

Heritage & Archaeology Assessment

Moto Hospitality Limited

Land off Junction 16, M4, Swindon

September 2023



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Project

Land off Junction 16, M4, Swindon

Client

Moto Hospitality Limited

Job Number

715

Date

September 2023

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1. Introduction

- 1.1

This Heritage Assessment has been prepared by Smith Jenkins Planning & Heritage on behalf of Moto Hospitality Limited in support of redevelopment proposals for Land off M4, Junction 16, Swindon (hereafter referred to as 'the Site') comprising:

Outline application (with Access to be determined) for development of a new Motorway Rest Area (MRA) to provide up to 241 car parking spaces; up to 63 Heavy Goods Vehicle (HGV) parking spaces; coach and caravan parking; amenity building; fuel filling station; new access from B4005; and associated landscaping, infrastructure and ancillary works.
- 1.2

This Heritage Assessment therefore sets out a summary of the historic development of the site, and identifies whether there are any heritage assets in the surrounding area which have the potential to be affected by future development.
- 1.3

The Site, located immediately off Junction 16, M4, Swindon is currently agricultural grassland, and is not within the immediate vicinity of any designated or non-designated heritage assets.
- 1.4

Paragraph 194 of the National Planning Policy Framework (NPPF) 2021 sets out the information requirements for determining applications and states that:

*‘In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance’.*¹
- 1.5

In response to the NPPF, Section 2 of this report identifies the heritage assets which may be affected by the application proposals, Section 3 provides proportionate statements of significance for the heritage assets identified. These are relative to the scale, nature and effect of the proposals.
- 1.6

Section 4 provides an assessment of the application proposals on the significance of the identified heritage assets based on national, regional and local policy and guidance. The Heritage Planning Policy context for the consideration of these proposals is set out in Appendix A. This includes the statutory duties as set out in the Planning (Listed Buildings and Conservation Areas) Act 1990, the NPPF, regional and local planning policy.

¹ NPPF (2021)



2. The Heritage Assets

- 2.1

A heritage asset is defined by the NPPF as:

‘A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing)’¹

Designated Heritage Assets
- 2.2

A Designated Heritage Asset is described by the NPPF (2021) as:

‘A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation’²
- 2.3

Such assets are statutorily identified as having a level of heritage (architectural and/or historic) interest to justify designation. There are then particular procedures in planning decisions to ensure that their special interest is preserved or enhanced.
- 2.4

The scoping radius has been set to 1km, this is due to the topography on and around the Site being largely flat and the location of the Site is in open fields which are a notable distance from other plots of land.

Listed Buildings
- 2.5

The heritage asset plan identifies the three designated heritage assets within a 1km radius of the Site boundary which have been scoped in for this assessment.

Conservation Areas
- 2.6

The Site is not situated within any conservation area nor in close proximity of a conservation area.
- 2.7

At the outset it must be noted that the setting of conservation areas is not statutorily recognised, and it is only the contribution that the surrounding area makes to the special character and appearance of an area that should be considered.

Non-Designated Heritage Assets
- 2.8

The NPPF identifies that heritage assets not only include those which are designated (often with statutory protection), but also those assets identified by the local planning authority which could include local listing or buildings of townscape merit. Any such designation, for the purposes
- 2.9

Wiltshire Council does keep a local list of non-designated assets. However, we are not considering any structures as non-designated assets within our assessment.
- of the NPPF, are considered to constitute non-designated heritage assets.

¹ NPPF (2021) Annex 2: Glossary (p.67)

² NPPF (2021) Annex 2: Glossary (p.66)

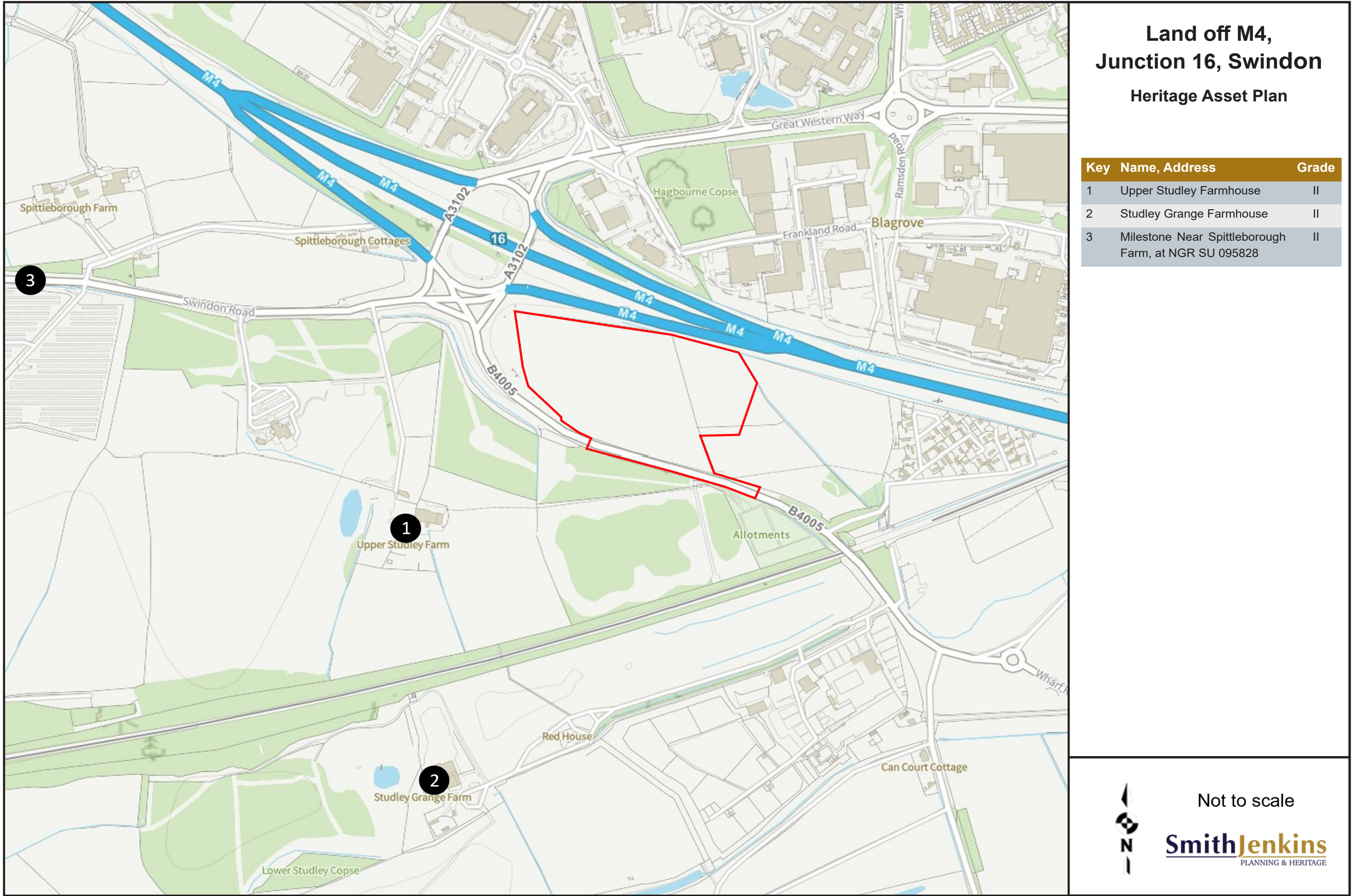


Figure 2.1 - Consolidated Heritage Asset Plan

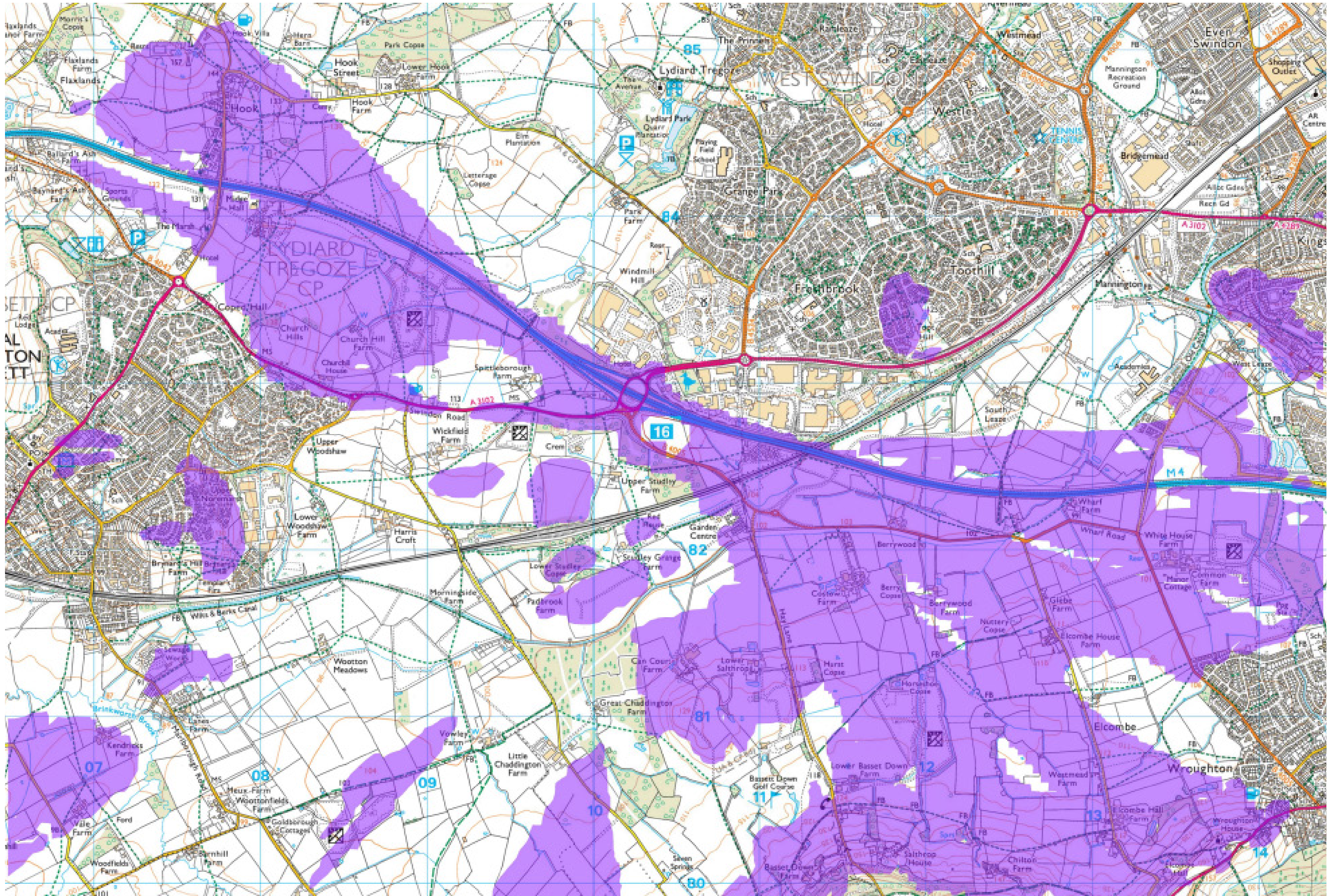


Figure 2.2 - Zone of Theoretical Visibility of Proposed Development

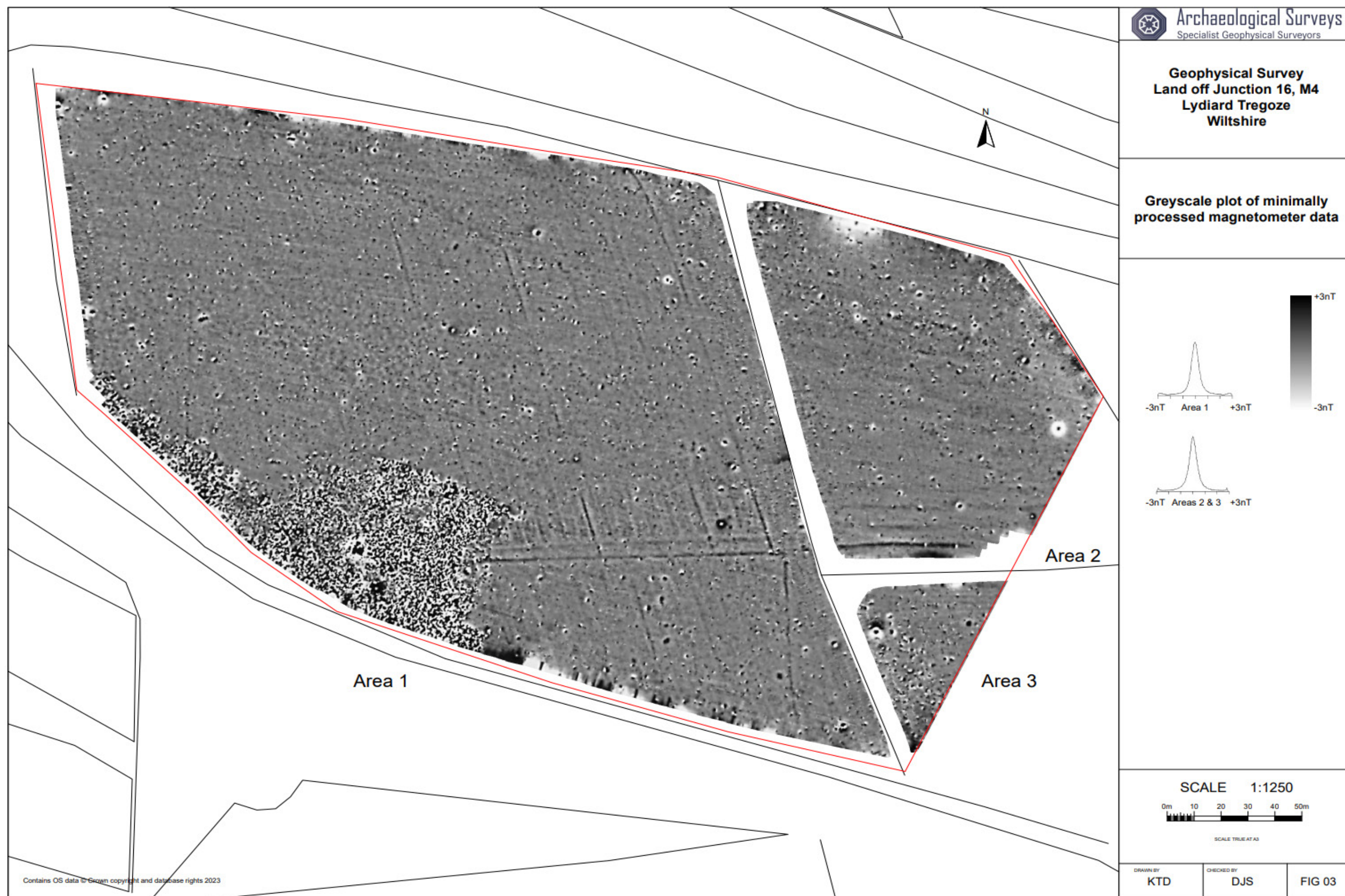


Figure 2.3 - Archaeological Geophysical Survey of the Land of Junction 16, M4, Swindon, full report included in appendices.

3. Historic Development

Pre-Historic Period (900,000 BC – 42AD)

- 3.1 The Lower (900,000 - 250,000 BC) and Middle (250,000 – 40,000 BC) Palaeolithic period saw alternating warm and cold phases with intermittent (likely seasonal) occupation. During the Upper Palaeolithic period (40,000 -10,000 BC), after the last Glacial Maximum (approximately 13,000BC), there was an extended period of warming where the woodland landscape in England changed to birch and pine as predominant species, and it is likely this period onwards saw continuous occupation. Much of the topographical land surfaces from this era have eroded, with evidence usually characterised by objects such as flint tools. However there is no known archaeological evidence from this period within the Site or the wider surrounding area.
- 3.2 The Mesolithic (10,000 – 4,000 BC) hunter-gather communities of the post glacial period inhabited a largely woodland landscape, with river and coastland being more preferable due to predictable sources of food and water, as well as transport and communication. Similarly, there is no known archaeological evidence from this period within the Site or the wider surrounding area.
- 3.3 The Neolithic (4,000 – 2,000 BC), Bronze Age (2,000 – 600 BC) and Iron Age (600BC – 42AD) are traditionally seen as era of technological change, with greater use of tools, continuous settlements forming and the advancement of agriculture, which required forest clearance and distinct land boundaries, as well as the construction of communal monuments suggesting greater social activity. South-east of the site, a Neolithic leaf-shaped arrowhead was found (HER: MWI75575), however this find is singular within the study area. The geo-physical survey shows several pits have been identified, these could be geological anomalies, however if man-made it would likely suggest light human activity from this period. In addition, as they are not in any sort of regular formation, it wouldn't suggest continuous settlement. Surrounding the Site, the HER record shows several identified pits of a similar character, largely considered to be Bronze Age and Iron Age.

Romano-British Period (43 – 409 AD)

- 3.4 Within the surrounding landscape, there are several Romano-British earthworks that have been identified (HER: MWI75581, MWI77601 and MWI77602), these are usually in the form of shallow linear ditches with concave profiles, likely used to drain the land for more efficient agricultural uses or as a trackway for transportation. North of the Site and of the M4, in the current enterprise zone on the outskirts of Swindon is a known Roman settlement, (HER: SU18SW313), with several shallow gullies, a rectangular area of cobbled flooring defined by clay walls, and an occupation layer containing stones. Ceramic pottery and tiles found in this area likely date from the 4th century AD.

Anglo-Saxon (410 – 1065 AD)

- 3.5 The Anglo-Saxon settlement of Swindon sat in a defensible position atop a limestone hill. It is referred to in the 1086 Domesday Book as Suindune, believed to be derived from the Old English words "swine" and "dun" meaning "pig hill" or possibly Sweyn's hill, Sweyn being a Scandinavian name akin to Sven and English swain. Before the Battle of Hastings, the Swindon estate was owned by an Anglo-Saxon thane called Leofgeat, however after the Norman Conquest, Swindon was split into five holdings.
- 3.6 There are no known archaeological finds from this period within the Site or the surrounding area.

Medieval Period (1066 – 1539 AD)

- 3.7 The Site and surrounding study area does consist of one significant feature that is distinct to the medieval period, namely ridge and furrow earth works. These medieval field systems are distinctly visible on the geo-physical survey to the east of the Site, they are also known to be east of Hay Lane (HER: SU18SW628).

Post Medieval and Modern Periods (1540 AD – Present)

- 3.8 The Site, comprising of agricultural grassland with several hedge boundaries has remained largely unaltered throughout this period, as shown by the 1840-1880 Series OS Map in Figure 3.1, with the exception of a small area of hard-standing for ancillary agricultural uses. The geophysical survey shows greater use of mechanical ploughing, as would be anticipated from the late 20th and 21st centuries. Surrounding the Site is largely agricultural land, including the farmhouses, dating from the 17th and 18th centuries, discussed in more detail in Section 4.
- 3.9 The surrounding landscape in this period has witnessed three distinct changes. Firstly, the construction of the Great Western Mainline Railway, located south of the Site. The line runs between Paddington and Bristol Temple Meads, built between 1838 and 1841, by Great Western Railway.
- 3.10 Following the railway and growth of the Industrial Revolution, Swindon significantly expanded. During the second half of the 19th century, Swindon New Town grew around the main line between London and Bristol. In 1900, the original market town, Old Swindon, merged with its new neighbour at the bottom of the hill to become a single town. Previously a small market town of 2,500 residents it was documented over 14,500 railway workers within the town at the start of the 20th century, one of the biggest railway industry communities within the country. GWR was the principal railway operator, although there were others within the town, however GWR also invested significantly in Swindon's social infrastructure, including housing, baths, laundries and medical facilities.



Figure 3.1 - OS Six Inch Map Series 1840-1880.

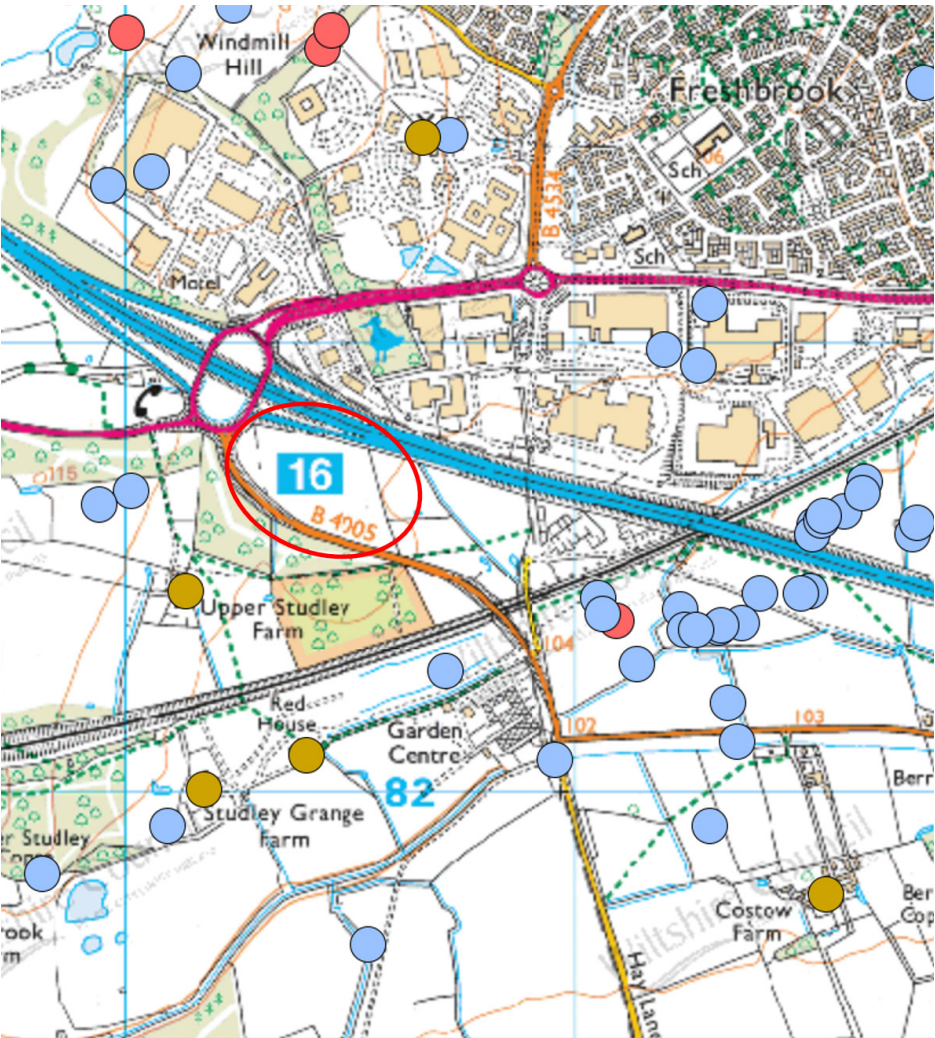


Figure 3.2- Wiltshire and Swindon Historic Environment Record Map Database

- 3.11 The expansion of Swindon was again further enhanced by the construction of the M4, built largely between 1956-1961, with several extensions as late as the 1990s, it is considered one of the major motorways within the United Kingdom.



Figure 3.3 - Archive Photograph of construction of Junction 16, M4 Swindon, circa 1970.



Figure 3.4 - Junction 16, M4, Westbound looking towards the Site.

4. Significance

4.1 The significance of a heritage asset is defined within the glossary of the NPPF as:

‘The value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence, but also from its setting’.¹

4.2 Listed buildings are statutorily designated and, for the purposes of the NPPF, are designated heritage assets. Recognising this statutory designation, buildings must hold special architectural or historic interest. The Department of Culture, Media and Sport publish the ‘Principles of Selection for Listed Buildings (2010)’ which is supported by thematic papers, ‘Listing Selection Guides’, based on building type, which give more detailed guidance.

4.3 Conservation Areas are identified if they are of special architectural or historic interest, the character or appearance of which should be preserved or enhanced. Historic England has published guidance on the designation of Conservation Areas which provides a framework for the identification of those features that form the character and appearance.

4.4 The identification of a site as a non-designated heritage asset does not provide any legal protection of such asset, however, for the purposes of the NPPF, they are a material consideration in the determination of applications.

4.5 Historic England has published ‘Conservation Principles’ (2008) which identifies four types of heritage values that a heritage asset (whether it be designated or non-designated) may hold – aesthetic, communal, evidential or historic interest. Conservation Principles (2008) is currently being updated by Historic England after a Consultation Draft was published on 10th November, closing on 2nd February 2018. Historic England has also published Good Practice Advice Notes on the ‘Setting of Heritage Assets’ (2nd Edition, 2017) and ‘Statements of Heritage Significance’ (October 2019) which are used to understand the surroundings of a heritage asset which may contribute to the significance of a heritage asset and explore the assessment of significance of heritage assets as part of a staged approach to decision-making in which assessing significance precedes the design of proposals.

Assessment

4.6 The following summary statements of significance provide an overview of the identified designated and non-designated heritage assets set out in Section 2, which may be affected by the application proposals. These are proportionate to the importance of the asset and the likely impacts of the proposals.

¹ NPPF (2021) Annex 2: Glossary (p.71)

Upper Studley Farmhouse - Grade II

- 4.7 The Upper Studley Farmhouse was designated grade II (NHLE: 1022662) on 15th August 1985). It is situated south-west of the Site boundary.

Historic Significance

- 4.8 Upper Studley Farmhouse was built in approximately 1625. There are no known people of historic interest in association with the farmhouse. Therefore, the historic significance of the building lies in its origins as a farmhouse from the time of its construction. The building has maintained its intended use and played an role in the history of agriculture in the area, which was known for farming.

Architectural Significance

- 4.9 The two storey farmhouse was built of coursed rubble limestone with ashlar quoins and a Roman tiled roof. The building is in the form of an L-plan with 3 bays, which another 2 bays which also date to the 17th century.
- 4.10 The 2 bay block of the farmhouse has gable stacks and a door. The windows are 3-light moulded stone mullioned, although the ground floor windows have been replaced by 18-pane sashes which date to the early 19th century and the rear windows have been blocked. There has also been a modern extension to the rear.
- 4.11 The architectural significance of the building comes from the detailing and the evidence of the evolution of the farmhouse since it was initially built.

Setting

- 4.12 The setting of Upper Studley Farmhouse is defined by its position within an open agricultural landscape which is accessed by the B4005 on Hay Lane. The setting remains the same as the farmhouse would have originally resided in and retains its agricultural character which is a crucial part of the experience of the farmhouse. The farmhouse is closed off from the wider surroundings of the open fields, which consist of main roads.

Summary

- 4.13 The significance of Upper Studley Farmhouse is principally derived from its age as a farmhouse, which retains original features and architectural detailing. The immediate historic setting of an open agricultural landscape is also a key contributor to its significance.



Figure 4.1. Upper Studley Farmhouse (source: Historic England).

Studley Grange Farmhouse - Grade II

4.14 Studley Grange Farmhouse was designated grade II (NHLE: 1022661) on 15th August 1985. It is situated west of the Site boundary on Swindon Road.

Historic Significance

4.15 The farmhouse was built some time between the late 18th and early 19th centuries. However, it is believed that the original farmhouse may date earlier than this. The building is no longer in use and the surrounding fields have been used as a landfill site. The historic significance of the building lies in its connection to the agricultural history of the area and that buildings age.

Architectural Significance

4.16 Studley Grange Farmhouse was built using rubble limestone and Roman tile roofs. The two storey farmhouse contains 3 bays with gable stacks, and a 2 bay extension on the right. The original entrance has been blocked, and a door has been placed in the extension of a more modern porch. The facade of the building has been whitewashed, and there are timber casement windows. The upper windows of the farmhouse have segmental brick arches.

4.17 The exterior largely remains in tact, although there are signs of wear and some neglect. The architectural significance of the building lies in its original features and the evidence of its development over time.

Setting

4.18 The farmhouse is located in the middle of an open agricultural landscape which is closed off from the wider setting of the main roads. The setting retains the agricultural character which makes the experience of the farmhouse.

Summary

4.19 Studley Grange Farmhouse largely attains its significance from its age as a farmhouse, which maintains original features. The immediate historic setting of an open agricultural landscape is also a crucial factor in its significance.



Figure 4.2. Studley Grange Farmhouse (source: Save Britain's Heritage).



Figure 4.3. Studley Grange Farmhouse (source: Save Britain's Heritage).



Figure 4.4. Studley Grange Farmhouse (source: Save Britain's Heritage).

Milestone Near Spittleborough Farm, at NGR SU 095828- Grade II

4.20 Milestone Near Spittleborough Farm, at NGR SU 095828 was designated grade II (NHLE: 1022661) on 15th August 1985. It is situated on Swindon Road outside of the Site Boundary.

Historic Significance

4.21 The milestone was built some time after 1821. It reads Bath 29 miles, to Swindon 4 miles, to Wootton Bassett 2 miles, to Chippenham 16 miles and to Oxford 34 miles. This indicates that the milestone was positioned on a historic route.

Architectural Significance

4.22 The milestone is a small pillar that was built of limestone with a hexagonal top face. It has deteriorated due to weathering and age, with some of the inscriptions difficult to read.

Setting

4.23 The setting of the milestone is defined by the A3102 on Swindon Road, where it is situated on the north side of the carriageway. The wider setting is that of open agricultural fields.

Summary

4.24 The milestone is of significance due to its historic role as a milestone marker, which would have historically served travellers.



Figure 4.5. Milestone (Source: Historic England).



Figure 4.6. Milestone (Source: Historic England).



Figure 4.7. Milestone (Source: Historic England).

5. Assessment of Proposals

- 5.1 The heritage legal and planning policy relevant to the consideration of the application proposals set out in Appendix A of this report. This legal and policy context includes the statutory duties of the Planning (Listed Buildings and Conservation Areas) Act 1990, national policy set out in the NPPF as well as regional and local policy for the historic environment.
- 5.2 In accordance with paragraph 194 of the NPPF, the significance of the designated and non-designated heritage assets that may be affected by the application proposals have been set out in Section 4 of this report.
- 5.3 The NPPF requires local planning authorities to identify and assess significance of a heritage asset that may be affected by the proposals (paragraph 195). They should take the assessment into account when considering the impact of proposals in order to avoid or minimise conflict between the heritage asset’s conservation and any aspect of the proposals.
- 5.4 Account should be taken of the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation, the positive contribution that conservation of heritage assets can make to sustainable communities including their economic viability, and the desirability of the new development making a positive contribution to local character and distinctiveness (paragraph 190).
- 5.5 When considering the impact of proposals on the significance of designated heritage assets, the NPPF requires (paragraph 199) that great weight should be given to their conservation and the more important the asset, the greater the weight should be. This is consistent with recent high court judgements (Barnwell Manor, Forge Fields) where great weight should be attached to the statutory duty.
- 5.6 Where a development proposal causes harm to the significance of designated heritage assets, this should either be treated as less than substantial (paragraph 202), or substantial (paragraph 201). In determining the level of harm, the relative significance of the element affected should be taken into account (paragraph 199). Furthermore, local planning authorities are also encouraged to look for opportunities for new development within conservation areas and the setting of heritage assets to enhance or better reveal their significance. According to paragraph 206, proposals that preserve those elements of setting the make a positive contribution to or better reveal the significance of a heritage asset should be treated favourably.
- 5.7 Paragraph 203 of the NPPF concerns the effect of an application on the significance of a non-designated heritage asset and should be taken into account when considering development proposals with a balanced judgement being required to have regard to the scale of any harm or loss against the significance of the asset.

The Proposals

- 5.8 The application proposals comprise:

Outline application (with Access to be determined) for development of a new Motorway Rest Area (MRA) to provide up to 241 car parking spaces; up to 63 Heavy Goods Vehicle (HGV) parking spaces; coach and caravan parking; amenity building; fuel filling station; new access from B4005; and associated landscaping, infrastructure and ancillary works.

Impact of Application Proposals

- 5.9 Whilst the proposed outline plan for a motorway rest area with ancillary parking and services will considerably alter the existing environment, changing from agricultural grassland to built form, this will have minimal impact on the surrounding historic environment, including designated heritage assets and below ground archaeology.
- 5.10 The distance between the proposed development and the designated heritage assets, discussed in Section 4, ensure any effect from development is wholly indirect on the listed buildings. The intervening landscape, consisting of agricultural fields and several large groves of mature trees and vegetation, that is outside the site boundary and will therefore be retained, shall assist in retaining the rural setting of Studley Grange Farmhouse and Upper Studley Farmhouse. Regarding the grade II listed milestone, this feature within the landscape has a more open setting connected with transportation, which although traffic is likely to increase, the setting will not be impacted.
- 5.11 The wider area to the south of the M4 is largely rural and agricultural in character, contrasting the more urban built environment north of the M4. The illustrative masterplan highlights significant green boundary treatment to assist in sheilding the proposed development, particularly from the south-east, which is where the rural character is most prevalent.
- 5.12 The principal rest-area building is 12m tall and therefore will be seen within the wider landscape, as shown in the Zone of Theoretical Visibility (Figure 2.2), however this does not consistently account for natural screening within the landscape from intervening development, vegetation or mature tree growth, therefore the effects of this are likely significantly less. In addition, the proposal comprises a green roof, this is likely to minimise the impact when viewed from a distance, reflecting the character of the wider rural landscape to the south of the M4, where possible.
- 5.13 As discussed in Section 3, the area is not considered to be of high archaeological significance, with a consistent agricultural use shown through medieval ridge and furrow field systems and unaltered field

boundaries.

- 5.14 The geophysical survey, highlighted in Figure 2.3 and included within the appendices concludes:

The geophysical survey located a linear anomaly that appears to relate to a fragmented linear ditch but its date and function are uncertain. A small number of discrete, pit-like features have also been located, but it is not clear if they relate to natural or anthropogenic features. A small number of very weakly positive linear anomalies and a negative linear anomaly have also been located in the north western part of the site, but they lack a coherent morphology and cannot be confidently interpreted as cut features. Ridge and furrow can be seen in the north eastern part of the site, as well as more recent agricultural activity in the west; however, a possible former field boundary appears to be associated with this activity, but this has not been mapped.

- 5.15 Due to the proposed layout of the site, the more distinct archaeological elements, such as the medieval ridge and furrow system to the east of the Site will be retained, therefore maintaining the principal agricultural significance of the land. Some features highlighted by the survey, such as potential pits will likely be disturbed by the landscaping for the ancillary car parking. However, it is unlikely these elements are of high significance since they are sporadic and do not form consistent indication of previous activity. Therefore recording them through the geophysical survey should be sufficient for future investigation into the archaeological landscape.

Considerations against Legislation and Policy

Statutory Duties

- 5.16 The Planning (Listed Buildings and Conservation Areas) Act 1990 places duty upon the decision maker in determining applications for planning permission to have special regard to the desirability of preserving the character and appearance of conservation areas.
- 5.17 This statement has identified the significance of the designated and non-designated heritage assets which could be affected by the application proposals and concludes that the significance, including the setting of the designated heritage assets is retained.

NPPF (2021)

- 5.18 The significance of the heritage assets (both designated and non-designated), as required by paragraph 194 of the NPPF, has been set out in Section 3 of this report. In accordance with paragraph 197 of the NPPF, the application proposals will preserve the setting and significance of the

designated heritage assets.

- 5.19 The conservation of heritage assets has, in line with paragraph 199 of the NPPF, been given great weight and provides an opportunity for new development to better reveal the significance of the surrounding heritage assets (paragraph 206). Accordingly, the application proposals are in accordance with the NPPF.

Local Policy

- 5.20 Core Policy 58 of Wiltshire's Core Strategy 2015 highlights proposals for development affecting heritage assets shall conserve and, where appropriate, enhance their significance and setting. Therefore the outline proposals are in accordance with the Core Strategy.

6. Summary & Conclusions

- 6.1 In accordance with paragraph 194 of the NPPF, the significance of the designated and non-designated heritage assets which have the potential to be affected by the application proposals have been described in this Statement. A clear understanding and appreciation of the significance of the heritage asset has informed the evolution of the proposals. This report has concluded that the outline proposed development will preserve the character and significance of the historic and archaeological environment.
- 6.2 This harm is outweighed by the public benefits of the scheme which include delivering a high quality sustainable, and economically viable motorway rest area on agricultural land, that is a considerable distance from any designated heritage assets, minimising impact to the setting of the listed buildings and is not of high archaeological value.
- 6.3 The application proposals are therefore in accordance with the statutory duties as set out in the Planning (Listed Buildings and Conservation Areas) Act 1990, national policy set out in the NPPF (2021) and relevant regional and local policy and guidance, including the Wiltshire's Core Strategy (2015).

Appendix 1: Heritage Planning Policy Context

Legislation

Planning (Listed Building and Conservation Areas) Act 1990

Legislation regarding buildings and areas of special architectural and historic interest is contained within the Planning (Listed Buildings and Conservation Areas) Act 1990.

The relevant legislation in this case extends from Section 16 of the 1990 Act which states that in considering applications for listed building consent, the local planning authority shall have special regard to the desirability of preserving the Listed Building or its setting or any features of special architectural or historic interest which it possesses.

Section 66 further states that special regard must be given by the authority in the exercise of planning functions to the desirability of preserving or enhancing Listed Buildings and their setting.

According to Section 69 of the Act a Conservation Area is an “area of special architectural or historic interest the character and the appearance of which is desirable to preserve or enhance”. It is the duty of Local Authorities to designate such areas and to use their legal powers to safeguard and enhance the special qualities of these areas within the framework of controlled and positive management of change.

Section 69 further states that it shall be the duty of a local planning authority from time to time to review the past exercise of functions under this section and to determine whether any parts or any further parts of their area should be designated as conservation areas; and, if they so determine, they shall designate those parts accordingly. Adding, The Secretary of State may from time to time determine that any part of a local planning authority’s area which is not for the time being designated as a conservation area is an area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance; and, if he so determines, he may designate that part as a conservation area.

Further to this Section 72 of the 1990 Act states that in exercising all planning functions, local planning authorities must have special regard to the desirability of preserving or enhancing the character and appearance of Conservation Areas. Further provisions are detailed in Section 74 of the Act.

Recent case law¹ has confirmed that Parliament’s intention in enacting Section 66 (1) was that decision-makers should give “considerable importance and weight” to the desirability of preserving the setting of listed buildings, where “preserve” means “to do no harm”. This duty must be borne in mind when considering any harm that may accrue and the balancing of such harm against public benefits

¹ Barnwell Manor Wind Energy Limited and (1) East Northamptonshire District Council (2) Historic England (3) National Trust (4) The Secretary of State for Communities and Local Governments, Case No: C1/2013/0843, 18th February 2014

as required by national planning policy. This can also logically be applied to the statutory tests in respect of conservation areas. Similarly, it has also been proven that weight must also be given to heritage benefits.

National Planning Policy

National Planning Policy Framework (NPPF) July 2021

The National Planning Policy Framework (NPPF) was published on 20th of July 2021 and sets out the Government’s planning policies for England and how these are expected to be applied. It has purposefully been created to provide a framework within which local people and Local Planning Authorities (LPAs) can produce their own distinctive Local and Neighbourhood Plans which reflect the needs and priorities of their communities.

When determining Planning Applications, the NPPF directs LPAs to apply the approach of presumption in favour of sustainable development; the ‘golden thread’ which is expected to run through the plan-making and decision-taking activities. It should be noted however, that this is expected to apply except where this conflicts with other policies combined within the NPPF, inclusive of those covering the protection of designated heritage assets , as set out in paragraph 11 of the NPPF. Within section 12 of the NPPF, ‘Achieving well-designed places’, Paragraphs 126 to 136, reinforce the importance of good design in achieving sustainable development by ensuring the creation of inclusive and high-quality places. This section of the NPPF affirms the need for new design to function well and add to the quality of the area in which it is built; establish a strong sense of place; and respond to local character and history, reflecting the built identity of the surrounding area.

Section 16, ‘Conserving and Enhancing the Historic Environment’, Paragraphs 189-208, relate to developments that have an effect upon the historic environment. These paragraphs provide the guidance to which local authorities need to refer when setting out a strategy for the conservation and enjoyment of the historic environment in their Local Plans. This should be a positive strategy for the conservation and enjoyment of the historic environment and should include heritage assets which are most at risk through neglect, decay or other threats. It is also noted that heritage assets should be conserved in a manner appropriate to their significance .

The NPPF advises local authorities to take into account the following points when drawing up strategies for the conservation and enjoyment of the historic environment. These considerations should be taken into account when determining planning applications:

- The desirability of sustaining and enhancing the significance of heritage assets and preserving them in a viable use consistent with their conservation;
- The wider social, cultural, economic and environmental benefits that the conservation of the historic environment can bring;
- The desirability of new development in making a positive contribution to local

character and distinctiveness;

- Opportunities to draw on the contribution made by the historic environment to the character of a place.

Paragraph 191 of the NPPF states that when considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.

In order to determine applications for development, Paragraph 194 of the NPPF states that LPAs should require applicants to describe the significance of the heritage assets affected and the contribution made by their setting . Adding that the level of detail provided should be proportionate to the significance of the asset and sufficient to understand the impact of the proposal on this significance.

According to Paragraph 195, LPAs should also identify and assess the significance of a heritage asset that may be affected by a proposal and should take this assessment into account when considering the impact upon the heritage asset.

Paragraph 196 adds that where there is evidence of deliberate neglect of or damage to a heritage asset the deteriorated state of the heritage asset should not be taken into account in any decision.

Paragraphs 199 to 204 consider the impact of a proposed development upon the significance of a heritage asset . Paragraph 199 emphasises that when a new development is proposed, great weight should be given to the asset’s conservation and that the more important the asset, the greater this weight should be. It is noted within this paragraph that significance can be harmed or lost through the alteration or destruction of the heritage asset or by development within its setting.

Paragraph 202 advises that where a development will cause less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

Paragraph 203 notes that the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. Adding, that in weighing applications that affect directly or indirectly non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

Paragraph 204 stipulates that local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

In addition, Paragraph 206 notes that local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites and within the setting of heritage assets to enhance or better reveal their

significance. Adding, proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably.

Paragraph 207 importantly clarifies that not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. Adding, loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 201 or less than substantial harm under paragraph 202, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

The NPPF therefore continues the philosophy of that upheld in PPS5 in moving away from narrow or prescriptive attitudes towards development within the historic environment, towards intelligent, imaginative and sustainable approaches to managing change. English Heritage (now Historic England) defined this new approach, now reflected in the NPPF, as 'constructive conservation'. This is defined as 'a positive and collaborative approach to conservation that focuses on actively managing change...the aim is to recognise and reinforce the historic significance of places, while accommodating the changes necessary to ensure their continued use and enjoyment.' (Constructive Conservation in Practice, English Heritage, 2009).

National Guidance

Planning Practice Guidance (NPPG) 2019

Planning Practice Guidance (PPG) was introduced by the Government as a web-based resource on 6th March 2014 and is updated regularly, with the most recent update on 23rd July 2019. The PPG is intended to provide more detailed guidance and information with regard to the implementation of national policy set out in the NPPF.

It reiterates that conservation of heritage assets in a manner appropriate to their significance is a core planning principle. It also states, conservation is an active process of maintenance and managing change, requiring a flexible and thoughtful approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation.

Importantly, the guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset's significance and make the interpretation publicly available.

Key elements of the guidance relate to assessing harm. It states, an important consideration should be whether the proposed works adversely affect a key element of the heritage asset's special architectural or historic interest. Adding, it is the degree of harm, rather than the scale of development that is to be assessed. The level of 'substantial harm' is stated to be a high bar that may not arise in many

cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the NPPF.

Importantly, it is stated harm may arise from works to the asset or from development within its setting. Setting is defined as the surroundings in which an asset is experienced and may be more extensive than the curtilage. A thorough assessment of the impact of proposals upon setting needs to take into account, and be proportionate to, the significance of the heritage asset and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

The PPG makes clear that the delivery of development within the setting of heritage assets has the potential to make a positive contribution to, or better reveal, the significance of that asset.

Finally, the PPG provides in depth guidance on the importance of World Heritage Sites, why they are importance and the contribution setting makes to their Outstanding Universal Value. The PPG also provides guidance on the approaches that should be taken to assess the impact of development on the Outstanding Universal Value of World Heritage Sites.

Historic England Guidance - Overview

On the 25th March 2015 Historic England (formerly English Heritage) withdrew the PPS5 Practice Guide. This document has been replaced with three Good Practice Advice in Planning Notes (GPAs), 'GPA1: Local Plan Making' (Published 25th March 2015), 'GPA2: Managing significance in Decision-Taking in the historic Environment' (Published 27th March 2015) and 'GPA3: The Setting of Heritage Assets (December 2017).

The GPAs provide supporting guidance relating to good conservation practice. The documents particularly focus on the how good practice can be achieved through the principles included within national policy and guidance. As such, the GPAs provide information on good practice to assist LPAs, planning and other consultants, owners, applicants and other interested parties when implementing policy found within the NPPF and PPG relating to the historic environment.

In addition to these documents, Historic England has published several core Advice Notes (HEAs) which provide detailed and practical advice on how national policy and guidance is implemented. These documents include; 'HEAN1: Conservation Area Appraisal, Designation and Management (Second Edition, February 2019)', 'HEAN2: Making Changes to Heritage Assets' (25th February 2016) and 'HEAN3: The Historic Environment and Site Allocations in Local Plans' (30th October 2015). In addition to these 'HEAN4: Tall Buildings' (December 2015), 'HEA:#N7: Local Heritage Listing: Identifying and Conserving Local Heritage (Second Edition, January 2021), 'HEAN10: Listed Buildings and Curtilage' (21st February 2018) and, 'HEAN12: Statements of Heritage Significance' (October 2019). Collectively, these Advice Notes provide further information and guidance in respect of managing the historic environment and development within it.

Historic England Good Practice Advice Note 1 (GPA1): The Historic Environment in Local Plans (March 2015)

This document stresses the importance of formulating Local Plans that are based on up-to-date and relevant evidence in relation to the economic, social and environmental characteristics and prospects of an area, including the historic environment, as set out by the NPPF. The document provides advice on how information in respect of the local historic environment can be gathered, emphasising the importance of not only setting out known sites, but in understanding their value (i.e. significance). This evidence should be used to define a positive strategy for the historic environment and the formulation of a plan for the maintenance and use of heritage assets and for the delivery of development, including within their setting, that will afford appropriate protection for the asset(s) and make a positive contribution to local character and distinctiveness.

Furthermore, the Local Plan can assist in ensuring that site allocations avoid harming the significance of heritage assets and their settings, whilst providing the opportunity to 'inform the nature of allocations so development responds and reflects local character'.

Further information is given relating to cumulative impact, 106 agreements, stating 'to support the delivery of the Plan's heritage strategy it may be considered appropriate to include reference to the role of Section 106 agreements in relation to heritage assets, particularly those at risk.' It also advises on how the heritage policies within Local Plans should identify areas that are appropriate for development as well as defining specific Development Management Policies for the historic environment. It also suggests that a heritage Supplementary Planning Document (SPD) can be a useful tool to amplify and elaborate on the delivery of the positive heritage strategy in the Local Plan.

Historic England Good Practice Advice Note 2 (GPA2): Managing Significance in Decision-Taking in the Historic Environment (March 2015)

This document provides advice on the numerous ways in which decision-taking in the historic environment can be undertaken, emphasising that the first step for all applicants is to understand the significance of any affected heritage asset and the contribution of its setting to its significance. In line with the NPPF and PPG, this document states that early engagement and expert advice in considering and assessing the significance of heritage assets is encouraged, stating that 'development proposals that affect the historic environment are much more likely to gain the necessary permissions and create successful places if they are designed with the knowledge and understanding of the significance of the heritage assets they may affect.'

The advice suggests a structured staged approach to the assembly and analysis of relevant information, this is as follows:

1. Understand the significance of the affected assets;

2. Understand the impact of the proposal on that significance;
3. Avoid, minimise and mitigate impact in a way that meets the objectives of the NPPF;
4. Look for opportunities to better reveal or enhance significance;
5. Justify any harmful impacts in terms of the sustainable development objective of conserving significance and the need for change; and
6. Offset negative impacts on aspects of significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected.

The advice reiterates that heritage assets may be affected by direct physical change or by change in their setting. Assessment of the nature, extent and importance of the significance of a heritage asset and the contribution of its setting at an early stage can assist the planning process resulting in informed decision-taking.

This document sets out the recommended steps for assessing significance and the impact of development proposals upon a heritage asset, including examining the asset and its setting and analysing local policies and information sources. In assessing the impact of a development proposal on the significance of a heritage asset the document emphasises that the cumulative impact of incremental small-scale changes may have as great an effect on the significance of a heritage asset as a larger scale change.

Crucially, the nature and importance of the significance that is affected will dictate the proportionate response to assessing that change, its justification, mitigation and any recording which may be necessary. This document also provides guidance in respect of neglect and unauthorised works.

Historic England Good Practice Advice Note (GPA3): The Setting of Heritage Assets (December 2017)

This is used to understand the surroundings of a heritage asset which may contribute to its significance. It aids practitioners with the implementation of national policies and guidance relating to the historic environment found within the NPPF and PPG, once again advocating a stepped approach to assessment.

It amalgamates ‘Seeing the History in the View’ (2011) and ‘Setting of Heritage Assets’ (2015) forming one succinct document which focuses on the management of change within the setting of heritage assets.

The guidance is largely a continuation of the philosophy and approach of the previous documents, albeit now with a greater emphasis on the contribution that views to and from heritage assets make to their significance. It reaffirms that setting should be understood as the way in which an asset is experienced.

The guidance emphasises that setting is not a heritage asset, nor a heritage

designation, and that its importance lies in what it contributes to the significance of the heritage asset. It also states that elements of setting may make a positive, negative or neutral contribution to the significance of the heritage asset.

While setting is largely a visual term, with views considered to be an important consideration in any assessment of the contribution that setting makes to the significance of an asset, setting, and thus the way in which an asset is experienced, can also be affected by other environmental factors including noise, vibration and odour, while setting may also incorporate perceptual and associational attributes pertaining to the asset’s surroundings.

This document provides guidance on practical and proportionate decision making with regards to the management of proposed development and the setting of heritage assets. It identifies that the protection of the setting of a heritage asset need not prevent change and that decisions relating to such issues need to be based on the nature, extent and level of the significance of a heritage asset, as well as further weighing up the potential public benefits associated with the proposals. It clarifies that changes within the setting of a heritage asset may have positive or neutral effects.

It highlights that the contribution made to the significance of heritage assets by their settings will vary depending on the nature of the heritage asset and its setting and that different heritage assets may have different abilities to accommodate change within their settings without harming the significance of the asset and therefore setting should be assessed on a case-by-case basis. Although not prescriptive in setting out how this assessment should be carried out, noting that any approach should be demonstrably compliant with legislation, national policies and objectives, Historic England recommend using a ‘5-step process’ in order to assess the potential impact of a proposed development on the setting and significance of a heritage asset, with this 5-step process similar to that utilised in earlier guidance:

Step 1: Identify which heritage assets and their settings are affected

Step 2: Assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated

Step 3: Assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it

Step 4: Explore ways to maximise enhancement and avoid or minimise harm

Step 5: Make and document the decision and monitor outcomes

Historic England Advice Note 1 (HEAN1): Conservation Area Appraisal, Designation and Management (Second Edition, February 2019)

First published by English Heritage March 2011 as: Understanding Place: Conservation Area Designation, Appraisal and Management and republished as Conservation Area Appraisal, Designation and Management, Historic England Advice Note 1 2016, Historic England Advice Note 1 (HEA): Conservation Area

Appraisal, Designation and Management (Second Edition, February 2019) continues to support the management of change in a way that conserves and enhances the character and appearance of historic areas through conservation area appraisal, designation and management.

This second edition updates the advice in light of the publication of the 2018 National Planning Policy Framework and gives more information on the relationship with local and neighbourhood plans and policies. It is also re-ordered, to underline the staged approach to the appraisal, designation and management of conservation areas, while continuing to offer advice on managing conservation areas so that the potential of historic areas worthy of protection is fully realised. It has also been updated to give more information on innovative ways of handling conservation appraisals, particularly community involvement beyond consultation, character assessment and digital presentation.

This document identifies different types of special architectural and historic interest which contribute to the significance and character of a conservation area, leading to its designation. These include:

- Areas with a high number of nationally designated heritage assets and a variety of architectural styles and historic associations;
- Those linked to a particular industry or individual with a particular local interest;
- Where an earlier, historically significant, layout is visible in the modern street pattern; Where a particular style of architecture or traditional building materials predominate; and
- Areas designated because of the quality of the public realm or a spatial element, such as a design form or settlement pattern, green spaces which are an essential component of a wider historic area, and historic parks and gardens and other designed landscapes, including those included on the Historic England Register of parks and gardens of special historic interest.

Change is inevitable, and often beneficial, and this document provides guidance in respect of managing change in a way that conserves and enhances conservation areas. It also identifies ways in which suitable areas can be identified for designation as new conservation areas or extensions to conservation areas through historic characterisation studies, production of neighbourhood plans, confirmation of special interest and setting out of recommendations.

Historic England Advice Note 2 (HEAN2): Making Changes to Heritage Assets (February 2016)

The purpose of this document is to provide information in respect of the repair, restoration and alterations to heritage assets. It promotes guidance for both LPAs, consultants, owners, applicants and other interested parties in order to promote well-informed and collaborative conservation.

The best way to conserve a building is to keep it in use, or to find an appropriate

new use. This document states that ‘an unreasonable, inflexible approach will prevent action that could give a building new life...A reasonable proportionate approach to owners’ needs is therefore essential’. Whilst this is the case, the limits imposed by the significance of individual elements are an important consideration, especially when considering an asset’s compatibility with Building Regulations and the Equality Act. As such, it is good practice for LPAs to consider imaginative ways of avoiding such conflict.

This document provides information relating to proposed change to a heritage asset, which are characterised as:

- Repair;
- Restoration;
- Addition and alteration, either singly or in combination; and
- Works for research alone.

Historic England Advice Note 3 (HEAN3): The Historic Environment and Site Allocations in Local Plans (October 2015)

This document provides information for those involved in the site allocation process, particularly when implementing historic environment legislation, relevant policy within the NPPF and related guidance found within the Planning Practice Guidance (PPG).

The inclusion of sites within a Local Plan can provide the opportunity to ensure that new development will avoid harming the significance of both designated and non-designated heritage assets, including effects on their setting. Furthermore, this document highlights the ways in which the process of site allocation may present opportunities to better reveal the historic environment. It sets out a five-step methodology which can assist in appropriate site selection:

- Step 1: Identify which heritage assets are affected by the potential site allocation;
- Step 2: Understand what contribution the site (in its current form) makes to the significance of heritage asset(s);
- Step 3: Identify what impacts the allocation might have on that significance;
- Step 4: Consider maximising enhancements and avoiding harm; and
- Step 5: Determine whether the proposed site allocation is appropriate in light if the NPPF’s tests of soundness.

Historic England Advice Note 7 (HEAN7): Local Heritage Listing: Identifying and Conserving Local Heritage (Second Edition, January 2021)

First published by English Heritage in 2012 under the title ‘Good Practice Guide for Local Heritage Listing’, HEA7: Local Heritage Listing: Identifying and Conserving

Local Heritage supersedes the first edition of the published guidance; Historic England Advice Note 7: Local Heritage Listing (2016), reflecting the changes made to the Planning Practice Guidance in 2019.

The updated advice seeks to support communities and local authorities in the introduction of a local heritage list in their area or for those wishing to make changes to an existing list which may have already been adopted. It observes the value of a local heritage list and seeks to adopt a consistent and accountable approach to the identification and management of heritage assets at a local level.

Historic England notes that inclusion on a local heritage list based on sound evidence and criteria delivers a consistent and accountable way of recognising non-designated heritage assets, no matter how they are identified, to the benefits of good planning for the area and of owners, developers and others wishing to understand local context fully. By providing clear and up-to-date information, backed by policy set out in the NPPF (2019), a local heritage list which has been available on the website of a local planning authority and via the Historic Environment Record (HER) provides clarity on the location and identification of non-designated heritage assets.

Regarding the identification of non-designated heritage assets, Historic England builds on the guidance set out in Planning Practice Guidance (2019) in defining a non-designated heritage asset, highlighting that they can be identified in several ways, including:

- Local Heritage Lists;
- Local and Neighbourhood Plans;
- Conservation Area Appraisals and Reviews;
- Decision-making on planning applications.

Whilst the advice notes that planning protections for non-designated heritage assets are not as strong as those for designated heritage assets, it highlights that they are still important, referring to the importance of paragraph 197 of the NPPF (2019), which requires local planning authorities to take into account the desirability of sustaining and enhancing the significance of such heritage assets.

This document draws on good practice across the country in developing a new local heritage list or making improvements to an existing one. Importantly, this advice should be seen as a starting point. In order to remain flexible enough to respond to local needs, decisions on the ways in which assets are identified, and the system adopted for managing the local heritage list, are matters for local planning authorities and their communities. This advice does, however, set out methods for setting up and managing a local list to provide ideas on how this might be done, including providing a clear criterion setting commonly applied selection criteria for assessing the suitability of assets for inclusion in a local heritage list.

Historic England Advice Note 10 (HEAN10): Listed Buildings and Curtilage (February 2018)

HE10: Listed Buildings and Curtilage provides advice on assessing whether a building has a curtilage and what that curtilage might/may include. It provides hypothetical examples to assist in that assessment and is based on current legislative provisions in the Planning (Listed Building and Conservation Areas) Act 1990 and consideration of listed buildings and curtilage in legal cases.

In general terms, the guidance defines the curtilage of a building (the principal listed building) as any area of land and other buildings that are around and associated with that principal building. It sets out that the courts have stated that there are three key factors to be taken into account in assessing whether a structure, building or object falls within the curtilage of a listed building:

- The physical layout of the listed building and structure;
- Their ownership, both historically and at the date of listing;
- The use or function of the relevant buildings, again both historically and at the date of listing.

It is important to note that the law (Section 1(5) of the Planning (Listed Buildings and Conservation Areas) Act 1990) states that listed buildings identified on the National Heritage List for England also includes any ancillary objects or structures within the curtilage of the building, which forms part of the land and has done so since before 1st July 1948. Ultimately, it will be for the Local Planning Authority to reach a conclusion as to whether or not buildings are within a particular curtilage, and ultimately a matter for the courts to determine if that decision is thought unreasonable.

Historic England Advice Note 12 (HEA12): Statements of Heritage Significance (October 2019)

HEA12: Statements of Heritage Significance covers the National Planning Policy Framework requirement for applicants for heritage and other consents to describe heritage significance to help local planning authorities to make decisions on the impact of proposals for change to heritage assets.

The document states that understanding the significance of heritage assets, in advance of developing proposals for their buildings and sites, enables owners and applicants to receive effective, consistent and timely decisions. It explores the assessment of significance of heritage assets as part of a staged approach to decision-making in which assessing significance precedes designing the proposal(s).

Historic England Advice Note 16 (HEAN 16): Listed Building Consent

HE16: Listed Building Consent provides advice on how to judge whether proposals require listed building consent and how to make informed applications for this. It also advises on what works are likely to need listed building consent or not, and

provides guidance on submitting successful applications.

The note emphasises the importance of understanding the significance of a listed building and where it gains its special interest, and recommends the assistance of heritage professionals to increase the likelihood of a successful listed building consent application, as well as utilising contractors who have experience with historic buildings to carry out works.

It provides a reminder of the relevant policies that are laid out in the Planning (Listed Buildings and Conservation Areas) Act 1990 (in particular sections 7,8 and 9), the NPPF and the PPG. The note's 'Annex 1' provides examples of common scenarios involving proposals of works to a listed building, and advises as to whether or not these would require listed building consent. Additionally, a table of potential proposed works is laid out with guidance as to what would not require an application for listed building consent and what exceptions there are likely to be.

Conservation Principles, Policies and Guidance (English Heritage, 2008)

Conservation Principles outlines English Heritage's approach to the sustainable management of the historic environment. While primarily intended to ensure consistency in English Heritage's own advice and guidance through the planning process, the document is commended to local authorities to ensure that all decisions about change affecting the historic environment are informed and sustainable.

This document was published in line with the philosophy of PPS5 and is currently in the process of being updated. Nevertheless, it remains relevant to the current policy regime in that emphasis is placed upon the importance of understanding significance as a means to properly assess the effects of change to heritage assets. The guidance describes a range of heritage values which enable the significance of assets to be established systematically, with the four main 'heritage values' being: evidential, historical, aesthetic and communal. The Principles emphasise that 'considered change offers the potential to enhance and add value to places...it is the means by which each generation aspires to enrich the historic environment' (paragraph 25).

Strategic Policy

Wiltshire's Core Strategy

Wiltshire's Core Strategy was formally adopted in 2015 providing the development strategy to deliver sustainable growth to the year 2026.

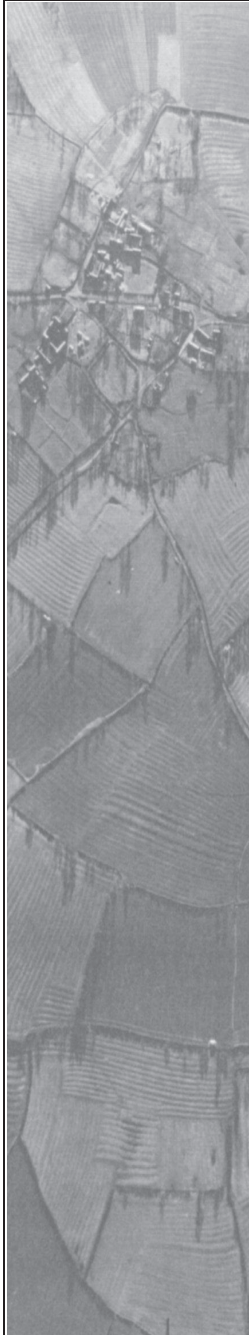
Core Strategy Policy 58: Ensuring Conservation of the Historic Environment sets forward the strategic objective to protect, conserve and enhance the historic environment. Opportunities to protect and better reveal the significance of those assets will be sought to ensure the historic environment plays an integral and positive role in place-making, to positively support and integrate the value of heritage, enhancing the cultural and economic environment.

The policy highlights the historic environment shall be sustained and enhanced.

This includes all heritage assets including historic buildings, conservation areas, historic parks and gardens, landscape and archaeology.

Proposals for development affecting heritage assets shall conserve and, where appropriate, enhance their significance and setting. Distinctive elements of Wiltshire's historic environment, including designated and non-designated heritage assets, which contribute to a sense of local character and identity will be conserved, and where possible enhanced. The potential contribution of these heritage assets towards wider social, cultural, economic and environmental benefits will also be utilised where this can be delivered in a sensitive and appropriate manner.

Appendix 2: Archaeology Report



**Land off M4 Junction 16
Lydiard Tregoze
Wiltshire**

MAGNETOMETER SURVEY REPORT

for

Smith Jenkins

Kerry Donaldson & David Sabin

June 2023

Ref. no. J968

ARCHAEOLOGICAL SURVEYS LTD

**Land off M4 Junction 16
Lydiard Tregoze
Wiltshire**

MAGNETOMETER SURVEY REPORT

for

Smith Jenkins

Fieldwork by David Sabin BSc (Hons) MCIfA

Report by Kerry Donaldson BSc (Hons) MCIfA

Report checked by David Sabin

Primary archive location - Archaeological Surveys Ltd, Yatesbury, Wiltshire

Survey dates – 19th & 20th June 2023

Ordnance Survey Grid Reference – **SU 10470 82680**



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SUMMARY

A geophysical survey, comprising detailed magnetometry, was undertaken by Archaeological Surveys at the request of Smith Jenkins over 6.9ha on land adjacent to Junction 16 of the M4 motorway on the south western edge of Swindon. The results show a fragmented positive linear anomaly that could relate to a ditch-like feature, but several very weakly positive linear and a negative linear anomaly in the north western part of the site are poorly defined. A small number of pit-like anomalies are magnetically enhanced which could suggest an anthropogenic origin. Ridge and furrow can be seen in the north eastern part of the site, with more recent agricultural activity to the west.

1 INTRODUCTION

1.1 *Survey background*

- 1.1.1 Archaeological Surveys Ltd was commissioned by Smith Jenkins to undertake a magnetometer survey of an area of land off Junction 16 of the M4 motorway on the south western edge of Swindon, but within the parish of Lydiard Tregoze in Wiltshire. The site has been outlined for a proposed development of a new service station off the motorway and the survey forms part of an archaeological assessment.

1.2 *Survey objectives and techniques*

- 1.2.1 The objective of the survey was to use magnetometry to locate geophysical anomalies that may be archaeological in origin so that they may be assessed prior to development of the site. The methodology is considered an efficient and effective approach to archaeological prospection.
- 1.2.2 Geophysical survey can provide useful information on the archaeological potential of a site; however, the outcome of any survey relies on a number of factors and as a consequence results can vary. The success in meeting the aims and objectives of a survey is, therefore, often impossible to predetermine.

1.3 *Standards, guidance and recommendations for the use of this report*

- 1.3.1 Archaeological Surveys Ltd is a Registered Organisation with the Chartered Institute for Archaeologists (CIfA) and both company directors are Members of the Chartered Institute for Archaeologists (MCIfA) and have therefore been assessed for their technical competence and ethical suitability and abide by the CIfA Codes of Conduct. The survey and report follow the recommendations set out by: European Archaeological Council (2015) Guidelines for the Use of Geophysics in Archaeology; Institute for

Archaeologists (2002) The use of Geophysical Techniques in Archaeological Evaluations. The work has been carried out to the Chartered Institute for Archaeologists (2014, updated 2020) Standard and Guidance for Archaeological Geophysical Survey.

- 1.3.2 Archaeological Surveys Ltd provide a detailed geophysical survey report and it is recommended that where possible the contents should be considered in full. The Summary provides a brief overview of the results with more detail available in the Discussion and/or Conclusion. The *List of anomalies* within the Results provides a detailed assessment of the anomalies within separate categories which can be useful in inferring a level of confidence to the interpretation. Quality and factors influencing the interpretation of anomalies is also set out within the results.
- 1.3.3 It is recommended that the full report should always be considered when using data and interpretation plots; where this is not possible, in the field for example, the abstraction and interpretation plots should retain their colour coding and be used with a corresponding legend.
- 1.3.4 Where targeting of anomalies by excavation is to be carried out, care should be taken to place trenches over solid lines or features visible on the abstraction and interpretation plots. Archaeological Surveys abstraction and interpretation avoids the use of dashed or dotted line formats, and broken or fragmented lines used in interpretive plots may well correspond closely with truncation of archaeological features.

1.4 Site location, description and survey conditions

- 1.4.1 The site is located immediately south east of Junction 16 of the M4 motorway on the south western edge of Swindon, but within the parish of Lydiard Tregoze, Wiltshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) ST 10470 82680, see Figs 01 and 02.
- 1.4.2 The geophysical survey covers approximately 6.9ha within three land parcels. Area 1 is situated immediately adjacent to the motorway junction and was surveyed in entirety, Areas 2 and 3 lie within two smaller fields to the east and were only partially surveyed within the development boundary.
- 1.4.3 The site is generally on level ground at around 105m AODN. The fields contained long grass, boundaries are mainly hedgerows with some post and rail fencing separating the site from the B4005 which is located immediately to the south.
- 1.4.4 The ground conditions across the site were generally considered to be favourable for the collection of magnetometry data. Weather conditions during the survey were fine.



Plate 1: Area 1 looking north west

1.5 Site history and archaeological potential

- 1.5.1 There are no designated or non-designated heritage assets within the site. A number of undated pits (MWI75243) and gullies (MWI75427) were located through evaluation c.300-400m to the west, with three undated pits and linear features MWI16583) also recorded 300m to the south east. A number of finds and features were discovered through evaluation of the new Wichel Way to the east including a Neolithic leaf-shaped arrowhead (MWI75575) 600m to the east south east and a number Romano-British ditches (MWI75581, MWI75582, MWI75583, MWI75596) c.770-900m to the east. An undated field system, but of probable medieval date, (MWI9381) is located 500m to the north west.
- 1.5.2 Mapping from the 1880s and early 20th century shows the field boundaries in the same layout as today, with the insertion of the M4 to the north in the early 1970s and a diversion of Hay Lane from the south to Junction 16 forming the southern boundary of the site.

1.6 Geology and soils

- 1.6.1 The underlying geology is mudstone from the Kimmeridge Clay Formation (BGS, 2023).
- 1.6.2 The overlying soil across the site is from the Denchworth association (712b) and is a pelo-stagnogley soil. It consists of a slowly permeable, seasonally waterlogged, clayey soil (Soil Survey of England and Wales, 1983).

- 1.6.3 The underlying geology and soils are frequently associated with low magnetic contrast and low levels of magnetic susceptibility. However, cut features of archaeological potential may be located where human activity has altered the magnetic characteristics of the soil sufficiently. The underlying geology and soils are, therefore, considered acceptable for magnetic survey.

2 METHODOLOGY

2.1 *Technical synopsis*

- 2.1.1 Magnetometry survey records localised magnetic fields that can be associated with features formed by human activity. Magnetic susceptibility and magnetic thermoremnance (also known as thermoremanence) are factors associated with the formation of localised magnetic fields.
- 2.1.2 Iron minerals within the soil may become altered by burning and the break down of biological material; effectively the magnetic susceptibility of the soil is increased, and the iron minerals become magnetic in the presence of the Earth's magnetic field. Accumulations of magnetically enhanced soils within features, such as pits and ditches, may produce positive magnetic anomalies that can be mapped by magnetic prospection. In addition, where soil is displaced by material of comparatively low magnetic susceptibility, such as many types of sedimentary rock, anomalies of negative value may occur which could be indicative of structural remains.
- 2.1.3 Magnetic thermoremnance can occur when ferrous minerals have been heated to high temperatures such as in a kiln, hearth, oven etc. On cooling, a permanent magnetisation may be acquired due to the presence of the Earth's magnetic field. Certain natural processes associated with the formation of some igneous and metamorphic rock may also result in magnetic thermoremnance.
- 2.1.4 The localised variations in magnetism are measured as sub-units of the Tesla, which is a SI unit of magnetic flux density. These sub-units are nano Teslas (nT), which are equivalent to 10^{-9} Tesla (T). Additional details are set out in 2.2 below and within Appendix A.

2.2 *Equipment configuration, data collection and survey detail*

- 2.2.1 The detailed magnetic survey was carried out using a SENSYS MAGNETO® MX V3 6 channel cart-based system. The instrument has 6 fluxgate gradiometers (FGM650) spaced 0.5m apart with readings recorded at 20Hz. The cart is pushed at walking speed and not towed. Each sensor is not zeroed in the field as the vertical axis alignment is precisely fixed leaving sensor offsets that are removed during data processing. The fixing of the vertical alignment ensures the sensors are not unduly influenced by localised magnetic fields and that the vertical component of a magnetic anomaly is measured. The gradiometers have a recorded range of ± 3000 nT, and resolution is approximately 0.1nT. They are linked to a Leica GS10

RTK GNSS with data recorded by SENSYS MonMX software on a rugged notebook computer system.

- 2.2.2 Due to the fixed offsets within the fluxgate sensors, as a result of the manufacturing and tensioning process, the survey data do not provide a visually useful dataset until a zero median traverse algorithm is applied. It is recognised that this has the potential to affect some anomalies detrimentally by removing linear features orientated parallel to survey transects. However, this has not been noted as a particular problem with the system due to the high resolution data collection, generally long length of traverses and variability within the magnetic characteristics of a linear anomaly.
- 2.2.3 Data are collected along a series of parallel survey transects to achieve 100% coverage of the surveyable land. The length of each transect is variable and relates to the size of the survey area and other factors including ground conditions. A visual display allows accurate placing of transects and helps maintain the correct separation between adjacent traverses. Data are not collected within fixed grids and data points are considered to be random even though the data are collected in a systematic manner covering all accessible areas (Aspinall, Gaffney and Schmidt, 2009).
- 2.2.4 Fluxgate sensors are highly sensitive to temperature change and this manifests as drift during the course of a survey. This can be particularly noticeable during the morning as temperatures rise and the equipment warms or cools. Sensor drift within the course of a traverse will appear as a line trending from negative to positive after processing with a zero median traverse algorithm. To remove the potential for temperature drift, data were collected after a 20 minute stabilisation period and traverses were limited to a time of generally <100s.

2.3 *Data processing and presentation*

- 2.3.1 Magnetic data collected by the MAGNETO® MX V3 cart-based system are initially prepared using SENSYS MAGNETO® DLMGPS software. The software effectively allocates a geographic position for each data point and can compensate for fixed offsets present within the FGM650 sensors. The offsets are positive or negative values present on all fluxgate gradiometer sensors. Some systems use manual or electronic balancing to effectively zero the sensors; however, this is a short term measure that is prone to drift through temperature changes and vibration and can easily be incorrectly set due to localised magnetic fields. The FGM650 sensors are very accurately aligned to the vertical magnetic gradient and are highly stable showing negligible drift on long traverses. The offset values are removed using TerraSurveyor software.
- 2.3.2 Survey tracks are analysed and georeferenced raw data (UTM Z30N) are then exported in ASCII format for further analysis and display within TerraSurveyor. The removal of the offset values (compensation) of the sensors is also carried out in TerraSurveyor using a zero median traverse function. Data are then

considered to be minimally processed. Note: without the zero median traverse function it is not possible to create a meaningful data plot as all sensors have a different offset value. Although a zero median traverse algorithm can remove anomalies aligned with the survey tracks, in practice this rarely occurs due to the use of long traverses, high resolution measurement and variability within the magnetic susceptibility of long linear features.

- 2.3.3 The minimally processed data are collected between limits of $\pm 3000\text{nT}$ and clipped for display at $\pm 3\text{nT}$. Data are interpolated to a resolution of effectively 0.5m between tracks and 0.15m along each survey track.
- 2.3.4 Appendix C contains metadata concerning the survey and data attributes and is derived directly from TerraSurveyor. Reference should be made to Appendix B for further information on processing.
- 2.3.5 A TIF file is produced by TerraSurveyor software along with an associated world file (.TFW) that allows automatic georeferencing (OSGB36 datum) when using GIS or CAD software. The main form of data display used in the report is the minimally processed greyscale plot. Minimally processed data are considered by the manufacturer to be data that are compensated by SENSYS MAGNETO DLMGPS software, see 2.3.1 and 2.3.2. Note: traceplots are not considered to be appropriate as they do not provide an accurate or useful assessment of the magnetic anomalies due to the very high density of data collection. In addition, traceplots cannot be meaningfully plotted against base mapping and in areas of complexity traces may be lost or highly confused. Traceplots may be used to demonstrate characteristic magnetic profiles across discrete features where it is considered beneficial.
- 2.3.6 The raster images are combined with base mapping using ProgeCAD Professional 2021, creating DWG (2018) file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. The CAD plots are effectively georeferenced facilitating relocation of features using GNSS, resection method, etc.
- 2.3.7 An abstraction and interpretation is drawn and plotted for all geophysical anomalies located by the survey. Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing. Appendix E sets out CAD layer names with colour and graphic content for each interpretation category, see 3.3.
- 2.3.8 A brief summary of each anomaly, with an appropriate reference number, is set out in list form within the results (Section 3) to allow a rapid and objective assessment of features within each survey area.
- 2.3.9 A digital archive is produced with this report, see Appendix D below. The main archive is held at the offices of Archaeological Surveys Ltd.

3 RESULTS

3.1 General assessment of survey results

- 3.1.1 The detailed magnetic survey was carried out over a total of three survey areas covering approximately 6.9ha.
- 3.1.2 Magnetic anomalies located can be generally classified as positive and negative anomalies of an uncertain origin, anomalies associated with land management, linear anomalies of an agricultural origin, areas of magnetic debris and disturbance, strong discrete dipolar anomalies relating to ferrous objects. Anomalies located within the site have been numbered and are described in 3.4 below.

3.2 Data quality and factors affecting the interpretation or formation of anomalies

- 3.2.1 Data are considered representative of the magnetic anomalies present within the site. There are no significant defects within the dataset.
- 3.2.2 The results demonstrate the presence of a number of anomalies across the site. Magnetic contrast is generally low to moderate but anomalies of agricultural origin infer the potential for useful magnetic contrast between the soil, subsoil and/or solid geology.
- 3.2.3 A large zone of magnetic debris in the south western part of Area 1 relates to ferrous contamination within the soil across an area formerly used as a site compound. The high magnitude magnetic anomalies associated with the debris have the potential to obscure more significant weak anomalies should they be present within this part of the site.

3.3 Data interpretation

- 3.3.1 The list of sub-headings below attempts to define a number of separate categories that reflect the range and type of features located during the survey. A general explanation of the characteristics of the magnetic anomalies is set out for each category in order to justify interpretation, see Table 1.

Interpretation category	Description and origin of anomalies
Anomalies with an uncertain origin	The category applies to a range of anomalies where <u>there is not enough evidence to confidently suggest an origin</u> . Anomalies in this category <u>may well be related to archaeologically significant features, but equally relatively modern features, geological/pedological features and agricultural features should be considered</u> . Morphology may be unclear or uncharacteristic and there may be a lack of additional supporting information. Positive anomalies are indicative of magnetically enhanced soils that may form the fill of 'cut' features or may be produced by accumulation within layers or 'earthwork' features; soils subject to burning may also produce positive anomalies. Negative anomalies are produced by material of comparatively low magnetic susceptibility such as stone and subsoil.
Anomalies relating to land management	Anomalies are mainly linear and may be indicative of the magnetically enhanced fill of cut features (i.e. ditches). The anomalies may be long and/or form rectilinear elements and they may relate to topographic features or be visible on early mapping. Associated agricultural anomalies (e.g. headlands, plough marks and former ridge and furrow) may support the interpretation. Land drains can appear in a classic herringbone pattern of interconnected multiple dipolar linear anomalies, or as parallel linear anomalies. The multiple

	dipolar response indicates ceramic land drains.
Anomalies with an agricultural origin	The anomalies are often linear and form a series of parallel responses or are parallel to extant land boundaries. Where the response is broad, former ridge and furrow is likely; narrow response is often related to modern ploughing. This category <u>does not include</u> agricultural features of early date or considered to be of archaeological potential (e.g. animal stockades, enclosures, farmsteads, etc).
Anomalies associated with magnetic debris	Magnetic debris often appears as areas containing many small dipolar anomalies that may range from weak to very strong in magnitude. They often occur where there has been dumping or ground make-up and are related to magnetically thermoremanent materials such as brick or tile or other small fragments of ferrous material. This type of response is occasionally associated with kilns, furnace structures, hearths and nail spreads from former wooden structures or rooves and <u>may therefore, be archaeologically significant</u> . It is also possible that the response may be caused by natural material such as certain gravels and fragments of igneous or metamorphic rock. Strong discrete dipolar anomalies are responses to ferrous objects within the topsoil.
Anomalies with a modern origin	The magnetic response is often strong and dipolar indicative of ferrous material and may be associated with extant above surface features such as wire fencing, cables, pylons etc. Often a significant area around these features has a strong magnetic flux which may create magnetic disturbance; such disturbance can effectively obscure low magnitude anomalies if they are present. Fluxgate sensors may respond erratically adjacent to strong magnetic sources. Buried services may produce characteristic multiple dipolar anomalies dependant upon their construction.

Table 1: List and description of interpretation categories

3.4 List of anomalies

Area centred on OS NGR 410470 182680, see Figs 03 & 04.

Anomalies with an uncertain origin

(1) – A fragmented positive linear anomaly appears to extend southwards from linear feature (5). It is not parallel with the series of agricultural anomalies (9) that are associated with (5). The fragmented appearance would suggest that it has been truncated by later activity, and it may relate to a ditch-like feature indicative of a former boundary. However, the field boundary just to the east has been mapped since at least the 1880s and so the date of the anomaly is not certain.

(2) – The site contains a small number of discrete positive responses. They appear to relate to pit-like features with a moderately enhanced fill (6-13nT) which could suggest an anthropogenic origin. However, there are a lack of associated anomalies or coherent layout and their origin is uncertain.

(3) – A small number of weakly positive linear anomalies are located towards the north western corner of the site. It is not clear if they relate to cut features as they are so poorly defined.

(4) – A negative linear anomaly extends from the centre towards the north east corner of Area 1. This type of anomaly could relate to a cut feature with a fill of material that is less magnetically enhanced than the surrounding soil; however, it could also be associated with vehicular activity.

Anomalies associated with land management

(5) – A positive linear anomaly appears to relate to an unmapped boundary feature. It is associated with the agricultural anomalies (9) which are oriented at right angles

to it, with one parallel with it, but it also appears to end at anomaly (1).

(6) – A weakly dipolar, linear anomaly is located in the north eastern corner of Area 2 and appears to relate to a land drain.

Anomalies with an agricultural origin

(7 & 8) - Two series of linear anomalies can be seen in Area 2 in the north eastern part of the site. The anomalies would suggest a response to former ridge and furrow.

(9) – A series of parallel linear anomalies in Area 1 relate to agricultural activity.

Anomalies associated with magnetic debris

(10) – A zone of strongly magnetic debris in the south western part of the site relates to material used within a site compound during the recent reconstruction of Junction 16.

(11) – Strong, discrete, dipolar anomalies are a response to ferrous and other magnetically thermoremanent objects, such as brick/tile in the topsoil.

4 CONCLUSION

- 4.1.1 The geophysical survey located a linear anomaly that appears to relate to a fragmented linear ditch but its date and function are uncertain. A small number of discrete, pit-like features have also been located, but it is not clear if they relate to natural or anthropogenic features. A small number of very weakly positive linear anomalies and a negative linear anomaly have also been located in the north western part of the site, but they lack a coherent morphology and cannot be confidently interpreted as cut features. Ridge and furrow can be seen in the north eastern part of the site, as well as more recent agricultural activity in the west; however, a possible former field boundary appears to be associated with this activity, but this has not been mapped.

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Appendix A – basic principles of magnetic survey

Iron minerals are always present to some degree within the topsoil and enhancement associated with human activity is related to increases in the level of magnetic susceptibility and thermoremanent material. Magnetic susceptibility is an induced magnetism within a material when it is in the presence of a magnetic field. This can be thought of as effectively permanent due to the presence of the Earth's magnetic field. Thermoremanent magnetism occurs when ferrous material is heated beyond a specific temperature known as the Curie Point. Demagnetisation occurs at this temperature with re-magnetisation by the Earth's magnetic field upon cooling.

Enhancement of magnetic susceptibility can occur in areas subject to burning and complex fermentation processes on biological material; these are frequently associated with human settlement. Thermoremanent features include ovens, hearths, and kilns. In addition thermoremanent material such as tile and brick may also be associated with human activity and settlement.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil can create an area of enhancement compared with surrounding soils and subsoils into which the feature is cut. Mapping enhanced areas will produce linear and discrete anomalies allowing an assessment and characterisation of hidden subsurface features.

It should be noted that areas of negative enhancement can be produced from material having lower magnetic properties compared to the topsoil. This is common for many sedimentary bedrocks and subsoils which were often used in the construction of banks and walls etc. Mapping these 'negative' anomalies may also reveal archaeological features.

Magnetic survey or magnetometry can be carried out using a fluxgate gradiometer and may be referred to as gradiometry. The SENSYS gradiometer is a passive instrument consisting of two fluxgate sensors mounted vertically 65cm apart. The instrument is carried about 10-20cm above the ground surface and the upper sensor measures the Earth's magnetic field as does the lower sensor but this is influenced to a greater degree by any localised buried magnetic field. The difference between the two sensors will relate to the strength of the magnetic field created by the buried feature.

There are a number of factors that may affect the magnetic survey and these include soil type, local geology and previous human activity. Situations arise where magnetic disturbance associated with modern services, metal fencing, dumped waste material etc., obscures low magnitude fields associated with archaeological features.

Appendix B – data processing notes

Clipping

Minimum and maximum values are set and replace data outside of the range with those values. Extreme values are removed improving colour or greyscale contrast associated with data values that may be archaeologically significant. Different ranges are applied to data in order to determine the most suitable for anomaly abstraction and display.

Zero Median/Mean Traverse

The median (or mean) of data from each traverse is calculated ignoring data outside a threshold value, the median (or mean) is then subtracted from the traverse. The process is used to equalise differences between the offset values of the gradiometer sensors. The process can remove archaeological features that run along a traverse but with the high resolution datasets created by the Sensys FGM650 sensors and the method of data collection this has not been a notable problem. In fact, the removal of offsets using software avoids carrying out a balancing procedure on site, which inevitably can never be done in magnetically clean conditions and results in improperly aligned fluxgate sensors and/or electronic adjustment values.

Appendix C – survey and data information

Area 1 minimally processed data	Std Dev: 0.97	Dummy Value: 32702
Filename: J968-mag-Area1-proc.xcp	Mean: 0.02	Dimensions
Instrument Type: Sensys DLMGPS	Median: 0.01	Survey Size (meters): 147 m x 223 m
Units: nT	Composite Area: 8.2251 ha	X&Y Interval: 0.15 m
UTM Zone: 30U	Surveyed Area: 5.0898 ha	Source GPS Points: Active: 531420, Recorded: 531426
Survey corner coordinates (X/Y): OSGB36	PROGRAM	Stats
Northwest corner: 410292.61, 182808.86 m	Name: TerraSurveyor	Max: 3.32
Southeast corner: 410603.11, 182543.96 m	Version: 3.0.37.0	Min: -3.30
Collection Method: Randomised	GPS based Proce4	Std Dev: 0.94
Sensors: 6	1 Base Layer	Mean: 0.01
Dummy Value: 32702	2 Unit Conversion Layer (UTM to OSGB36)	Median: 0.02
Dimensions	3 DeStripe Median Traverse:	Composite Area: 3.2756 ha
Survey Size (meters): 311 m x 265 m	4 Clip from -3.00 to 3.00 nT	Surveyed Area: 1.6915 ha
X&Y Interval: 0.15 m	Areas 2 & 3 minimally processed data	GPS based Proce4
Source GPS Points: Active: 1631117, Recorded: 1631123	Filename: J968-mag-Area2-proc.xcp	1 Base Layer
Stats	Northwest corner: 410549.36 182763.734 m	2 Unit Conversion Layer (UTM to OSGB36)
Max: 3.32	Southeast corner: 410696.51, 182541.13m	3 DeStripe Median Traverse:
Min: -3.30	Collection Method: Randomised	4 Clip from -3.00 to 3.00 nT
	Sensors: 6	

Appendix D – digital archive

Archaeological Surveys Ltd hold the primary digital archive at their offices in Wiltshire. Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site.

A PDF copy will be supplied to the Wiltshire Historic Environment Record with greyscale images and abstraction layers made available on request. The report will also be uploaded to OASIS, the online system for reporting archaeological investigations and linking research outputs and archives.

Archive contents:

File type	Naming scheme	Description
Data	J968-mag-[area number/name].asc J968-mag-[area number/name].xcp J968-mag-[area number/name]-proc.xcp	Raw data as ASCII CSV TerraSurveyor raw data TerraSurveyor minimally processed data
Graphics	J968-mag-[area number/name]-proc.tif	Image in TIF format
Drawing	J968-[version number].dwg	CAD file in 2018 dwg format
Report	J968 report.odt	Report text in LibreOffice odt format

Table 2: Archive metadata

Appendix E – CAD layers for abstraction and interpretation plots

The table below sets out Archaeological Surveys Ltd CAD layer names with associated colours and graphical content. Where CAD files are available layers may be extracted for further CAD/GIS use. Note: hatched polygon boundaries are contained within layers with the RGB colour code 254, 255, 255 (near white) in order to prevent their visibility.

Report sub-heading and associated CAD layer names	Colour with RGB index	Layer content
Anomalies with an uncertain origin		
AS-ABST MAG POS LINEAR UNCERTAIN	255,127,0	Line, polyline or polygon (solid)
AS-ABST MAG NEG LINEAR UNCERTAIN	Blue 0,0,255	Line, polyline or polygon (solid)
AS-ABST MAG POS DISCRETE UNCERTAIN	255,127,0	Solid donut, point or polygon (solid)
Anomalies relating to land management		
AS-ABST MAG BOUNDARY	127,0,0	Line, polyline or polygon (solid or cross hatched ANSI37)

AS-ABST MAG LAND DRAIN		Cyan 0,255,255	Line or polyline
Anomalies with an agricultural origin			
AS-ABST MAG AGRICULTURAL		Green 0,255,0	Line or polyline
AS-ABST MAG RIDGE AND FURROW		0,127,63	Line, polyline or polygon (cross hatched ANSI37)
Anomalies associated with magnetic debris			
AS-ABST MAG DEBRIS		132, 132, 132	Polygon (cross hatched ANSI37)
AS-ABST MAG STRONG DIPOLAR		132, 132, 132	Solid donut, point or polygon (solid)
Anomalies with a modern origin			
AS-ABST MAG DISTURBANCE		132, 132, 132	Polygon (hatched ANSI31)

Table 3: CAD layering

Appendix F – copyright and intellectual property

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**Geophysical Survey
Land off M4 Junction 16
Lydiard Tregoze
Wiltshire**

Map of survey area



● Survey location

Site centred on OS NGR
SU 10470 82680

SCALE 1:25 000

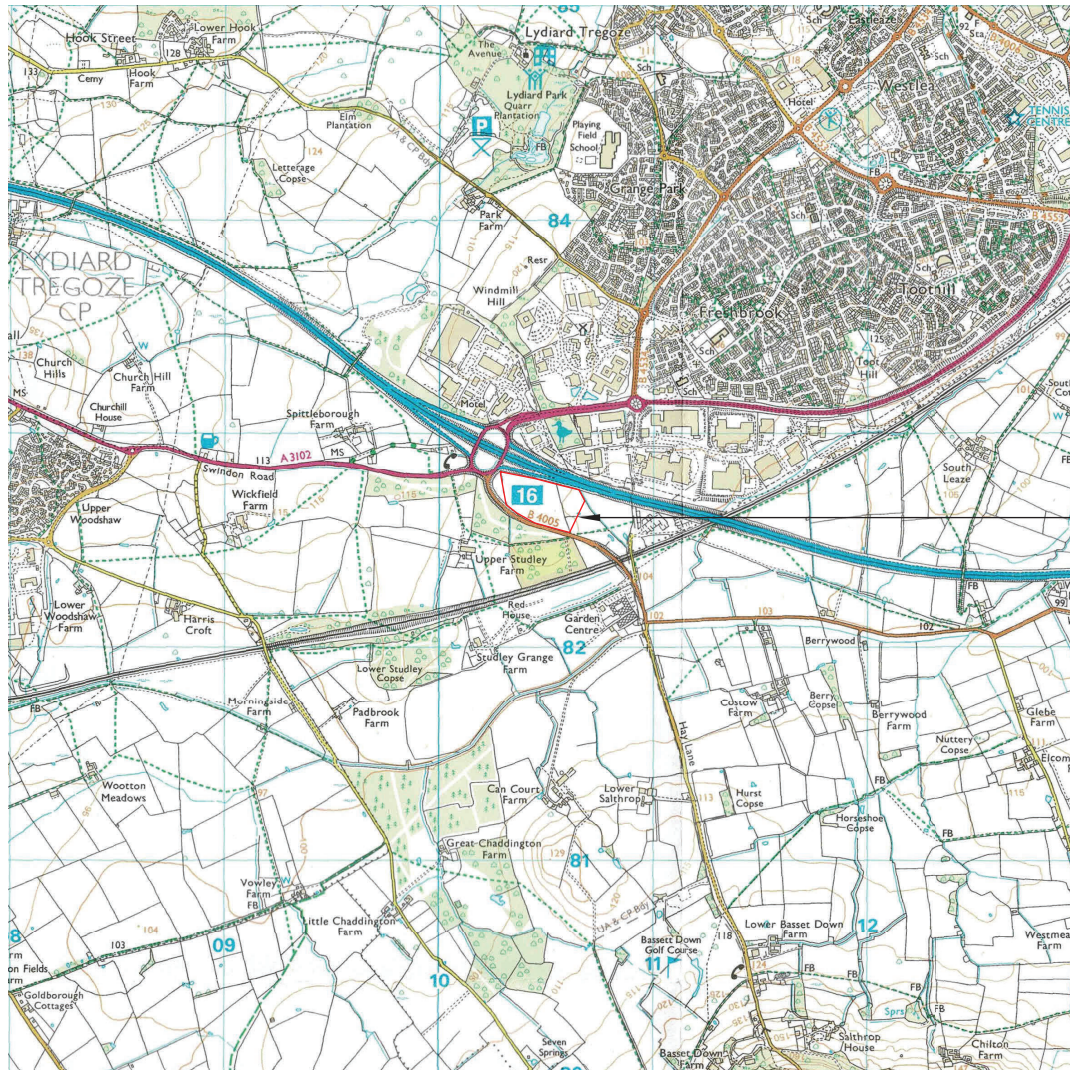


SCALE TRUE AT A3

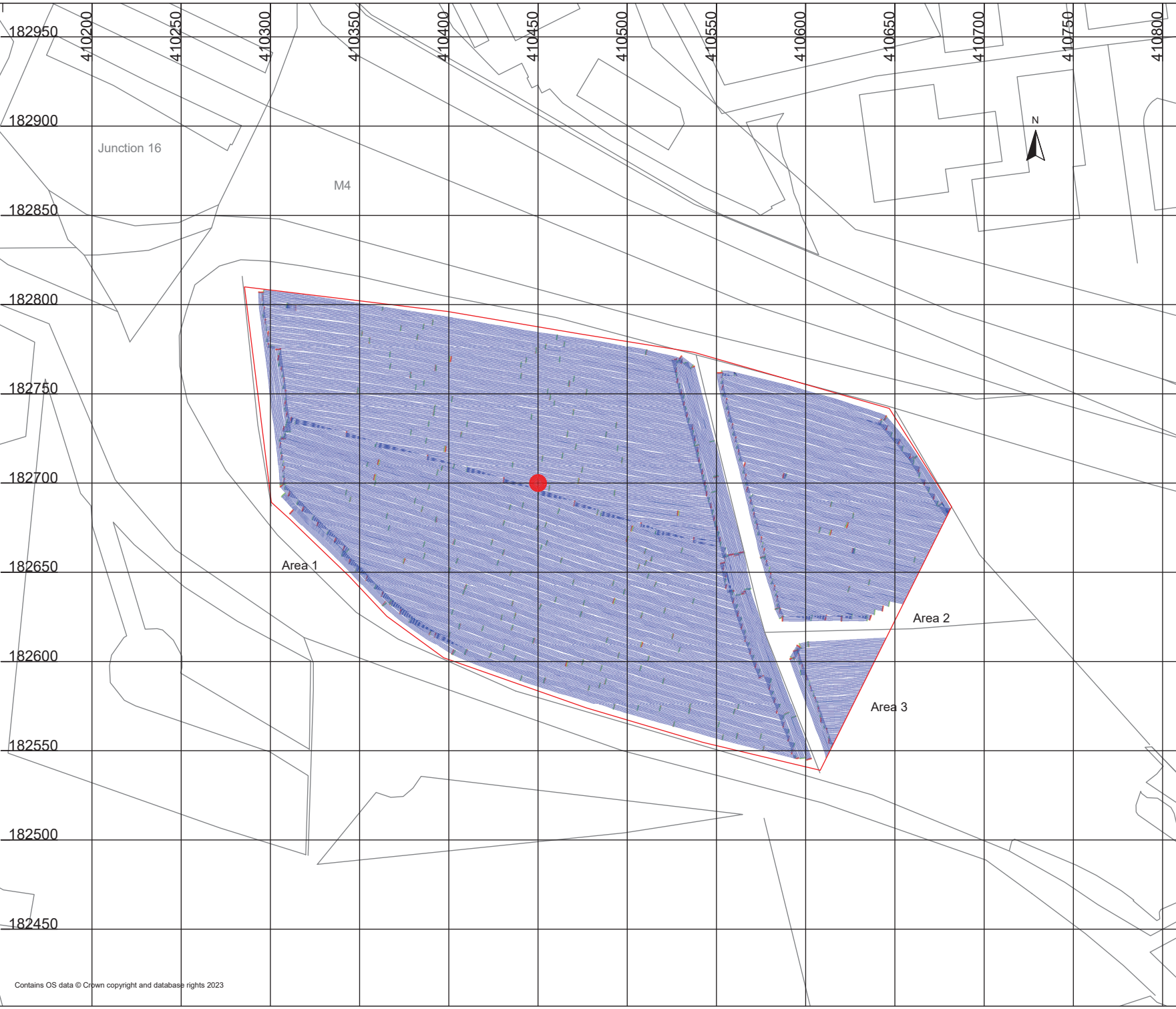
DRAWN BY
KTD

CHECKED BY
DJS

FIG 01



Survey location



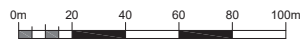
Geophysical Survey
Land off M4 Junction 16
Lydiard Tregoze
Wiltshire

Referencing information

Referencing grid to OSGB36 datum at 50m intervals

-  410450 182700
-  Survey tracks
-  Survey track start
-  Survey track stop
-  Development boundary

SCALE 1:2000

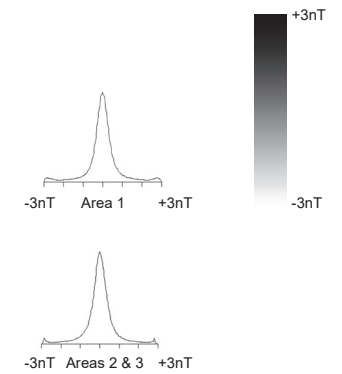


SCALE TRUE AT A3



**Geophysical Survey
Land off M4 Junction 16
Lydiard Tregoze
Wiltshire**

**Greyscale plot of minimally
processed magnetometer data**



Area 1

Area 2

Area 3

SCALE 1:1250



SCALE TRUE AT A3

Geophysical Survey
Land off M4 Junction 16
Lydiard Tregoze
Wiltshire

**Abstraction and interpretation of
magnetic anomalies**

-  Positive linear anomaly - possible ditch-like feature
-  Negative linear anomaly - material of low magnetic susceptibility
-  Positive linear anomaly - former field boundary
-  Positive/weak multiple dipolar linear anomaly - possible land drain
-  Linear anomaly - ridge and furrow
-  Linear anomaly - of agricultural origin
-  Discrete positive response - possible pit-like feature
-  Magnetic debris - spread of magnetically thermoremanent/ferrous material
-  Magnetic disturbance from ferrous material
-  Strong dipolar anomaly - ferrous object

SCALE 1:1250



SCALE TRUE AT A3

DRAWN BY
KTD

CHECKED BY
DJS

FIG 04



Appendix 3: List Descriptions

UPPER STUDLEY FARMHOUSE

Overview

Heritage Category: Listed Building

Grade: II

List Entry Number: 1022662

Date first listed: 15-Aug-1985

Statutory Address: UPPER STUDLEY FARMHOUSE, SWINDON TO CHIPPENHAM ROAD

Map



Details

SU 18 SW LYDIARD TREGOZE A420 SWINDON TO

CHIPPENHAM ROAD

6/32 Upper Studley Farmhouse

II

Farmhouse, c1625. Coursed limestone rubble with ashlar quoins, Roman tiled roof. 2-storey, 3-bay on L plan, the 2 bays extended by further bay as agricultural space, also C17. Gable stacks to the 2-bay block, door in right bay. 3-light ovolo moulded stone mullioned windows, ground floor replaced with early C19 18-pane sashes. Relieving arches over. Mid wall hollow moulded string course Single light ovolo windows to gable. Rear windows blocked. Recent rear extensions. Interior: Cross ceiling beams with barred run-out stops to main rooms. Large blocked fireplaces. Stair in re-entrant angle. Roof, 5 bays with double purlins.

Listing NGR: SU1011382431

STUDLEY GRANGE FARMHOUSE

Overview

Heritage Category: Listed Building
Grade: II
List Entry Number: 1022664
Date first listed: 15-Aug-1985
Statutory Address: STUDLEY GRANGE FARMHOUSE, HAY LANE

Map



Details

SU 18 SW LYDIARD TREGOZE HAY LANE

6/37 Studley Grange Farmhouse

II

Farmhouse, late C18 to early C19, rubble limestone, Roman tile roofs. 2-storey, 3-bay, gable stacks, original entrance blocked. 2-bay extension to right. Facade whitewashed, timber casement windows, door in extension under recent porch. Upper windows with segmental brick arches.

Listing NGR: SU1014382001

MILESTONE NEAR SPITTLEBOROUGH FARM, AT NGR SU 095828

Overview

Heritage Category: Listed Building

Grade: II

List Entry Number: 1022661

Date first listed: 15-Aug-1985

Statutory Address: MILESTONE NEAR SPITTLEBOROUGH FARM, AT NGR SU 095828, A420

Map



Details

SU 08 SE 5/30

LYDIARD TREGOZE

A420 SWINDON TO CHIPPENHAM ROAD

Milestone near Spittleborough Farm, at NGR SU 095828

II

Milestone on north side of carriageway. After 1821. Limestone. Hexagonal top face reading; BATH 29 Miles. Half oval section stem, reading; on left, TO SWINDON 4 miles; on right, TO WOOTTON BASSETT 2 Miles TO CHIPPENHAM 16 Miles. Foot, reading; TO OXFORD 34 Miles.

Listing NGR: SU0952282873



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