



# Topographic Survey & Archaeological Evaluation

North Street Meadow  
Kingsland  
Herefordshire

SMR No: 43227  
NGR (SO 443 617)

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## 1. Non Technical Summary

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*The topographic survey carried out at North Street Meadow revealed the presence of linear earthworks and depressions, some of which appeared consistent with medieval ridge-and-furrow agriculture. However, the subsequent evaluation, which comprised 11 trenches, indicated that these features were probably caused by variations in the depth of subsoil and thus appeared likely to have been the result of landscaping during the early 20<sup>th</sup> century.*

*The evaluation further revealed a number of features, including the terminus of a ditch or a substantial pit containing pottery of probable 'high medieval' (13<sup>th</sup>-14<sup>th</sup> century) date. These features could be associated with a medieval house that occupied the site of present-day Croftmead, located immediately east of North Street Meadow, or with a dwelling or farmstead that may have stood somewhere within the field, although no evidence has yet been found to substantiate this.*

*It should also be noted that no evidence was found of an association between the features identified in North Street Meadow with cropmarks in the two large fields immediately to the north of the site, which have been previously identified from aerial photography as field enclosures and ring ditches either of prehistoric or Roman origin.*

*This may imply that this prehistoric and Roman activity did not extend any further to the south or that the landscaping of the property during the early 20<sup>th</sup> century obliterated any such features. A bank running along the northeast boundary of the site was found to comprise subsoil and is probably the result of modern landscaping.*



## 2. Introduction

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Border Archaeology was instructed by James Spreckley MRICS on behalf of Mrs M Nicholson, Croftmead, Kingsland, Herefordshire, to carry out a topographic survey and archaeological evaluation of land adjacent to Croftmead, namely North Street Meadow, in pursuance of a brief issued by Herefordshire Archaeology (Ref:05#3947B1).

The criteria of the topographic survey were discussed with and supplied to Julian Cotton for his approval in advance of the fieldwork being undertaken, this reflecting the relatively tight planning timeframe.

Copies of this report will be submitted to Mrs Nicholson, Julian Cotton (Herefordshire Archaeology) and the county Sites & Monuments Record.

### 2.1 Soils & Geology

The site lies within an area of typical argillic brown earths of the Rowton series (571A) (argillic soils typically have a clay enriched subsoil) (Soil Survey of England and Wales 1983). These comprise well-drained fine silty and fine loamy soils, locally over gravel, with some fine silty over clayey soils with slowly permeable subsoils and seasonal waterlogging and some slowly permeable seasonally waterlogged fine silty over clayey soils. The underlying geology is Old Red Sandstone of the Devonian period (BGS 2001) with overlying alluvial deposits (BGS 1977). No significant geological/pedological features are expected to be present within the survey area.

## 3. Historical & Archaeological Background

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The following information has been derived from the Desk-Based Assessment (DBA) carried out by Border Archaeology in May 2004. It is not intended to repeat the contents of that document here and further reference should be made to the DBA if required.

Aerial photography has revealed a number of cropmarks immediately to the N of the survey area that include two ring ditches likely to be Bronze Age in date.

North Street Meadow may at one time formed part of the large open common fields of Kingsland during the medieval period. Some time before 1816 it was enclosed and became part of the property of Upper House situated to the SE.

A clubhouse or 'Recreation Room' was constructed within the NW part of the site around 1920; the remains of this structure are currently visible.



Plate 1: View of site looking SW



Plate 2: View E showing Croftmead



Fig 1: General location map (1:50 000)



Fig. 2: Topographic detail (1:500)

## 4. Topographic Survey

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### 4.1 Summary

A topographic survey was carried out over approximately 1ha of land at North Street Meadow. A particular emphasis was put on modelling possible earthworks that may be of archaeological significance as a number of cropmarks indicating prehistoric and possible Romano-British features have been located on land to the N of the area. The survey has revealed several linear banks, a linear depression and depressions related to access to the site from the adjacent B4360. The nature of the linear anomalies and their orientation would suggest that they are related to former agricultural features or land division; this would indicate a likely date within the medieval to post-medieval periods.

### 4.2 Introduction

#### 4.2.1 Survey background

Archaeological Surveys was commissioned by Border Archaeology to undertake a topographic survey of North Street Meadow, this forming part of an assessment of the archaeological potential of the site prior to ground disturbance by intrusive archaeological trenching and possible housing construction. Of specific interest was the potential for the site to contain archaeologically significant earthworks (Border Archaeology, 2004).

#### 4.2.2 Survey objectives

The objective of the survey was to create a record of the topography of the site with a particular emphasis on surface variations that may relate to features of archaeological significance.

To achieve the objective of the survey, the site was to be recorded with as much detail as necessary to accurately portray the surface in a number of useful formats, including contours and coloured surface modelling. In addition, hachuring was used to emphasise surface variation with an anthropogenic origin where this was readily visible (see methodology below).

#### 4.2.3 Site description

The total area is approximately 1ha split between two areas of permanent pasture, a lawn, an area of mature trees and the remains of a brick-built structure relating to a former tennis club.

The SW boundary is a mixed hedgerow with a number of more mature stands that separates the site from the B4360. Relatively modern housing plots are located outside the area to the NW separated by conifers and dilapidated fencing. To the SE is a timber-framed building with surrounding lawns separated from the site by an iron-railing fence. Agricultural land lies to the N and NE separated from the site by a mixed hedgerow.





A smaller area of permanent pasture within the NW part of the site is only partially separated from a larger pasture area forming the bulk of the survey by a section of mature mixed hedgerow and a small number of mature ash trees and a horse chestnut. A section of lawn, also forming part of the development area, is part of gardens attached to the property to the SE and it is separated from the rest of the site by a large beech hedgerow that has overgrown an iron fence; the lawn is bounded by shrubs and trees to the N and E. The N part of the site contains brick building remains that have been overgrown by trees and bushes – of note is a large coniferous tree immediately to the E of this area.

Surface cover is mainly thick, somewhat tussocky grass over pasture areas with large patches of dead stems relating to wild herbs such as *Urtica dioica* (nettle) and *Cirsium* (thistle). Areas close to hedgerows have been invaded by clumps of *Rubus* (bramble) and immature trees/shrubs. Most of the mature trees within the survey area have thick lower branches and cover, presumably from a lack of grazing, which prevent the collection of survey data. Adjacent to the brick remains is a distinct and well-defined patch of *Pteridium aquilinum* (bracken) that is perhaps related soil alteration (courts?) by the former tennis club know to have existed there in the earlier 20<sup>th</sup> century.

## 4.3 Methodology

### 4.3.1 Approach

It should be noted that the main objective of the survey was to consider the potential for survival of earthwork features of archaeological significance. In this case, it is considered that this relates to the potential survival of features from all periods; however, due to difficult surveying conditions around the remains of the 20<sup>th</sup> century 'Recreation Room', this part of the site was excluded.

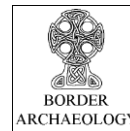
The following approach was adopted after assessing the site and considering the main objective:

- Concentration mainly on the larger area of pasture where low earthworks were clearly visible and surface modification was unlikely in recent times
- Combining current topographic features with surface modelling and contouring
- Hachuring the grosser features based on site observations

Generally, the survey will follow specification produced by the Royal Commission for the Historical Monuments of England (RCHME) – *Recording Archaeological Field Monuments, A Descriptive Specification* (RCHME, 1999).

### 4.3.2 Surveying details

Survey data was collected in three dimensions using a Topcon APL1 robotic total station and Husky data logger. Full specifications are included in Appendix 2 – the instrument was used in 'fine mode' with prism type 3. The prism detail pole was capped at its base so as to prevent intrusion into the soft soil, which can produce significant and unpredictable height variations.



Measurements were recorded as coordinates based on the Ordnance Survey National Grid with heights based on Ordnance Datum Newlyn (ODN); spot height information (see Appendix 3) was provided by the client.

Eastings and northings were provided in OSGB36 format by a differential Global Positioning System (dGPS) manufactured by CSI Wireless. The system is capable of sub-metre accuracies and was used to provide the coordinates for one station point only in the centre of the site - all other stations were derived from this point in order to minimise additional errors. A backsight marker was set out on the site boundary using the dGPS also and an angle calculated from the two points was used to set the instrument orientation. Although this system will have some error to the National Grid, this is likely to be less than 2m; point to point errors within the survey will be minimal and relate to the instrument capabilities and quality of resection positions.

Data was collected systematically across the larger pasture area using ranging rods as markers and pacing 1m data collection points between traverses separated by 1m. Where surface height was noted to vary rapidly additional data was collected closer than 1m spacing. The irregular nature of the surface cover due to grass tussocks, wild herb remains, molehills etc. precluded the use of accurately separated data collection points. A significant degree of manual 'filtering' was used to effectively avoid these variations and more effectively represent the ground surface.

Points were marked in order to allow resection for the establishment of two additional stations within the lawn area to the E of the site and the smaller area of pasture to the W.

#### 4.3.3 Data processing and presentation

Data points downloaded from the Husky data logger were imported into MapInfo with Vertical Mapper for analysis and display. Topographic detail was digitised as vectors and points within MapInfo based on point information codes collected in the field. Vertical Mapper was used to provide a fifth order polynomial interpolation of the data based on a triangular irregular network (TIN) formed from each data point. The interpolated surface is used to produce model surfaces and contours.

The fifth order polynomial interpolation used by Vertical Mapper is a slope-bending algorithm that produces a smoother more representative surface when compared to a simple linear solution. The polynomial is influenced by five properties relating to the triangular geometry between the collected data points and their values: (a) triangle centroid location, (b) triangle area, (c) triangle spect ratio, (d) angle versus slope of the triangle and (e) statistically derived slope of a triangle vertex.

Using a TIN results in an interpolated surface that honours all of the original data points collected in the field and produces a very small degree of 'overshoot' and 'undershoot' which can be advantageous when modelling features such as land surfaces.

The surface model is represented graphically using a grid cell size of 0.1m. Contours are produced by a process of 'threaded vectors' based on the model grid values and the user defined requirements.

The interpolated data is displayed as polyline contours at 5cm (**Fig. 3**) and 20cm (**Fig. 4**) with contour regions at 10cm (**Fig. 5**). A surface model is also shown with appropriate



colouring to enhance surface variation (**Fig. 6**). The surface model is shown as a scaled plan view for the purposes of this report but can be interrogated as a 3D surface within the digital environment.

Hachures were drawn in AutoCAD and based on a combination of field notes, digitised boundaries and contour information. However, only surface variation clearly visible within the surface area that is related to anthropogenic activity has been hachured. Additional 'earthworks' visible within the surface model and contour data have not been included.

#### 4.3.4 Archive

A digital archive of data has been prepared and includes an ASCII text file of all grid points referenced to OSGB36 National Grid and ODN; the file format is listed as easting, northing and height.

MapInfo tables have been archived in version 6 and include mapping and contour plots. In addition version 12 DXF files and AutoCAD 2000 DWG files have been archived for mapping and hachuring.

This report has been archived as Microsoft Word 2000 and also in PDF format. All plots have also been archived as PDFs.

### 4.4 Results

Immediately apparent from the surface model and contouring are a series of low linear banks within the larger area of pasture and extending into the lawn area, labelled A, B, C and D (**Fig. 6**). A linear depression also crosses the larger pasture area along the NW side, labelled E (**Fig. 6**). An irregularly shaped depression is also apparent close to the current gateway into the site at the S corner of the surveyed area, labelled F.

Hachuring generally correlates with the surface model and contouring. In particular, the low bank and shallow ditch crossing the NW side of the larger pasture area (labelled A and E) with a SW to NE orientation has been mapped as has a low bank along the NE boundary of the surveyed area (labelled D) and adjacent to the B4360 along the SW edge (labelled C). The hachure survey has also picked out the depression close to the site entrance at the S corner (labelled F) and a depression related to a former entranceway in the W corner (labelled G in Fig. 6).

The surface model indicates a very low bank, labelled B, crossing the larger pasture area with a similar orientation to bank A and separated from it by approximately 30m. It appears as though B partially extends into the lawn, although it is clear that the lawn has been levelled by cutting into bank D at the N boundary and raising the surface close to the E side. These alterations are clearly visible in the hachure survey.

Depression F is related to gradation of the field surface down to the current road level, a fall of about 1m. Likewise depression G is also related to road access.



## 4.5 Discussion

Most of the earthwork features located within the survey area are either perpendicular or parallel to the B4360 passing immediately adjacent to the site, outside the SW boundary, and to land plots to the NE and SW. With the layout of the village of Kingsland likely to have been established by c1300AD (Border Archaeology, 2004), these features could be consistent with medieval land division either for agricultural or settlement purposes.

Medieval strip fields or ridge-and-furrow field systems may leave earthwork traces dependant upon soil structure and subsequent more recent land use. Low banks C and D have the appearance of 'headlands' associated with such practices. Bank A and ditch feature E have dimensions of approximately 7m from centre to centre which is highly consistent with ridge-and-furrow and it is possible that bank B also represents some survival of such an agricultural system.

Depression F probably suggests the entrance to the site has been established for a long period, as the feature is typical of soil erosion caused by movement of livestock. In this case, the surface of the B4360 is approximately 1m below the field surface, probably suggesting it has been eroded over a very long period. Occasional but regular access to the site from the road has probably resulted in erosion and a lowering of the gradient. Depression G appears to have been deliberately cut down possibly to allow access to the former 'Recreation Room'.

## 4.6 Conclusion

Topographic survey and terrain modelling has clearly indicated the presence of linear earthworks and depressions within the survey area. From the available evidence it would seem that linear features are likely to be associated with medieval and later agricultural activities although other land division purposes should be considered. A depression close to the current entrance to the site is likely to represent erosion from access over a long period.



Fig. 3: ODN contours at 5cm separation (1:500)



Fig. 4: ODN contours at 20cm separation (1:500)



Fig. 5: ODN contour regions at 10cm separation (1:1000)



Fig. 6: Surface model (1:500)





Fig. 7: Hachure survey (1:500)

## 5. Evaluation

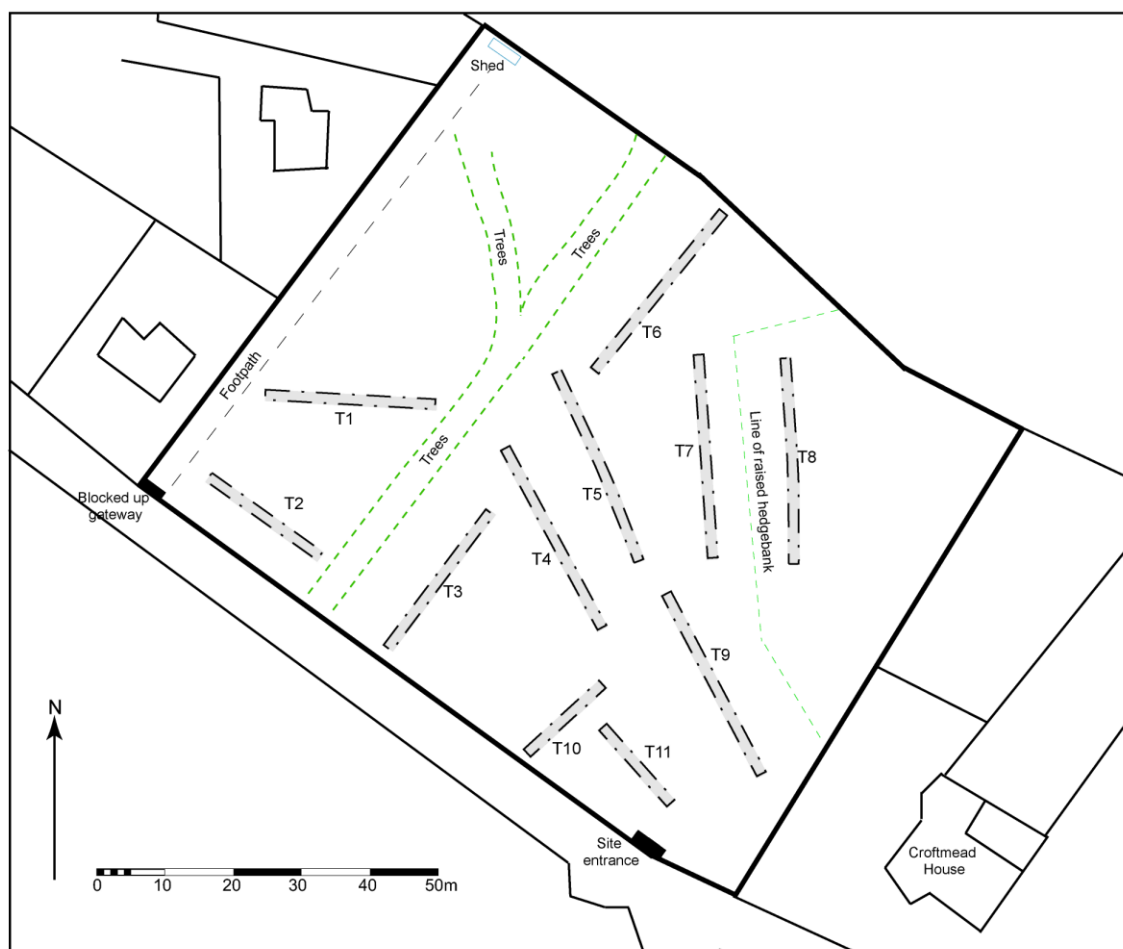


Fig. 8: Trench location plan

### 5.1 Methodology

Following completion of the topographic survey, 11 evaluation trenches, representing a total area of 420 square metres, were strategically located to investigate all potential archaeological features (Fig. 8).

The trenching was excavated by machine to the first archaeological horizon and hand cleaned.

A detailed stratigraphic record was made using a context number system and recording in plan and section was at a scale of 1:20 with individual features generally drawn at 1:10. A photographic record was compiled using 35mm colour print and 4.0M pixel digital formats.

A single temporary benchmark of 87.36m OD was established on the site, from which all surveying was undertaken. A known spot height of 86.26m OD was located immediately SW of the site on North Road (B4360).

Environmental samples were recovered from deposits promising some degree of palaeoenvironmental survival or further information regarding depositional processes.

All spoil was inspected for artefacts, which were recorded as unstratified.

## 5.2 Results



Plate 3: View NE showing dark band of (306) midway along Trench 3

Eleven trenches were opened, of which three - trenches 3, 7 and 9 - produced archaeological material.

**Trench 1** was aligned broadly E-W, with a slight inclination to WNW-ESE, and measured 25m x 1.5m. Three contexts were revealed, the uppermost of which was topsoil (101) and this was present throughout all 11 trenches, except Trench 8. This overlay a mid yellowish-brown silty clay subsoil (102); underlying this in a largely level layer was dark yellowish-brown gravelly layer (103).

**Trench 2** was aligned NW-SE, and measured 20m x 1.5m. The upper layer (201) was topsoil (as Trench 1). Below this was a light greyish-brown clayey silt subsoil (202) with a maximum thickness of 0.4m. Beneath the subsoil was a light yellowish-brown clayey silt with frequent mudstone and occasional gravel lenses (203). This was interpreted as alluvial deposition, although it possibly related to banked-up material relating to a tree line along the

roadside. At the NW end of the trench the ground level dropped noticeably, where a former footpath eroded through this banked material.

**Trench 3** was aligned roughly NE-SW and measured 25m x 1.5m. The uppermost of six contexts was topsoil (301) (as Trench 1), below which was a subsoil deposit (302) (as Trench 1). This overlay the fill (304) of a shallow truncated pit [305] (**Plate 4**), consisting of mid brownish-grey clayey silt with occasional charcoal flecking. No finds were recovered from this fill, which measured 0.07m thick. The pit [305] comprised a sub-rectangular feature measuring 0.86m x 0.87m, with a sharp break of slope at the top and a gradual break at the base. The sides were shallow and concave and the base concave. The pit cut into (303), which was identical to (202) in Trench 2 and probably derived from the same alluvial episode or banking feature. A large homogenous spread (306) (**Plate 3**) measuring 9.65m x >1.5m and up to 0.09m thick consisted of a mid brownish-grey clayey silt with occasional charcoal flecking, which appeared to fill a probable natural depression in material (303).



Plate 4: View NW showing pit [305] in Trench 3

**Trench 4** was aligned NNW-SSE and measured 30m x 1.5m. The trench contained three contexts, with topsoil (401) (as Trench 1) overlying subsoil material (402) (as Trench 1). The subsoil overlay natural (403) (as Trench 1).

**Trench 5** was aligned NNW-SSE and measured 30m x 1.5m. The trench was situated 5m N of Trench 4 and bowed slightly to the NE. Underlying topsoil (501) (as Trench 1) was subsoil (502) (as Trench 1). This overlay natural (503) (as Trench 1).

**Trench 6** was aligned NE-SW and measured 30m x 1.5m. This contained three contexts, the uppermost of which was (601) (as Trench 1). Below this was subsoil (602) (as Trench 1, although considerably thicker at the NE end of the trench, where a visible bank in the surface could be identified), which overlay natural (603) (as Trench 1).





Plate 5: Possible fire pit [705] in Trench 7, looking NE

**Trench 7** was aligned broadly N-S, with a very slight inclination to NNW-SSE. The trench measured 30m x 1.5m and revealed nine contexts. Topsoil (701) (as Trench 1) overlay subsoil (702) (as Trench 1), which covered the fills of two features, [705] and [707]. The first of these [705] was a sub-ovoid cut measuring 2.8m NE-SW x 1.6m NW-SE x 0.34m. The break of slope at the top was sharp and the sides were concave irregular, initially gradual, then shallow and subsequently steep. The break of slope at the base was gradual to a concave base. This profile seems to suggest an initial feature within the steep-sided bowl at the centre of the feature, which was later made into a wider, shallower pit; however, as no direct evidence survived, this hypothetical wider pit was not assigned a separate context number. The upper fill of [705] was a mid brownish-grey clayey silt (704). This was thickest at the SE edge of the pit, where the deposit dived down abruptly, as if filling a void. Fill (704) was interpreted as dishing material within the top of the feature and the reason for this increased depth was

not ascertained from the half-section. This material overlay a dark brownish-grey clayey silt (708) with moderate charcoal flecks and patches, occasional CBM flecking and occasional very degraded shell fragments, which proved impossible to collect. Within the fill were small patches of baked natural (703) and burnt sandstone gravels. (708) was interpreted as a raking deposit from a nearby burning feature. It is possible that it related to burning within [705], although it is also possible that it represented raked material deposited within [705] after the original feature fell into disuse. The primary fill of [705] was a mid orangey-red silty clay with frequent burnt gravel and occasional charcoal flecks (709). This was interpreted as the burnt lining of fire pit [705]. Neither (708) nor (709) produced animal bone or pottery nor any other datable finds from their half section. A single potsherd was recovered from (704), although, as this appeared to be a dishing deposit, the sherd does not assist in the dating of the feature.



Plate 6: Possible stake hole [707] in Trench 7



Feature [707] formed a small ovoid measuring 0.16m x 0.1m x 0.05m with a sharp break at the top, gradual concave sides and a gradual break to a concave base. The feature was evaluated in half-section but produced no finds. It is likely that [707] was a natural depression or root hole; however, its anthropogenic form suggests a possible stake hole, the broad, shallow dimensions indicating severe truncation. Within [707] was a light brownish-grey clayey silt (706) that appeared to be a natural accumulation.

**Trench 8** was aligned broadly N-S, with a very slight inclination to NNW-SSE and slight bowing to the ENE. The trench measured 30m x 1.5m and produced three contexts. Topsoil (801) was a dark greyish-brown humic sandy silt, measuring a maximum of 0.2m thick. Underlying this was a mid greyish-brown sandy silt subsoil (802) up to 0.4m thick at the SSE end, which did not appear to relate to any visible feature above ground. Below (802) was natural deposit (803) (as Trench 1).



Plates 7 & 8: Evaluations of natural banding 'features' in Trench 9, looking NE (above) and ENE (below)



**Trench 9** was aligned NNW-SSE and measured 30m x 1.5m. The trench contained six contexts, of which (901) and (902) were topsoil and subsoil identical to those revealed in Trench 1. Subsoil (902) overlay a mid greyish-brown humic, gritty, clayey silt dishing deposit (904) in the top of feature [905], which produced pottery, animal bone and an iron knife blade. Given the paucity of finds within the subsoil throughout the site, these artefacts and ecofacts are likely to have been disturbed from the deposit below. This deposit was main fill (908), which was a gravelly pale greenish-grey clayey silt filling the bulk of [905] and which produced pottery and animal bone. Feature [905] itself was likely to have been either a steep-sided pit or the terminus of a ditch. A slight curve at the SW end may indicate that the feature was a curvilinear, although this may have been misleading. Projecting 1.45m into the trench and measuring 1.3m wide and 1.05m deep, the feature's profile and dimensions indicate a substantial ditch



and seem unlikely to have an agricultural origin. The finds within both fills appeared domestic in nature, suggesting that the feature may have formed part of a settlement boundary. If, however, [905] was a pit, then its substantial form would indicate a significant waste deposit, and possibly a cesspit. The lack of cess material within the fills may be due to the full extent of the pit not being exposed within the trench or may be due to the endurance of such deposits in the local environment. [905] was cut into natural (903) which was the same as that in trench 1. Toward the NNW end of the trench were three linear features, all roughly perpendicular to the line of the trench. These were all sampled, but were interpreted as natural silt banding within the natural (903) rather than cut features.



Plate 9: Pit/ditch terminus [905] in Trench 9, looking ENE

**Trench 10** was aligned broadly NE-SW, with a slight inclination towards ENE-WSW. It measured 15m x 1.5m and produced three contexts. These were topsoil (1001), subsoil (1002) and natural (1003), which were identical to (101), (102) and (103), respectively.

**Trench 11** was aligned perpendicular to Trench 10, running roughly SE towards the site entrance. The trench measured 15m x 1.5m and produced three contexts. These were topsoil (1101), subsoil (1102) and natural (1103), which were all identical to (1001), (1002) and (1003), respectively. At the SE end of the trench, the ground level dropped away considerably where the field access had worn away the subsoil. This was due to erosion of subsoil (1102) rather than accumulation of material to the NW.

### 5.3 Interpretation

Of the 11 trenches excavated at North Street Meadow, only three produced evidence of archaeological activity. Trenches 1, 2, 4, 5, 6, 8, 10 and 11 were completely devoid of deposits other than topsoil, subsoil and natural. No evidence was found to confirm the interpretation of the linear features identified in the topographic survey as the remains of medieval land divisions, either for agricultural purposes (e.g. medieval strip fields or ridge-and-furrow systems) or settlement boundaries (Sabin & Donaldson, 2006).

Where the evaluation trenches passed over features identified during the survey, these appear to have been caused by variations in the depth of subsoil rather than the presence of further subterranean deposits. These topographical features, therefore, appear likely to have been the result of landscaping of the field enclosure, which appears to have been carried out during the early 20<sup>th</sup> century. The differing topsoil and subsoil in Trench 8 appeared to relate to the differing use of the site divisions: Trench 8 sat within a landscaped garden area, whilst the other trenches were within a field utilised as arable and pasture land. Possible alluvial or banking deposits noted in Trenches 2 and 3 may have concealed earlier features.

The spread in Trench 3 appeared to be residual material from some form of agricultural process, although the nature of this is unclear. It may be that this represented some form of ploughed-out furrow, although, if so, it would either have been very broad – should the furrow run E-W – or heavily truncated, probably by modern landscaping, if it ran N-S. The truncated pit feature in Trench 3 appeared to be filled with similar material to that in the spread and this may indicate that it was related to the process which formed the spread or it may be that it predated the spread and remained open at the time deposit (306) was laid down. The function of this pit is unclear from the half-section excavated, due to the lack of finds and the degree of truncation.

The small 'stake-hole' feature in Trench 7 was of shallow ovoid form and thus unlikely to be a stake-hole if it had not been truncated. The angle of the sides suggest that if the feature was truncated by any degree then it would have been a wider, bowl-shaped feature, more akin to a posthole. No finds were recovered from the half-section excavated and it is possible that the feature was caused naturally by rooting or animal activity.

The half-section of the pit in Trench 7 may well indicate two phases of activity; however, this could not be definitely ascertained from the evaluation and to avoid over complication of the feature the upper fill was not assigned a separate feature number. The feature appeared to comprise a sub-circular bowl-shaped pit, lined with baked natural and burnt gravel, in the centre, with a shallow, much broader lip around it. The secondary fill (708) contained a moderate degree of burnt residue and seemed likely to include raked material from a fire-pit. This fill followed the profile of the wider, shallower depression, possibly indicating that it represented later reuse of the feature as a raking pit.

However, it is also possible that the stepped profile of [705] was caused by intensive raking from the bowl of [705] across the friable natural material (703), thereby creating a shallow depression around the original feature. Then, as the feature fell into disuse, the residual material was allowed to accumulate in the feature as (708) before the final abandonment and deposition of (704).





The usage of [705] remains unclear, as no finds were recovered from either the primary or secondary fills and only a single sherd of pottery, possibly of medieval date, was recovered from the dishing fill (704). Its use as a fire-pit seems certain, due to the burning of the gravels and natural within the bowl, but this does not appear to have been a domestic fire as there was no evidence of animal bone or other domestic refuse in the half-section evaluated. Traces of heavily degraded, and possibly burnt, shell were noted but proved impossible to collect. A sample was taken of (708) in order to determine the precise nature of the feature.

Feature [905], interpreted as a large pit or ditch terminus in Trench 9, produced a small assemblage of domestic artefacts and ecofacts. The primary and secondary fills of this feature contained a small quantity of glazed pottery sherds of probable 'high medieval' (13<sup>th</sup>-14<sup>th</sup> century) date, the quantity and quality of which suggests low-status, domestic use rather than waste material associated with pottery manufacture.

In profile and plan, [905] appeared most likely to be a ditch terminus, although this could not be confirmed within the scope of Trench 9. The SW end of the feature had a slight curve, which may indicate a curvilinear form, although equally this may have been coincidental. The nature of the feature was substantial, indicating an impressive boundary marker and - unless it widened noticeably beyond the trench - with quite a defensive profile.

Assuming the feature was a linear, the alignment was neither parallel nor perpendicular to the road (the present alignment of which was established before c.1700) nor did it relate directly to the boundaries of the adjacent property called Croftmead (a late 16<sup>th</sup>-early 17<sup>th</sup> century house). This then suggests that [905] may have functioned as part of a substantial property boundary associated with a farmstead enclosure, which does not appear to have respected the boundaries of the adjacent property at Croftmead or the existing alignment of North Street. Based on a provisional assessment of the pottery recovered from the fills of this feature, it appears to be of 'high medieval' (13<sup>th</sup>-14<sup>th</sup> century) date.

If the feature was, instead, a discrete pit feature then its sharp profile is very unusual and may indicate expansion to the NE to create a more practical pit shape. The dimensions would still make it unlikely to be a simple domestic waste pit and it seems likely that it would have had an earlier function, such as a cesspit. No traces of cess were noted in the primary fill; however, if the feature did extend beyond Trench 9, then residual cess would be more likely to be found in the bowl of the feature. Assessment of an environmental sample of the primary fill material (908) may help to determine the precise function of [905].

Based on the interpretation of the specific finds and features revealed, a general interpretation of their dating and function will be attempted.

The features revealed during the evaluation probably related to both agricultural and domestic activity in the immediate locality of the site during the medieval period. It should be noted that these features were chiefly focused in the E half of the field; landscaping work carried out in the western half of the field during the 1920s (when a 'Recreation Room' and tennis courts were built there) has probably resulted in the severe truncation of archaeological features in this area.

If the spread in Trench 3 did indeed represent the remains of a ploughed-out furrow, then this suggests that at least part of the site was under ridge-and-furrow cultivation,



probably at some point during the medieval or early post-medieval period. The Bateman estate plan of Kingsland, dated 1709, shows the two fields immediately N of North Street Meadow as forming part of Little West Field, one of the medieval open common fields within the manor of Kingsland which was not enclosed until the early 19<sup>th</sup> century. North Street Meadow is not shown as forming part of Little West Field on the 1709 map and it is likely that it had already been enclosed as meadow or pasture by that date.

The fire/raking pit in Trench 7 [705] and the substantial ditch terminus/pit feature [905] encountered in Trench 9 indicate domestic occupation in the vicinity of the site, which, based on the evidence of the finds assemblage, is probably of medieval date. It is possible that they may have been associated with Croftmead, situated immediately to the E of the site.

Croftmead, formerly called Upper House, is an L-shaped timber-framed farmhouse identified by the RCHME as being of late 16<sup>th</sup>-early 17<sup>th</sup> century date (RCHME, 1934, 83). An examination of the external fabric of the building suggests that it may incorporate reused timber and masonry from an earlier structure, a feature often found in timber-framed structures not only in Kingsland but also in neighbouring villages, such as Pembridge (James, 2005). If this is the case, then it could be that Croftmead occupies the approximate site of an earlier, medieval structure. However, it is difficult to establish how [905], if interpreted as the terminus of a substantial ditched enclosure boundary, related to the boundaries of the existing property at Croftmead.

An alternative explanation is that there may have been a dwelling or farmstead occupying the site of North Street Meadow during the medieval period. This area of Kingsland is referred to as 'West Town' in documentary sources dating back to the 17<sup>th</sup> century and the 1831 parish map of Kingsland and the 1841 tithe map both show a series of long narrow strips fronting onto North Street immediately opposite North Street Meadow, which could be indicative of medieval burgage plots. These plots may have represented the remnants of a westward extension to the planned urban settlement at Kingsland, which the Mortimer family unsuccessfully attempted to establish during the late 13<sup>th</sup>-early 14<sup>th</sup> century (Reeves, 1980).

Whatever the case, it is likely that all traces of settlement activity within North Street Meadow were probably swept away by the 16<sup>th</sup>/17<sup>th</sup> centuries. No evidence for any structural features was identified by the topographic survey or the archaeological evaluation. It is likely that the study area has been enclosed pasture since the early post-medieval period, in view of the evidence for soil erosion at the entrance to the meadow, which appears to have been caused by the movement of livestock over a considerable period of time.

Moreover, there is no cartographic or documentary evidence for any structures within the field by the early 19<sup>th</sup> century. The parish map of 1831, which is the earliest to show North Street Meadow, shows that the present-day boundaries of the field had already been established by that date, excepting the bank of trees delineating the former site of the 'Recreation Room' and tennis courts (erected c.1920) in the W portion of the site and the beech hedgebank and fence in the NE corner of the field (which was added c.1960).

To conclude, therefore, the results of the archaeological evaluation at North Street Meadow have revealed evidence of medieval activity, focused predominantly in the E half of the site, associated either with agricultural cultivation and/or domestic occupation. A small pit feature and associated domestic debris spread of probable medieval date were found in the NE corner of the field. To the SW of this feature, a large pit interpreted



as a two-phase feature, comprising a fire pit and a later raking pit, was found in Trench 7. Meanwhile in Trench 9, situated immediately SE of Trench 7, a steep-sided feature was identified; this was interpreted either as the terminus of a ditch or a substantial pit, the fills of which contained a quantity of pottery of probable 'high medieval' (13<sup>th</sup>-14<sup>th</sup> century) date.

The relationship between these various features is difficult to establish at present but, taken as a whole, they appear to represent evidence of relatively low-status agricultural and domestic activity, probably of 'high medieval' (13<sup>th</sup>-14<sup>th</sup> century) date and somewhat restricted in chronological terms, based on a preliminary assessment of the pottery assemblage.

These features could be associated with a medieval house that occupied the site of present-day Croftmead, or with a dwelling or farmstead that may have stood somewhere within North Street Meadow itself, although no archaeological, cartographic or documentary evidence has yet been found to substantiate this. The evidence of the Kingsland parish map of 1831 indicates that any traces of occupation in North Street Meadow had long been swept away by the early 19<sup>th</sup> century and the present boundaries of the enclosed meadow had been established.

It should also be noted that the evaluation revealed no evidence of an association between the features identified in North Street Meadow with the numerous cropmarks in the two large fields immediately to the N of the site, which have been previously identified from aerial photography as field enclosures and ring ditches either of prehistoric or Roman origin. Indeed, the evidence of the pottery assemblage associated with the features identified during the evaluation of North Street Meadow indicates that they probably belong to a phase of medieval activity on the site.

This may imply that the prehistoric and Roman activity evidenced by the cropmarks to the N of the evaluated area did not extend any further to the S or that the landscaping of the property during the early 20<sup>th</sup> century could have resulted in the obliteration of these features. The bank running along the NE boundary of the property, concerning which there was some initial debate as to its antiquity, was made up solely of subsoil and is likely to be the result of modern landscaping.

## 6. Copyright

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## 8. Appendices

### 8.1 Appendix 1: Context Register

<b>TRENCH 1</b>	
(101)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (102)
<i>INTERPRETATION:</i>	<i>Topsoil</i>
(102)	Moderately compacted mid yellowish-brown clayey silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.4m. Underlies (101). Overlies (103).
<i>INTERPRETATION:</i>	<i>Subsoil</i>
(103)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small-medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (102)
<i>INTERPRETATION:</i>	<i>Natural</i>
<b>TRENCH 2</b>	
(201)	Loosely compacted dark greyish-brown humic clayey silt with occasional small and medium angular stones and charcoal flecks. 0.18-0.23m in thickness. Overlies (202)
<i>INTERPRETATION:</i>	<i>Topsoil</i>
(202)	Moderately compacted light greyish-brown clayey silt with occasional charcoal flecking and small subangular stones. 0.2-0.28m in thickness. Underlies (201). Overlies (203).
<i>INTERPRETATION:</i>	<i>Subsoil</i>
(203)	Moderately compacted light brown clayey silt with frequent mudstone and occasional gravel lenses. Underlies (202)
<i>INTERPRETATION:</i>	<i>Alluvial or banked-up material</i>
<b>TRENCH 3</b>	
(301)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (302)
<i>INTERPRETATION:</i>	<i>Topsoil</i>
(302)	Moderately compacted mid yellowish-brown clayey silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.3m. Underlies (301). Overlies (304) and (306).
<i>INTERPRETATION:</i>	<i>Subsoil</i>
(303)	Moderately compacted light brown clayey silt with frequent mudstone and occasional gravel lenses. Underlies (202)
<i>INTERPRETATION:</i>	<i>Alluvial or banked-up material</i>
(304)	Moderately compacted mid brownish grey clayey silt. Occasional charcoal flecking. Maximum thickness 0.07m. Underlies (302). Fills [305]
<i>INTERPRETATION:</i>	<i>Accumulated pit fill in [305]. Very similar material to (306) and possibly laid down during the same depositional process</i>
[305]	Sub-rectangular pit with rounded corners. 0.86m x 0.87m x 0.07m. Sharp break of slope at top and gradual break at base. Sides shallow and concave. Base concave. Filled by (304). Cuts (303)

<i>INTERPRETATION:</i>	<i>Small, truncated pit of uncertain function</i>
(306)	Large, homogenous spread 9.65m x >1.5m. Moderately compacted mid brownish-grey clayey silt. Occasional charcoal flecking. Maximum 0.09m thick. Underlies (302). Appears to fill a probable natural depression in material (303).
<i>INTERPRETATION:</i>	<i>Large spread, probably relating to agricultural deposition such as a furrow. If a furrow then it is either unusually wide (if running E-W) or truncated to both N and S (if running N-S)</i>
<b>TRENCH 4</b>	
(401)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (402)
<i>INTERPRETATION:</i>	<i>Topsoil</i>
(402)	Moderately compacted mid yellowish-brown clayey silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.4m. Underlies (401). Overlies (403).
<i>INTERPRETATION:</i>	<i>Subsoil</i>
(403)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small-medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (402)
<i>INTERPRETATION:</i>	<i>Natural</i>
<b>TRENCH 5</b>	
(501)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (502)
<i>INTERPRETATION:</i>	<i>Topsoil</i>
(502)	Moderately compacted mid yellowish-brown clayey silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.4m. Underlies (501). Overlies (503).
<i>INTERPRETATION:</i>	<i>Subsoil</i>
(503)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small-medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (502)
<i>INTERPRETATION:</i>	<i>Natural</i>
<b>TRENCH 6</b>	
(601)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (602)
<i>INTERPRETATION</i>	<i>Topsoil</i>
(602)	Moderately compacted mid yellowish-brown clayey silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.7m at NE end of trench. Underlies (601). Overlies (603).
<i>INTERPRETATION</i>	<i>Subsoil</i>
(603)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small-medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (602)
<i>INTERPRETATION</i>	<i>Natural</i>

<b>TRENCH 7</b>	
(701)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.3m. Overlies (702)
<i>INTERPRETATION</i>	<i>Topsoil</i>
(702)	Moderately compacted mid yellowish-brown clayey silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.18m. Underlies (701). Overlies (704), (706).
<i>INTERPRETATION</i>	<i>Subsoil</i>
(703)	Friable, loose light and mid orangey-yellow clayey silt with frequent gravel inclusions and moderate small to large rounded stones. Thickness and extent unknown. Cut by [705], [707]
<i>INTERPRETATION</i>	<i>Natural</i>
(704)	Moderately compacted mid brownish-grey clayey silt with occasional small rounded and angular stones and occasional charcoal flecks and burnt patches. Maximum thickness 0.17m at SE edge of pit [705]. Underlies (702). Overlies (708). Fills [705]
<i>INTERPRETATION</i>	<i>Upper fill of [705] possibly disturbed by ploughing</i>
[705]	Cut measuring 2.8m NE-SW x 1.6m NW-SE x 0.34m. Sub-ovoid in plan. Break of slope at top sharp, sides concave irregular, stepped, initially gradual, then shallow and subsequently steep, break of slope at base gradual, base concave. Underlies (709). Cuts (703). Filled by (704), (708), (709)
<i>INTERPRETATION</i>	<i>Material (709), if in-situ, may indicate use of central portion of feature as a fire pit. (708) appears to be raked waste material, which may indicate a disposal pit for burnt waste (probably non-domestic, due to lack of animal bone and pottery). Thus the feature is probably a fire pit that was subsequently used for waste disposal.</i>
(706)	Moderately compacted light brownish-grey clayey silt with occasional small rounded stones. Measures 0.05m thick. Underlies (702). Fills [707]
<i>INTERPRETATION</i>	<i>Natural accumulation in feature [707]</i>
[707]	Cut measuring 0.16m x 0.1m x 0.05m. Ovoid in plan. Break of slope at top sharp, sides gradual, concave, break of slope at base gradual, base concave. Cuts (703). Filled by (706).
<i>INTERPRETATION</i>	<i>Possible stake hole, although this seems unlikely. May be small root hole or similar.</i>
(708)	Moderately compacted dark brownish-grey clayey silt with moderate charcoal flecks and patches, moderate gravel inclusions and small angular stones, patches and lumps of burnt (703) and burnt gravels. Maximum 0.23m thick. Underlies (704). Overlies (709). Fills [705].
<i>INTERPRETATION</i>	<i>Fill included occasional fragments of highly degraded, possibly burnt, shell. May be raking of domestic fire but lack of bone or pot residue suggests non-domestic source.</i>
(709)	Loosely compacted mid orangey-red silty clay with frequent burnt gravel and occasional charcoal flecks. Maximum 0.08m thick. Underlies (708). Fills [705].
<i>INTERPRETATION</i>	<i>Burnt gravel, lining of fire pit or raked residue.</i>
<b>TRENCH 8</b>	
(801)	Loosely compacted dark greyish-brown humic sandy silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (802)
<i>INTERPRETATION</i>	<i>Topsoil</i>

(802)	Loosely compacted mid greyish-brown sandy silt with occasional small and medium angular stones and charcoal flecks and patches. Maximum thickness 0.5m, at the SSE end of the trench. Underlies (801). Overlies (803)
<i>INTERPRETATION</i>	<i>Subsoil</i>
(803)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small to medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (802)
<i>INTERPRETATION</i>	<i>Natural</i>
<b>TRENCH 9</b>	
(901)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (902)
<i>INTERPRETATION</i>	<i>Topsoil</i>
(902)	Moderately compacted mid greyish-brown clayey silt with occasional small angular stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.3m. Underlies (901). Overlies (904)
<i>INTERPRETATION</i>	<i>Subsoil</i>
(903)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small to medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Cut by [905]
<i>INTERPRETATION</i>	<i>Natural</i>
(904)	Moderately compacted mid greyish-brown humic, gritty clay silt. Frequent flecks and fragments of charcoal. Moderate patches of red and yellow clay lumps. 0.15m thick. Finds include pottery, animal bone and an Fe blade. Underlies (902). Overlies (908). Fills [905]
<i>INTERPRETATION</i>	<i>Dishing fill in surface of feature [905]</i>
[905]	Kidney-shaped feature, as revealed in trench, extending NE beyond scope of excavation. 1.3m NW-SE x 1.45m NE-SW x 1.05m. Break of slope at top sharp, sides steep and slightly concave, break of slope at base sharp, base slightly rounded. Slight curved shape in plan, suggesting a curved ditch. Filled by (904) and (908). Cuts (903)
<i>INTERPRETATION</i>	<i>Either part of a deep pit or terminus of a linear or curvilinear</i>
906	VOID
<i>INTERPRETATION</i>	<i>VOID</i>
907	VOID
<i>INTERPRETATION</i>	<i>VOID</i>
(908)	Moderately compacted pale greenish-grey clay silt. Frequent gravel. Occasional charcoal flecks. Several large, flattish stones, typically 0.18m x 0.12m x 0.03m, possibly structural. Moderate lumps of red and yellow clay. Maximum thickness 0.89m. Finds include pottery and animal bone. Underlies (904), Fills [905]
<i>INTERPRETATION</i>	<i>Primary fill of feature [905], comprising bulk of pit fill but yielding relatively few finds</i>
<b>TRENCH 10</b>	
(1001)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (1002)
<i>INTERPRETATION</i>	<i>Topsoil</i>



(1002)	Moderately compacted mid greyish-brown clayey silt with occasional small angular stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.25m. Underlies (1001). Overlies (1003)
<i>INTERPRETATION</i>	<i>Subsoil</i>
(1003)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small to medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (1002)
<i>INTERPRETATION</i>	<i>Natural</i>
<b>TRENCH 11</b>	
(1101)	Loosely compacted dark greyish-brown humic clayey silt with occasional angular small and large stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.2m. Overlies (1102)
<i>INTERPRETATION</i>	<i>Topsoil</i>
(1102)	Moderately compacted mid greyish-brown clayey silt with occasional small angular stones, charcoal flecks and patches and CBM flecks. Maximum thickness 0.3m. Underlies (1101). Overlies (1103)
<i>INTERPRETATION</i>	<i>Subsoil</i>
(1103)	Moderately compacted dark yellowish-brown clayey silt with frequent sandstone gravel and occasional small to medium angular sandstone fragments. Occasional light yellowish-brown silt banding. Occasional dark orangey-brown sandstone gravel patches. Underlies (1102)
<i>INTERPRETATION</i>	<i>Natural</i>

## 8.2 Appendix 2: Plans and sections

Fig 9: Trench 1 plan and section

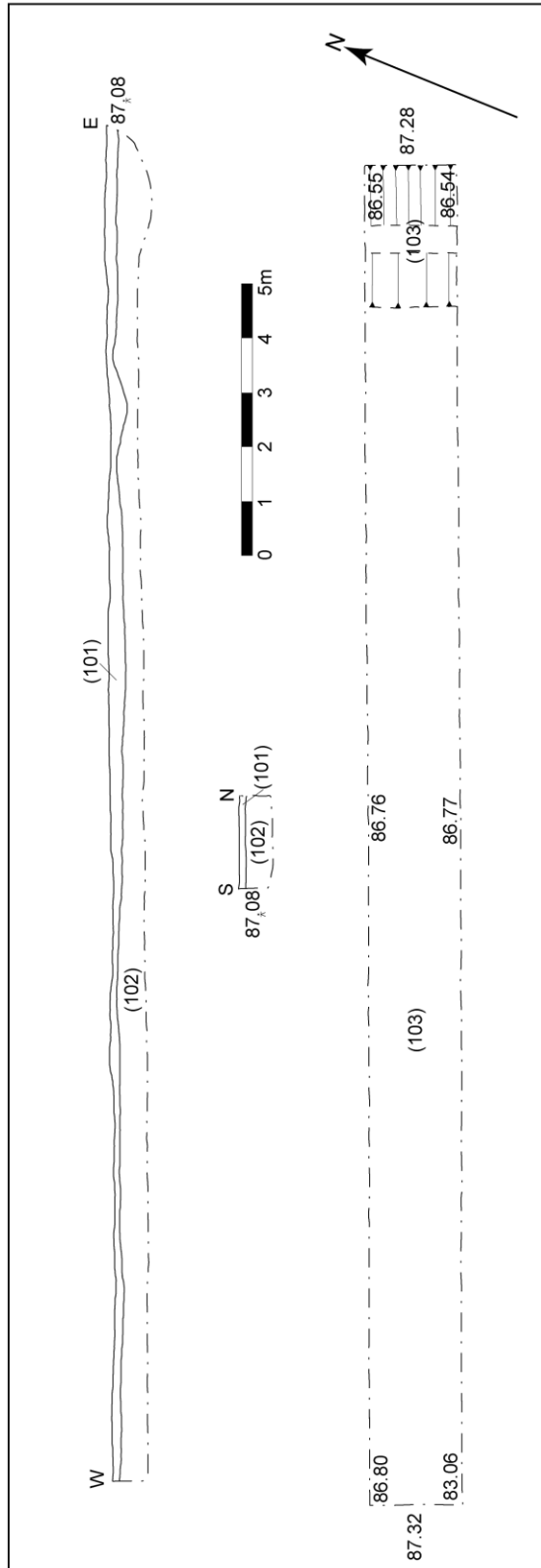


Fig 10: Trench 3 plan and section

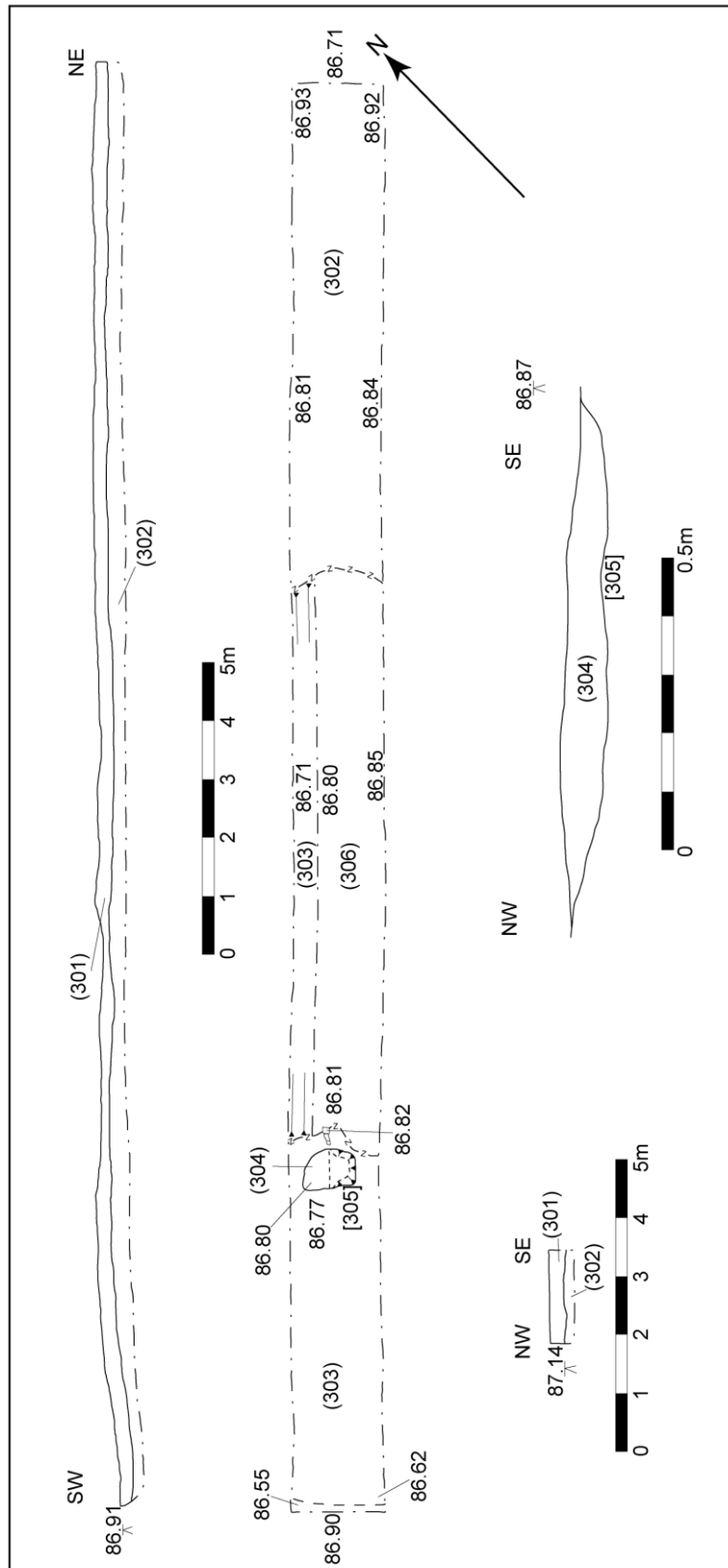


Fig. 11: Trench 7 plan and sections

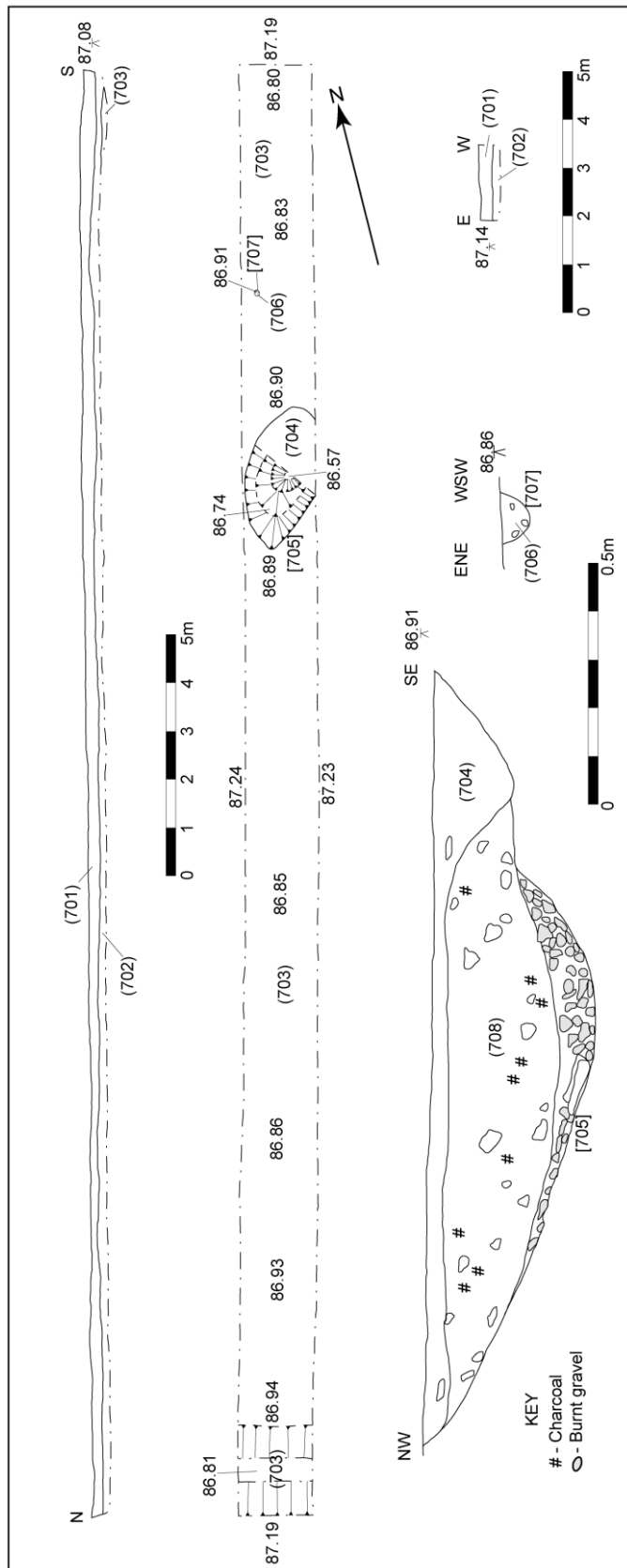
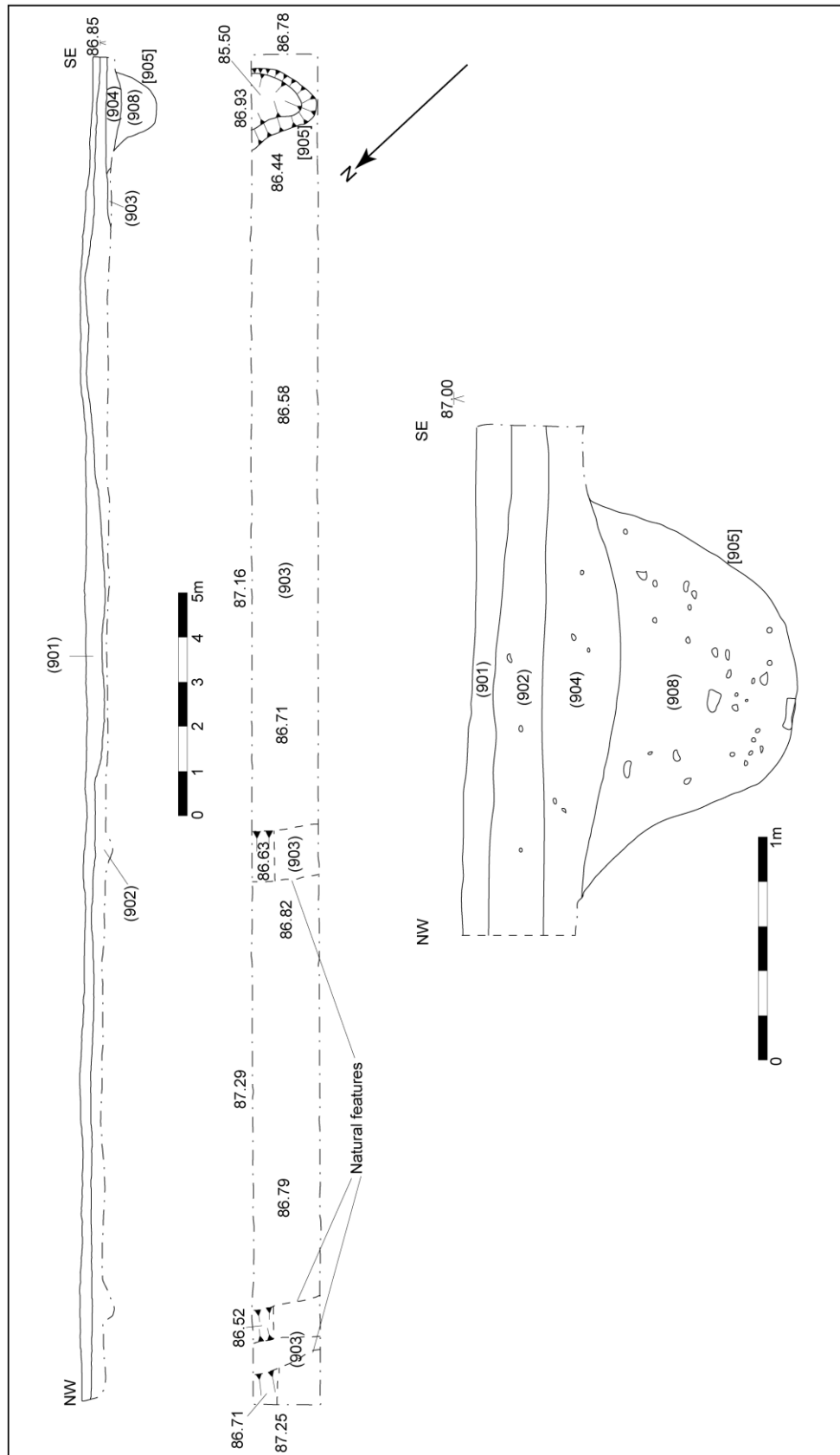


Fig. 12: Trench 9 plan and sections





### 8.3 Appendix 2: Topcon APL1 Specification

Survey settings are highlighted in red where appropriate

#### Telescope

Length	:	173mm
Objective lens	:	50mm
Magnification	:	30 ×
Image	:	Erect
Field of view	:	1° 30'
Resolving power	:	3.5"
Minimum focus	:	1.5m

#### Automatic Tracking

Automatic Tracking speed range *1	:	Angular speed	:	10°/sec
		Angular acceleration	:	10°/sec <sup>2</sup>

Automatic Tracking range \*2

Prism	Scanning range NARROW(20'×20')	Scanning range MIDDLE(40'×40')	Scanning range WIDE(60'×60')
Prism type 2, with 1 prism	20 ~ 1,000 m (66 ~3,300ft)	10 ~ 1,000 m (33~3,300ft)	7 ~ 1,000 m (23~3,300ft)
Prism type 2, with 5 prisms *3	75 ~ 1,300 m (250~4,300ft)	38 ~ 1,300 m (125~4,300ft)	25 ~ 1,300m (82~4,300ft)
Prism type 2, with 9 prisms *3	75 ~ 1,600 m (250~5,250ft)	38 ~ 1,600 m (125~5,250ft)	25 ~ 1,600m (82~5,250ft)
<b>Prism type 3 or 5, with 1 prism</b>	<b>12 ~ 700 m (40~2,300ft)</b>	<b>6 ~ 700m (20~2,300ft)</b>	<b>4 ~ 700m (13~2,300ft)</b>
Prism Unit Type A2/A3 (Prism type 3, 6 in all direction)	30 ~ 500 m (100~1650ft)	15 ~ 500m (50~1650ft)	10 ~ 500m (33~1650ft)

Collimation accuracy (Repeatability of collimation by Automatic Tracking) 4 :

Setting	Prism staying	Prism moving (Angular speed / acceleration)
<b>LOW speed</b>	<b>3"(1mgon)</b>	—————
MEDIUM speed	5"(1.5mgon)	2'(37mgon) ( 8°/sec, 4°/sec <sup>2</sup> )
HIGH speed	10"(3mgon)	2'(37mgon) ( 8°/sec, 8°/sec <sup>2</sup> )

Search pattern	:	High / Normal
Search range	:	Any value can be set, able to set (1° step)
Scanning range	:	NARROW / MIDDLE / WIDE
Safety standard for Laser Beam	:	Class 2(IEC Publication 825),ClassII(FDA/BRH 21 CFR 1040)

- \*1 In scanning range: MIDDLE, except around zenith.
- \*2 Condition : Normal(Visibility about 20km), except high humidity time.
- \*3 In case using 9 prism holder fixing type 2.
- \*4 The standard deviation in the condition of stable air and the scanning range is set MIDDLE.

#### Distance Measurement

Measurement range :

Prism	Normal condition *6
Prism type 2, with 1 prism	1,000 m (3,300ft)
Prism type 2, with 5 prisms	1,300 m (4,300ft)



Prism type 2, with 9 prisms	1,600 m (5,250ft)
<b>Prism type 3 or 5, with 1 prism</b>	<b>700 m (2,300ft)</b>
Prism Unit Type A2/A3 (Prism Type 3, 6 prisms in all direction)	500 m (1,650ft)

\*6 Normal condition : Slight haze with visibility about 20km (12.5 miles)  
moderate sunlight with light heat shimmer.

Measurement range : \*7

<b>FINE measurement</b>	:	<b>±(3mm+2ppm)m.s.e.</b>
COARSE measurement	:	±(10mm+2ppm)m.s.e.
Possible measurement max. prism moving speed (in direction of near to far)	:	20 km/h (12.5miles/h) (COARSE measurement)
Least count in measurement		
FINE measurement	:	0.2mm / 1mm (0.001ft /0.005ft)
COARSE measurement	:	1mm / 10mm (0.005ft / 0.02ft)
Measuring interval time		
<b>FINE measurement</b>		
<b>0.2mm mode</b>	:	<b>approx.4.5 seconds (providing 9~12 seconds for first time)</b>
<b>1mm mode</b>	:	<b>approx.2 seconds (providing 3~5 seconds for first time)</b>
COARSE measurement		
1mm mode	:	approx.0.5 second(providing 1~3 seconds for first time)
10mm mode	:	approx.0.2 second(providing 1~3 seconds for first time)
Atmospheric correction range	:	-99 ~ + 99ppm (1 ppm step)
Prism constant correction range	:	-99 ~ + 99mm (1 mm step)
*7 The prism is staying		

#### Angle Measurement

Method	:	Incremental reading
Detecting system	:	
Horizontal angle	:	2 sides
Vertical angle	:	2 sides
Minimum reading	:	1"/5" (0.2mgon/1mgon,0.01mil/0.1mil) reading
Accuracy	:	2"(Standard deviation based on DIN 18723 in 1"reading )
Diameter of circle	:	71mm

#### Tilt Correction (H/V angle)

System	:	Automatic correction in 2 axis (Correction On / OFF)
Method	:	Liquid type
Compensating Range	:	±3'
Correction unit	:	1"

#### Wireless Communication

Method	:	Depends on the market.
Communication range*8	:	Depends on the market.

\*8 The communication distance will be determined by the circumstances of instrument occupation and/or radio condition. Refer to the instruction manual in detail.

#### Others

Operating Temperature limit	:	-20 ~+50°C (Avoid not to be condensed drops) (-4 ~+122°F)
Storage Temperature limit	:	-20 ~+60°C (Avoid not to be condensed drops)



		(-4 ~+140°F)
Instrument height	:	242mm (9.53in) Base unit detachable (Height from the tribrach dish to the center of telescope)
Level sensitivity		
Circular level	:	10"/2mm
Plate level	:	30"/2 mm
Optical Plummet Telescope		
Magnification	:	3×
Focusing range	:	0.5m to infinity
Image	:	Erect
Field of view	:	4°(91mm $\phi$ /1.3m)
Communication system	:	
COM.1	:	Based on RS-232C (3 lines system)
COM.2	:	Based on RS-232C (AP-L1AN)
Dimension	:	
AP-L1A	:	405(H) ×216(W) ×180(L) mm(except antenna) *9 (15.9(H) ×8.5(W) ×7.1in(L))
Weight	:	
AP-L1A	:	9.4kg ( 20.7 lbs) (with Tribrach) *9
AP-L1AN	:	8.9kg (19.6 lbs) (with Tribrach)
Input Voltage	:	DC 12V
Power consumption *10	:	5 ~ 18W
Operating time (Using 90% charged Mark light battery) *9, *11		
Only for Distance and Angle measuring	:	approx.7 hours
Auto-Tracking of a still object	:	approx.5 hours
Auto-Tracking of a moving object	:	approx.4 hours
*9		Differs with the type of wireless modem.
*10		Differs with operation condition of AP-L1A.
*11		Differs with the conditions of operating, recharging mark light battery or temperature.

### 8.4 Appendix 3: Positional Details

Station A established at OS grid reference (OSGB36):

Easting - 344259.60  
 Northing - 261682.90

Height for Station A transferred from spot height in the centre of the B4360 at 86.26  
 ODN:

Station A – 87.43m AODN





## Summary

<b>Report Name &amp; Title</b>	North Street Meadow Kingsland Herefordshire Topographic Survey & Archaeological Evaluation	
<b>Contractor's Name and Address</b>	Border Archaeology, PO Box 36, Leominster, Herefordshire, HR6 OYQ	
<b>Site Name</b>	North Street Meadow Kingsland Herefordshire	
<b>Grid Reference</b>	NGR (SO 443 617) Planning Application No: 05#3947B1	
<b>SMR number/s of site</b>	43227	
<b>Date of Field Work</b>	February 2006	
<b>Date of Report</b>	March 2006	
<b>NUMBER AND TYPE OF FINDS</b>		
<b>Pottery</b>	Period: Medieval	Number of sherds: c.40
<b>Other</b>	Period: N/A	Quantity: N/A
<b>NUMBER AND TYPE OF SAMPLES COLLECTED</b>		
<b>Bulk samples taken</b>	No of features sampled: 2 No of buckets: 2	
<b>Summary of the report</b>	<p>Topographic survey and terrain modelling indicated the presence of linear earthworks and depressions within the survey area, which the subsequent evaluation indicated were probably caused by variations in the depth of subsoil and thus appeared likely to have been the result of landscaping during the early C20<sup>th</sup>.</p> <p>The evaluation further revealed a number of features, including the terminus of a ditch, or a substantial pit, containing pottery of probable C13<sup>th</sup>-C14<sup>th</sup> date. These features could be associated with a medieval house that occupied the site of present-day Croftmead, located immediately E of North Street Meadow, or with a dwelling or farmstead that may have stood somewhere within the field, although no evidence has yet been found to substantiate this.</p> <p>No evidence was found of an association between these features and cropmarks in the two large fields immediately to the N of the site, which have been previously identified from aerial photography as field enclosures and ring ditches either of prehistoric or Roman origin.</p>	



## Document Control

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<b>Job title</b>	North Street Meadow Kingsland Herefordshire – Topographic Survey & Archaeological Evaluation	<b>Job No</b>	BA0601MNNSMK
<b>Report written by</b>	Graham Cruse BA & Stephen Priestley MA		
<b>Report edited by</b>	George Children MA		
<b>Issue No</b>	<b>Status</b>	<b>Date</b>	<b>Approved for issue</b>
1	Interim	March 2006	Neil Shurety