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**A46 NEWARK TO WIDMERPOOL:
STAGE 2 ARCHAEOLOGICAL EVALUATION
SITE 16L: EAST STOKE**

prepared on behalf of:

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SUMMARY

As part of the assessment of the archaeological potential of the proposed upgrading of the A46 trunk road between Newark and Widmerpool, Nottinghamshire, the site of a former earthwork at East Stoke (centred SK 7569 4942) was evaluated.

Geophysical survey failed to identify the remains of the earthwork (Site 16L) but machine trenching revealed a system of broad flat-bottomed ditches cut into a heterogeneous blue/grey calcareous clay. The silty basal deposits contained quantities of fresh or brackish water mollusca and the scales and a bone of a Carp.

The features are similar to those of fish ponds of medieval or post-medieval date, and the associated finds reinforce the suggestion that the present site is part of a system of fishponds, elements of which survive as earthworks elsewhere in the immediate vicinity.

ACKNOWLEDGEMENTS

The work was commissioned by David Tyldesley and Associates on behalf of the Department of Transport. Wessex Archaeology are grateful to Dr John Samuels of David Tyldesley and Tony Sumpter of John Samuels Archaeological Consultants for their assistance, and to the landowners T.B. Horner and Sons for agreeing access.

The geophysical survey was undertaken by Geoquest Associates, with the survey work being undertaken by C. Lambert and D. Watson, the report compiled by C. Lambert and Dr M. Noel and the work managed by Dr M. Noel. The trial trenching was supervised for Wessex Archaeology by Michael Heaton assisted by Paul Pearce. This report was compiled by A P. Fitzpatrick and Michael Heaton with contributions by Michael J. Allen and Sarah F. Wyles (mollusca and waterlogged plant remains) Rowena Gale (wood) and Sheila Hamilton-Dyer (fish remains). The illustrations are by Julian Cross. The project was managed for Wessex Archaeology by A.P. Fitzpatrick.

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1 INTRODUCTION

1.1 Project background

- 1.1.1 Archaeological work on the proposed route of the A46 is being carried out as part of the broader consideration of the environmental impact of the road scheme, and is taking place before the preferred route is finalised, in order to assess the impact of the scheme on the archaeological resource of the area.
- 1.1.2 A desk study and fieldwalking survey have already been undertaken on behalf of English Heritage by Trent and Peak Archaeological Trust (TPAT) (TPAT 1992: *Archaeology of the Fosse Way, Vol 2*, October 1992). A study area was defined 1 km either side of the published proposed route, with a more detailed study of aspects, including fieldwalking, of a corridor 100 m either side of the present A46. Geophysical survey and trial excavations were also undertaken at one site (*Margidunum*). The site reference numbers used by Trent and Peak Archaeological Trust have been retained in the subsequent surveys (Fig. 1).
- 1.1.3 Since that report was commissioned the Department of Transport has assumed responsibility for the archaeological assessments and evaluations. An enhanced detailed study of the air photographs has also been completed (Palmer 1993).
- 1.1.4 The proposed route is c. 30 km long and runs through a landscape with a high archaeological potential. The archaeological sites in or within the immediate vicinity of the route corridor range in date from the Late Upper Palaeolithic to the post-medieval period and include settlements, an Anglo-Saxon cemetery and industrial monuments. Earlier sites may be buried under alluvial deposits towards the northern end of the proposed route corridor.
- 1.1.5 Full details of the 16 sites which form part of the proposed evaluation can be found in the reports compiled by TPAT (1992) and Palmer (1993).
- 1.1.6 In December 1993, the proposed layout for the junction of Moor Lane and the A46 at East Stoke (Fig. 2) was re-designed, incorporating a re-alignment of Moor Lane south of its present course. The proposed realignment of Moor Lane would result in it encroaching upon the site of a former earthwork (TPAT 1992, 62, site 16L, fig. 32).
- 1.1.7 Wessex Archaeology was instructed to prepare a project design for the evaluation of these features *A46 Newark to Widmerpool: Site 16L, Archaeological Evaluation, Project Design* (Wessex Archaeology 1994, Reference 36302c).

The objectives of the work were to:

- define the precise location, depth, extent, date, character, significance and quality of the archaeological remains
- to assess the condition and nature of these remains

This report presents the results of that work and should be read in conjunction with reports on preceding stages of the work.

1.2 The site, its situation and topographic setting

- 1.2.1 The site has been designated 16L in the initial report by Trent and Peak Archaeological Trust (TPAT 1992, 62).
- 1.2.2 The site is known as an 'E'-shaped soil mark of light brown soil against darker peaty alluvium, is approximately 30 m square and apparently open to the north-west. It is situated in the centre of a small field approximately 350 m south-east of the junction of Moor Lane and the A46 at East Stoke (Fig. 2), centred SK 7569 4942
- 1.2.3 The field is currently arable, with a small rectangle in the centre sown with beet. The field is perpetually damp, necessitating the recent insertion of a deep drainage system, and the enhancement of the soil surface by soil dumping (D. Horner pers. comm.). The field's north-west and south-western boundaries have been removed recently and are shown in broken line on Figure 2 for ease of comparison with earlier work.
- 1.2.4 The site lies at approximately 14 m AOD on the gravel terrace at the confluence of the Rivers Trent and Smite.

1.3 Archaeological background

- 1.3.1 An air photograph taken in 1973 shows the site standing as an earthwork in a pasture field which also contained ridge and furrow. The earthworks have subsequently been ploughed out.
- 1.3.2 The enclosure map for East Stoke and Elston shows that the site was wooded and enclosed within a larger field by 1796.
- 1.3.3 The site was tentatively identified as a fishpond, probably of medieval date (TPAT 1992, 62). Earthworks thought to be associated with fishponds are known to exist to the north-west (Fig. 2).
- 1.3.4 Subject to depositional conditions, fishponds might be expected to contain a wide range of palaeo-environmental material. Assessing the survival of such materials within the former earthwork was a specific goal of the present work.

2 METHODOLOGY

2.1 Project design

2.1.2. The Project Design specified:

- Geophysical survey of an area of c. 100 m x 100 m spanning beyond the recorded extent of the earthwork features
- Two machine-cut trenches 50 m and 30 m in length, located so as to cross the earthwork features at right angles, in which all deposits would be investigated and recorded in accordance with standard Wessex Archaeology procedures (see below Section 2.3.6).
- Sampling of sealed deposits for palaeoenvironmental materials.
- Processing, analysis and curation of all materials recovered, and preparation of a written report.
- Deposition of archive within 6 months of completion of last stage of the project.

2.2 Geophysical survey

2.2.1 *Survey methods*

Fluxgate magnetometry was employed in the geophysical survey. Measurements of vertical geomagnetic gradient were made at 1 x 0.5 m intervals in gridded units of 20 x 20 m using a Geoscan FM36 fluxgate gradiometer with an ST1 sample trigger. A zigzag traverse scheme was employed. The presence of crops resulted in it not being possible to maintain a uniform instrument height or orientation, with the result that the data contain an increased proportion of noise. An area of 0.96 ha. was surveyed.

2.3 Trial trenching

2.3.1 The precise location of the machine trenches was determined after assessing the preliminary results of the geophysical survey.

2.3.2 After assessing those (negative) results, trench positions were laid out by taped measurement from fixed topographic features, scaled from the tender drawing presented in the Project Design. Trench positions are shown on Figure 2 of this report.

2.3.3 Trenches were excavated using a JCB equipped with toothless bucket, under constant archaeological supervision. Trenching was stopped at the upper surface of archaeological deposits, the discovery of field drains, or at the top of natural clay.

2.3.4 Major archaeological deposits were then excavated by machine in 0.2 m spits, with hand cleaning and scrutiny of each spit surface and inspection of all excavated spoil.

2.3.5 The boundaries of all deposits were then clarified by hand cleaning and recorded using the standard Wessex Archaeology system of detailed written, drawn and photographic records. All record numbers, including trenches and drawings etc., continue the number sequences used on earlier stages of evaluation work on this project.

2.3.6 Soil samples were retained from the basal deposits of the major archaeological features that appeared, on visual inspection, to contain palaeoenvironmental materials.

2.3.7 No artefacts were discovered in stratified contexts.

2.4 Geophysical data processing

The data were processed into a filtered half-tone image, scaled 32 shades of grey, showing the residual geomagnetic anomalies.

2.5 Wessex Archaeology analysis methods

2.5.1 All records were checked, cross referenced, and appended to the existing archive for earlier stages of fieldwork carried out by Wessex Archaeology on this project, site code No. W590.

2.5.2 Soil samples were disaggregated in warm water and passed through a nest of sieves, and all residues dried and scanned for palaeoenvironmental materials.

2.5.3 Detailed identifications of the fish bones and wood were made. Terrestrial mollusca and plant remains were not reported on beyond the assessment stage.

2.5.4 Summary descriptions of all deposits and recovered materials are presented below, grouped by site specific criteria. Trench and principal feature positions are illustrated on Figure 2, detailed trench plans and sections are presented on Figure 3.

3 RESULTS

3.1 Geophysical survey

A geophysical survey was carried out by Geoquest Associates in May 1994. In summary no evidence was found for archaeological features associated with the soil mark. Other features which might be related to archaeological features or deposits were recorded elsewhere in the survey area, but with the exception of a possible headland which may be associated with the ridge and furrow noted on the airphotograph of 1973, none are certainly of archaeological origin.

3.2 Trial trenching

3.2.1 *Overburden and modern disturbances.*

Detailed descriptions are given in Appendix 1. Both trenches revealed a consistent 0.30 m thick layer of very dark grey-brown clay loam ploughsoil (150, 168). The soil was well-tilled and relatively open in gross structure, with small quantities of pebbles and modern pottery. Observation of the surface of the field revealed a slight browning of the soil in the immediate vicinity of the trenches. Slight linear depressions about a sub-rectangular raised mound were visible on the surface, and in the trench sections. No artefacts were recovered. Distinct lenses of browner clay-rich soils (173, 161 and 162), beneath the ploughsoil, were revealed in both trenches corresponding to the slight surface depressions, and resting in the upper profiles of three broad ditches cutting into the natural clay base (see below). Field drains were revealed in the base of Trench 1, filled with flint gravel, but were not visible in the trench section.

3.2.2 *Archaeological features and deposits.*

Trench 20

Two of three soilmarks were observed as ditches in this trench but the northern one was not located even though the trench was extended 7.5 m beyond the predicted location of the soilmark.

Ditch 155 was aligned NW-SE, 3.1 m wide x 0.6 m deep, and 160 NW-SE aligned, 8 m wide x 0.6 m deep in Trench 20. Ditch 160 was wider, having a slightly asymmetric profile with a lobe-shaped spread of darker grey clay (167) lying on its north-eastern edge (Fig. 3). The ditches appeared to cut through layer 151. Their positions corresponded to linear depressions visible on the surface, and the brown soil lenses visible in section. Both ditches were filled with similar sequences of deposits: 0.2 m-0.3 m thick bands of laminated malodorous waterlogged organic silts (159, 165) containing coarse plant remains, mollusc shells and fish scales and bones; beneath thicker deposits of drier, well sorted dark grey-brown clay loams (157-8, 163-4) occupying the bulk of the ditch profiles. These were sealed by the lower ploughsoil layers referred to above. A sample for environmental evidence was taken from the organic silts in ditch 155. Both ditches cut through a 0.15 m thick layer of clean black silty clay loam, that extended the entire length and breadth of both trenches, infilling shallow depressions in the upper surface of the underlying natural clay. No dating evidence was found.

Trench 21

Trench 21 revealed, in its north section only, a thin band of very pale brown eluviated gypsum-rich clay (169) approximately 0.1 m thick, lying directly beneath the ploughsoil. It extended intermittently the entire length of the trench, but was not visible over ditch 170 which was aligned SW-NE, 3.8 m wide x 0.6 m deep (Fig. 2-3). The ditch appeared to cut through layer 171, but was partially sealed by the eluviated layer 169. Its position corresponded

to the linear depression visible on the surface, and the brown soil lenses visible in section. Ditch 170 was filled with similar sequences of deposit as ditches 155 and 160 in Trench 20; 0.2 m-0.3 m thick bands of laminated malodorous waterlogged organic silts (176-178) containing coarse plant remains, mollusc shells and fish scales and bones; beneath thicker deposits of drier, well sorted dark grey-brown clay loams (174-5) occupying the bulk of the ditch profile. These were sealed by the lower ploughsoil layers referred to above. A sample for environmental evidence was taken from the organic silts in ditch 170. The ditch cut through a 0.15 m thick layer of clean black silty clay loam, that extended the entire length and breadth of the trench, infilling shallow depressions in the upper surface of the underlying natural clay. No dating evidence was found.

3.2.3 *Natural base*

Both trenches revealed a pale grey gypsum-rich clay with a smooth level surface resting at approximately 0.5 m below present ground level. Minor involutions in its upper surface were filled with the black clay loam (151 and 171) under which it lay, and field drains were visible cut into it. Trenching was not pursued deeper than the upper surface of this deposit.

3.3 **Artefacts**

3.3.1 Artefacts were only found in the topsoil, and these were modern.

3.4 **Palaeo environmental materials**

3.4.1 *Introduction*

Two small bulk samples were taken; sample <303> from 176 the basal fill of ditch 170 and sample <304> from 159 the basal fill of ditch 155. Both samples were less than 2 litres and their small size has led to low numbers of fish bone in particular being recovered.

3.4.2 *Sample processing*

Both samples were quantified and processed by laboratory flotation with the flots being retained on a sieve of 0.250 mm mesh aperture, the residue was entirely ecofactual (i.e. wood and bone).

The flots from each sample were quantified and scanned under a stereobinocular microscope and recorded in Table 1. The residue was also recorded.

TABLE 1. ASSESMENT OF PALAEO ENVIRONMENTAL SAMPLES

Sample	context	qty (litres)	flot qty (ml)	plant remains	wood	snails	No. fish bones
303	176	1.5	600	✓	-	✓	10
304	159	2	400	✓	2	✓	-

3.4.3 Results

Wood

Two pieces of branch wood c. 1250 mm long and c. 50 mm diameter were recovered from ditch 155. Both samples were from the stem/branch of *Prunus* sp. British species include *P. avium*, wild cherry, *P. spinosa*, blackthorn and *P. padus*, bird cherry. It was not possible to identify the species.

The bark (thin, with lenticels) was *in situ* on one sample. The bark was absent on the second but the wood appeared to be more or less intact from the central axis to the vascular cambial region around most of its circumference. The samples measured c. 50 mm in diameter and included 7 growth rings.

One sample shows signs of horizontal and oblique cutting with a metal implement and the other shows a possible vertical axe split down a branch bifurcation point.

Waterlogged plant remains

Both samples were very rich in waterlogged plant material. Most comprises plant detritus such as leaf veins and small twigs, but identifiable leaf fragments, seeds and brachyophytes (moss) were also noted.

Mollusca

Both samples contained fresh and brackish water molluscs. No terrestrial species were noticed. The numbers of shells were relatively low (c. 20 - 30 per sample from a rapid scan) and included predominately the Planorbids and *Lymnaea* spp.: all species typical of small bodies of water such as ponds.

Fish bones

Ten pieces of fish bone/scale were recovered from sample <303>. These are nine fragments of fish scales and a branchiostegal ray. These are comparable with remains of large cyprinidae (carp family) such as carp or bream of approximately 0.4 m total length and weighing in the region of 600 g.

The fragments are not diagnostic to species but, in view of the probable fishpond context, may well be of carp, *Cyprinus carpio*. This species was introduced into Britain during the late Middle Ages and in the south-east is associated particularly with monastic fishponds.

4 CONCLUSIONS

4.1 Demonstrated archaeological presence

- 4.1.1 Machine-cut trenches have demonstrated that some of the soil mark features identified from aerial photographs, referred to as Site 16L, correspond to substantial subsurface features. These survive as well defined, broad, flat bottomed ditches, arranged at right angles to each other. A ditch corresponding with the northernmost soilmark was not located.
- 4.1.2 It seems likely that, as originally suggested (TPAT 1992, 62), these features are components of a fishpond complex. Some of the earthworks on the north side of Moor Lane (Fig. 2) may belong to the same complex and represent either leats or, possibly, long linear, ponds. While no evidence was located in the geophysical survey for ditches which would have connected the present site with a larger system, the survey did not locate the ditches found in the trial trenching.
- 4.1.3 The location of the site is likely to have been determined by the wetness of the ground (Section 1.2.3 above). The water table will have been managed by the building of dams and the water then controlled by sluices and leats (Aston 1988, *passim*).
- 4.1.4 Soil layers between some of the ditches sampled suggest the ephemeral survival of upcast mounds, perhaps deriving from the regular clearing of silt from the ponds.
- 4.1.5 The clay smear 167 in Ditch 160 may represent the remains of a clay lining. Deposits within the lower, waterlogged, fills of these features contain a wide range of palaeoenvironmental materials including aquatic mollusca, fish scales and skeletal elements, and plant remains.
- 4.1.6 The ditches sampled in the present work would be compatible with their having been rearing ponds. They may have been clay lined and the fragments of cherry may be associated with structural elements integral to the operation of the ponds, such as sluices.
- 4.1.7 The ponds, and deposits within them, cannot be firmly dated but if the presence of carp is taken as a *terminus post quem* the ponds may be later medieval or post-medieval in date. The morphology of the ponds does not allow a more precise dating, but the enclosure map for East Stoke and Elston suggests that the site had passed out of use by 1796. On grounds of association it would seem likely that the ponds were associated with the shrunken medieval village of East Stoke.

4.2 Likely extent and condition of archaeological deposits

- 4.2.1 The evidence from aerial photographs is equivocal about the north-western extent of the features, but trenching has confirmed the south-eastern, south western and north-eastern elements and the rectangular arrangement of the features apparent on aerial photographs. The north-western boundary of these features remains unknown.
- 4.2.2 These features are only one component of a larger system of fish ponds.
- 4.2.3 The unexamined lengths of these features may also contain comparable palaeo-environmental material, although localised desiccation from recent field drainage might be anticipated.

5 THE ARCHIVE

The archive is presently held at the office of Wessex Archaeology, Portway House, Salisbury, under the site code W590 (16L) and comprises all the environmental materials and an A4 ring bound file which contains;

- Copy of the Project Design
- Copy of the Day Book
- All records
- Monochrome prints
- Colour transparencies
- Two copies of this report

It is intended in due course that the archive will be deposited with an appropriate museum.

6 REFERENCES

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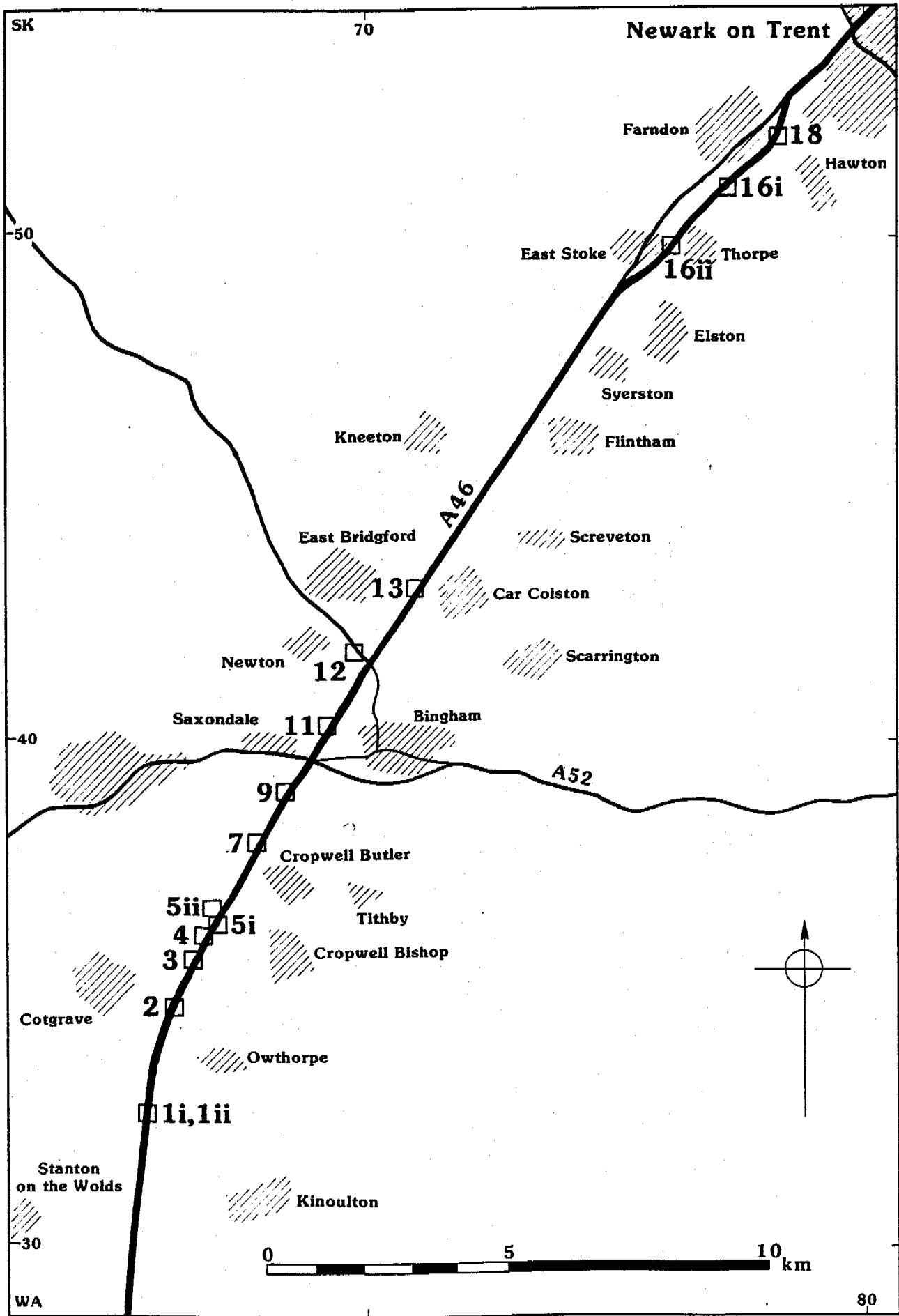


Fig. 1: Location of Sites

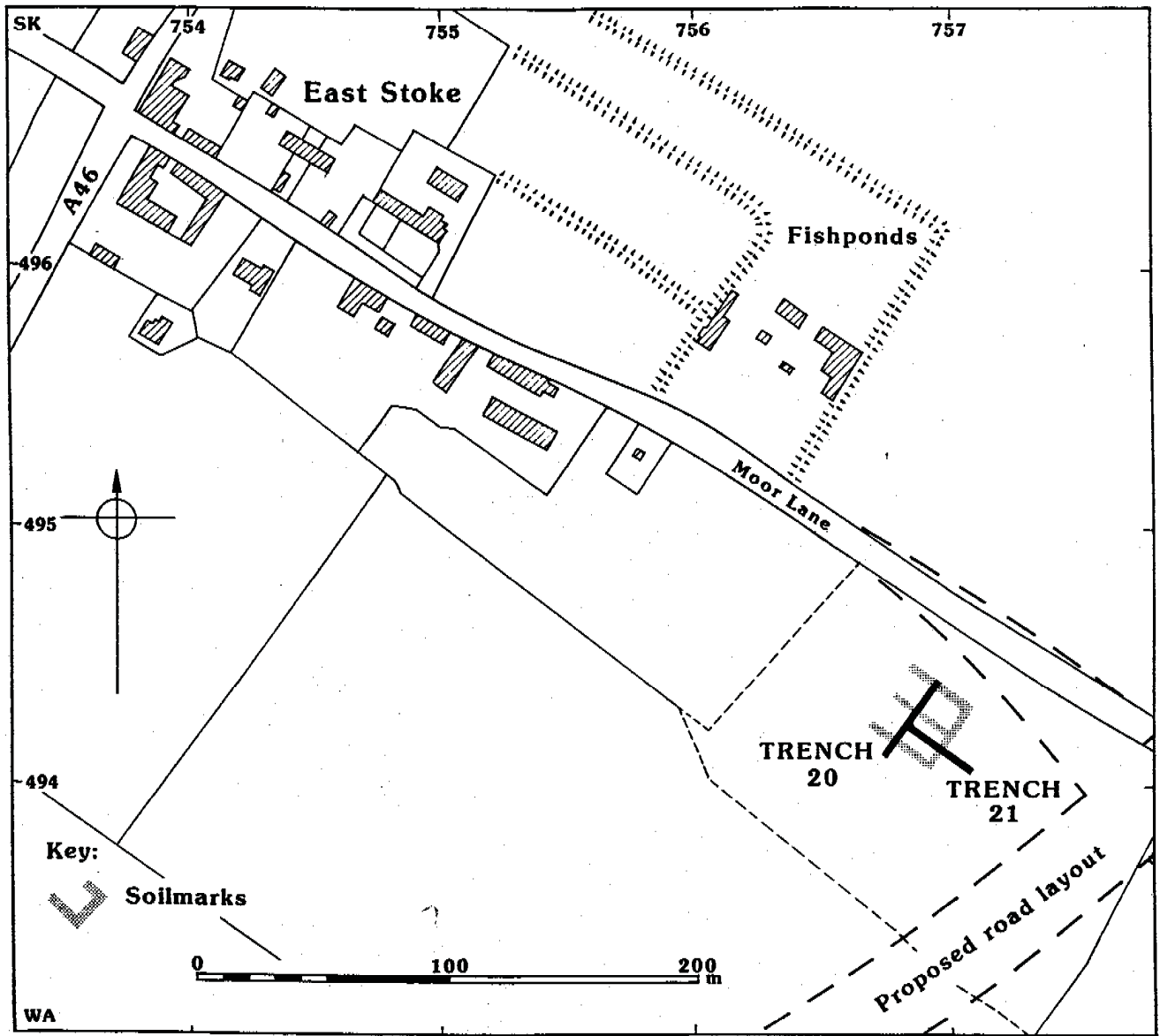


Fig.2: Location of site 16L in relation to earthworks of shrunken village of East Stoke