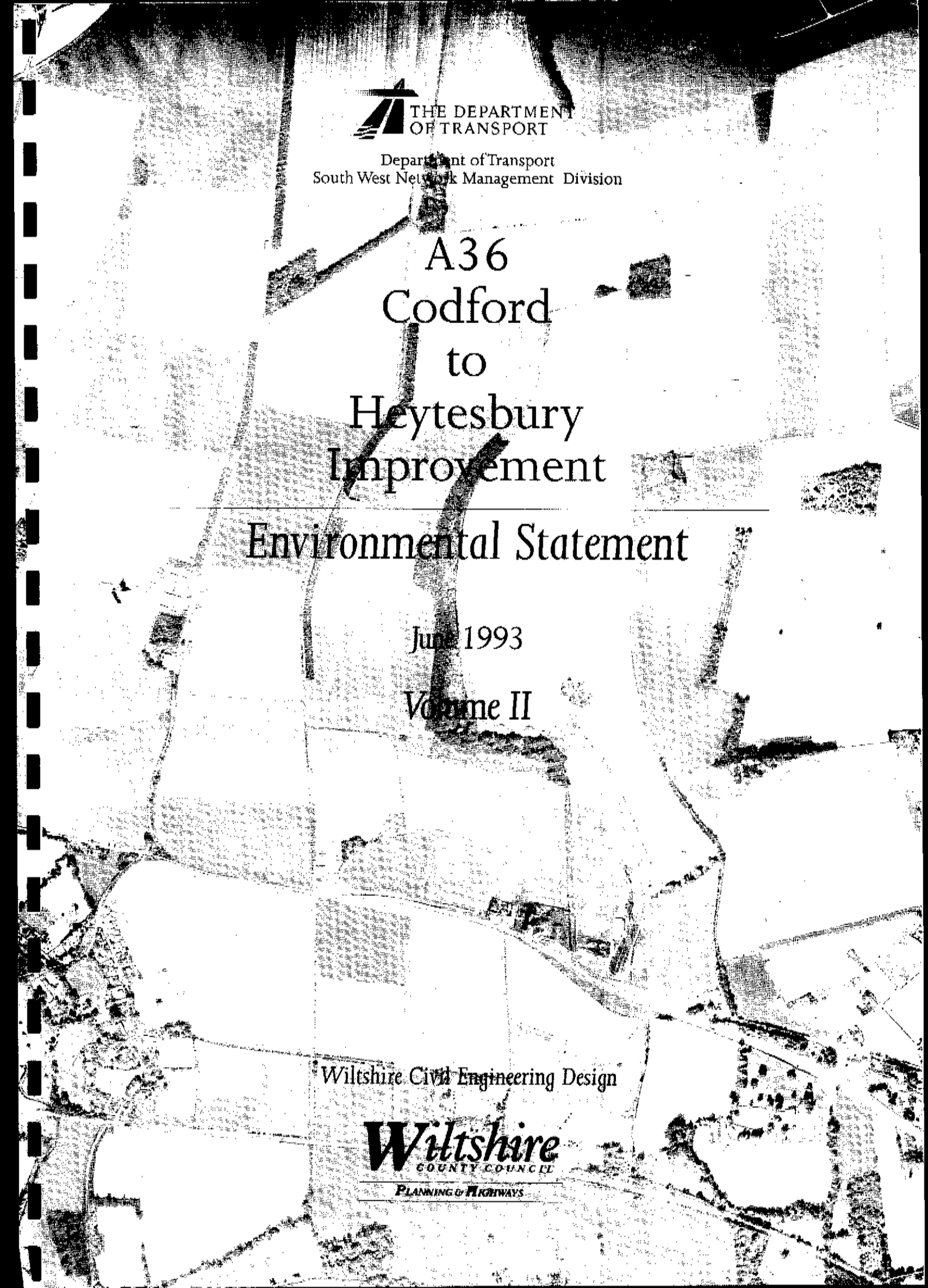

THE DEPARTMENT OF TRANSPORT

Department of Transport
South West Network Management Division

A36 Codford to Heytesbury Improvement

Environmental Statement

June 1993

Volume II

Wiltshire Civil Engineering Design

Wiltshire COUNTY COUNCIL
PLANNING & HIGHWAYS

DEPARTMENT OF TRANSPORT
SOUTH WEST NETWORK MANAGEMENT DIVISION

A36 Codford to Heytesbury Improvement

ENVIRONMENTAL STATEMENT

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Volume 2

WILTSHIRE COUNTY COUNCIL

DEPARTMENT OF
PLANNING & HIGHWAYS

WILTSHIRE CIVIL
ENGINEERING DESIGN

VOLUME 2

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APPENDIX 1

Archaeological Assessment

A36 CODFORD - HEYTESBURY ROAD IMPROVEMENT

ARCHAEOLOGICAL ASSESSMENT

Report No. W577

Prepared on behalf of:
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Appendices:

ACKNOWLEDGEMENTS

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The 1993 fieldwork was carried out by Andrew Crockett and analysis of the results was undertaken by Andrew Crockett and Michael Allen. The CAD plan was produced by Linda Coleman. The project was managed and this report compiled by Richard Newman.

A36 CODFORD TO HEYTESBURY ROAD IMPROVEMENT
ARCHAEOLOGICAL ASSESSMENT

1. INTRODUCTION

Wessex Archaeology has carried out two stages of archaeological assessment along the course of the proposed A36 improvement between Heytesbury and Codford, Wiltshire. The first stage was undertaken in 1990 and the second in 1993.

1.1 Project Background

As part of the ongoing upgrading of the A36 Bristol to Southampton trunk road, Wiltshire County Council, acting as consulting engineers on behalf of the Department of Transport, propose to construct a new length of road between Heytesbury (ST 933 427) and Codford (ST 958 404). This new route, 3.7km in length, is designed to remove the tight corner at Knook, take traffic away from the north end of Upton Lovell and link the recently opened Heytesbury and Codford bypasses (Fig. 1). A new junction with the B390 Heytesbury to Chitterne road is also planned, with the B390 being diverted to the south of Knook army camp.

1.1.1 As a result of the likely archaeological implications of the road construction Wessex Archaeology was commissioned by Wiltshire County Council to carry out an archaeological assessment. The work was completed during September and October 1990. A report entitled *Codford-Heytesbury A36 Road Improvement Archaeological Evaluation* was submitted by Wessex Archaeology in November 1990. This was followed by a further report commissioned by Wiltshire County Council for submission to English Heritage outlining a proposed mitigation strategy (Wessex Archaeology, October 1991).

1.1.2 Subsequently it was decided to upgrade the road to a dual carriageway with graded junctions. As a result Wiltshire County Council requested Wessex Archaeology to recast their previous work in order that the documentation would reflect the changed impact of the road and be appropriate as supporting documents to an intended Environmental Statement. Further assessment work was also requested by the County Archaeological Officer and English Heritage in order to take account of the likely greater impact of the revised construction proposals. This fieldwork was carried out in February 1993.

1.1.3 The 1990 fieldwork is hereinafter referred to as stage 1 and the 1993 work as stage 2. For the purposes of this report fields along the route have been numbered sequentially from the north-west to the south-east.

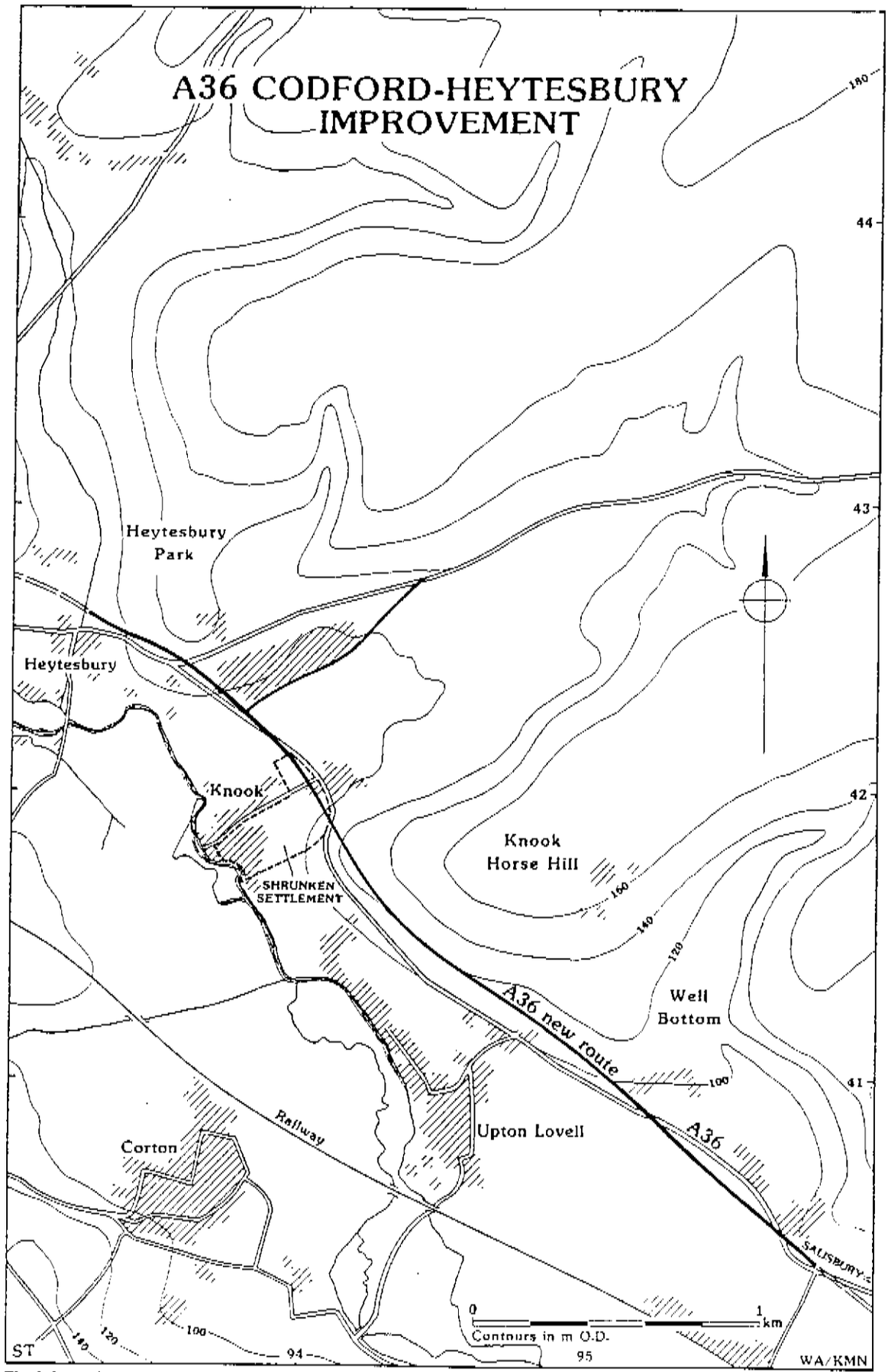


Fig.1 Location

1.2 Geological and Topographic Background

1.2.1 The area of investigations (see Fig. 1) lies on the south-eastern edge of the Salisbury Plain within the major chalk landscape of Wessex. The A36 runs at the foot of the chalk on the northern edge of the Wylye Valley. The chalk edge of the Wylye valley rises steeply, at approximately 26°, from the floodplain to a height of c. 188m OD. This face is incised by a number of broad, flat-bottomed dry valleys and other minor 'finger' valleys. The most significant of these is Well Bottom (Fig. 1) the mouth of which extends north-eastwards into the Plain.

1.2.2 The majority of the 3.40km length of the proposed route of the A36 lay under pasture, the exceptions being the 0.70km under crop and 0.15km under woodland. Of the 0.90km length of the new B390, 0.35km was under crop, 0.35km under pasture, the rest being contained within the Knook army camp facilities.

1.3 Archaeological Background

A study was carried out of the Wiltshire Sites and Monuments Record (SMR) and of relevant photographs housed in the Aerial Photographic Section of the National Monuments Record, and of maps contained within the Wiltshire County Records Office. The following information is derived from this desk-based search.

1.3.1 The most significant archaeological site noted within a 500m easement centred on the new roadline was the shrunken medieval settlement of Knook, SMR No. ST94SW455. This was situated opposite West Farm to the south of the present A36 at ST940 419 (Fig. 1). Today this survives as a series of earthworks within field 12, planned in detail by the Royal Commission on Ancient and Historic Monuments (Fig. 2).

1.3.2 An area of Romano-British settlement is known to the north-west of the route (ST 958 445) on Knook Down West (72/107, Anon 1973). In addition two areas of field systems were noted on the SMR as being close to the new road. SMR Nos. ST94SW653 and SW665 (ST 941 429 and ST 945 420), comprised strip lynchets to the north and east of Knook village, with which they were probably associated. SMR No. ST94SE635 was located to the north of the new road at Upton Lovell (ST 953 411).

1.3.3 Further to the north as the valley side gives way to Salisbury Plain, many areas of field systems, of various periods, and individual long and round barrows are recorded. These, however, lie well outside the area to be disturbed by the new road.

1.3.4 The geology and drift deposits of the area have the potential to contain significant archaeological information. At the base of the dry valleys hillwash (colluvium) has accumulated. Not only can this mask archaeological deposits, but also the mollusc shells contained within it can be important indicators of past environmental conditions. The gravel deposits of the valleys are prime areas for the location of Palaeolithic stone tools.

1.3.5 No additional information was obtained from the available aerial photographs (NGR Index Numbers ST 9340/1-2, ST 9440/1-6, ST 9441/4-5, ST 9540/1-3 and ST 9542/1-2).

1.4 Planning background

The requirement to consider archaeology as part of an environmental impact assessment was defined in the EC *Council Directive 85/337/EEC*, where under article 3 the cultural heritage is listed as one of the factors for which the direct and indirect effects of a development project should be assessed. This was enforced for the DTp's road schemes in the *Highways (Assessment of Environmental Effects) Regulations 1988.*

1.4.1 The principal legislation and national policies relevant to the consideration of the effects of developments on the archaeological and architectural heritage are the *Ancient Monuments and Archaeological Areas Act 1979, Planning (Listed Buildings and Conservation Areas) Act 1990* and Planning Policy Guidance 16 *Archaeology and Planning* (November 1990). The latter makes it clear, at least in planning matters, '**where nationally important archaeological remains, whether scheduled or not, and their settings, are affected by proposed development there should be a presumption in favour of their physical preservation**' (item 8).

1.4.2 The route of the proposed A36 Heytesbury-Codford improvement lies within an Area of Outstanding Natural Beauty and close to the Salisbury Plain Special Landscape Area on the one side, and the River Wylye Area of High Ecological Value on the other (*Wiltshire Landscape Local Plan: Written Statement*, 1986, proposals plan).

1.4.3 Within the *Wiltshire Landscape Local Plan* the area through which the proposed road route will pass, and through which the current route passes, is defined as an Area of Special Archaeological Significance. It is numbered area 29 which covers the Wylye valley and is described as an '**area of significant potential, which may contain primary settlements from which the chalkland was colonised**' (1986, 85). Within Areas of Special Archaeological Significance it is stated that '**an attempt would be made to preserve for posterity the ancient landscape containing, for example, whole barrow groups, field systems, settlements, complex crop mark sites and other sub-surface features**' (1986, 49). Further definition of county policy toward archaeological sites is given in *A Rural Strategy for Wiltshire* (1989) in which it is recommended that '**...The maximum opportunity should be sought to investigate development sites in rural areas and record the archaeological evidence if destruction cannot be avoided**' (R54, 28).

1.4.4 The district authority's policy to archaeology is given in recommendation C14 of the *Western Wiltshire Structure Plan Incorporating Alteration Number One: Written Statement* (1990) in which it states that '**...Important areas of archaeological interest will be protected from development pressures as far as possible. Proposals for development which would damage or destroy important archaeological sites will not normally be permitted. In other cases where appropriate, consideration will be given to the use of agreements (including those under section 52 of the *Town and Country Planning Act 1971*) to facilitate site investigation and recording before any damage or destruction can occur and where possible to secure the preservation of archaeological features and deposits**' (1990, 8). The area through which the road route will pass is defined in this structure plan as an Area of Important Archaeological Landscape (1990, proposals plan) and must therefore be considered to be an important area of archaeological interest.

1.4.5 Both national and local policies make it clear that there should be in the consideration of the impact of development proposals on archaeological remains, a presumption in favour of preservation where those remains are sufficiently important. In an Area of Special Archaeological Significance in particular the importance of an individual site can be elevated by its relationship to others and its role as an element in a wider archaeological landscape. Where it is not possible to preserve sites *in situ* it is clear steps should be taken to investigate and record them prior to destruction.

2. PROJECT AIMS

2.1 Objectives of the 1990 archaeological evaluation

The main aim of the stage 1 evaluation was to identify areas of archaeological potential which merited more detailed archaeological investigation or preservation along the route of the proposed A36 Codford - Heytesbury improvement. Given the routes location adjacent to the edge of Salisbury Plain particular attention was paid to the potential of colluvial deposits both within the Wylye valley and in the coombes running into the Plain. Another area of particular concern was the identification of the limits of medieval settlement at Knook.

2.2 Objectives of the 1993 additional archaeological work

The primary aim was to provide additional coverage appropriate to the increased size of the scheme's proposals. It was also considered necessary to try to provide details of archaeological features to add to the artefact data gained from previous test pitting, in the area of cut across Knook Horse Hill. Specific aims were targeted on the two infiltration ponds that were now a construction requirement for the graded junctions at Well Bottom (ST 9395 4213) and Knook (ST 9525 4078).

2.2.1 At Well Bottom the purpose of further work was to assess the potential impact of the infiltration pond and any topsoil stripping on any buried landscapes there, as well as evaluating the colluvium deposits known to be present from the stage 1 evaluation. A deep sequence of colluvium of up to 3m was noted there in a geotechnic trial pit, but it was not sampled for safety reasons.

2.2.2 At Knook the purpose of further work was to establish the impact of the infiltration pond to the west of Knook village. In particular it was necessary to assess whether or not the Romano-British and medieval archaeological activity noted in the area from finds scatters (Wessex Archaeology 1990) could be equated with features.

3. METHOD STATEMENT

3.1 Desk-based Study

A study was to be carried out of the Wiltshire Sites and Monuments Record (SMR) and of relevant photographs housed in the Aerial Photographic Section of the National Monuments Record. Maps and documentary sources contained within the Wiltshire County Records Office were also to be consulted.

3.1.1 Contemporary with the A36 project, Wessex Archaeology was carrying out a watching brief and limited excavation along the Codford to Heytesbury Wessex Water pipeline (W387, Coe 1990), the route of which ran almost parallel some 500m to the south. A small excavation was undertaken at the south end of the Knook earthworks in field 12. The relevant results of this work were to be integrated into the assessment of the proposed road route.

3.2 Fieldwalking

Fields under arable cultivation which had recently been ploughed were to be fieldwalked. This was to be undertaken using a 25m artefact collection grid over an area extending 50m each side of the new road centre line.

3.3 Test Pitting

A series of hand-excavated pits was to be dug along the route in pre-determined locations with the intention of assessing artefact distributions and depth of deposits. These were located to sample each area of topography along the route. Each pit was excavated down to one of the following: natural chalk; the top of suspected colluvial deposits; undisturbed natural deposits; or a depth where because of safety considerations and movement restrictions it became unfeasible to work in the pit (*c.* 1.00m)

3.4 Machine trenching

3.4.1 *Geotechnic Pits*
The excavation of these pits by Wiltshire County Council's geotechnical contractors was to be observed and any archaeological features noted.

3.4.2 *Environmental Trenching*
A series of four machine trenches was proposed to investigate colluvial deposits at specific points along the route. These trenches were to be used to determine whether the colluvial deposits were masking archaeological remains and to gain background landscape data. Mollusc samples were to be taken from each trench with a view to placing archaeological sites found along the route within their palaeoenvironmental context. An artefact collection box, an area of 1.50m x 0.75m centred around the mollusc column, was to be excavated from the surface by trowel. All artefacts recovered from this were to be three-dimensionally recorded so they could be accurately related to the mollusc column. The methods of investigation and analyses to be employed were those adopted by Bell (1981; 1983) and Allen (1984a; 1988) in their colluvial studies.

3.4.3 *1993 trenches at Knook*

In stage 2 two trenches were to be excavated at Knook in the location of an infiltration pond (fields 8 and 9). They were to be excavated to determine whether the artefact scatters noted in stage 1 were associated with features (Fig. 5). A further two trenches were to be excavated in fields 24 and 25 to assess the depth of colluvium within the area of the intended infiltration pond for the Well Bottom graded junction.

3.5 Geophysical Survey

Geophysical survey using both magnetic and resistance techniques were to be employed. In areas where either the fieldwalking or test pit results had illustrated archaeological potential the area was to be further investigated by geophysical survey. By this method it was hoped further to define and delimit the archaeological activity.

4. Non Technical Summary of Results

4.1 Desk-based study

No sites were noted along the road line other than at Knook.

4.1.1 *Knook*

Eighteenth-century maps, show a settlement at Knook extending to the west and north (Fig. 3). The earliest recorded settlement on the site was of a village known as Cunuche in 1086 AD. By the later 18th century, the settlement appears to be polyfocal with one focus around the church and another to the east along the Warminster to Salisbury road (Coe and Newman 1993). Field names on a 1774 Knook estate map (101/1174/1, Wiltshire Records Office) suggest one of the *foci* may have been known as Garston; in the nineteenth century the farm bearing this name was located in the south-west corner of the parish at ST 9356 4222 within the area known in 1774 as Upper Garston. Present day Knook comprises a small agricultural community centred around the church and situated to the west of the area of earthworks.

4.2 Fieldwalking

4.2.1 During stage 1 five fields were subjected to fieldwalking, involving the collection of artefacts present on the surface of the field, though only field 6 was in the ideal state of being recently ploughed. The other four (fields 8, 10, 23, and 24) had been ploughed in spring and were covered in the residual stubble from the summer crop, thus reducing the visibility of the artefacts present, the effectiveness of the technique. The results are outlined per field below; only pottery, worked flint, burnt flint, and brick and tile are itemised. No other artefacts were found in numbers great enough to be of significance.

4.2.2 *Field 3*

Forty-eight x 25m artefact collection runs were possible along the 100m wide road easement within 4 hectare collection squares (5000-5003). This field was in the best state for fieldwalking of any of the five walked, having only recently been ploughed. The field, sloping steeply to the south-east, is to be bisected by the new B390. The proposed route runs down the Knook dry valley and to the east of the present army camp. The modern field occupies part of the former Common Arable Land of Knook parish (1774 Knook estate map, Wiltshire Records Office). Only eight pieces (122g) of pottery were found in the field, one Roman, one Medieval and six post-medieval; these were spread over the easement. A total of 25 pieces of worked flint (14 flakes, ten broken flakes and one retouched flake) were spread thinly over the route as were 40 pieces (1240g) of burnt flint. The most common find was of brick and tile, 61 pieces (3271g) being found evenly over the walked area. This material is most likely to derive from the present army camp and the adjacent former Great War camp. Overall there was a low density of finds and no coherent concentrations.

4.2.3 *Field 8*

In all, 22 25m artefact collection runs were possible spread over three hectare squares (5005-5007). The available area was constrained by the proximity of the new and present roads resulting in the necessity of walking only in the southern half of the easement. This field, dipping slightly to the south, was situated directly opposite the

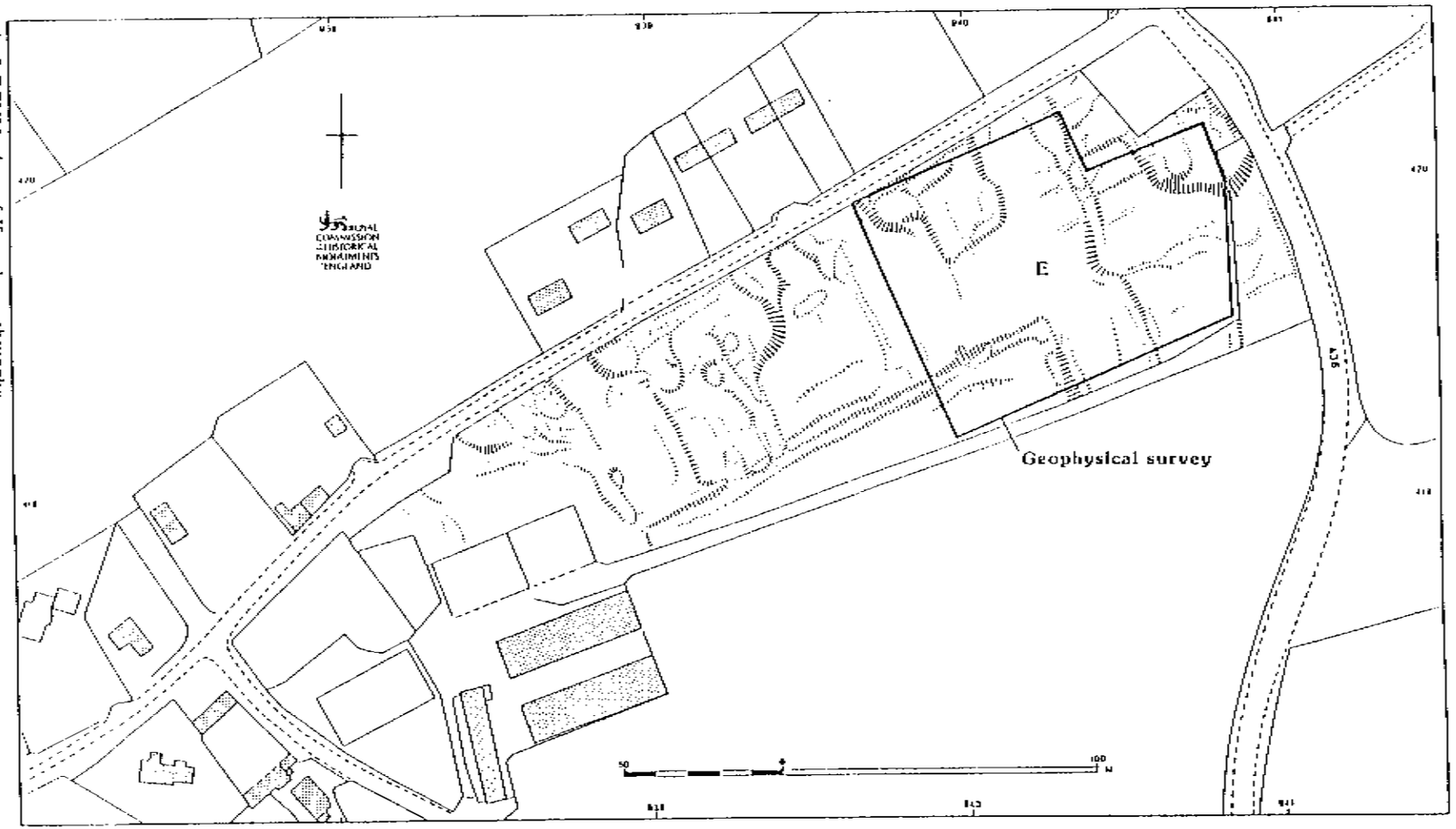


Fig.2 RCHM plan of Knook earthworks

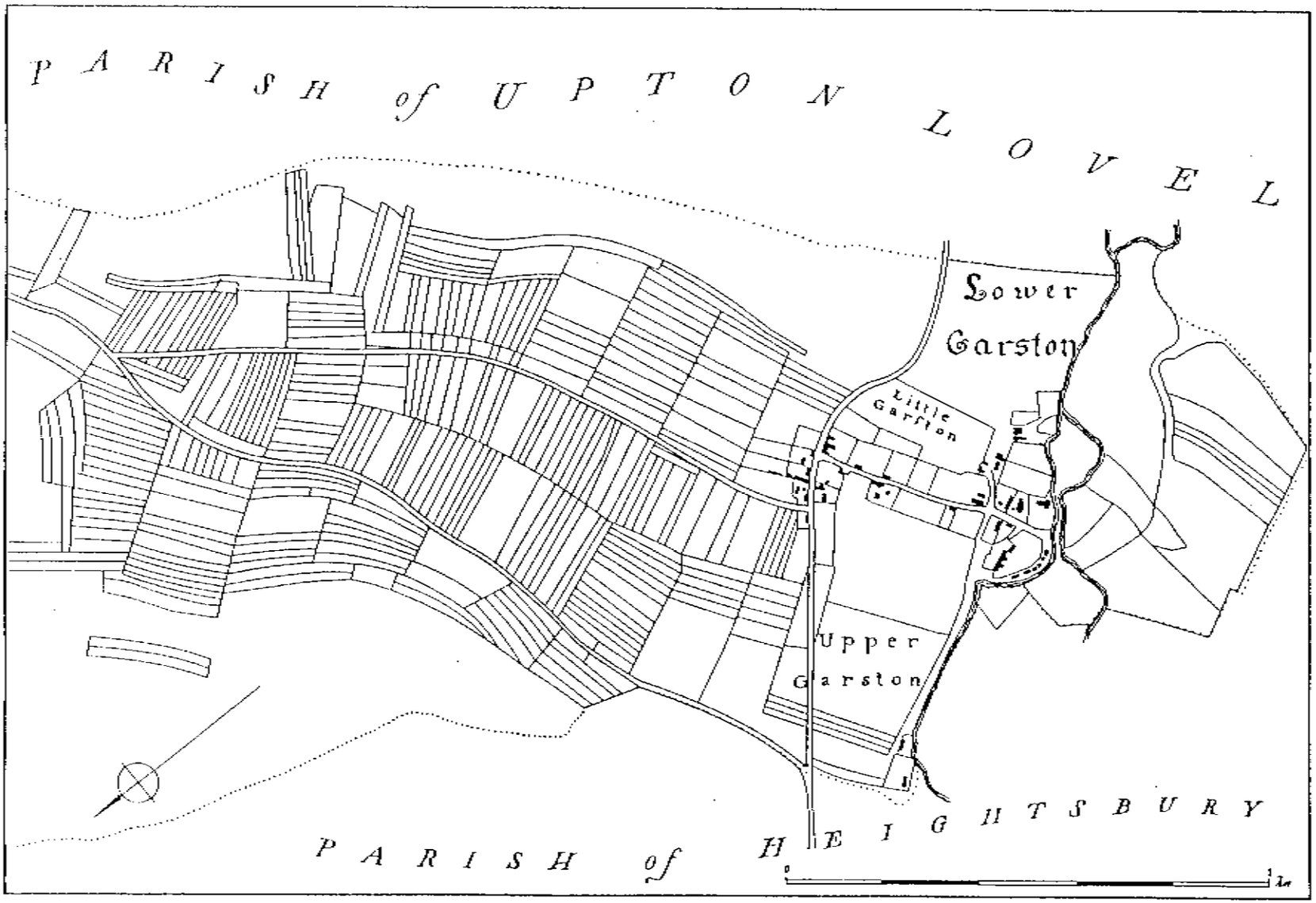


Fig.3 Part of Knook Parish with its common fields from 1774

Knook army camp and was on the margin of suitability for fieldwalking. The field had been ploughed in the spring, stubble still being present after harvesting. This, coupled with sprouting grass, made surface visibility very poor. Only seven pieces (89g) of pottery, all post-medieval and four pieces (145g) of burnt flint were recovered. The only artefact type found in any quantity was brick and tile of which 65 pieces (5567g) were found. These can be attributed to the Great War camp that once occupied the field. Too few artefacts were recovered to define any concentrations.

4.2.4 *Field 10*

In all, only nine 25m artefact collection runs were available in a single hectare square (5004). The available area was constrained by the proximity of the present road allowing only the southern half of the easement to be walked. The field was relatively flat, though earthworks were visible towards its northern end (Fig. 5). A crop had recently been harvested and stubble remained, resulting in poor surface visibility. Very few artefacts were recovered from the field; one flint flake, three pieces (33g) of burnt flint, 15 pieces (121g) of pottery, all post-Medieval, and 102 pieces (6252g) of brick and tile. The latter can be explained by the former presence of houses, until at least 1930, between the field and the A36. Too few artefacts were recovered to make any valid statements concerning the distribution.

4.2.5 *Field 23*

This comprised a thin linear field directly to the south and running along the edge of the present A36. The proximity of the present road meant it was only possible to walk four 25m artefact collection runs in a single hectare square (5008). The field was relatively flat, dipping only slightly to the south and was covered with the wizened remains of a former crop of peas. Surface visibility was consequently poor. Very few artefacts were recovered from the field: only three pieces (79g) of burnt flint, and two fragments (18g) of brick and tile being found.

4.2.6 *Field 25*

This was a large field immediately to the south of the present A36, of which all bar the northernmost run was available for fieldwalking. In all, 35 x 25 artefact collection runs were made over three hectare squares. The field was relatively flat, dipping only slightly to the south and was covered with the wizened remains of a former crop of peas. Surface visibility was consequently poor. A uniform spread of 26 pieces of worked flint (nine flakes, 14 broken flakes, one burnt worked piece, one scraper and one fabricator) and 40 pieces (838g) of burnt flint was found over the whole field. There was little in the way of brick and tile, only 11 pieces (327g), and a mere 17 (192g) pottery sherds incorporating one Romano-British, one medieval and 14 post-medieval. No concentrations or patterns were visible in the distribution.

4.2.7 In all, the fieldwalking results were poor. Too few artefacts were recovered to attempt any distributional analysis, so no significant concentrations indicative of sites were noted. The poor retrieval must in part be a result of the limited visibility, resulting from the field conditions at the time of the survey.

4.3 Test Pits

A total of 46 1m x 1m test pits were excavated. In addition a single 2m x 2m pit (test pit 52) was excavated on the centre line of the proposed new road to Guernsey Farm

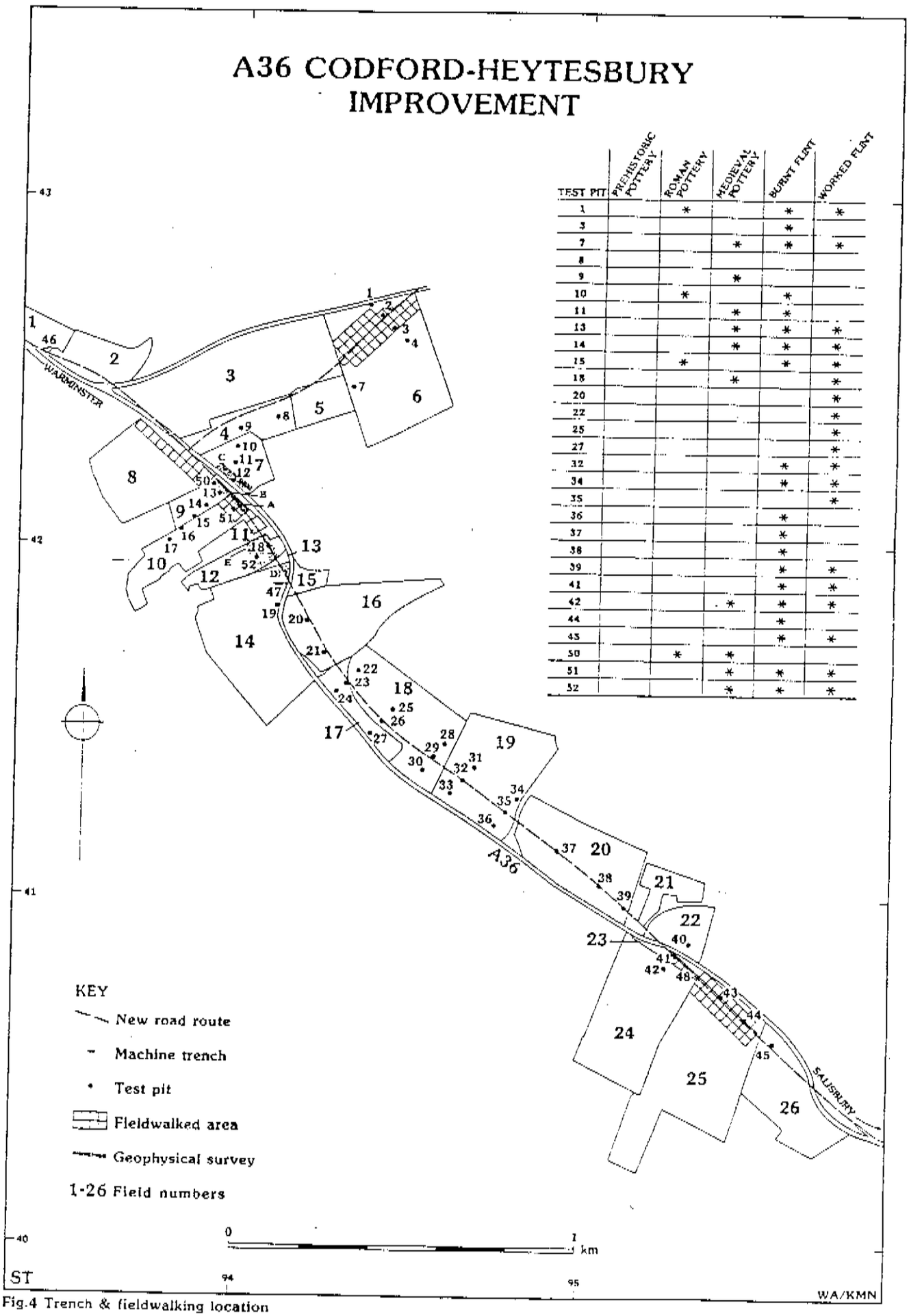


Fig.4 Trench & fieldwalking location

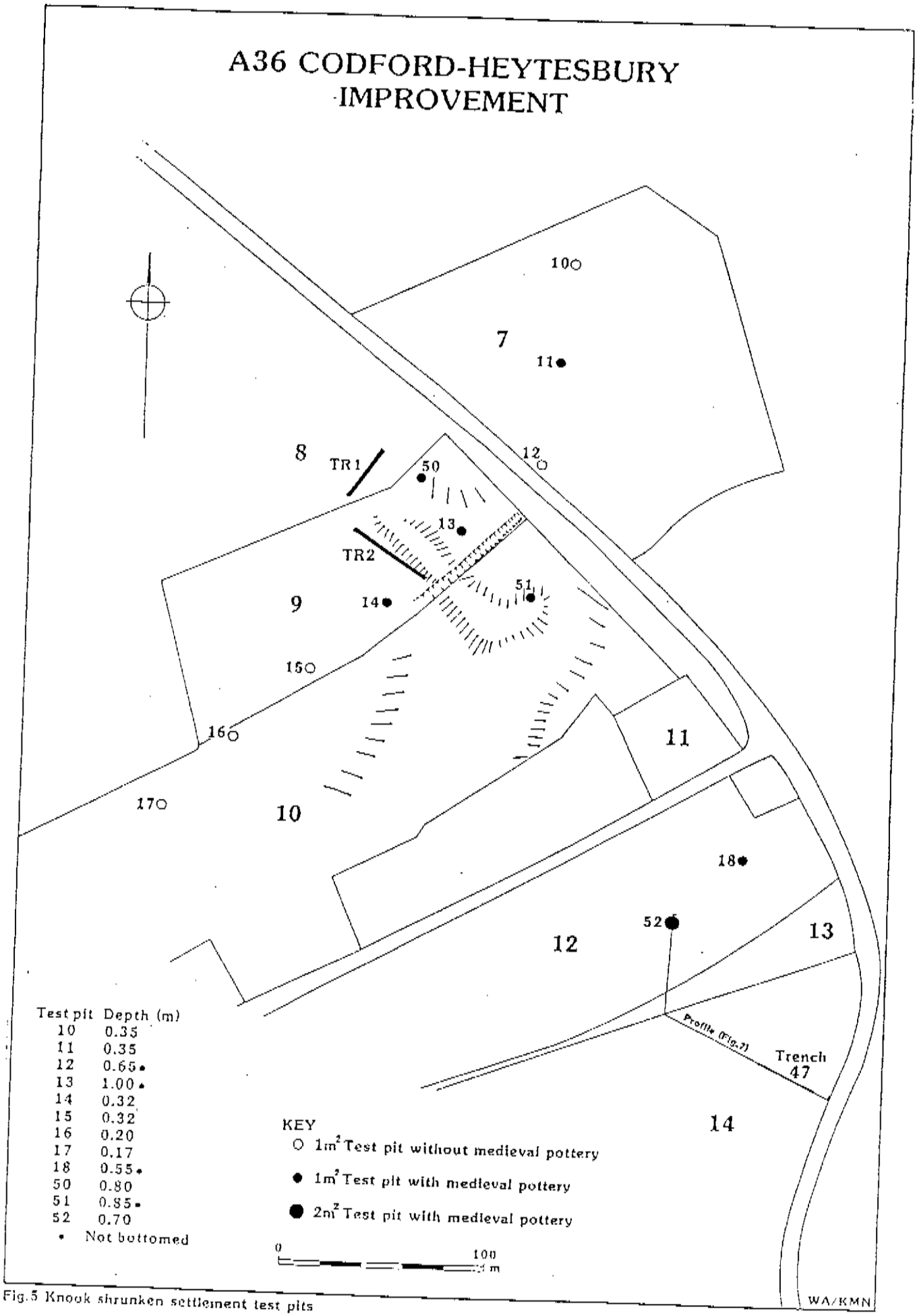


Fig.5 Knook shrunken settlement test pits

where it crossed the Knook earthworks in field 12. The recorded deposits are listed in Appendix 1.

4.3.1 The average depth of deposits over either the chalk bedrock or colluvium was 0.44m. As would be expected deposits were generally deeper in the valley and at the base of the valley side compared to those further upslope. An exception to this was encountered in field 19 where test pit 32, well up the valley side, was 1.10m deep, the deepest fully excavated. In field 18 immediately to the east, test pits 22 and 25 displayed a buried soil, under which worked flint was found. The test pits (13, 18, 50, 51, 52) around Knook shrunken settlement were significantly deeper than surrounding test pits presumably due to the build up of deposits associated with past settlement activity. The artefacts recovered from the pits are discussed below with a number and weight count presented in Table 1.

4.3.2 *The Flint*

A total of 68 pieces (560g) of worked flint was recovered from the test pits (see Table 1 below). This assemblage comprised 33 flakes, 33 broken flakes, one burnt worked flint and one retouched flake. All material was patinated white. The assemblage was undiagnostic and biased towards the more robust specimens which survive more readily in ploughed soils. A total of 101 pieces (1735g) of burnt flint was found in the test pits (see Table 1 below).

4.3.3 *The Pottery*

In total 318 sherds of pottery (1992g) were recovered from the test pits (see Table 1 below). This total comprised four Romano-British sherds (30g), 268 medieval sherds (1739g) and 46 post-medieval sherds (223g). A brief analysis of the pottery recovered is given below.

> **Romano British.** The Romano-British material consisted of three coarseware sherds and one fineware sherd, part of a New Forest colour-coated Beaker. The latter piece could be dated to the late 3rd to 4th century AD, and one of the coarseware sherds from a drop flange bowl is also of late Roman type. The remaining sherds were undiagnostic.
>
> **Medieval.** Most of the medieval material fell within a broad date range of 11th- to 13th-century. Fabric types identified could be divided into three main groups: sandy wares; 'gritty' wares i.e. fabrics tempered with coarse, poorly-sorted quartz and flint fragments; and calcareous wares i.e. fabrics tempered with limestone fragments. None of these wares has a known source, although the sandy wares, frequently scratchmarked, are similar to material from Salisbury, which is presumed to derive from the kilns at Laverstock, or nearby. Calcareous wares are distributed widely across the West Country in the early medieval period, and were undoubtedly produced at several centres. One source, for example, has been suggested in the Avon Valley near Bath (Vince 1979). So-called 'gritty' wares form part of as widespread tradition across southern England, developing from similar Late Saxon wares and continuing in use until the 12th century. Vessel forms recognised amongst the early medieval material are restricted mainly to cookpots, although there are also a number of base sherds from 'West Country' dishes, a vessel form common in this area in the 12th and 13th centuries. There are also a few sherds of finer sandy wares, frequently glazed, and some with white slip decoration, which can be dated to the late medieval period (14th to 15th century).
>
> **Post-medieval.** The post-medieval material consists largely of earthenwares, mostly of Verwood type, from the Dorset/Hampshire border; none of these are closely datable.

4.3.4 Artefact distribution from the test pits (see Fig. 4) along the route showed one distinct cluster. Significant quantities of medieval pottery. was found in the test pits in fields 4, 7, 9, 10, and 12 (see Fig. 5). This spread was located directly north of the

known limits of the Knook shrunken settlement and appears to be associated with a previously unsurveyed earthwork, probably the boundary bank to a toft (A36.3 on Fig 9). In addition a concentration of worked flint was found at neighbouring test pits 34 and 35, near Upton Folly. The mean total of worked flint for each test pit was 3.58 therefore using the Chi squared test the concentration of seventeen worked flints from the two test pits has a 99.9% probability of being significant (A36.7 on Fig 9). Another statistically significant concentration of seven worked flints was found in test pit 22 near Guernsey Belt (A36.6 on Fig 9). This latter concentration may be associated with sub soil disturbance from badgers as it is located over a badger set. The flints in test pits 34 and 35 were probably derived from occupation and activity upslope away from the proposed road line.

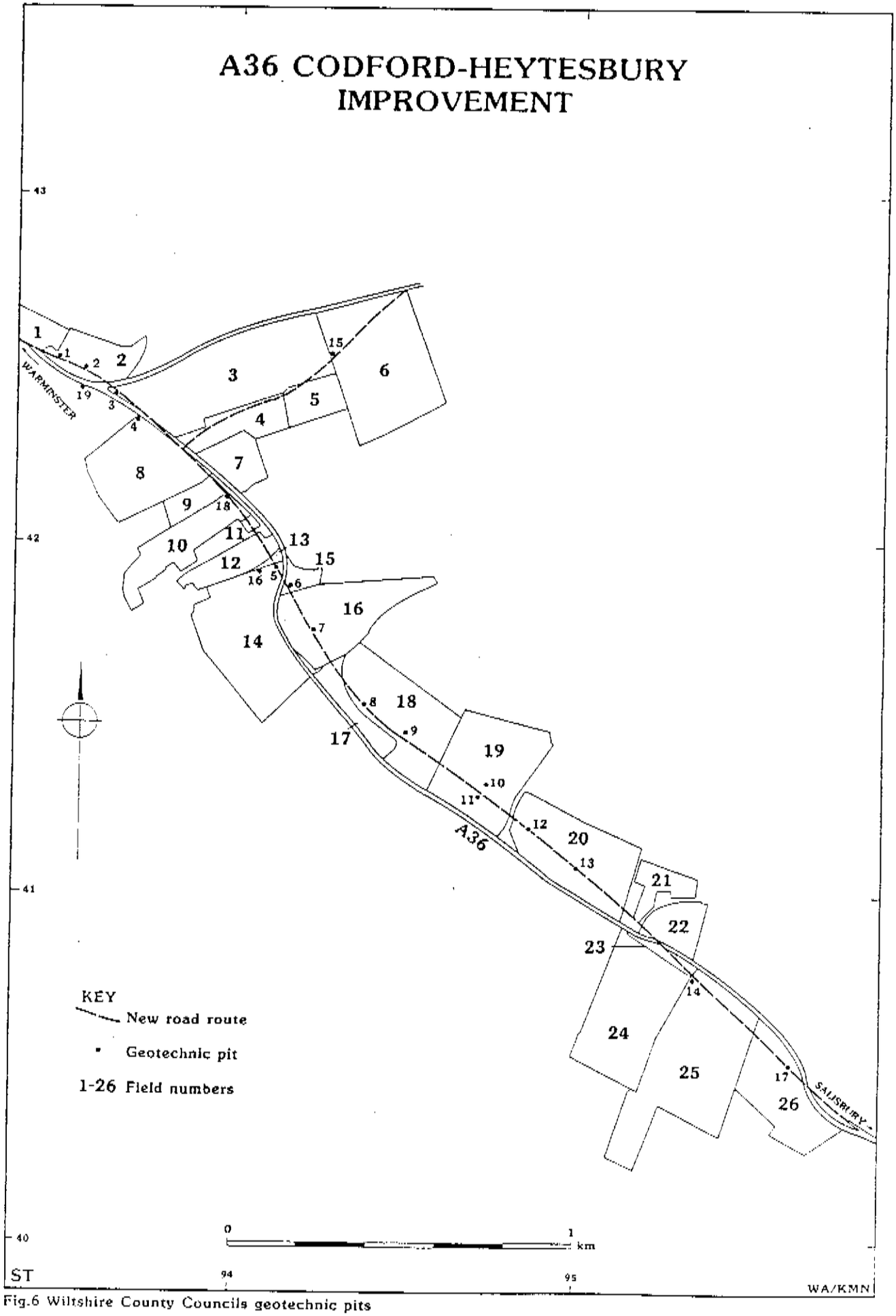


Fig.6 Wiltshire County Councils geotechnic pits

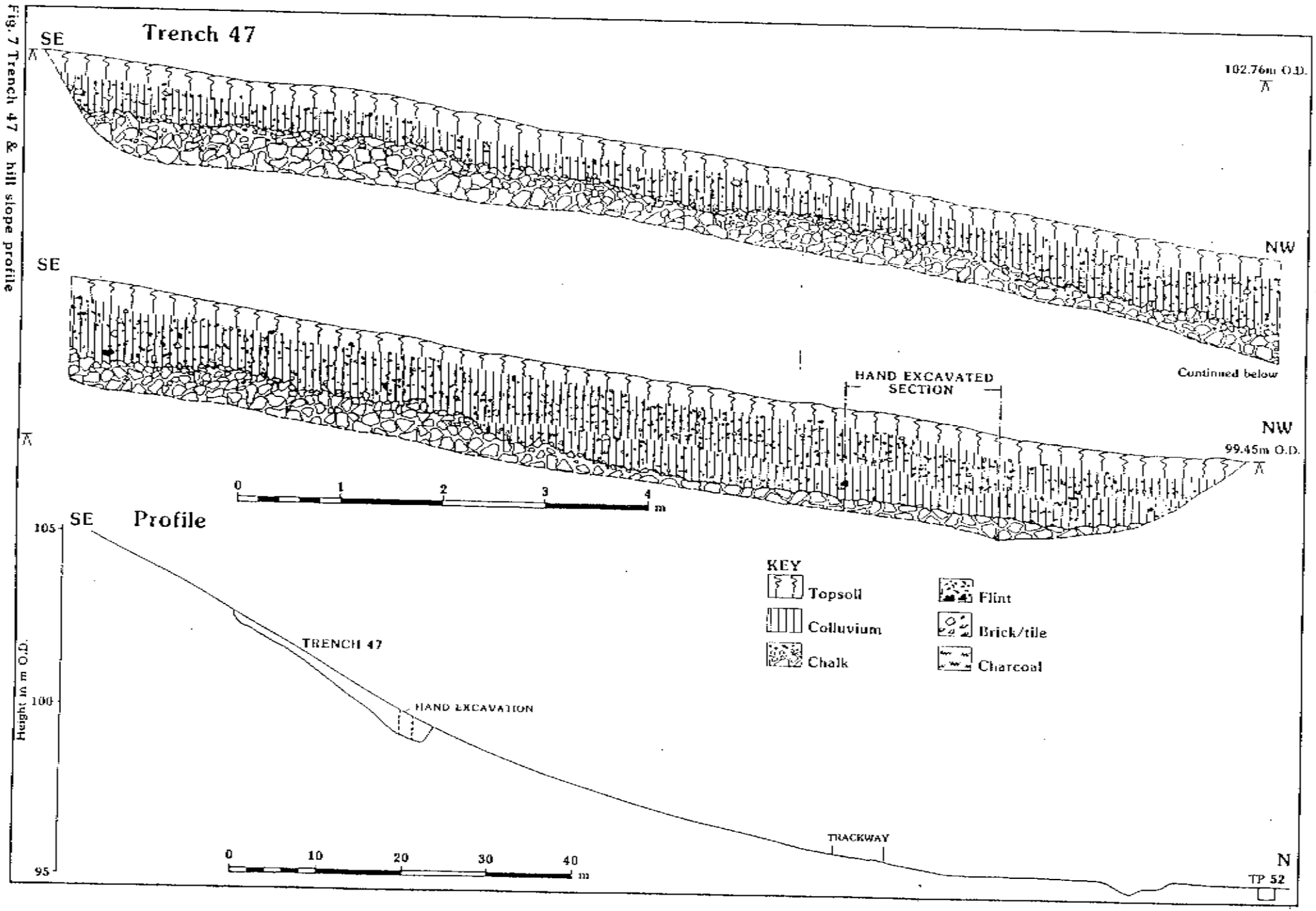
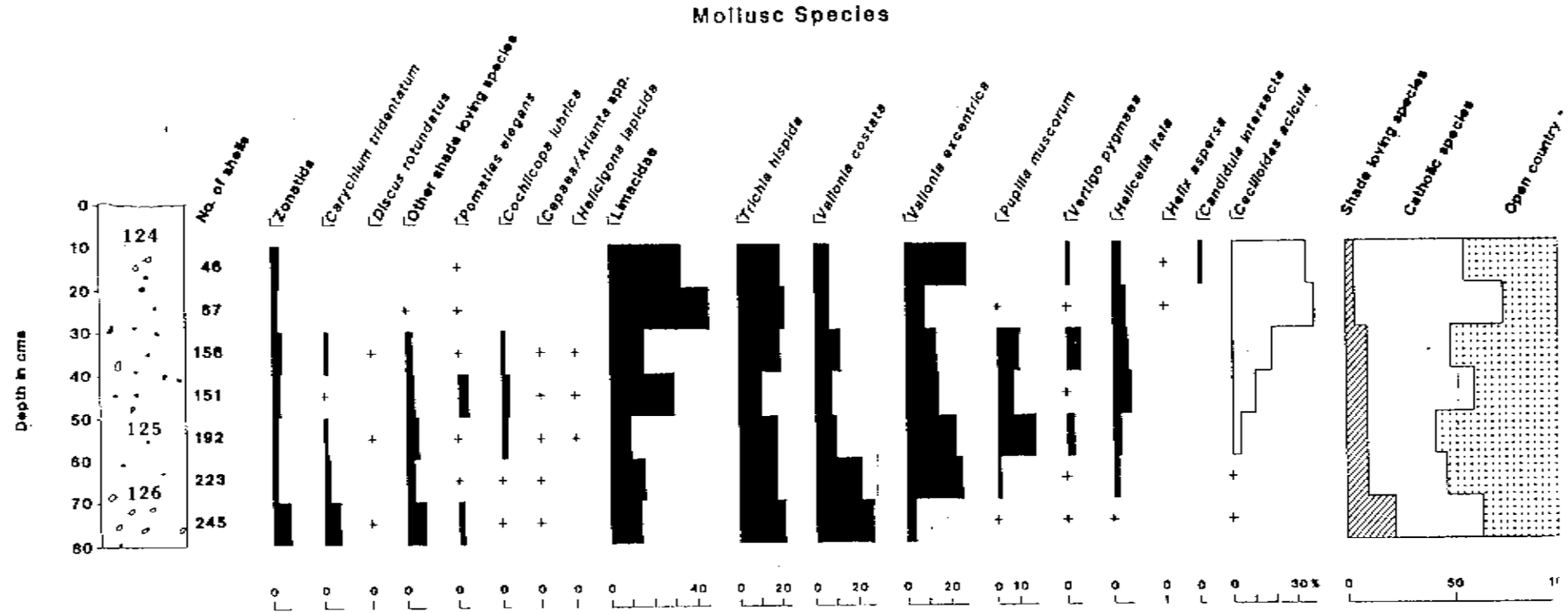
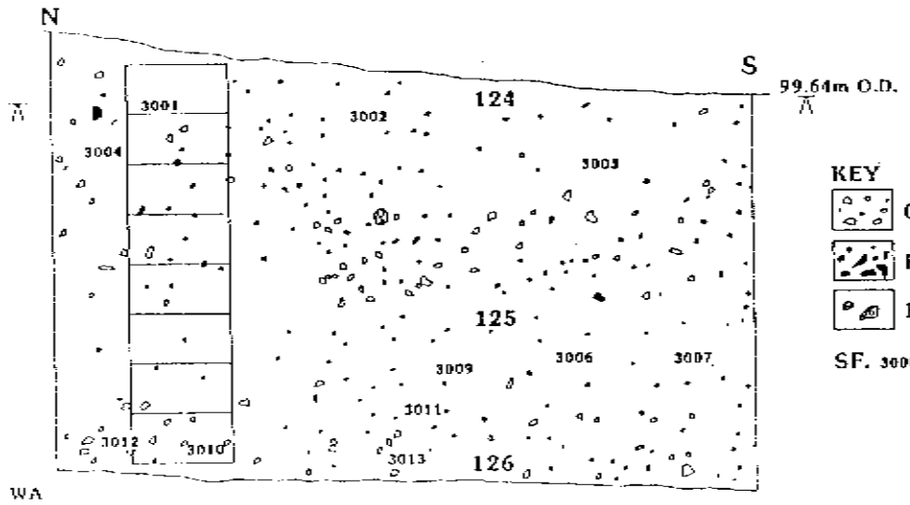


Fig. 7 Trench 47 & hill slope profile

Fig.8 Mollusc column & diagram





KEY

- Chalk
- Flint
- Burnt flint

SF. 3000-3013

3001 Roman pottery
3002 Brick/tile
3003 Brick/tile
3004 Natural stone
3006 Iron Age pottery
3007 Burnt flint
3009 Early Prehistoric pottery (Beake
3010 Burnt flint
3011 Prehistoric pottery
3012 Prehistoric pottery
3013 Burnt worked flint

0 50 100 cm

Table 1: Test pit finds

Test Pit	Burnt Flint		Worked Flint		CBM		Roman Pot		Medieval Pot		Post-med Pot	
	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt
1	2	6g	1	8g	3	8g	1	3g				
3	1	4g										
7	1	15g	4	64g					3	12g		
8											1	2g
9					3	196g						
10	3	24g					1	1g				
11	1	9g			1	58g			3	5g	25	53g
12					1	584g					2	5g
13	1	5g	1	2g					65	494g		
14	7	66g	2	8g	10	130g			3	6g	3	37g
15	12	215g	3	27g	3	25g	1	3g				
18			3	7g	1	252g			16	96g		
19					1	50g					1	3g
20			2	13g								
22			7	114g								
24											1	29g
25			3	58g								
26					1	19g						
27			1	4g							1	9g
32	10	126g	3	25g	1	1g						
34	6	86g	10	91g	1	4g						
35			7	18g	4	566g						
36	2	12g									1	8g
37	4	49g										
38	9	186g										
39	26	572g	4	18g								
41	1	17g	2	18g	3	24g						
42	3	51g	2	14g	1	37g			1	6g	5	32g
44	5	172g										
45	2	18g	1	4g								
50					3	5g	1	23g	33	153g		
51	1	22g	1	6g	1	9g			6	36g		
52	4	78g	11	61g					136	927g	4	25g
Total	**101**	**1735g**	**68**	**560g**	**38**	**1968g**	**4**	**30g**	**268**	**1739g**	**46**	**223g**

4.4 Machine trenching

4.4.1 *Geotechnic pits*

The machine-excavation of 19 pits (see Fig. 6) by Wiltshire County Council's contractors was observed by staff of Wessex Archaeology. One planned pit (WCC geotechnic pit 14) was not observed at the time of fieldwork due to access to the land being withheld. No archaeological features were noted, and no artefacts recovered. geotechnic pit 17 in field 26 displayed a depth of 5.00m colluvial material. This complemented the results from Wessex Archaeology's machine trench 48 in field 24 to the north-west where similar deposits 3.60m deep were recorded.

4.4.2 *Environmental trenching*

Originally four environmental trenches were planned to examine the suspected colluvial deposits. Unfortunately one of the planned trenches had to be abandoned due to the reticence of the land owner to allow its excavation. This alteration to the work programme was agreed with Wiltshire County Council. Hence only three trenches (46-48) were actually excavated. The detailed results are given in Appendix 2. In trench 46 (28m x 2m) in Heytesbury Park, three post-medieval features were noted, as was one earlier but undated ditch (A36.1 on Fig 9). These trenches cut through a 1.5m thick deposit of colluvium, which was clearly disturbed by recent landscaping activities. In trench 47 (23.4m x 2m) below Knook Horse Hill, a prehistoric lynchet was recorded, as was a shallow colluvial sequence and a possible truncated land surface (A36.5 on Fig 9). From the artefacts, it is postulated that the truncated ancient land surface is possibly earlier Bronze Age with the main colluvial sequence being Iron Age and later. In trench 48 (3m x 2m) at Well Bottom a colluvial sequence of 3.6m was exposed (A36.8 on Fig 9).

4.4.3 *1993 trenches*

In 1993 two areas proposed as the locations for infiltration ponds were targeted for further machine trenching. Trenches 1 and 2 were located in fields to the south of Knook army camp (fields). Trench 3 was situated to the east of the Happy Eater restaurant at the northern end of the Codford bypass (field 25); a further trench proposed for this area could not be excavated due to opposition from the landowner. The tabulated results from these trenches are presented in appendix 4. In brief trench 1 (28m x 2m) located two undated ditches, as both were cut into the natural marl and gravel and lay beneath deposits similar to those containing medieval and Romano-British pottery to the east, it is postulated that the ditches may be prehistoric (A36.2 on Fig 9). Trench 2 (45m x 2m) did not contain any features of archaeological interest. Trench 3 (40m x 2m) revealed a thick layer of colluvium. This was machine excavated to a depth of 1.2m. An auger bore was taken at the south-east end of the trench and showed the colluvium to be present to a depth of at least a further 2m below the base of the trench. This supported the previous observations made in geotechnic pit 17 and Wessex Archaeology's machine trench 48 (A36.8 on Fig 9). No finds were recovered but the calcareous nature of the upper 1m of hill wash which was sampled indicates an origin as an erosion product derived from thin, highly calcareous rendzina soils, and may therefore be of later prehistoric or post Roman date. The presence of the shells of introduced Helicellids in the mollusc shell assemblage at about 0.7m below the present ground surface, infers that the upper 1m of hillwash is probably post Roman in date as they are of medieval or later date. The mollusc species in total (see table 2) indicated an open country environment but with some change through time perhaps indicative of a move from dry open short (grazed) grassland or arable to longer grassland (rough pasture).

4.5 Earthwork Survey

The earthworks representing the shrunken settlement at Knook (field 12) have recently been surveyed by the Royal Commission for Historic Monuments (RCHM) (Fig. 2). The slight earthworks in fields 9 and 10 were not included in the RCHM survey, and so were recorded as part of the 1990 evaluation. They took the form of a slight, interrupted bank running parallel to the present road (see Fig. 5 which may represent former house platforms. Test pits 13 and 51 excavated through these

earthworks displayed significant depths of deposits (1.00m, not bottomed and 0.85 not bottomed, respectively). Large amounts of medieval pottery were found in test pit 13 which in both fabric and numbers compared to that found in test pit 52, situated in the heart of the shrunken settlement.

4.6 Geophysical Survey

4.6.1 *1990 magnetometry survey*

After completion of the trial pits in 1990, two areas were selected for geophysical survey. fields 7, 9, and 10 (see Appendix 3 Fig. 4, geophysical surveys C, B, and A respectively) were chosen to investigate the observed earthworks and high density of medieval pottery. In addition the northern corner of field 14 (see Appendix 3 Fig. 4, geophysical survey D) was chosen to assess whether the shrunken settlement or field boundaries known to the east (SMR ST94SW665) continued into this area. The survey was conducted by Geophysical Surveys of Bradford (90/69) using a fluxgate magnetometer over a 20m grid. Plots provided in their reports are shown in Figs 10-13 in Appendix 3. The survey isolated the south-east corner of field 7 (Appendix 3 Fig. 11, survey C), as being badly disturbed, probably by either the Great war camp or farming activity. The rest of the survey, both in fields 9 (Appendix 3 Fig. 11, survey B), field 10 (Appendix 3 Fig. 10, survey A) and in field 14 (Appendix 3 Fig. 13, survey D) produced no significant anomalies. In fields 9 and 10 this may be attributed to the substantial depth of deposits, over 0.80m in test pits 13, 50 and 51. These may have masked features. It was concluded the areas investigated had only limited archaeological potential. It was, nevertheless felt better results might be achieved by a resistance metre if further geophysical work was to be undertaken in the area.

4.6.2 *1990 resistance survey*

With the agreement of Wiltshire County Council's Archaeological Officer a resistivity survey was undertaken along the road corridor (Appendix 3, Fig. 14, survey E) where it crossed the Knook shrunken settlement earthworks in field 12 (see Fig. 2). The results of the resistivity survey (Geophysical Surveys 90/73) correlated well with the results of the earthwork survey. The three platforms visible in the survey area were identified as geophysical anomalies (see Appendix 3 Fig. 14), the two having high readings suggesting structural evidence. In addition a linear anomaly thought possibly to be a filled-in sunken way entered the site from the north before terminating close to the southern edge of the field. This is not visible through surface examination and suggests the present visible earthworks reflect the later stages of activity and mask earlier developments (Coe and Newman 1993, 85).

4.6.3 *1993 magnetometry survey*

An area of approximately 1.5km by 70m was scanned using a fluxgate gradiometer. From the basis of this scan any areas of potential were to be subjected to a gridded survey, detailed results are contained in appendix 5. Although no areas of potential were revealed in the scan two areas were surveyed in detail. Area A amounting to 40m x 20m, was surveyed over a badger set to the north-east of the Guernsey Belt. No responses were gained from the set or from features of archaeological interest. Area B, 40m x 40m and lying to the west of Manor Road in the vicinity of test pits 34 and 35, was surveyed because the scan indicated the presence of two anomalies. No

archaeologically significant anomalies were revealed in the survey and it is possible the anomalies noted in the scan were the two former test pits.

4.7 Summary of results

Four major areas of interest were defined by the fieldwork, the already known settlement earthworks at Knook (A36.4), an undated earthwork and associated medieval finds scatter to the north of the Knook earthworks (A36.3), a deep colluvial sequence at Well Bottom (A36.8) and a colluvial sequence and truncated land surface at Knook Horse Hill (A36.5).

4.7.1 The fieldwork around Knook shrunken settlement in fields 7, 9, 10, and 12 (A36.3 and 4) supported the historical evidence that the shrunken settlement had once spread over this area. Although only one possible structural feature was excavated, slot 044 in test pit 51, the considerable depths of deposit and amounts of pottery suggest structural remains in the locality. The test pit was in any case located to minimise any damage to structural deposits. The inability of magnetic survey to locate any archaeological activity can probably be attributed to the depth of deposits. The medieval pottery recovered proves the existence of structures in the area before those shown on the 18th-century maps. The current earthworks could be considered to be of sufficient quality to merit scheduling but they represent only part of a wider site much of which has been recently disturbed and in some instances destroyed (Coe and Newman 1993). The presence of Romano-British pottery, however little of it there was, implies by its relative concentration that a Romano-British settlement existed in the locality.

4.7.2 The deep colluvial deposits from the mouth of Well Bottom (trench 48, field 24, A36.8) are exceptional and may contain a long and detailed palaeoenvironmental sequence, perhaps stretching back to the Neolithic, this would be of considerable local significance. The data for land-use history from Knook Horse Hill (trench 47, field 14, A36.5) is surprisingly detailed. Previous molluscan analyses from calcareous colluvium have not been able to detect with any certainty such discrete episodes of pasture and arable. Closer sampling of such stratigraphy may provide a higher resolution of information relating to the supposed cyclical use of this hillside (Allen 1992, 4). A full discussion of the information concerning the palaeoenvironmental evidence is contained in appendix 6.

4.7.3 Less significant areas of archaeological interest were identified in four other locations. Field 18 and test pits 22 and 25 contained buried soils covering subsoils which included pieces of worked flint, there being a statistically significant number of such flints in test pit 22 (A36.6). No anomalies were noted during a subsequent magnetometer survey, however. The unusual depth of deposits in test pit 32 (field 19), and the quantities of worked flint recovered from nearby test pits 34 and 35 may indicate an area of archaeological interest in the vicinity (A36.7) but again a magnetometry survey failed to identify any archaeologically significant anomalies. The undated pre-landscaping ditch in trench 46 (field 1), may be part of a wider archaeological site (A36.1) as might the undated but probably prehistoric ditches recorded in field 8 (A36.2).

5. STATEMENT OF ARCHAEOLOGICAL POTENTIAL

5.1 General Statement

In general the proposed road runs through an area of 'significant potential' for archaeology as defined in the *Wiltshire Landscape Local Plan* (1986). The route is also within an 'Area of Important Archaeological Landscape' as defined within the *Western Wiltshire Structure Plan* (1990). This said it does not however impinge on any scheduled monuments, listed buildings or conservation areas.

5.2 Classification of areas of archaeological significance

5.2.1 In order to assess the relative importance of the sites identified along a road route it is necessary to classify and rank them. This is done by defining a site's status at the time of undertaking the archaeological study and then attributing relative significance.

5.2.2 The definition of status is a matter of fact, but the attribution of significance is largely based on professional judgement. Certain levels of status, however, ensure a minimum level of significance, hence world heritage sites would be automatically considered of international significance and scheduled monuments automatically considered to be of national significance.

5.2.3 Lesser definitions of significance are local, limited and none. Local implies importance at a county or district level. Limited implies that whilst a site has some archaeological potential it is of limited value as a local landscape feature and/or as a research resource. Sites having no significance would be SMR entries which are erroneous or refer to sites which no longer exist. They also may be places which are recorded due to the presence of a few finds, but which on evaluation do not have unusual levels of artefacts above that to be expected as a general background level and where no corroborative evidence for archaeological interest can be found.

5.3 Ranking of areas of archaeological significance along the route of the A36 Heytesbury to Codford improvement

The sites along the A36 Codford to Heytesbury Improvement are ranked as follows:

Site No.	*Status*	*Significance*
A36.4	SMR entry within a local authority designated area of archaeological interest	National/Local
A36.3	Unknown prior to evaluation	Local
A36.8	Unknown prior to evaluation	Local
A36.5	Unknown prior to evaluation	Local/Limited
A36.1	Unknown prior to evaluation	Limited
A36.2	Unknown prior to evaluation	Limited
A36.6	Unknown prior to evaluation	Limited
A36.7	Unknown prior to evaluation	Limited

6. IMPACT OF THE ROAD SCHEME

The effect of the road building proposals varies along the route largely dependant on whether the road is constructed on embankment or through a cutting. Even where the road is constructed on an embankment it is usual for the topsoil to be stripped in advance of construction. Where there are no upstanding earthworks present topsoil stripping to a depth of 150mm should not affect any underlying archaeological deposits.

6.1 Areas of embankment

Sites A36.4 and A36.8 are in areas of embankment. A36.4, the area of upstanding earthworks at Knook, would be adversely affected by topsoil stripping as this would have the affect of levelling the earthworks. At A36.8, the deep colluvial sequence at Well Bottom, it is estimated that up to 500mm of topsoil and subsoil might be removed during initial preparatory works. This would not affect any known archaeological deposits and would only remove the upper and recent hillwash accumulation.

6.2 Areas of cut

All other sites identified along the road line will be within areas of cutting and therefore in most cases will be largely destroyed within the width of the road easement. In most cases, however, these sites are of limited significance. The two exceptions are A36.3 and A36.8. At the former road construction will remove the undated earthwork noted during the course of the stage 1 survey and disturb layers known to contain significant quantities of medieval pottery. It is thought this is the site of a medieval property (Coe and Newman 1993). At A36.8 the construction of an infiltration pond will penetrate deeply into the recorded colluvial sequence. Although this pond will only remove a tiny percentage of the colluvium at Well Bottom, its construction will present an opportunity to sample the sequence to a much greater depth than has been possible previously.

7. MITIGATION PROPOSALS

The following proposals are put forward as mitigation against the adverse effects of the road construction proposals on the archaeological resource. Preservation in situ and pre-construction excavation has been proposed where the sites of greatest significance are affected by the proposed route.

7.1 Watching brief

The entire length of the road should be subjected to a watching brief during topsoil stripping and other initial earth disturbance activities. This response is sufficient to provide mitigation for sites A36.1, A36.2, A36.5, A36.6 and A36.7. It is essential during this work close liaison is maintained between the on-site archaeologist and the construction contractors with adequate provision made for archaeological recording.

7.2 Areas of embankment

7.2.1 In field 12 at A36.4, engineering measures including the laying of a geotextile mat should be undertaken to ensure the earthworks and sub-surface archaeological features are not disturbed and will be preserved under the embankment.

7.2.2 Any unavoidable excavation necessary in field 12 for drainage etc. must be undertaken under archaeological supervision and sufficient time allowed for a complete record of all archaeological features to be obtained. Wherever possible all such ground disturbance will be avoided in field 12.

7.2.3 Elsewhere the embanked road is unlikely to affect sites of archaeological potential except at Well Bottom (A36.8) where up to a maximum of 0.5m of the colluvial sequence may be removed in preparation works. This upper level of the sequence has been shown to be of recent origin and sufficient sampling work has already been carried out in order to characterise its nature and to derive palaeoenvironmental data.

7.3 Areas of cut

7.3.1 Within fields 9 and 10 the area defined by the earthwork bank (A36.3) will be archaeologically excavated in advance of construction thus ensuring the site preservation by record. It is proposed two trenches, each measuring 30m x 12m, be excavated, one in field 9 and one in field 10. The topsoil and overburden will be stripped by mechanical excavator under the supervision of an archaeologist, and any underlying features and deposits excavated manually. All archaeological deposits and features will be recorded graphically, photographically and in writing on *pro forma* record sheets. All finds will be retained for analysis and environmental samples taken where appropriate.

7.3.2 At Well Bottom (A36.8) in the location of the proposed infiltration pond (field 24), a section approximately 10m x 2m at the surface and 3.6m deep will be mechanically excavated through the colluvial deposits and shored. A hand-excavated column will be taken from the machine trench section measuring 1.5m wide and penetrating 0.5m into the section face. Within this column all artefacts will be plotted and recovered and a mollusc column sample taken which will enable an environmental sequence to be recorded.

Table 2: Definition of site mitigation responses

Site	Significance	Response
A36.1	Limited	Watching brief
A36.2	Limited	Watching brief
A36.3	Local	Excavation
A36.4	National/Local	Preservation
A36.5	Local/Limited	Watching brief
A36.6	Limited	Watching brief
A36.7	Limited	Watching brief
A36.8	Local	Excavation

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APPENDIX 1

Test Pit Register

Test Pit 1, Field 6.
007 Brown silty clay loam topsoil, 0.20m thick.
008 Very pale brown calcareous silty loam subsoil, 0.08m thick.
009 Chalk bedrock.

Test Pit 2, Field 6.
001 Brown silty clay loam topsoil, 0.25m thick.
002 Very pale brown calcareous silty loam subsoil, 0.08m thick.
003 Chalk bedrock.

Test Pit 3, Field 6.
004 Brown silty clay loam topsoil, 0.20m thick.
005 Brown silty clay loam subsoil, 0.20m thick.
006 Weathered chalk bedrock.

Test Pit 4, Field 6.
010 Brown silty clay loam topsoil, 0.20m thick
011 Very pale brown calcareous silty loam subsoil, 0.08m thick.
012 Weathered chalk bedrock.

Test Pits 5 and 6 not excavated due to being located over disturbed areas of Knook Camp, Field 5.

Test Pit 7, Field 6.
013 Very dark greyish brown silty clay loam topsoil, 0.25m thick.
014 Brown silty clay subsoil, 0.45m thick.
015 Degraded surface of chalk bedrock.

Test Pit 8, Field 4.
081 Grey silty loam topsoil, 0.08m thick.
082 Dark greyish brown silty loam with much chalk, 0.20m thick. Levelling deposit connected with Great War camp.
083 Dark brown silty loam subsoil, 0.42m thick. Pre-Great War camp surface.
084 Degraded chalk natural.

Test Pit 9, Field 4.
079 Greyish brown silty loam topsoil, 0.14m thick.
080 Greyish brown silty loam excavated to a depth of 0.50m. Disturbed and not bottomed, probably associated with Great War camp.

Test Pit 10, Field 7.
020 Dark greyish brown silty clay loam topsoil, 0.22m thick.
021 Dark greyish brown silty clay loam subsoil, 0.18m thick.
022 Degraded chalk deposit.

Test Pit 11, Field 7.
034 Grey silty loam topsoil, 0.17m thick.
035 Grey silty loam subsoil, 0.17m thick.
036 Degraded chalk deposit.

Test Pit 12, Field 7.
023 Dark greyish brown silty loam topsoil, 0.08m thick.
024 Dark grey silty loam excavated to a depth of 0.55m but not bottomed. Appeared to be an embankment for the adjacent A36 road.

Test Pit 13, Field 9.
025 Dark grey silty loam topsoil, 0.17m thick.
026 Dark greyish brown silty loam deposit presumably associated with low bank through which the pit was excavated, 0.40m thick.
027 Dark greyish brown silty clay loam subsoil, excavated to a depth of 0.45m but not bottomed.

Test Pit 14, Field 9.
028 Dark greyish brown silty loam topsoil, 0.15m thick.
029 Dark greyish brown silty loam subsoil, 0.17m thick.
030 Degraded chalk deposit.

Test Pit 15, Field 9.
031 Dark greyish brown silty loam topsoil, 0.17m thick.
032 Greyish brown silty clay loam subsoil, 0.10m thick.
033 degraded chalk deposit.

Test Pit 16, Field 10.
018 Dark brown silt loam topsoil, 0.15m thick.
019 Flint gravel natural subsoil.

Test Pit 17, Field 10.
016 Dark brown silty clay topsoil, 0.16m thick.
017 Chalky surface of natural subsoil.

Test Pit 18, Field 12.
037 Dark greyish brown silty loam topsoil, 0.22m thick.
038 Dark greyish brown silty loam subsoil excavated to a depth of 0.33m but not bottomed.

Test Pit 19, Field 14.
045 Grey silty loam topsoil, 0.20m thick.
046 Light grey chalky silt excavated to a depth of 0.30m, thought to be top of colluvial deposits, not bottomed.

Test Pit 20, Field 16.
051 Greyish brown silty loam topsoil, 0.25m thick. Flint 2p 13g.
052 Degraded surface of chalk bedrock.

Test Pit 21, Field 16.
053 Greyish brown silty loam topsoil, 0.28m thick.
054 Degraded surface of chalk bedrock.

Test Pit 22, Field 18.
059 Grey silty loam topsoil, 0.16m thick.
060 Dark grey silty loam buried soil, 0.08m thick.
061 Greyish brown silty loam subsoil, 0.15m thick.
062 Degraded surface of chalk bedrock.

Test Pit 23, Field 17.
057 Dark greyish brown silty loam topsoil, 0.16m thick.
058 Degraded surface of chalk bedrock.

Test Pit 24, Field 17.
055 Greyish brown silty loam topsoil, 0.25m thick.
056 Degraded surface of chalk bedrock.

Test Pit 25, Field 18.
063 Grey silty loam topsoil, 0.18m thick.
064 Dark grey silty loam buried soil, 0.08m thick.
065 Greyish brown silty loam subsoil, 0.13m thick.
066 Degraded surface of chalk bedrock.

Test Pit 26, Field 18.
067 Grey silty loam topsoil, 0.25m thick.
068 Degraded surface of chalk bedrock.

Test Pit 27, Field 17.
075 Very dark grey silty loam topsoil with much leaf matter, 0.26m thick.
076 Chalky silt excavated to a depth of 0.30m, thought to be surface of colluvial deposits, not bottomed.

Test Pit 28, Field 18.
073 Grey silty loam topsoil, 0.24m thick.
074 Degraded surface of chalk bedrock.

Test Pit 29, Field 18.
071 Grey silty loam topsoil, 0.23m thick.
072 Degraded surface of chalk bedrock.

Test Pit 30, Field 18.
069 Disturbed grey silty loam topsoil, 0.23m thick.
070 Degraded surface of chalk bedrock.

Test Pit 31, Field 19.
092 Grey silty loam topsoil, 0.21m thick.
093 Chalky silt excavated to a depth of 0.18m, thought to be surface of colluvial deposits, not bottomed.

Test Pit 32, Field 19.
094 Grey silty loam topsoil, 0.64m thick.
095 Greyish brown silty loam subsoil, 0.46m thick.
096 Degraded surface of chalk bedrock.

Test Pit 33, Field 19.
077 Grey silty loam topsoil, 0.33m thick.
078 Degraded surface of chalk bedrock.

Test Pit 34, Field 19.
089 Light grey silty loam topsoil, 0.23m thick.
090 Pale brown silty loam subsoil, 0.33m thick.
091 Degraded surface of chalk bedrock.

Test Pit 35, Field 19.
087 Grey silty loam topsoil, 0.26m thick.
088 Degraded surface of chalk bedrock.

Test Pit 36, Field 19.
085 Light grey silty loam topsoil, 0.28m thick.
086 Greyish brown silty loam excavated to a depth of 0.05m and thought to be surface of colluvial deposits, not bottomed.

Test Pit 37, Field 20.
097 Grey silty loam topsoil, 0.26m thick.
098 Light brownish grey silty loam subsoil, 0.25m thick.
099 Degraded surface of chalk bedrock.

Test Pit 38, Field 20.
103 Grey silty loam topsoil, 0.44m thick.
104 Degraded surface of chalk bedrock.

Test Pit 39, Field 20.
100 Grey silty loam topsoil, 0.25m thick.
101 Light brownish grey silty loam subsoil, 0.28m thick.
102 Degraded surface of chalk bedrock.

Test Pit 40, Field 22.
105 Greyish brown deposit consisting mostly of modern demolition rubbish. Excavated to a depth of 0.60m, not bottomed.

Test Pit 41, Field 23.
109 Grey silty clay loam topsoil, 0.18m thick.
110 Grey silty clay loam subsoil, 0.28m thick.
111 Dark greyish brown silty clay loam subsoil 0.30m thick.
112 Chalky silt deposit, thought to be surface of colluvium.

Test Pit 42, Field 24.
106 Pale brown grey silt loam topsoil, 0.21m thick.
107 Pale brown clay loam subsoil, 0.19m thick.
108 Chalky silt deposit thought to be top of colluvial deposits.

Test Pit 43, Field 25.
113 Yellowish brown silty loam topsoil, 0.25m thick.
114 Chalky peagrit deposit, possibly colluvial.

Test Pit 44, Field 25.
115 Pale greyish brown silt loam topsoil, 0.24m thick.
116 Grey silt subsoil 0.08m thick.
117 Surface of chalky deposit, possibly colluvial.

Test Pit 45, Field 26.
118 Light brownish grey silty clay loam topsoil, 0.24m thick.
119 Surface of chalky gravel, possibly colluvial.

Test Pit 50, Field 9.
039 Dark grey silty loam topsoil, 0.15m thick.
040 Dark grey silty loam subsoil, possibly part of surrounding earthwork, 0.40m thick.
041 Dark greyish brown silty loam subsoil, 0.25m thick.
043 Dark greyish brown silty loam fill of 044.
044 Shallow slot 0.11m wide and 0.08m deep with steep straight sides and a flat base cutting into natural 042. Entered the trench from the south and ran for 0.40m north-south then turned a right-angled corner and proceeded 0.60m to east and out of the pit. Possibly constitutes structural evidence.
042 Compacted chalk gravel.

Test Pit 51, Field 10.
047 Dark greyish brown silty loam topsoil, 0.20m thick.
048 Chalk silt fill of 049.
049 Slot 0.29m deep and at least 0.46m wide running north-south across eastern side of pit.
050 Grey silty loam subsoil excavated to a depth of 0.68m but not bottomed.

Test Pit 52 (2m x 2m), Field 12.
120 Pale grey silt loam topsoil, 0.29m thick.
121 Greyish brown silty clay loam subsoil, 0.20m thick.
122 Brown clay loam subsoil, 0.18m thick.
123 Chalky clay silt, surface of colluvium.

APPENDIX 2

Environmental Trenches 1990

Trench 46, Field 1 Heytesbury Park ST425934 - A machine trench 25m in length, 2m wide and up to 2m in depth was cut through the south facing side of a dry valley in the south-east corner of Heytesbury House gardens, to the immediate south of Heytesbury plantation.

The deposits in the trench were sealed by topsoil (129) a pale grey brown silty loam 0.25m thick, and subsoil (139) a pale grey silty clay.

Cutting from directly beneath the topsoil were three features assumed to be modern on the basis of associated artefacts:

Ditch 134 - a ditch 8.60m wide and 1.35m deep with a shallow sided flat-bottomed profile, ran north-west/south-east across the trench. Filled with a series of silty clay deposits (135) which contained much brick, tile and slate. This ditch had been recut at least once (136), the recut being 3.60m wide and 0.80m deep with a silty clay loam fill (137) containing much modern pottery.

Ditch 140 - a steep sided flat bottomed ditch 1.70m wide and 0.60m deep crossing the trench east-west. Filled with a deposit indistinguishable from the silty clay subsoil (139) and which contained modern artefacts.

Pit 141 - a steep sided flat bottomed pit 0.80m wide and 0.38m deep filled with a single silty clay loam (142) containing modern artefacts including an 1885 Queen Victoria penny.

Another ditch, (131), crossed the trench east-west, and was 2.5m wide and 1.10m deep with moderately steep sides. This was cut to the north by modern ditch (134) and was to the south sealed by subsoil (139). The fill, a pale grey silty clay (132) contained no artefacts though it was only examined in section. The form and nature of the ditch and fill along with its stratigraphic relationships implied that this feature may have been of some antiquity.

All the features in the trench cut through colluvial deposit 133, an extremely compact chalky silty clay, up to 1.50m thick, which directly overlay chalk bedrock (130).

The trench revealed evidence of extensive landscaping to create a series of bench terraces. As a consequence of this later 19th century/early 20th century activity, any former prehistoric or early historic colluvial deposits had been removed. Small relict pockets of highly calcareous hillwash survived, but these had been disturbed and were noted to contain small fragments of brick and slate. In view of the extensive disturbance the section was recorded but no detailed descriptions or sampling was undertaken.

Trench 47, Field 14 Knook East/Knook Horse Hill West ST418939
A machine cut trench 23.4m long, 2.0m wide and up to 1.0m deep was excavated along the axis of the proposed road improvements below Knook Horse Hill and just above Knook shrunken settlement (figs. 4 and 6). To the south of the trench the slope leads down on to Wylye Valley floodplain and the shrunken settlement. Test pits on the floodplain (Test Pit 51) revealed limited deposits (max. 1.2m) of which most could be attributable to medieval or post-medieval activity.

The trench revealed a fairly shallow sequence not exceeding a metre (fig. 7). The deposits increased gradually in depth southwards downslope, and the greatest depth of hillwash on this slope was probably immediately downslope of the excavated section.

The basal deposits (127) comprised large and medium chalk pieces in a silty calcareous matrix. This weathered chalk was probably a result of periglacial conditions. At the deepest point in the stratigraphy a calcareous silty clay loam horizon (context 126) was observed. This contained significantly more clay (by field textural observations) than the overlying colluvium and was also darker in colour. The latter observation probably indicated a less calcareous deposit and possibly a higher organic content. Close microscopic inspection of the weak blocky peds showed distinct inter-pedal coatings. It is probable that this horizon represented a relict, truncated old land surface. The coatings observed under a low power microscope might be the result of slaking due to silt translocation following an episode of tillage.

The main colluvial deposit (context 125) was a highly calcareous pale whitey grey (10YR 7/2) silt loam with many small to medium chalk pieces. Towards the top of this deposit small and very small chalk inclusions were more frequent. The lack of large stones and the predominance of small stones in the fine calcareous matrix indicates low energy deposition. This deposit may be the result of low energy erosion events such as small scale sheet-wash and rilling episodes typical within and from arable contexts (Allen in press). The modern topsoil is a pale grey (10YR 6/2) silty loam calcareous brown earth.

The colluvial deposit (125) and possible truncated land surface (126) were deemed to be of environmental interest. Thus an artefact collection box consisting of a 1.5m section excavated 0.5m back from the face of the southern end of the trench was dug. Within this a mollusc column was removed.

The artefact collection box produced 11 artefacts (see fig. 8). The basal relict old land surface produced only a single fragment of prehistoric pottery (SF. 3012) and a flint flake (SF. 3013). The lower portion of the colluvium contained a well worn fragment of earlier prehistoric pottery (SF. 3009; Cleal pers. comm.) and a sherd of Iron Age pottery (SF. 3006), while the upper more calcareous colluvium was artefact-free. The topsoil contained fragments of brick/tile (SF. 3002, 3003) and Roman pottery (SF. 3001). The paucity of artefacts certainly indicated the absence of prehistoric settlement in the immediate vicinity and the artefact density of 18.7 artefacts per cubic metre is very low compared with other published data (Allen 1988, 69; Bell 1986). Nevertheless, we could suggest that the relict truncated old land surface may be earlier prehistoric (earlier Bronze Age) whilst the main colluvial sequence was probably Iron Age or later.

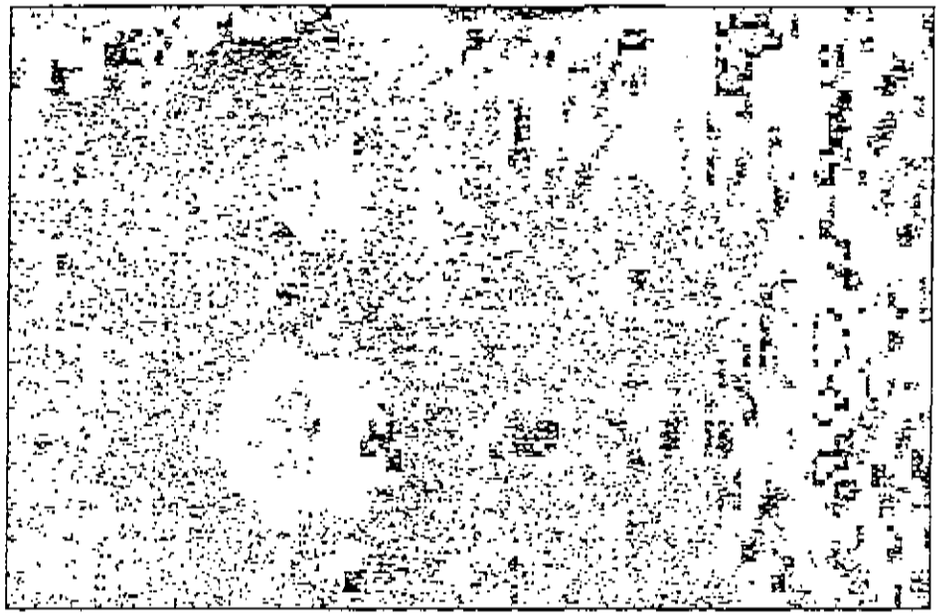
A summary of the environmental analysis of the samples from the trench is included under Section 6 below.

Trench 48, Field 23 Well Bottom ST 407953 - A machine trench was positioned to examine the deposits thought to have emanated from Well Bottom dry valley to the north. The initial 3m length of the trench was machined down to the degraded surface of the chalk, a depth of 3.60m, revealing an exceptionally deep colluvial sequence. Nearby Test Pits 41 and 42 (see fig. 4) had not been bottomed because of the depth of the colluvium, Test Pit 41

having revealed colluvial deposits with a minimum overall depth of 0.75m. It was obvious that the trench would have to be unfeasibly large to allow someone to work safely at the necessary depth. Consequently the trench was abandoned and backfilled.

Before backfilling the section was recorded, from the surface. At 3.60m the weathered periglacially soliflucted chalk surface was noted, which contained weathered medium to large chalk pieces in a silty calcareous matrix. The colluvial deposit overlying this comprised 3.10m of homogeneous calcareous silty mud hillwash with few flints. No lenses of chalk or flint pieces were apparent nor was any other horizonation. The modern soil was a typical calcareous brown earth 0.55m deep.

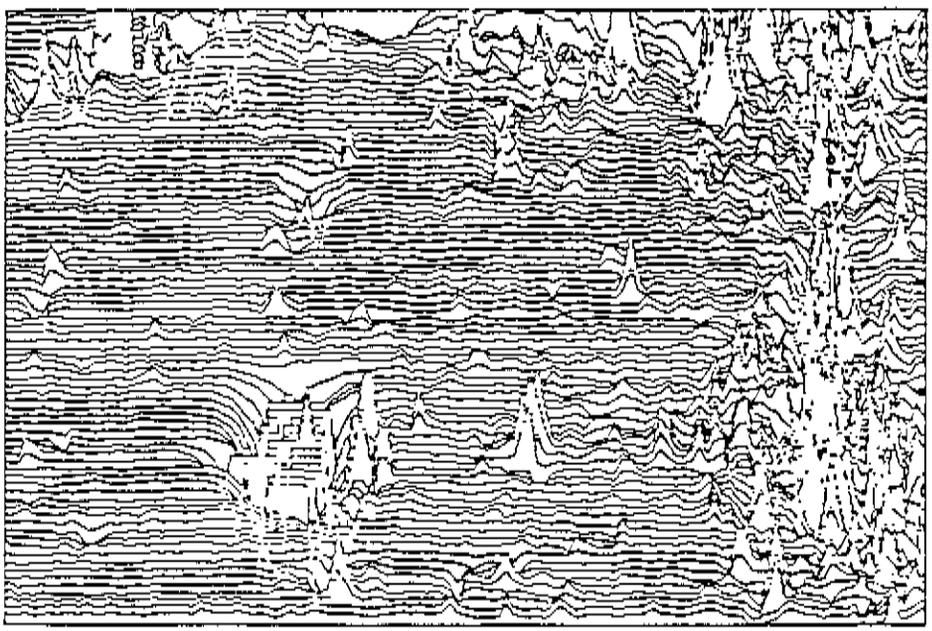
APPENDIX 3: Geophysical Survey Plots, 1990



nT

10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.1

KNOOK



Scale in nT

1 3 5 10

0 15m

Area A

Fig.9 Magnetometer survey - Area A, Field 10

KNOOK

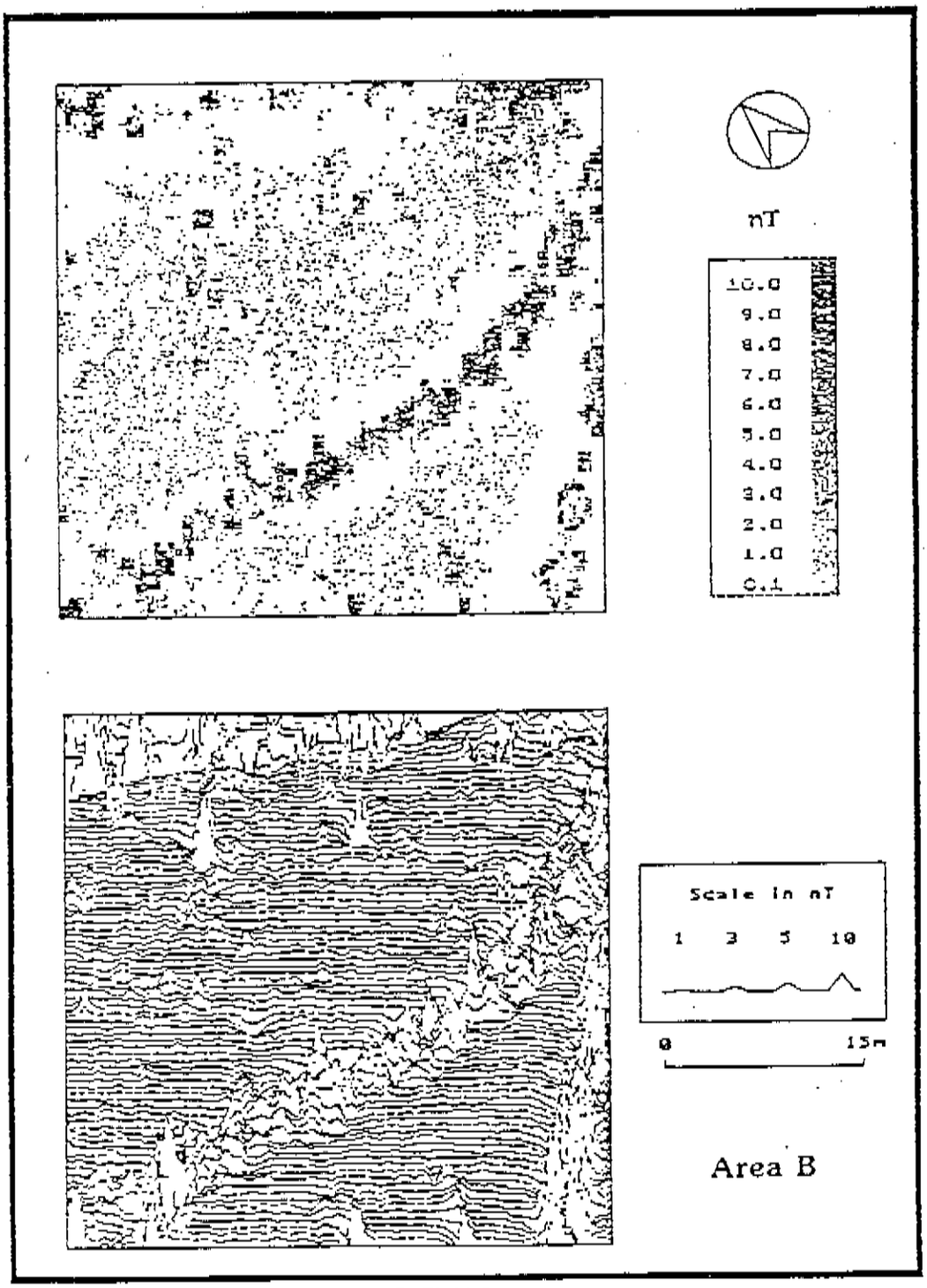


Fig.10 Magnetometer survey - Area B, Field 9

Fig.11 Magnetometer survey - Area C, Field 7

KNOOK

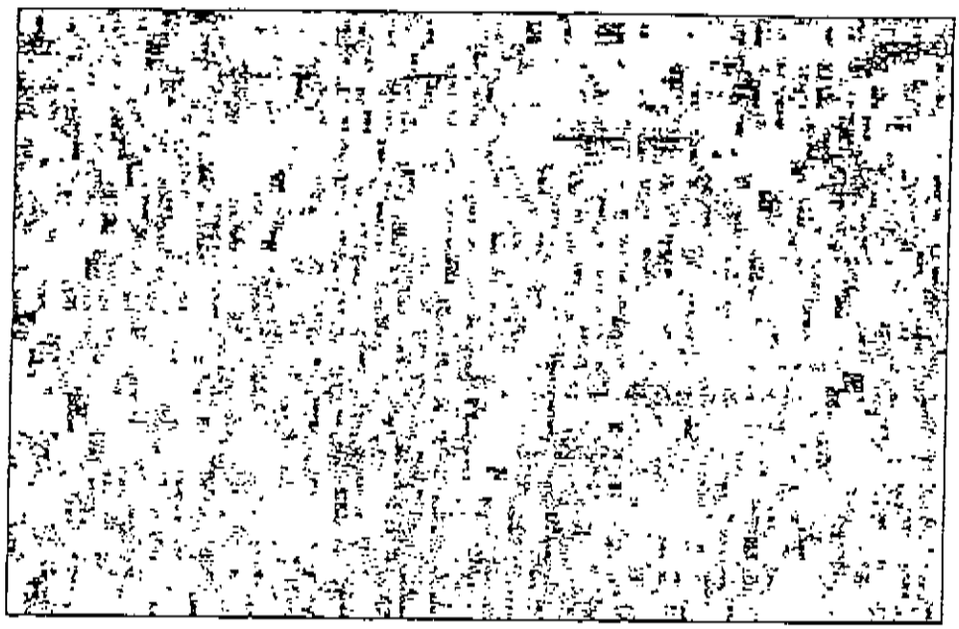
nT

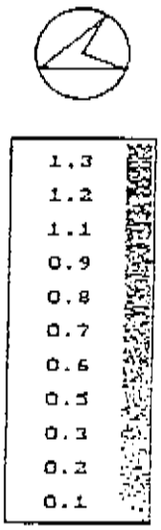
9.5
8.5
7.5
6.5
5.5
4.5
3.5
2.5
1.5
0.5

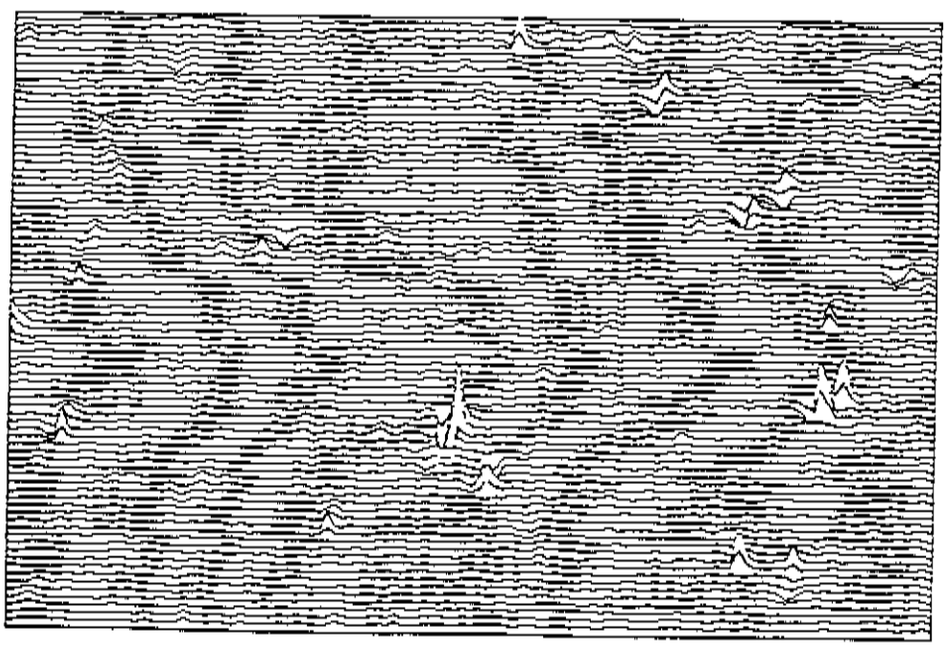
Area C

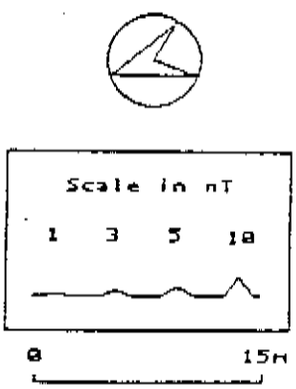
1:500

KNOOK





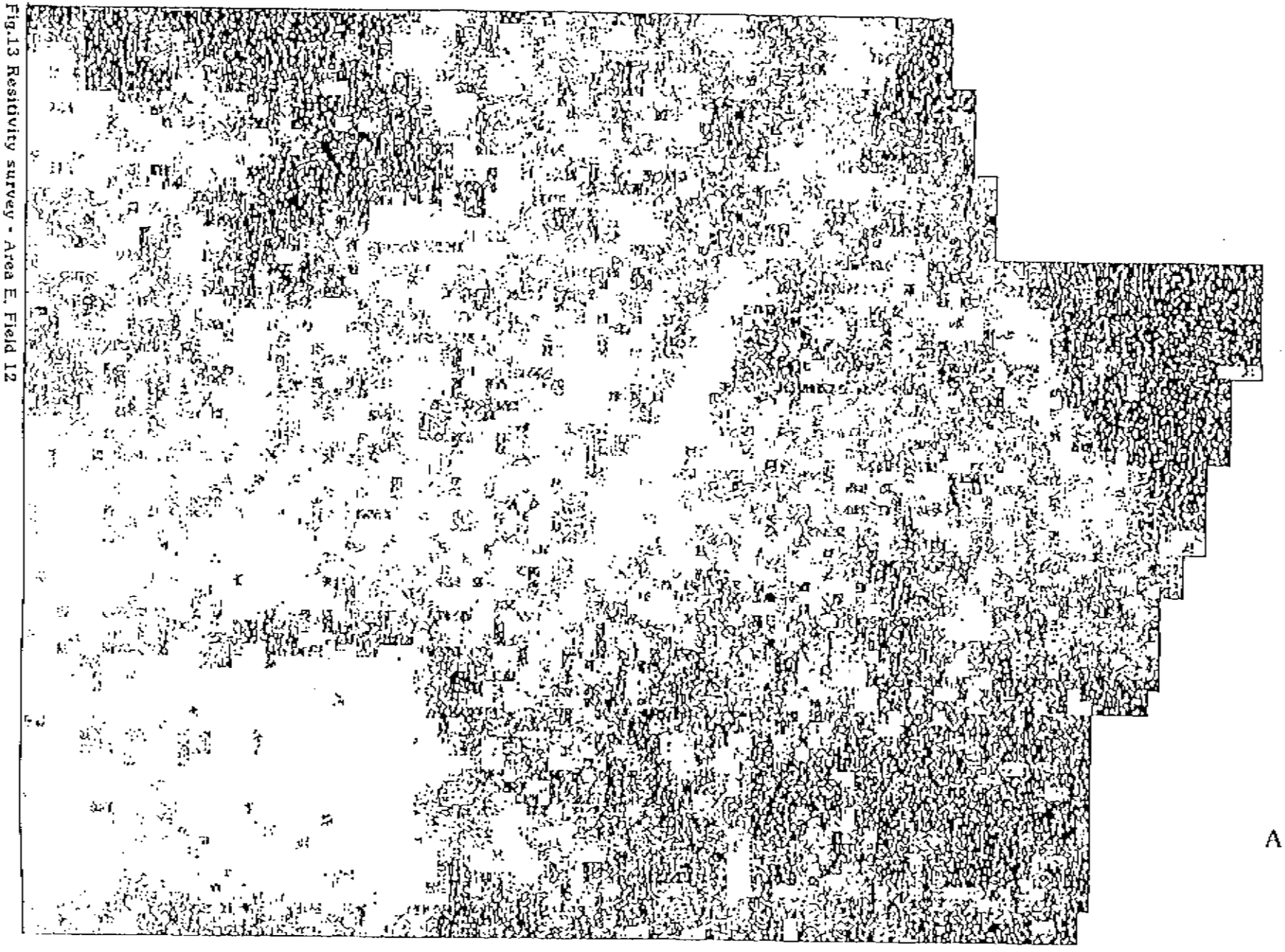




Area D

Fig.12 Magnetometer survey - Area D, Field 14

Fig.13 Resistivity survey - Area E, Field 12



Ohms

55.0
54.1
53.1
52.2
51.2
50.3
49.3
48.4
47.4
46.5
45.5

1:500

Area E

APPENDIX 4: Evaluation trench results 1993

Trench 1

Dimensions: 28m long, 2m wide and up to 0.95m deep.
NGR: ST9384542165 - ST9386042190

Context	Description	Depth	Interpretation
100	A mid brown clayey loam with moderate flint gravel and rare chalk flecking. One piece of burnt flint weighing 8g was also recovered.	0.15m	Topsoil
101	A pale brown clayey silt with moderate to frequent flint gravel and occasional chalk flecking. Three pieces of burnt flint weighing 33g and 4 pieces of worked flint weighing 116g were recovered.	0.25m	Subsoil
102	A very pale brown/ off white weathered chalk marl with frequent flint gravel and clayey silt, and frequent unstructured chalk blocks.	n/e	Natural
[103]	A shallow SE/NW aligned linear feature, 0.9m wide, 0.25m deep, observed cutting 102 and filled with 104.	0.55m	Ditch
104	A pale brown clayey silt with frequent flint gravel and occasional chalk flecks filling [103]. Two pieces of animal bone weighing 27g, two pieces of burnt flint weighing 122g, two pieces of worked flint weighing 3g and one piece of fired clay weighing 2g were recovered.	0.55m	Ditch fill
105	A light greyish brown clayey silt with very occasional chalk flecks and flint gravel, filling [106] and sealing 107. One piece of burnt flint weighing 8g and a one iron nail were recovered.	0.25m	Upper ditch fill
[106]	A steep-sided SSE/NNW aligned linear feature, 1m wide and 0.5m deep, observed cutting 102 and filled with 105 and 107.	0.5m	Ditch
107	A greyish brown slightly clayey silt with profuse chalk flecks and moderate flint gravel, filling [106] and sealed by 105. One piece of burnt flint weighing 12g and two pieces of worked flint weighing 220g were recovered.	0.25m	Primary ditch fill
108	Lenses of very light brown clayey silt filling natural depressions in the surface of 102, and sealed by 101. Four pieces of worked flint weighing 8g were recovered.	0.06m	Periglacial feature fill
109	A mid brown clayey silt with occasional chalk flecks and rare flint gravel, filling [110]	0.1m	Root disturbance fill
[110]	An irregular shallow depression, at least 1m in diameter, filled with 109 and cutting 102.	0.1m	Root disturbance
111	A lens of dark reddish brown/ black silty clay, not excavated. This appeared to be cut by 112, and may therefore represent part of the fill of a feature also filled with 113.	n/e	Pit fill ?
112	A SSE/NNW aligned linear band of pale brown clayey silt with occasional chalk flecks. This appeared to cut through 111 and 113	n/e	Modern trench fill ?

113	A large subcircular spread of mid brown clayey loam with moderate to frequent chalk flecks and occasional flint gravel. This appeared to be cut by 112, and may therefore represent part of the fill of a feature also filled with 111.	n/e	Pit fill ?

Trench 2

Dimensions: 45m long, 2m wide and up to 0.7m deep.
NGR: ST9385042150 - ST9388742125

Context	Description	Depth	Interpretation
200	A mid brown clayey loam with moderate flint gravel and rare chalk flecking. One piece of CBM weighing 37g, two pieces of worked flint weighing 18g and two pieces of post-medieval pottery weighing 12g were recovered.	0.15m	Topsoil
201	A pale brown slightly clayey silt with moderate to frequent flint gravel and occasional chalk flecking. One piece of worked flint weighing 4g was recovered	0.30m	Subsoil
202	A very pale brown/ off white weathered chalk marl, with frequent flint gravel, lenses of clayey silt, and unstructured chalk blocks.	n/e	Natural
203	A mid brown slightly clayey silt with occasional flint gravel and profuse chalk flecking, filling [204].	0.05m	Watercourse fill
[204]	A shallow irregular N/S aligned feature, 3m wide and 0.1m deep, filled with 203 and cutting 102.	0.05m	Watercourse

Trench 3

Dimensions: 40m long, 2m wide and up to 1.2m deep
NGR: ST9528740807 - ST9532340787

Context	Description	Depth	Interpretation
300	A dark brown loamy clay with rare flint gravel.	0.25m	Topsoil
301	A light brown silty clay, ped-like in structure.	0.2m	Subsoil
302	A thin band of greyish light brown clayey silt, representing an interface between 303 and 306. A second deposit of this material was observed within layer 306.	0.05-0.1m	Colluvium
303	A mixed pale brown/ dark yellow clayey silt, ped-like in structure.	0.2-0.5m	Colluvium
304	A pale brown clayey silt with profuse very small chalk granules and very occasional flint gravel.	0.2-0.4m	Colluvium
305	A thin band of pale/ mid brown soft clayey silt, within layer 306.	0.05-0.1m	Colluvium
306	A pale yellow compacted silty clay, ped-like in structure.	0.5m+	Colluvium

n/e = Not excavated
CBM = Ceramic building material (brick, tile etc.)

APPENDIX 5: Geophysical Survey results, 1993

SITE SUMMARY SHEET

93 / 23 A36 Heytesbury to Codford

NGR: ST 941 418 to ST 956 405

Location, topography and Geology

The proposed road corridor covers approximately 1.5 km by 70m to the north of the existing A36 road from Heytesbury to Codford. The area is undulating, sloping down to the A36 in the south. Ground cover was predominantly pasture with an area of stubble in the east. The underlying geology comprises chalk.

Archaeology

Aerial photographs indicate no archaeological features and trial pits have given no indications of archaeological activity (R Newman, *pers comm*).

Aims of Survey

A gradiometer scan was undertaken in an attempt to establish the extent of any archaeological features that might exist at the site. Detailed survey was to be undertaken over any anomalies of possible archaeological interest. The geophysical survey was carried out as part of an archaeological evaluation being undertaken by Wessex Archaeology (WA), prior to widening of the A36.

Summary of Results *

Scanning showed the area to be very quiet magnetically with only one anomaly of possible interest being detected. Detailed survey in two areas revealed no archaeologically significant anomalies.

*** It is essential that this summary is read in conjunction with the detailed results of the survey.**

SURVEY RESULTS

93 / 23 A36 Heytesbury to Codford

1. Survey Areas (Figures 1 - 2)

1.1 An area of approximately 1.5km by 70m covering the proposed road corridor, was initially scanned using a fluxgate gradiometer. Yellow wooden stakes, marking the road corridor, had been set out prior to the survey.

1.2 Two areas of detailed survey work, A and B, were undertaken and the location of these is shown in Figures 1 and 2 at a scale of 1:2500.

1.3 The survey grids were set out and tied-in by **Geophysical Surveys of Bradford** personnel. Accurate tie-in information is available on request.

2. Display

2.1 The results are displayed as X-Y traces and dot density plots. These display formats are discussed in the *Technical Information* section, at the end of the report.

2.2 The data are displayed at a scale of 1:500, with interpretation diagrams at the same scale.

3. General Considerations - Complicating factors

3.1 Conditions proved ideal for gradiometry, the ground being gently undulating and free of obstructions.

4. Results

4.1 Results of Scanning

4.1.1 Scanning showed the majority of the road corridor to be magnetically extremely quiet. The background noise level was slightly higher in the most westerly field; almost certainly the result of past agricultural processes. Only one anomaly of possible archaeological interest was located during the scanning. This lies in the eastern portion of the corridor and the results are discussed in Section 4.3.

4.1.2 Strong ferrous type responses were detected to the north of Guernsey Belt wood suggesting the presence of pipes and possibly modern dumping. In addition, several discrete strong response were detected during scanning. These are due to modern ferrous debris in the topsoil.

4.2 Area A

4.2.1 A small area of 20m by 40m was surveyed immediately adjacent to the Guernsey Belt over a badger set. It was hoped that gradiometry would be able to determine the extent of the associated underground chambers and passageways.

4.2.2 Along the southern edge of the surveyed area the data have been distorted by the presence of a ferrous pipe, part of which is visible above the surface.

4.2.3 The rest of the survey area is extremely quiet with no suggestion of responses from the badger set or archaeological activity.

4.3 Area B

4.3.1 Area B, 40m by 40m lies to the west of Manor Road as indicated on Figure 2. Scanning located two anomalies of possible interest. However, the detailed survey revealed no archaeologically significant anomalies.

4.3.2 The area is slightly noisy with several discrete ferrous responses, the most prominent of which are indicated on the interpretation plan. The increased level of noise may be due to the nearby Manor Road.

---

5. Conclusions

5.1 The gradiometer scan indicated that the proposed road corridor was extremely quiet magnetically, apart from isolated ferrous responses. Only one anomaly of possible interest was scanned out and surveyed in detail. The detailed survey indicated no archaeologically significant responses. As a result of the lack of potentially archaeological responses the 1ha contingency for detailed survey was not used, at the request of the client.

5.2 Survey over a known badger set failed to proved any information with regards to its extent.

Project Co-ordinator: Dr S Ovenden
Project Assistants: J Grandidge and A Shields

11th March 1993
Geophysical Surveys of Bradford

A36 Heytesbury to Codford

Location Diagram

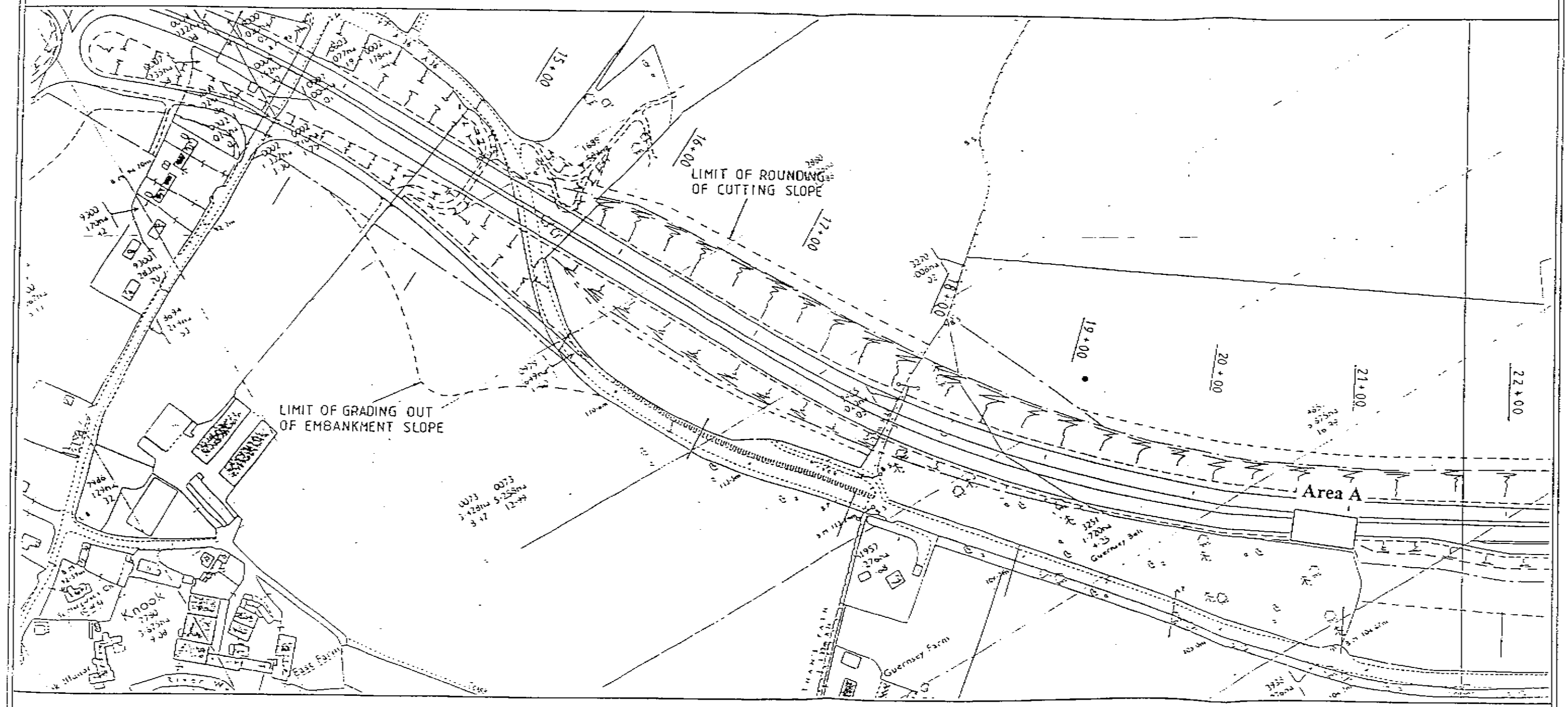


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Figure 1

A36 Heytesbury to Codford

Location Diagram

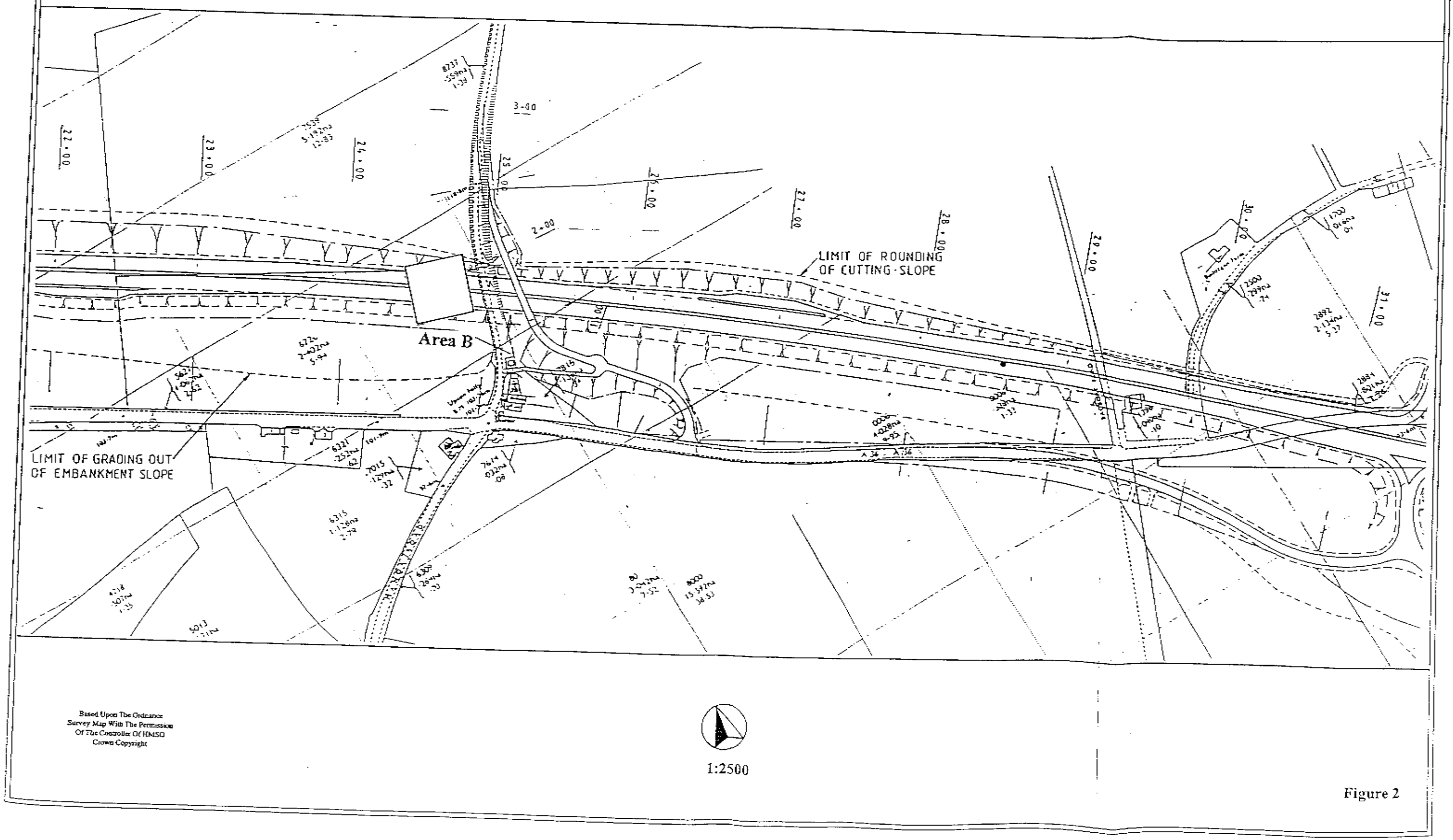

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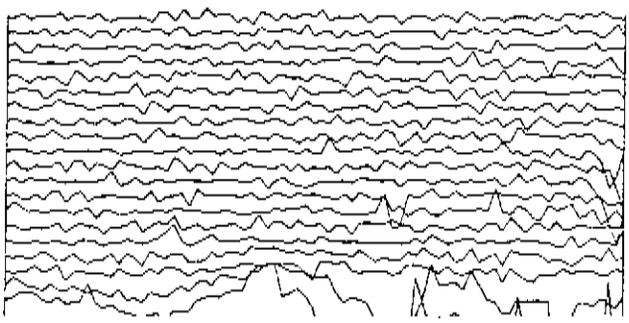
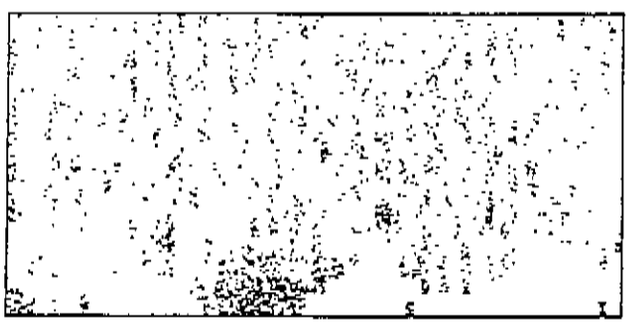
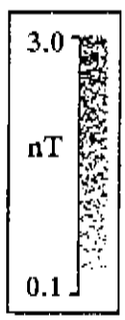
Figure 2

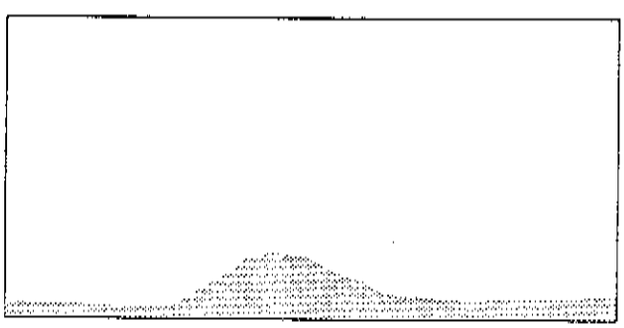
A36 Heytesbury to Codford
Area A



15 nT





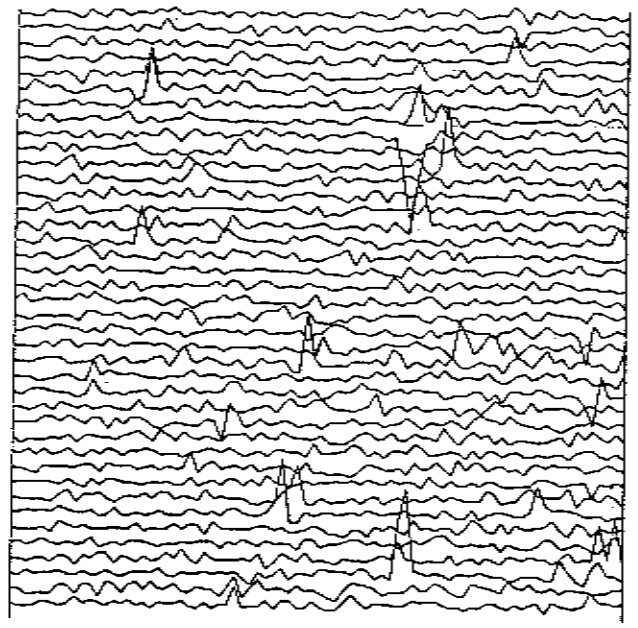


Ferrous

0 m 20

Figure A1

A36 Heytesbury to Codford
Area B



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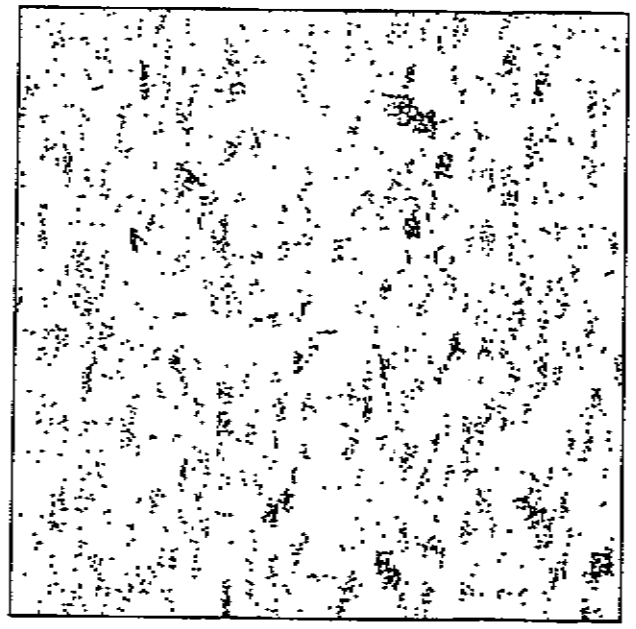

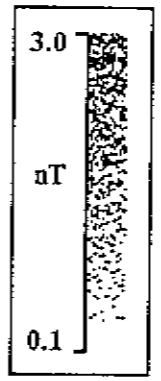

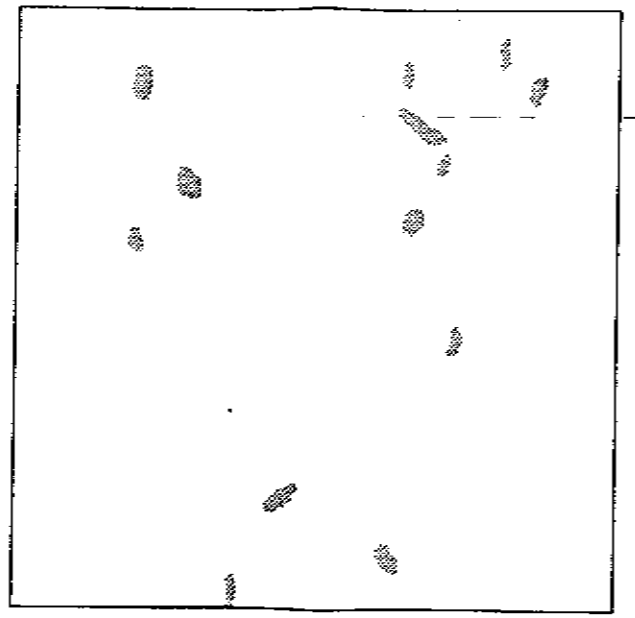

Ferrous

0 m 20

Figure B1

APPENDIX 6: Mollusca from samples taken from 1993 trench 3

	Sample column 350									Sample column 360							
Mollusca	351	352	353	354	355	356	357	358	359	361	362	363	364	365	366	367	368
Open country species																	
Introduced Helicellids	-	-	-	-	-	C	-	-	-	-	-	-	C	-	-	-	-
Helicella itala	-	-	-	-	C	C	-	B	B	-	-	-	-	-	-	-	-
Pupilla muscorum	-	-	-	-	-	-	C	B	B	B	A	-	B	B	C	C	B
Vallonia spp.	-	-	-	-	-	-	B	B	B	A	B	-	A	B	-.B	B	
Vertigocf. pygmaea	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-
Abida secale	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-
Intermediate species																	
Trichia hispida	-	-	-	-	-	C	B	B	B	-	-	-	-	-	-	-	C
Cochlicopa spp.	-	-	-	-	-	-	-	C	C	-	B	-	-	C	-	-	-
Vitrina pellucida	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-
Shade-loving species																	
Punctum pygmaeum	-	-	-	-	-	-	-	C	-	-	B	C	C	B	-	C	C
Euconulus fulvus	-	-	-	-	-	-	-	C	-	C	-	-	-	C	-	-	-
Burrowing species																	
Cecilioides acicula	-	-	-	-	C	-	C	B	B	-	-	-	-	-	C	C	-

Scanned flots: A ≥ 10, B = 5-9 and C = <4 shells.

APPENDIX 7

Colluvial Sequences and Landscape Taphonomy

Along the route of the A36 Codford to Heytesbury road improvement areas were identified as being potential locations of hillwash by analogy with known typical locations (see Bell 1981, fig 5.1 p76; Bell 1986, fig 2 p74), and by field observations during the project planning stage. The nature of the colluvial deposits at three of these locations was investigated. The most important area was not investigated due to the landowner's opposition. In all three areas trenched the slope edge deposits were examined by the excavation of machine cut trenches (46, 47 and 48) which were augmented by hand-dug test pits.

The aims of the investigations of the colluvial deposits were to record evidence of human activity either causing, or masked by, hillwash and to attempt to determine the landscape history The area, situated on the south-western edge of Salisbury Plain, is composed of chalk geology masked by alluvial deposits in the Wylye valley. Colluvial deposits were suspected at the base of the steep south-east facing valley side. In addition two major dry valleys cross the route, both of which were expected to have colluvial deposits. The most westerly descends from Knook Down and is to be traversed by the new length of the B390. The other is situated to the east associated with such archaeological activities. Thus, in the first instance, it was necessary to determine if colluvial deposits, which could bury significant areas of the landscape, occur. Elsewhere in southern England colluvium has been demonstrated to mask archaeological sites (Allen 1988) and potentially archaeological landscapes and artefact scatters (Allen in press). The occurrence of hillwash also provides an indication of anthropogenic activity itself (Bell 1981) and provides the potential for palaeoenvironmental determination (Kerney et al. 1964; 1980; Allen 1988; Bell 1983) via the analysis of land Mollusca and the analysis of the deposits themselves.

Three trenches were excavated using a JCB to reveal the extent, depth and nature of the colluvial sequences. Where appropriate and possible, the entire section was cleaned and accurately recorded at 1:20. In Trench 47 a 1.5 metre wide section of the most informative portion of the colluvial sequence was selected for hand excavation adjacent to the exposed face and all artefacts carefully recorded in order to provide a crude chronological framework for the erosional regimes. After detailed drawing (1:10) of this section a contiguous column of samples for land Mollusca was taken and detailed pedological descriptions of the sequence made following the methods and terminology outlined in Hodgson (1976).

One kilogram of air dried soil from the mollusc column in Trench 47 was processed following the methodology outlined by Evans (1972). The results of analyses are presented in Table 2 and as histograms of relative abundance in figure 7. Molluscs were relatively well-preserved, although as the deposits seemed to become increasingly more calcareous up the profile, mollusc numbers declined significantly.

Table 2: Mollusc data from Trench 47.

sample	2000	2001	2002	2003
context	--126--		-------12	
depth (cm)	70-79	60-70	50-60	40-50
wt (g)	1000	1000	1000	1000
Mollusca				
Pomatias elegans (Müller)	7	3	2	7
Carychium tridentatum (Risso)	19	7	3	2
Cochlicopa lubrica (Müller)	-	-	-	1
Cochlicopa spp.	3	3	5	5
Vertigo pygmaea (Draparnaud)	3	2	7	1
Pupilla muscorum (Linnaeus)	3	5	33	12
Vallonia costata (Müller)	66	47	18	12
Vallonia excentrica Sterki	12	58	44	23
Acanthinula aculeata (Müller)	1	1	-	2
Punctum pygmaeum (Draparnaud)	2	2	5	1
Discus rotundatus (Müller)	3	-	1	-
Vitrina pellucida (Müller)	3	1	-	2
Vitrea contracta (Westerlund)	7	-	1	2
Nesovitrea hammonis (Ström)	-	1	-	1
Aegopinella pura (Alder)	11	1	-	-
Aegopinella nitidula (Draparnaud)	-	4	2	3
Oxychilus cellarius (Müller)	3	1	2	-
Limacidae	36	36	20	45
Cecilioides acicula (Müller)	1	2	7	16
Cochlodina laminata (Montagu)	1	2	2	-
Clausilia bidentata (Ström)	7	-	2	1
Candidula intersecta (Poiret)	-	-	-	-
Helicella itala (Linnaeus)	3	6	8	13
Trichia striolata (C. Pfeiffer)	-	3	2	-
Trichia hispida (Linnaeus)	53	40	34	17
Helicigona lapicida (Linnaeus)	-	-	+	1
Cepaea/Arianta spp.	2	+	1	+
Helix aspersa (Müller)	-	-	-	-
Taxa	20	19	19	18
TOTAL	245	223	192	151

Totals exclude the burrowing species C. a

The basal relict buried soil produced high mollusc numbers (in excess of 240 shells per kilogram). The assemblage, however, was comparatively restricted. It was dominated by Limacidae, Trichia hispida and Vallonia costata. The shade-loving component, according to Evans' ecological groupings (1972), attained 23% and primarily comprised Carychium tridentatum and the Zonitids. Apart from the Vallonias which like open dry grassland habitats there are very few other open county species present. Although shade-loving species as defined by Evans (1972) are present (Table 2) most of these individuals are also common in longer grassland and early scrub succession (Cameron and Morgan-Huws 1975). Indeed the three species that Cameron and Morgan-Huws suggest could be reclassified as catholic species (Carychium tridentatum, Vitrea contracta and Aegopinella pura) are the most common 'shade-loving' species here. It is likely therefore, that this assemblage represents long grassland and open calcareous scrub habitats. The occurrence of Pomatias elegans, which prefers loose disturbed soil and might be found in

bare earth patches beneath hawthorn bushes, is commonly taken to indicate disturbance and creation of loose earth as a result of vegetation clearance or tillage. The fact the assemblage from the upper part of the truncated old land surface displays a significantly different characteristics, may suggest that the occurrence of P. elegans is a result of elements of both bare soil habitats beneath bushes and clearance. This assemblages differs insofar as Vallonia excentrica becomes dominant and V. costata declines. This is accompanied by an increase in the proportions of Pupilla muscorum and Helicella itala and an overall decline in the shade-loving species. This change in the assemblage composition certainly indicates more open and drier conditions probably associated with very short, grazed grassland.

The colluvial sequence produced predominantly open country assemblages, and mollusc numbers declined rapidly towards the surface. Overall the assemblages were dominated by V. excentrica, Pupilla muscorum, Trichia hispida and Limacidae. Helicella itala and Vertigo pygmaea were also present, the latter is rarely found in any habitat in abundance. V. excentrica , however declines throughout the hillwash. This assemblage is typical of chalkland dry valley and lynchet deposits (cf. Bell 1983, Evans 1972 and Allen 1988 and in prep) and can also be paralleled with field boundary ditch assemblages (see Allen 1984b; Allen and Fennemore 1984). Thus the assemblage can be seen predominantly as one of arable contexts. That being said, some variation can be detected within this sequence. P. muscorum is particularly abundant at the base of the colluvium. It is a grassland species but is characteristic of earth bare of vegetation. A coincidental proportional increase of P. elegans, which likes loose bare earth habitats, H. itala, which is common in prehistoric arable contexts, and Limacidae may indicate an episode of tillage. The preceding and succeeding increases in both P. muscorum and V. pygmaea may indicate short intensively (?sheep) grazed grassland.

The uppermost sample, from the base of the modern soil shows a re-emergence of V. excentrica as the dominant species with Limacidae. T. hispida and V. costata remaining constant. This assemblage may indicate very open harsh arable conditions. The occurrence of both Helix aspersa and Candidula intersecta indicate a post-Roman (Kerney 1977) if not medieval or latter date.

The variations detected within the colluvial sequence indicate mollusc communities adapting to localised small scale changes in the micro-environment. This suggests that the deposits had accumulated slowly over a long period of time and that they immediate environs became more inhospitable for snail life, probably as a result of arable intensity.

As in Trench 48 the early prehistoric climax soil (argillic brown earth) is absent. The hillwash recorded here predominantly originates from the gentler slopes of Knook Horse Hill. The colluvium has washed immediately downslope, the minor break in slope (fig. 7) arresting erosion and enabling deposition. The resultant hillwash can be paralleled particularly well ploughwash from lynchet deposits. The earliest molluscan evidence indicated a period of long grassland and open scrub possibly used as rough grazing. Clearance of the open scrub for cultivation followed. This probably occurred during the Bronze Age. The variations detected within the mollusc sequence (fig. 8) might

indicate alternating arable and pastoral phases. The nature of the erosional and deposition regimes have blurred these effects, but closer sampling (perhaps at 5cm intervals) may have provided a better resolution. Through later prehistory it seems likely therefore, that the area was subjected to a rotational system of tillage and pasture. This seems to provide the only secure evidence of prehistoric activity from the Codford to Heytesbury A36 improvements.

The lack of medieval deposits indicates a long period of stable grassland, probably heavily grazed. Thus it can be suggested that the slopes to the west of the Knook shrunken settlement were not cultivated during its occupation, but were used to graze livestock.

The lack of a basal buried soil in the sequence is not untypical of downland colluvial sequences, but higher humic content and clay rich relict basal sequences are more common in the deeper (2.0m +) colluvial deposits (see Strawberry Hill, Wiltshire and Little Down, Isle of Wight; Allen unpub. data). The completely homogeneous colluvial sequence is also relatively unusual and indicates a lack of high energy deposits at the location investigated. This deposit is probably the result of soil erosion from the western slopes of Well Bottom below Knook Horse Hill as well as down the valley axis. The hillwash here suggests a gradual and continual accumulation of sediments as a result of an open and tilled landscape on the slopes of, and within, Well Bottom. Although the colluvium is probably a product of two erosion regimes, the nature, extent and depth of the deposit indicate erosion from an intensively used landscape, and by analogy with other colluvial sequences (Allen 1988) almost certainly extends into prehistory. The initial onset of erosion was severe enough to truncate and strip out the former land surface and suggests that a lacuna in the sequence exists. The erosion products of the former, probably brown earth, soil cover are not present. The hillwash represents erosion from severely thinned soils and by analogy with other sequences probably is of Bronze Age or later date. Without further confirmatory artefactual evidence no closer chronological statements can be attributed to this hillwash.

The deposit is exceptionally deep and probably spatially quite extensive. It is probable that large areas of the Well Bottom valley and the base of the downland slope are blanketed by colluvium and may well completely seal and mask prehistoric to medieval sites in the vicinity, especially in view of the density of such sites postulated by Allen (1988).

Evidence for extensive colluviation occurs within Well Bottom and the exceptional depth and probable extent of this deposit certainly indicates fairly extensive or long-term human activity. Although no artefacts were recovered from the section or from the spoil heap the deposits are almost certainly primarily of prehistoric date. In view of the local topography it certainly would not be surprising to find relatively extensive settlement activity within Well Bottom completely sealed by hillwash. It is likely that hillwash is very deep at the mouth of Well Bottom and at the base of the steep chalk slope, but relatively shallow (c. 1 - 1.5m) within the main valley (see Bell and Allen 1985). Certainly below Knook Horse Hill there is again evidence for prehistoric arable and pastoral activity and it is possible that both colluvial sequences are broadly contemporary. On the whole however, prehistoric activity, as reflected by these deposits,

was not extensive. Bronze Age and Iron Age settlement was probably more extensively confined to the chalklands and the valleys themselves and there is little evidence to indicate such occupation extended into the Wylye Valley itself at this point.

The lack of Roman and medieval colluvium (especially at Knook) indicates a reduction in arable agriculture and probably an increase in pasture and animal grazing. The shrunken settlement at Knook, was probably essentially based on livestock, as indeed is Knook East Farm today.

APPENDIX 2

Ecological Appraisal

CONSERVATION CONSULTANCY
Ecological Assessment and Management Planning

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ECOLOGICAL APPRAISAL OF THE A36 HEYTESBURY TO CODFORD ROAD IMPROVEMENT SCHEME

UP-DATED REPORT

MAY 1993

ORDER NO. PHM 96764
YOUR REF. DMH/MH/17803/6260
OUR REF. CC3HC/C3W1HCc

Dave Green BSBI Recorder VC7
Associate Member of the Institute of Environmental Assessment

ECOLOGICAL APPRAISAL OF THE

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Biological Records Centre, Devizes.
Wiltshire Trust for Nature Conservation.
Nature Conservancy Council
National Rivers Authority
West Wiltshire Badger Group
Wiltshire Butterfly Recorder
Wiltshire Mammal Recorder
Wiltshire Recorders for the Botanical Society of the British Isles

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1. INTRODUCTION

1.1 THE SURVEY

David Green, of Conservation Consultancy, was contracted in August 1990 by Wiltshire County Council to undertake an ecological survey of part of the A36 road and surrounding land which will be affected by the Heytesbury/Codford Road Improvement scheme. Instructions were to study areas within the Band of Interest as shown on the drawing, TR223/61/1, Map 10 and Map 1a, and to make an appraisal of :

a) The existing ecology of the area.

b) The impact of the proposed new road on the local environment.

c) Measures to mitigate the effects of the new road on the present ecology.

Conservation Consultancy was contracted again in January 1993 to re-appraise the Band of Interest and the initial Report since the new road plans had been changed to incorporate a dual carriageway. This evaluation is based on scheme drawings TR223/76/3 and TR223/77/3. The Band of Interest was re-aligned to take into account the proposed wider carriageway.

The copy of this report which is available for public discussion has had any reference to precise locations of protected flora and fauna removed from the text, maps and appendices.

1.2 DAVID GREEN FLS AIEEM

KEY QUALIFICATIONS. Twenty years' experience as a field botanist, involving extensive collaboration with local Trusts, government bodies, Botanical Society for the British Isles, etc.

PROFESSIONAL STATUS. Fellow of the Linnean Society; Associate of the Institute of Ecology and Environmental Management; Member of the Institute of Environmental Assessment; auditor on IEA Panel of Experts; BSBI Recorder for N. Wilts; record co-ordinator for *Omithogalum pyrenaicum* for BSBI scarce plants project; founder member of Plant Life; initiator and co-ordinator of Wiltshire Flora Mapping Project; founder member of British *hieracea* Group; co-author of "The New Flora of Wiltshire" (in press); founding Chairman of the Wiltshire Botanical Society.

SPECIALIST AREAS. Botanical identification of all British vascular plants in the field and from herbarium material. Identification of flora by vegetative characteristics, including winter identification of summer-flowering species. Habitat assessment in a local, regional and national context through field survey and up-to-date in-house nationally correlated records. Extensive knowledge of chalk and neutral grassland, marsh, bog and fen conditions, woodland and sub-maritime ecosystems, aquatic and emergent vegetation, arable weeds, sedges, grasses and rushes.

EXPERIENCE RECORD. In 1990 Conservation Consultancy was formed as an independent practice offering services to local government, property developers, landscape architects, planners and environmental organisations. The practice offers expertise in vascular plants, mammals, birds, fungi, herpetiles, fresh-water fish and invertebrates; statistical analysis; habitat assessment, restoration and management.

PUBLICATIONS. Contributions to:

Flora of Somerset, Capt. R.G. Roe, SANHS, 1981
Supplement to the Flora of Gloucestershire, S. Holland, Grenfell, 1986
Ancient Woodlands of Wiltshire, Wiltshire Trust &NCC, 1985
Neutral Meadows of Wiltshire, Wiltshire Trust & NCC, 1985
Co-author of *The New Flora of Wiltshire* (in press)

1.3 OBJECTIVES OF ECOLOGICAL APPRAISAL

a) Existing Ecology

The objectives of the appraisal of existing ecology are:

i To record and describe the extent of habitats within the Band of Interest, including land use and species composition.
ii To identify sites of high ecological interest.
iii To identify environmental factors such as geology, topography, hydrology, land management, etc. which determine the pattern of habitat types.
iv To identify localised or rare species of flora and fauna.
v To study the presence and activities of wild animals on the area.
vi To identify needs for future monitoring and recording after the initial report in January 1991.

b) Impact of Route

The objectives of the appraisal of the impact of the proposed route are:

i To predict the impact of the new road on the affected ecosystems.
ii To assess the value of specific areas within the Band of Interest in terms of nature conservation and ecological importance.
iii To assess the impact of the road scheme on identified sites outside the Band of Interest.

c) Measures to Mitigate

The objectives in recommending mitigating measures are:

i To safeguard, where possible, identified sites of high ecological importance.
ii To protect existing ground water levels.
iii To integrate habitats with proposed cuttings and embankments.
iv To make provision for identified animal habitats and routes.
v To create new plant and animal habitats where sites have been disturbed or fragmented.

d) Re-appraisal

The objectives of the re-appraisal are:

i To re-assess areas in the Band of Interest which will be affected by the planned dual carriageway.

ii To up-date the original badger appraisal, taking into account the findings and recommendations of Penny Cresswell of the Badger Consultancy and the 1992 Protection of Badgers Act.

2. METHODOLOGY

2.1 INITIAL REPORT

Since an Initial Report was requested for January 1991, the first site visits were undertaken in September and October 1990. Further visits were made in May and June, 1991. Standard recording methods were adopted, using Biological Records Centre recording cards. Detailed maps of the area were consulted, 1.2500 in the office and 1.25000 in the field.

2.2 a) Survey Method

i The projected line of the new road was walked, and the area in the Band of Interest studied. All land use and habitat types were noted, as were species relating to specific habitats.

ii During site visits, all vascular plants were recorded and note taken of the relative abundance and distribution of each species.

iii Lists were compiled on signs of badgers (setts, runs, foraging areas, etc.) Notes were made on signs of other creatures.

iv Soil types and drainage were assessed, as were outcrops of bare earth and rock (e.g. chalk quarry).

v All relevant conservation bodies were contacted and asked for information relating to the site:

N.C.C. / English Nature
Wiltshire Trust for Nature Conservation.
Biological Records Centre
Recorders for the Botanical Society of the British Isles.
Mammal Recorder for Wiltshire
Butterfly Recorder for Wiltshire

vi The survey results were assessed and evaluated using the criteria developed by Ratcliffe as a guide. These are set out in Appendix 13.

vii Data gathering on flora and fauna was carried out through a combination of on-site identification during field visits, and referral to existing records held by:

Biological Records Centre, Devizes
Wiltshire Trust for Nature Conservation
N.C.C. / English Nature
B.S.B.I. Recorder for South Wiltshire.

2.2 b) Constraints

Due to the very heavy flow of traffic on the A36, there was difficulty in studying some small sections of road verges as closely as we would have wished. Since the first site visits had to be made in Autumn 1990, many early spring and summer plants had died back and were not identifiable. Heavy grazing in some fields limited the identification at this time of year of some plant species, and also restricted evidence of animal movements.

The site was re-surveyed in May 1991 in order to assess the area after the spring growing season.

Further consultation took place in February 1993 between Conservation Consultancy and Ms. R. Sparshott, English Nature Species Protection Officer, relating to the feasibility of the proposed road alignment and restrictions to the badger colony in Guernsey Belt. The E.N. reply is contained in Appendix 15.

2.2 c) Site Ownership

All information on site ownership was passed to us by Wiltshire County Council Planning and Highways Department. Initial letters were sent in late September 1990 to land owners requesting permission to gain access in order to carry out surveys.

3. RESULTS

3.1 GENERAL DESCRIPTION OF LOCATION, TOPOGRAPHY

The site lies adjacent to the existing A36 between Warminster and Salisbury, due North of the hamlet of Knook, between NGR 935425 and 956404. The locality forms part of the River Wylye Valley which runs South East from Warminster to Salisbury, where it joins the River Nadder, which itself enters the River Avon and issues into the English Channel at Christchurch, Hampshire. The proposed road skirts the South-Western facing edge of the central section of Salisbury Plain at an average elevation of 100/110m. A dry combe which cuts through the site contains part of Knook Camp. One footpath and two bridlepaths cross the proposed road.

The proposed route falls within the O.S. 10km. square ST94, and within the Wiltshire Flora Mapping tetrads G7 and K2 (see Map 2). Chalk downland in Wiltshire is considered by the N.C.C. to be of national importance, since a high proportion of Britain's unimproved chalk downland occurs in this county.

Adjacent to the Band of Interest are six area types of ecological interest, as shown on Map 4. These are:

a) Area of Outstanding Natural Beauty (A.O.N.B. is designated under the National Parks and Access to the Countryside Act, 1949)

b) Special Landscape Area (S.L.A. designated by the W.C.C. Landscape Local Plan, 1984)

c) Area of High Ecological Value (A.H.E.V: defined by N.C.C. and included in W.C.C. Landscape Local Plan)

d) Site of Special Scientific Interest (S.S.S.I: Section 28 of the Wildlife and Countryside Act, 1981)

e) Unimproved grassland (Defined in Wiltshire Trust for Nature Conservation Ancient Woods and Meadows Survey, 1984 - 1987)

f) Site of Nature Conservation Interest (Defined by Devizes Biological Records Centre, 1980)

The Band of Interest itself runs through three area types:

a) Area of Outstanding Natural Beauty

b) Special Landscape Area

c) Site of Nature Conservation Interest

3.2 GEOLOGY

See Map 12.

The solid geology along the Band of Interest is as follows:

Starting at the Western end of the Band of Interest, near Heytesbury House, NGR 935 425, the proposed road route passes over a band of alluvium before rising through lower chalk and crossing an outcrop of upper chalk at Heytesbury Plantation. The route then falls towards Knook Camp, where it crosses river terrace gravels around the area of West Farm. On rising through the lower chalk escarpment adjacent to the old chalk pit, it passes upper chalk just to the West of Guernsey Belt. The route drops back into lower chalk after some 200m and stays on this stratum as it approaches the Eastern end of the Band of Interest.

3.3 HYDROLOGY

The land along the Band of Interest is fully draining, with no standing water anywhere along the proposed route. The predominant flora is consequently that associated with dry chalk grassland.

The National Rivers Authority, Wessex Region, was contacted concerning two matters:

a) Run-off of surface water from the proposed road

b) Effects of the road's construction on the existing aquifer.

The reply from Mr. D. J. Crowther of the Planning Liaison Section contained the following comments:

NRA Wessex Region recently developed a groundwater source protection policy which is guiding our responses to development proposals while we await the coming national aquifer protection policy.

The length of A36 road under consideration is within the catchment area (source protection area) of the Codford Boreholes (ST 953 400), a major public water supply source operated by Wessex Water. We are therefore concerned at two aspects of the proposed development:

1. *Runoff from the road surface led to the river is lost to the aquifer.*
2. *Runoff from the road surface recharged to the Chalk aquifer by direct soakaway is a pollution hazard.*

Elsewhere in Wessex Region, under similar circumstances, we have asked for road runoff to be led to infiltration lagoons (bunded areas of grassland on permeable strata). The resulting pool/wetland regime favours natural treatment of tainted runoff. Severe pollution that could result from tanker spillage can be catered for by an impermeable chamber or bunded area of at least 20m^3 capacity (one large tanker plus washdown water) through which the runoff must pass on its way to the lagoon.

Arrangements must be made to ensure that the interception chamber or area does not remain permanently full of water.

Direct discharge to the River Wylye is therefore unlikely to be acceptable in this instance. In any event direct discharge would depend on the ability of the watercourse to accept the increased amount of runoff. The Authority insists on silt and grit interception and an oil/petrol interceptor on direct discharges to watercourse to minimise the risk of pollution.

In construction of the road it should be noted that the severing of existing farm drains may lead to slurry effluent getting into the highway drainage system and should be avoided.

The projected bunded lagoons, if sited in line with the projected drainage outfall positions on TR 223/61/1 Map 10, are not on areas of high ecological interest and would not influence to any degree the existing ecology.

Two infiltration lagoons are proposed. These are to be situated within the southern loops of the overpass links, NGR 939 421.5 and NGR 953 407.

3.4 LAND USE AND HABITATS: EVALUATION

Fields within the Band of Interest have been numbered 1 - 26 for ease of reference (see Map 5 and Map 13).

The land surveyed falls into seven distinct groups: a quarry; one created chalk cutting; woodland; hedgerows; and three types of field as described below. Woodland and field types are shown on Map 6.

a) Improved Pasture

Field nos. 1, 3, 5, 6, 9, 11, 14, 15, 16, 17, 19, 20, 22 on Map 5.

This is grassland which, through use of fertilizer and reseeding, has become a culture of cultivated *Gramineae* (grasses). These pastures, at the time of the first field study, were either being grazed or had been cut for silage. They contain a low diversity of plant species and lack permanence or rarity value. They are of low ecological value.

b) Arable Fields

Field nos. 2, 4, 7, 8, 10, 18, 20, 21, 23, 24, 25, 26 on Map 5.

This is land which is ploughed and seeded with crops such as wheat, barley, oats, lucerne or rape. They contain a low diversity of plant species and lack permanence or rarity value. These fields are of low ecological value.

c) Unimproved Chalk Downland

Field nos. 12, 13, 14a on Map 5 and Map 13.

These grazed grasslands are untouched by fertilizer, and traditionally farmed by means of grazing cattle or sheep. They are never ploughed. The only example in this survey is Knook Horse Hill, whose lower Western-facing slopes fall within the Band of Interest, NGR 943 418 (see map 6 and Appendix 3). This area supports very short turf and highly diverse plant species, distinctive of Southern English chalk downlands. It has a rich diversity of chalkland plant species, including one nationally rare sedge (*Carex humilis*, dwarf sedge). The B.S.B.I. "Atlas of the British Flora" (F.H. Perring and S.M. Walters, 1976), updated by the B.S.B.I. "Sedges of the British Isles" (Jermy, David, Chater, 1982), states that *Carex humilis* occurs in twenty four 10km. squares in the United Kingdom. Of these, eight 10km squares occur in South Wiltshire (See Appendices 7 and 7a). *Gentianella anglica* (Early Gentian) has been recorded by the N.C.C. from Knook Horse Hill (See Appendix 8).

The possible presence of this species within the Band of Interest was investigated during further field surveys in May and June, 1991. This downland also supports large numbers of Horsehoe Vetch, an important foodplant for two butterfly species which have nationally restricted distributions. These are *Lysandra bellargus* (Adonis Blue) and *Lysandra coridon* (Chalk Hill Blue). (see Appendices 9 and 10) Further work was carried out in 1991 to ascertain whether these species inhabit this site.

Records from the Biological Records Centre, Devizes show that Adonis Blue appeared in 1987 on an adjacent site on Knook Horse Hill (NGR 948 421. See Appendix 3). This is a very similar habitat, extending down the valley to the rear of the wood and chalk pit.

The Biological Records Centre does not hold a comprehensive list of invertebrate records. A data search showed that there are no records of rare species, other than *Lepidoptera* described above in the Area of Interest.

Up-dated Information

i **Carex humilis.** As requested further survey work was carried out in spring 1991 to investigate the presence of *Carex humilis*. The small colony observed in September 1990 was not located. This may have been due to early spring grazing or to the harsh winter conditions.

ii **Chalk Hill Blue.** Since the imago of Chalk Hill Blue, *Lysandra coridon*, does not appear until August, we were unable during the follow-up survey of spring 1991 to ascertain whether this species occurs on the Knook Horse Hill site.

iii **Adonis Blue.** Specimens of Adonis Blue, *Lysandra bellargus*, were seen on site on 18.6.91, near the colony of Horshoe Vetch. Since this is their feeding plant and host for eggs, there is a strong possibility that the Adonis Blue has a resident breeding population here.

iv **Gentianella anglica.** The site was searched in mid-June for Early Gentian, *Gentianella anglica*, but it was not located. The habitat, however, is suitable for this species and it may well be found in future years.

v **Orobanche elatior.** An extensive colony of Tall Broomrape, *Orobanche elatior*, was found in June 1991, covering a large proportion of the downland. This species has not been recorded on Knook Horse Hill SNCI. It is a parasitic species on Greater Knapweed, *Centaurea scabosia*, and is extremely localised on the chalk and limestone areas of Wiltshire.

vi **Species list.** After further recording in May and June, 1991, an updated species list was made of the area marked D on map 10 and map 13 (see Appendix 3).
Two further nationally restricted plants were identified:

Polygala calcarea. Chalk milkwort *Polygala calcarea* is found on southern chalk and limestone. A large colony of this plant covers the western end of the downland (see Appendix 11).

Thesium humifusum. Bastard Toadflax *Thesium humifusum* is a parasitic species of chalk and limestone grassland. This plant grows in Wiltshire, Hampshire and Dorset. A small colony was identified on the central section of downland (see Appendix 12).

This downland covers a relatively large area; contains a high diversity of plant species; has a rarity value; is permanent; does not suffer from modification; and functions as an ecological unit, Area 14a is relatively small and isolated from the other downland sites apart from a narrow corridor. However, it supports the most species-rich flora of all the downlands surveyed. The area as a whole is of high ecological value.

d) Quarry

Adjacent to the unimproved chalk downland, NGR 142 418, is a small chalk quarry, about $25m^2$. The land directly above the quarry, about $100m^2$, has an ungrazed Upright Brome *Bromopsis erecta* sward, with a variety of typical downland plants.

Further survey work in May and June, 1991, established that large colonies of Chalk Milkwort, *Polygala calcarea*, Horshoe Vetch, *Hippocrepis comosa* and Common Spotted Orchid, *Dactylorhiza fuchsii*, grow on the land directly above the quarry.

The quarry itself is of low ecological value since it is small; is heavily modified; lacks permanence; and has no ecological rarity value. The downland above the quarry, although small and fragmented, supports a number of rare plants and is similar in character to adjacent downlands. It is of medium ecological value.

e) Created Chalk Cutting Area c, Map 10 and Map 11, Appendix 3.

This habitat was created by the realignment of the road in 1979. The bare chalk strata on the cutting are being colonised by herb species. The diversity of plant species is improving annually. The site has rarity value in that this pioneering type habitat is nationally scarce. It is of medium ecological value.

f) Woodland

Nos. 27, 28, 29 on Map 5.

These are broadleaved woods, containing a mixture of planted trees and spontaneous growth. They are used for cover for pheasants, as windbreaks to protect crops, and for timber.

Three sections of woodland were identified:

i **Heytesbury Plantation**, NGR 935 423 (see species lists, Appendices 2 and 5)
The Southern end of this extensive woodland comes within the Band of Interest. It is a mixed deciduous wood of recent origin, and suffers from dumping of building materials and much human pressure. Since woodlands are a declining habitat, this site has rarity value. It is of medium ecological value.

ii **Un-named wood** at the entrance to chalk pit, NGR 942 419 (see species lists, Appendices 2 and 5). A number of planted mature beech and well-grown ash trees at the road edge of this site gives the impression of a woodland. In fact it is a large area (approx. 0.75 of an acre) of mixed shrubs which has developed spontaneously around an access track onto the downland beyond. On the more level areas dumping has taken place. Botanically the site is poor. A patch of scrub on the South-Eastern edge provides a shelter and feeding ground for small birds. The site as a whole is of low ecological value.

iii **Guernsey Belt**, NGR 943 416 (see species list, Appendices 2 and 5).
The section of this small wood which skirts the A36, to a distance of 30 metres, is of standard planted beech. It contains a limited diversity of plant species. The rear section of the wood has developed as a failed pine plantation, with some beech standards around the edges, some of which have sustained storm damage since 1990. Much of this rear section supports only elder and nettles, with some invasive sycamore and regenerating English elm. All the above woodlands must be described as secondary type (i.e. of recent origin). None of them is mentioned in "Ancient Woodlands of Wiltshire" (1984/5 Wilts Trust, N.C.C.). The wood itself is of limited conservation interest, but evidence of badger activity in the locality enhances the value of this site. It is therefore of high ecological value.

g) Hedgerows

It was found that a large proportion of the hedgerow in the Band of Interest was of recent spontaneous growth, mostly of hawthorn, along the existing fence lines. An exception to this rule is the bridlepath leaving the A36 at Upton Folley in a North Easterly direction, NGR 948 412, which supports a planted hedge along both sides of a lane. (See Map 2 and Photograph 4). This hedge and all other surveyed are of low plant diversity and have no rarity value. They are of low ecological value.

3.5 ANIMAL OBSERVATIONS

Animals observed during site visits in September 1990, and follow-up visits in May and June, 1991.

a) **Foxes**

Two earths were noted, with signs of activity, on the section of unimproved chalk downland (see Map 7). There were also signs of fox tracks near Heytesbury Plantation.

b) **Rabbits**

A warren was noted in Guernsey Belt and near the chalk pit, and also along the cutting at Heytesbury Plantation ; and at the Eastern end of the Band of Interest (see Map 8).

c) **Deer**

Records from the Biological Records Centre, Devizes, show no deer sitings within the Band of Interest. Our field visits, however, have shown signs of deer passing through the area, including slots to the North of the Happy Eater restaurant. Information gained from local farmers indicates that a small herd of up to 12 animals regularly grazes on Knook Horse Hill SNCI. This is outside the Band of Interest.

d) **Hare**

Seven hares were noted on Knook Horse Hill SNCI and adjoining fields during one visit on 26.5.91. Two mated pairs were observed on 28.5.91, both with a single leveret.

e) **Badger**

A very large sett, or combination of setts, is evident in the North Eastern section of the Guernsey Belt. The workings are over 200m long, and 40m deep in parts, along the woodland edge. Thirty-odd active tunnel entrances were counted in the woodland, and four active tunnel entrances in the adjacent pasture. A further 150 - 200 old or unused tunnel entrances were estimated to be present in the woodland, and five in the pasture.

Secondary or annexe setts occur in four outlying sites adjacent to the Guernsey Belt wood (see Map 7 and 9):

i On grassland, approximately 75m North East of wood: One active hole.

ii In woodland, northern triangular section of Guernsey Belt: 2 active holes.

iii In shrub hedgebank on the South side of the existing A36, in a corner of the field: 3 holes, none active.

iv In a shrub hedge to the South of the existing A36: 1 active hole. The pasture field North East of the Guernsey Belt has been identified as a major foraging area.

As a result of these findings, Penny Cresswell, of the Badger Consultancy was commissioned to make further investigations. Her report is shown in Appendix 14 and Maps 14 and 15, and will be referred to in this report.
During further surveys in February 1993 a single active hole was located on the South side of the existing A36, opposite a gateway to the White Horse stables. Signs of badger activity were noted to the North-east of this hole. Two active tracks run down the new cutting to the North of the A36. There were signs of foraging activity to the North of the Happy Eater restaurant.
See maps 9 and 16.

f) **Birds**

A list of species recorded during field visits appears in Appendix 6.

Two species of Raptor (predatory bird) were observed. Other signs of birdlife noted were:

A rookery in the Guernsey Belt

Woodpecker holes in dead branches of beech trees in Guernsey Belt

Flocks of finches and tits in and around the chalk quarry

g) **Butterflies**

A list of species recorded during field visits appears in Appendix 1.

A data-search at the Wiltshire Biological Records Centre showed that no bats, reptiles or amphibians were known from the area of interest. None was observed during the field survey.

3.6 SPECIES LISTS

Full lists of plant, bird and butterfly species, either identified on site or taken from existing records, appear in the Appendices.

4. IMPACT OF ROUTE

4.1 DESCRIPTION

See Map 1a.

Starting from the Eastern end of the proposed route, the new road would leave the existing A36 at NGR 935 425. The relatively new cutting, excavated in 1979, would be cut back to create the new line which would continue across the existing B390 and into the South Western edge of the M.O.D. Knook Camp. The section from this point to the area due South of West Farm, NGR 940 400, would follow the contour of the valley. The realigned B390 would join the new road at a point adjacent to the Eastern boundary of Knook Camp, NGR 938 423.5. The B390 would follow the valley contour until it rejoined the original road at NGR 946 428.

From a point near West Farm the new route would continue East until it entered a cutting near the existing chalk pit, NGR 942 418.5. This route would run South East for approximately 0.9 of a mile until it left the cutting at NGR 952 409. It would cut through the Western end of the Guernsey Belt and run parallel with the wood for its entire length. From here the new road would continue along the existing ground level until reaching the newly-constructed by-pass at NGR 957 404. The proposed route would cut through the existing A36 at 4 points:

935 425

941 420

953 408.5

957 404

The route would cut through two existing footpaths, at NGR 942 419 and 951 410, one bridlepath, at 947 413 and the chalk quarry at 942 418.5.

The proposed route would lead to fragmentation of field and woodland habitats, restriction of access to certain footpaths and bridleways, and barriers along existing animal corridors.

4.2 ANALYSIS OF IMPACT OF PROPOSED ROUTE

a) Fragmentation

In all, eighteen pockets of land would be fragmented (i.e. isolated from their previous field or wood ecosystem). See Map 10. These pockets fall into five habitat types:

i Arable : 2 sites, marked I and P on Map 10.

ii Woodland: 2 sites, marked E and F on Map 10.

iii Unimproved chalk downland: 1 site, marked D on Map 10 and Map13.

iv Improved Pasture: 1 site, marked G on Map 10.

v Land likely to be taken into road scheme: 11 sites, marked A, B, C, H, J, K, L, M, N, O and Q on Map 10.

vi Plot E would become a very small remnant of woodland.

Plots A, B, J, K, L, M, N and O would become wide road verges, or other parts of the road system itself.

Plots C and K would be used as infiltration lagoons.
Plots D, F, G and I would be completely isolated between the old and new A36 road. The effect of this, with a cutting on the uphill side and the abrupt end of the hill adjacent to the old A36, may be to create a very dry habitat on the western end due to diminished ground water level on this section of hill. Access by tractor to parts of this section could become difficult.

Plot P, adjacent to the B390: the altered size of this section may mean a change of use from arable to forestry.

The Heytesbury chalk cutting would be further cut back into the woodland above, removing the present improving ecology.

b) Hedgerows

Species counts in the hedgerows were very low. Sparse shrub growth, together with very little standard tree cover, indicates that almost all the hedgerow plants have accumulated along the wire fences within a relatively short period.

The effect of severing any hedgerow limits the ease of passage of animals along defined corridors of travel.

The track, or bridlepath, to Manor Farm, although containing the oldest of the hedges surveyed, was found to be of low botanical interest (See Photograph 2 and Appendix 4).

The proposed link road between the B390 and the A36 would cross improved fields throughout its length (that is, fields of low botanical interest) and would cut through hedges of very low ecological value.

c) Flora

Any disturbance of ground soil would create in the short term a swarm of annual and perennial invasive species on previously cultivated land. Major areas of impact will be:

i **Unimproved downland** (plot D, Map 10 and Map 13). With the new cutting isolating this area and potential loss of ground water, there are four possible results:

- The peninsula of land, plot numbers D, F, G and I, Map 10 and Map 13, could dry out to such an extent that some existing species would die out, and this habitat type would change.

- Since such a small area may not be considered viable as a grazed downland it may become derelict and invaded by coarse grasses and shrubs, which would take over from the low-growing grazed species.

- This plot may be planted up as an extension to the woodland, giving the same effect to the present flora as above.

- If ground water levels were not to drop significantly and if the plot were managed sympathetically, it could remain as an area of high nature conservation interest, and a valuable example of such a localised habitat.

ii **Woodland.** A section of the North Western end of the Guernsey Belt would be destroyed by the proposed road. This would leave a triangle of woodland isolated on the North side of the new road.

d) Fauna

i **Foxes.** The proposed road is unlikely to disturb the two earths discovered to date. Moreover, any disturbance to the earths is unlikely to pose a threat to the population since they are likely to settle easily elsewhere.

ii **Rabbits.** See Map 8. The rabbit colonies in and around the chalk pit, NGR 942 419, and to the south of the Happy Eater, NGR 956 406, would be destroyed by the proposed road scheme. The cutting behind Guernsey Belt, NGR 944 415 would limit ease of access by rabbits to grazing areas.

iii **Deer.** Although there is no documented evidence at the Biological Records Centre of permanent populations and site visits have not shown signs of regular corridors of travel, there are signs that passing deer cross the existing A36. A wider, faster road will incur greater hazards where deer are crossing.

iv **Hares.** Although it must be said that there is no proof that hares cross the present A36, it is likely that the mortality rate would rise with the construction of the new road.

v **Badgers.** See Map 7. Refer also to photographs 5, 6, 7 and 8.
The very large badger colony, with thirty-odd active holes would be seriously affected by the proposed road scheme. Holes within Field 17 would be destroyed. The secondary or annexed setts adjacent to Guernsey Belt (see Map 9) would be destroyed since they are either directly in line of the proposed road or they fall within a few metres of it.
On the present line of the projected road, the badger runs which exit into the field would be destroyed by excavations. Site visits by Conservation Consultancy and the Badger Consultancy identified the major runs, dung pits and foraging areas. The impact of the proposed development on the Guernsey Belt colony will be:

- to sever existing runs, foraging areas and access to secondary setts
- to destroy three secondary setts
- to destroy part of the main sett.

A single active hole at the Eastern end of the Band of Interest (NGR 956 406) would also be destroyed.

Construction of the proposed new road may temporarily disrupt existing runs which cross the present A36 at the eastern and western ends of the Band of Interest. The projected dual carriageway may present a greater hazard to both badgers and road users since the route will be wider and faster than the existing road.

vi **Birds**. Apart from the rookery in Guernsey Belt, no other resident nesting birds have been recorded to date. Nevertheless, the un-named wood, no. 28 on Map 5, contains an appropriate habitat - shrubs, bushes, and so on - for nesting migrants and small resident seed-eaters.

vii Bats. No bats were observed during field surveys. They may, however, roost in Guernsey Belt and Heytesbury Plantation where the large, mature trees would be attractive to them.

5. MITIGATION

5.1 SAFEGUARDING AREAS OF HIGH ECOLOGICAL IMPORTANCE

Within the Band of Interest, two areas of ecological importance (a and b) and one area of noteworthy habitat (c) are highlighted on Map 11 and Map 13. See also Photograph 1.

a) **Area a:**

This is an area of unimproved chalk downland, as described in 3.4 c), and is an important habitat type. Methods of safeguarding are:

i To protect from accidental damage due to unnecessary excavation or dumping during roadworking.

ii Removal of invasive shrubs to maintain the habitat type.

iii Continued grazing regime to conserve the existing habitat.

b) **Area b: Guernsey Belt**

Although the woodland is of secondary nature and poor in plant species, it contains large numbers of rabbit and badger. Since there are badger setts in the edge of adjacent fields and woodland (see Maps 7 and 9) the Northern side of the wood and adjacent section of pasture no. 17 (see Map 5) should be left undisturbed. Should some disturbance become inevitable, further studies should be undertaken with a view to protect the badger population during and after the proposed road development.

c) **Area c: Heytesbury Chalk Cutting**

This is an area of chalk substrate left to colonise naturally. The proposed road workings will eradicate this habitat (See Map 10). The proposed new cutting should be profiled and also left to colonise naturally so that a similar habitat will regenerate.

5.2 PROTECTING GROUND WATER LEVELS

Close co-operation with the N.R.A. Wessex Region will be required. See comments under Hydrology, 3.3.

5.3 INTEGRATING EXISTING HABITATS WITH NEW CUTTINGS AND EMBANKMENTS

This may be possible in two places:

a) Both banks of the cutting adjacent to the unimproved chalk grassland (see Map 10).

Here, a seed mixture similar to the present downland flora, and including *Hippocrepis Comosa* (Horseshoe Vetch) could be sown over a very thin topsoil or directly onto the bare chalk. Sufficient topsoil should be saved for this purpose from the excavations on the turf of the downland above the quarry, and laid over the bare chalk exposed by the roadworks. This soil will naturally contain a reservoir of localised downland seed. The required seed mixture could be harvested before commencement of construction work from the downland in area 14a (see Map 5).

b) The chalk cutting adjacent to woodland at Guernsey Belt (see map 10).
Beech trees could be planted here along both slopes in order to extend the line of the existing woodland.

5.4 PROTECTING ANIMAL HABITATS

No regular routes have been identified for fox or deer, and no specific recommendations are being made.

Rabbits, hare, fox, deer, and bird species are unlikely to suffer any long-term effects from the proposed road scheme, although it must be added that there may be a higher rate of animal mortality, at least temporarily, on the new road.

Badgers are a cause for concern. Due to the large colony in Guernsey Belt, and the foraging areas and established trackways within the Band of Interest, we advised Wiltshire County Council to take independent consultative advice on the best way of dealing with this problem.

Penny Cresswell, of Badger Consultancy, was contacted, and Conservation Consultancy kept in close liaison with her on this matter. Her report is shown in Appendix 14.

Should some disturbance to the badger colonies become inevitable, further studies should be undertaken with a view to protecting the badger population during and after the proposed road. This would involve consultations between Conservation Consultancy and English Nature. Account will need to be taken of the Protection of Badgers Act 1992.

5.5 CREATING NEW HABITATS

Only two areas lend themselves to the possibility of creating new habitats, and those are the chalk embankments and cuttings formed by the proposed road.

a) Knook Horse Hill section (N. East of G, H and I, Map 10)

Leaving this section as bare chalk would encourage the growth of calciferous plant species. Alternatively, the cutting could be sown with a recommended chalk species mix. (Refer to 5.3a)

b) Heytesbury Plantation (Grey shaded area on Map 10)

The lead of previous landscaping should be followed at this point, leaving bare chalk cutting to develop its own ecosystem. The higher slopes could be planted with chalk-loving shrub species such as *Cornus* (Dogwood), *Ligustrum* (Privet) and *Viburnum* (Wayfaring Tree).

5.6 FACTORS RELATING TO THE ECOLOGY WITHIN THE BAND OF INTEREST

a) Air pollution. The ecology of the area is unlikely to be adversely affected by the changing of the road to the new route.

b) Tipping of surplus soil should be kept away from the two areas of high ecological interest. Close liaison with the National River Authority should ensure that dumpage does not obstruct any water flow.

c) Storage of Plant and Materials. All storage of plant and materials should be kept away from the areas of high ecological interest, and also from any drains or culverts leading to the River Wylye.

d) Sources of Aggregates. It seems unlikely that any quantity of aggregate material will be found on site.

e) Public Pressure. Drawing no. T.R.223/76/3 and T.R.223/77/3 show two proposed laybys but no increased footpath access. It is not foreseen that there will be any increased public pressure on the site in the event of the new road being built, since they are both at the foot of steep cuttings with no access into surrounding land.

6. CONCLUSIONS

6.1 RECOMMENDATIONS: BADGER COLONY

With legal restraints due to the proximity of the badger to the line of the proposed road, we recommend :

a) **Active measures** should be taken to minimise disturbance to the badger population during the construction stage and after completion of the proposed road.

b) **Further survey work** should be carried out with a view to affording optimum protection to the badger population during and after the proposed road development. Consultation will be needed with English Nature and reference made to the Protection of Badgers Act 1992.

6.2 RECOMMENDATIONS: OTHER AREAS OF ECOLOGICAL IMPORTANCE

The A36 Heytesbury to Codford road improvement scheme must take into account two areas of high ecological value, as shown on Map 11 :

a) **Chalk downland.** This area should be protected from excavation and dumpage. After shrub clearance the grazing regime should continue.

b) **Guernsey Belt.** Consideration must be given to the protection of this habitat which is an important badger foraging area.

Another area of interest is the bridlepath leading to Manor Farm, NGR 948 412. Care should be taken to protect this site from damage by limiting excavations around the hedge line.

The chalk cutting at Heytesbury Plantation should be re-created after roadworks are complete. (See Map 11.)

6.3 RECOMMENDATIONS: FURTHER WORKS

A survey of areas A, B and C, Map 11, was recommended in the Initial Report to be carried out in 1991 in order to update data on these areas of ecological value:

a) A re-visit of all sites first seen in September 1990.

b) A check to assess the hedgerow flora in the main flowering season

c) A re-visit to the main butterfly sites to ascertain occurence of rare species

d) Any further badger survey if necessary.

This work was carried out in 1991 and data gathered then has been integrated into this Report. Further recommendations are:

a) A re-visit to the downland sites in late summer to investigate the possible occurrence of the Adonis Blue butterfly, and to check on the presence of any high summer flowering plants which were not apparent during previous surveys.

b) Expansion of the present Band of Interest in order to ascertain the location, size and area of forage of the newly-located badger colony on the Eastern end of the proposed development.

c) A site visit prior to the commencement of road construction to check on any changes to badger setts and runs since the last survey in 1990.

d) Any large, mature trees in the line of the road development should be investigated before construction begins in order to establish the prescence of bats.

7. MAJOR ECOLOGICAL FACTORS AFFECTING PROPOSED ROAD SCHEME

7.1 NOTES

a) The proposed road scheme passes through three areas of landscape interest:

i Area of Outstanding Natural Beauty

ii Special Landscape Area

iii Site of Nature Conservation Interest

b) There will be fragmentation of downland, hedge, wood, pasture and arable land within the Band of Interest.

c) There will be destruction or disturbance of areas of ecological interest in Guernsey Belt, in unimproved downland and on a bare chalk slope.

d) There will be destruction of a section of badger sett; disturbance to other parts of badger colonies; and disruption to a number of badger runs.

APPENDIX 1: BUTTERFLY SPECIES RECORDED FROM 10 KM. SQUARE ST94, IN ORDER OF THE PROVISIONAL ATLAS OF DISTRIBUTION MAPS, 1989

Thymelicus sylvestris	Small Skipper
Thymelicus lineola	Essex Skipper
Ochlodes venata	Large Skipper
Erynnis tages	Dingy Skipper
Pyrgus malvae	Grizzled Skipper
Gonepteryx rhamni	Brimstone
Pieris brassicae *	Large White
Pieris rapae *	Small White
Pieris napi	Green Veined White
Anthocaris cardamines *	Orange Tipped
Callophris rubi	Green Hairstreak
Quercusia quercis	Purple Hairstreak
Lycaena phloea	Small Copper
Cupido minimus *	Small Blue
Aricia agestis	Brown Argus
Polyommatus icarus *	Common Blue
Lysandra coridon *	Chalk Hill Blue
Lysandra bellargus	Adonis Blue
Celastrina argiolus	Holly Blue
Hamearis lucina	Duke of Burgundy
Vanessa atalanta *	Red Admiral
Cynthia cardui	Painted Lady
Alais urticae	Small Tortoiseshell
Inachis io*	Peacock
Polygonia c - album	Comma
Mesoacidalia aglaja	Dark Green Fritillary
Eurodryas aurina	Marsh Fritillary
Pararge aegeria	Speckled Wood
Lasiommata megera	Wall
Melanargia galathea	Marbled White
Pyronia tithonus*	Hedge Brown
Maniola jurtina	Meadow Brown
Coenonympha pamphilus *	Small Heath
Aphantopus hyperantus	Ringlet

* Species recorded during field visits

APPENDIX 2: WOODLAND GROUND FLORA RECORDED DURING SURVEY

PLANT	27 GUERNSEY BELT	25 HEYTESBURY PLANTATION	26 UN-NAMED WOOD #
Achillea millefolium Yarrow	*		*
Alliaria petiolata Garlic mustard	*		
Arctium minus Lesser Burdock	*		*
Anthriscus sylvestris Cow Parsley	*		*
Arrhenatherum elatius False Oat Grass	*	*	
Artemesia absinthium Wormwood			*
Arum maculatum Lords and Ladies	*	*	*
Brachypodium sylvaticum False Brome	*	*	*
Bromopsis erecta Upright Brome	*		
Cephalanthera damasonium White Helleborine	*		
Cirsium vulgare Spear Thistle	*		
Dactylis glomerata Cock's-foot	*	*	*
Carex sylvatica Wood-sedge		*	
Dryopteris filix-mas Male Fern		*	
Fragaria vesca Wild Strawberry	*	*	
Geranium robertianum Herb Robert	*		
Geum urbanum Herb Bennett	*	*	

APPENDIX 2: WOODLAND GROUND FLORA - CONTINUED

PLANT	27 GUERNSEY BELT	25 HEYTESBURY PLANTATION	26 UN-NAMED WOOD #
Glechoma hederacea Ground Ivy	*		
Hedera helix Ivy	*		
Inula conyzae Ploughman's-spikenard	*	*	
Lapsana communis Nipplewort	*		
Poa trivialis Rough Meadow-grass	*		*
Mercurialis perennis Dog's Mercury		*	
Rosa canina Dogrose	*	*	*
Rubus fruticosus Bramble	*	*	*
Rumex sanguineus var viridis Wood Dock	*	*	*
Rumex obtusifolius Broad-leaved Dock	*		*
Stachys sylvatica Hedge Woundwort			*
Symphytum x uplandicum Russian Comfrey	*	*	*
Urtica dioica Stinging Nettle	*	*	*
Viola oderata Sweet Violet	*		
TOTAL SPECIES	26	15	16

= NGR 942 418

Species listed according to alphabetical order of Latin nomenclature

Numbers 25, 26, 27 refer to references on Map 5.

Plant nomenclature in appendices follows "New Flora of the British Isles", C. Stace, CUP 1991

APPENDIX 3: DOWNLAND PLANT LIST
EXPLANATION AND KEY

Key

- ! Rare or very locally distributed
- ~ Nationally rare
- + Species of particular association with short turf chalk downland
- # Rare endemic biennial herb

KNOOK HORSE HILL: NGR 945 420
A36 K H H: NGR 942 418
HEYTESBURY CHALK CUTTING: NGR 935 425

APPENDIX 3: DOWNLAND PLANT LIST

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Achillea millefolium Yarrow	*	*	
Agrostis capillaris Common Bent	*		
Agrostis stolonifera Creeping Bent			*
Alopecurus pratensis Meadow Foxtail		*	*
Anacamptis pyramidalis + Pyramidal Orchid	*		
Anagallis arvensis Scarlet Pimpernel	*		
Anisantha sterilis Sterile Brome			*
Anthoxanthum odoratum Sweet Vernal Grass	*		
Anthyllis vulneraria + Kidney Vetch	*	*	*
Arctium minus Lesser Burdock	*		*
Arenaria serpyllifolia Thymeleaved Sandwort	*		
Arum maculatum Lords and Ladies		*	
Asperula cynanchica + Squinancywort	*		
Berberis vulgaris Winter Cress		*	*
Bellis perennis Daisy	*		
Betula pendula Silver Birch		*	
Blackstonia perfoliata + Yellow wort		*	
Borago officinalis Borage			*
Brachypodium sylvaticum False Brome		*	*

APPENDIX 3 : DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Briza media Quaking Grass	*	*	
Bromopsis erecta Upright Bromc	*	*	*
Bromus hordeaceus Soft Brome		*	*
Campanula glomerata ! Clustered Bellflower	*		
Campanula rotundifolia + Harebell	*	*	
Carduus nutans Musk Thistle	*		
Carex caryophyllea + Spring Sedge	*		
Carex flacca Glaucus sedge	*		*
Carex humilis + ~ Dwarf Sedge	*	*	
Carlina vulgaris + Carline Thistle	*	*	
Centaurea nigra Common Knapweed	*	*	
Centaurea scabiosa Greater Knapweed	*	*	
Centaurium erythraea + Common Centaury		*	*
Leucanthemum vulgare Oxeye Daisy	*	*	*
Cirsium acaule + Dwarf Thistle	*	*	
Cirsium arvense Creeping Thistle	*		*
Cirsium eriophorum ! Woolly Thistle	*		
Cirsium vulgare Spear Thistle	*		
Clinopodium vulgare Wild Basil			*

APPENDIX 3 : DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Conopodium majus Pignut		*	*
Convolvulus arvensis Field Bindweed	*		
Cornus sanguinea Dogwood			* planting
Cotoneaster integrifolious Small Leaved Cotoncaster		*	
Cotoneaster horizontalis Horizontal Cotoneaster			*
Crataegus monogyna Hawthorn	*	*	*
Crepis vesicaria Beaked Hawk's-beard			*
Cynosurus cristatus Crested Dog's-tail	*	*	
Dactylis glomerata Cock's-foot	*		
Dactylorhiza fuchsii + Common Spotted Orchid	*	*	
Daucus carota Wild Carrot	*		*
Echium vulgare Viper's-bugloss			*
Euphrasia officinalis Eyebright	*		
Festuca ovina Sheep's-fescue	*	*	
Festuca rubra Red Fescue	*		*
Filipendula vulgaris + Dropwort	*	*	
Fragaria Vesca Wild Strawberry			*
Galium mollugo Hedge Bedstraw	*		
Galium verum + Lady's Bedstraw	*	*	

APPENDIX 3 : DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Gentianella amarella + Autumn Gentian	*	*	
Geranium dissectum Cut Leaved Crane's-bill	*		*
Geranium pyrenaicum Hedgerow Cranesbill			*
Glechoma hederacea Ground Ivy	*		
Gymnadenia conopsea + Fragrant Orchid	*	*	
Helianthemum nummularium + *Common Rock-rose*	*	*	
Helictotrichon pratense + Meadow Oat-grass	*	*	
Helictotrichon pubescens + Downy Oat-grass	*		
Heracleum sphondylium Hogweed	*		
Hippocrepis comosa + Horseshoe Vetch	*	*	
Hypericum perforatum Perforate St John's-wort			*
Inula conyzae Ploughman's-spikenard		*	*
Iris foetidissima ! Stinking Iris			*
Knautia arvensis Field Scabious	*	*	
Koeleria macrantha + Crested Hair-grass	*		
Lamium album White Dead-nettle			*
Lapsana communis Nipplewort			*
Luzula campestris Field Wood-rush		*	
Leontodon autumnalis Autumn Hawkbit	*	*	

APPENDIX 3 : DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Leontodon saxatalis Lesser Hawkbit			*
Leontodon hispidus Rough Hawkbit	*	*	
Ligustrum vulgare Wild Privet		*	*
Linum catharticum + Fairy Flax	*	*	
Listera ovata Common Twayblade	*	*	
Lithospermum officiale Common Gromwell			*
Lolium perenne Rye Grass	*		
Lotus corniculatus Common Bird'sfoot-trefoil	*	*	
Medicago lupulina Black Medick	*		
Malus domestica Apple		*	
Malva moschata Musk Mallow			*
Melilotus altissimus Tall Melilot			*
Myosotis arvensis Field Forget-me-not			*
Odontites vernus Red Bartsia	*		
Onobrychis viciifolia + Sainfoin	*		
Ononis repens + Common Restharrow	*	*	
Pillosella officinalis Mouse-ear-hawkweed	*	*	*
Ophrys apifera + Bee Orchid	*		
Orchis mascula + Early Purple Orchid	*		

APPENDIX 3: DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Orobanche elatior Knapweed Broomrape ~		*	
Pastinaca sativa Wild Parsnip		*	*
Phleum bertolonii Smaller Cat'stail	*	*	
Picris hieracioides Hawkweed Oxtongue	*	*	
Pimpinella saxifraga Burnet Saxifrage	*	*	
Plantago lanceolata Ribwort Plantain	*		*
Plantago major Greater Plantain	*	*	
Plantago media Hoary Plantain	*	*	
Plantanthera bifolia + Lesser Butterfly Orchid		*	
Poa pratensis Smooth Meadow-grass	*		*
Poa trivialis Rough Meadow-grass	*		
Polygala calcarea + ~ Chalk Milkwort	*	*	
Polygala vulgaris Common Milkwort	*		
Potentilla anserina Silverweed	*		
Primula veris + Cowslip	*	*	
Primula vulgaris Primrose	*		
Prunella vulgaris Self Heal			*
Ranunculus bulbosus Bulbous Buttercup	*	*	*
Reseda lutea Wild Mignonette	*		

APPENDIX 3 : DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Rhamnus cathartica Buckthorn	*		
Rhinanthus minor + Yellow Rattle	*		
Rosa canina Dogrose	*	*	*
Sanguisorba minor Salad Burnett	*	*	
Scabiosa columbaria + Small Scabious	*		
Sedum album White Stonecrop			*
Senecio jacobaea Common Ragwort	*	*	*
Senecio vulgaris Groundsel			*
Sonchus asper Prickly Sow Thistle	*		
Thesium humifusum ~ Bastard Toadflax	*	*	
Succisa pratensis + Devil's-bit Scabious	*	*	
Symphytum x uplandicum Russian Comfrey			*
Taraxacum officinale Dandelion	*	*	*
Thymus polytrichus + Wild Thyme	*	*	
Trifolium pratense Red Clover	*	*	
Trifolium repens White Clover	*		
Urtica dioica Stinging Nettle	*	*	
Verbascum thapsus Great Mullein			*
Veronica chamaedrys Germander Speedwell	*		*

APPENDIX 3 : DOWNLAND PLANT LIST - CONTINUED

PLANT	KNOOK HORSE HILL	A36 K H H	HEYTESBURY CHALK CUTTING
Vicia sativa Common Vetch		*	*
Viola oderata Sweet violet			*
Viola hirta + Hairy Violet	*	*	
TOTALS	76	59	44

APPENDIX 4: HEDGEROW TREE AND SHRUB LIST

PLANT	NGR 937 424 OPPOSITE KNOOK CAMP	NGR 945 415 OPPOSITE GUERNSEY BELT	NGR 947 414 UPTON LOVELL BRIDLEPATH
Acer pseudoplatanus Sycamore			*
Crataegus monogyna Hawthorn	*		*
Fagus sylvatica Beech		*	
Fraxinus excelsior Ash	*	*	
Aesculus hippocastanum Horse-chestnut	*		*
Ligustrum vulgare Wild Privet			
Malus domestica Apple			*
Prunus spinosa Sloe			*
Rosa canina Dogrose	*		*
Rubus fruticosa Bramble			*
Sambucus nigra Elder	*		
Ulmus procera Elm	*	*	
TOTALS	6	3	7

APPENDIX 5: TREE AND SHRUB SPECIES LIST

PLANT	27 GUERNSEY BELT	25 HEYTESBURY PLANTATION	26 UN-NAMED WOOD#
Acer pseudoplatanus Sycamore	*	*	*
Betula pendula Silver Birch		*	
Cornus sanguinea Dogwood		*	
Crataegus monogyna Hawthorn	*	*	*
Fagus sylvatica Beech	*	*	*
Fraxinus excelsior Ash	*	*	*
Ilex aquifolium Holly	*		
Larix decidua European Larch	*	*	
Ligustrum vulgare Wild Privet	*	*	
Malus domestica Apple	*		
Sambucus nigra Elder	*	*	*
Taxus baccata Yew (introduced)	*	*	
Ulmus glabra Wych Elm	*		
Ulmus procera Elm	*		
Viburnum lantana Wayfaring Tree		*	
Picea sp Conifer Spruce sp	*		
TOTAL	13	11	5

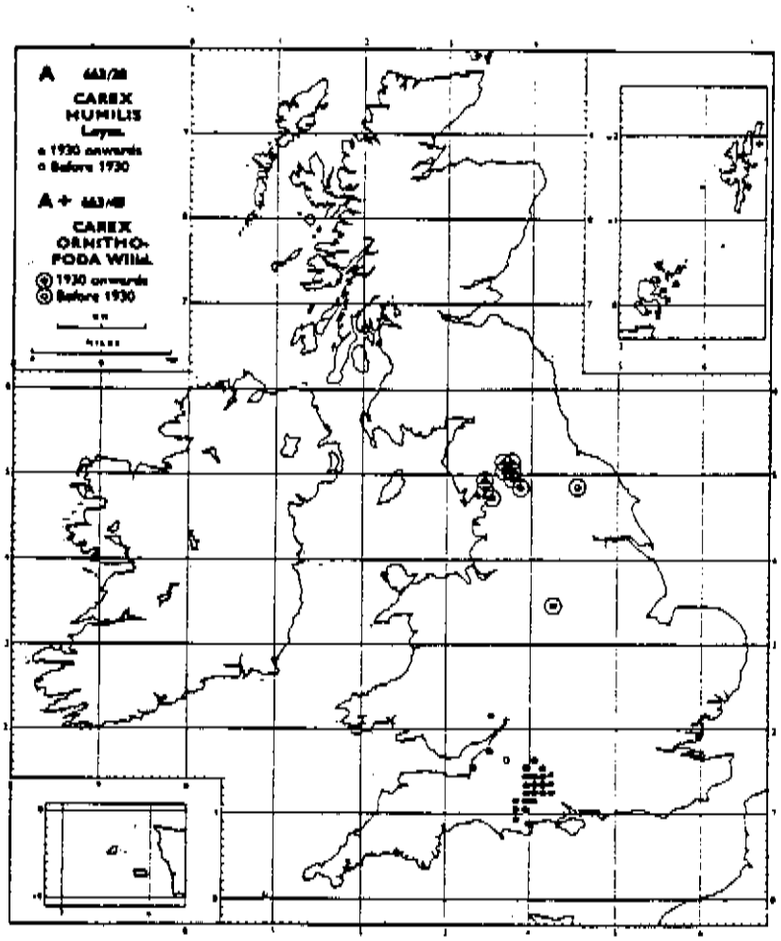
= NGR 942 418

Numbers 25, 26 and 27 refer to references on Map 5

APPENDIX 6: SPECIES LIST OF BIRDS NOTED DURING FIELD VISITS

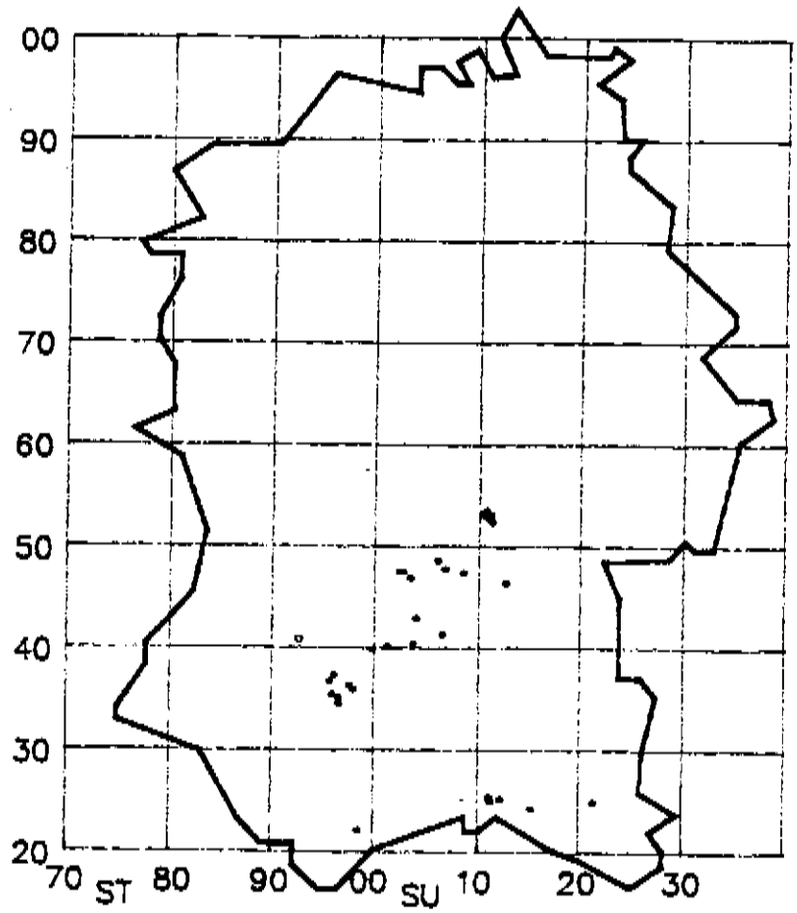
Alauda arvensis	Skylark
Buteo buteo	Buzzard
Carduelis carduelis	Goldfinch
Carduelis chloris	Greenfinch
Columba palumbus	Wood Pigeon
Corvus corone corone	Carrion Crow
Corvus frugilegus	Rook
Emberiza cintrinella	Yellow Hammer
Falco tinnunculus	Kestrel
Fringilla coelebs	Chaffinch
Hirundo rustica	Swallow
Parus caeruleus	Blue Tit
Parus major	Great Tit
Pica Pica	Magpie
Prunella modularis	Dunnock (Hedge Sparrow)
Regulus regulus	Goldcrest
Turdus merula	Blackbird
Turdus viscivorus	Mistle Thrush

Species listed according to alphabetical order of Latin nomenclature



APPENDIX 7: CAREX HUMILIS

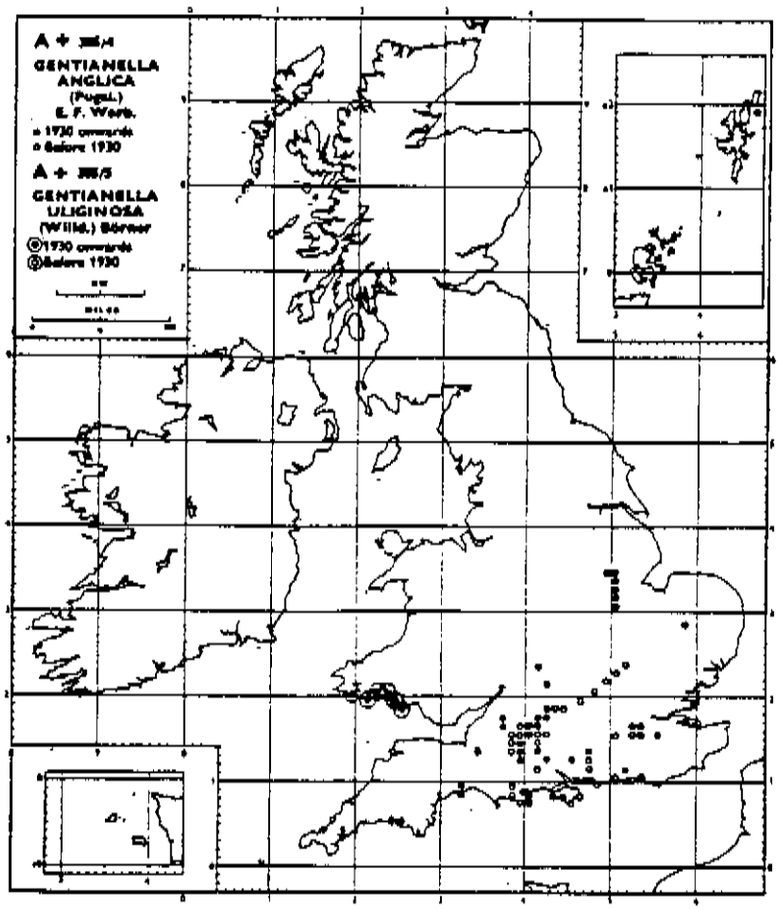
The above map shows the known distribution of Carex humilis (Dwarf Sedge) as shown in the B.S.B.I. Atlas of the British Flora (F.H. Perring and S.M. Walters, 1976), updated by B.S.B.I. Sedges of the British Isles (Jeremy David and Chater 1982).



APPENDIX 7a: CAREX HUMILIS

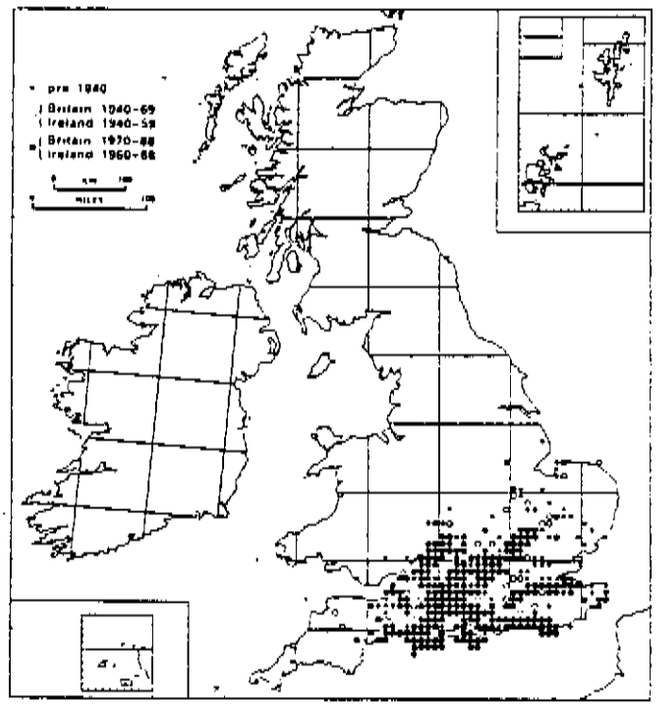
The above map shows the distribution of Carex humilis (Dwarf Sedge) within the county of Wiltshire, as compiled by Devizes Biological Records Centre on behalf of the Wiltshire Flora Mapping project.

Each dot represents one colony. The circle represents the colony discovered during survey work for this document. It constitutes a new 10 km square record, extending the known distribution of this species.



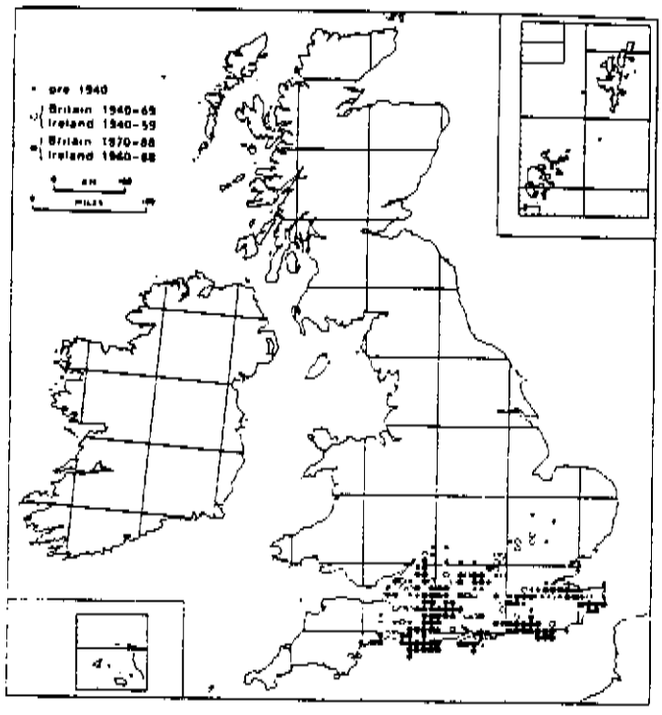
APPENDIX 8: GENTIANELLA ANGLICA (PUGSL) E.F. WARB SUBSP ANGLICA

This endemic biennial of cliff dunes and grassland on chalk and limestone has a total world distribution of thirty five 10 km squares. In recent years it has shown signs of decline. Britain contains twenty nine species of endemic plants (i.e. found only in this country). Gentianella anglica has been studied by the International Union for the Conservation of Nature, and its status is currently considered as rare or threatened on a continental scale.



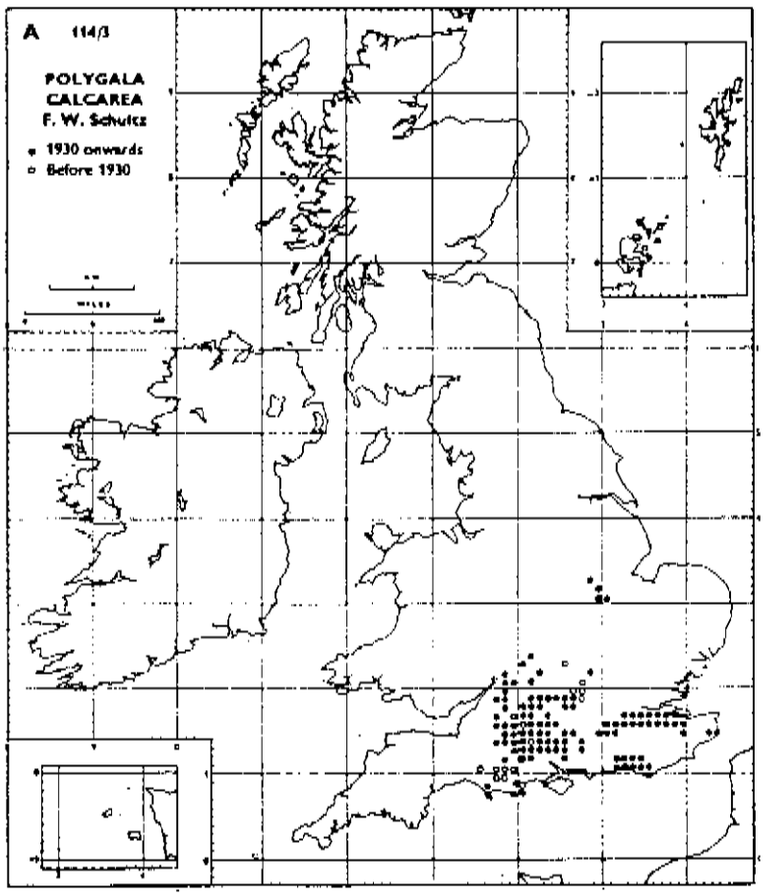
APPENDIX 9: LYSANDRA CORIDON (CHALK HILL BLUE)

This species is almost entirely restricted to England south-east of a line from the Wash to the Severn estuary where its distribution corresponds with that of chalk and limestone grassland. Colonies formed on other types of soil are usually shortlived. It formerly occurred in isolated sites in Lincolnshire and south-eastern Wales, and there is an old unconfirmed record from limestone at Witherslack, Cumbria.



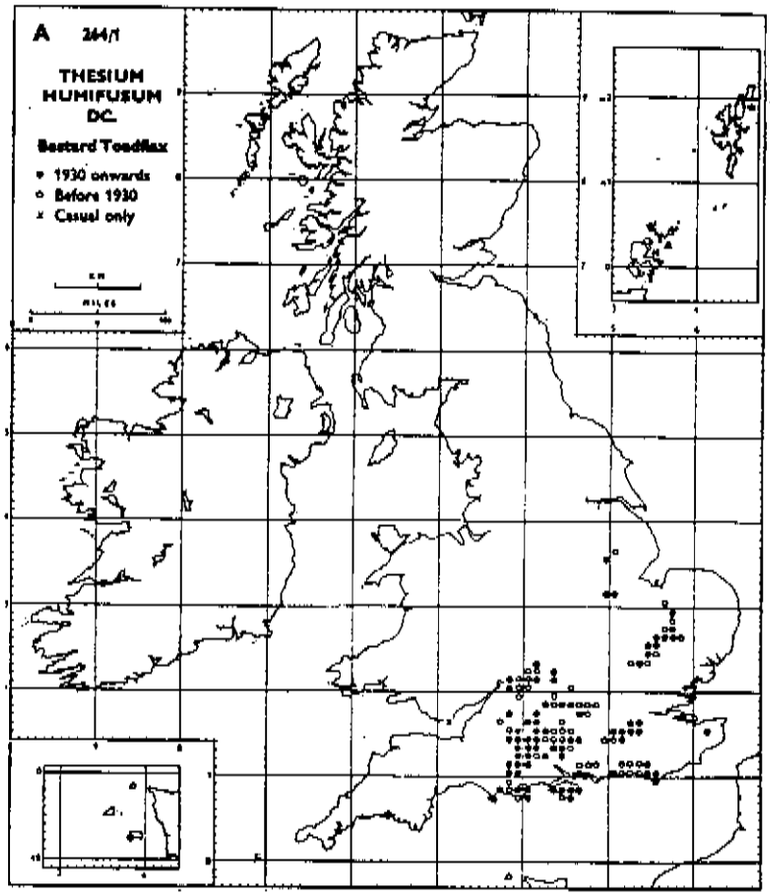
APPENDIX 10: LYSANDRA BELLARGUS (ADONIS BLUE)

Like L. coridon, L. bellargus is at the extreme northern limit of its distribution and seems to be even more dependent on a warm local climate. Consequently it is confined to the calcareous downland of southern England and has never extended as far north as L. coridon. Its numbers steadily declined and by the late 1970s there were only 75 surviving colonies, some of which were under threat. However, in the last few years their number has increased to about 150, partly through improvement of habitat following the return of grazing by rabbits and sheep, and partly through successful reintroductions (Thomas, 1986). It is now locally common in Dorset and still occurs sparingly in Wiltshire, Hampshire including the Isle of Wight, Surrey, Sussex, Kent and Buckinghamshire. It is probably extinct in Gloucestershire (Muggleton, 1973), Oxfordshire, Bedfordshire and Hertfordshire.



APPENDIX 11: POLYGALA CALCAREA F.W. SCHULTZ

This milkwort is a perennial herb of chalk and limestone areas.
The above map from the B.S.B.I. Atlas of the British Flora (F.H. Perring and S.M. Walters, 1976) shows the known distribution.



APPENDIX 12: THESIUM HUMIFUSUM D.C.

Bastard Tadflax is a perennial parasitic plant of chalk and limestone localities.
The above map from the B.S.B.I. Atlas of the British Flora (F.H. Perring and S.M. Walters, 1976) shows the known distribution.

APPENDIX 13: AN ECOLOGICAL EVALUATION

The Criteria for Evaluation

The criteria for evaluation have been adopted from the widely used set developed by Ratcliffe (1977). These were originally conceived to provide a systematic framework for the selection of Sites of Special Scientific Interest (SSSI) by the Nature Conservancy Council (NCC), but have since been adopted and adapted widely by ecologists, for example, in Local Authorities and Wildlife Trusts.

The criteria used in this report are drawn from these widely applied criteria. They are:-

SIZE - Large sites in general contain more species and larger populations of animals and plants than small ones and are therefore of a greater value.

DIVERSITY - Large numbers of species, particularly when represented by large populations, are to be valued.

PERMANENCE - A site which has been occupied by a semi-natural habitat for a long time is usually more valuable than one which has only recently arisen. This is because they have had time to aquire rich assemblages of plants and animals.

LACK OF MODIFICATION - Adverse influences by man, such as inappropriate management regimes and pollution, will reduce the quality of an area.

RARITY - The presence of rare species adds to overall ecological value especially when habitat ranks highly on other criteria as well. The habitat type too may also be rare nationally or regionally.

POSITION IN AN ECOLOGICAL UNIT - The presence of other areas of semi-natural habitat adjacent or close to a site enhances the value of both habitats.

These criteria provide a useful basis against which to evaluate the intrinsic ecological quality of a site, but in an urban area, it is also important to consider the value of an area to the local people, (GLC 1985). Thus the appeal of a site, its educational and amenity value, as well as its accessibility as a wildlife area, need to be included in the evaluation.

APPENDIX 14: BADGER CONSULTANCY REPORT

Below are extracts from the report compiled by Penny Cresswell of the Badger Consultancy and submitted to David Hogan, Wiltshire County Council.

November 1990

A36 HEYTESBURY TO CODFORD IMPROVEMENT - BADGER SURVEY AND RECOMMENDATIONS

BADGER SOCIAL ORGANISATION

Badgers live in groups which jointly defend a territory. The territory may include a number of setts of different sizes and functions, and will encompass sufficient foraging areas to support the group throughout the year.

The four types of sett are as follows:

MAIN SETTS	These are in continuous use, they are large, well established and often extensive. It is where the cubs are most likely to be born. There is only one main sett per social group of badgers.
ANNEXE SETTS	These occur in close association with the main sett, and are linked to the main sett by clear well-used paths. If a second litter of cubs is born, this may be where they are reared.
SUBSIDIARY SETTS	These are setts of more than five holes, but which are not in continuous use.
OUTLYING SETTS	These consist of only one or two holes. Usually they have small spoil heaps indicating that underground they are not very extensive.

The setts found during the survey are shown on the enclosed maps:

Map 14: a & b: Both disused outlying setts with three entrances.

Map 15: c: Subsidiary sett - 5 well-used entrances.

d: Outlying sett - 1 well-used entrance.

e: Outlying sett - 1 well-used, 1 partially-used entrance.

f: Outlying sett - 1 disused hole.

g: Outlying sett - 2 partially-used holes.

APPENDIX 14: BADGER CONSULTANCY REPORT - CONTINUED

h: Subsidiary sett - 1 well-used, 3 partially-used entrances.

i: Subsidiary sett - 4 entrances.

j: Outlying sett - 1 well-used entrance.

k: Main sett - 30+ holes, little activity at present.

l: Outlying sett - 1 partially-used hole.

HEYTESBURY PLANTATION

Map 14 shows the location of two outlying setts in Heytesbury plantation near Knook camp. Before the road is constructed these will need to be checked by an expert to verify whether they are still unoccupied. This should be done a month before construction is due to begin. If the sett is empty, it can be blocked to ensure no animals move in beforehand. If it is occupied, the badgers will need to be moved before construction can begin.

The animals cross the existing A36 at this point too. If possible, a tunnel should be placed under the road, where it passes through the plantation. The material best suited to this purpose is 600mm diameter concrete pipe. The entrance to the pipe can be grilled to prevent entry by children so long as the centre bottom square of the grill is no less than 300mm high by 225mm wide. To funnel the animals into the tunnel, badger-proof fencing is needed for a distance of 50m either side of the tunnel entrances.

GUERNSEY BELT

On Map 15, setts relating to the badgers in Guernsey Belt, together with arrows indicating favoured badger paths, are shown. Their territory extends on both sides of the existing A36 as far as the River Wylye to the south and to some point around Knook Wood to the north. The main sett (k) is crucial to the survival of the group. As all the tunnels are connected underground, damage to any part of the main sett would require the sett to be completely closed, and the badgers to be moved. The dotted line shows the maximum likely extent of the sett underground, thus as the road stands it would necessitate the closure of this sett. To ensure the survival of the group, I would recommend that the alignment of the road is shifted so that heavy machinery is not brought within 20m of the dotted line shown on the map. Furthermore, the erection of a temporary fence to mark the edge of the exclusion zone would avoid any accidental damage. This need not be anything more than simple chestnut-paling.

If the road is shifted north it is then likely to cut through three smaller setts (f, g, & j). These are outlying setts; they are not crucial to the survival of the group and while it will be necessary to ensure they are empty prior to construction, this operation will be far easier and infinitely preferable to the loss of a main sett. It should be undertaken as described for the Heytesbury Plantation setts.

APPENDIX 14: BADGER CONSULTANCY REPORT - CONTINUED

From a bait-marking study carried out in the autumn 1990, it is clear that the badgers crossed the proposed route of the new road frequently. While not all of their territory boundary was apparent, setts used by this group will be on both sides of the new road, which clearly indicates a need to supply badger underpasses. The success of underpasses depends both on their location and their number. Three crossing points would be sufficient to ensure the badgers' continued use of the area. The recommended locations are shown on maps 14 & 15 . Each underpass/crossing would require badger-proof fencing either side for at least 50m. In practice, it is sometimes better to use landmarks rather than distance to dictate the length of fencing. Thus I have outlined on maps 14 & 15 where I would expect the badger-proof fencing to be most effective. In particular, as the road is passing so close to a main sett (which is the centre of activity of the group), it would be desirable to extend the length of badger-proof fencing to connect between the crossings numbered 2 & 3 as shown on the maps.

It should be noted that at present only one sett (j) would require a closure operation, all the others are not currently occupied. At any one time it would be most unlikely for more than two outlying setts to be occupied.

TIMING

The success of a displacement can depend on how effectively the original sett is destroyed - the most effective being actually building on it. Thus the timing of such an operation will depend on the construction schedule itself. There are limitations, however. No displacement can normally take place between December and June (inclusive) because of the general inactivity of badgers during the winter and the likelihood of pregnant females and young cubs being present (December to February and February to June respectively). So the displacement should start four weeks before the intended date of construction, so long as it was outside the December - June limits. If construction was due to begin within these limits, then provided it did not include sett j, sett closure could probably be undertaken anyway, since outlying setts are unlikely to be occupied for extended periods during the winter. For sett j, which, due to its proximity to the main sett, could function as a small annexe sett, a displacement would have to be done between June and December. It should be stressed that no guarantee can be made that the sett will remain unoccupied, even after destruction, if the construction does not begin quickly afterwards.

SUMMARY OF RECOMMENDATIONS

1. A total of four badger crossing points are needed.

2. The road line should be shifted to avoid the need to close the main sett in Guernsey Belt.

3. This will result in the need to close 3 outlying setts, in addition to the 2 outlying setts in Heytesbury Plantation.

APPENDIX 15: ENGLISH NATURE CONSULTATION REPORT: EXCERPTS FROM THE REPLY BY R E SPARSHOTT OF ENGLISH NATURE TO D L HOUSE, DEPT. OF TRANSPORT

I do not regard the possibility of removing any badgers from the site, either temporarily or permanently, as a viable option. Whilst in the past entire social groups of badgers have been captured it is a process which takes usually several days and occasionally several weeks to ensure that the entire social group has been captured. This obviously places a great deal of stress upon the badgers and is an expensive operation to undertake. Holding wild animals in captivity is also stressful to them.

I therefore consider that the road construction should take place whilst the badgers are still present at this site, although obviously not in the way of digging machinery.

Conservation Consultancy's report indicates the status of the badger setts found on site. Outlier setts are small setts some distance removed from the main sett. They may only be in intermittent use and it is normally relatively easy to exclude badgers from them. Subsidiary setts will be of medium size and probably in continuous use. The badgers, generally speaking, will make more determined efforts to return to these sett areas after exclusion. Main setts are with multiple holes and may cover a considerable area as is the case here. Exclusion from a main sett is frequently difficult. There are well established exclusion procedures but badgers are very strong and determined animals and, unless the sett is destroyed immediately after exclusion is complete, they will continue to attempt to burrow back into this area. Even if the main sett area is destroyed immediately after exclusion is complete, it is by no means certain that the badgers will not attempt to re-colonise. I consider therefore that every attempt should be made to preserve the sett which Conservation Consultancy has designated 'K', even though part of this sett extends out into what will be the main carriage-way. The remaining setts within the line of the carriage-way do not present any serious problems. A and B are disused outlying setts and, whilst they should be checked prior to work taking place as suggested in Conservation Consultancy's report, in the regrettable event that they have been re-colonised, exclusion under licence should be a simple procedure. Sett G is an active outlier sett and again I foresee no problems with exclusion here. Sett F, whilst not in the direct line of the carriage-way, is very close to it and should this sett show signs of expansion, then immediate exclusion would be advisable. Setts J and H are also close to the line of the proposed carriage-way, in the case of H within 25 metres, but I consider that they should be left intact.

Because the strong territorial nature of badgers would cause them to make such determined attempts to return to a main sett, I consider that the best course of action will be to exclude the badgers from that portion of sett K which will be affected by earth-works. In order to achieve this it will be necessary to physically block off badger tunnels underground. It is suggested that this is achieved by inserting a trench at least 2.5 metres deep one side of which will then be lined with plastic-coated wire chain-link mesh along the edge of the Guernsey Belt. I suggest that this trench starts at the junction of the Guernsey Belt and the A36 at ST 944403 and runs along the edge of the Belt for 50 metres until it reaches the junction where earthworks will commence, then follow the line of the earthworks for 200 metres. This will ensure a margin of 50 metres beyond the current edge of sett K to take account of the fact that the sett may well expand in a different direction when part of its area is lost. It may be

APPENDIX 15: ENGLISH NATURE CONSULTATION REPORT: EXCERPTS FROM THE REPLY BY R E SPARSHOTT OF ENGLISH NATURE TO D L HOUSE, DEPT OF TRANSPORT - CONTINUED

necessary to adjust this distance immediately prior to work commencing should expansion of the sett take place in the meantime. The digging of this trench will cut existing badger tunnels and must therefore be done with great care. It is recommended that he work be done by one digger operator using a low ground pressure vehicle and a narrow smooth-edged bucket and that, as soon as tunnels are breached, the area immediately around the tunnels is cleared by hand using a spade. It is also recommended that a badger worker be available on site during this period in order to supervise the activities of the workmen and deal with any casualties amongst the badgers if, in spite of these precautions, they should occur.

Once tunnels have been breached, it is recommended that they be excavated backwards away from the sett area and area all destroyed by hand. Once it is certain that no badger remain in the vicinity, the whole area should be dug out and permanently destroyed in order to reduce the chance of re-colonisation of this area. It is obviously impractical for reasons of cost to completely badger-fence the entire line of the proposed carriage-way prior to construction work and therefore there is a risk that badgers, which have been excluded from one area along the carriage-way, will attempt to dig themselves a new sett further along the carriage-way line. It will therefore be necessary to inspect the line regularly, a minimum of once a week, in order to determine if badger digging is taking place so that exclusion can take place before the badgers have developed territorial attachment tot he site. It will also be necessary to tape off, or fence off, any badger setts which are in lines which could be used by construction traffic going over them where this is not actually essential to the structure of the road. This is in order to prevent the possibility of tunnel collapse and badgers being crushed by heavy machinery going over their setts. A radius of 15 metres from the entrance to a badger sett should be taped off. This is because badgers will normally burrow around to 10 metres underground from their holes and a safety factor is also incorporated here. If this radius is adhered to, the chances are extremely remote that any badgers will be injured in such a manner.

The main foraging area for the badgers lies to the north of the sett and it will be necessary to cross the new road in order to gain access. It will therefore be necessary to insert badger tunnels and appropriate fencing to prevent either badgers being killed or the possibility of road traffic accidents. I consider that it is vital for human safety as well as that of the badgers that adequate precautions against road traffic accidents are taken here. I therefore suggest that over the stretch of road between the quarry and the eastern end of the plantation at least five badger tunnels are inserted and that the entire stretch be fenced on both sides with badger-proof fencing. I can make no comment at this point on the most suitable locations for such badger tunnels and would suggest that this is determined on-site after earthworks have commenced in the light of the badger paths which are occurring at that time. The badgers may well choose to divert around rather than crossing a disturbed or excavated area in which case the tunnels should be placed at regular intervals along the stretch. It would be advantageous if on

APPENDIX 15: ENGLISH NATURE CONSULTATION REPORT: EXCERPTS FROM THE REPLY BY R E SPARSHOTT OF ENGLISH NATURE TO D L HOUSE, DEPT OF TRANSPORT - CONTINUED

existing paths which are not tunnelled, some one-way gates are inserted leading away from the road so that any badger inadvertently trapped on the road had a means of egress. You may wish to consider erecting this to a further height to prevent the possibility of deer strayoing on to the road. whilst I was on site, I found a considerable number of muntjac slots, and the area is obviously heavily used by these animals.

I do not regard the construction of an artificial sett as appropriate in this situation. The badgers already have other setts in the area which they can move to if it becomes necessary. However, if landscape tree-planting is planned, it would be advantageous to create a belt or clump of trees to the north of the existing road where they would be more likely to construct a new sett than in the open downland. This would obviously reduce the number of occasions on which badgers needed to cross the road and the possibility of their becoming trapped on it.

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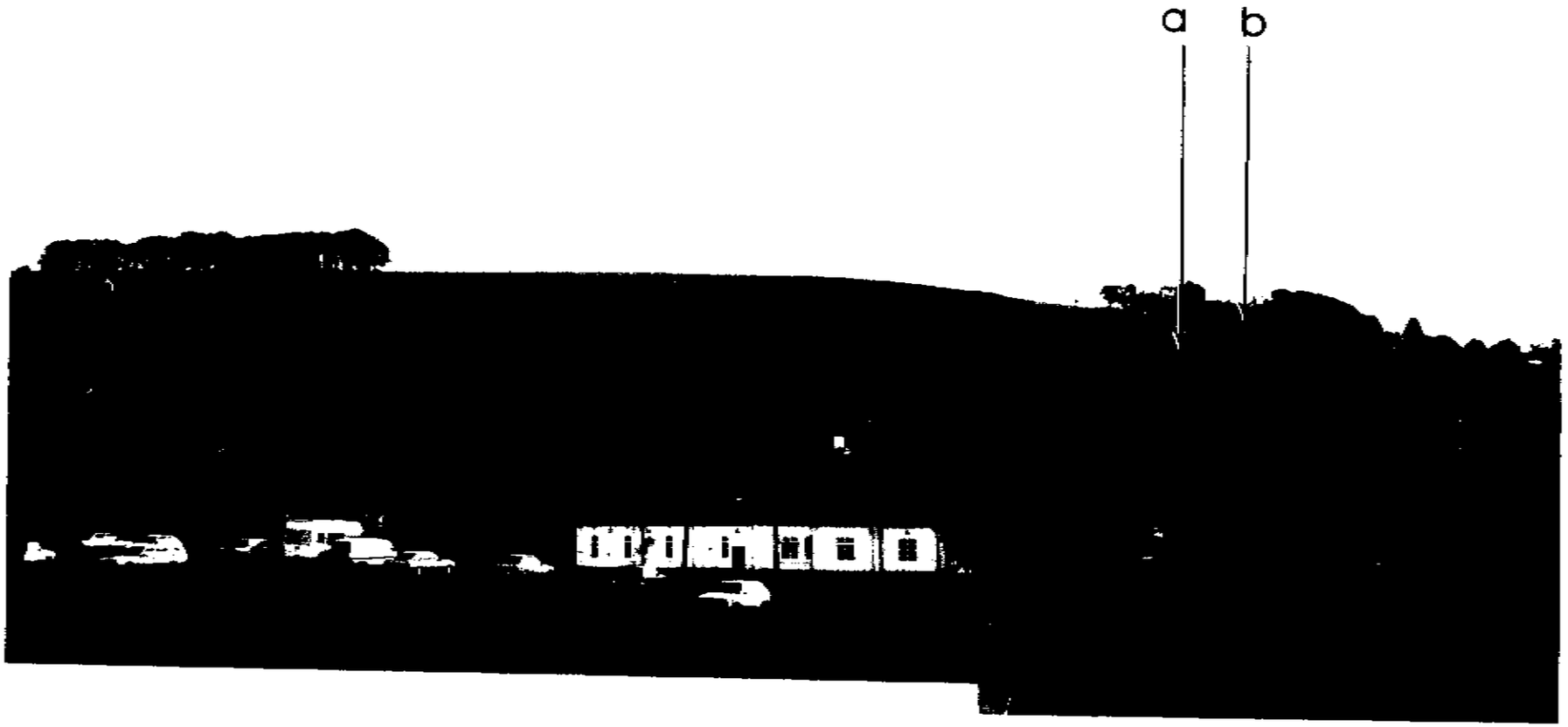


1. VIEW TOWARDS KNOOK HORSE HILL
SHOWING AREAS OF HIGH ECOLOGICAL VALUE
MARKED a AND b; SEE MAP 11

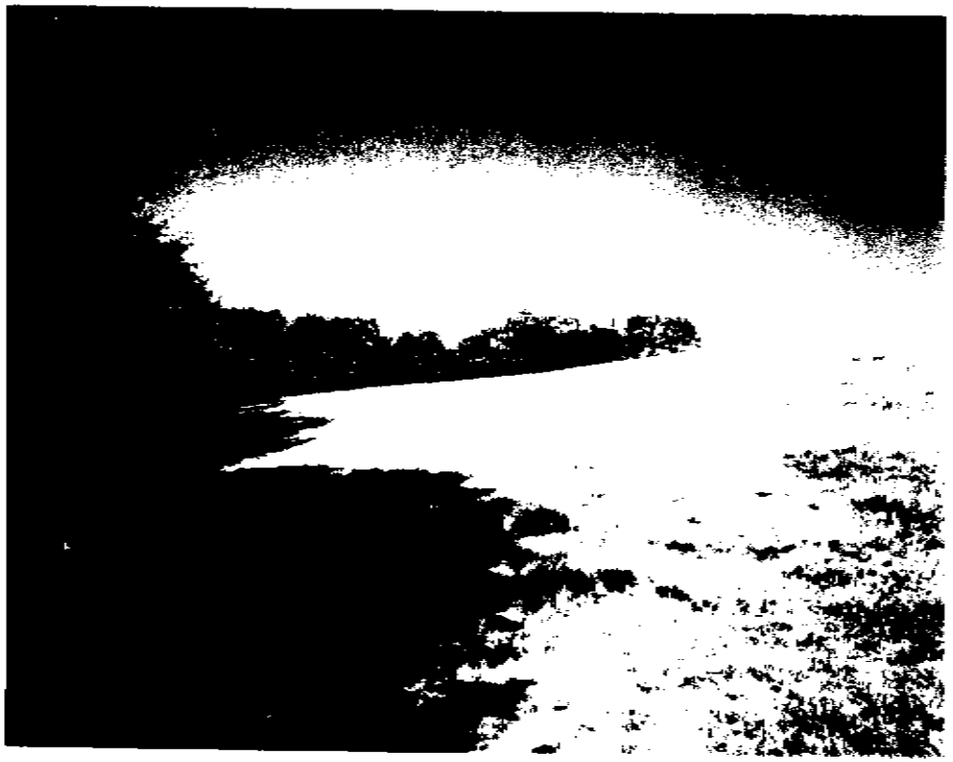
2. TRACK LEADING TO MANOR FARM, SHOWING THE POINT AT WHICH IT WILL BE CROSSED BY THE PROPOSED ROAD

3. SECTION OF CHALK PIT, AREA a ON MAP 11

4. UNIMPROVED CHALK DOWNLAND ADJACENT TO CHALK PIT, LOOKING TOWARDS KNOOK CAMP.

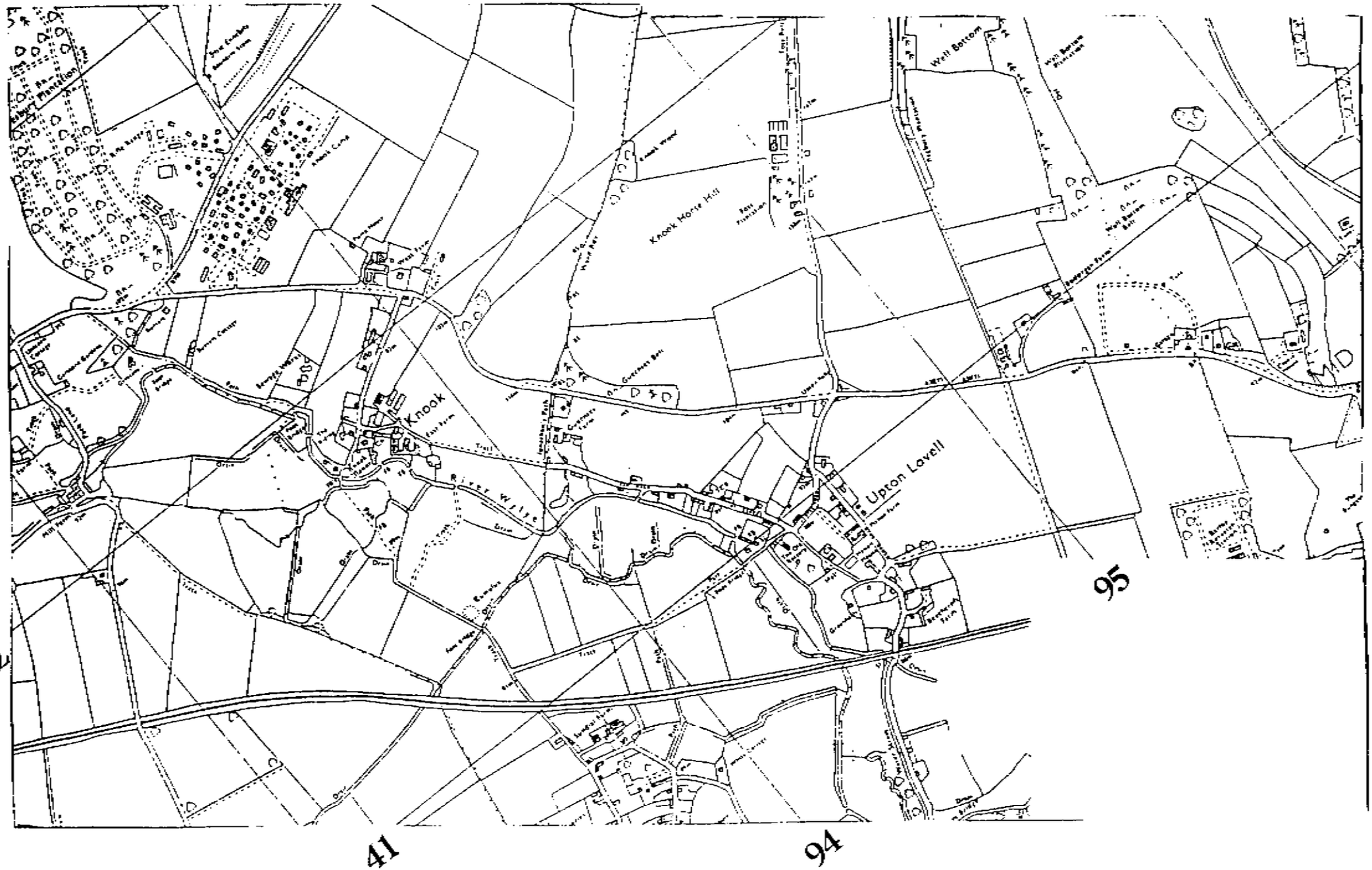
5. RECENTLY EXCAVATED BADGER TUNNEL ENTRANCE IN WOODLAND, AREA b ON MAP 11.

6. BADGER TUNNELS MARKED 1,2,3 AND 4, WITH SIGNS OF PAST EXCAVATIONS, IN WOODLAND, AREA b ON MAP 11.



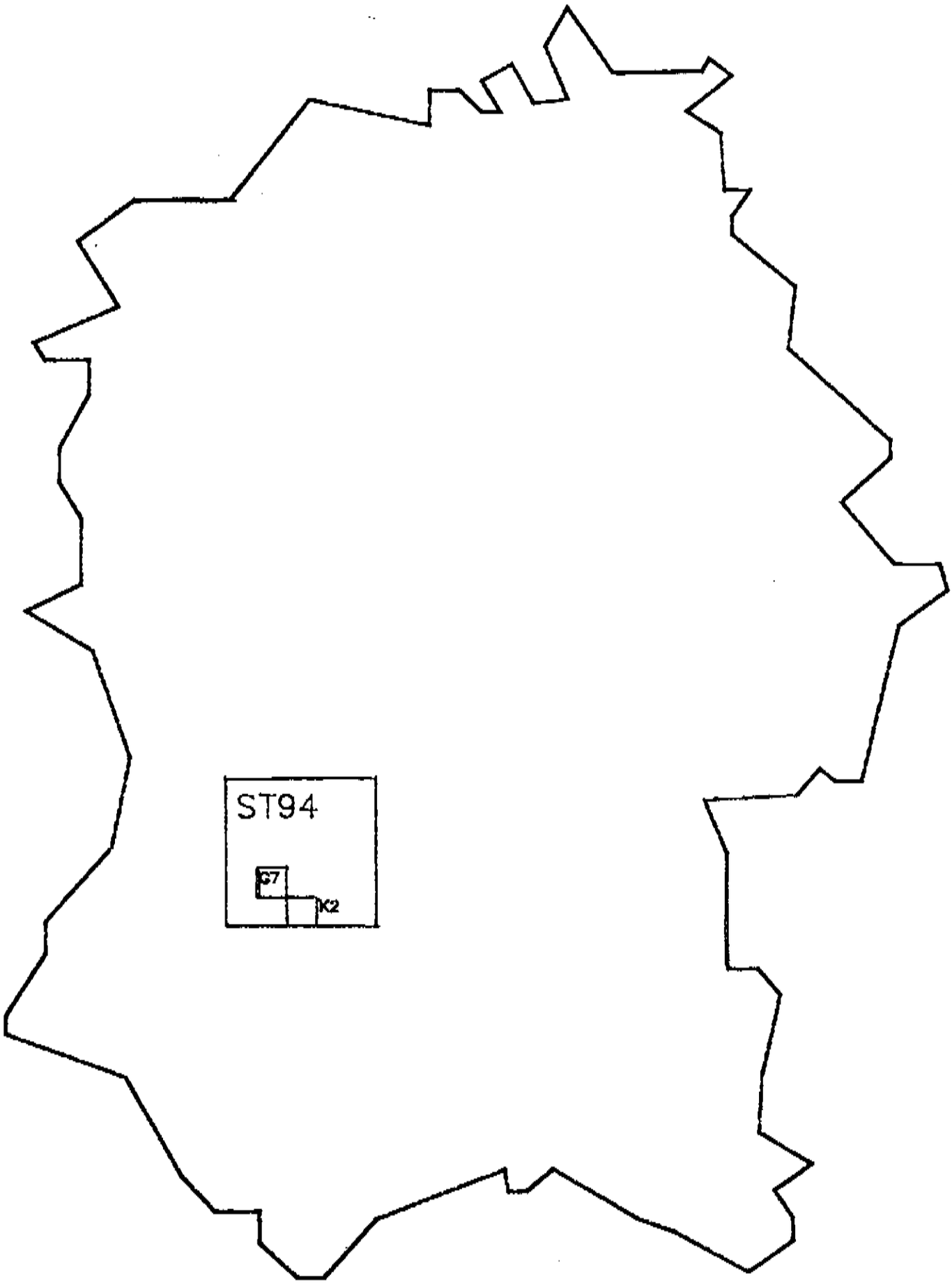
7,8. BADGER TUNNEL ENTRANCES IN PASTURE, FIELD NO.17 ON MAP 5.

9. VIEW NORTH WEST ALONG LINE OF PROPOSED A36 PAST GUERNSEY BELT

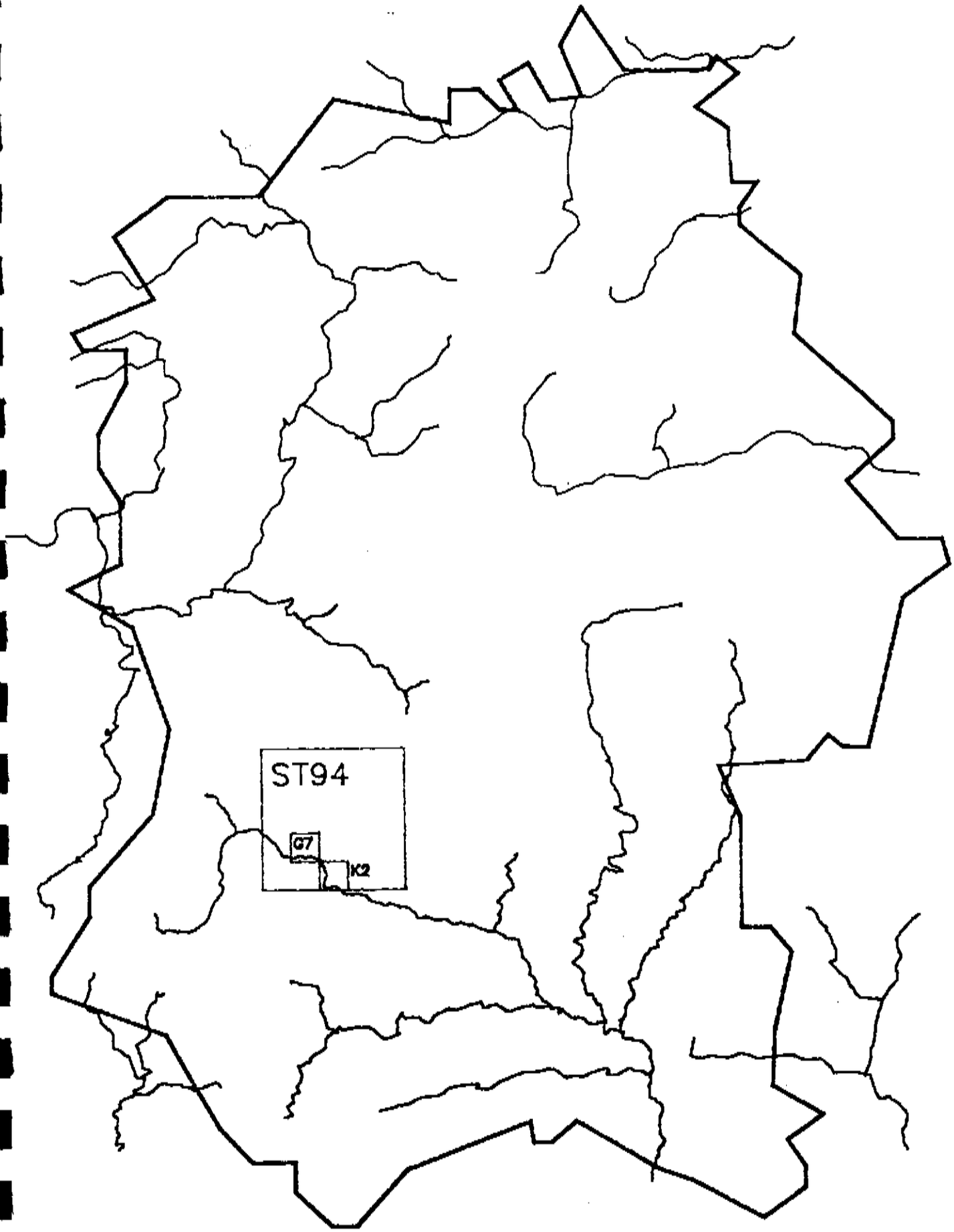


MAP 1: BASE MAP WITH NATIONAL GRID REFERENCES

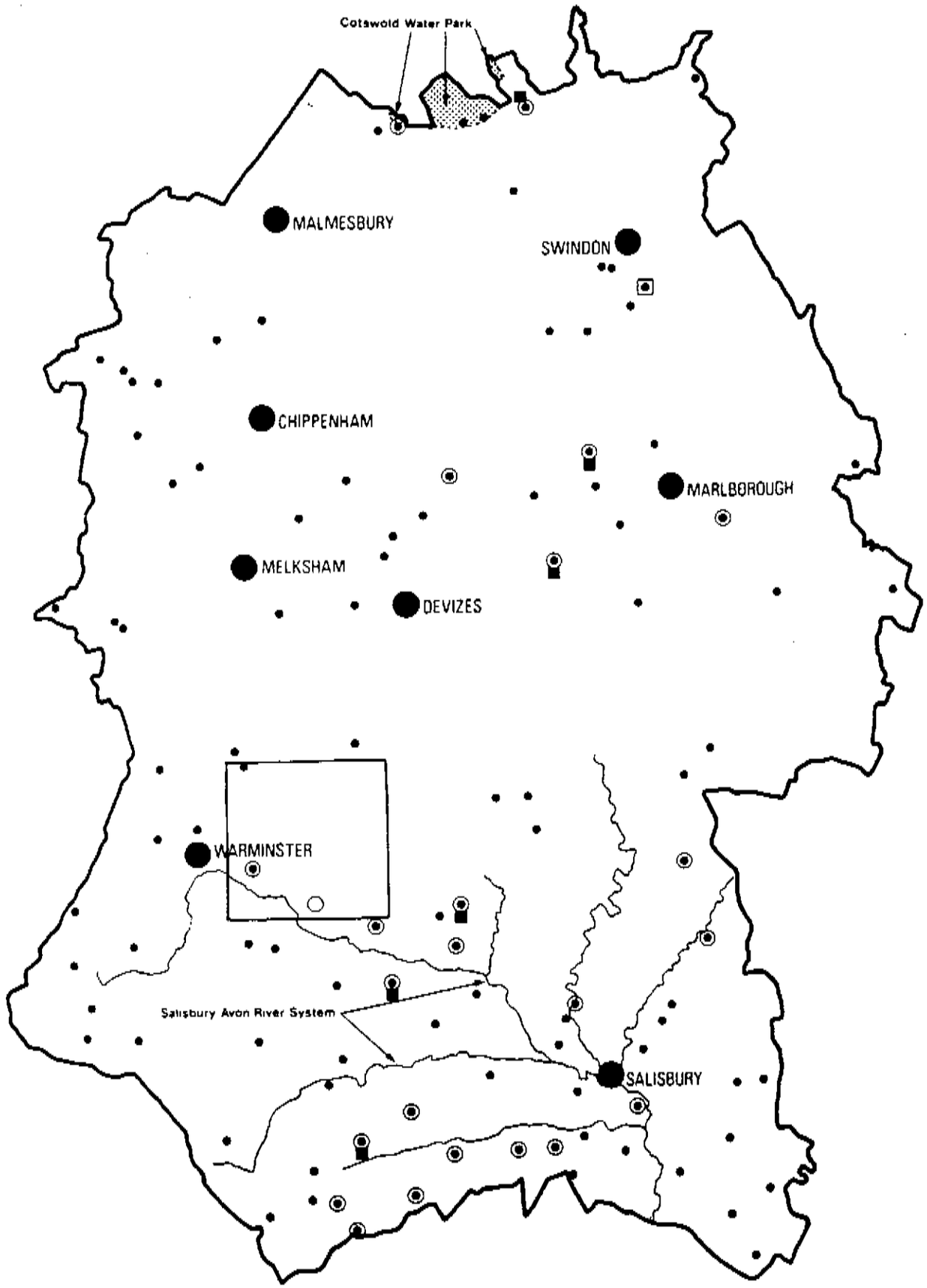
MAP 1A: BASE MAP SHOWING LINE OF PROPOSED ROADS



MAP 2: WILTSHIRE FLORA MAPPING PROJECT TETRAD REFERENCES COVERING THE BAND OF INTEREST AND ITS POSITION WITHIN N.G. SQUARE ST94.



MAP 2A: RIVERS IN WILTSHIRE

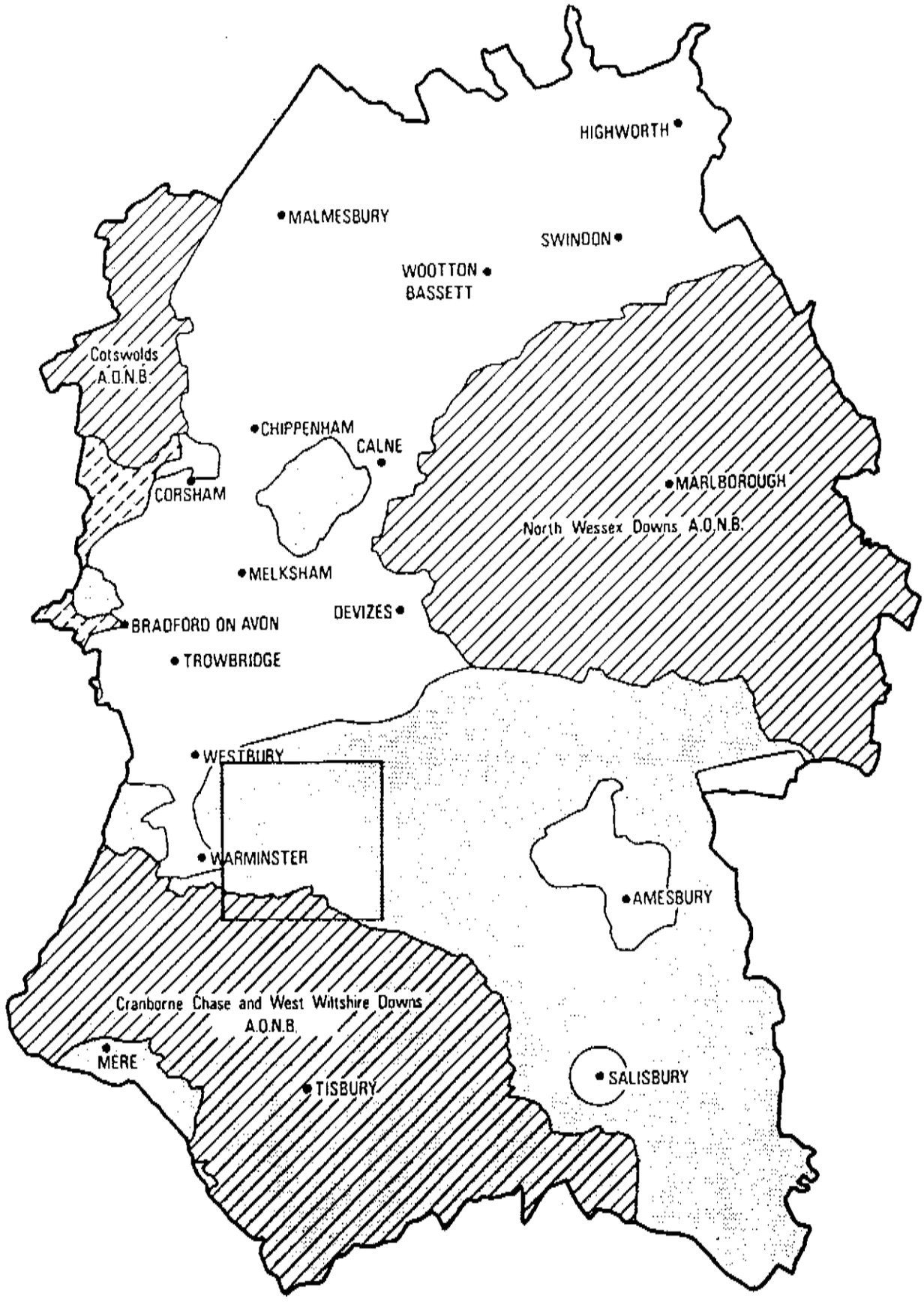


National Nature Reserves, Sites of Special Scientific Interest & Nature Conservation Review Sites

National Nature Reserve
Local Nature Reserve
Site of Special Scientific Interest
Nature Conservation Review Key Sites

0 5km
0 3miles

MAP 2B: AREAS OF CONSERVATION INTEREST

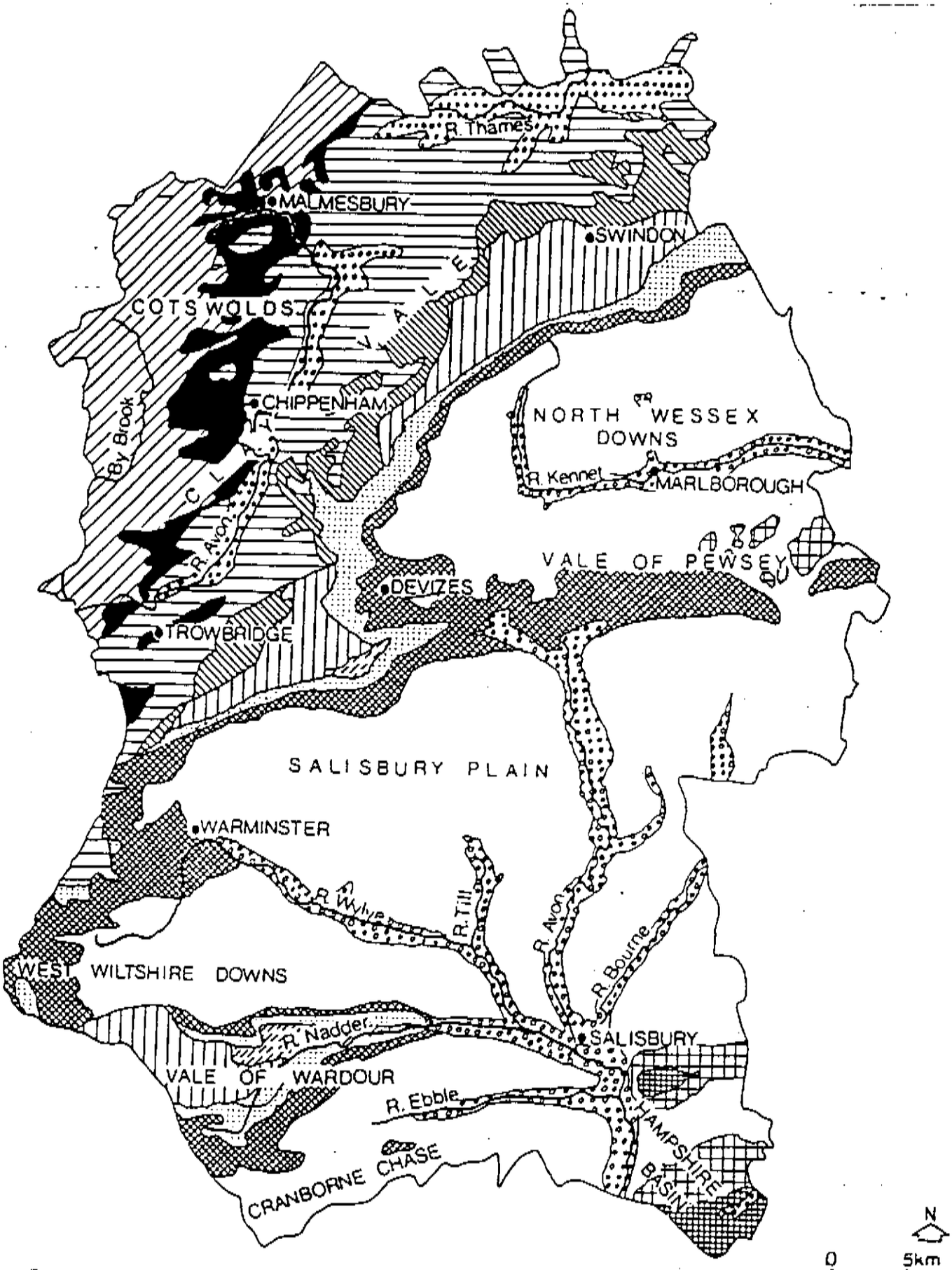


Areas of Outstanding Natural Beauty & Special Landscape Areas

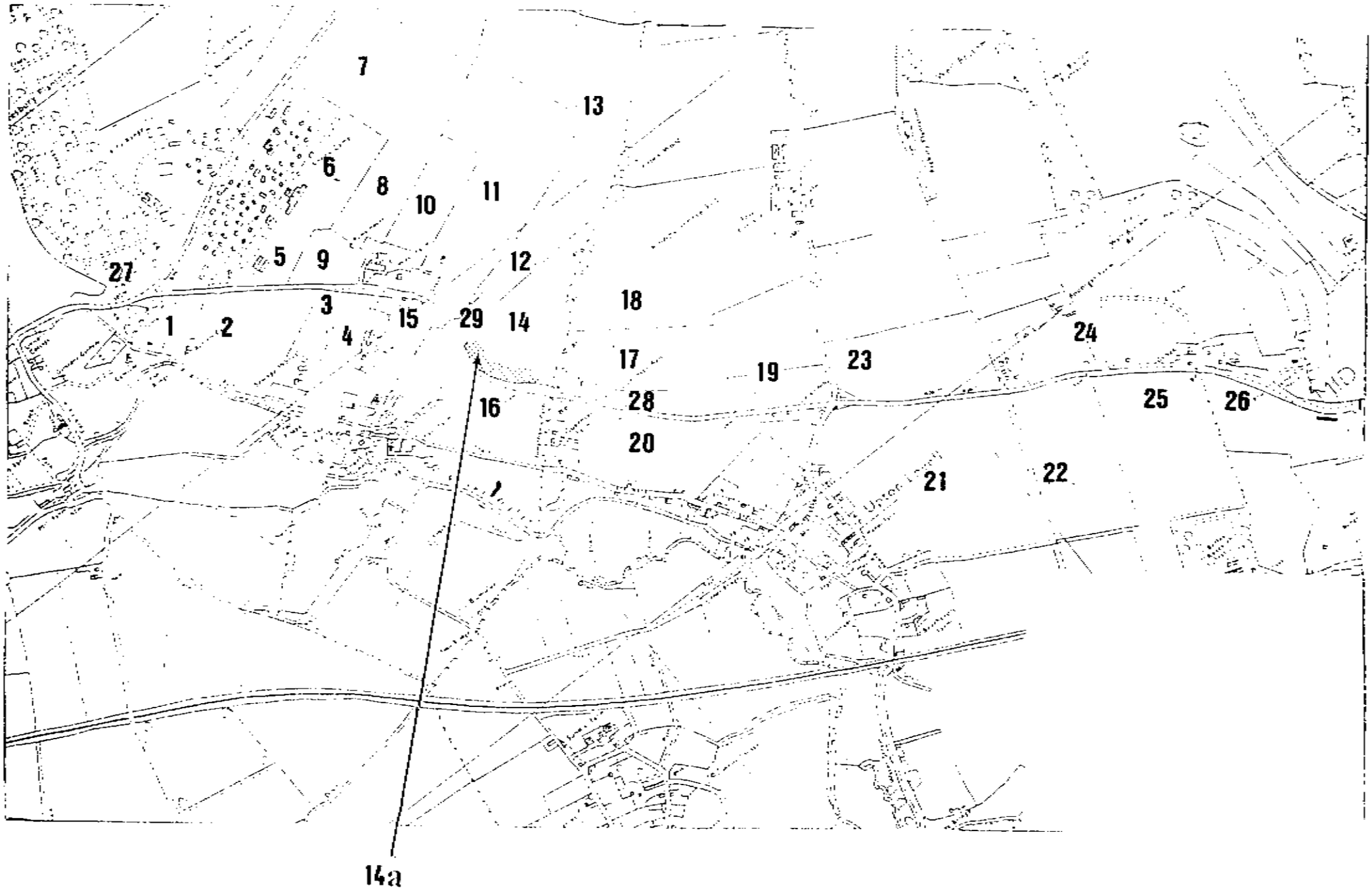
	Existing	Proposed
Area of Outstanding Natural Beauty		
Special Landscape Area		

0 5km
0 3miles

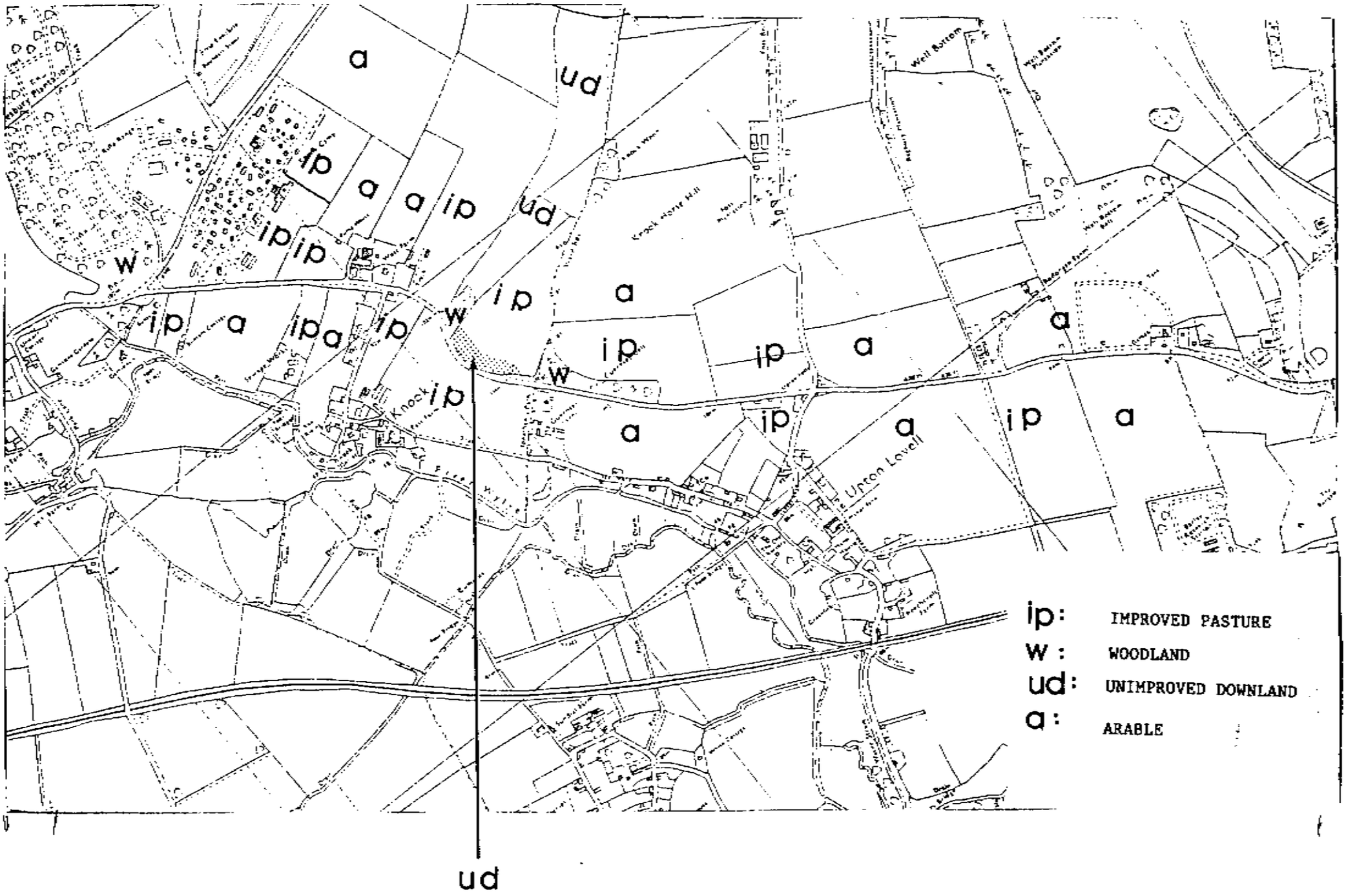
MAP 2C: AREAS OF HIGH ECOLOGICAL INTEREST IN WILTSHIRE



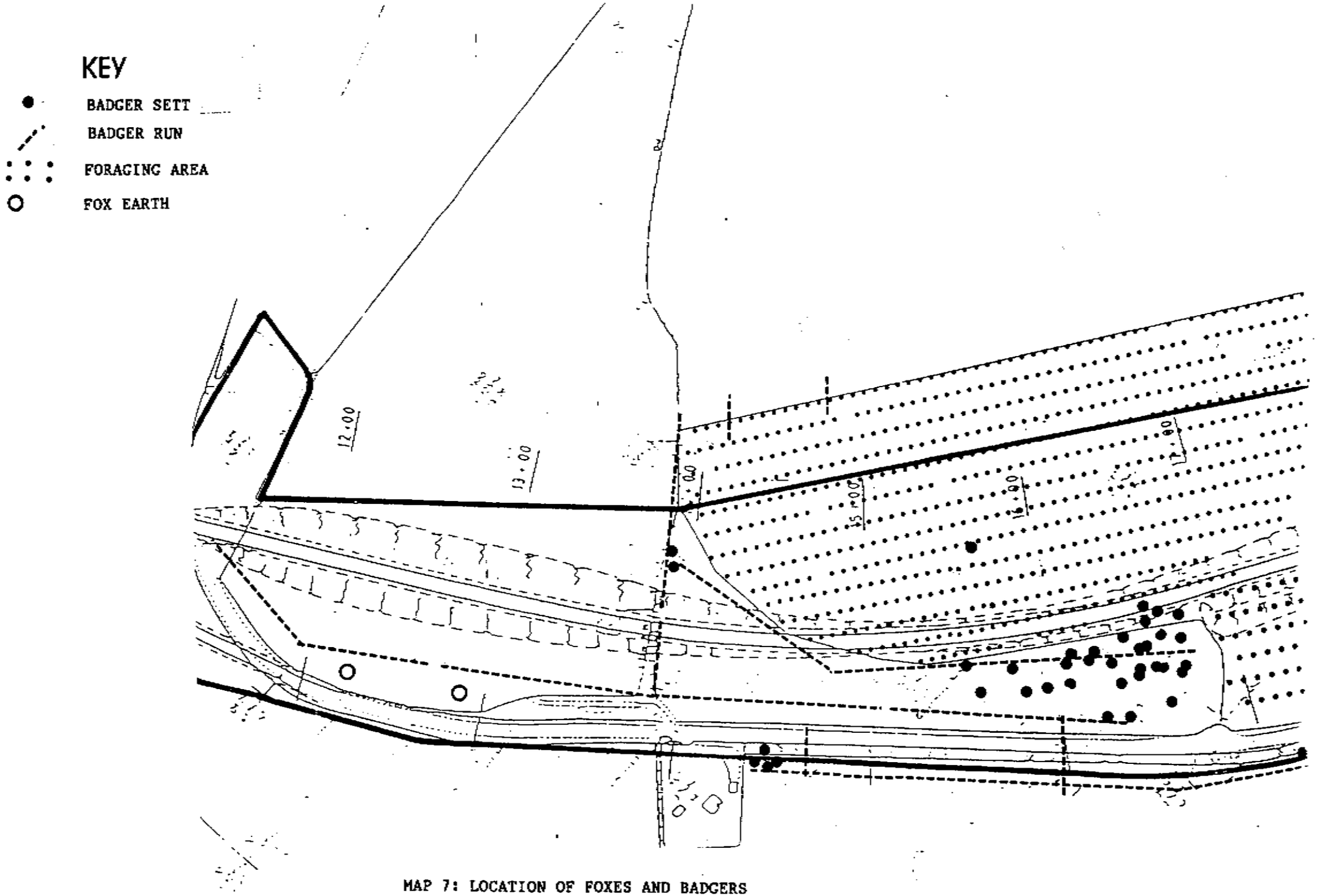
MAP 3: GEOLOGY OF WILTSHIRE



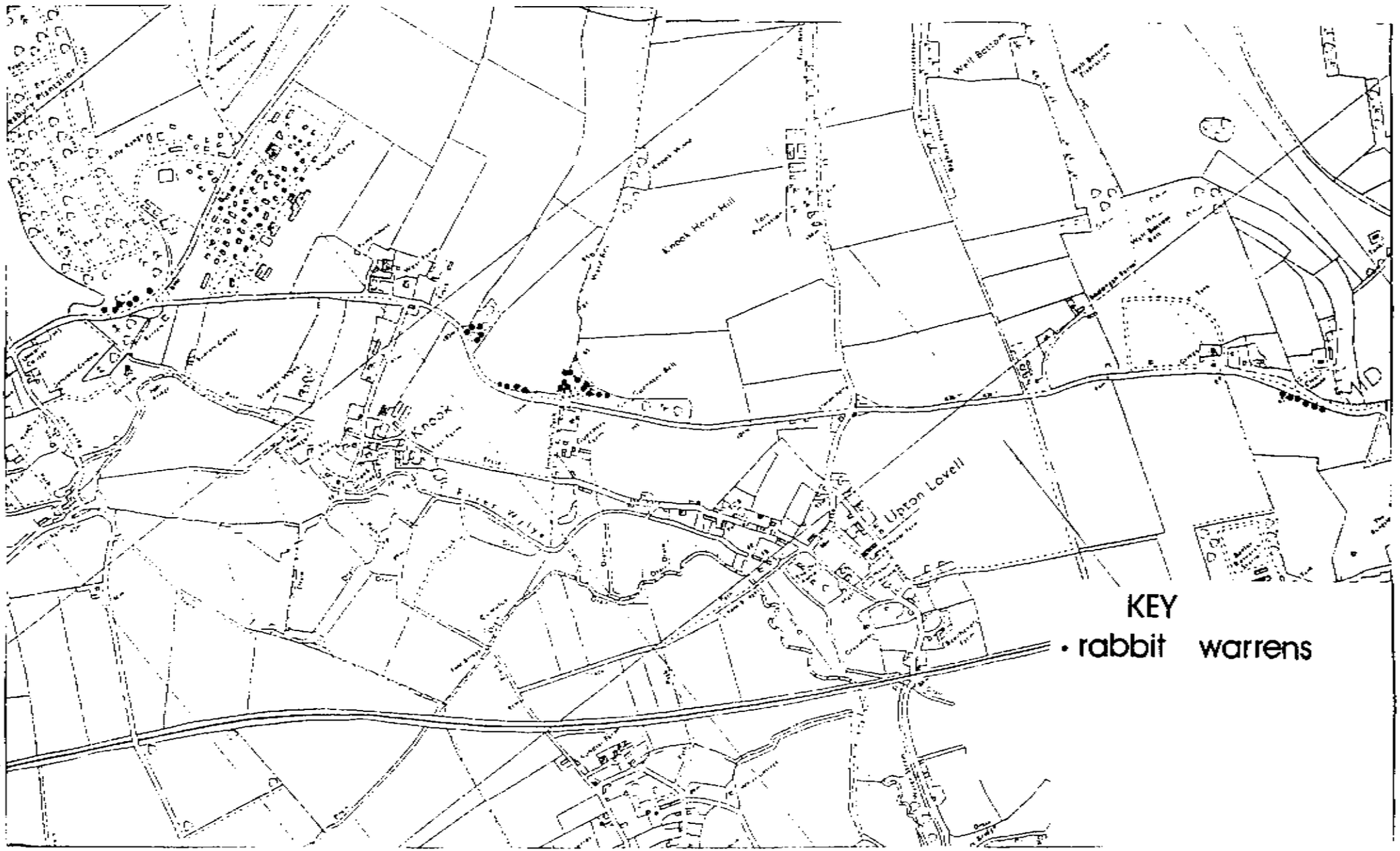
MAP 5: NUMBERED FIELDS IN BAND OF INTEREST



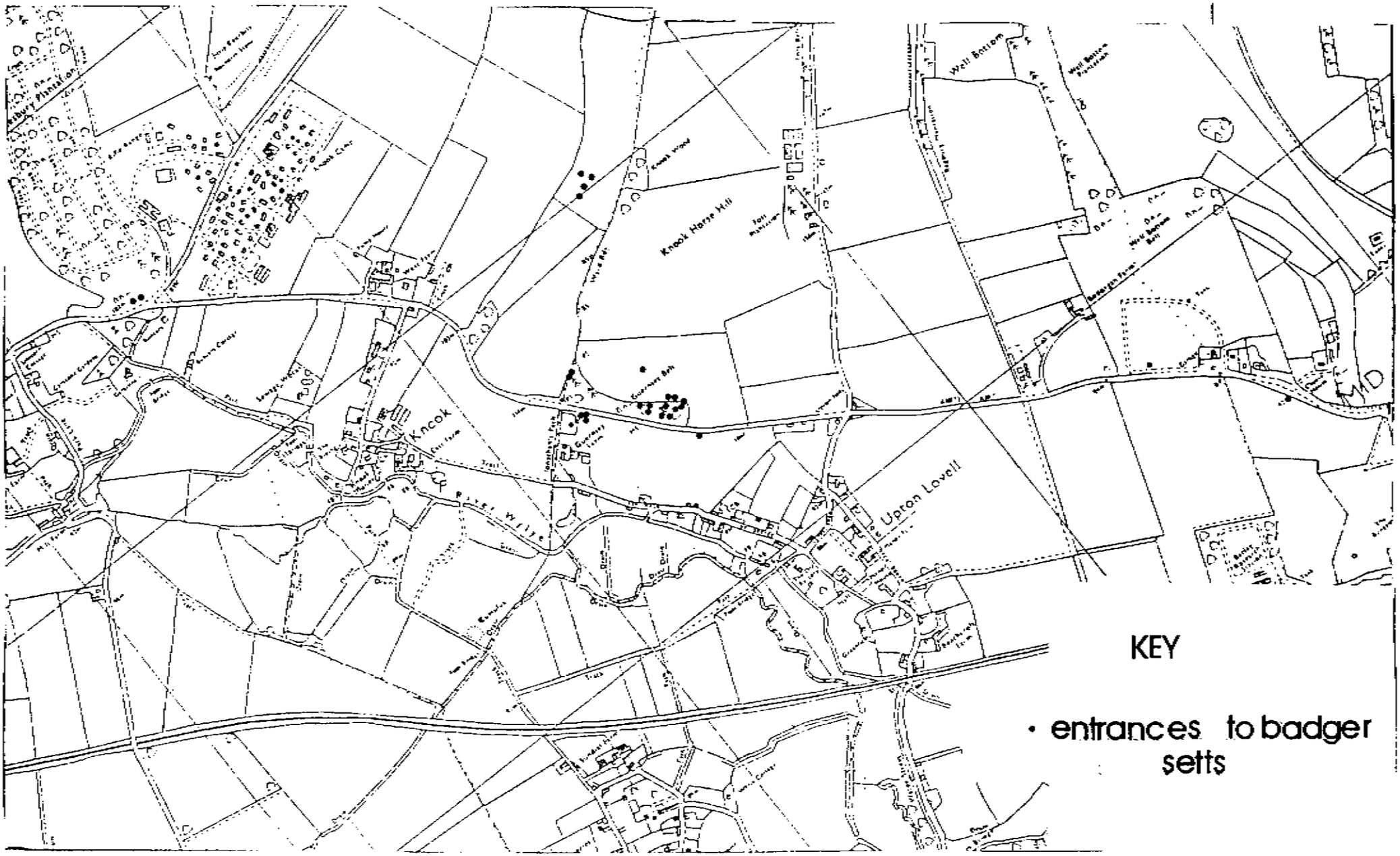
MAP 6: LAND USE WITHIN THE BAND OF INTEREST



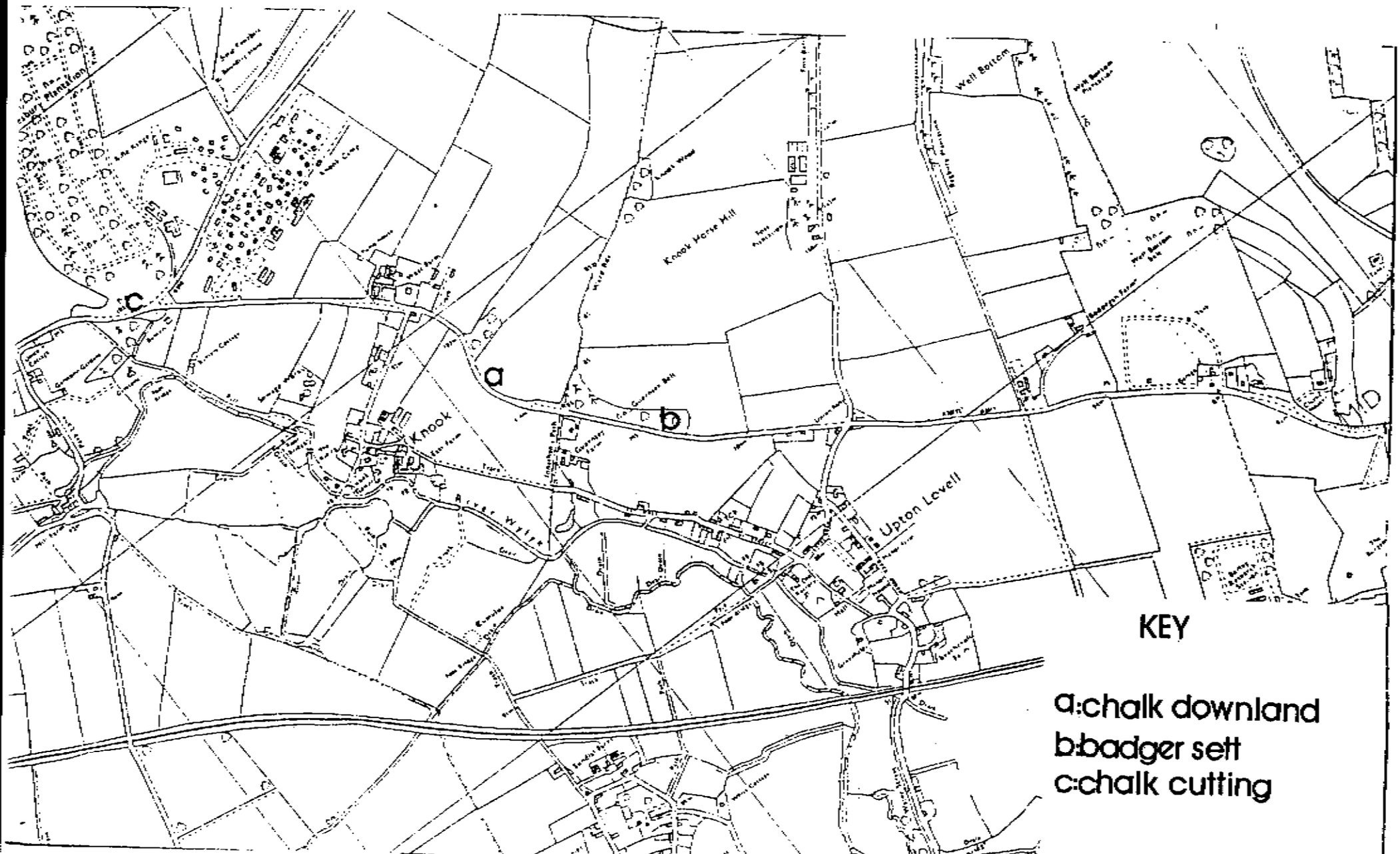
MAP 7: LOCATION OF FOXES AND BADGERS



MAP 8: DISTRIBUTION OF RABBIT WARRENS

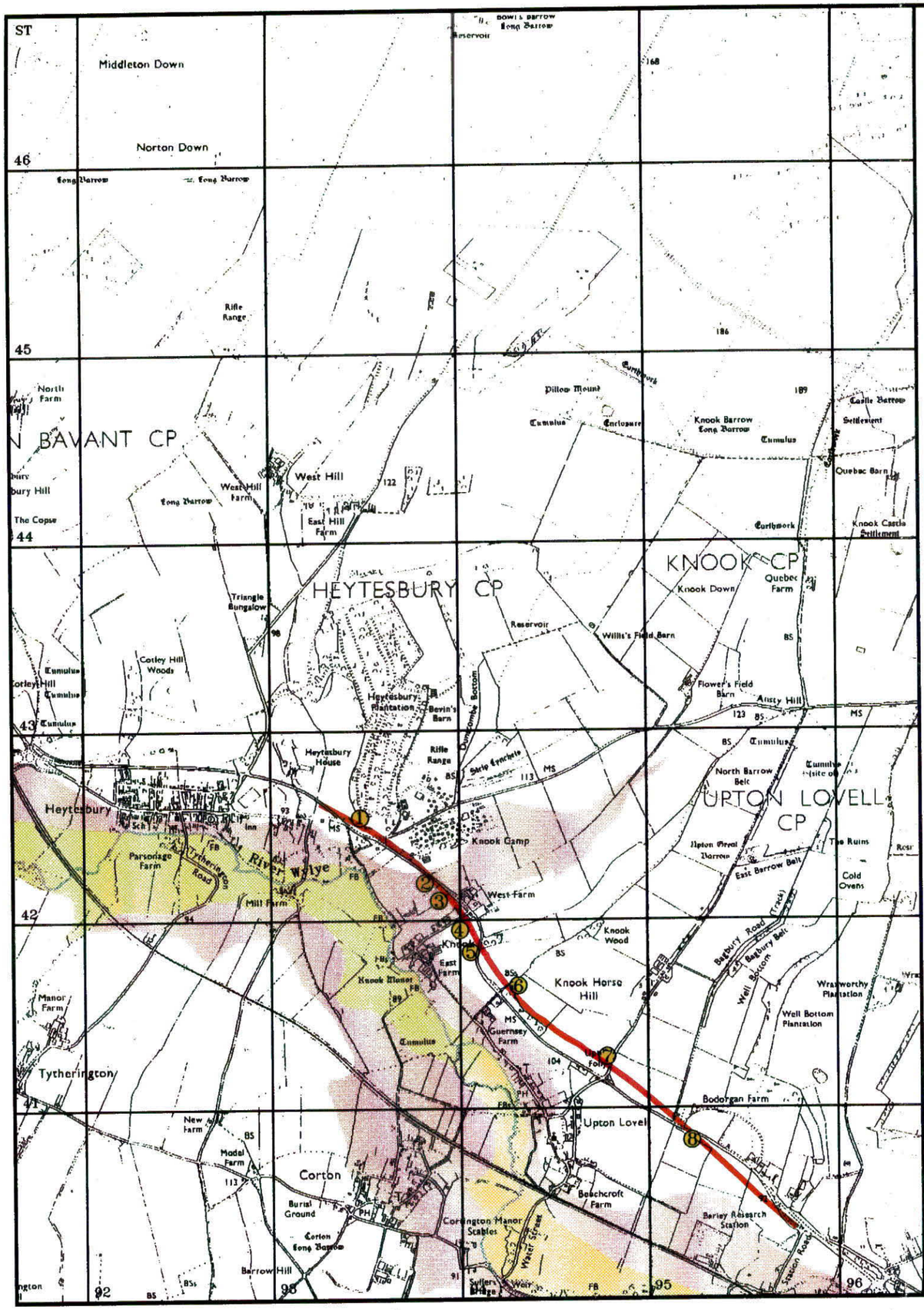


MAP 9: LOCATION OF BADGER ENTRANCES



MAP 11: AREAS OF ECOLOGICAL VALUE WITHIN THE BAND OF INTEREST

A36 CODFORD TO HEYTESBURY IMPROVEMENT – ENVIRONMENTAL STATEMENT VOL 2 07/93



KEY

- A36 new route
- Site of archaeological potential (see table below)
- Alluvium
- Valley gravel

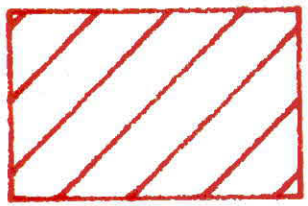
Site No.	O.S. Reference	Description	SMR Reference
A36.1	ST934 425	Undated ditch but originating prior to construction of Heytesbury Park landscaped grounds	—
A36.2	ST938 422	Undated narrow ditches of probable prehistoric date	—
A36.3	ST939 421	Undated earthwork and medieval finds scatter	—
A36.4	ST940 419	Shrunken settlement, earthworks associated with medieval artefacts	ST94 SW455
A36.5	ST941 418	Possible prehistoric lynchet and truncated land surface	—
A36.6	ST943 416	Seven undiagnostic worked flints recovered from a test pit	—
A36.7	ST948 413	Seventeen undiagnostic worked flints recovered from two adjacent test pits	—
A36.8	ST953 408	Deep colluvial sequence	—

Wessex Archaeology

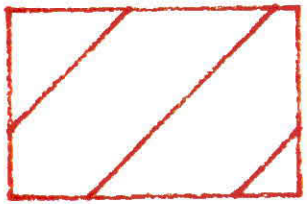
SCALE	1:25 000
DRAWN BY	LJC
CHECKED BY	RN
APPROVED BY	RN
DATE	16/4/93

Fig. 9. Sites of archaeological potential

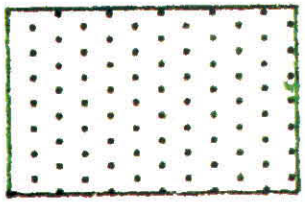
KEY



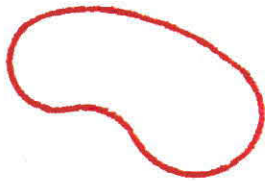
Area of Outstanding Natural Beauty



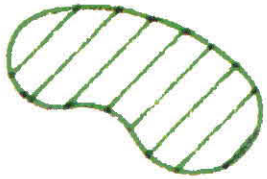
Special Landscape Area



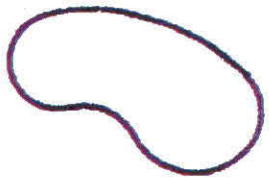
Area of High Ecological Value



Site of Special Scientific Interest

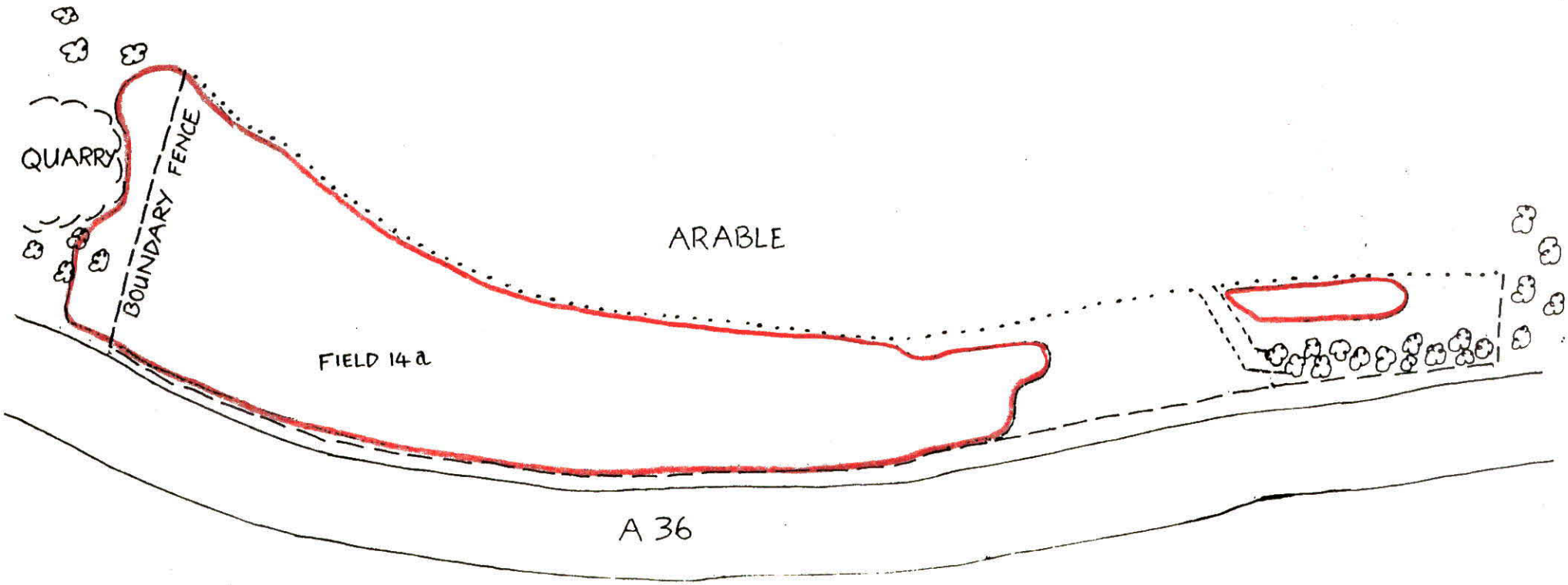


Unimproved Grassland



Site Of Nature Conservation Interest

KEY TO MAP 4

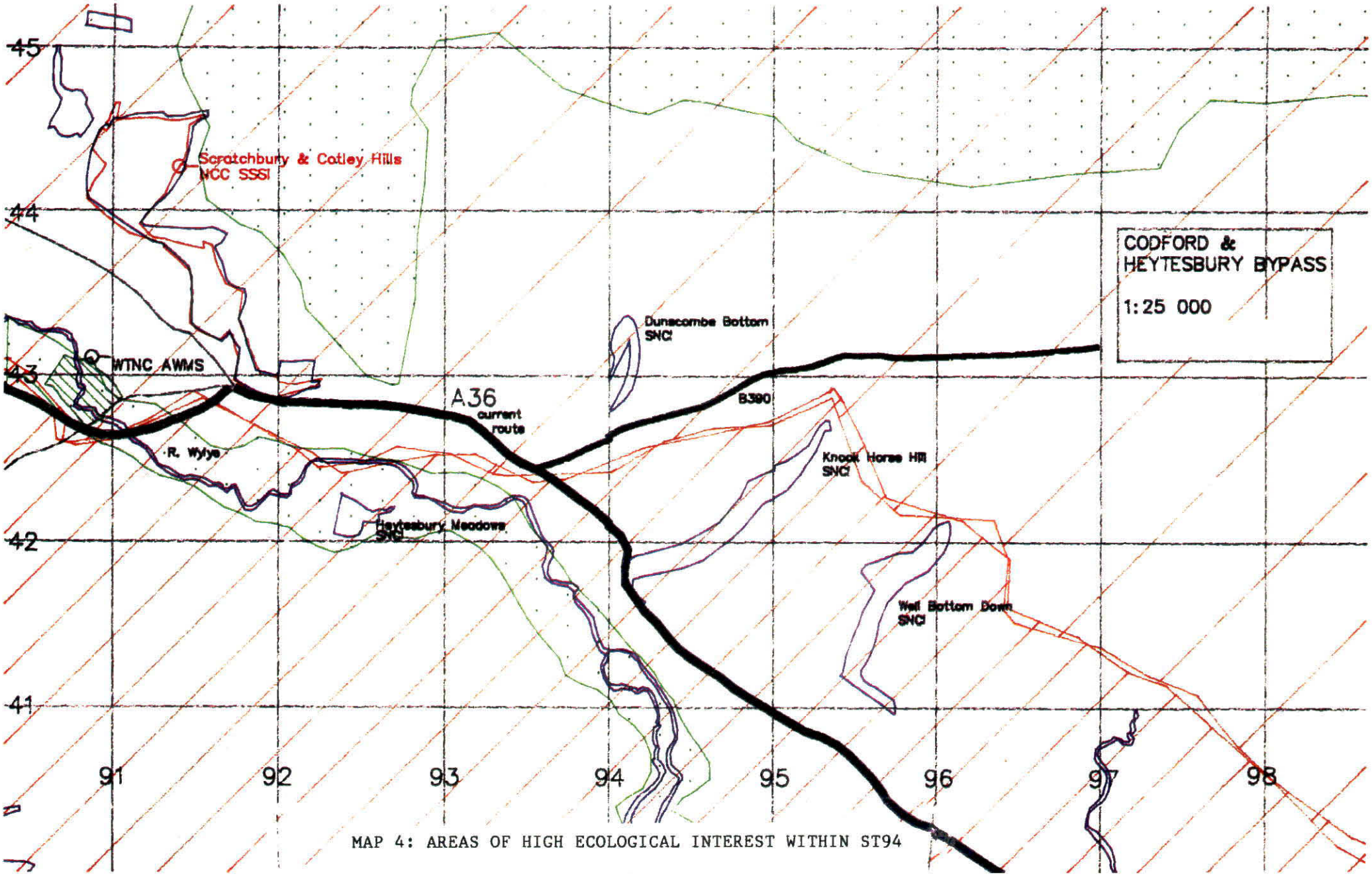


SKETCH MAP TO SHOW AREA OF UNIMPROVED DOWNLAND MARKED AREA D ON MAP 10

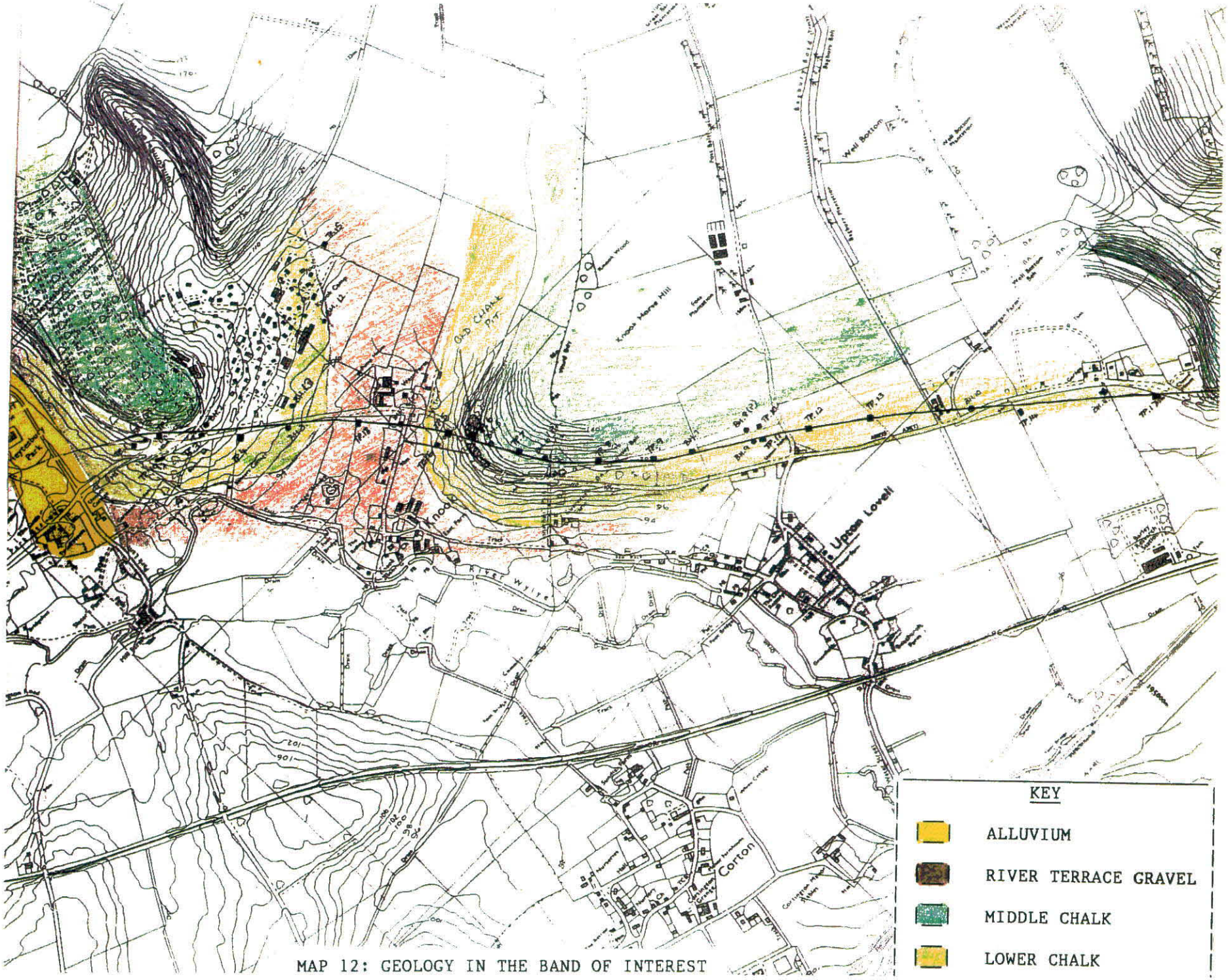
1 cm = 10 m

COMPLETELY UNIMPROVED AREAS

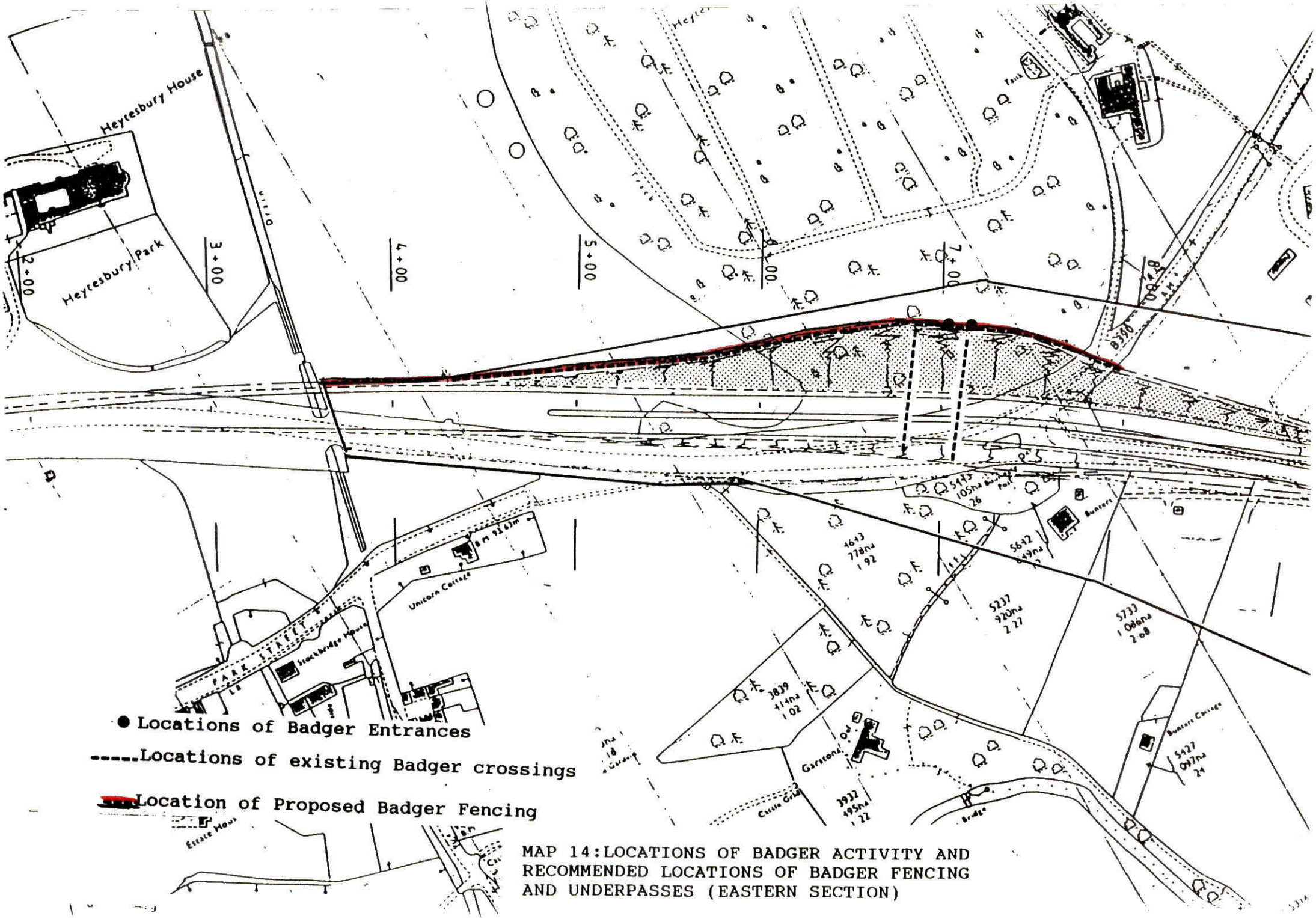
MAP 13



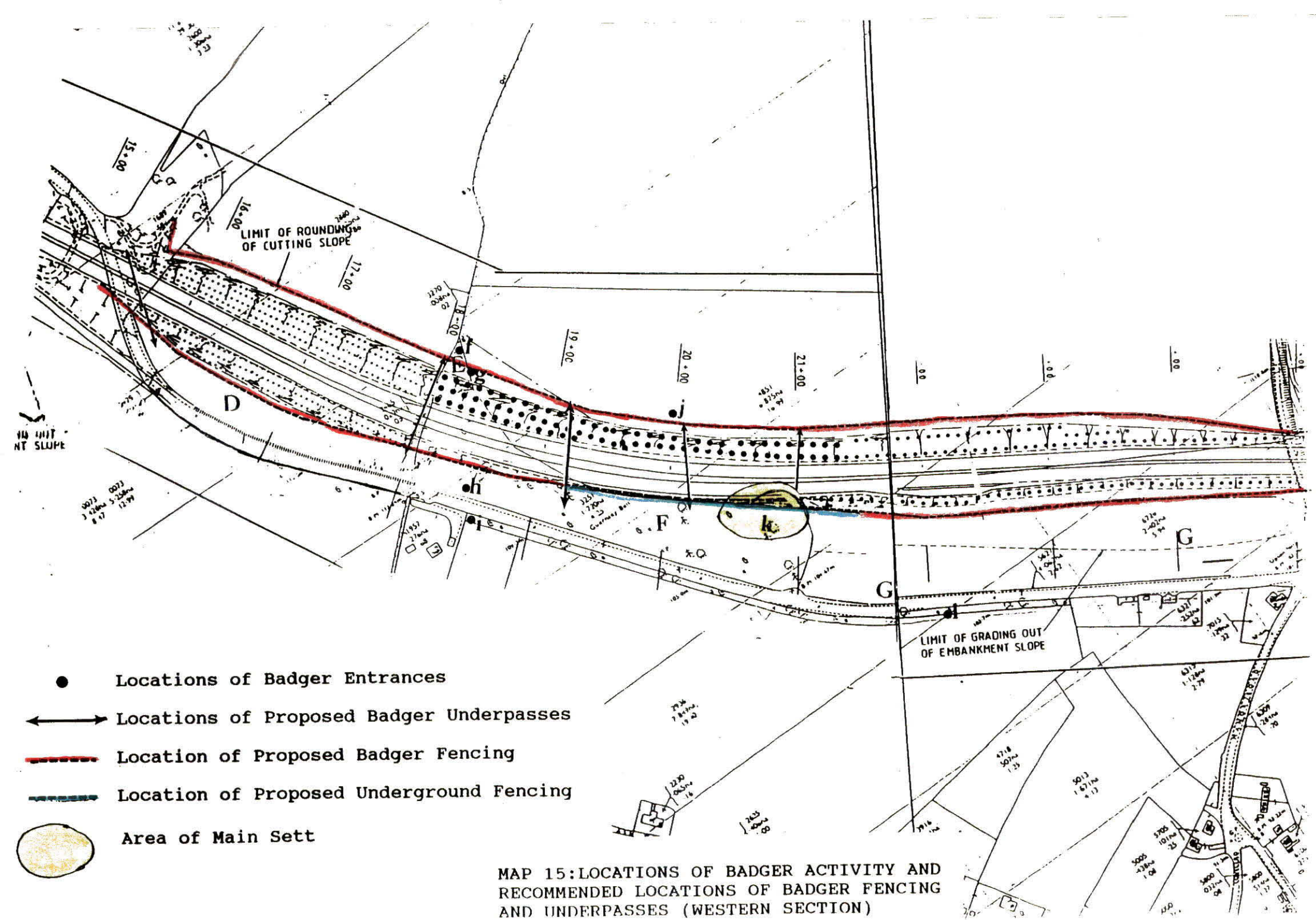
MAP 4: AREAS OF HIGH ECOLOGICAL INTEREST WITHIN ST94



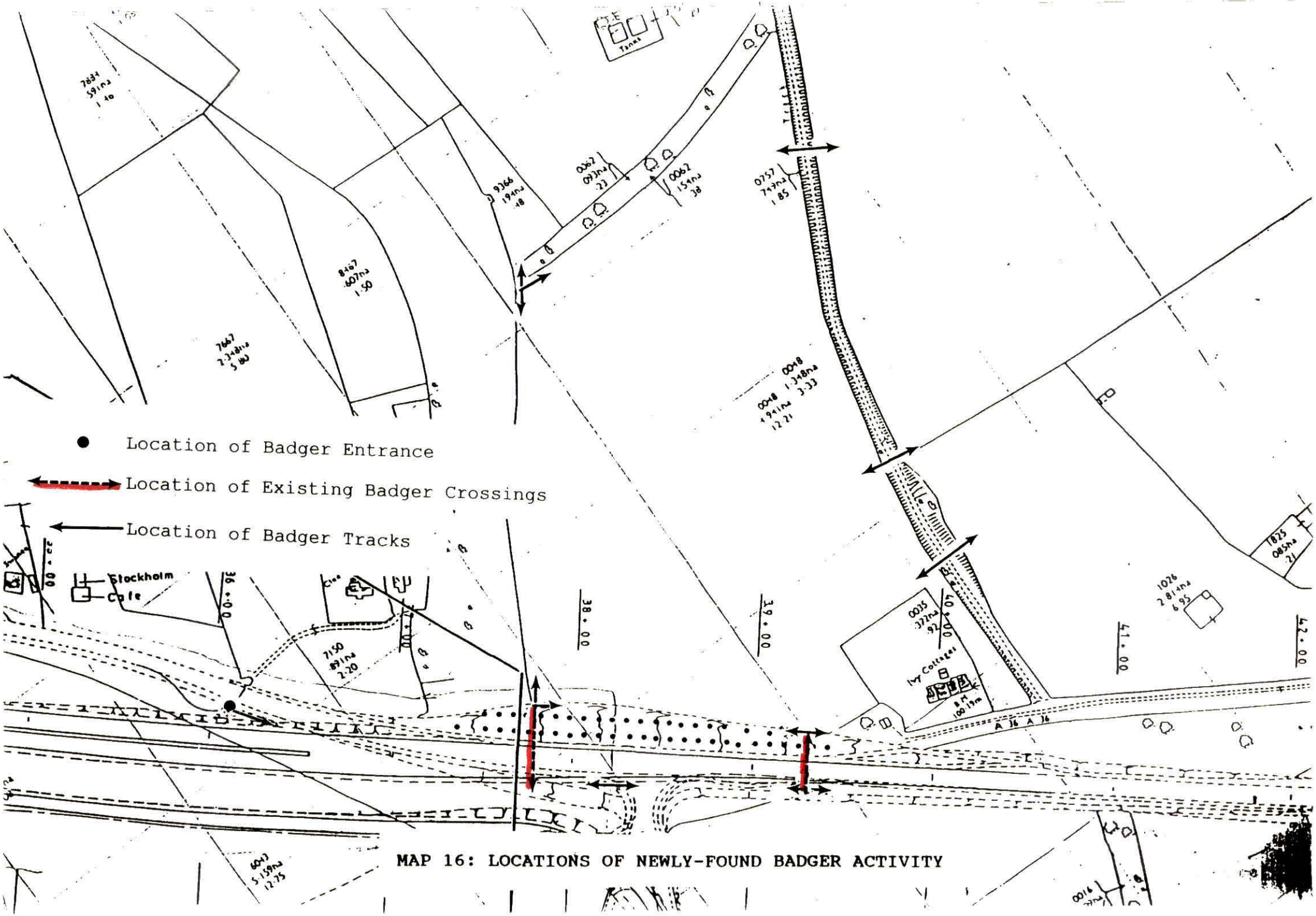
MAP 12: GEOLOGY IN THE BAND OF INTEREST



MAP 14:LOCATIONS OF BADGER ACTIVITY AND RECOMMENDED LOCATIONS OF BADGER FENCING AND UNDERPASSES (EASTERN SECTION)



MAP 15: LOCATIONS OF BADGER ACTIVITY AND RECOMMENDED LOCATIONS OF BADGER FENCING AND UNDERPASSES (WESTERN SECTION)



MAP 16: LOCATIONS OF NEWLY-FOUND BADGER ACTIVITY

DRAWN BY	
DRAWN DATE	
TRACED BY	
TRACING DATE	
CHECKED	

DEPARTMENT OF TRANSPORT
SOUTH WEST REGION
DIRECTOR (NETWORK MANAGEMENT)
A.P. MOSS M.A., T.D., M.I.C.E., M.I.H.T.

A 36 CODFORD TO HEYTESBURY IMPROVEMENT
DUAL CARRIAGEWAY WITH GRADE SEPARATED JUNCTIONS
CHAINAGE 21+50 TO 40+00. -- OPTION 1

MAP 10a: TO SHOW
FRAGMENTATION AND
RECOMMENDATIONS FOR LANDSCAPING
(EASTERN SECTION)

SCALES
1 / 2500

WILTSHIRE COUNTY COUNCIL
DEPARTMENT OF PLANNING & HIGHWAYS
DIRECTOR
DAVID GARDNER M.Sc., C.Eng., F.I.C.E., F.I.H.T.

DRAWING No.
T.R. 223 / 77 / 4

KEY

BAND OF INTEREST

FRAGMENTATION :

ARABLE

WOODLAND

UNIMPROVED CHALK DOWNLAND

IMPROVED PASTURE

LAND LIKELY TO BE TAKEN INTO ROAD SCHEME

RECOMMENDATIONS FOR LANDSCAPING :

LEAVE AS BARE CHALK

REINSTATE AS UNIMPROVED CHALK DOWNLAND

LEAVE AS BARE CHALK OR SOW WITH FINE GRASSES

PLANT BEECH TREES

CUT LINE

Heytesbury Plantation

LIMIT OF GRADING OUT OF EMBANKMENT SLOPE

LIMIT OF GRADING OUT OF EMBANKMENT SLOPE

LIMIT OF GRADING OUT OF EMBANKMENT SLOPE

LIMIT OF ROUNDING OF CUTTING SLOPE

A

B

C

D

E

F

G

DEPARTMENT OF TRANSPORT
SOUTH WEST REGION
DIRECTOR (NETWORK MANAGEMENT)
A.P. MOSS M.A., T.D., M.I.C.E., M.I.H.T.

A 36 CODFORD TO HEYTESBURY IMPROVEMENT
DUAL CARRIAGEWAY WITH GRADE SEPARATED JUNCTIONS
CHAINAGE 0+00 TO 21+50

MAP 10: MAP TO SHOW FRAGMENTATION AND RECOMMENDATIONS FOR LANDSCAPING (WESTERN SECTION)

SCALES
1/2500

WILTSHIRE COUNTY COUNCIL
DEPARTMENT OF PLANNING & HIGHWAYS
DIRECTOR
DAVID GARDNER M.Sc., C.Eng., F.I.C.E., F.I.H.T.

DRAWING No.
T.R. 223/76/4