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THE HERTFORDSHIRE ARCHAEOLOGICAL TRUST

WADESMILL BY-PASS (A10)

Archaeological Appraisal

by

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An Archaeological Appraisal of the Wadesmill By-Pass.

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Introduction

The route of the proposed road lies to the east of Ermine Street and by-passes the settlements of Thundridge, Wadesmill, High Cross and Colliers End. The road begins 600m south of Thundridge (GR TL 355 162) and proceeds approximately 7 km to within 600m of the southern edge of Puckeridge (GR TL 380 226). For most of its route the road lies between 300 and 500m east of the former Roman road.

Topography

For the majority of its length the proposed road will cut through arable land. The exception to this is where the road bisects the emparked landscape at Youngsbury and several small portions of woodland. The quality of the agricultural land is Grade 2 and 3, divided approximately equally (*Agricultural Land Classification of England and Wales*, sheet 148). The soils vary from a mixed, loamy gravelly drift over chalk to Chalky Boulder clays (Thomasson and Avery 1970). For a more detailed description of the soils see Appendix 1.

For most of its length the route crosses either flat or gently sloping terrain. The exception to this is the valley of the River Rib where the valley sides are relatively steeper. 'Flat' is here defined as being between 1 in 140 (metres) and 1 in 150 (metres). 'Gently sloping' is between 1 in 30 (metres) and 1 in 85 (metres). The steepest gradient lies on the southern side of the R. Rib where the terrain has a slope of 1 in 9 (metres).

Method

This appraisal has examined the relevant documentary evidence and the terrain through which the new by-pass is to be cut. In addition, the route has been scanned from the air on two occasions (June and July) for any signs of crop mark evidence. The route has been divided into 33 separate land parcels or units in order that each may be individually described.

The method of retrieving archaeological information from the plough soil is now a well established practice (Fasham et al 1980; Haselgrove et al 1985; Shennan 1985; Gaffney and Tingle 1989) and needs no amplification here. Nevertheless, there is a need to describe how the results were achieved in order to understand the quality of the information upon which this archaeological appraisal is based. All the available arable land parcels were inspected after the removal of the surface crop and preparation prior to or after planting the next crop. It should be emphasised that in only one case (Land Parcel no.32) were optimum conditions for field walking achieved. For the majority of field parcels the land had not had time to weather adequately and therefore visibility and the consequent recovery of artefacts was limited. The quality of the visibility of the soil will be

discussed further on.

Four levels of archaeological data perception have been classified by Hammond (1978), see Table 1 below.

Table 1

1. Observed. Such data may be incomplete.
2. Not observed, but potentially observable through surface field walking.
3. Not observed, but potentially observable under certain condition. eg. sites under buildings and pasture, exposed during earth moving.
4. Never observable. eg. under reservoirs and open cast mining areas.

Approximately 15% of the route would be classified as 2 (not observed) with the remaining 85% being classified at level 1 (observed). Accordingly, this in turn is sub-divided into the degree of visibility available at the time of inspecting the land. On a progressive measure from minimum to maximum the following scale may be devised:

1. Ploughed.
2. Ploughed and harrowed.
3. Rolled and drilled.
4. Weathered (here defined as being sufficiently washed so that all non-soil components are clearly visible.

If we apply this scale to the route of the by-pass the following pattern emerges:

Table 2
Plough soil visibility scale. (PSVS).

Land Parcel	1	2	3	4	5	6	7	8	9	10	11
PSVS	X	X	X	X	3	X	2	X	1	1	X

Land Parcel	12	13	14	15	16	17	18	19	20	21	22
PSVS	X	X	X	X	3	1	1	3	3	3	3

Land Parcel	23	24	25	26	27	28	29	30	31	32	33
PSVS	X	1	1	2	2	X	1	3	3	4	X

Total Score = 41

An ideal plough soil condition would require a score of 96. This figure would be achieved if all the available land parcels (24) had been sufficiently weathered to deserve an individual rating or score of 4. That is 24 x 4 = 96. As can be seen below the higher the score the greater the potential for retrieving artefacts from the ploughsoil.

A score of 72 would suggest a **restricted** range of visibility.
A score of 48 would suggest a **very limited** range of visibility.
A score of 24 would suggest a **poor** range of visibility.

This Table could be further refined, but for our purposes it permits an approximate idea of the level of quality that was attained during fieldwork.

The corridor of the by-pass route was walked along four North-South traverses. Only in Land Parcel no. 32 was it deemed worthwhile to walk at 5m intervals in a 50m sq grid. The results will be described below.

A Description of the individual Land Parcels. (See Plans 1-3).

Land Parcels:

No. 1

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	Tithe map of 1845 (HCRO DSA4/105).
Archaeological Finds:	None.
Archaeological Ref:	SMR 4714 (see below).
Soil conditions:	Stubble.
Archaeological Potential:	Certain.
Recommendation:	Trial trenching.

[See plan on p. 24]. This land parcel is composed of four mid-19th century fields: Three Acre Bottoms containing 1.7 acres of grass (TA no.132); Harlow Croft, 7.2 acres of arable (TA no.133); Walls Field, 6.7 acres of arable (TA no.134); Harlow Meadow, 2.5 acres (TA no.135). No sign of these divisions are apparent today. The field had been ploughed and harrowed by October 17th. Due to the dryness and freshness of the soil no artefacts were recovered. A greater concentration of stones was noticed some 90m north from the beginning of the by-pass at (GR TL 3574-1630). This manifested itself as a linear band approximately 10m wide and of indeterminate length (40m +) on an E-W axis. There were a few more tiles present than on the surrounding area, but otherwise there is no certainty as to what may have caused this phenomenon. It may be due to a bank being ploughed out, but this does not account for the increased concentration of stones. An alternative interpretation is that it is a ploughed-out building, possibly a barn. Previous archaeological investigation in the early 1970's revealed a series of 'linear pits connected by channels' about 15m in length of Romano-British date situated 25m east of Ermine Street at GR TL 356 163 (Kiln 1977 p.191). It is difficult to know what the site is from the published evidence. The geophysical survey, due to the inhibiting effects of recent ploughing, was only able to reveal weakly defined anomalies (see Appendix 4, Report 2.0). However, it is possible that the activity may be associated with roadside development in the Roman period. Nevertheless, neither the character nor the extent of this activity is reliably understood and therefore further trial trenching is essential if the remaining evidence is not to be lost.

In addition to the Roman-British evidence a flint scraper and flakes was found in the vicinity. These may be casual losses but, depending on the time of year, observation may yield further mesolithic/neolithic evidence.

No. 2

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Woodland.
Historical Ref:	HCRO DSA4 105
Archaeological Finds:	None.
Soil conditions:	Stubble.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 24]. This was only a small wood in the mid-19th century, referred to as Spring Wood or Moulsey, 2.1 acres (TA no. 129). Since then it has more than doubled in size. There are no earthworks visible.

No. 3

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 105
Archaeological Finds:	None.
Soil conditions:	Stubble.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 24]. This is made up of two portions of the following 1845 fields: Meadow, 2.5 acres (TA no. 128); Three Cornered Meadow, 2.8 acres (TA no. 127). On the four occasions that the area was visited in September 1990 this field remained unploughed and therefore unseen. The geophysical survey carried out in mid-October was limited by the distorting influence of a large gas pipe-line (see Appendix 4, Report 3.0).

No. 4

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 105.
Archaeological Finds:	None.
Soil conditions:	Stubble.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 24]. The proposed by-pass route just clips the north-western corner of this field. In 1845 this was part of Middle Field, 7.3 acres (TA no. 143) and Spring Field, 6 acres (TA no. 144). This was also unploughed in September, therefore

the surface archaeology remains unknown.

No. 5

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 105.
Archaeological Ref:	Kiln 1970.
Archaeological Finds:	See below.
Soil conditions:	Rolled/drilled.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 24]. This field had been ploughed, rolled and drilled, and had experienced only a few hours of rain. When visited it was comparatively dry with flattened, though unbroken, sods in evidence. Conditions were not ideal but, excluding Land Parcel no. 32, the best for inspection. In 1845 its western side consisted of at least five fields: King's Croft, 9.7 acres of arable (TA no. 172); Old Home Field, 6.8 acres of arable (TA no. 176); Slough Field, 6.8 acres of arable (TA no. 177); Little Home Field, 3.8 acres of arable (TA no. 178); Grudges, 9.2 acres of pasture (TA no. 179). No evidence remains of these fields.

Fieldwalking along the road corridor failed to retrieve pottery earlier than the late medieval period. However, one anomaly was located close to the western edge of the road at the northern end of the field at GR TL 3694-1682. Seen from the NW it appears as a gentle rise in the ground. This aspect is less apparent from the west where it attains a more elongated appearance. It is not certain what this feature is, but it could conceivably be a ploughed-out barrow modified by later field boundaries. From north to south it has an overall dimension of approximately 32m and a maximum height of about 0.4m.

The importance of this field derives from the evidence for an early Iron Age site 100m east of the road corridor at GR TL 362-166. This was discovered in 1968 as a result of observing a gas pipeline trench. Occupation material was recovered from five pits or ditches (Kiln 1970). The majority of finds come from a single pit. These consisted of pottery and flint flakes. The pottery was coarse, hand made with 'rounded shoulders with straight or everted rims'. The decoration consists of finger or thumb impressions on shoulders and lips. The date was interpreted to be of early Iron Age or transitional Bronze Age-Iron Age period. Apart from the dry and poorly washed ground surface, there are additional factors why no further Iron Age evidence was forthcoming. Firstly, the pottery fabric does not survive very well in ploughsoil conditions. Secondly, the pottery assemblages are effectively masked by ploughsoil, which means they are not being brought up to the surface by the action

of ploughing. The geophysical survey failed to detect any discernible anomalies, which indicates that the road corridor is probably devoid of any significant occupation sites (see Appendix 4, Report 4.0).

Between Land Parcel no. 5 and Land Parcel no. 6 there is a sunken lane (1m deep). The bank on its northern side is higher than that on the south, and has blackthorn, hazel and elm suckers present. On the southern side of the lane the following species were present in a 30m length: dogwood, field maple, oak, hazel and hawthorn.

No. 6

Terrain:	Sloping.
Soil:	Thundridge.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 105.
Archaeological Finds:	None.
Archaeological Ref:	None.
Soil conditions:	Stubble.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation, but see also below.

[See plan on p. 24]. In 1845 this field was called Church Field and contained 22.6 acres (TA no. 180). At the time of inspection (September 18th and 24th) it was still unploughed except for a single four furrow strip close to the by-pass route. Nothing was observed on the surface but the area exposed was too small to be meaningful. It is possible that the lower slopes of this field may contain deposits of hillwash (colluviation) that may mask an earlier land surface. It is therefore recommended that a trial trench is opened to test for this possibility.

The trackway and bank marking the boundary between Land Parcels 6 and 7 has elm suckers, crab apple, old man's beard and nettles present.

No. 7

Terrain:	Flat.
Soil:	Thundridge/Rib.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 105.
Archaeological Finds:	None.
Soil conditions:	Ploughed and harrowed.
Archaeological Potential:	Possible.
Recommendation:	Trial trenching.

[See plan on p. 24]. This is a narrow strip of cultivated land (20m). In 1845 it was meadow (TA no. 183). It had been ploughed

but no surface evidence could be seen.

No. 8

Terrain:	Flat.
Soil:	Rib.
Quality:	Grade 3.
Land use:	Woodland.
Historical Ref:	HCRO DSA4 105.
Archaeological Finds:	None.
Soil conditions:	Vegetation cover.
Archaeological Potential:	Possible.
Recommendation:	Observation.

[See plan on p. 24]. This is a small portion of deciduous woodland. No earthworks present.

No. 9

Terrain:	Flat.
Soil:	Rib/Thundridge.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 105.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Trial trenching.

[See plan on p. 24]. The lower part of this field was meadow in the mid-19th century (TA no. 438). Above the still visible terrace it was arable land called Mill Field containing 10.6 acres (TA no. 469). This had recently been ploughed and much straw was in evidence. No material was recovered from a surface inspection.

The boundary between Land Parcels 9 and 10 is the blocked up Youngsbury Lane. There is only a slight lynchet visible, caused more by a natural dip in the terrain. On its upper edge hawthorn, elder, ash and oak are present. The boundary does not look particularly ancient.

No. 10

Terrain:	Gently sloping.
Soil:	Thundridge.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Improbable.
Recommendation:	Observation.

[See plan on p. 24]. This was called Mill Field in 1840 and consisted of 35.5 acres of arable land (GR TL 362-177). When visited on September 12th the field had been ploughed. Accordingly, the degree of visibility was poor. Nevertheless, the subsoil was being exposed and any significant evidence would have been visible. This excludes the possibility that the phenomena described in Land Parcel no. 6 had also occurred here. In terms of settlement evidence this Land Parcel would be classified as 'improbable'.

No. 11

Terrain:	Gently sloping.
Soil:	Thundridge.
Quality:	Grade 3.
Land use:	Woodland.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Vegetation.
Archaeological Potential:	Improbable.
Recommendation:	Observation.

[See plan on p. 24]. (GR TL 363-178) This has been an area of deciduous woodland since the 19th century (TA no. 442). Most probably it developed as part of the boundary devised to screen the Park that surrounds Youngsbury. This is an existing feature (post-medieval woodland) which will be partially clipped by the by-pass route. It is improbable that this area masks any archaeological evidence worth recovering.

No. 12

Terrain:	Flat.
Soil:	Thundridge.
Quality:	Grade 3.
Land use:	Grass.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Unploughed.
Archaeological Potential:	Possible.
Recommendation:	Observation.

[See plan on p. 24]. (GR TL 364-179) This is now parkland surrounding Youngsbury. In 1840 it was called Knats Park and was 7.3 acres of arable land. It became emparked some time prior to 1880.

The boundary between Land Parcels 12 and 10 is a lynchet which, to judge from its size, was of medieval if not earlier date (see illustration in Appendix 2). The soil was not exposed as the field was under grass. The road will destroy a pre-park enclosure boundary running north-south.

The geophysical survey was limited to the west of Gravel Pit Wood, but the results were inconclusive (see Appendix 4, Report 1.0).

No. 13

Terrain:	Irregular.
Soil:	Gravels.
Quality:	Nil.
Land use:	Woodland.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Quarried.
Archaeological Potential:	Destroyed.
Recommendation:	Occasional observation.

[See plan on p. 25]. (GR TL 3645-1800) This is a large rectangular quarry dug for the extraction of gravel. It still retains its 19th century name of Old Gravel Pit, though in 1840 it consisted of two portions, the southern half was 1.45 acres (TA no. 452), the northern half was also 1.45 acres and called Gravel Pit Plantation (TA no. 453). The trackway that divided them can still be seen. It is possible that the quarry may be associated with the development of the Wades Mill Turnpike Trust in the early 18th century and its consequent need for raw materials (Munby 1987). The gravel pit seems too large for an individual farm or even an estate's needs. However, it is possible that a particular quarry could have been exploited over a long period of time. Either way it cannot be proved without documentary evidence.

The quarry is an irregular elongated oval (N-S) and has a present depth of about 4m (there is a profile of its NW ridge in Appendix 2). The area is demarcated by ash and sycamore standards with occasional beech trees. There is no discernible ground cover and there are trunks of wind-blown trees lying about and the tipping of agricultural debris (old fences, wire, miscellaneous iron etc.) has taken place. Apart from the relict feature itself, the archaeological evidence has been destroyed.

No. 14

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 3.
Land use:	Grass.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Unploughed.
Archaeological Potential:	Possible.
Recommendation:	Geophysics and trial trenching.

[See plan on p. 25]. This area was also parkland though in 1840 it was arable and called Broad Rowley, 22.8 acres in extent (TA no. 454). By 1880 it had become emparked. Apart from the remains of an old bank and ditch running E-W there are no other features visible. On the western side of this former field (Broad Rowley) there is an E-W trackway (GR TL 3666-1824) surviving as an earthwork (see Appendix 2).

No. 15

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 3.
Land use:	Grass.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Unploughed.
Archaeological Potential:	Possible.
Recommendation:	Geophysics and trial trenching.

[See plan on p. 25]. This area was arable in 1840, called Upper Bentleys and contained 6.3 acres (TA no. 480). By 1880 it was parkland and remains so to this day. Apart from the previously mentioned trackway the surface is devoid of all features.

No. 16

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Rolled and drilled.
Archaeological Potential:	Possible.
Recommendation:	Trial trenching.

[See plan on p. 25]. This field (TL GR 378-184) had been ploughed and rolled when inspected on September 4th but not weathered. The field (21.5 acres) was called Great Southy (TA

no. 498) and was one of three similarly sized fields, the others being Middle Southy (23.2 acres) and Sutes Southy (22.5 acres). The land is good quality for Hertfordshire (Grade 2) which together with its proximity to Sutes would have been part of the demesne lands of the manor. It is, therefore, likely to have been cultivated for a long period of time. A few post-medieval sherds and tile fragments were picked up but little else.

The land is flat where the by-pass crosses it. However, some 90m north of the trackway leading to Youngsbury, on the western edge of the by-pass route is a curious anomaly (GR TL 3677-1840). It consists of a low oval shaped rise, approximately 30m by 20m, on an E-W axis. The height of this feature is between 20 and 25cm though it is easier to identify from the south than from the north. The feature is also more stony than the surrounding area. It is difficult to account for this phenomenon and it may be a wholly natural outcrop. Nevertheless, it is an anomaly that could only be resolved by excavation.

No. 17

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. Between this field and no. 16 runs an E-W bank and ditch (on the south side) with a tall overgrown hedge (6 to 7m high) composed of sucker Elms, Ash and Blackthorn. The field itself had only just been ploughed (12-09-90). As has been previously mentioned this was part of a three field arrangement with no. 16. In 1840 the area was arable (TA nos. 543 and 559). The dark soil was quite uniform in character and there was little sign of any previous disturbance.

No. 18

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. This was called Nine Acres in 1840 (TA no. 557) consisting of 10.2 acres of arable land. Like Land Parcel no. 17 it had just been ploughed and conditions were poor for retrieving archaeological information.

No. 19

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Harrowed and rolled.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. In 1840 this was part of Fairley Field (TA no. 556) 6.8 acres, and an allotment in Nimdell Field (TA no. 551); 16.7 acres. Both were arable in 1840. When visited in early September the field had been harrowed and rolled but the surface was very dry. Apart from an above average quantity of very abraded tile debris no other evidence was recovered. The tile fragments were scattered evenly across the field so that their existence is not considered to be structurally significant.

No. 20

Terrain:	Flat.
Soil:	Hanslope.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Harrowed and rolled.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. Like the previous four land parcels (nos. 16-19) this is good arable land and has probably been cultivated over a long period of time. In 1840 it comprised 12.2 acres of arable (TA no. 554) and on its northern edge Broad Oak Mead, 4.3 acres of pasture (TA no. 553). It had been ploughed and rolled (4.9.90) but was very dry. Accordingly, the recovery of surface evidence was greatly restricted.

Dividing this field (20) from Land Parcel no.21 at GR TL 3716-1963 is what appears to be a 10m wide depression some 3m deep or so (see Appendix 2 for the profile). At its base runs a drainage gully. It seemed too large to be a simple drain. On examining the Tithe map of 1840 the problem was solved. It was called Broad Oak Lane and appears to have run SW-NE between Gore lane and Plashes farm towards the junction of Dane End Road with Ermine Street at

GR TL 3648-1903. The lane was still in existence in 1880 and had therefore gone out of use sometime in the early 20th century. Along its course there were the following species growing: elder, bryony, elm suckers, ash, hazel, holly, oak, hawthorn, bracken and brambles.

No.21

Terrain:	Flat
Soil:	Hanslope/Thundridge
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Harrowed and rolled.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. This field was visited on September 4th and 12th. On the first occasion the field was partially covered by secondary self sown corn. However, the surface had been weathered and thus visibility was quite good. On the second occasion the field had been harrowed and rolled but remained unweathered. On both occasions there was little difference in the quantity of surface material recovered (medieval and post-medieval pottery and tile fragments). Prior to 1835 (Enclosure Award) the field was part of a large open arable field. In 1840 it was described as an 'Allotment in Staplefield' (TA no.574; 17.2 acres).

No.22

Terrain:	Flat.
Soil:	Thundridge/Mimms
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Harrowed and rolled.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. This had been ploughed and harrowed but not rolled or weathered. Apart from post-medieval sherds the route was quite barren. In 1840 it was referred to as an 'Allotment in Staplefield' (TA no. 607; 29.3 acres).

The boundary between no. 22 and no. 23 is a bank and ditch with a hedge of hawthorn, blackthorn and occasional dog rose.

No. 23

Terrain:	Flat.
Soil:	Mimms.
Quality:	Grade 3.
Land use:	Grass and clover.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Unploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 25]. This was still under grass and clover and so the sub-vegetation level was not visible. In 1840 it was arable and called 'Allotment in Staplefield' (TA no. 608; 21.3 acres). On the western boundary of this field is a large quarry with a kiln shown on the 1840 Tithe map. This is most probably a lime kiln used to reduce the chalk into lime (GR TL 3705-2105).

The boundary between no. 23 and no. 24 consists of a double row of hawthorn, elder, dog rose, old man's beard and occasional oak. It has been layered sometime in its history but has been neglected for at least 20 years or more. At the top of the slope there are some field maples.

No. 24

Terrain:	Flat.
Soil:	Mimms.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. This had been freshly ploughed with evidence that the subsoil had been brought to the surface. This was part of no. 23 in 1840.

The route of the by-pass will bisect a small bank or lynchet which has the following species growing on it: oak, hawthorn, dogwood, crack willow, ash, dog rose, blackthorn and brambles. On its downward slope hazel, field maple and hornbeam are present.

No. 25

Terrain:	Flat.
Soil:	Mimms.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Possible.
Recommendation:	Observation.

[See plan on p. 26]. This was visited on two occasions (September 3rd and 11th). Most of this field had been ploughed but not the area directly in line with the by-pass route. Nevertheless, the zone closest to the threatened area was looked at and proved to be barren, stony and with sub-soil present. In 1840 this was called Clerk Leys (TA no. 606; 34.5 acres arable).

The boundary between no. 25 and no. 26 consisted of a bank or lynchet (the land lay higher on its northern side). This was surmounted by a trimmed hedge containing the following species: hawthorn, ash, field maple, dogwood, old man's beard, hazel and blackthorn.

No. 26

Terrain:	Sloping.
Soil:	Mimms.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed and harrowed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. In 1840 this was composed of two units Wheatly Spring (TA no. 648; 1.5 acres of wood) and Dell Mead (TA no. 646; 14.4 acres of pasture). Today it is under cultivation with very little apparent archaeology. It is very stony and the subsoil is being brought up by the plough. The by-pass route will overrun a chalk dell on its northern side (GR TL 3640-2045).

The boundary between 26 and 27 consists of a machine cut drainage ditch devoid of vegetation except for grass, nettles and docks.

No. 27

Terrain:	Gently sloping.
Soil:	Mimms.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed and harrowed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. This is a large field which is almost bisected by the southern edge of Land Parcel no. 28. It is very stony with the subsoil being ploughed up. It has a dell on its southern side which will be cut by the by-pass. The dell is probably of contemporary date with that in no. 26. In 1840 it was composed of three units: Bean Close (TA no. 645; 6.5 acres of pasture), Backsides (TA no. 642; containing 11.1 acres), Goldings (TA no. 641; 3.3 acres of arable) and Dell Mead (TA no. 646; 14.3 acres of pasture). No archaeological evidence was found.

No. 28

Terrain:	Gently sloping.
Soil:	Mimms.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Unploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. (GR TL 3745-2075) This field was unploughed when visited but there is little to suggest any difference between it and Land Parcel no. 27.

The boundary between no. 27 and no. 29 is a ditch and trimmed hedge consisting of mainly hawthorn and blackthorn. The hedge has gaps in it.

No. 29

Terrain:	Flat.
Soil:	Oak.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Ploughed.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. This was pasture in 1840 called Pondfield (TA no. 633; 9.5 acres). Today it is arable and when inspected had only recently been ploughed. The subsoil is being brought up by the plough. No significant finds were found. This field lies immediately adjacent to the former moated manor of Dowsetts on its western side.

No. 30

Terrain:	Flat.
Soil:	Hanslope/Shenley
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Ref:	SMR 'Area of Archaeological Interest' (AAI no. 85).
Archaeological Finds:	None.
Soil conditions:	Rolled and drilled.
Archaeological Potential:	Possible.
Recommendation:	Observation.

[See plan on p. 26]. Once across the lane the by-pass will cross a large arable field and into an area of archaeological interest (AAI no. 85). About 30% of the potential route within this field originally lay under woodland (called Lilley Wood in 1840); (TA no. 724). The date of this wood is not certain but the name itself is certainly of 14th century origin (Gover et al, 1970, p. 304). The remaining 70% was covered by a portion of Perry Field (TA no. 722; 25.3 acres of arable) and Riders (TA no. 730; 21.3 acres of arable). Prior to the enclosure award of 1835 the remainder of this route lay in a single open field (Perry Field). It would seem that it has been in continuous cultivation since at least the medieval period. It was walked on September 4th but had had no time to weather. Therefore, the recovery of finds was negligible. This result was disappointing considering the crop-mark site that is only 100m or so from the by-pass route (see Appendix 3 for a description of this site).

The boundary between Land Parcels 30 and 31 is a single grass covered ditch.

No. 31

Terrain:	Flat.
Soil:	Hanslope\Shenley.
Quality:	Grade 2.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Ref:	SMR AAI no. 85.
Archaeological Finds:	None.
Soil conditions:	Harrowed and rolled.
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. (GR TL 3785-2195) This was also a former part of Perry Field. In 1840 it was called Sars Field (TA no. 731; 3.2 acres). The field had not been weathered adequately and the soil was quite gravelly in appearance. Only post-medieval pottery was recovered.

Boundary between Land Parcels 31 and 32 is a ditch and a trimmed but patchy hedge of hawthorn and blackthorn.

No. 32

Terrain:	Gently sloping.
Soil:	Shenley/Thundridge.
Quality:	Grade 3.
Land use:	Arable.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Weathered (PSVS no. 4).
Archaeological Potential:	Remotely possible.
Recommendation:	Observation.

[See plan on p. 26]. (GR TL 379-221) Of all the land parcels that have been described hitherto this field came closest to the ideal conditions for field survey. It had been sufficiently weathered to enable the non-soil surface matrix to be clearly seen. As its name implies (Dell Hole Field, TA no. 735; 10.7 acres of arable in 1840) the field has two circular and one roughly rectangular quarry pit. All three of these features should just escape damage from the by-pass route. The two circular pits on the eastern side of the proposed road (GR TL 3697-2211 and TL 3697-2205) were approximately 30 and 40m in circumference. Neither are shown on the Ordnance Survey of 1880 (6" scale), though this is because they are fairly shallow in appearance (saucer shaped). The rectangular quarry pit which lies just to the north of Ryders Grove is far more substantial and appears to be of more recent origin, possibly this century. It was certainly exploited for chalk to judge from the type of debris lying around.

The route of the by-pass was divided up into 50m squares and then line-walked at 5m intervals. This was the first field to be

examined and the material recovered enabled an approximate yardstick to be created against which to measure other fields. Both the range and the quantity of material was, as to be expected, relatively large. Tile debris was not collected because of its ubiquity and because the quantity was not directly relevant to the discovery of occupation evidence along the corridor of the route. The material was mainly post-medieval with a few sherds of medieval pottery present. The stoniness of the terrain and the numerous plough shattered flints made the identification and recovery of stone artefacts very difficult.

Dividing Land Parcels no. 31 and 32 is the original path of Ermine Street. There is a deep drainage ditch on its eastern side and the terrain looks to have been modified in recent years.

No. 33

Terrain:	Flat.
Soil:	Shenley/Thundridge/Swaffham Prior.
Quality:	Grade 3.
Land use:	Grass.
Historical Ref:	HCRO DSA4 96; QS/E 61.
Archaeological Finds:	None.
Soil conditions:	Vegetation cover.
Archaeological Potential:	Possible.
Recommendation:	Geophysics.

[See plan on p. 26]. (GR TL 370-224) This was part of the large common arable field called Puckeridge Field. By 1840 it formed part of Lowe Field (TA n. 736; 6.6 acres) and Langlands and an allotment in Puckeridge (TA no. 738; 57.2 acres). The field was under grass and therefore not available for surface walking.

Historical and Archaeological Discussion.

The proposed Wadesmill By-pass cuts through a landscape that has been settled from at least the early Iron Age if not before. However, though there are known occupation sites adjacent to the route, there are none confirmed directly in its path, with the sole exception of Land Parcel no. 1. In the interests of clarity a brief description of the chronological sequence of settlement in the area is set out below.

Prehistoric Period.

The evidence from the pre-Roman period can only be described as meagre. There are occasional finds of stone implements, but apart from the early Iron Age evidence for Moles Farm (see Land Parcel no. 5) information from this period is scanty. There are two anomalous features (LP nos. 5 and 16) which may be of prehistoric date but this awaits further investigation.

Romano-British Period.

The principal settlement in the area lay at Ware on the River Lea some 2km to the south of the southern end of the Wadesmill by-pass (Andrews 1900; Holmes 1952-4; Davies 1968; Partridge 1979, 1981; Day 1980). Further north at Youngsbury lay the probable site of a Romano-British villa some 400m east of the by-pass route (GR TL 369-179 (Evans 1890)). Towards the end of the route lay a probable native enclosed site just below Kitchencroft Wood some 100m east of the road corridor (GR TL 3698-2168). This site may have originated in the pre-Romano-British period. For a description of the site see Appendix 3.

Medieval and post-medieval Period.

Most of the modern settlement along Ermine Street has come into existence towards the end of the medieval period. In the early 18th century the development of the Turnpike system encouraged settlement along this major road. Such was the 'pull' of the road (now the A10) that settlements like Thundridge developed to the south of Wadesmill. Originally, the village of Thundridge was located adjacent to the moated area of St. Mary and All Saints church some 900m east of Ermine Street. The improvement to the road system in the 17th and 18th century attracted settlement away from their earlier locations to those areas that offered greater economic potential. Both High Cross and Colliers End developed as a consequence of this.

The River Rib marks the parochial boundary between the parishes of Thundridge and Standon. North of the Rib lay the Liberty of Standon. The proposed road cuts through the estates of at least five, possibly six manorial estates (Thundridge, Youngsbury, Sutes, Plashes, Barwick and Dowsetts). What is particularly interesting is the number of moated sites that lay within 1km

east of Ermine Street. Thundridge is a three-sided moated site (GR TL 3680-1735). Sutes was a four-sided moated site 150m east of the road (GR TL 3565-1900). Plashes had a crescent shaped moat on its northern side and lay 1km east of Ermine Street (GR TL 3700-2035). Dowsetts manor was a three sided moated enclosure lying 500m from Ermine Street (GR TL 3680-2105). To judge from the Tithe map there is what appears to be a small three-sided water filled moat at Cowards (GR TL 3650-1665; HCRO DSA4 105/1; TA no. 159) called Calves Pightle, some 200m from the road corridor).

The present landscape has evolved from a more open, communally based agrarian system which can only be vaguely perceived. Standon was not enclosed until 1835 though even by that date it had already become divided by separate fields. Within the 19th century the landscape underwent some radical changes, the results of which can, in the main, be still seen today. One of the many consequences of the new road will be the dramatic change it will bring to the sub-division of the landscape. It will inevitably mean that many existing boundaries will, over time, be destroyed and new fields made.

Summary.

Table 3.

Summary of the potential settlement archaeology along the Wadesmill by-pass route.

(metres represents length of road in each land parcel).

LP no.	Destroyed	Improbable	Remotely possible	Possible	Probable	Certain
1						170m
2			200m			
3			200m			
4			200m			
5			350m			
6			300m			
7				20m		
8				50m		
9			240m			
10		260m				
11		50m				
12				100m		
13	150m					
14				240m		
15				100m		
16				250m		
17			500m			
18			220m			
19			290m			
20			130m			
21				130m		
22			160m			
23			180m			
24			50m			
25				170m		
26			190m			
27			500m			
28			90m			
29			230m			
30				750m		
31			120m			
32			310m			
33				170m		
Total	150m	310m	4460m	1980m	0	170m
%	2.1	4.4	63.1	28.0	0	2.4

Recommended Action.

Based on the above evaluation the following actions have been recommended (see Table 4 below).

Table 4.

LP no.	Occasional observation	Continuous observation	Trial trenching	Probable area excavation
1			*	#
2		*		
3		*		
4		*		
5		*		
6			*	
7			*	
8		*		
9			*	
10	*			
11	*			
12		*		
13	*			
14		*	*	
15		*	*	
16			*	
17		*		
18		*		
19		*		
20		*		
21		*		
22		*		
23		*		
24		*		
25		*		
26		*		
27		*		
28		*		
29		*		
30		*		
31		*		
32		*		
33		*		
Total metres	460	5630		980
%	6.5	79.6		13.9

(Continuous Observation after trial trenching work).
(* = affirmative).

Summary.

It can be seen from Table 3 (p. 23) that in terms of the potential archaeology the following pattern may be predicted:

Archaeological Potential of the A10 Wadesmill By-pass.
(In order of increasing probability).

Negative	-	6.5%
Low potential	-	63.1%
Potential	-	28.0%
High potential	-	2.4%

The recommendations set out in Table 4 (p. 24) are summarised as follows:

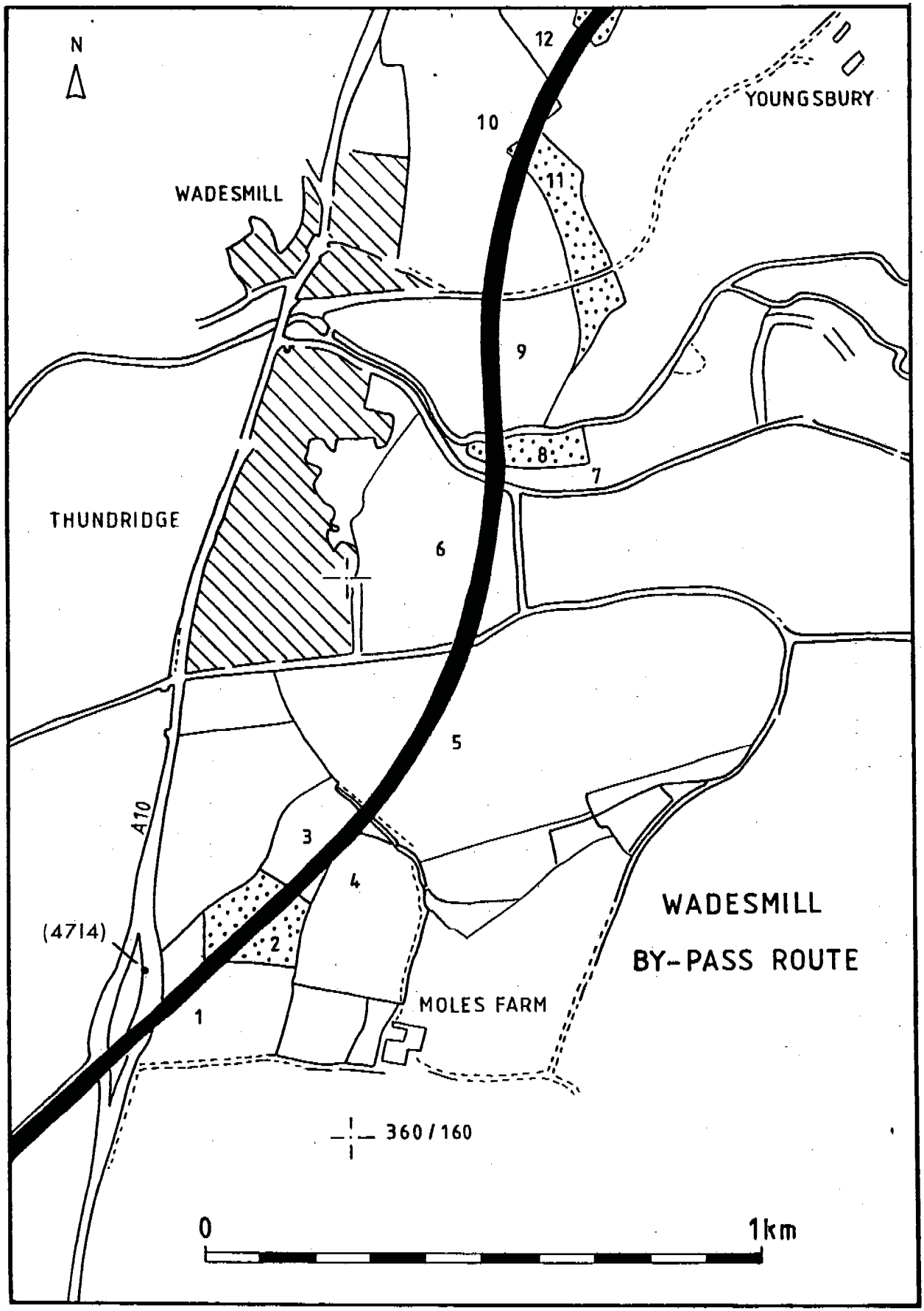
1. Prior to topsoil removal the following land parcels should be trial trenched (no's 1, 6, 7, 9 and 16) ie. 13.9%.

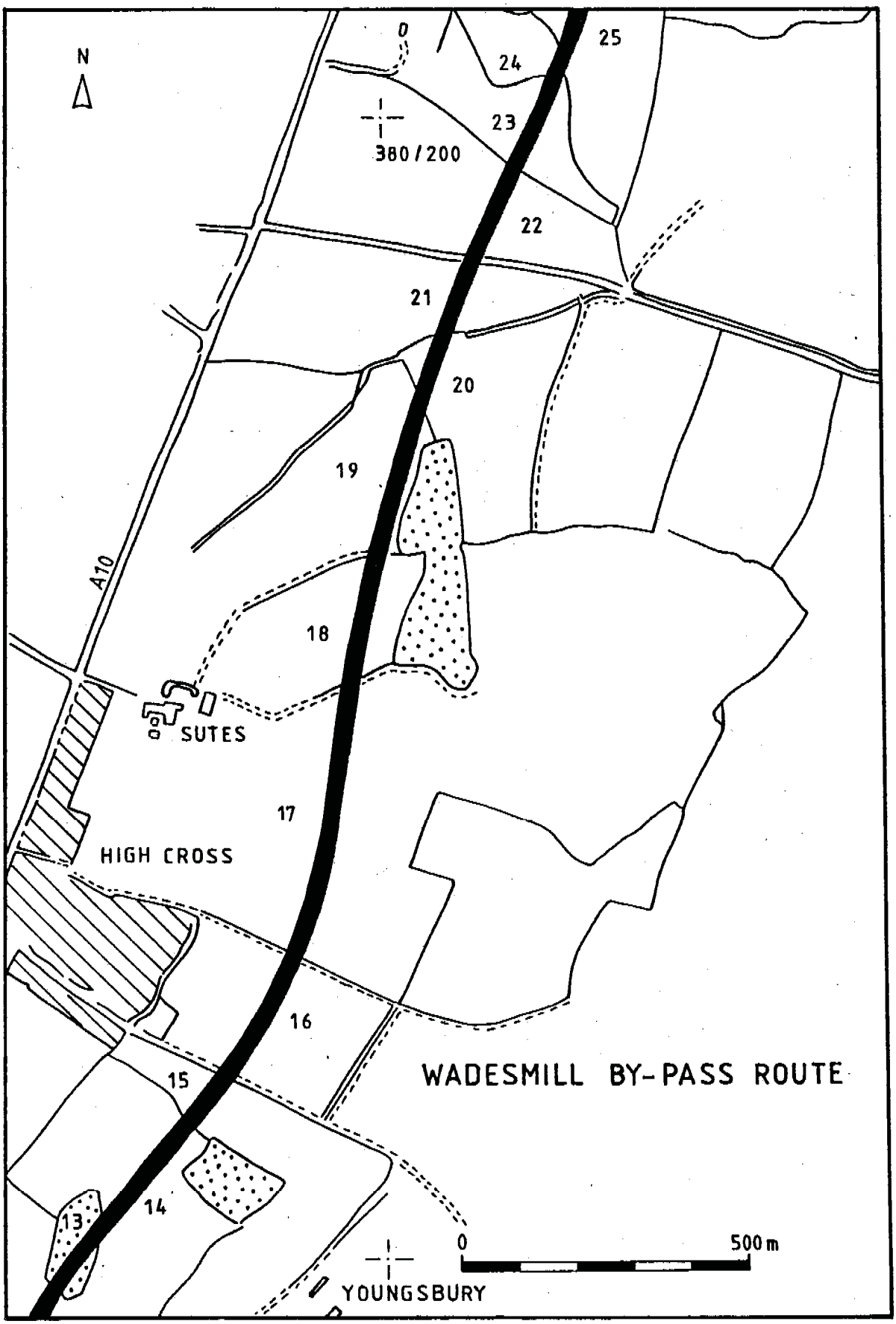
2. Contingency planning for area excavation in land parcel no. 1 should be made (ie. 2.4% of route).

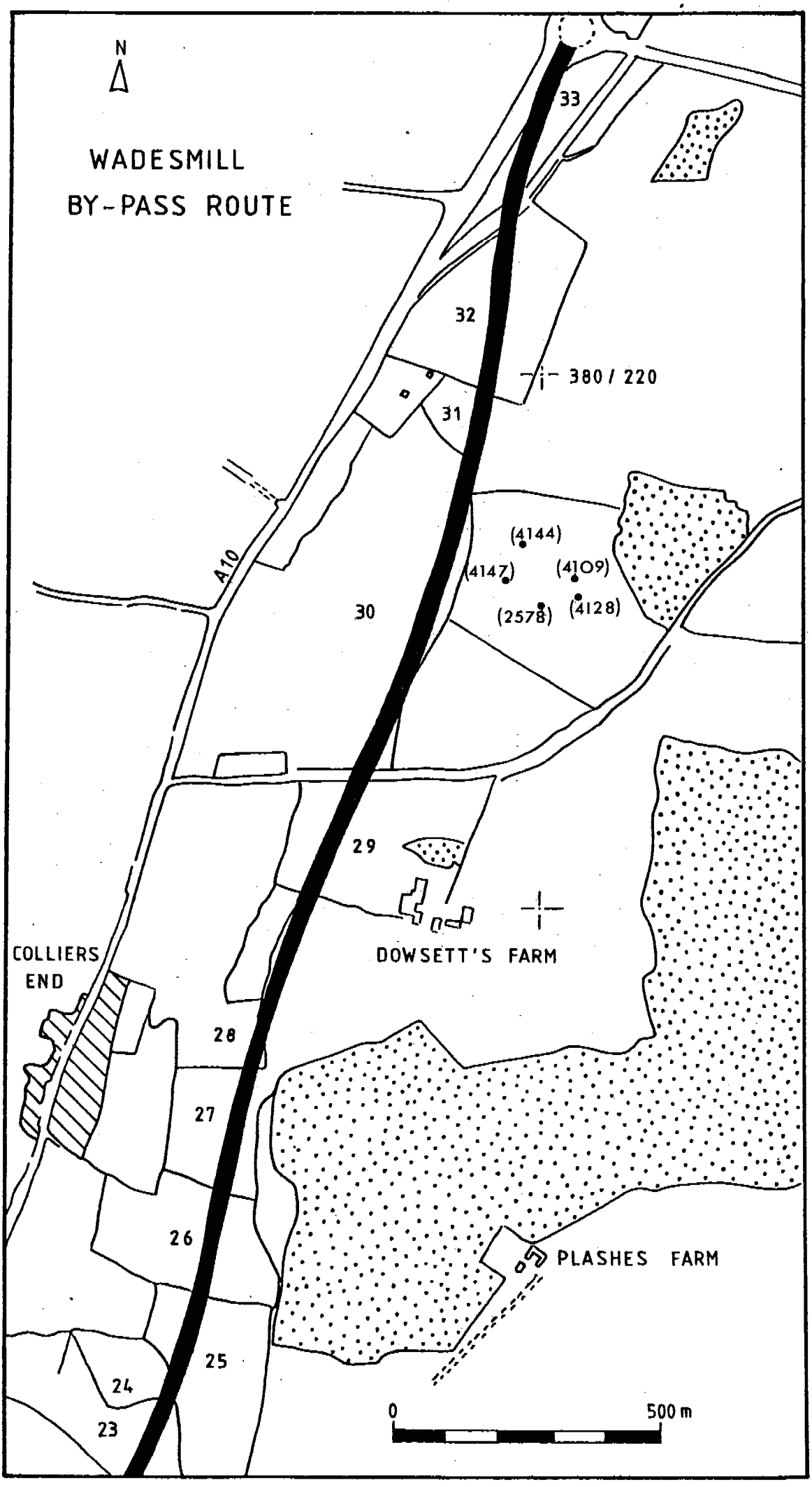
3. During the course of topsoil removal along the road corridor the following land parcels should be continuously observed: no's 2-5, 8, 12, 14, 15, 17-33 (ie. 79.6% of route).

4. During the process of topsoiling the road corridor the following land parcels should be occasionally observed: no's 10, 11 and 13 (ie. 6.5% of route).

J. R. H. 30-09-90


N
12
YOUNGSBURY
10
11
WADESMILL
9
8
7
THUNDRIDGE
6
5
A10
3
4
(4714)
2
1
MOLES FARM
WADESMILL
BY-PASS ROUTE
360/160
0
1km


N
0
24
25
23
380/200
22
21
20
19
A10
18
SUTES
17
HIGH CROSS
16
15
14
13
WADESMILL BY-PASS ROUTE
0
500 m
YOUNGSBURY


N
WADESMILL
BY-PASS ROUTE
33
32
31
30
29
28
27
26
25
24
23
380 / 220
(4144)
(4147)
(4109)
(2578)
(4128)
A10
COLLIERS
END
DOWSETT'S FARM
PLASHES FARM
0
500 m
KEY
(4109) =
SITE/MONUMEN
RECORD
NUMBER

Appendix 1.

(The soil descriptions are in alphabetical order).

Hanslope

Soil Group	-	Calcareous gley soil.
Parent Material	-	Chalky boulder clay.
Drainage Status	-	Poor to free, mainly imperfect.

'The soils are developed in chalky till on low plateaux and gently to strongly sloping valley flanks. Both the main soils are clay to the surface, have strongly permeable sub-surface horizons, but are seldom seriously waterlogged. Hanslope soils have a calcareous brownish sub-surface horizon. It passes downwards into a dense mottled substrate containing many chalk stones..... It has a clay water-retentive topsoil which can only be worked satisfactorily over a narrow range of moisture content, so cultivation needs to be timely' (Hodge et al 1985, p.209-212).

Mimms.

Soil Group	-	Brown earth and non-calcareous gley soil.
Parent Material	-	Disturbed or in-situ Reading beds sand and clay.
Drainage Status	-	Free to poor.

This soil has a fine sandy texture intermixed with brown clay loam resting on chalk at 3 to 5 feet (Thomasson and Avery 1970). This association is no longer recognised as a distinct sub-group.

Oak.

Soil Group	-	Non calcareous gley group.
Parent Material	-	Mainly decalcified boulder clay.
Drainage Status	-	Imperfect to poor.

'The soils are dominantly fine loamy or fine silty with clay subsoils. They are non-calcareous and waterlogged in winter'. They may be cultivated in September and October. Spring wetness delays sowing so that Spring barley rarely yields well. Cereals suffer moderately from drought. They are naturally acid and require occasional liming.

Thundridge.

Soil Group	-	Brown earth.
Parent Material	-	Loamy, gravelly or clay drift over disturbed chalk or gravel.
Drainage Status	-	Free to moderate.

Overlying chalk on the valley sides is a soil Head derived from

boulder clay and gravel. 'The associated soils are stony loams with a brown or reddish brown, fine textured subsoil of stony clay loam, clay or sandy clay resting at variable depths on disturbed chalk' (Thomasson and Avery 1970).

Shenley.

Soil Group	-	Non-calcareous gley soil.
Parent Material	-	Pebble Gravel and decalcified boulder clay overlying eocene clay.
Drainage Status	-	Poor to free.

'Surface textures are coarser on many upper valley sides where very pebbly sandy loams overly a more or less gleyed, sandy clay substratum' (Thomasson and Avery 1970, p. 13).

Swaffham Prior.

Soil Group	-	Brown calcareous soil.
Parent Material	-	Loamy chalky drift over chalk or chalk Marl.
Drainage Status	-	Free.

'Consists of a coarse loamy and fine loamy typical brown calcareous earths over chalk or rubbly chalk drift. The soils are easy to cultivate and there are adequate days for spring and autumn cultivation' (Hodge et al 1984 pp. 316-321).

Rib.

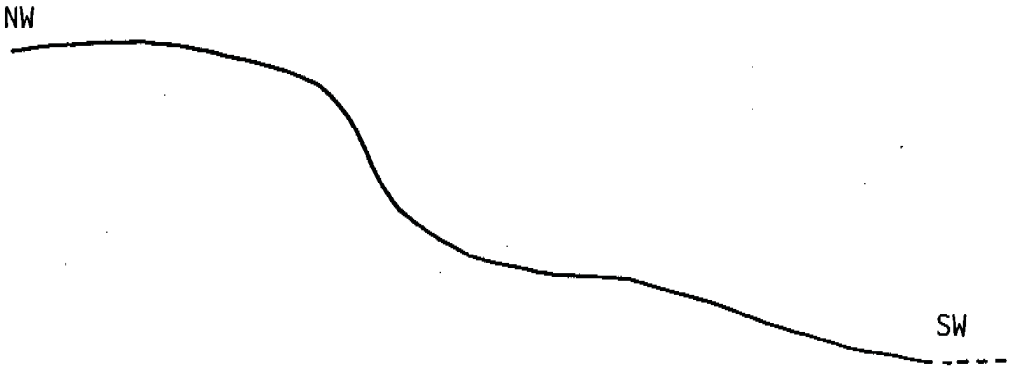
Soil Group	-	Calcareous gley soil.
Parent Material	-	Alluvium, locally overlying peat.
Drainage Status	-	Imperfect to poor.

The soils are rich in organic matter and mainly calcareous. They are derived from boulder clay, the profile showing a silty clay loam surface over dull brown and grey mottled silty clay. Beds of sand and gravel are present with peaty deposits infilling hollows within them' (Thomasson and Avery 1970 p.18).

APPENDIX 2

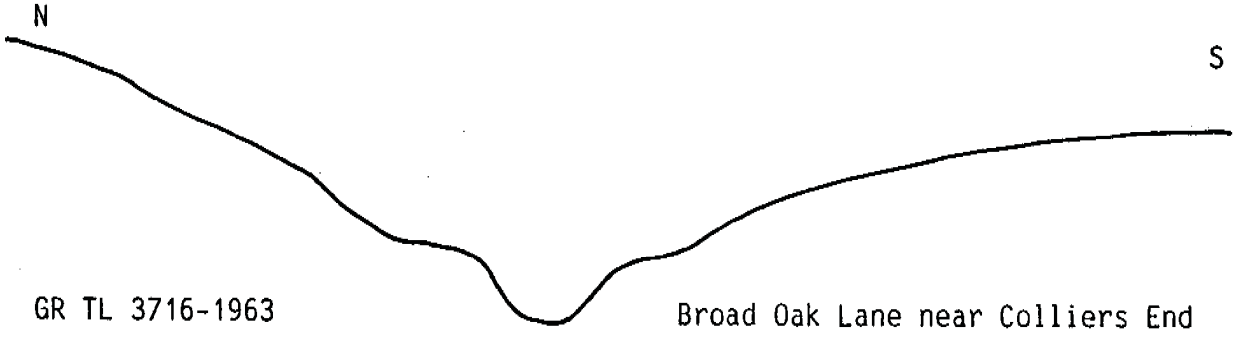
Scale 1:100

GR TL 3640-1785 Lynchet between Land parcel 10 and no.12



GR TL 3645-1810 Gravel Pit Quarry near High Cross, Standon.

GR TL 3666-1824 Trackway in Youngsbury Park near High Cross.



GR TL 3716-1963 Broad Oak Lane near Colliers End

Appendix 3.

Sites and Monuments Record of Hertfordshire County Council..

SMR no. 2578 (GR TL 3800-2155)

'Cropmark of a D-shaped enclosure. Entrance in its straight side, facing north-east. Maximum diameter 80m. No internal features. Surrounded by other cropmarks: linear ditch (4147) circular enclosure (4144); oval enclosure (4128) and a rectilinear ditch system (4109)'.

SMR no. 4109 (GR TL 3807-2164)

'Cropmarks of a rectilinear ditch system. At least three units of dissimilar size. Incorporated within the ditch system is an oval enclosure (4128) and a D-shaped enclosure (2578). To the immediate west is a linear ditch (4147) and a small circular enclosure (4144)'.

SMR no. 4128 (GR TL 3807-2159)

'Cropmark of a small oval enclosure; dimensions approx. 32m x 18m. No breaks in ditch circuit. The enclosure is surrounded by a rectilinear ditch system (4109). To the immediate west is a D-shaped enclosure (2578); linear ditch (4147) and a small circular enclosure (4144)'.

SMR no. 4144 (GR TL 3797-2169)

'Cropmark of a single-ditched circular enclosure; diameter approx. 22m. No entrance. No internal features. The enclosure touches a linear ditch (4147). To the immediate south-east is a rectilinear ditch system (4109); D-shaped enclosure (2578) and an oval enclosure (4128)'.

SMR no. 4147 (GR TL 3774-2165)

'Cropmark of a linear ditch, aligned NW-SE then E-W. The ditch touches a small circular enclosure (4144). To the immediate east is a D-shaped enclosure (2578); rectilinear ditch system (4109) and oval enclosure (4128)'.

SMR no. 4714 (GR TL 3555-1630)

'Mechanical Stripping in advance of previous A10 roadworks revealed a dark area of linear pits connected by channels extending to a total length of c.15m. These features may represent puddling pits or clay working. Pottery found gives a Roman date.'

Appendix 4.

Results of Geophysical Survey.

WADESMILL A10 BY-PASS OCTOBER 1990
REPORT 1.0

SITE:

CLIENT: HERTFORDSHIRE ARCHAEOLOGICAL TRUST

NAME: GRAVELPIT WOODS (SOUTH PART)

NATURE: UNKNOWN

SURVEY CENTRAL OSGR: ? (Approx. central point)

REFS:

PERSONNEL: P.N. CHEETHAM

SURVEY DETAILS:

DATE : 19.10.90

TYPE: MAGNETOMETER

INSTRUMENT: GEOSCAN FM18 FLUXGATE GRADIOMETER

DATA LOGGING: AUTO LOGGED. DUMPED TO AMSTRAD PPC640 PORTABLE P.C.

AREA: 2000 m^{-2}.

GRIDS: 5

GRID SIZE: 20x20m

SAMPLE INTERVAL: 1m

GRID SURVEY: TAPED BASELINE AND OFFSET

GRID ACCURACY: NO E.D.M. AVAILABLE

GROUND CONDITIONS: PASTURE.

WEATHER CONDITIONS: FINE

PROCESSING:

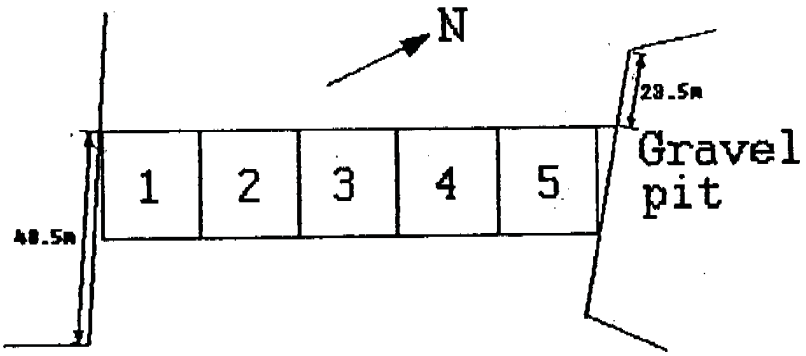
SITE: NONE

REPORT: ELONEX 286M, VGA GRAPHICS, CONTORS SOFTWARE

DATA ARCHIVE: RAW DATA ON $3^1/_2$" DISC, CONTORS FORMAT.

REPORT DATA: GRAVM[grid ref.].DAT
DIRECTORY: GRAVMAG1
REPORT FILE NAME: GRAVMAG1.REP

GRID LOCATION PLAN:



FINDINGS AND INTERPRETATION:

(See attached laser print and interpretation sketch)

The site response was quiet and this is reflected in the narrow range (-1 to +1.5 nT) required to bring any detail in the attached laser print. Generally the plot reveals background variations and little evidence for definable anomalies. A number of isolated spikes, probably due to the presence of iron objects, are evident as are gross variations across the survey area which are likely to arise from localised soil and geological variations. The observed anomalies include:-

ANOMALY	DESCRIPTION
A	A weak ill-defined positive linear anomaly passing across grids 3 and 4 terminating at its eastern end in an area of highly anomalous readings. Could be interpreted as a ditch but both strength and definition do not allow a confident interpretation.
B	Anomaly A runs across this area of more active response which may exhibit evidence of structures and has a concentration of spikes within it suggesting activity but without satisfactory interpretation.
C	An area of negative response apparently running across the survey area most likely to be of geological origin.

CONCLUSIONS:

With the limited area of survey it is difficult to assess the significance of the anomolous area B as this could simply be an increased background response due to localised variations in soil depth and underlying geology. The narrow range of random variation which arises from a combination of background, short term field fluctuations and instrument bias, when plotted, can result in spurious patterning being observed of which anomaly A may be an example. A follow up resistivity survey and extension of the magnetometer survey would be options. However, trial excavation is possibly a more appropriate approach in assessing the archaeological potential of the anomalous area as negative evidence from a magnetometer survey is not valid criteria for dismissing the presence of archaeological features.

P.N.Cheetham 23.10.90

A10 Gravelpit Wood (south part) 19/10/90 (mag).
Displayed level boundaries:
-0.8 -0.5 -0.1 0.3 0.6 1.0 1.3
-1.0 -0.6 -0.3 0.1 0.4 0.8 1.1 1.5
Scale is 1: 600.→

OVERLAY GRAVELPIT WOOD SOUTH

Fig 1. Laser print of Gravelpit Wood (south part). Overlay provided.

WADESMILL A10 BY-PASS OCTOBER 1990
REPORT 2.0

SITE:

CLIENT: HERTFORDSHIRE ARCHAEOLOGICAL TRUST

NAME: MOLE'S FARM (SITE 1)

NATURE: UNKNOWN

SURVEY CENTRAL OSGR: ? (Approx. central point)

REFS:

PERSONNEL: P.N. CHEETHAM

SURVEY DETAILS:

DATE : 17.10.90

TYPE: MAGNETOMETER

INSTRUMENT: GEOSCAN FM18 FLUXGATE GRADIOMETER

DATA LOGGING: AUTO LOGGED. DUMPED TO AMSTRAD PPC640 PORTABLE P.C.

AREA: 5001 m^{-2}.

GRIDS: 13

GRID SIZE: 20x20m

SAMPLE INTERVAL: 1m

GRID SURVEY: THEODOLITE/TAPED BASELINE(pegged) AND TAPED OFFSET

GRID ACCURACY: NO E.D.M. AVAILABLE

GROUND CONDITIONS: PLOUGHED AND SOWN.

WEATHER CONDITIONS: FINE

PROCESSING:

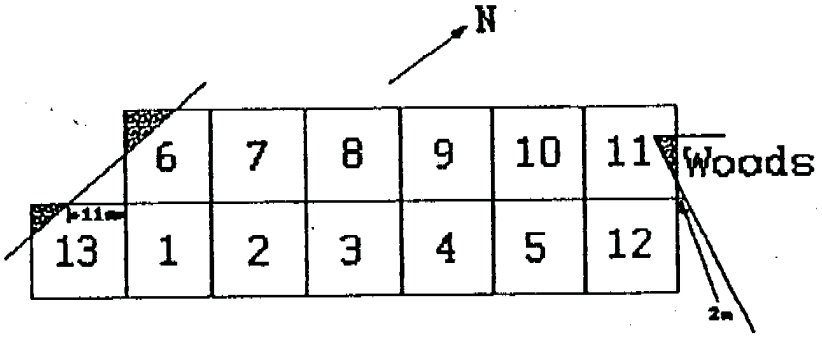
SITE: AMSTRAD PPC640 PORTABLE P.C. , CONTORS SOFTWARE

REPORT: ELONEX 286M, VGA GRAPHICS, CONTORS SOFTWARE

DATA ARCHIVE: RAW DATA ON $3^1/_2$" DISC, CONTORS FORMAT.

REPORT DATA: MOLEM[grid ref.].DAT
DIRECTORY: MOLEMAG1
REPORT FILE NAME: MOLEMAG1.REP

GRID LOCATION PLAN:



FINDINGS AND INTERPRETATION:

(See attached laser prints and interpretation sketch)

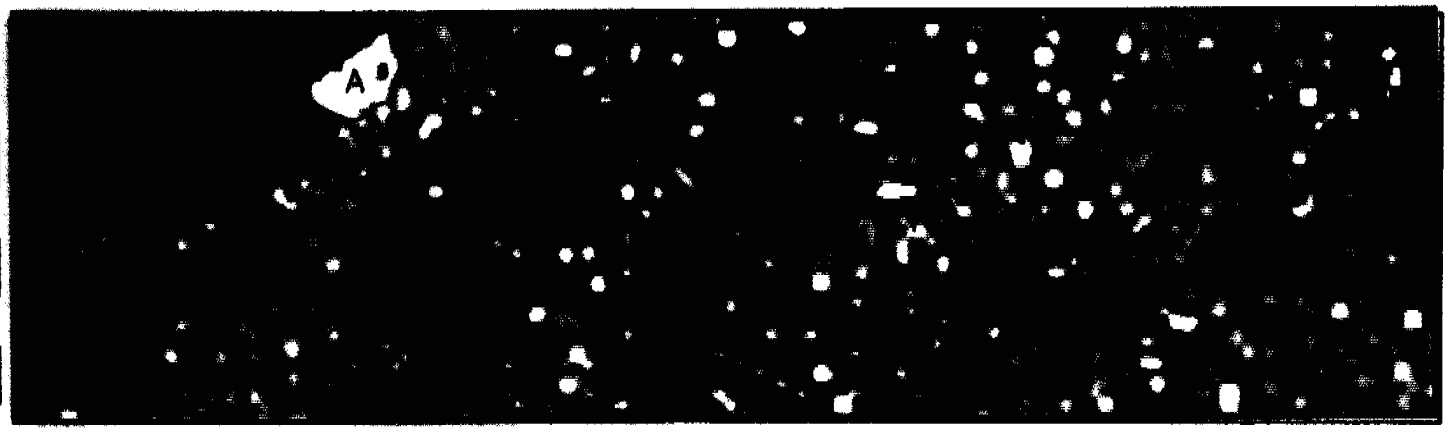
The site response was quiet and this is reflected in the narrow range (-1.6 to +1.2 nT) required to bring any detail in the attached laser print. Generally the plot reveals background variations and little evidence for well defined anomlies. A large number of isolated spikes, probably due to the presence of iron objects are evident and a pumber of farm machine parts and horseshoes littering the surface seem to confirm this interpretation. The observed anomalies include:-

ANOMALY	DESCRIPTION
A & B	Effects of a wire mesh boundary fence. Disregard.
C	Linear negative anomaly running parallel to the field edge through grid 13. Commonly encountered on magnetometer surveys, this feature seems to be the result of a modern farming practice of creating a drain or aeration void perhaps with a mole, running 5-10 metre in from the field edge. Should be checked with farmer as it seems not to be clear in why this does not appear continuing into and across grid 6. Normally negative anomalies represent a magnetic void caused either by air or stone which has reduced magnetic properties compared with the surrounding soil.
D,E,F,G	A series of weakly defined positive linear anomalies which may represent ditches, drains or cultivation scars. E and F are the most clearly defined and producing the stongest response. Both appear dis-continuous indicating that the are narrow (< 2m) and probably shallow. (see discussion in conclusions section).
H & I	A concentration of spikes and increased noise with a possible linear anomaly (I) abutting. There is also the sugestion of another linear anomaly running though this area parallel to anomaly E. No interpretation offered.
J	An area of anomalous response close to the enclosed woodland and an open drainage ditch which appears to originate from the effects of a high concentration of spikes presumably from iron objects.

CONCLUSIONS:

A potential problem with any interpretation of this area is the knowledge that ploughing has taken place recently. Ploughing increases the background noise levels and plough lines will be detected by a sensitive survey thereby masking weak anomalies of interest. This can also lead to an effect termed *aliasing*, where regular gridded data may produce linear features at an incorrect angle due to the interaction of direction of the survey grid to that of the true direction of anomalies. This effect is unpredicatable and therefore some of the linear anomalies observed should possibly viewed with this in mind. While it is clear that some sub-surface features exist to produce the many apparent linear anomalies which can be observed on the plots provided, trial excavation is required to assess the archaeological potential of these.

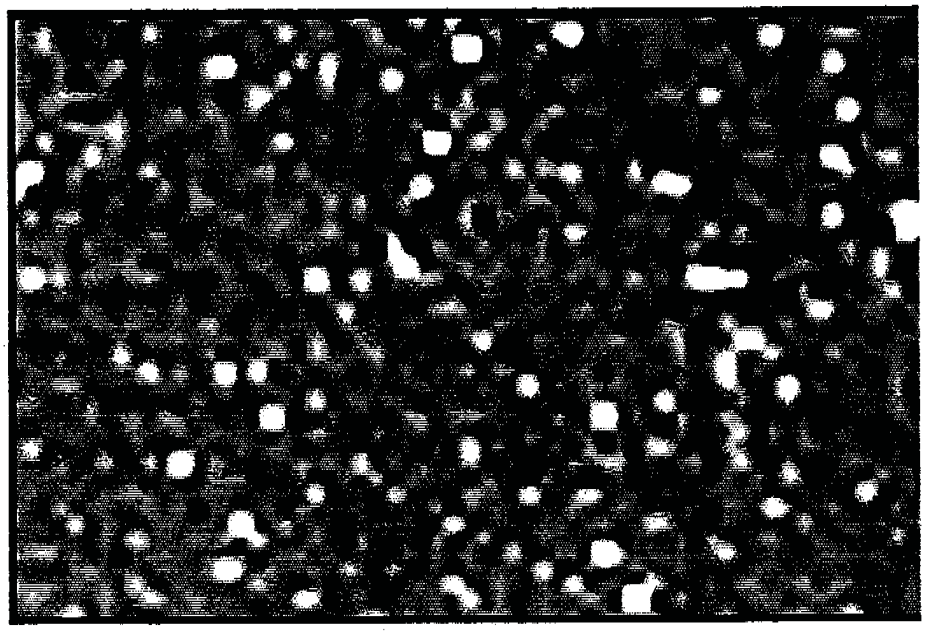
P.N.Cheetham 23.10.90



```
10 Mole's Farm (site 1) 17/10/90 (mag).
   Displayed level boundaries:
          -1.6    -1.2    -0.7    -0.3     0.1     0.6     1.0
      -1.8    -1.4    -0.9    -0.5    -0.1     0.3     0.8     1.2
cale is 1:  748.→
```

OVERLAY MOLE'S FARM SITE 1

Fig 1. Laser print of Mole's Farm Site 1. Overlay provided.



```
10 Mole's Farm (site 1) 17/10/90 (mag).
   Displayed level boundaries:
          -0.9    -0.6    -0.3     0.0     0.3     0.6     0.9
      -1.1    -0.8    -0.5    -0.2     0.2     0.5     0.8     1.1
cale is 1:  500.→
```

Fig 2. Laser print of Mole's Farm Site 1. Detail of grids 2,3,4/7,8,9. No overlay.

WADESMILL A10 BY-PASS OCTOBER 1990
REPORT 3.0

SITE:

CLIENT: HERTFORDSHIRE ARCHAEOLOGICAL TRUST

NAME: MOLE'S FARM (SITE 2)

NATURE: UNKNOWN

SURVEY CENTRAL OSGR: ? (Approx. central point)

REFS:

PERSONNEL: P.N. CHEETHAM

SURVEY DETAILS:

DATE : 17.10.90

TYPE: MAGNETOMETER

INSTRUMENT: GEOSCAN FM18 FLUXGATE GRADIOMETER

DATA LOGGING: AUTO LOGGED. DUMPED TO AMSTRAD PPC640 PORTABLE P.C.

AREA: 3200m $^{-2}$.

GRIDS: 8

GRID SIZE: 20x20m

SAMPLE INTERVAL: 1m

GRID SURVEY: THEODOLITE/TAPED BASELINE (not measured in) AND TAPED OFFSET

GRID ACCURACY: NO E.D.M. AVAILABLE

GROUND CONDITIONS: PLOUGHED SOWN AND ROLLED.

WEATHER CONDITIONS: MISTY AND DAMP

PROCESSING:

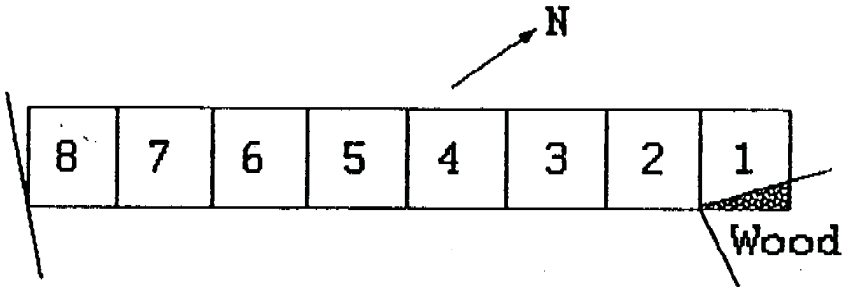
SITE: AMSTRAD PPC640 PORTABLE P.C. , CONTORS SOFTWARE

REPORT: ELONEX 286M, VGA GRAPHICS, CONTORS SOFTWARE

DATA ARCHIVE: RAW DATA ON 3 $^{1}/_{2}$" DISC, CONTORS FORMAT.

REPORT DATA: MOLE2M[grid ref.].DAT
DIRECTORY: MOLEMAG2
REPORT FILE NAME: MOLEMAG2.REP

GRID LOCATION PLAN:



FINDINGS AND INTERPRETATION:

(See attached laser print and interpretation sketch)

Unfortunately the mid section of the survey transect (grids 3 to 6) has been rendered unproductive by the presence of a large gas main (size 4?). However the two ends of the transect were unaffected by this and the observed anomalies include:-

ANOMALY	DESCRIPTION
A	Area affected by gas pipline.
B	This area displays a number of striations (cultivation?) possible linear features and spikes due to stray iron objects but no definate structural forms.
C	Possible short length of ditch represented by a positive linear anomaly running approx. north-south.
D	A large area of spikes alongside the woodland at the eastern end of the transect which co-incide with surface finds of modern material (pottery, ironwork) which may represent a recent rubbish dump site.

CONCLUSIONS:

Apart from C there i s little indication of archaeological features in this survey. It may be possible to extract some detail from the pipeline halo by using a high pass filter on the data but it is likely that the construction corridor and trench for this large pipeline would have seriously damaged any archaeology in this area.

P.N.Cheetham 23.10.90

10 Mole's Farm (site 2) 18/10/90 (mag).
Displayed level boundaries:
-1.3 -0.9 -0.4 0.0 0.4 0.9 1.3
-1.5 -1.1 -0.6 -0.2 0.2 0.6 1.1 1.5
cale is 1: 900.→

OVERLAY FOR MOLE'S FARM SITE 2

Fig 1. Laser print of Mole's Farm Site 2. Overlay provided.

WADESMILL A10 BY-PASS
REPORT 4.0

OCTOBER 1990

SITE:

CLIENT: HERTFORDSHIRE ARCHAEOLOGICAL TRUST

NAME: MOLE'S FARM (SITE 3)

NATURE: UNKNOWN

SURVEY CENTRAL OSGR: ? (Approx. central point)

REFS:

PERSONNEL: P.N. CHEETHAM

SURVEY DETAILS:

DATE : 17.10.90

TYPE: MAGNETOMETER

INSTRUMENT: GEOSCAN FM18 FLUXGATE GRADIOMETER

DATA LOGGING: AUTO LOGGED. DUMPED TO AMSTRAD PPC640 PORTABLE P.C.

AREA: 6200m^{-2}.

GRIDS: 16

GRID SIZE: 20x20m

SAMPLE INTERVAL: 1m

GRID SURVEY: THEODOLITE/TAPED BASELINE AND TAPED OFFSET

GRID ACCURACY: NO E.D.M. AVAILABLE

GROUND CONDITIONS: GROWING CROP.

WEATHER CONDITIONS: MISTY AND DAMP

PROCESSING:

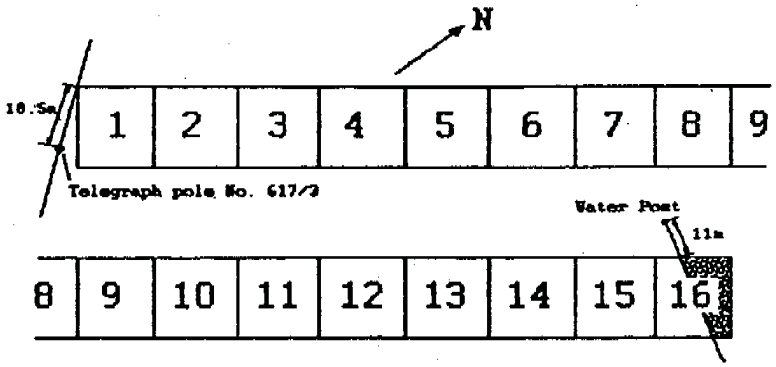
SITE: AMSTRAD PPC640 PORTABLE P.C. , CONTORS SOFTWARE

REPORT: ELONEX 286M, VGA GRAPHICS, CONTORS SOFTWARE

DATA ARCHIVE: RAW DATA ON $3^1/_2$" DISC. CONTORS FORMAT.

REPORT DATA: MOLE3M[grid ref.].DAT
DIRECTORY: MOLEMAG3
REPORT FILE NAME: MOLEMAG3.REP

GRID LOCATION PLAN:



FINDINGS AND INTERPRETATION:

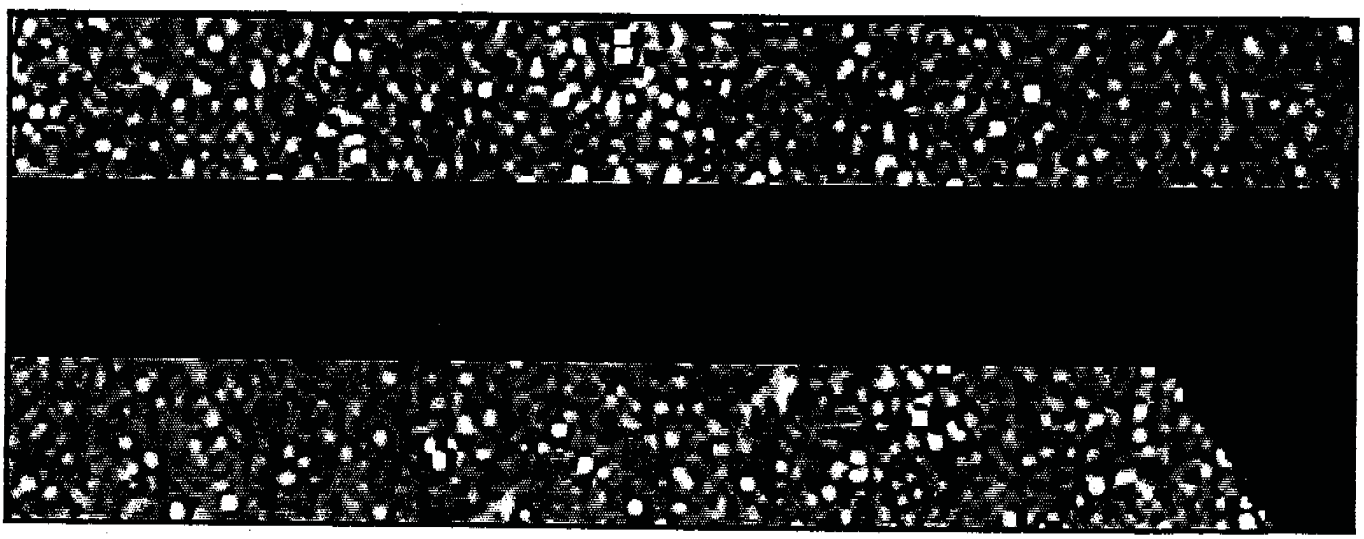
(See attached laser print)

This 360 metre transect (plotted in two sections) apparently yields only background noise and no discernible anomalies excepting some amorphous changes at the north-eastern end of the survey (grids 12 to 16) and an increase in the frequency of spikes in this area. The whole area displays crosswise striations which may be cultivation artefacts or aliasing (see report 2).

CONCLUSIONS:

Generally the survey can be concluded to be devoid of any detectable archaeological features. However, trial trenching in the area of grids 12 to 16 may be appropriate to confirm this negative assessment.

P.N.Cheetham 23.10.90



```
A10 Mole's Farm (site 3) 18-19/10/90 (mag).
    Displayed level boundaries:
            -1.0    -0.6    -0.2     0.2     0.7     1.1     1.5
        -1.2    -0.8    -0.4     0.0     0.5     0.9     1.3     1.7
cale is 1:  900.→
```

Fig 1. Laser print of Mole's Farm Site 3. 320m transect grids 1-8 and below grids 9-16. No overlay

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