

Geophysical survey at Stoke Mandeville deserted village site

GEOPHYSICAL SURVEY REPORT / March 2014

**Buckinghamshire
Archaeological
Society**



SURVEY:
Members of the
BAS Active
Archaeology
Group led by Gary
Marshall

REPORT:
Gary Marshall,
David Green and
Peter Marsden

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THANKS

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Report compiled by Gary Marshall, David Green and Peter Marsden following a geophysical survey by members of the Active Archaeology Group of the Buckinghamshire Archaeological Society. This is report number BAS/2014-01.

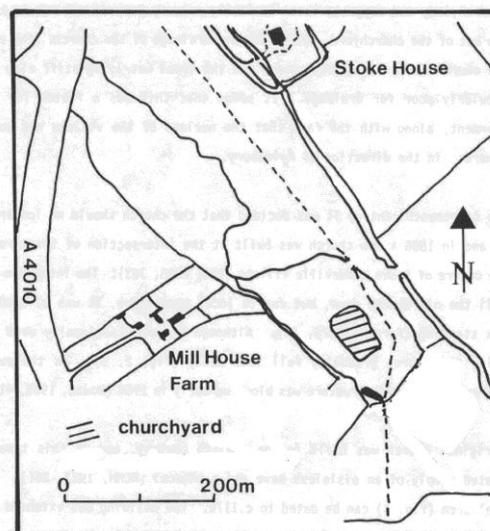
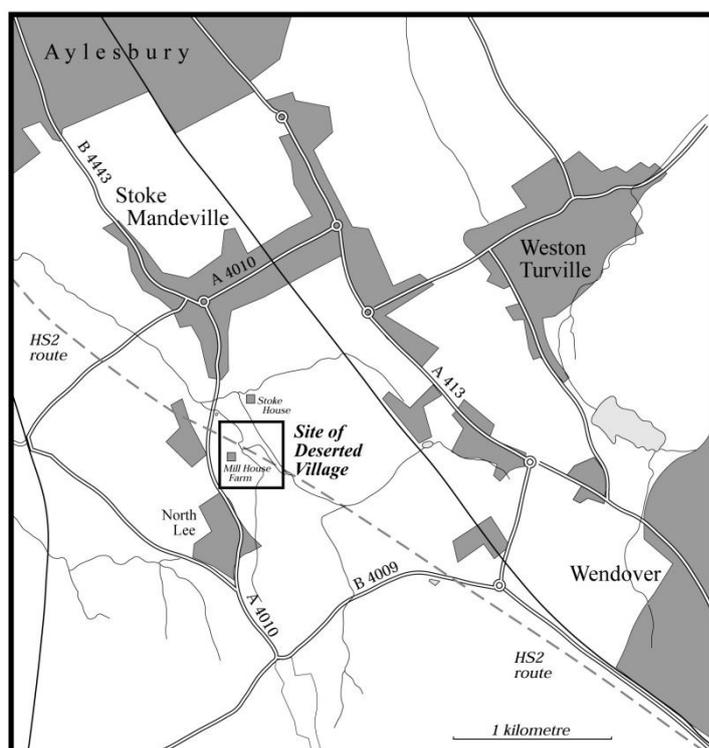


Figure 1 (left): The deserted village site in relation to Aylesbury, the present Stoke Mandeville and neighbouring villages.

Figure 2 (above): A plan of the site, showing the churchyard (hatched area) in an 'outer enclosure' defined by watercourses.

1 THE SITE

The ruins of the Church of St Mary the Virgin are in the fields to the south of the present village of Stoke Mandeville. They are on an east-west axis across the north end of the church's former burial ground, which still retains some standing gravestones. This churchyard is approximately 60 metres by 40 metres. It is bounded by an iron railing.

The former churchyard is surrounded by an 'outer enclosure' formed on three sides by watercourses and currently on the south by a hedge and fence. In the field beyond, about 50 metres further south, the current Ordnance Survey map¹ shows a ditch and bank which may have been another watercourse, but both ditch and bank have been ploughed out and no surface features remain.

The present outer enclosure is divided into three small paddocks by post, rail and wire fences. These are used as animal pasture. Beyond these are open fields. The site is in a shallow valley bounded to the north-east and south-west. Steep banks rise by between three and five metres beyond the watercourses to higher surrounding fields. The nearest group of buildings is Mill House Farm, approximately 250 metres to the west of the church ruins and on higher ground.

The site is approximately four miles south of Aylesbury, in the county of Buckinghamshire. The Ordnance Survey national grid reference for what remains of the chancel arch of the ruined old Church of St Mary the Virgin at Stoke Mandeville is SP 83829 09436.

2 THE KNOWN HISTORY OF THE SITE

The village known today as Stoke Mandeville appears in Domesday Book simply as 'Stoke'. It acquired the 'Mandeville' in the 13th century. The Domesday survey of 1086 recorded a village of 24 families, three slaves, open fields enough to keep 21 ploughs busy, and a mill valued at 10 shillings.²

Before the Norman Conquest of 1066 the manor of Stoke had been held by the Anglo-Saxon Bishop Wulfwig of Dorchester on Thames. The Domesday entry for Stoke is unusual because it records the payment to the bishop of a levy of corn by all the Freemen of the eight Hundreds of Aylesbury. This raises the question of whether the bishop's manor there may have been the collection point for this levy, giving the mill there a greater significance than its 10s valuation might imply.³

A report for the Society for the Preservation of Ancient Buildings in 1911, when the church was disused but not yet ruined, concluded that its chancel arch 'must date from the early Norman time'. It had a 15th-century font and 17th-century tower.⁴

Over the centuries the focus of the village shifted away to higher ground to the north, a new church being consecrated there in 1866. Apart from the church ruins, the churchyard boundary and the watercourses – most likely leats to serve the mill – no signs of village buildings remain above ground.

3 THE AIM OF THE SURVEYS

These geophysical surveys were carried out on three days in October and November 2013. Their aim was to discover any signs within the 'outer enclosure' of former village buildings, roadways or other features. The surveys were part of work being carried out by members of the Buckinghamshire Archaeological Society to establish the significance and extent of the deserted medieval village.

The underlying reason for this work is the proposal by the UK Government to build a

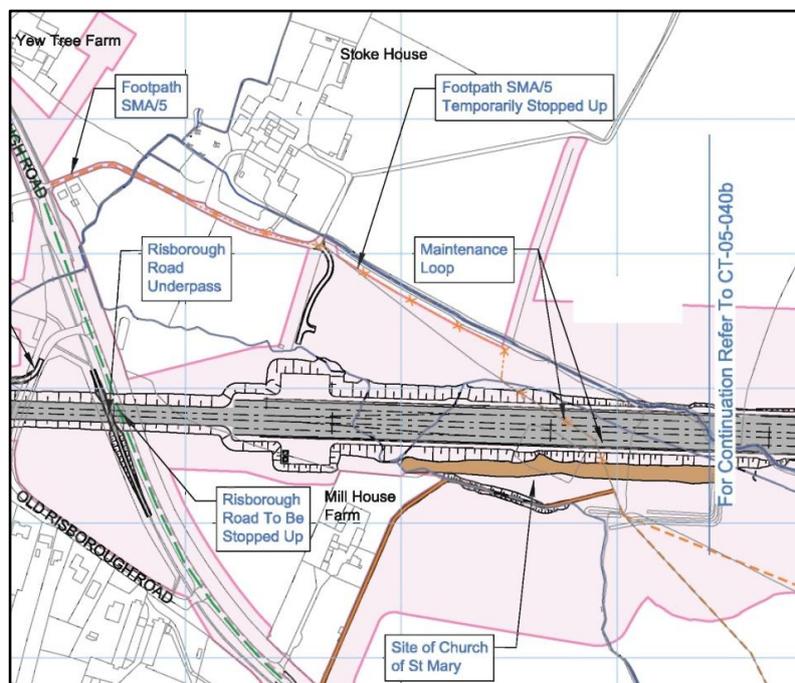


Figure 3: A section from the HS2 engineering plan of November 2013 showing how four parallel rail lines will pass directly through the deserted village site. The area surveyed is in the centre of the plan, completely covered by the line.

new high-speed rail line, known as 'HS2', between London and Birmingham. If built, the line would cross Buckinghamshire from north to south. Where it passes close to the present Stoke Mandeville, its construction would destroy what remains of the old church and its churchyard, along with any remaining archaeology in the surrounding fields.⁵

(The geophysical surveys described here coincided with others carried for HS2 Limited. A summary of their results is given below in an Appendix to this report.)



Figure 4: The resistance results of Survey 1 (bottom) and Survey 2 (top) plotted on to an aerial view of the Stoke Mandeville deserted village site. The ruined church and its churchyard are under the clump of trees (centre) with the 'outer enclosure' delineated by watercourses (left and right, and curving across the top) and squared off by the fence to the south.



Figure 5: The resistance results of Survey 3 plotted on to the same aerial view of the Stoke Mandeville deserted village site as shown in Figure 4.

4 THE SURVEYS

Three geophysical surveys were undertaken by members of Buckinghamshire Archaeological Society using a Geoscan RM15 resistance meter. The surveys were carried out within a series of 20-metre square grids set out around the north, east and south sides of the churchyard.

Survey intervals were of one metre, with readings taken in zig-zag mode. Survey results were processed in Geoplot 3. Ground conditions were wet following a period of intermittent rain. The surveys were completed on 5 October, 26 October and 10 November 2013.

5 PLOTS AND INTERPRETATIONS

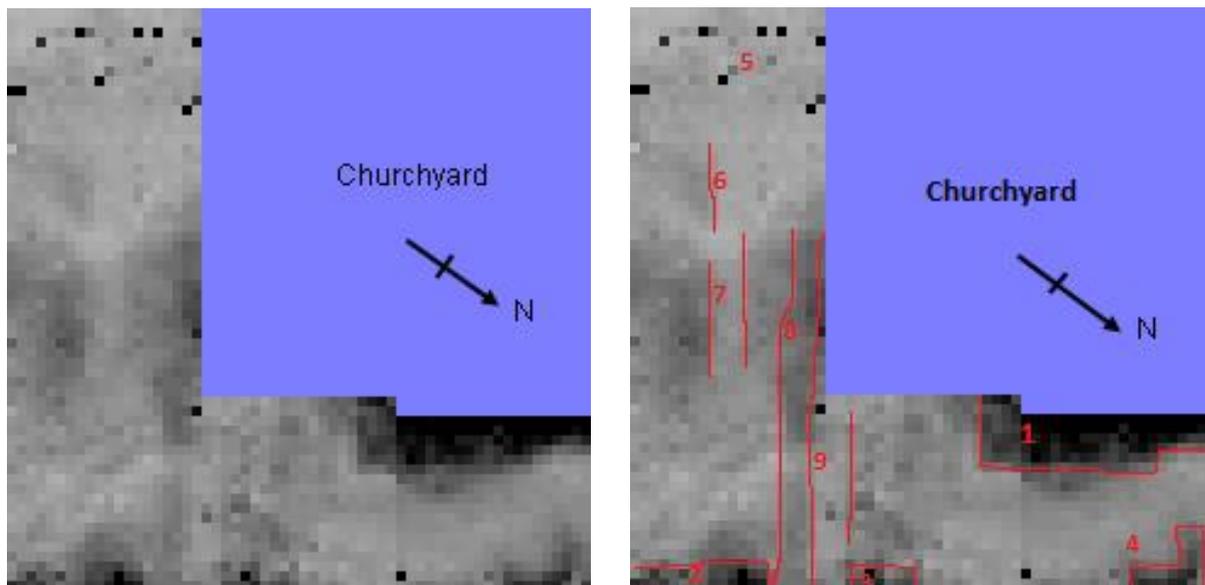
The First Survey (5 October 2013) was of five grid squares which formed an L-shape around the outside of the south-east corner of the churchyard.

The Second Survey (26 October 2013) covered seven grid squares in the paddock on the north side of the churchyard.

The Third Survey (10 November 2013) linked the two areas previously covered and overlapped both. This completed the survey around the south, east and northern sides of the churchyard. This Survey 3 was also undertaken to provide further evidence of the high-resistance feature that had been found on the outside south-east corner of the churchyard during Survey 1. As Survey 3 did not follow the grid locations established for Surveys 1 and 2, it has been fitted to a second copy of the aerial photograph.

The survey plots are presented on the following pages in two versions, first without interpretation and then with interpretation markers added.

5.1 The First Survey (5 October 2013)



Figures 6 and 7: Results of the first survey, in the southern end of the 'outer enclosure' The features numbered in the right-hand plot are interpreted in the text below.

Feature 1 corresponds to a prominent six-metre wide strip of high resistance which follows the perimeter of the churchyard. It is sharply defined and may correspond with an in-filled ditch or moat around the churchyard. Alternatively it may coincide with a sharp change in the geology, suggesting a prominence on which the church was built.

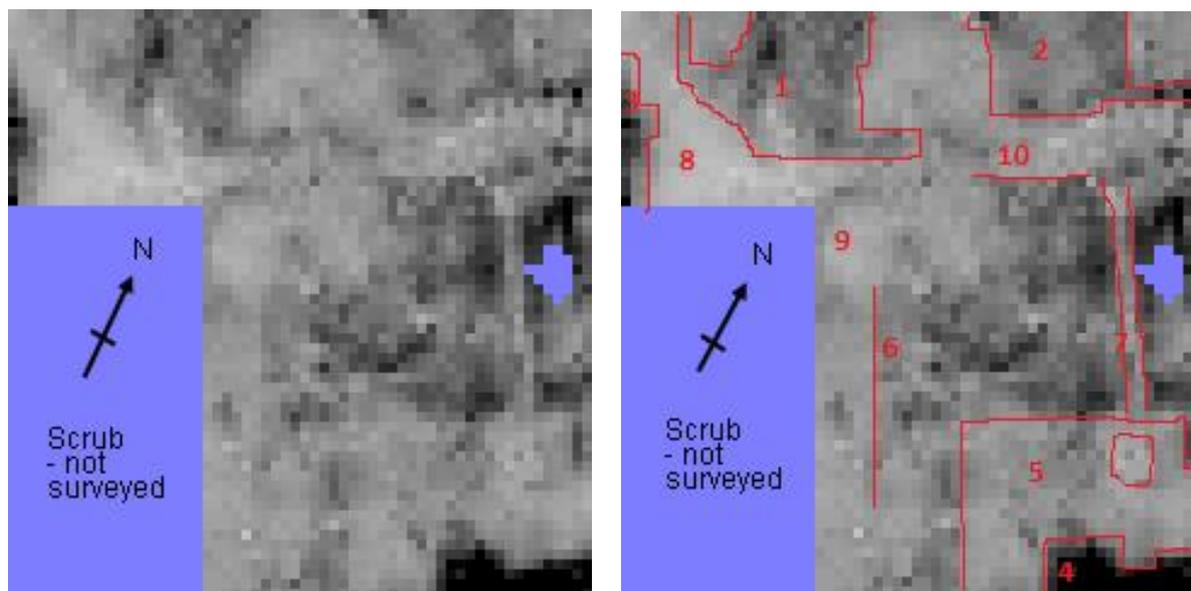
Features 2, 3 and 4 relate to small zones of high resistance that extend off the eastern margin of the plot and coincide with the modern fence running alongside the stream. Feature 4 is L-shaped. These resistance zones may indicate foundation walls of former buildings.

Feature 5: This series of high-resistance single readings should be ignored; they represent survey errors.

Features 6 and 7: These straight edges aligned north-east to south-west may be caused by underlying geology, or they may indicate a narrow zone of cultivation which has cut down into the underlying geology.

Features 8 and 9: This is a slight linear depression which extends along the outside of the southern edge of the churchyard. It is flanked on its northern edge by a narrow linear zone of slightly lower resistance (feature 9), though unlike the linear depression this cannot be seen on the ground. It could define an old trackway or a boundary bank and ditch.

5.2 The Second Survey (26 October 2013)



Figures 8 and 9: Results from the second survey, the north-west corner of the 'outer enclosure'.

Features 1, 2 and 3: These three areas of relatively high resistance with regular outlines are located on a ridge of slightly higher ground in the north-west corner of the paddock. It is possible that their sharp edges have been caused by past cultivation reaching down to a geological level. However it is also possible that these may be man-made features: considering their proximity to the church these could equate to house platforms.

Feature 4: This is an area at the north-west corner of the churchyard immediately outside its surrounding iron railing. This is a low-lying area of the paddock and the high resistivity equates with a very slight linear depression that follows the outlines of the churchyard and may have been part of a boundary ditch. The high resistance may relate to discarded rubble from the church, perhaps used to fill in the ditch, and it was noted during the survey that this feature corresponds with a patch of nettles suggesting disturbed or enriched ground.

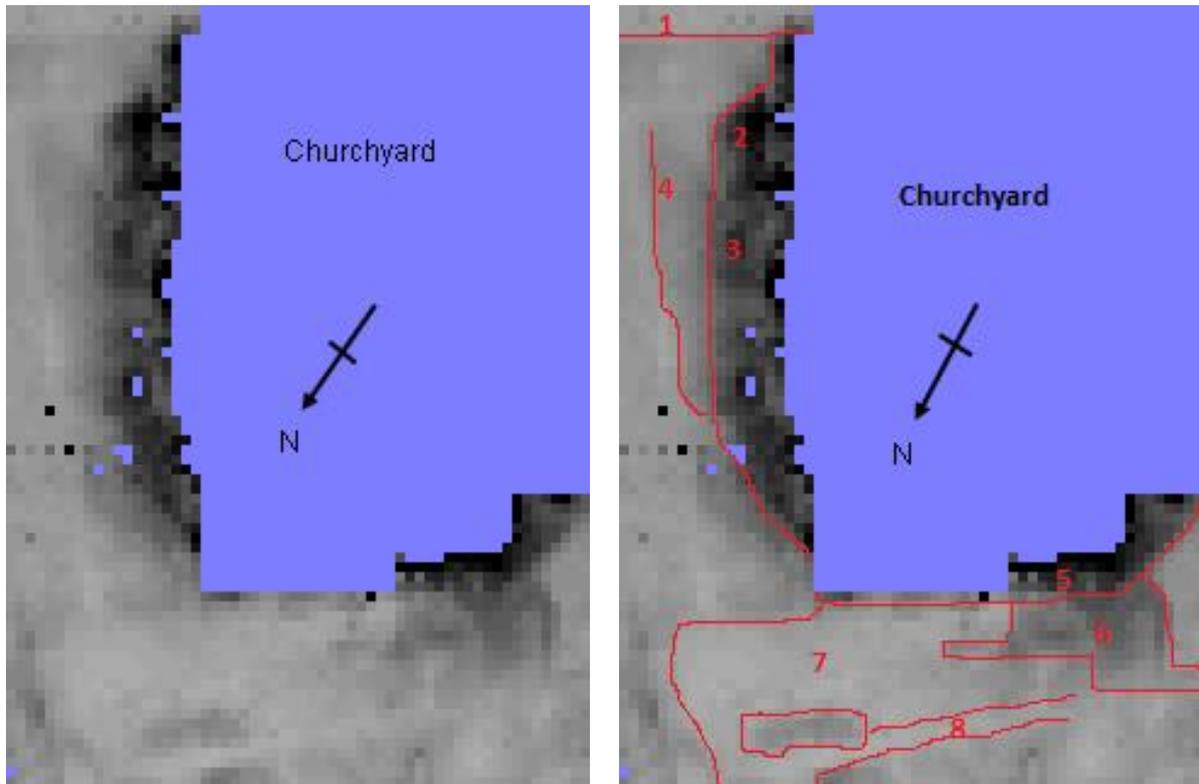
Feature 5: This L-shaped zone of slightly lower resistance measures approximately 25 metres east-west and 20 metres north-south, and appears to extend beyond the east and south margins of the plot. Its regular edges suggest that it is a cut feature which has reached through the underlying geology. The most likely possibility is a large pond on the north-west outside corner of the churchyard.

Feature 6: This is a north-south aligned straight edge to the area of higher resistance in the central area of the plot. It may result from past cultivation along the paddock's west edge.

Feature 7: This narrow two-metre wide linear strip of lower resistance links features 5 and 10. It probably corresponds with a service trench, perhaps a drainage pipe. Its southern end leads to a small circular zone of low resistance – marked on the plot but not numbered.

Features 8, 9 and 10: These correspond with zones of low resistance. Feature 9 has a regular outline, measuring about 7 metres east-west by 8 metres north-south and may represent a small pond or cut feature. Feature 10 appears to correspond with a large rectangular pond shown on the second-edition Ordnance Survey 25-inch map surveyed in 1897.

5.3 The Third Survey (10 November 2013)



Figures 10 and 11: Results of the third survey, along the east and north sides of the churchyard.

Feature 1: This appears as Feature 9 on Survey 1, and is interpreted there.

Feature 2: This is a pronounced L-shaped feature which may indicate the foundations of a former building. It lies within, but is more pronounced than the 10-metre-wide bank of high resistance (feature 3) running around the outer edge of the churchyard.

Feature 3: This prominent band of high resistance, roughly 10 metres wide, follows the eastern boundary railings around the churchyard. It is sharply defined along its eastern edge, and likewise at the point where it forms a westerly return to continue along the northern edge and north-west corner of the churchyard (where it is marked as Feature 5). As this band of high resistance follows the outlines of the churchyard it seems reasonable to assume that the two are related: the sharp outlines may define an earlier larger outline of the churchyard.

A very shallow ditch runs immediately outside the churchyard railing. This may indicate a re-cut boundary for the churchyard, postdating features 2 and 3.

Feature 4: This defines a straight edge along the eastern side of the plot. It may be a drainage ditch.

Feature 5: This is similar to Feature 3, and may indicate an earlier, larger outline of the churchyard.

Feature 6: This broad area of moderately high resistance, with a narrow arm extending off to the east, may indicate another house platform. It is similar in character to Features 1-3 on Survey 2,

Feature 7: This is a broad, sharply defined zone of low resistance with clear edges to the east and north. It may define a large pond, and probably corresponds with an L-shaped area of wet ground shown on the Ordnance Survey second-edition 25-inch map surveyed in 1897. It is flanked on its north edge by feature 8, a narrow linear band of low resistance perhaps corresponding to a drainage ditch.

6 CONCLUSIONS

The resistivity surveys described in this report have identified several areas of archaeological potential surrounding the former church site. In our view these results strongly support the suggestion that archaeological remains from the medieval village of Stoke Mandeville are to be found in the fields surrounding the ruined church and its churchyard.

6.1 The original churchyard boundary?

Perhaps the most significant feature is what appears to be an oval-shaped zone of high resistance, between six and ten metres wide, which extends around the east and north sides of the churchyard, and appears to continue around its west side. This corresponds with a very shallow and barely discernible ditch, which is perhaps surprising as one would normally expect low rather than high resistance readings to be associated with a silted-up ditch.

This feature may be of some significance if it defines the original boundary of the churchyard, particularly if the ditch retains well stratified deposits and artefact material defining and dating the formation of the church boundary.

6.2 Possible signs of former buildings

The resistivity surveys also give hints of the outlines of former buildings, suggested by narrow lines of slightly higher resistance to the north and east of the churchyard. Those to the north appear to coincide with a ridge of higher ground. They remain to be tested by excavation but if they survive as building foundations this would provide significant evidence of a village settlement associated with the church and might resolve the question of why the church now stands in isolation.

6.3 Former ponds

The surveys also provide tantalising glimpses of low-resistance features immediately north of the churchyard. Evidence from map sources suggests ponds in this area with regular outlines. The purpose of these ponds remains uncertain, though they could have started out as decoy ponds for attracting ducks and wildfowl. Alternatively they may have originated as stew ponds for rearing fish, in which case they would have needed a source of running water which would probably have been provided off one of the original watercourses.

The early origins of these ponds should be tested by excavation. They could retain significant environmental evidence if beds of silt and peat remain at depth.

6.4 A trackway or boundary bank

Mention should also be made of the shallow linear hollow identified in survey 1 (features 8 and 9). It appears to respect the southern edge of the churchyard and must therefore have developed after the outlines of the church were established. It could be an old trackway or boundary feature and its date and function need to be established by excavation.

7 Further investigations

The results set out above point to several areas where further surveys are likely to yield positive results, with the possible identification of further former buildings or features of the medieval village.

7.1 Earthwork surveys

7.1.1 The area around the Churchyard

A detailed earthwork survey needs to be undertaken to map and define some of the less discernible features identified here: the boundary ditch around the churchyard, the linear hollow to the south and the embankment to the south-west which appears to be a remnant of the enclosure shown on the Ordnance Survey maps.

7.1.2 The possible site of the mill

A second earthwork survey is needed to map the water features not addressed by this present survey: the complex of natural streams and man-made leats which served the mill identified in Domesday Book and its successors over the following 900 years.

7.2 Resistivity surveys

7.2.1 Completing the area around the Churchyard

This survey has highlighted the potential of the site. However a more complete survey around all four sides of the churchyard is needed, extending into the churchyard itself.

7.2.2 The former bank and ditch to the south

The current Ordnance Survey map of the area⁵ records the existence of a ditch-and-bank feature in the large field to the south of the enclosed area around the churchyard. This may have been a watercourse, mill leat or even part of a former moat. Evidence on the ground, however, shows that this feature has in fact been 'ploughed out'.

Despite this, the former course of this ditch is likely to be traceable below the present ground level. A further resistivity survey may therefore identify this.

7.3 Site evaluation before HS2 construction

The site of the former St Mary's Church, its churchyard and the surrounding enclosures with the vestiges of the original village of Stoke needs to be properly evaluated well before construction of HS2 begins, so that this can inform a strategy of detailed investigation and rescue archaeology which would be applied before the start of construction.

APPENDIX:
The survey carried out by HS2 Limited

It is worth adding a note about the geophysical surveys carried out for the HS2 Environmental Statement during 2013 because these both contrast and complement our own survey results.

Two surveys were carried out in May 2013 by Cotswold Archaeology for the HS2 Environmental Statement, which was published by HS2 Limited in November 2013.⁶ Both were magnetometer surveys, in contrast to our own resistance survey. And the HS2 surveys covered a larger area, providing additional results.

The first survey for HS2 included not only the immediate enclosure around the church site but also two fields along the shallow valley to the north-west (see Figure 12). The second survey was of three fields on higher ground to the north-east (see figure 13).

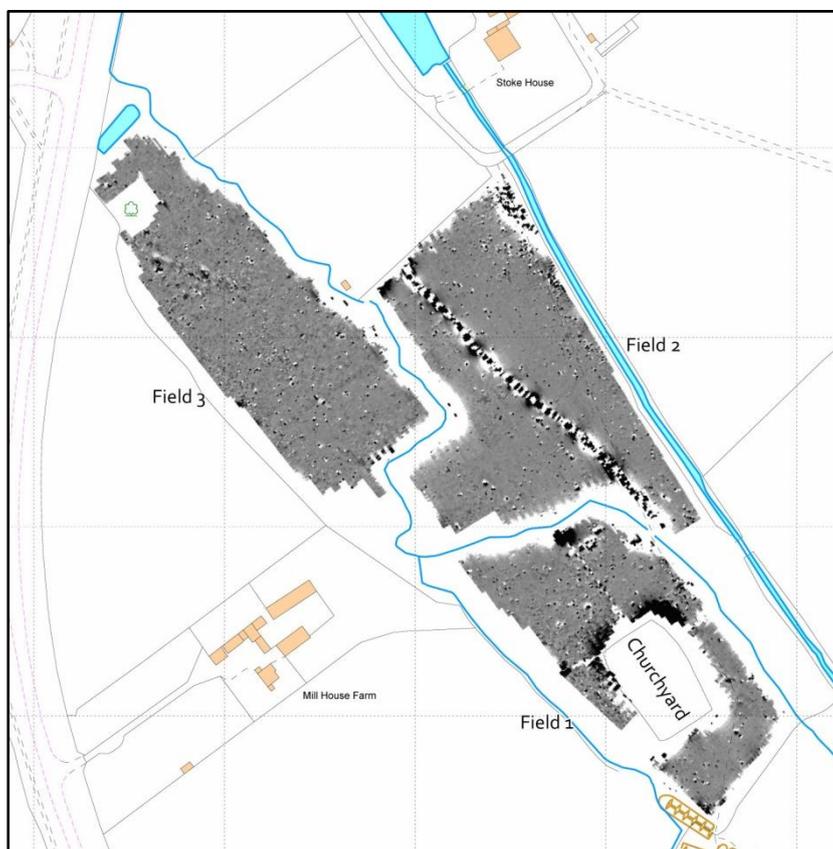


Figure 12: The results of the magnetometry valley survey done for HS2.¹³ The churchyard (bottom right), streams and leats can be clearly seen.

A1 The valley survey

The surveyors described their magnetometry results for the enclosure around the churchyard (Figure 12) as ‘minimally informative’, judging that ‘the magnetic haloes around the edges of fields are due to adjacent [metal] fences’, and that the larger anomaly at the northern end of the field ‘probably represents an accumulation of scrap within the backfill of a former pond’.

The intense linear anomaly in field 2 represents a modern pipeline, while the concentration of anomalies in the northern corner of this field again represents a former pond.

The survey report identifies three possible archaeological features: two backfilled ponds and a possible ditch, and comments that 'This is far less than might be expected, considering the known history of the survey area. It is recognised, however, that geophysical surveys do not always work well on medieval settlement sites and that the detection of house platforms and other remains by magnetometer can be especially problematic.'

The surveyors conclude that: 'The results of this survey may not, therefore, provide a comprehensive reflection of any archaeological remains present at the site.'⁷



Figure 13:
The magnetometry results from the high ground to the east of the churchyard.¹⁴ The square 'industrial' feature is clearly visible, with the fainter 'ladder type settlement' below it. The jagged white area marks a modern hedgeline where survey was not possible.

A2 The fields to the north-east

The HS2 magnetometer survey in the fields beyond the mill leat to the north-east of the churchyard and its outer enclosure produced far more positive results (Figure 13). This revealed 'a square enclosure measuring approximately 50m²', the entire interior of which was 'identified as an area of archaeological responses' – three of which suggest 'the presence of a kiln or oven'. The survey also records 'linear anomalies apparently forming a series of land divisions' between 200 and 400 metres east of the churchyard.⁸ This is summarised as 'a ladder type settlement with [an] offset square enclosure'.⁹

A3 LiDAR imaging results

The surveyors for HS2 also had access to earlier LiDAR imaging which, they conclude, 'indicates the presence of two or three platforms adjacent to the eastern leat to the south-east of the church enclosure. A third platform appears to be present at the junction of the two leats near Mill House Farm. These may indicate the former location of buildings (such as mills) lying beside these leats or could be quarry hollows'.¹⁰

The report concludes of Mill House Farm that 'it is possible that the farmstead lies in the locality of a former mill,¹¹ and that there is 'very likely to be associated village evidence and mill(s) adjacent to leats'.¹²

REFERENCES

1. Ordnance Survey Explorer map 181: Chiltern Hills North, edition B2 revised (Southampton 2009).
2. **Domesday Book: Buckinghamshire**, edited by John Morris (Phillimore, Chichester 1978) Section 3a.
3. For details of evidence and deductions, see Peter Marsden, **Last Chance for Stoke Mandeville's deserted village?** (Buckinghamshire Archaeological Society, Aylesbury 2012) pages 7-16.
4. W Niven, 'Disused church of St Mary the Virgin, Stoke Mandeville', in **Records of Buckinghamshire**, volume 10 part 2 (Buckinghamshire Archaeological Society, Aylesbury 1911) pages 94-7. See also **Royal Commission on Historical Monuments: Buckinghamshire**, volume 1 (1913) pages 281-2.
5. Ordnance Survey Explorer map 181: Chiltern Hills North, edition B2 revised (Southampton 2009).
6. HS2 Limited, **London-West Midlands Environmental Statement** (November 2013).
7. The results and deductions in this section are taken from **HS2 Environmental Statement**, Appendix CH-004-011, page 29.
8. **HS2 Environmental Statement**, Appendix CH-004-011, pages 30-31.
9. **HS2 Environmental Statement**, Appendix CH-001-011, page 9.
10. **HS2 Environmental Statement**, Appendix CH-001-011, page 22.
11. **HS2 Environmental Statement**, Appendix CH-001-011, page 29.
12. **HS2 Environmental Statement**, Appendix CH-001-011, page 57, item 2.
13. **HS2 Environmental Statement**, CFA-11 Volume 5, Figure CH-004-11.11 (section).
14. **HS2 Environmental Statement**, CFA-11 Volume 5, Figure CH-004-11.15 (section).