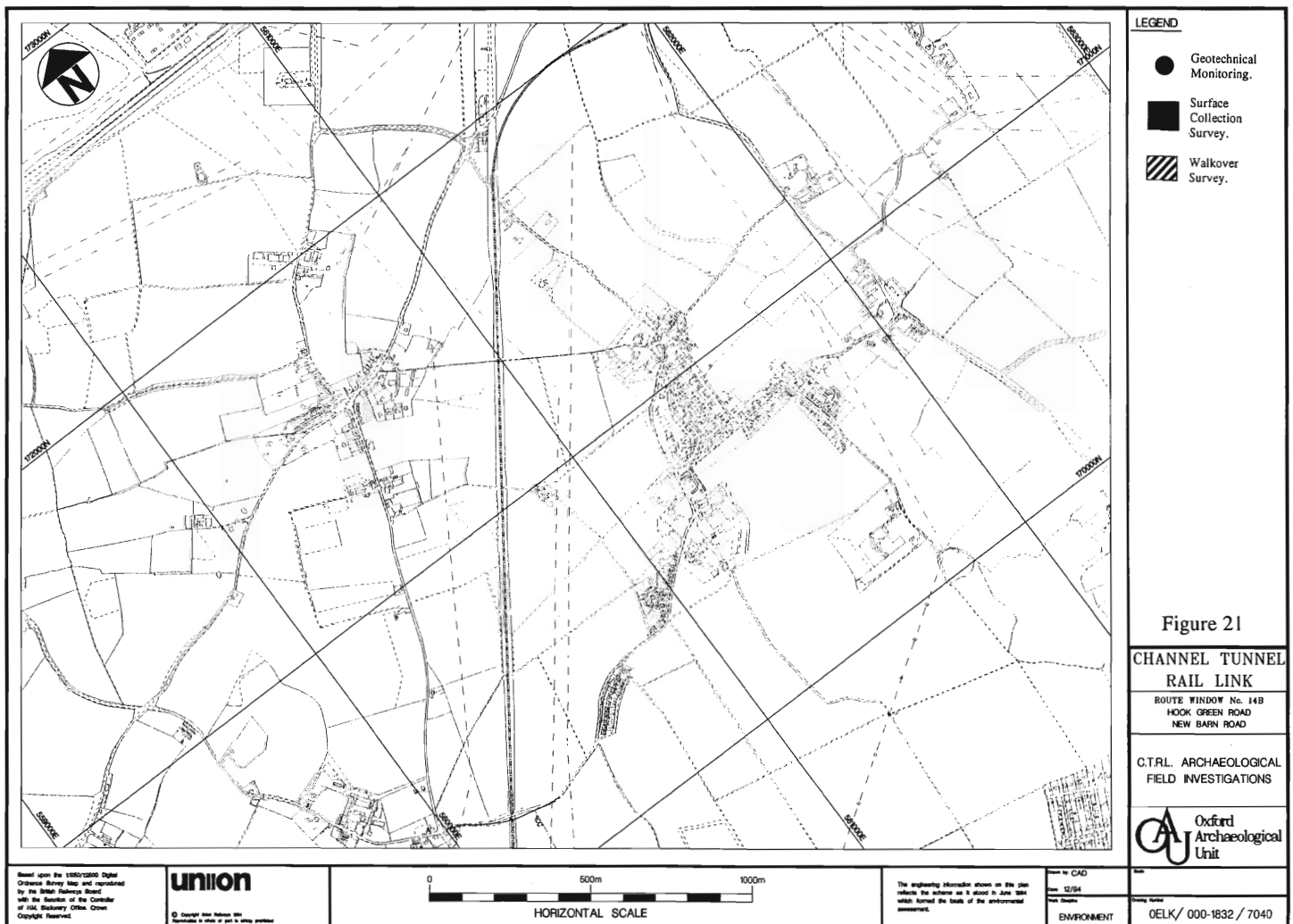
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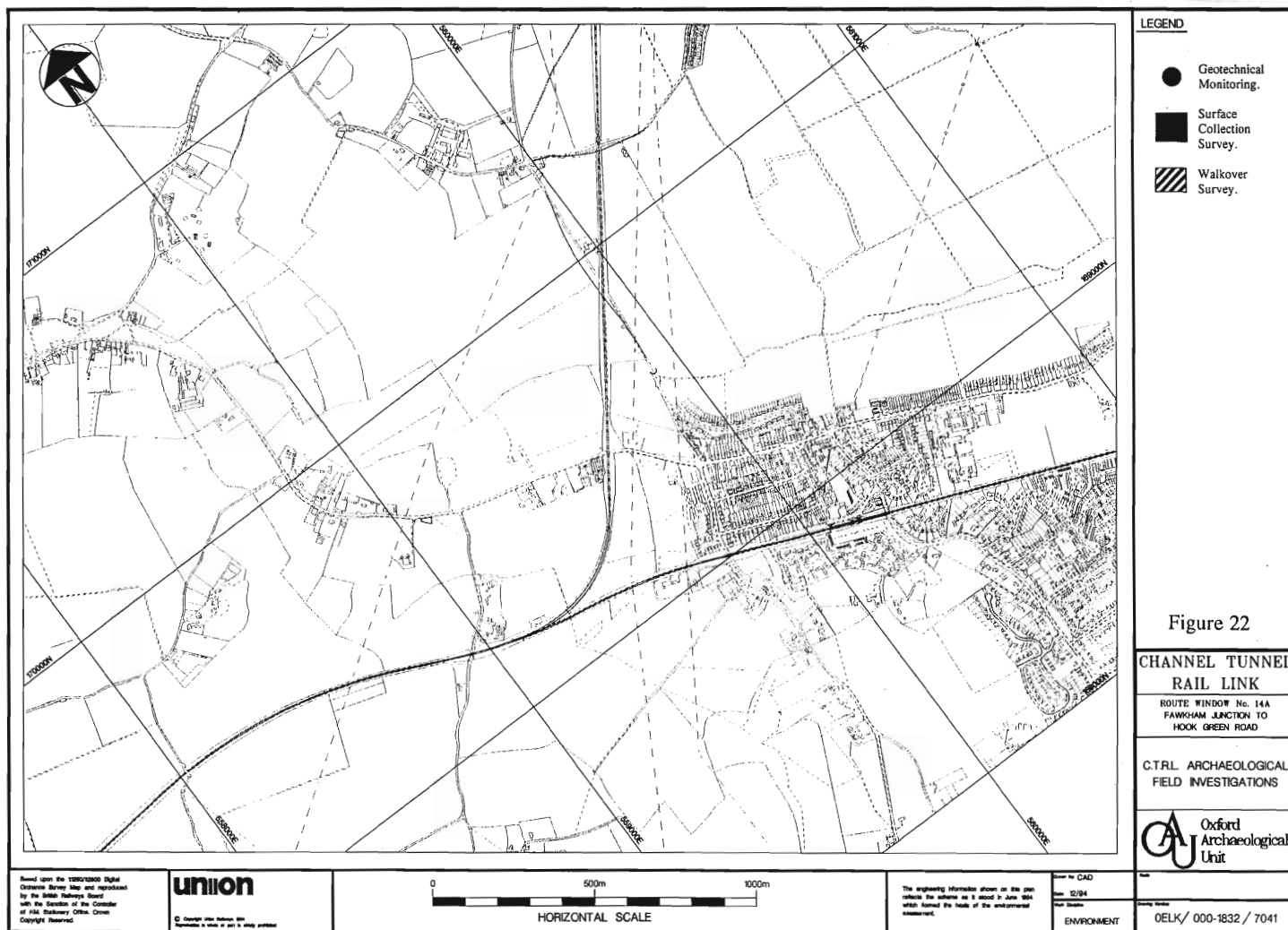
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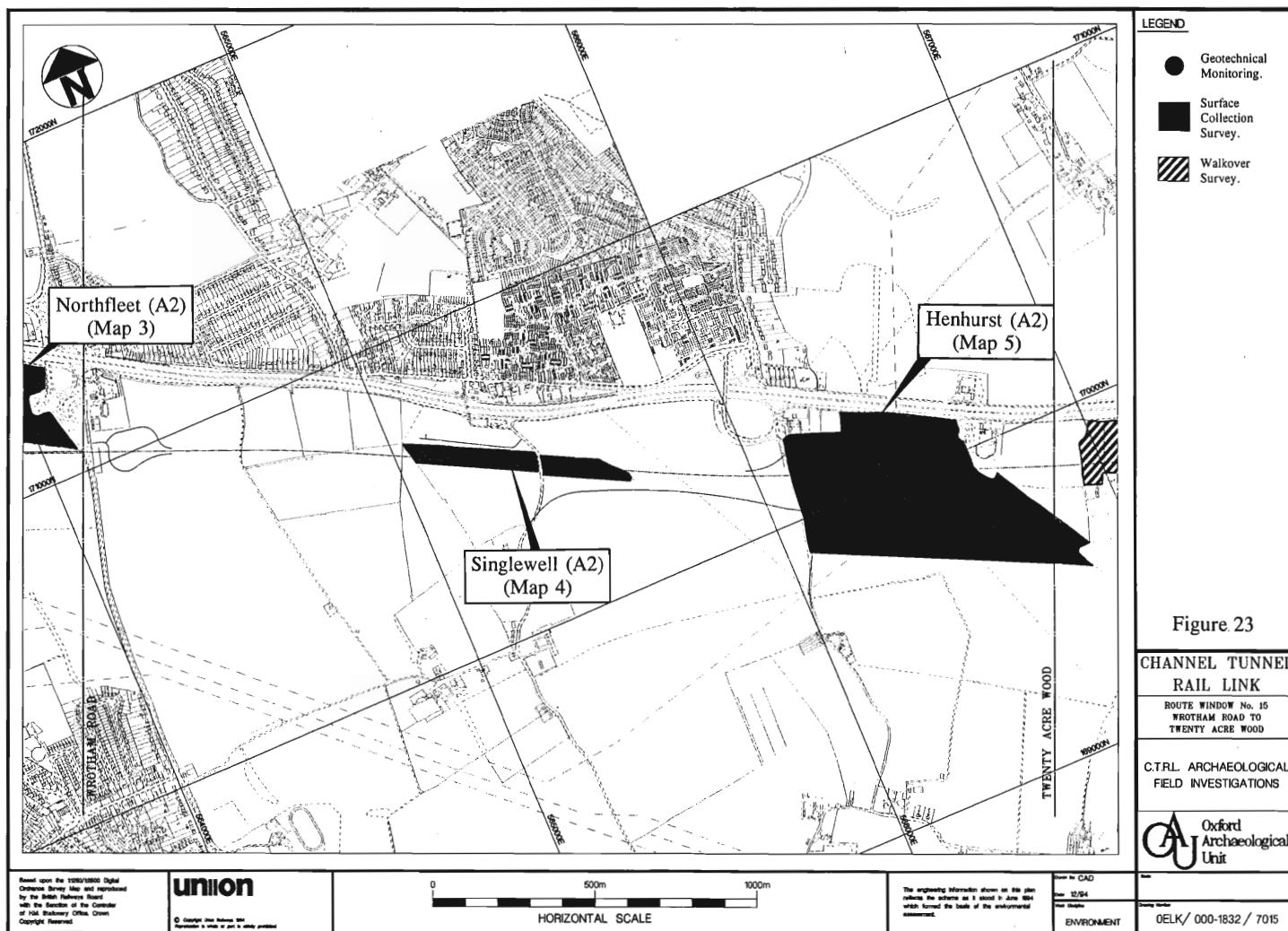
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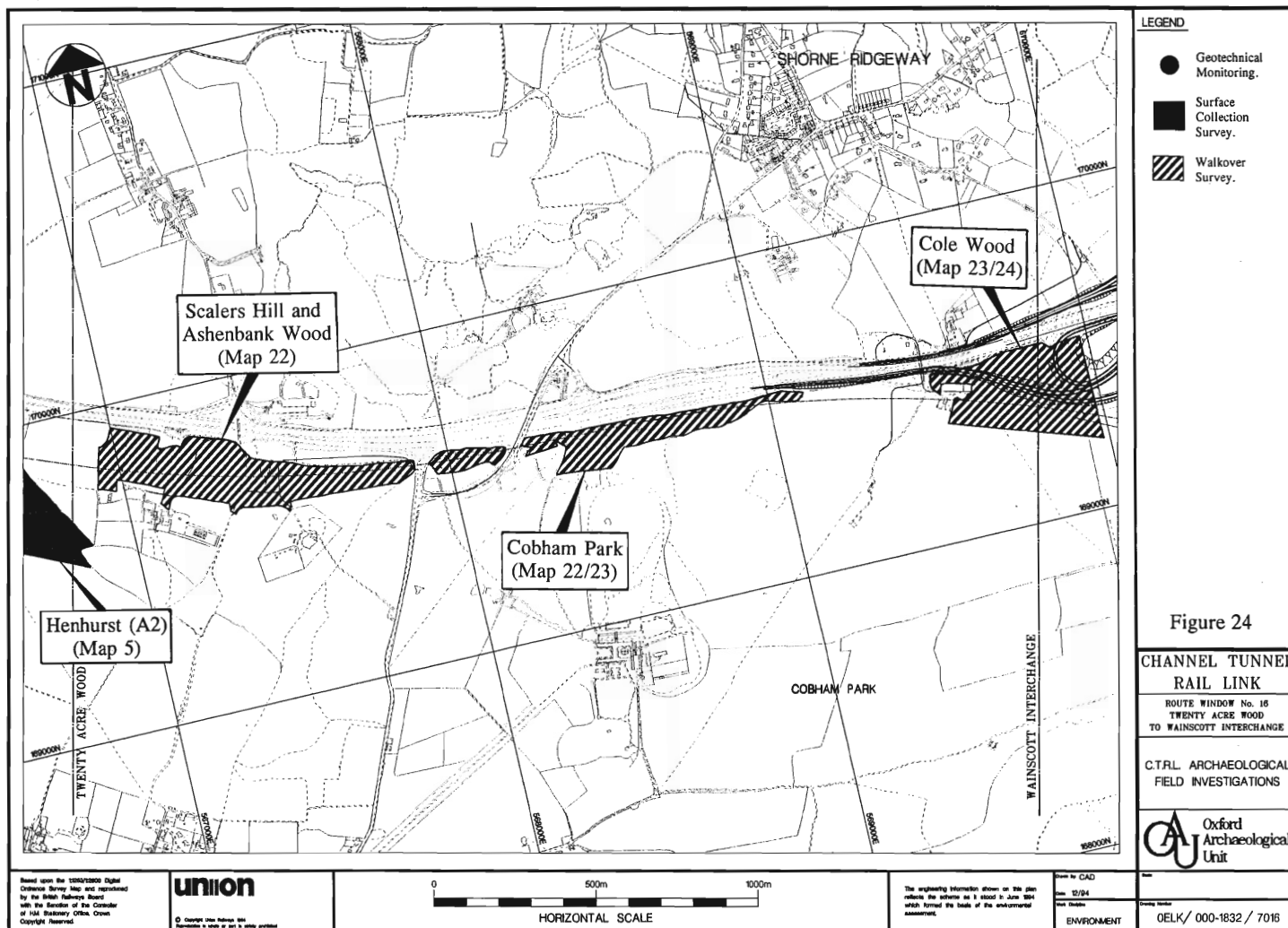


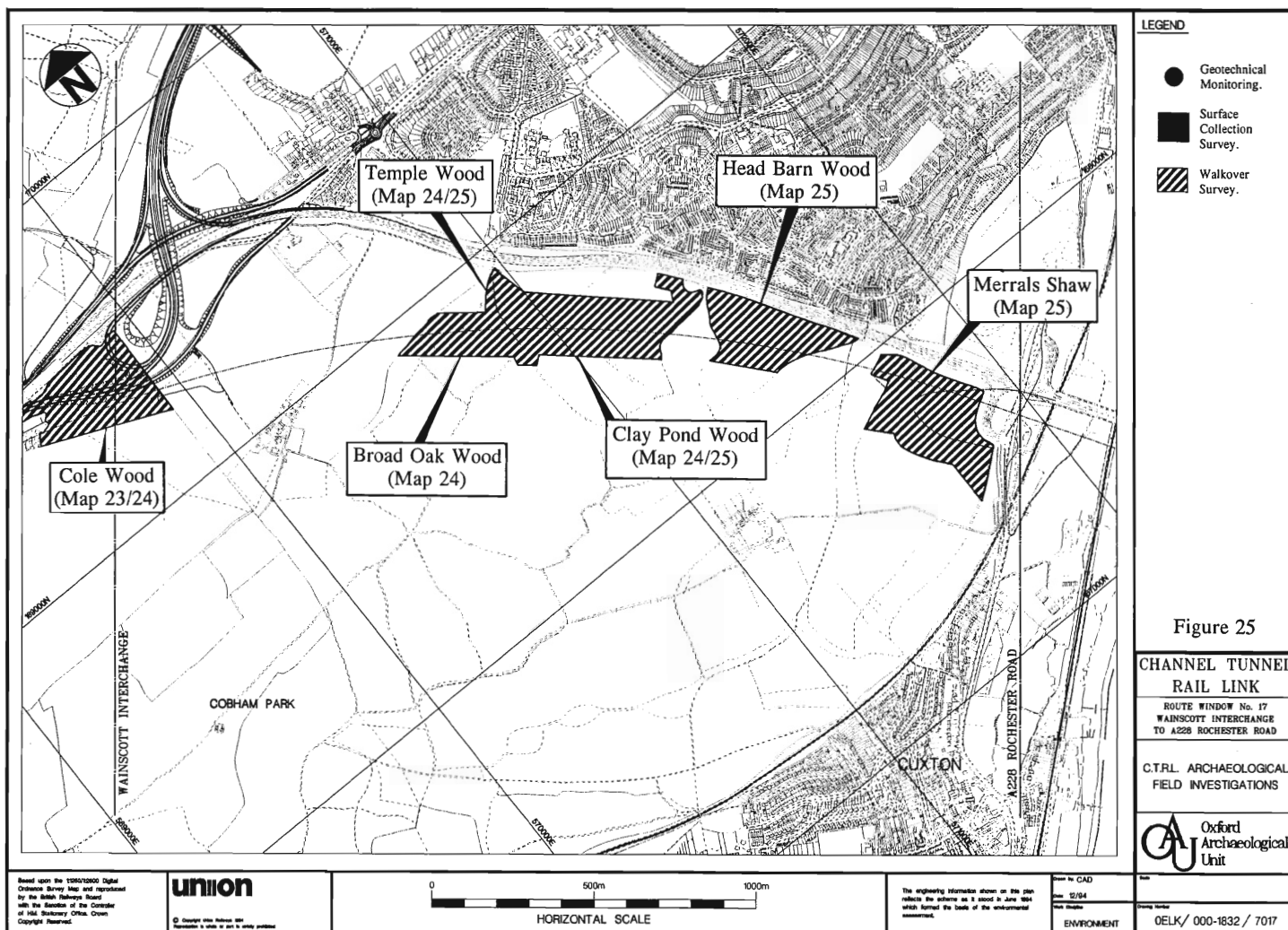


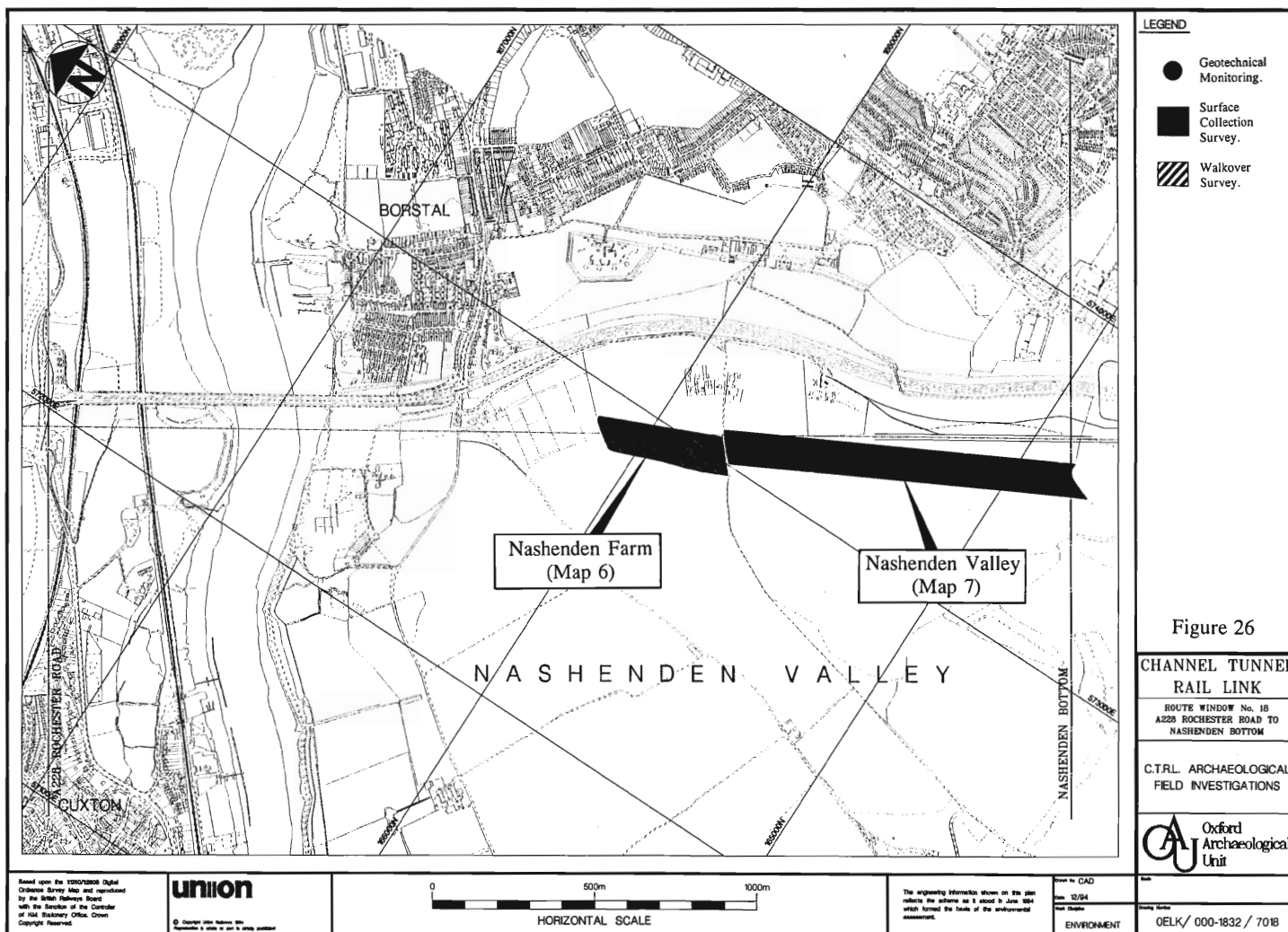


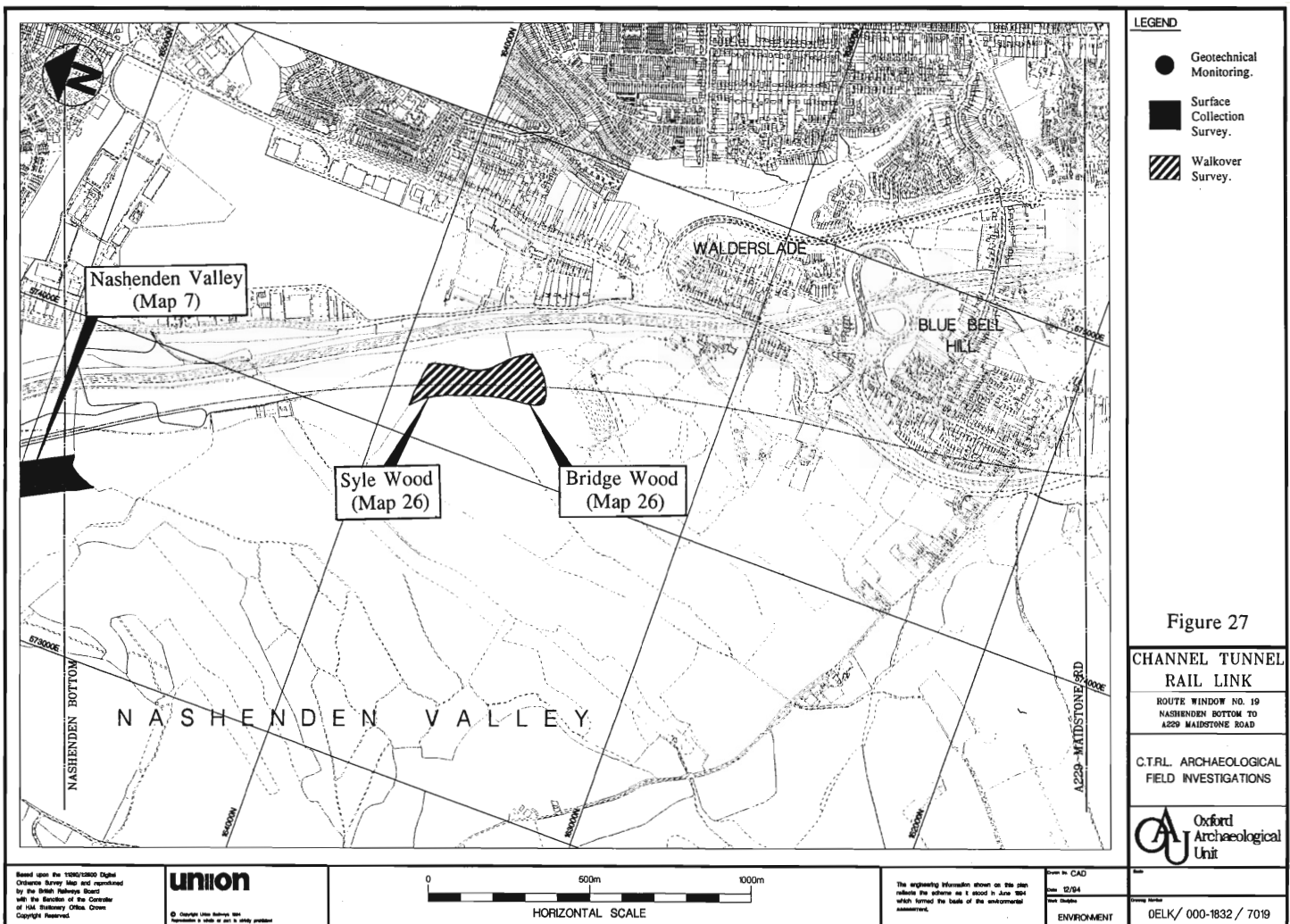


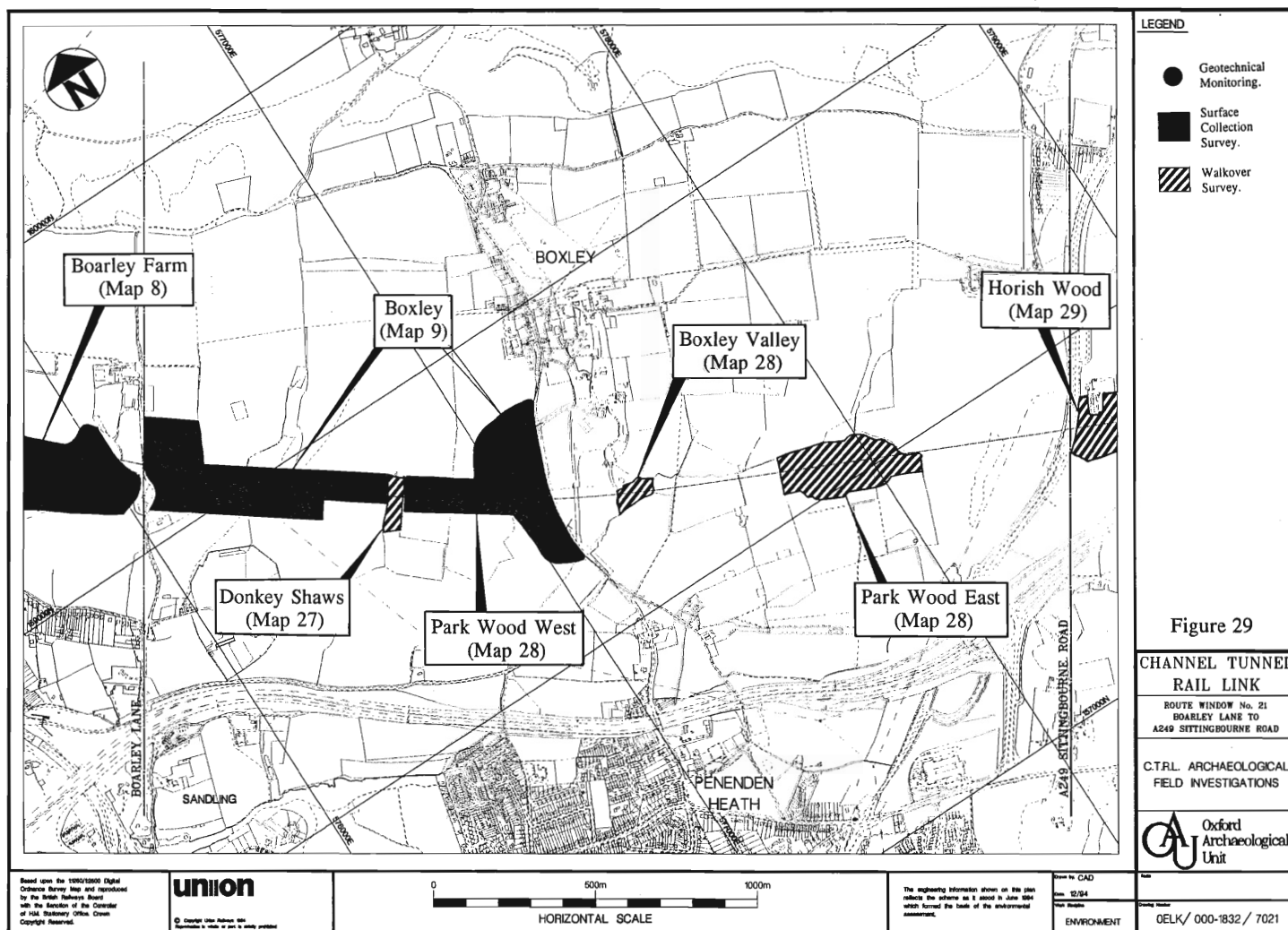


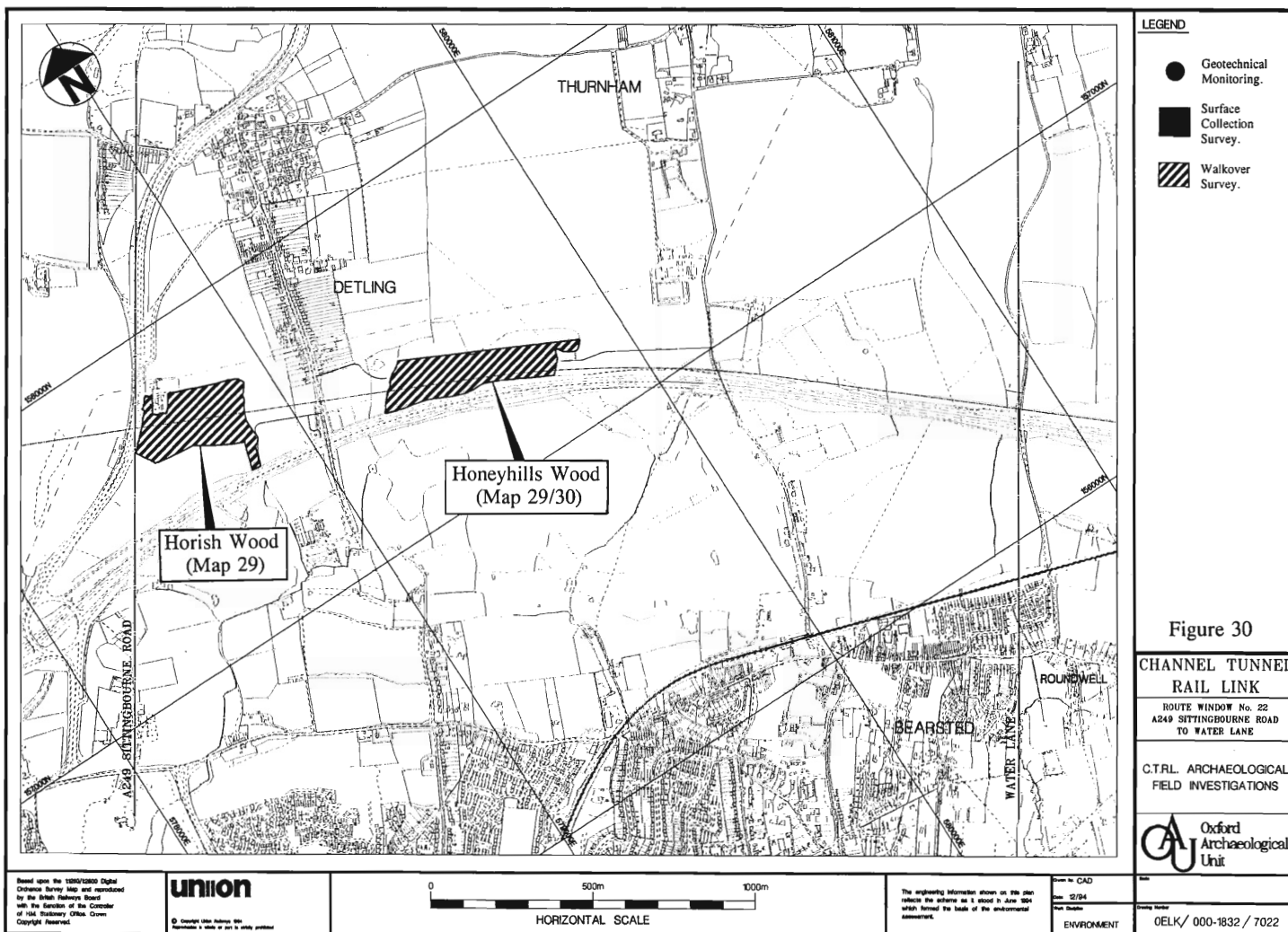


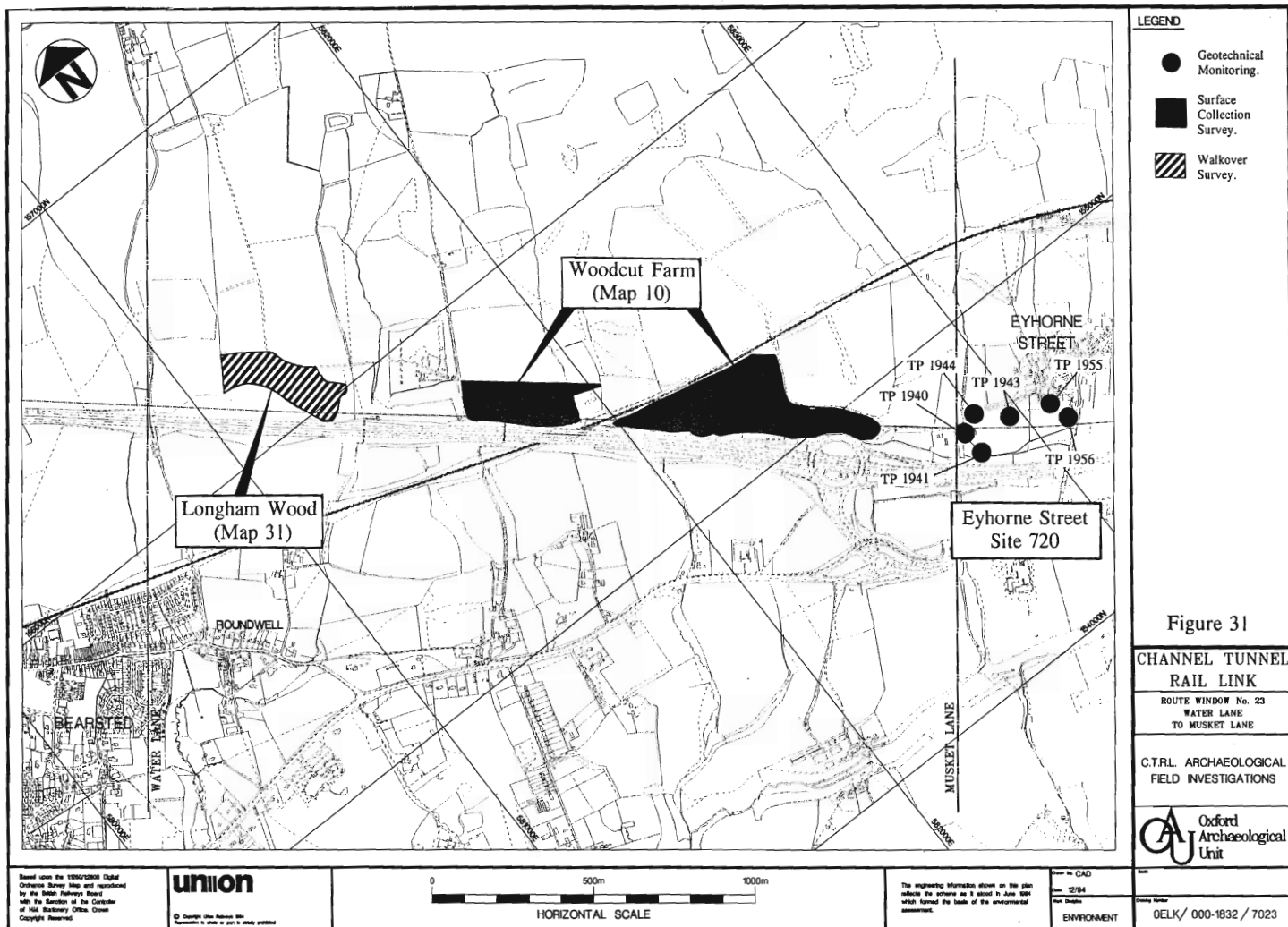


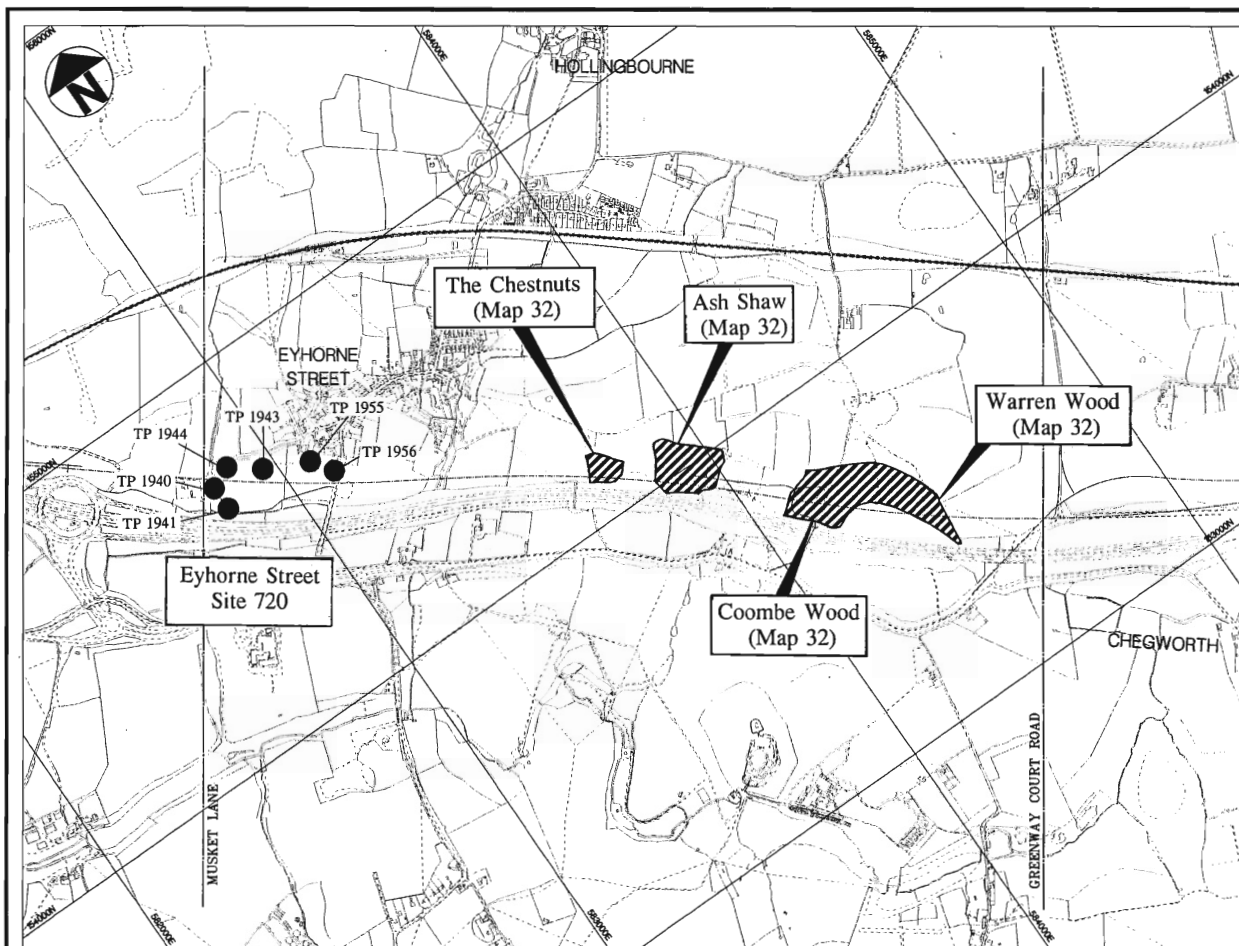












LEGEND

- Geotechnical Monitoring.
- Surface Collection Survey.
- ▨ Walkover Survey.

Figure 32

CHANNEL TUNNEL RAIL LINK

ROUTE WINDOW No. 24
MUSKET LANE
TO GREENWAY COURT ROAD

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FIELD INVESTIGATIONS

CAJ Oxford
Archaeological
Unit

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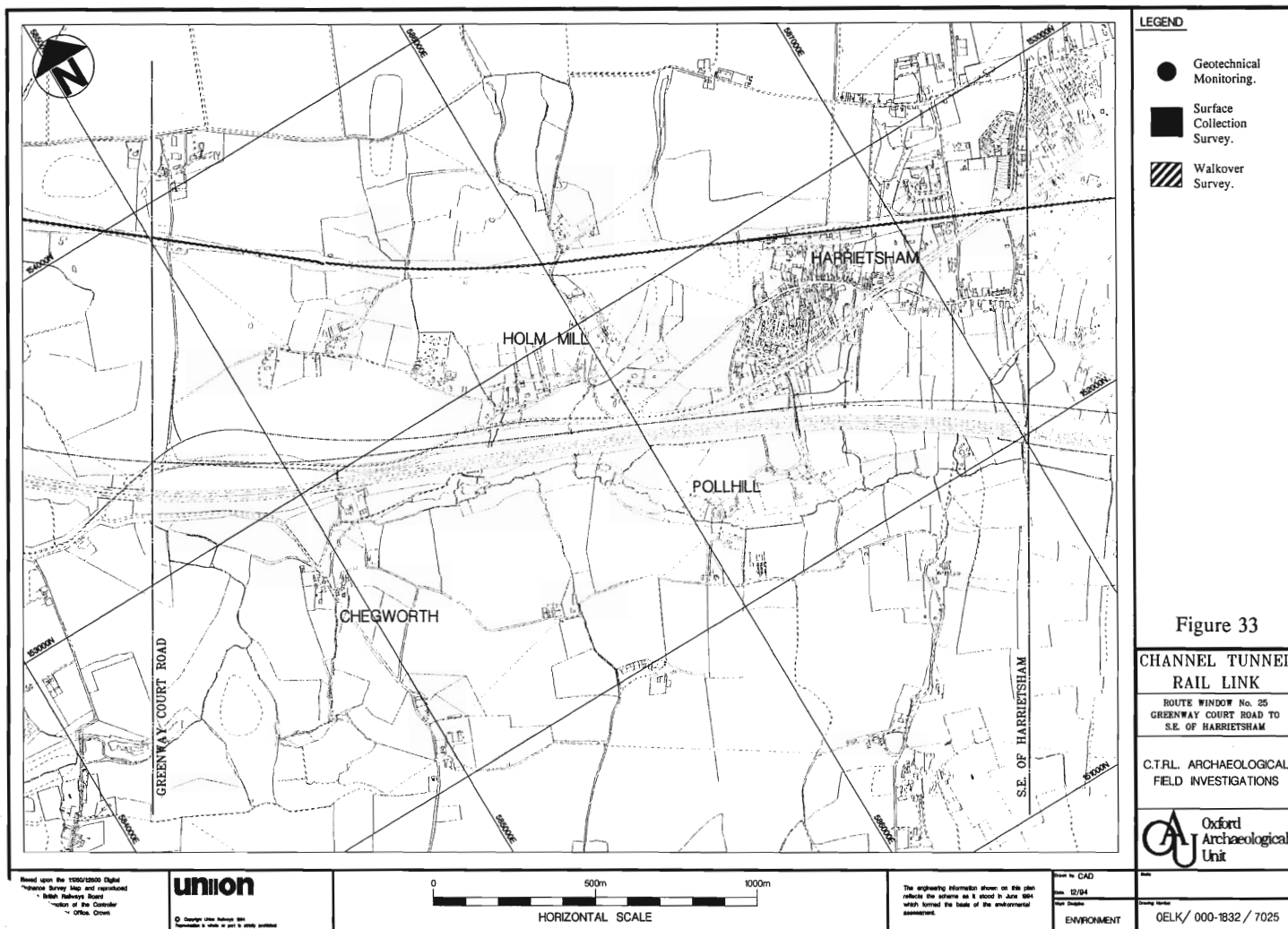
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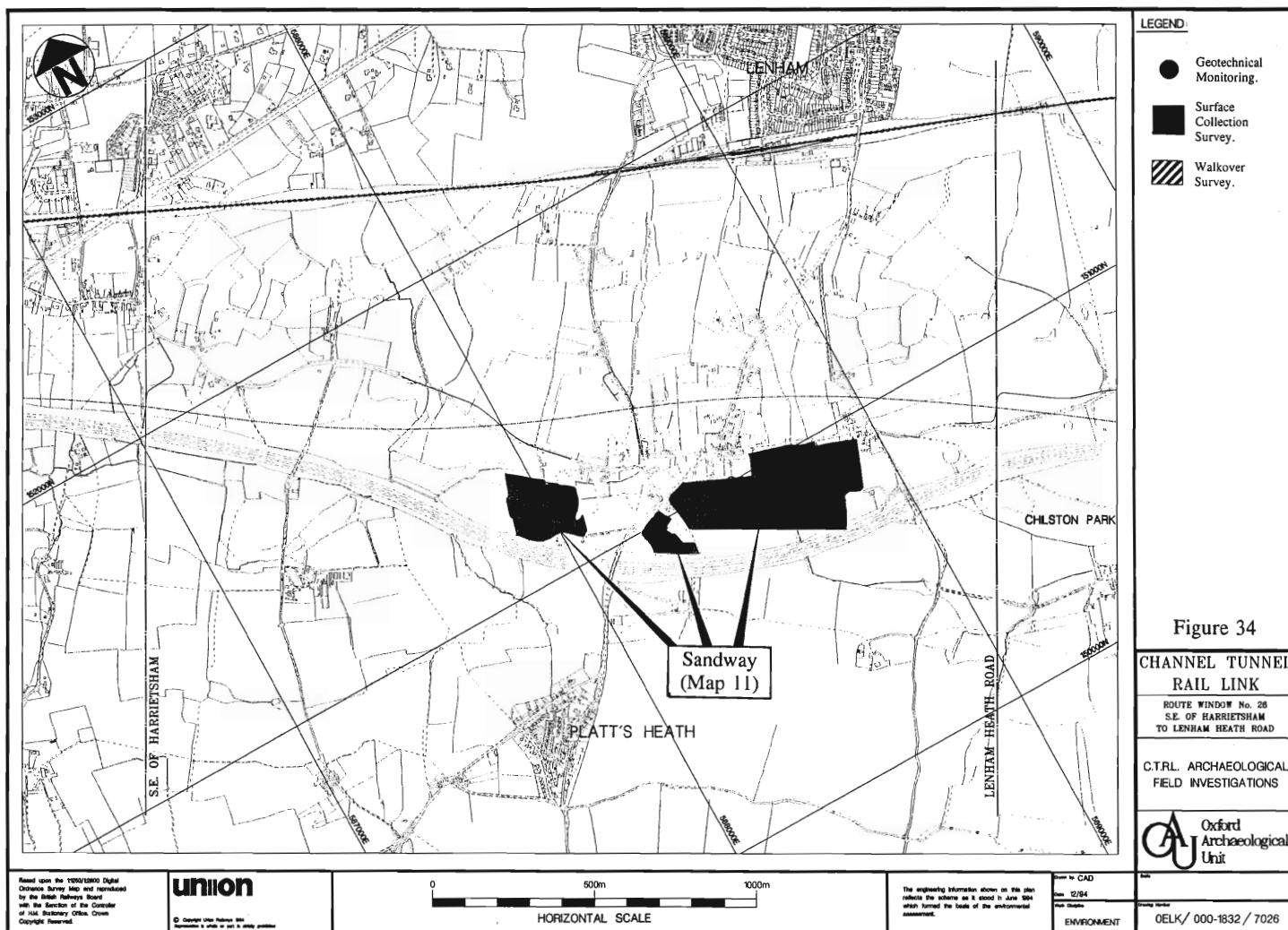
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HORIZONTAL SCALE

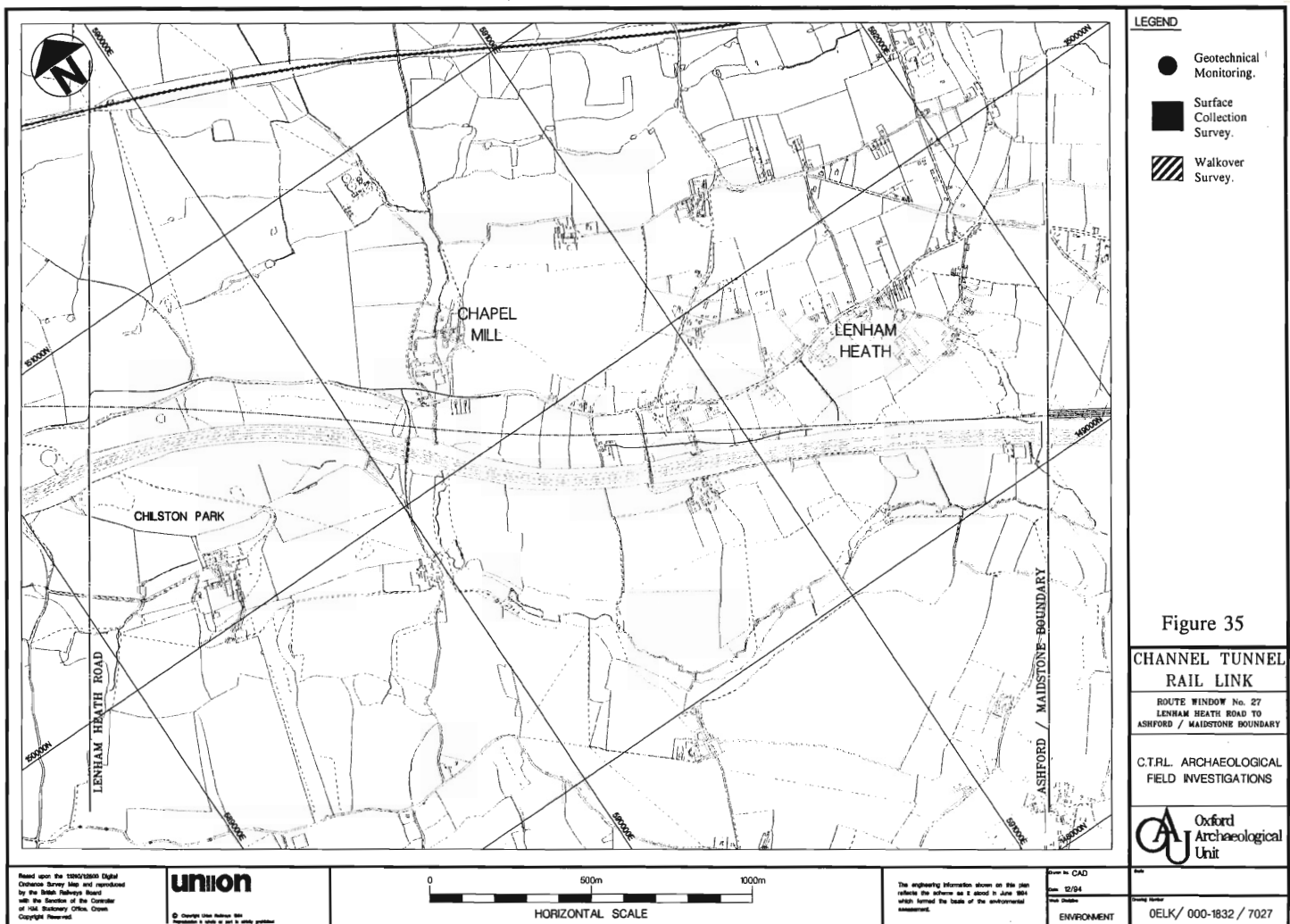
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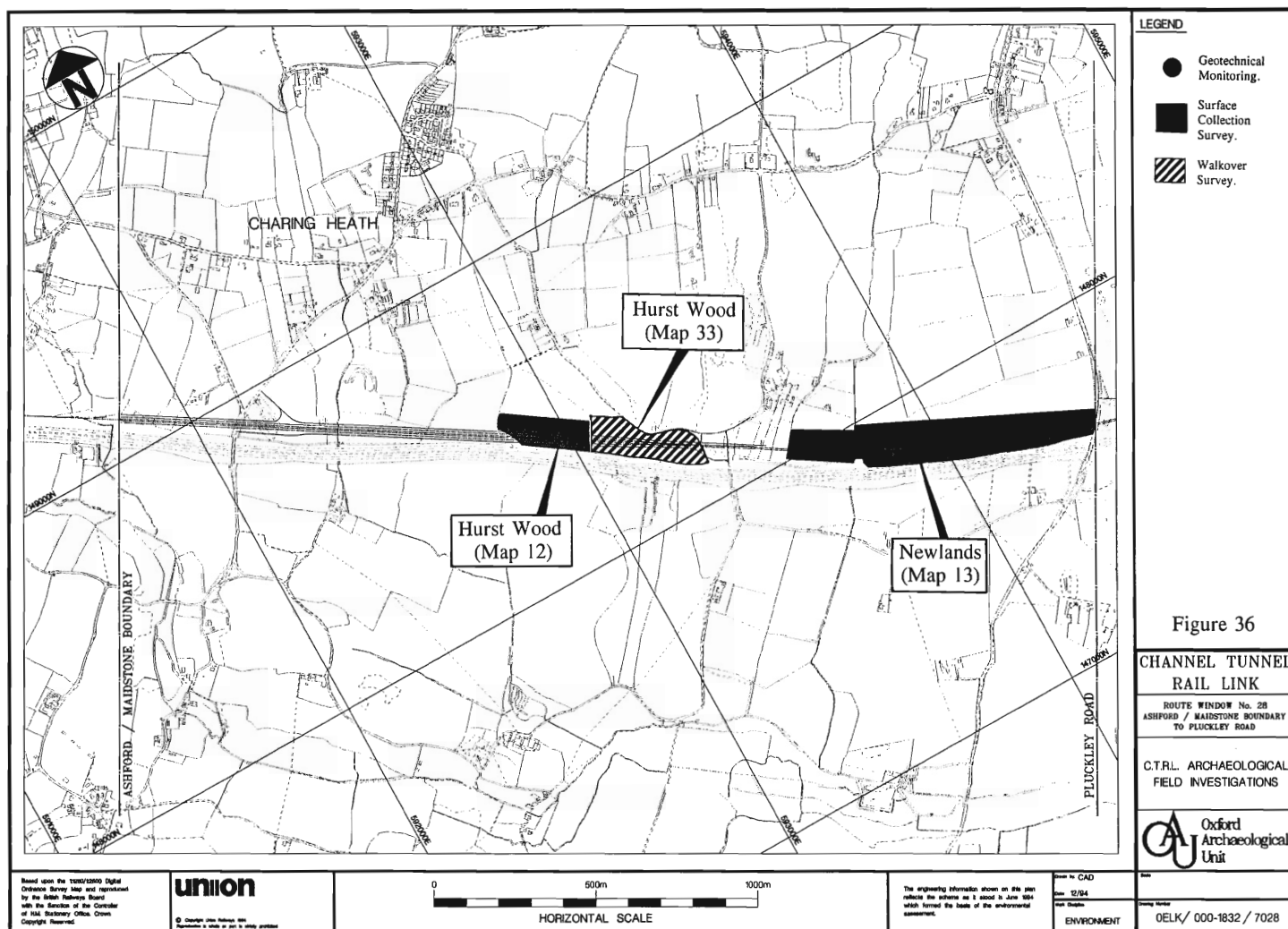
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Sheet number:
ENVIRONMENT

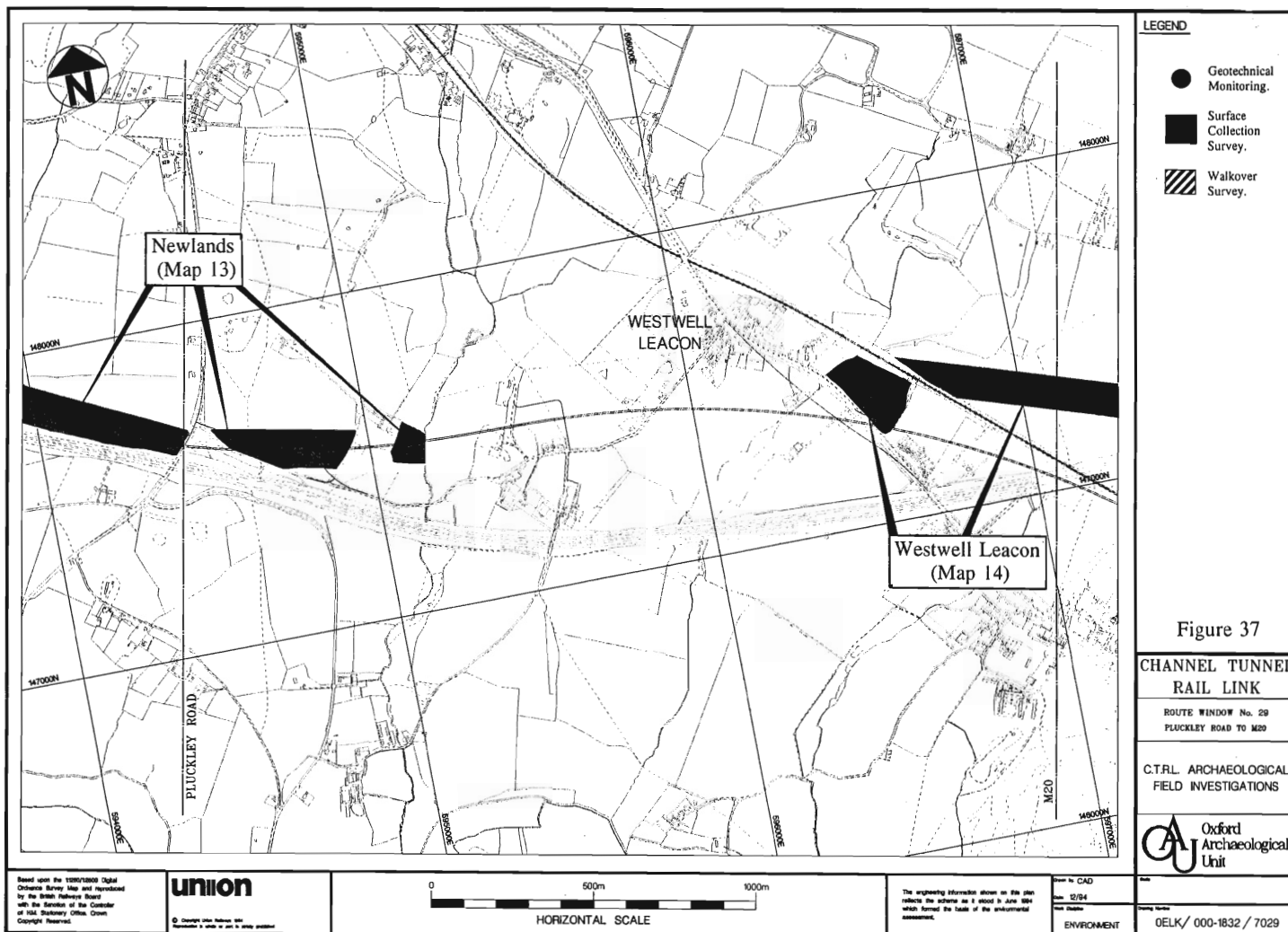
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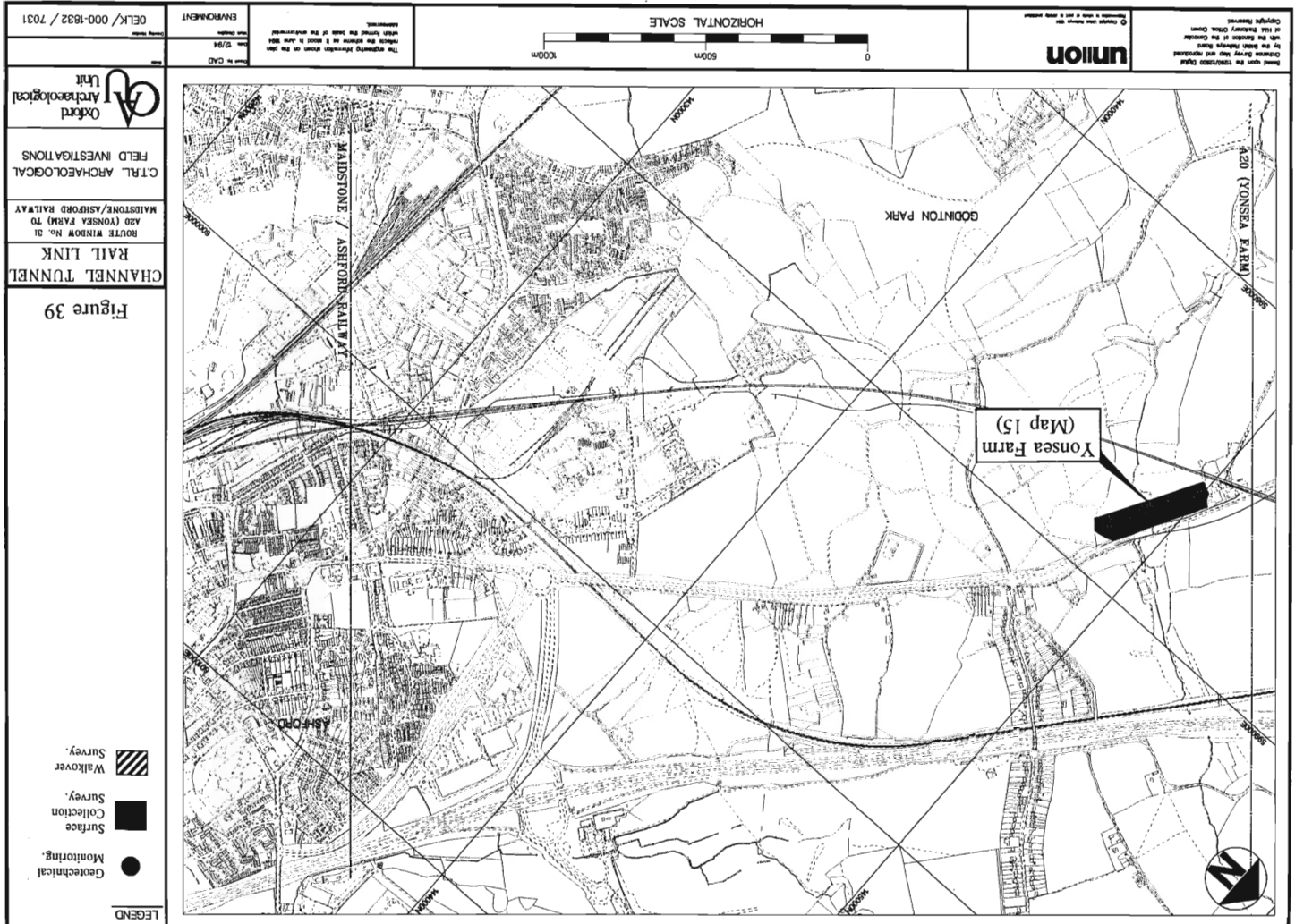


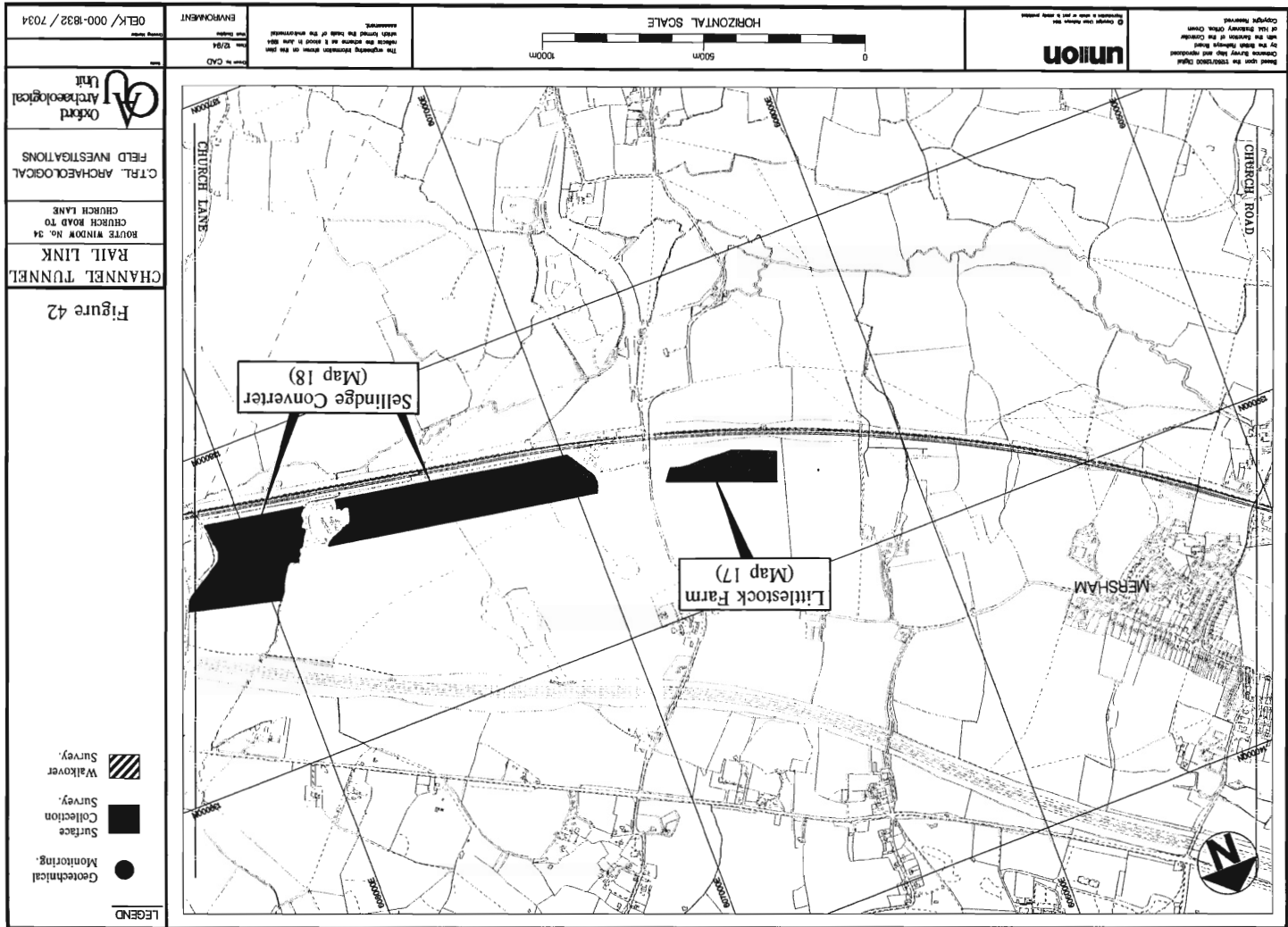


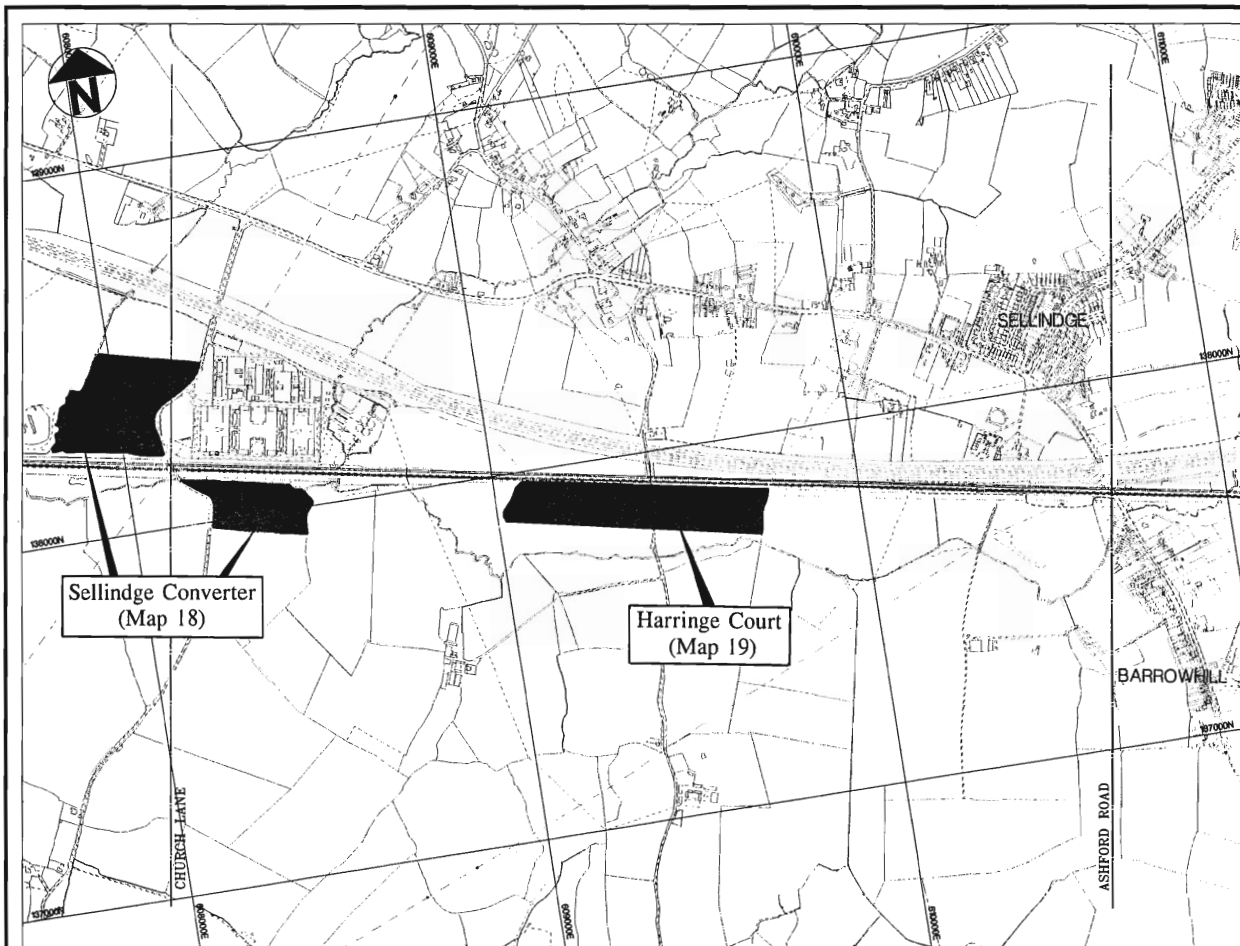












LEGEND

- Geotechnical Monitoring.
- Surface Collection Survey.
- ▨ Walkover Survey.

Figure 43

CHANNEL TUNNEL RAIL LINK

ROUTE WINDOW No. 35
CHURCH LANE
TO ASHFORD ROAD

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FIELD INVESTIGATIONS



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HORIZONTAL SCALE

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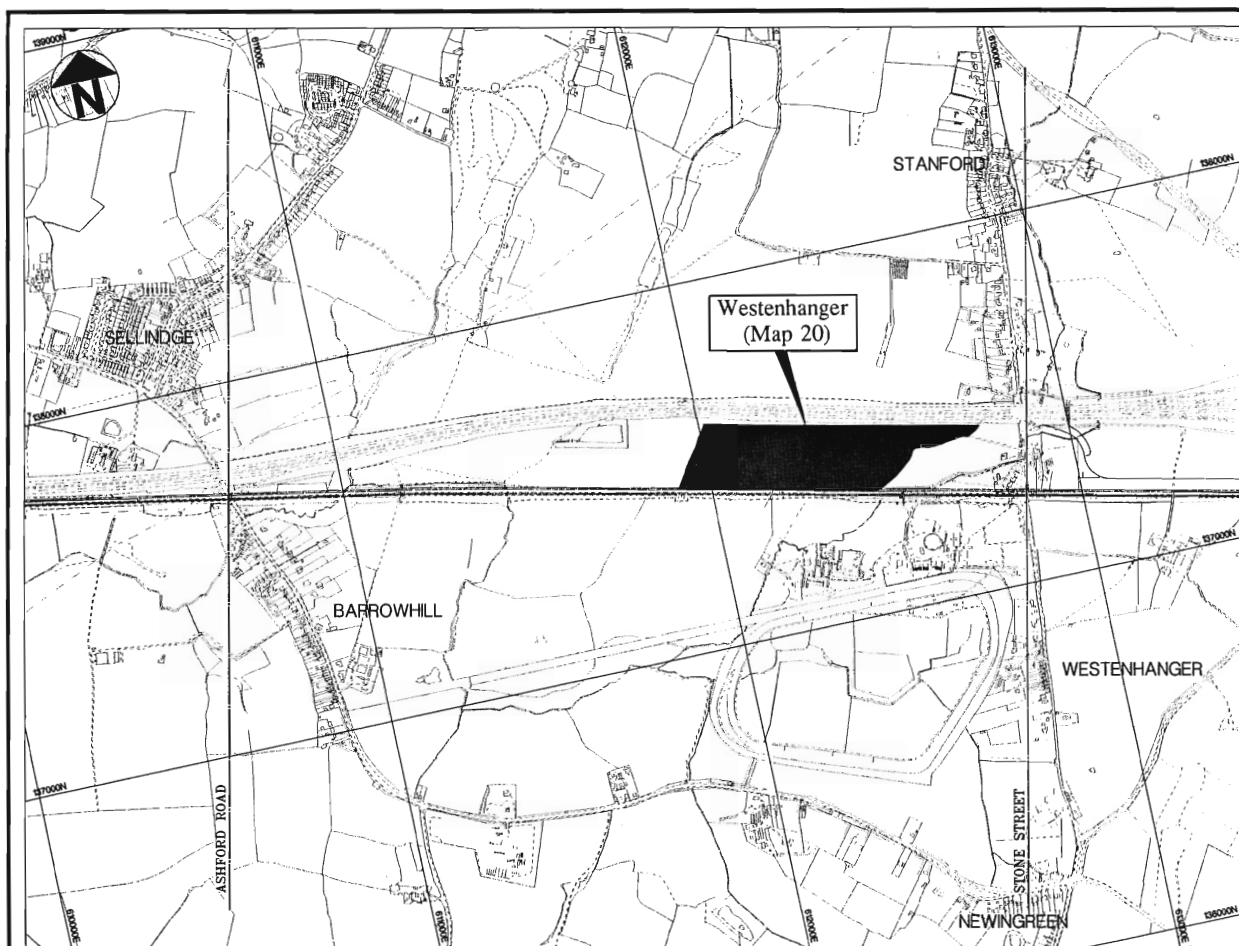
Date: 12/94

Drawn by:

Environment

Project Number

0ELK/ 000-1832 / 7035



LEGEND

- Geotechnical Monitoring.
- Surface Collection Survey.
- ▨ Walkover Survey.

Figure 44

CHANNEL TUNNEL RAIL LINK

ROUTE WINDOW No. 36
ASHFORD ROAD
TO STONE STREET

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CAJ Oxford
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HORIZONTAL SCALE

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Date 12/04

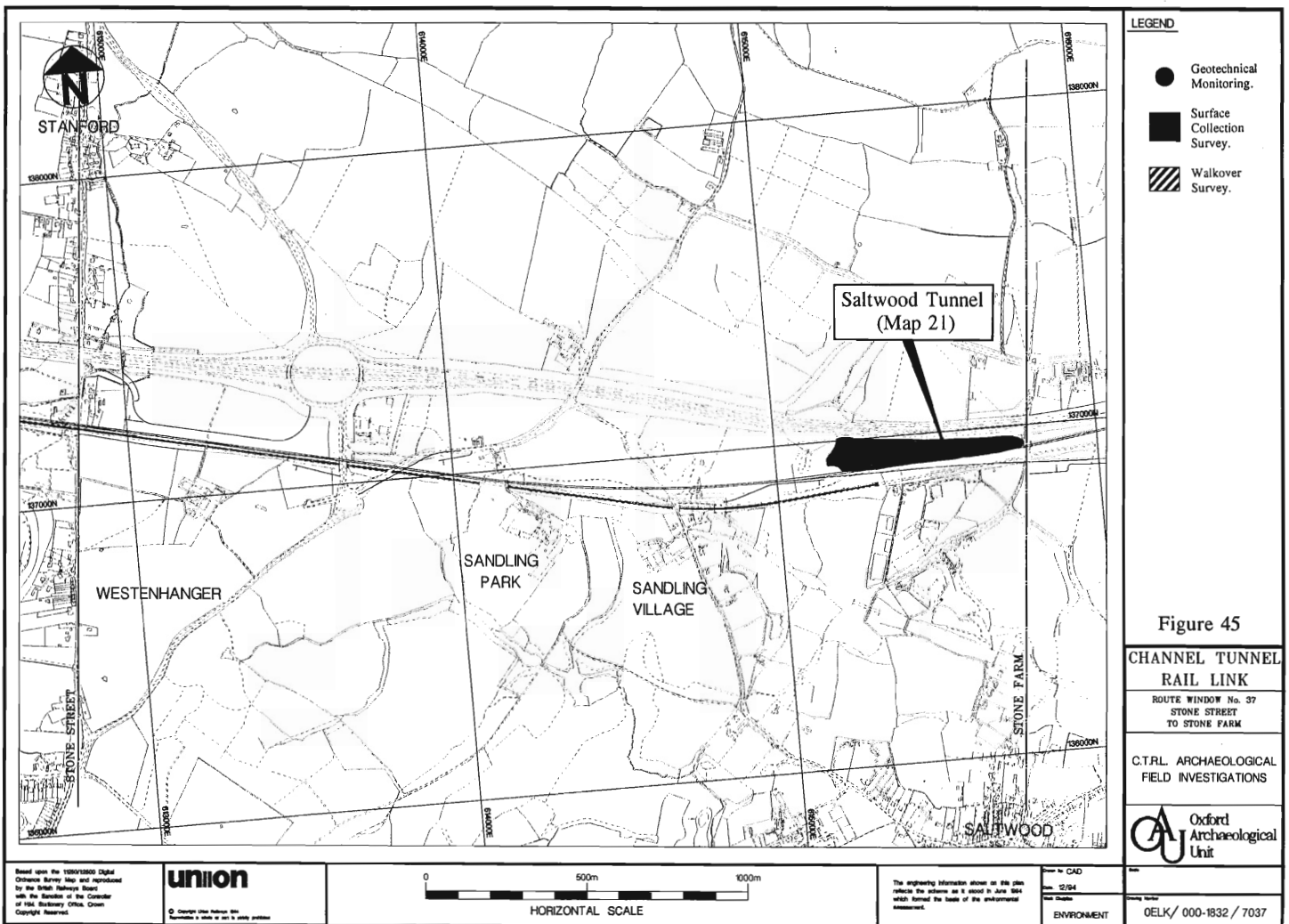
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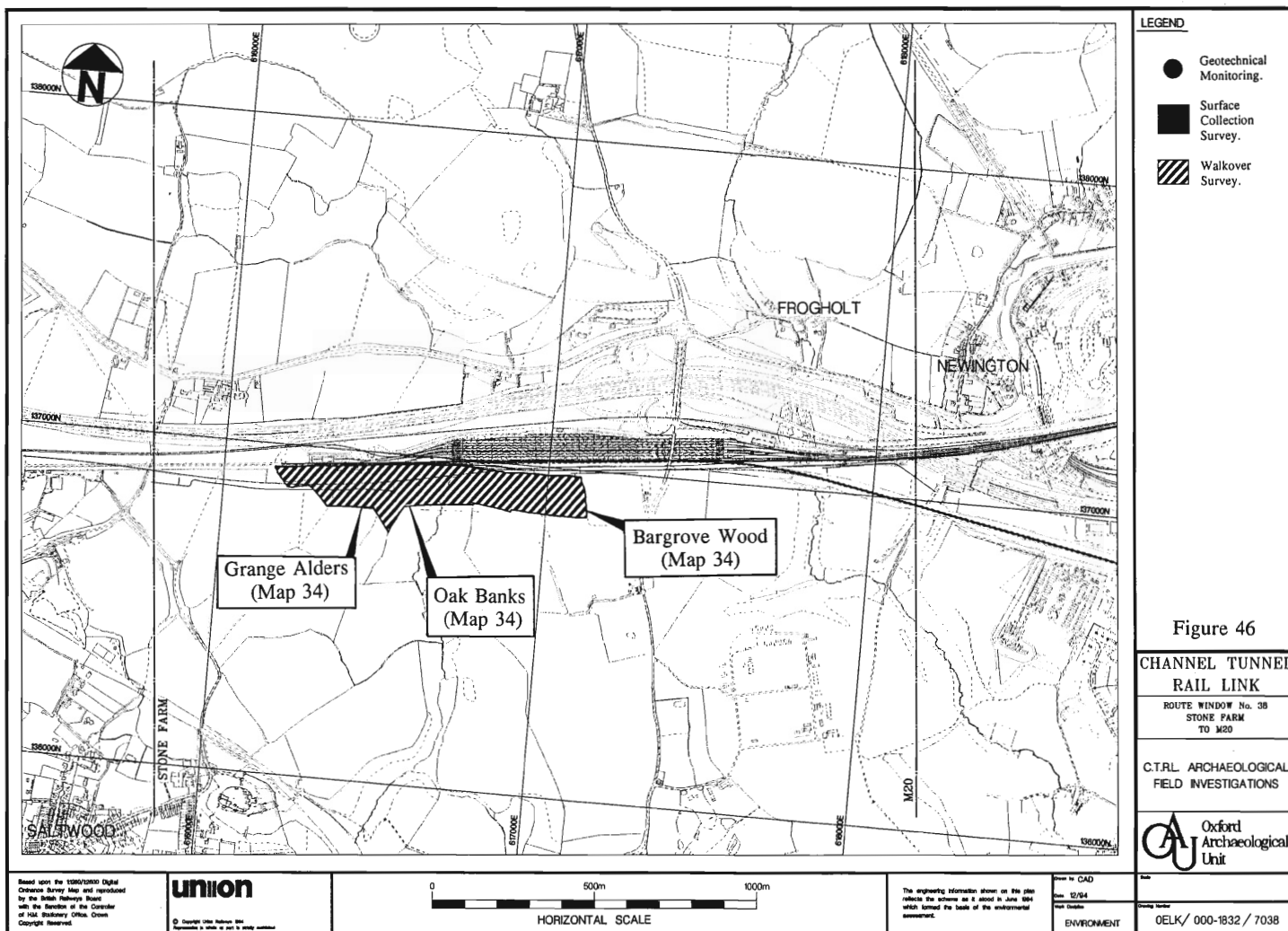
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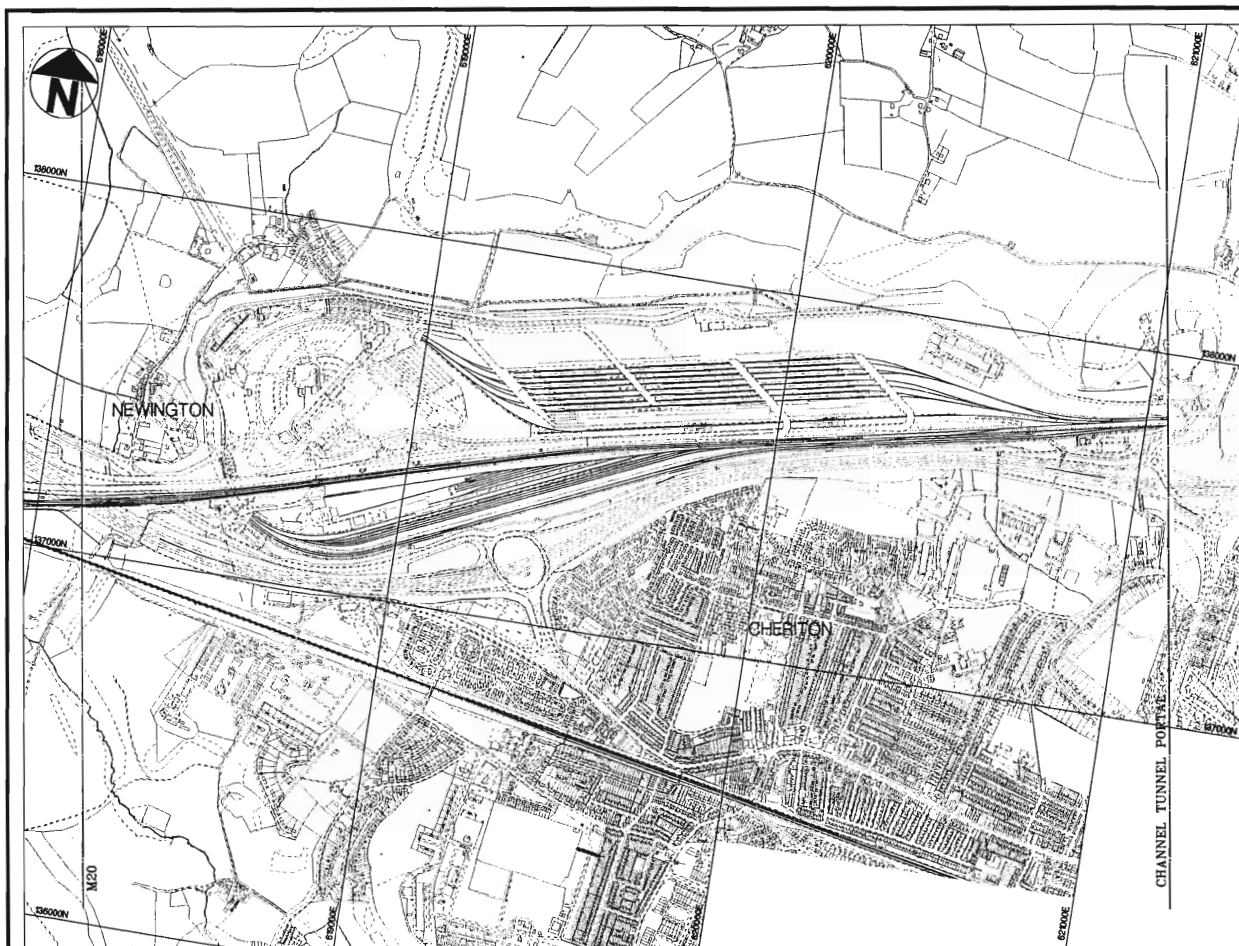
Ref

Project Number

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LEGEND

- Geotechnical Monitoring.
- Surface Collection Survey.
- ▨ Walkover Survey.

Figure 47

CHANNEL TUNNEL RAIL LINK

ROUTE WINDOW No. 39
M20 TO
CHANNEL TUNNEL PORTAL

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HORIZONTAL SCALE

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statement.

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Date: 12/94

Scale: 1:5000

Environment

0ELK/ 000-1832 / 7039



Linear bank (OAU No. 1965) in Bridge Wood

Plate 1



Site of brick building with staddle stones on top (OAU No. 1854) in the Boxley Valley

Plate 2



Earthworks (OAU No. 1966) in Honeyhills Wood

Plate 3



Bank and ditch (OAU No. 1967) in Longham Wood

Plate 4



Former wood bank in Hurst Wood

[illegible]

Appendix 2

Walkover Survey Record Sheet

Oxford Archaeological Unit, 46 Hythe Bridge Street, Oxford, OX1 2EP

Walkover Survey Record Sheet	
Project Name:	Project Code:
Parish:	OS. Land Parcel No:
Area:	Field Size:
Field Size:	NGR:
Dates:	Walker:
Photographic Record ?:	
Geology:	
Ground Conditions:	
Present Landuse:	
Historic Issues identified from desk study:	
Topographic Details:	
Conversation notes with landowner/tenant (delete as applicable)	