

Appendix E – 760 Land South of Keeley Lane, Wootton

1. This is a *deliverable* site in a sustainable and accessible location, with potential for a further 20-30 homes which complements the existing Wootton Neighbourhood Plan (WNP) (made March 2022) allocation on part of the site – W6 – Land on the south side of Keeley Lane, allocated for 20 dwellings (a planning application for this allocation was submitted in May 2022 and awaits determination – ref. 22/01035/MAO). This area is already recognised as a sustainable location for development given its allocation in the made WNP, with the extension proposed simply helping to meet future needs at Wootton over the new local plan period to 2040.
2. The site's sustainability and accessibility credentials are identified in the Council's SA of the site, summarised at **Appendix Ei** of these representations. The site is in close proximity to a food store, primary school and major employment – all of which scores positively in the Council's assessment.
3. The site is close to existing bus services at Keeley Corner, providing frequent services to the centre of Bedford and Bedford train station – just 20 minutes journey time via Services 53 and 41 (Stagecoach East).
4. The SA demonstrates that access can be achieved without constraints. With respect to the 'uncertain' impacts on highway capacity identified in the SA, this is clearly a scale of development where impacts will be limited and no capacity issues are identified at nearby junctions (refer to the Transport Technical Note enclosed at **Appendix Eii**). Even if issues were encountered the modest scale of development on this non-strategic site would be capable of localised mitigation through the S106/S278 process as required.
5. In terms of highway capacity, the Council's SA shows that strategic-scale developments including HOU16 (Land East of Wixhams), HOU14 (Kempston Hardwick New Settlement) and HOU19 (Little Barford New Settlement) will have a negative impact on highway and junction capacity in any event with highway access also identified as constraints by the Highway Authority. Site 760 performs better in access and highway terms than strategic growth allocations preferred by the Council, and is not dependant on SRN improvements or EWR.
6. In terms of ecology, the Ecology Topic Paper at **Appendix Eiii** (EDP, July 2022) demonstrates the potential presence of breeding birds, bats, badgers and reptiles, with an off-site population of GCN following surveys undertaken between 2019 and 2022. However, the assessment concludes that *“none of these species would provide an in-principle constraint to development. Any potential impacts upon these species can be mitigated for within the generous amount of open space being provided within the*

proposals for the Site.” In any event, the enclosed Biodiversity Net Gain calculation demonstrates how a net gain of 12.3% could be achieved. This resolves the SA’s ‘uncertain’ impacts under objectives 2b (protected species) and 2c (achieving a net gain). In the Council’s SA the site clearly performs better than the preferred strategic site allocations where negative impacts are identified in the SA – for sites HOU11, HOU13, HOU15 and HOU16 for example (refer **Appendix Ei**).

7. With respect to heritage it is important to note that the SA shows that all of the Council’s favoured strategic allocations (HOU11, HOU13, HOU14, HOU15, HOU16 & HOU19) score negative against this SA objective (4a) as demonstrated in **Appendix Ei**. Nevertheless, the conclusions of the Council’s heritage assessment for site 760 have been considered and are addressed in the topic paper enclosed at **Appendix Eiv** (EDP, July 2022). The assessment demonstrates that there would be harm to the significance of 35 Keeley Lane (a Grade II Listed Building c.50m to the west) and that the level of harm to 18 and 20 Keeley Lane and Pear Tree Cottage (Grade II) is minimal and did not prevent allocation of the northern part of the site in the WNP in any event. No other designated assets will be affected by development on the site.
8. With respect for the potential impacts on and loss of a small proportion of moderately preserved ridge and furrow (where the Council’s assessment identifies a level of ‘substantial harm’) the enclosed assessment explains that this represents *“no more than the eroded corner of a much larger 15ha block of better-preserved ridge and furrow, in a parish that has been identified more generally as having a “high level survival of ‘good’ condition ridge and furrow” (Albion Archaeology, 2016). Therefore, the level of potential harm is low - affecting just 3.5% of the block of ridge and furrow mapped in the HER - and the earthworks within the Site are assessed as being of low or local significance.”*
9. A draft masterplan is enclosed at **Appendix Ev** to illustrate how a well-planned community can be realised, informed by the above technical work. Rainier Developments is keen to work with the Council, Members, local community and key stakeholders to realise the opportunities and benefits associated with this deliverable site.

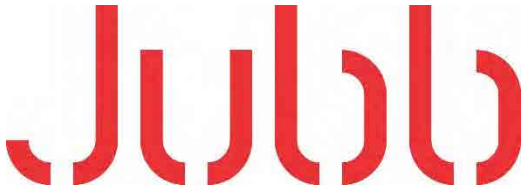
Appendix Ei Sustainability Appraisal Scoring Comparison

	KSC & RSC options	Draft Strategic Site Allocations				New Settlements (not assessed against same sub-criteria)	
	760 (Wootton) Land South of Keeley Lane	HOU11 (3245) Land at River Valley Park	HOU13 (1333 & 636) Kempston Rural, Land at Gibraltar Corner	HOU15 (1004) Land South of Wixhams	HOU16 (3233) Land East of Wixhams	HOU14 (0004) Land at Kempston Hardwick - New Settlement	HOU19 (907) Little Barford - New Settlement
1a. Within or adjoining AUB SPA or built form of a small settlement	?	x	?	?	x		
1b. Accessible on foot to a food store	+	x	+	++	++		
1c. Accessible on foot to a primary school	+	x	+	++	++	x	x
1d. Accessible on foot or by bus to a major employer	+	+	+	x	x		
1e. Outside, adjoining or within the air quality management area	+	+	+	+	+		
2a. Within or adjoining site of nature conservation importance	+	x	+	+	+		
2b. In an area where protected species are known or likely to exist	xx	xx	xx	xx	x		
2c. Potentially able to achieve a net gain in biodiversity	?	?	?	?	?	?	?
2d. Able to link into the green infrastructure opportunity network	0	+	+	+	+		
3a. Proposing a new renewable energy scheme or extra energy efficiency standards	0	0	0	0	+		
3b. Within or adjoining the urban area, a defined settlement policy area or the built form of a small settlement	?	x	?	?	x		
3c. Accessible on foot to a food store	+	x	+	++	++	x	x
3d. Accessible on foot to a primary school	+	x	+	++	++		
3e. Accessible on foot or by bus to a major employer	+	+	+	x	x		
4a. Likely to impact on designated or nondesignated heritage assets or their settings	xx	x	x	x	x	x	x
5a. Likely to increase future economic and employment opportunities	0	+	0	0	+	++	+
6a. Proposing a main town centre use in, on the edge or outside of a town centre	0	0	0	0	+	?	?
7a. Within 400m of an existing open space or proposing open space within it	x	x	+	x	+	+	+
7b. Within 800m of a sports facility or proposing a sports facility within it	x	+	x	x	+		
8a. Likely to have a significant adverse impact on the surrounding landscape	0	?	?	?	0		?
8b. Within the existing settlement built form	+	x	+	+	x		
9a. On previously developed land	x	x	x	x	x		x
9b. On best and most versatile agricultural land ie grades 1, 2 or 3a	?	x	?	?	x	+	
10a. Within a groundwater source protection zone	+	+	+	+	+	+	+
11a. At risk of flooding	+	?	+	+	?	?	?
12a. Likely to provide a mix of housing, including affordable housing	+	+	+	+	+		
12b. Able to address a particular housing need	x	x	+	+	+	+	+
13a. Within 800m of a facility where cultural or social activities can be accessed	+	x	+	+	+	+	+
14a. Likely to encourage social cohesion	0	+	+	0	+		
14b. Likely to help make the area safer	+	+	+	+	+		
15a. Within or adjoining the urban area, a defined settlement policy area or the built form of a small settlement	?	x	?	?	x		
15b. Accessible on foot to a food store	+	x	+	++	++		
15c. Accessible on foot to a primary school	+	x	+	++	++		
15d. Accessible on foot or by bus to a major employer	+	+	+	x	x	x	x
15e. Connect highway without constraint	+	+	+	?	?		
15f. Highway or junction capacity issues	?	+	?	?	x		

Key

- 0
- ?
- +
- ++
- x
- xx

Appendix Eii Transport Technical Note



Title: Technical Note 01– Review of Bedford
Local Plan 2040 Transport Evidence –
Roxton (Site 776)

Date: July 2022

Prepared by: AMW

1.0 Introduction

- 1.1 Jubb have been appointed by Rainier Developments Ltd (Rainier) to undertake a review of the transport evidence supporting the draft Bedford Local Plan 2040.
- 1.2 Rainier have submitted representations for residential development at Roxton (Site 776).

2.0 Preferred Option

- 2.1 The Plan has focussed on the delivery of new settlements located within the proposed future East West Rail corridor.
- 2.2 The East West Rail route between Bedford and Cambridge is at an early planning stage with no agreed preferred route or location for the new rail station at St Neots currently identified and with no funding established for its delivery. This is a **fundamental flaw** in the assessment of the delivery of the preferred option for the delivery of the draft Local Plan proposals.
- 2.3 The new settlements are reliant on the delivery of **large-scale highway infrastructure** to ensure their traffic generation can be accommodated without detriment to the highway network. Whilst for the Bedford highway network, schemes have been identified, the ability to deliver, and the viability of the schemes has not been progressed in any detail. **No schemes have been identified** for the Strategic Road Network and therefore, the ability to mitigate the effects of the preferred strategy is not known. This lack of detail gives rise to concerns in respect of the **soundness** and **justification** of the whole strategy.
- 2.4 The modelling recognises that for the proposed settlements, due to the large distances to the existing urban areas, **active travel will be prohibitive**. This statement brings into question the ability of the strategy to deliver sustainable development.
- 2.5 The location of the proposed settlements and their proximity to the proposed new rail station cannot be determined at this stage as the siting of the new station has not been determined. Therefore, at this stage, the sustainability of the preferred option **cannot be considered to be reliable**.

3.0 Modelling Scenarios

- 3.1 Modelling of four development scenarios was undertaken utilising the Bedford Borough Transport Model (BBTM) to inform the transport impacts:
 - Grey – dispersed growth uniformly scaling all sites identified as part of the Local Plan 2040 call for sites;
 - Pink, Yellow & Brown – infrastructure focused growth along the A421 corridor and the proposed East West rail corridor
 - Red & Orange – new settlement focussed growth; and
 - Brown – Urban focused growth

- 3.2 The modelling of the four scenarios is **not consistent** with each scenario delivering differing levels of housing (between 12,000 and 15,500) and jobs (between 11,000 and 16,500). These significant differences mean that the assessments of development scenarios are **not equivalent** as traffic generation of an additional 3,500 dwellings and/or an additional 5,500 jobs would be significant and therefore, the impact on the highway network would be **not comparable**.
- 3.3 The 'Grey' scenario is an **unformed and flawed** approach to the assessment of the delivery of dispersed growth. By uniformly scaling all sites it does not consider the viability of each site when delivering a reduced number of residential units, it does not review each site's location in terms of delivering sustainable development and it does not consider an approach where several smaller development sites in Key Service Centres could improve the existing sustainability to the benefit of the existing community.
- 3.4 Whilst not important in terms of assessment of the 2040 Local Plan, the 'Grey' scenario does not include any growth to 2050 whilst all other scenarios provide growth. Given that the call for sites the Council received submissions proposing in excess of 70,000 dwellings and 603 hectares of employment as a primary use, the reasons for not including growth during this time period have not been explained.
- 3.5 The majority of the identified mitigation schemes for the 2040 Local Plan growth are expected to open in 2040 or even, in the case of the proposed Dennybrook and Little Barton development after 2040. These schemes, which are not committed and, have **not been fully assessed** in terms of deliverability with available highway land, achieving design standards or fully costed, will not offer a resolution to the expected growth until the end of the 2040 plan period resulting in congestion.
- 3.6 All identified mitigation measures for the 'Grey' scenario have been utilised for the assessment. It is unclear whether these large schemes are beneficial in terms of mitigating the impact of dispersed development. The assessment **does not identify local mitigation** that could alter the results of some of the metrics utilised within the RAG assessment (e.g. localised transport schemes could reduce the 'red' assessment for rerouting onto less appropriate roads in the AM and PM peak hours and delays/volume capacity in the PM peak hours. Uniformly scaling all of the sites received from the call for sites has resulted in a scatter gun approach that does not consider the benefits of locating dispersed growth using a hierarchical approach set by accessibility to services and facilities and public transport provision along with local mitigation i.e. smaller junction improvements to increase capacity and prevent vehicles using alternative less appropriate roads and increased public transport frequency or routeing.

Summary

- 3.7 The quantum of development differs over the four scenarios and therefore, the assessment is not comparable.
- 3.8 The 'Grey' scenario does not consider the accessibility of the sites received from the call for sites. The assessment has been undertaken in a manner that does not represent the scenario in the best light and therefore, the soundness of this scenario is questioned. Detailed filtering of the sites included in the 'Grey' scenario should be undertaken to ensure the highest accessible sites are included in the scenario assessment.
- 3.9 The deliverability and viability of the identified mitigation measures has not been considered raising concerns over the soundness of the ability to provide the schemes. Localised mitigation measures for the 'Grey' scenario have not been considered; the identification of more localised measures could have an effect on the RAG assessment findings and again questions the soundness of the modelling and its findings.

4.0 Results of the Modelling

- 4.1 The 2030 Reference Case modelling, which includes the adopted Local Plan 2030 growth and identified infrastructure schemes indicates that the anticipated traffic flows will be approaching or exceeding the capacity of the road network. These include junctions along the A421 to the south of Bedford and along Clapham Road in northern Bedford town with **no identified improvement schemes** and in the case of the A421 Highways England are **only monitoring**.
- 4.2 The RAG assessment states for the preferred 'Red & Orange' scenario:

AM Peak Hour – “The ‘with mitigation’ scenario of this option produces the same RAG assessment as ‘Grey’ ‘with mitigation’. The ‘without mitigation’ scenario is also similar to ‘Grey’ ‘without mitigation’ with identical ratings for all metrics except for the cross boundary impacts.”

PM Peak Hour – “The ‘with mitigation’ scenario is very similar to ‘Grey’ ‘with mitigation’ varying only for the forecast volume-capacity ratios at key junctions and impacts on the AQMA. The mitigation measures only improve forecasts for average network speeds and forecast volume-capacity ratios with all other metrics forecast to stay the same or worsen with the inclusion of mitigation measures”

- 4.3 Despite these statements indicating that the performance of the ‘Red & Orange’ and ‘Grey’ scenarios are similar in finding, only the ‘Red & Orange’ scenario was taken forward for further assessment including additional mitigation with” Implementing *bus provision or active mode measures with a dispersed growth scenario* (‘Grey’) would be impractical due to the dispersed nature of growth assumed in this scenario”.
- 4.4 Whilst this statement can be agreed for the ‘Grey’ scenario as modelled, this statement does not hold ground for a ‘Grey’ scenario where sites are **filtered on sustainability and accessibility** and where this may provide a ‘Grey’ scenario where development is able to **support and enhance existing bus services**.
- 4.5 Additionally, in relation to the ‘Red & Orange’ scenario it is stated “the larger distances between these proposed settlements and existing urban areas would likely be **prohibitive to the development of active mode measures** to significantly reduce car usage”. Many of the ‘Grey’ scenario sites are located on urban fringes in proximity of existing services and facilities and given the opportunity to be filtered for accessibility would provide an opportunity to **improve existing active travel infrastructure** and decrease car usage.
- 4.6 The results of the further assessment of the ‘Red & Orange’ scenario indicates that extensive highway infrastructure will be required to mitigate the impact of the new settlements. The **ability to deliver** these schemes on the ground has not been considered in detail and their impact on the **viability** of the developments is not considered.
- 4.7 Critically, mitigation for the related impacts of the ‘Red & orange’ scenario on the Strategic Highway Network **has not been identified** with Highways England stating within a Memorandum of Understanding “*The parties will continue to work together to assess specific impacts in more detail and agree the outcomes of the modelling, which will confirm the package of interventions to be included in the IDP required to support delivery of the plan.*”

Summary

- 4.8 The **crude** assessment of the ‘Grey’ scenario **performs similarly** to the preferred ‘Red & Orange’ scenario. As identified earlier the ‘Grey’ scenario assessment should be undertaken with **filtering of sites** using accessibility thresholds and identified local mitigation schemes to enable a **realistic comparison exercise** of these similarly performing scenarios to be undertaken.
- 4.9 The delivery of the identified mitigation for the ‘Red & Orange’ scenario has not been assessed in terms of **deliverability** and **viability** and **necessary mitigation for the Strategic Road Network has not been identified** calling into the **soundness of the Council’s preferred option** for development post 2030.

5.0 Roxton Site 776

- 5.1 This section undertakes a review of the Rainier site at Roxton for which representations to the Local Plan call for sites has been submitted.
- 5.2 The site is identified to deliver a reduced quantum of approximately 50 residential units.
- 5.3 As identified in the BSAPF reports, suitable access can be provided.

- 5.4 The BSAPF reports that there are potential capacity issues. Googlemaps is not showing congestion at the Bedford Road / High Street junction. Googlemaps indicates that there may be congestion for traffic exiting/entering to/from the east at the Bedford Road / Park Road junction during the peak hours; however, given the location of the proposed development it would be expected for vehicles travelling to/from the east that access onto Bedford Road is taken from the High Street junction. Googlemaps indicates that there is congestion during the peak hours at the Bedford Road / A1 / A421 roundabout junction known as the Black Cat junction. A preliminary assessment has been undertaken indicating that 50 dwellings are likely to generate 39 and 31 two-way vehicle trips in the AM and PM peak hours respectively. Of these vehicle trips 18.5% are expected to travel to/from the Bedford Road / A1 / A421 roundabout which amounts to a maximum of an additional 7 two-way vehicle trips passing through the junction. This level of increase is not significant and will not have a 'severe' impact on the operation of the junction. No mitigation scheme was identified for this junction within the modelling exercise.
- 5.5 The Council's Sustainability Appraisal scored the site positively for criteria 1b, 1c, 1d and 15b - 15e. Jubb's analysis aligns with the findings and the appraisal shows that the site sites are in a sustainable and accessible location.
- 5.6 There are existing footways that serve the site and National Cycle Route 12 borders the site enabling direct access to the additional services and facilities available in Great Barford.
- 5.7 Bus stops, served by frequent bus services, are available within a 250 – 500m walk of the site. The 905 service provides a 30-minute frequency to Bedford (20 minutes) and St Neots (12 minutes) providing access to the shops, services and employment found in the centres and access to Bedford and bus station enabling onward travel by sustainable modes. The 905 to St Neots provides onwards connection to Cambridge (additional 60 minutes). The proposed development will add patronage and increase viability of the existing bus services.
- 5.8 There are a range of services and facilities within a reasonable 2km walking distance of the site including a post office and a primary school.
- 5.9 The site is **sustainably located** with access to a range of everyday services and facilities with **suitable infrastructure** to enable journeys to be undertaken by means other than the private car. The proposed development would not have a detrimental effect on the operation of the local highway.

Summary

- 5.10 The assessment of the site at Roxton that has been submitted for consideration has shown that the site is sustainably located with the ability to undertake journeys by modes other than the private car. The development is compliant with the requirements for new development set out in the National Planning Policy Framework.

6.0 Summary

- 6.1 This assessment of the transport evidence to support the Local Plan transport evidence has highlighted issues in respect of comparativeness, site selection and the deliverability and viability of identified mitigation for the four scenarios tested.
- 6.2 Of particular concern is the 'Grey' scenario where development has been uniformly scaled using all of the sites received in the call for sites rather than assessing the sites based on accessibility. A more detailed and well thought out assessment of the 'Grey' scenario is required to be undertaken.
- 6.3 The assessment has shown shortfalls in the transport work undertaken to date to support the Local Plan 2040 and this raises concerns regarding the soundness and justification of the whole strategy.
- 6.4 Due to the uncertainty in respect of the alignment of the East West rail route and the siting of new railway stations, along with the recognition that the new settlements will be prohibitive to active travel modal shift, the sustainability of, and therefore compliance with the National Planning Policy Framework, of the preferred strategy is brought into question.

- 6.5 The identified highways infrastructure required to support the new settlement preferred option is uncertain in terms of deliverability and viability. The site at Roxton is sustainably located and able to provide the undertaking of journeys by means other than the private car. The site does not require significant transport infrastructure improvements and can provide additional patronage to existing services and facilities.
- 6.6 Therefore, due to the unreliability of the transport evidence, the Local Plan 2040 should consider the allocation of sustainably located smaller development to ensure the required housing supply can be met.

Appendix Eiii Ecology Technical Note

Land off Keeley Lane, Wootton

Ecology Technical Note

edp5442_r015

1. Introduction

1.1 The following technical note outlines how the Land off Keeley Lane, Wootton, Site ID760 (hereafter referred to as the 'Site') will meet the site-specific ecology objectives set out in Bedford Borough Council's Sustainability Appraisal Report (April 2022) at Appendix 11. The location of the Site is shown in **Appendix EDP 1**. The objectives are;

- **“2a. Within or adjoining a site of nature conservation importance**
The site is not within or adjoining a site of nature conservation importance
- **2b. In an area where protected species are known of likely to exist?**
Protected species recorded on the site
- **2c. Potentially able to achieve a net gain in biodiversity?**
Uncertain or insufficient information
- **2d. Able to link into the green infrastructure opportunity network?**
The site is not within or adjoining the green infrastructure opportunity network or the impact of the proposal is neutral”.

1.2 This Technical Note therefore addresses the conclusions of:

- **2b.** - providing the latest information regarding protected species, how the masterplan has responded, demonstrating no adverse impacts and the clear potential to realise biodiversity net gains; and
- **2c.** - providing information to demonstrate that biodiversity net gain is a deliverable and realistic prospect.

1.3 It demonstrates how ecology is not an overriding constraint or reason to exclude the Site from further consideration as part of the site selection and Sustainability Appraisal process.

1.4 In addition to the above objectives, objective **2e.** states:

- **“2e. Likely to impact on an area currently providing ecosystem services.**
Opportunity area for 3 or more ecosystem services covers less than 25% of the site.”



1.5 Ecosystem services relate to water flow, air quality, and noise matters which have been addressed separately in the main representations. Therefore, they are not considered further within this note.

2. Objectives

Objective 2b

2.1 An ecological appraisal for the neighbouring land was undertaken in April 2022 and updated with an addendum in June 2022, submitted as part of a planning application (22/O1035/MAO). The ecological surveys undertaken to inform that appraisal between February 2019 and June 2022 included this Site within their scope, and the appraisal and addendum are therefore appended to this technical note as **Appendices EDP 2 and 3**.

2.2 The ecological surveys undertaken recorded the presence or likely presence of the following protected species within the Site:

- Birds – the likely presence of an assemblage of common and widespread breeding birds;
- Bats - an assemblage of mostly common and widespread foraging and commuting bats, with small numbers of rarer species including barbastelle;
- Badgers;
- Great crested newts – a medium meta-population of great crested newts within off-site ponds within 500m of the Site (peak count of 12 individuals). No great crested newts were recorded within the on-Site pond; and
- Reptiles – a small population of grass snakes (peak count of 4 adults).

2.3 It is not considered that any of these species would provide an in-principle constraint to development. Any potential impacts upon these species can be mitigated for within the generous amount of open space being provided within the proposals for the Site.

Objective 2c

2.4 The development proposals have been subject to a Biodiversity Net Gain assessment using the Defra Biodiversity Metric 3.1¹, released May 2022.

¹ <http://publications.naturalengland.org.uk/publication/6049804846366720>



- 2.5 The concept masterplan for the Site, included as **Appendix EDP 1**, is capable of achieving a Biodiversity Net Gain of +0.75 units (+12.31%) in line with local planning policy. The full calculator is provided as **Appendix EDP 4**.
- 2.6 The existing habitats for the Site are shown on **Plan EDP 1** within **Appendix EDP 2**. Proposed habitats are based on the concept masterplan and the assumptions given below:
- The area of retained green space alongside the central hedgerow will be retained with no enhancement;
 - The western green space will be enhanced from 'Modified grassland' in poor condition to 'Other neutral grassland' in good condition through over-seeding with an appropriate seed mix and sensitive management;
 - 0.2ha of green space has been excluded from the calculations to avoid double counting as Phase 1 of the development relies upon it to reach a net gain to biodiversity;
 - The developable area has been split 70% 'Developed land; sealed surface' and 30% 'Vegetated garden' in line with Defra guidance for sites at the outline planning stage;
 - It has been assumed that SuDS features will achieve good ecological condition due to wildlife sensitive design and the presence of permanent water;
 - The area around the SuDS feature will be enhanced from the existing grassland through sensitive management;
 - The existing pond will be retained;
 - A conservative estimate of 50 trees has been used to account for urban tree planting; and
 - The Site will necessitate no breaches or loss of existing hedgerows. New planting will be included within the design to achieve a net gain to linear habitats.
- 2.7 Full condition assessments for the existing habitats that are present within the Site are provided in **Appendix EDP 5**.
- 2.8 The masterplan, though illustrative at this stage, demonstrates that the Site is capable of providing a net gain to biodiversity. The calculator doesn't account for biodiversity enhancements such as bird and bat boxes, insect hotels, amphibian and reptile hibernaculum and hedgehog highways. These will provide further gains for biodiversity.



















3. Conclusions

- 3.1 The Site is able to make provisions for protected species and is capable of providing a net gain to biodiversity therefore it is able meet Objectives **2b** and **2c** of the Sustainability Appraisal.



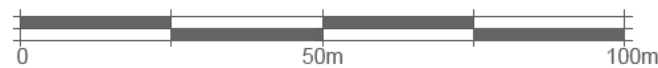
Appendix EDP 1
Phase 2 Concept Masterplan
(Urban Design Box RAN108-3203 July 2022)

-  Site boundary
-  Other land under the control of the applicant
-  Vehicle and pedestrian access
-  Pedestrian only access
-  Existing pedestrian route
-  Residential street
-  Shared surface street
-  Private drive
-  Residential development blocks / indicative building locations
-  Focal building locations
-  Public Open Space
-  Existing trees / hedgerows retained
-  Proposed hedgerows
-  Proposed trees
-  Existing field dry ditches
-  Potential attenuation area (subject to drainage design)



Schedule of Concept Masterplan Areas:

Site area (red line) :	1.86ha
Gross Residential Development: (20 homes @ average 26/hectare)	0.78ha
Public Open Space (includes required BNG area for Phases 1&2)	0.99ha
SUDS (indicative area shown includes earthworks)	0.09ha



client:
Rainier Developments Limited

project:
Land at Keeley Lane, Wootton

drawing title:
Phase 2 Concept Masterplan

urbandesignbox.co.uk

job number:
RAN108

scale
1:1250@ A3

date:
July 2022

drawing number:
3203B

drawn
AJ

status:
Preliminary

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Appendix EDP 2
Ecological Appraisal
(edp5442_r004)



Appendix EDP 1
Archaeological and Heritage Assessment
(edp5442_r002e)



**Land on South
Side of Keeley
Lane, Wootton
(Site 463)**

**Archaeological
and Heritage
Assessment**

Prepared by:
**The Environmental
Dimension
Partnership Ltd**

On behalf of:
**Rainier
Developments Ltd**

August 2020
Report Reference
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Images

Images EDP 1-2

Plans

Plan EDP 1	Designated Heritage Assets (edp5442_d002a 29 July 2019 GY/MM)
Plan EDP 2	Known Non-designated Heritage Assets (edp5442_d003a 29 July 2019 GY/MM)
Plan EDP 3	Extracts from (a) Wootton Enclosure Map (1838); and (b) First Edition Ordnance Survey Map (1883) (edp5442_d004 29 July 2019 GY/MM)

This version is intended for electronic viewing only

	Report Ref: edp5442_r002			
	Author	Formatted	Peer Review	Proofed by/Date
002_DRAFT	MM	JO	-	-
002a_DRAFT	MM	ER	-	-
002b	MM	-	AC	JO 310719
002c	MM	-	-	ER 010819
002d	MM	-	-	FJ 120820
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Non-technical Summary

- S1 This Archaeological and Heritage Appraisal has been produced by the Environmental Dimension Partnership Ltd on behalf of Rainier Developments Ltd. It considers the primary archaeological and heritage issues in relation to the proposed allocation of Land on South Side of Keeley Lane, Wootton ('the site') in the Bedford Borough Local Plan for 50 dwellings, and is also proposed for allocation within the emerging Wootton Neighbourhood Plan. In doing so, this report reaches a robust judgement on whether, and to what extent, these issues constrain the site and how they could be dealt with through good design and mitigation.
- S2 This report finds that the potential impacts of the draft allocation on designated and non-designated heritage assets are of insufficient scale to warrant development being prevented or severely restricted, such as to make its deliverability unviable. Therefore, in archaeological and heritage terms, there is no reason why the site should not be included in the Local Plan and the Neighbourhood Plan, given that there is every reason to believe and expect that it could be delivered in accordance with the relevant provisions of the National Planning Policy Framework and the provision in the adopted Local Plan (2030).

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Section 1

Introduction

- 1.1 This report has been prepared by The Environmental Dimension Partnership Ltd (EDP) on behalf of Rainier Developments Ltd and presents the results of an Archaeological and Heritage Appraisal of Land on South side of Keeley Lane, Wootton (hereafter referred to as 'the site'). This document has been produced to support the promotion for the allocation of this site through the Bedford Borough Local Plan and Wootton Neighbourhood Plan.
- 1.2 The aim of this assessment is to consider the primary archaeological and heritage issues regarding the site and establish whether or not these present such a level of constraint that would limit or preclude its capacity to accommodate development, as promoted through the Bedford Brough Local Plan and the emerging Neighbourhood Plan.
- 1.3 To answer this question, the available historical and archaeological resources have been consulted for the site to establish its likely potential to contain archaeological remains, and their likely level of significance, in accordance with the requirements of the *National Planning Policy Framework* (NPPF; MHCLG, 2019) and local planning policy.
- 1.4 In addition, this appraisal identifies and assesses the potential for designated heritage assets in the site's zone of influence to be affected by the allocation. Specifically, this focuses on the potential for changes to their setting and whether, and to what extent, those changes would affect their heritage significance. In doing so, it also explores appropriate mitigation measures to minimise or otherwise avoid the potential for harm.
- 1.5 Whilst there is no fixed masterplan for the development of the site, the indicative masterplan (which was influenced by the results of this Appraisal) included in the Vision Document produced by Barton Willmore in 2020, and accompanying the submission for this site, has been referred to where appropriate.
- 1.6 In accordance with best practice guidance, desktop sources have been augmented through the completion of a site walkover survey, which was undertaken in January 2019.

Location, Boundaries, Topography and Geology

- 1.7 The site is located on the northern edge of Wootton and is centred on National Grid Reference 500702, 245957. It comprises two arable fields.
- 1.8 It is bounded to the north, north-east, west and south by hedgerows and to the east and north-west by residential fencing. Beyond this, open farmland is located to the west and south, housing to the east and north-west, and Keeley Road to the north. The site is broadly flat and lies at c.45m above Ordnance Datum (aOD).

- 1.9 The site is located on mudstone of the Peterborough Member, overlain by superficial deposits of sand of the Crag Formation, overlain by superficial Head deposits comprising gravel, sand, silt and clay (www.bgs.ac.uk).

Section 2 Legislation and Planning Guidance

- 2.1 This section summarises the key legislative and planning policy context, relating to the proposed development of the site, at both national and local levels.

Legislation

- 2.2 Sections 66(1) and 72(1) of the *Planning (Listed Buildings and Conservation Areas) Act 1990* set out the duties of Local Planning Authorities (LPAs), in respect of the treatment of listed buildings and conservation areas through the planning process.
- 2.3 Section 66(1) of the *Planning (Listed Buildings and Conservation Areas) Act 1990* sets out the statutory duty of the decision-maker, where proposed development would affect a listed building or its setting.
- 2.4 The “*special regard*” duty of the 1990 Act has been tested in the Courts and confirmed to require that “*considerable importance and weight*” is afforded by the decision maker to the desirability of preserving a listed building along with its setting.
- 2.5 Furthermore, insofar as conservation areas are concerned, Section 72(1) of the 1990 Act identifies the following:

“In the exercise, with respect to any buildings or other land in a conservation area...special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area.”

- 2.6 It must be recognised from the above that: (1) there is **no** statutory duty to enhance the character or appearance of a conservation area – the Courts have confirmed that development that ‘preserves’ them is acceptable; and (2) the statutory duty only covers development that is within a conservation area – the ‘setting’ of a conservation area is addressed solely by planning policy.
- 2.7 With regard to point (1), this is made very clearly in Paragraph 54 of the High Court judgement in respect of *Forest of Dean DC v Secretary of State for Communities and Local Government* [2013] EWHC 4052 (Admin), which sets out that:
- “...Section 66 (1) did not oblige the inspector to reject the proposal because he found it would cause some harm to the setting of the listed buildings. The duty is directed to ‘the desirability of preserving’ the setting of listed buildings. One sees there the basic purpose of the ‘special regard’ duty. It is [sic] does not rule out acceptable change. It gives the decision-maker an extra task to perform, which is to judge whether the change proposed is acceptable. But it does not prescribe the outcome. It does not dictate the refusal of planning permission if the proposed development is found likely to alter or even to harm the setting of a listed building.”*

- 2.8 Paragraph 194 of the National Planning Policy Framework (MHCLG 2018) transposes s66(1) and s72(1) of the 1990 Act into national planning policy.
- 2.9 The balancing exercise to be performed – between the harm arising from a proposal and the benefits that would accrue from its implementation – is then subsequently presented in paragraphs 195 and 196 of the NPPF.

National Planning Policy

- 2.10 The revised NPPF was revised in June 2019. Section 16 sets out the government’s approach to the conservation and management of the historic environment, including both listed buildings and conservation areas, through the planning process. The opening paragraph, 184, recognises that heritage assets are an irreplaceable resource and should be conserved in a manner proportionate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations.

- 2.11 Paragraph 189 concerns planning applications, stating 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. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.”

- 2.12 Paragraph 193 considers the weighting given within the planning decision with regard to impacts on designated heritage assets, stating that:

“When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.”

- 2.13 Paragraph 194 considers the level of harmful effects on designated heritage assets and states that:

“Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

- a) *Grade II listed buildings, or grade II registered parks or gardens, should be exceptional;*

b) *Assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, Grade I and II* listed buildings, Grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.*

2.14 With regard to the decision-making process, paragraphs 195 and 196 are of relevance. Paragraph 195 states that:

“Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- a) *the nature of the heritage asset prevents all reasonable uses of the site; and*
- b) *no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
- c) *conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and*
- d) *the harm or loss is outweighed by the benefit of bringing the site back into use.”*

2.15 Paragraph 196 states that:

“Where a development proposal will lead to 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, where appropriate, securing its optimum viable use.”

2.16 It is worth highlighting here that the threshold between substantial and less than substantial harm has been clarified in the Courts. Whilst the judgement relates specifically to the impact of development proposals on a listed building, paragraphs 24 and 25 of *Bedford BC v Secretary of State for Communities and Local Government* [2013] EWHC 2847 remain of relevance here in the way they outline the assessment of ‘harm’ for heritage assets:

“What the inspector was saying was that for harm to be substantial, the impact on significance was required to be serious such that very much, if not all, of the significance was drained away.

Plainly in the context of physical harm, this would apply in the case of demolition or destruction, being a case of total loss. It would also apply to a case of serious damage to the structure of the building. In the context of non-physical or indirect harm, the yardstick was effectively the same. One was looking for an impact which would have such a serious impact on the significance of the asset that its significance was either vitiated altogether [i.e. destroyed] or very much reduced.”

2.17 In other words, for the ‘harm’ to be ‘substantial’ – and therefore require consideration against the more stringent requirements of paragraph 195 of the NPPF compared with paragraph 196 – the proposal would need to result in the asset’s significance either being “*vitiated altogether or very much reduced*”.

2.18 Planning Practice Guidance also contains the following discussion regarding substantial vs less than substantial harm and offers examples to illustrate where the division lies between these two positions. Ultimately, it is clear that substantial harm is a ‘high test’ and ‘may not arise in many cases’:

“Whether a proposal causes substantial harm will be a judgment for the decision-maker, having regard to the circumstances of the case and the policy in the National Planning Policy Framework. In general terms, substantial harm is a high test, so it may not arise in many cases. For example, in determining whether works to a listed building constitute substantial harm, an important consideration would be whether the adverse impact seriously affects a key element of its special architectural or historic interest. It is the degree of harm to the asset’s significance rather than the scale of the development that is to be assessed. The harm may arise from works to the asset or from development within its setting.

While the impact of total destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all, for example, when removing later additions to historic buildings where those additions are inappropriate and harm the buildings’ significance. Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm, depending on the nature of their impact on the asset and its setting.”

2.19 With regard to non-designated heritage assets, paragraph 197 states that:

“The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect 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.”

2.20 Therefore, in considering the treatment of archaeology and heritage in the NPPF, in instances of ‘harm’ it is clearly not the case that this should automatically lead to a refusal of planning permission. Rather, it is a matter of judgement for the decision maker to weigh any harm against the benefits of a scheme. In this regard, the Court of Appeal judgement covering Regina (Palmer) v Herefordshire Council [2016] EWCA Civ 1061 (04 November 2016) is also of relevance. This clarifies that development may have multiple different effects on a heritage asset – some beneficial and some harmful – but that the decision maker may legitimately balance these effects and conclude that there is no overall effect.

Local Planning Policy

2.21 The adopted Local Plan 2030 contains the following relevant policy regarding heritage:

“Policy 41S – Historic Environment and Heritage Assets

- i. Where a proposal would affect a heritage asset the applicant will be required to describe:
 - a. The significance of the asset including any contribution made by its setting and impacts of the proposal on this significance, and*
 - b. The justification for the proposal, how it seeks to preserve or enhance the asset/setting or where this is not possible, how it seeks to minimise the harm.**
- ii. This description must be in the form of one or a combination of: a desk based assessment; heritage statement; heritage impact assessment; and/or archaeological field evaluation. Further information will be requested where applicants have failed to provide assessment proportionate to the significance of the assets affected and sufficient to inform the decision-making process.*
- iii. Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset or non-designated heritage asset of archaeological interest of demonstrably equivalent significance to a scheduled monument, consent will be refused unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply: a) the nature of the heritage asset prevents all reasonable uses of the site; and b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and d) the harm or loss is outweighed by the benefit of bringing the site back into use*
- iv. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm will be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use*
- v. In considering proposals affecting designated heritage assets, or a non-designated heritage asset of archaeological interest of demonstrably equivalent significance to a scheduled monument, involving their alteration, extension, demolition, change of use and/or development in their setting, the Council will include in their consideration as appropriate:
 - a. The asset’s archaeological, architectural, artistic and historic interest and any contribution to its significance from setting (including the wider historic landscape)**

- b. *scale, form, layout, density, design, quality and type of materials, and architectural detailing*
 - c. *boundary treatments and means of enclosure*
 - d. *implications of associated car parking, services and other environmental factors*
 - e. *effect on streetscape, roofscape and skyline including important views within, into or out of heritage assets*
 - f. *impact on open space which contributes positively to the character and/or appearance of heritage assets*
 - g. *the positive benefits of the proposal in addressing heritage at risk*
- vi. *Where heritage assets are included on a Local List and are affected by development proposals the Council will afford weight proportionate to their heritage significance in the decision-making process to protect and conserve the significance which underpins their inclusion. Partial or total loss adversely impacting this significance will require clear and convincing justification.*
- vii. *The effect of proposals on the significance of non-designated heritage assets will be taken into account in determining applications for development. Applications which result in harm or loss of significance to non-designated heritage assets will only be supported if clear and convincing justification has been demonstrated. In making a decision, the Council will weigh the significance of the heritage asset affected against the scale of any harm or loss to it.*
- viii. *Where applications are permitted which will result in (total or partial) loss to a heritage asset's significance (including where preservation in situ of buried archaeological remains is not necessary or feasible), applicants will be required to arrange for further assessment of and recording of this significance in advance of, and where required, during development/works. This assessment and recording must be undertaken by a suitably qualified specialist in accordance with a design brief set by the Council's Historic Environment Team. The work must include archaeological fieldwork, post-excavation assessment, analysis, interpretation, archiving with the local depository, and presentation to the public of the results and finds in a form to be agreed with the Council. As a minimum, presentation of the results should be submitted to the Bedford Borough Historic Environment Record and where appropriate, will be required at the asset itself through on-site interpretation."*

2.22 As such, Policy 41S sections iii and iv closely mirror the NPPF paragraphs 195 and 196, in that the potential for harm to the significance of a designated heritage asset should be weighed against the benefits of implementing the proposed development. Where the potential harm is outweighed, there is no reason (in terms of designated heritage assets) as to why permission should not be granted.

- 2.23 However, in terms of assets included on a 'local list' and 'non-designated heritage assets' – both of which are not designated heritage assets – sections vi and viii of Policy 41S require 'clear and convincing justification' to be provided where harm would arise to their significance. This is non-NPPF compliant, as this only requires 'clear and convincing justification' in instances where the significance of designated heritage assets would be harmed (paragraph 194).
- 2.24 The plans and policies identified above have all been taken into account in the preparation of this assessment.

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Section 3

Methodology

- 3.1 This report has been produced in accordance with the *Standard and Guidance for Historic Environment Desk-Based Assessment* issued by the Chartered Institute for Archaeologists (CIfA, 2017). These guidelines provide a national standard for the completion of desk-based assessments.
- 3.2 The assessment principally involved consultation of readily available archaeological and historical information from documentary and cartographic sources. The major repositories of information comprised:
- Bedford Borough Historic Environment Record (HER) on known archaeological sites, monuments and findspots within the vicinity of the site;
 - Maps and documents held by the Bedfordshire Archives;
 - The National Heritage List for England (NHLE) curated by Historic England; and
 - Aerial photographs held by the Historic England Archive (HEA).
- 3.3 This report provides a synthesis of relevant information for the site derived from a search area extending up to 1km from its centre, hereafter known as the ‘study area’, to allow for additional contextual information regarding its archaeological interest and/or potential to be gathered.
- 3.4 The information gathered from the repositories and sources identified above was checked and augmented through the completion of a site visit and walkover, completed in January 2019. This walkover considered the nature and significance of known and/or potential archaeological assets within the site, identified visible historic features and assessed possible factors that may affect the survival or condition of known or potential assets.
- 3.5 The report thereafter concludes with an assessment of the site’s likely archaeological potential, made with regard to current best practice guidelines.

Setting Assessment Methodology

- 3.6 When assessing the impact of proposals on designated heritage assets through changes within their ‘setting’, it is not a question of whether there would be a direct physical impact on that asset, but instead whether change within the ‘setting’ would in turn lead to a loss of ‘significance’.

- 3.7 In simple terms, setting is defined as *“the surroundings in which a heritage asset is experienced”* (MHCLG 2019). It must be recognised from the outset that ‘setting’ is not a heritage asset and cannot itself be harmed. Its importance relates to the contribution it makes to the significance of the designated heritage asset.
- 3.8 Historic England guidance identifies that *“change to heritage assets is inevitable, but it is only harmful when significance is damaged”* (HE 2015).
- 3.9 In that regard, ‘significance’ is defined in Annex 2 of the NPPF as *“the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic.”*
- 3.10 As such, when assessing the indirect impact of proposals on designated heritage assets, it is not a question of whether setting would be affected, but rather a question of whether change within an asset’s ‘setting’ would lead to a loss of ‘significance’ based on the above ‘heritage interest’ as defined in the NPPF.
- 3.11 Set within this context, it is necessary to first define the significance of the asset in question, and the contribution made to that significance by its ‘setting’, in order to establish whether there would be a loss, and therefore harm. The guidance identifies that change within a heritage asset’s setting need not necessarily cause harm to that asset, it can be positive, negative or neutral.
- 3.12 In light of the above, the assessment of potential setting effects, arising from the proposed scheme, has followed the guidance set out in *Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets* published by Historic England in 2017. This guidance (GPA3; HE 2017) observes that:
- “The NPPF makes it clear that the extent of the setting of a heritage asset ‘is not fixed and may change as the asset and its surroundings evolve.’”*
- 3.13 The guidance also observes that:
- “Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate the significance or may be neutral.”*
- 3.14 The guidance states that the importance of setting *“lies in what it contributes to the significance of the heritage asset or to the ability to appreciate that significance.”*
- 3.15 It goes on to note that:
- “All heritage assets have significance, some of which have particular significance and are designated. The contribution made by their setting to their significance also varies. Although many settings may be enhanced by development, not all settings have the same capacity to accommodate change without harm to the significance of the heritage asset or the ability to appreciate it.”*

- 3.16 Whilst identifying that elements of an asset's setting can make an important contribution to its significance, the guidance states that "*Setting is not itself a heritage asset, nor a heritage designation, although land comprising a setting may itself be designated*". It continues by adding that "*Conserving or enhancing heritage assets by taking their settings into account need not prevent change; indeed change may be positive...*".
- 3.17 On a practical level, the Historic England guidance (2017) identifies an approach to assessing setting in relation to development management that is based on a five-step procedure, i.e.:
1. Identify which heritage assets are capable of being affected;
 2. Assess whether, how and to what degree setting makes a contribution to the significance of the heritage asset(s);
 3. Assess the effects of the proposed development, whether beneficial or harmful, on that significance;
 4. Explore ways of maximising enhancement and avoiding or minimising harm; and
 5. Make and document the decision and monitor outcomes.
- 3.18 As far as Step 2 is concerned, the guidance makes the following observations:
- "The second stage of any analysis is to assess whether the setting of a heritage asset makes a contribution to its significance and the extent and/or nature of that contribution...this assessment should first address the key attributes of the heritage asset itself and then consider:*
- *The physical surroundings of the asset, including its relationship with other heritage assets;*
 - *The asset's intangible associations with its surroundings, and patterns of use*
 - *The contribution made by noises, smells, etc to significance, and*
 - *The way views allow the significance of the asset to be appreciated."*
- 3.19 Thereafter, the guidance notes that "*This assessment of the contribution to significance made by setting will provide the baseline for establishing the effects of a proposed development on significance, as set out in 'Step 3' below.*"
- 3.20 Having established the baseline, the following guidance is provided in respect of an assessment of the effect upon 'setting', i.e.:

“In general...the assessment should address the attributes of the proposed development in terms of its:

- *Location and siting;*
- *Form and appearance;*
- *Wider effects; and*
- *Permanence.”*

3.21 In light of the above, the assessment of potential setting effects employed in the preparation of this report focused on the completion of site surveys, which were undertaken in January 2019 and concentrated on the following three main areas:

1. Identifying those heritage assets that could potentially be affected by the proposed scheme and the manner (if any) in which they would be affected;
2. Defining the contribution made to their *significance* by their setting; and
3. Assessing the likely impact upon their *significance* as a result of the form of development proposed being implemented.

3.22 As far as identifying the heritage assets potentially affected by the proposed scheme is concerned, this was determined in the first instance through desk-based assessment, then verified during the subsequent field visits. In this regard, given the local topography and built/planted environment, the site’s ‘zone of influence’ was determined as extending for a 1km radius.

3.23 In light of the above, the heritage setting assessment at **Section 4** of this report has been prepared in a robust manner, employing current best practice professional guidance and giving due regard to the methodology detailed above.

Section 4 Existing Information

Introduction

- 4.1 The site does not contain any designated heritage assets – as defined in Annex 2 of the NPPF – nor is it included within the boundary of a designated heritage asset. As such, the proposed development cannot result in a direct impact upon the form or fabric of any designated heritage asset, but rather could only result in harm to a designated heritage asset (if there would be any at all) through changes to their setting.
- 4.2 In the site's 'wider zone of influence' (i.e. 1km radius; see paragraph 3.17), there are 29 listed buildings and 1 conservation area, the locations of which are shown on **Plan EDP 1**. There are no world heritage sites, scheduled monuments, registered parks and gardens or registered battlefields.
- 4.3 The site is located within an area of previously recorded medieval or later ridge and furrow, a large part of which has been removed by post-medieval quarrying. The postulated alignment of a Roman road passes through the eastern edge of the site, although the accuracy of this record has previously been disputed. The extent of the medieval settlement of Keeley Green, as mapped on the HER, slightly overlaps with the north-eastern corner of the site, although the evidence base for this is unclear. A post-medieval standpipe was also previously recorded in the north-west corner of the site, although this has since been removed.
- 4.4 There are a number of archaeological records from the Bedford Borough HER in the wider study area relating to remains from the prehistoric to modern periods, the locations of which are identified on **Plan EDP 2**.

Designated Heritage Assets

- 4.5 The following section identifies which designated heritage assets and their settings could be affected by the proposed development. It also identifies the contribution made by their setting to their significance.
- 4.6 Whilst there is no fixed and finalised form to the future development of the site, being only at the promotional stage, the following section considers the potential for the assets to be affected by the allocation and any suitable design measures to reduce or otherwise avoid the potential for harm – in line with local policy. In other words, this section covers Steps 1, 2, 3 and 4 of HE 2017, within the parameters of the information available at this early stage. Where relevant, reference is made to the illustrative masterplan, which was informed by the results of this work, contained within the Vision Document produced by Barton Wilmore.

Listed Buildings

- 4.7 In the first instance, desk-based assessment of information contained within the National Heritage List for England, combined with observations during the site visit and data gathered as part of this assessment (e.g. cartographic sources), were utilised to identify which designated heritage assets have the potential to be affected by the development of the site, such that could harm their significance.
- 4.8 The majority of listed buildings within the site's wider zone of influence (identified as being a maximum of 1km radius due to the effect of topography and the intervening built and planted environment), comprise a collection of dwellings, public houses, etc., with the positive contributions of their setting deriving from their immediate surroundings and their locations on streetscenes and within settlements.
- 4.9 Similarly, in the few instances of listed farmhouses in the wider area, the positive contributions of their settings derived from their location within a farmyard grouping and the adjacent historically and/or functionally associated farmland, which did not include the site.
- 4.10 The site is distant and/or obscured by topography or the intervening planted/built environment, and has no functional or historic links, such that it does not contribute to the significance of most of these assets.
- 4.11 The following therefore concentrates on those listed buildings that were identified through the process outlined above, where the site forms more than a very ephemeral part of their setting, and where development of the site could affect their setting, such that *could* harm their significance.
- 4.12 In addition, the LPA identified in a consultation response to the Wootton Parish Council in 2019 that certain listed buildings may form a constraint to the allocation or development of the site. For completeness, all of these have been included for assessment below, even where they were not initially identified through the process outlined above (see paragraph 4.7) as having the potential to be affected.

Grade I Listed Parish Church of St Mary the Virgin

- 4.13 This Grade I listed Parish church (**1249239**) mainly dates from the 14th century but has a 15th century tower with a recessed lead spire. The west bays of the nave embracing the tower are 19th century. It is built of coursed limestone rubble and contains 18th and 19th century memorial tablets.
- 4.14 This listed building primarily derives its significance from its historic interest as a medieval church, and from its architectural interest as exhibited in its built form. To a lesser extent, it has artistic interest, due to the embellishments and memorial tablets it includes, as well as archaeological interest as its built form is a palimpsest of evolving styles and religious practices.

- 4.15 The church is set within a graveyard that surrounds it on all sides and is accessed along Church Row to the east, which is lined on the north side by a terrace of 19th century properties. Historically, a collection of properties was located immediately to the north on the edge of the graveyard, although these have since been demolished and their location subsumed within the extent of the cemetery. The graveyard is also the best location in which to appreciate the significance of the church displayed in its outward form.
- 4.16 Whereas historically the setting beyond the graveyard was broadly marked by low density development and open countryside to the north, this is now dominated by a large amount of modern residential estates that segregates the church from the farmland in this direction. Further modern housing estates extend to the east.
- 4.17 To the south and west, the landscape grounds of Wootton House border the cemetery, although these cannot be experienced from the church's immediate setting due to the boundary planting.
- 4.18 Due to the mature planting within the graveyard, views outward from the immediate setting are fairly limited. Where possible, views are mainly channelled along Church Row to the east, or north to the junction of Cause End Road, Church Road and Hall End Road, where the foliage is much thinner. The sparsely developed and historic character of Church Row juxtaposes with the modern housing estates that extend along Cause End Road. These immediate roadways provide further publicly accessible areas to appreciate the outward form of the church and the significance that this displays.
- 4.19 The height of the church tower means that it can be seen from multiple areas for some distance around Wootton, but this is obscured and intermittent due to the built and planted environment, particularly the housing estates to the north and east.
- 4.20 The site is markedly distant from the church, being c.840m to the north of it, and such views that are possible toward the building are restricted to the top of the church tower and spire alone and appreciated in the context of the intervening 20th century housing. Therefore, there is negligible opportunity to appreciate the significance of the church, in terms of its built form, in such views (see **Image EDP 1**).
- 4.21 In terms of church towers and spires specifically, GPA 3 notes that:
- “Being tall structures, church towers and spires are often widely visible across land- and townscapes but, where development does not impact on the significance of heritage assets visible in a wider setting or where not allowing significance to be appreciated, they are unlikely to be affected by small-scale development, unless that development competes with them, as tower blocks and wind turbines may. Even then, such an impact is more likely to be on the landscape values of the tower or spire rather than the heritage values, unless the development impacts on its significance, for instance by impacting on a designed or associative view.”*

- 4.22 In other words, the ability to see a heritage asset does not necessarily mean that it makes a contribution to heritage significance, and consequently, the loss of such views does not necessarily result in an impact on significance.
- 4.23 There are no known direct historic or functional links between the church and the site. There is no suggestion that such views as are possible – albeit heavily obscured, distant and framed by the modern built edge of Wootton - are ‘designed’. As such, the site is not considered to contribute to the significance of the church.
- 4.24 In summary, the following are identified as positive aspects of the church’s setting, such that contributes to its significance as a heritage asset:
- Its location within, and association with, the surrounding graveyard. This provides the best location in which to experience the significance of the church, in terms of its outward form;
 - Its location within, and association with, Church Row to the east and the streetscene immediately to the north. These also provide good locations in which to experience the significance of the church, in terms of its outward form; and
 - The historic and functional association with the historic core of Wootton.
- 4.25 Therefore, as the site does not contribute to, or allow any more than a ‘negligible’ appreciation of, the church’s significance, its allocation and future development will not result in harm in this regard. It is also clear that those positive aspects of the church’s setting that contribute to its significance will also not be affected in any way by the allocation or development of the site. Therefore, the church is not considered to form a constraint to the allocation/residential development of the site.

Grade II listed 35 Keeley Lane

- 4.26 The closest listed building to the site is the Grade II listed 35 Keeley Lane (**1249335**), c.30m to the north. This is an 18th century timber-framed house, with pebbledash rendering and an old clay tile roof. It is one storey high, with attics, and some 19th and 20th century alterations. It is clear that this building predominantly draws its significance from its historic and, to a lesser extent, architectural interests as an example of a post-medieval house in the local vernacular. Given its relative simplicity and limited phasing, as described within its listing citation, there are no artistic or archaeological interests identified.
- 4.27 In terms of its historic setting, this listed building was located within a small plot of private gardens and formed part of a small group of houses that were arranged along Keeley Lane. This arrangement formed part of a wider pattern of settlement along Keeley Lane, which extends westwards from the node of settlement formed by Keeley Green. Otherwise, the listed building’s plot was abutted to the south by agricultural fields and faced onto farmland on the opposite side of Keeley Lane to the north.

- 4.28 The modern setting of the listed building reflects several aspects of this historic setting. It is still located within a small garden plot amongst a line of houses along Keeley Lane. The farmland immediately to the north has been partly redeveloped for a two-storey modern house and garage set within a spacious garden. Otherwise, the farmland to the south remains present, including the site.
- 4.29 However, in this respect, it should be noted that the site has no known historic or functional links with this Cottage. Inasmuch that the site forms part of the experience of the listed building, this is restricted to the part of the site immediately to the south of the cottage, forming the western edge, and comprises glancing and very restricted views to the roof and chimney of the property (see **Image EDP 2**).
- 4.30 As such, the following are identified as positive aspects of 35 Keeley Lane's setting, such that contribute to its significance as a heritage asset:
- The relationship with Keeley Lane and the part it forms in the local streetscene, which also provides an opportunity to experience the significance of the asset's built form from the north;
 - Its location within its private gardens, which reflects its historic setting and also provides further opportunities to experience its built form (and the significance it embodies), albeit this is not publicly accessible; and
 - Its relationship with the historic properties to its immediate east and west within its small grouping on Keeley Lane, which reflects its historic setting.
- 4.31 By comparison, the western edge of the site, which has no functional or historic association with this listed building, is considered to make a very limited contribution to the cottage's significance, merely deriving from it forming part of the open and undeveloped land immediately to the south. Further away from the listed building, the central and eastern areas of the site are considered to be negligible in terms of their contribution to its significance as they are more peripheral to its experience due to intervening development.
- 4.32 The allocation being sought for the site, as outlined in the draft Vision Document, would only see the development of centre and eastern edge. Given the considerations outlined above, the contribution of this part of the site to the significance of the listed building is considered to be negligible and therefore so limited that its development would not result in 'harm'. As such, this listed building is not a constraint to the current allocation being sought.
- 4.33 Future development of the wider site would need to carefully consider the setting of this listed building and minimise or avoid harm through the retention of the western edge, behind the listed building, as open space and free from development. This would preserve the contribution that the site makes to the rural setting of this asset, albeit an element of its setting that only makes limited contribution to its significance.

4.34 Therefore, the listed building is not considered to be such a constraint that it should preclude the development of the wider site, or its allocation for the quantity of development promoted through the Local Plan.

Grade II listed 18 and 20 Keeley Lane

4.35 The Grade II listed 18 and 20 Keeley Lane (**1249348**) is located c.55m to the north-east of the site and comprises a pair of 18th century timber-framed houses. The structure is today rendered, with applied timber framing to the front elevation and an old clay tile roof. Similar to 35 Keeley Lane, this listed building derives its significance predominantly from its historic and, to a lesser extent, architectural interests as an example of an 18th century dwelling. Due to its simplicity and limited phasing, there are no artistic or archaeological interests identified.

4.36 Historically, the listed building was located within its private garden plots toward the western edge of Keeley Green, facing onto Keeley Lane, with the Rose and Crown Inn immediately to its west. The modern setting broadly reflects this arrangement, with the Rose and Crown Inn still present. It faces onto a small grass paddock – formerly part of the village green (**MBD11534** on **Plan EDP 2**) - on the opposite side of Keeley Lane, beyond which is a post-medieval house, with a 20th century housing estate on the horizon behind this.

4.37 There are no known direct historic or functional links between the listed building and the site. Due to the local topography and intervening planted and built environment, most of the site cannot be ‘experienced’ from this asset, although there is some limited level of intervisibility from the northern edge and north-east corner.

4.38 Based on the above, the following are considered to be positive contributions from the listed building’s setting to its heritage significance:

- Its relationship with Keeley Lane and the streetscene, which also affords the opportunity to experience the significance of the asset;
- Its position within its private garden plots and within the settlement of Keeley Green, which allows an experience of the asset’s significance, albeit there is no public access; and
- The semi-rural location, facing onto a small paddock (formerly part of the village green) and being ‘buffered’ from more extensive modern development by historic properties and green spaces.

4.39 Whilst not having any direct historic or functional link with this listed building, the site (where it can be experienced) contributes in a very limited way to the ‘semi-rural’ location noted above. As such, to minimise or avoid harm, development in the north-east corner of the site should be restricted by a stand-off of built form from the boundary, and retention and strengthening (where appropriate) of the existing planted edge. Such design measures are included in the indicative masterplan for the site, as included in the Vision Document.

4.40 Notwithstanding the application of good design and the application of mitigation measures, it is considered likely that the development of the site would result in a very small/negligible degree of harm. This would be through the erosion of the semi-rural setting, as presented in the visual change of part of a heavily obscured and moderately distant field from pasture to housing. Even then, this would be so peripheral and limited that it would only result in a very small loss of significance, which would unquestionably be at the very lower end of less than substantial harm.

4.41 Therefore, in accordance with paragraph 196 of the NPPF, it is a matter of judgement for the decision maker to balance the public benefits of implementing the development of the site against the very small level of harm and arrive at a decision of its acceptability. Given these considerations, there is no reason why the site should not be included in the Bedford Borough Local Plan and the Neighbourhood Plan, and (based on the indicative masterplan contained within the Vision Document) every reason to believe that a future application for the development of the site would be NPPF compliant.

Grade II listed Pear Tree Cottage

4.42 Pear Tree Cottage (**1373948**) is a Grade II listed 18th century timber-framed house, with a colourwashed exterior and pantile roof. It is two-storeys high and comprises three bays, the right hand one being a later addition, as is the 20th century flat roofed porch.

4.43 This listed building derives most of its significance from its historic and, to a lesser extent, architectural interest, as a relatively simple post-medieval house. Due to the scarcity of embellishments, it is considered to have no artistic interest. There is some limited phasing to the building itself, and therefore there is very limited archaeological interest.

4.44 Similar to 18 and 20 Keeley Lane, Pear Tree Cottage fronts onto the junction of Keeley Lane and Wootton Road, where it forms part of the street scene of Keeley Green, and it sits within an 'L-shaped' garden plot. Both of these elements reflect its historic setting, as depicted on cartographic sources (see below).

4.45 The listed building is located centrally to the historic core of Keeley Green, with a depth of buildings to its rear (west), north and south. More distant views from the cottage to the north-east and south-west are peripheral but allow an outlook into undeveloped areas of the former village green and farmland, the latter including the north-east corner of the site.

4.46 To the south-east, the modern residential edge of Wootton is clearly evident, with houses that reflect late 20th century tastes in terms of design and materials.

4.47 As such, the following are considered to contribute positively to the significance of the listed building:

- Its relationship with Keeley Lane/Wootton Road and the streetscene, which also affords the opportunity to experience the significance of the asset displayed in its outward form;

- Its position within its private garden plot, which allows an experience of the asset's significance, albeit there is no public access; and
- Its position within the centre of Keeley Green, and its relationship with immediately surrounding buildings.

4.48 The north-east corner of the site forms only a peripheral element in the listed building's 'experience' and is only one small element that contributes to its semi-rural setting. As such, the site makes a very limited/negligible contribution to the significance of this asset.

4.49 As outlined for 18 and 20 Keeley Lane, development in the north-east corner of the site should be offset and the existing planted boundary retained and (where appropriate) strengthened to minimise, if not altogether avoid, potential harm. Such design measures are included in the form of the indicative masterplan for the site, as included in the Vision Document.

4.50 Therefore, considering the design measures, it is considered that the development of the site would not result in more than a negligible level of harm to this listed building, at the lowest end of less than substantial harm. This would accrue from the change in view toward the north-east corner of the site from pasture to residential, albeit offset, heavily obscured and moderately distant.

4.51 This negligible level of harm would need to be weighed against the public benefits of implementing the development of the site, in accordance with paragraph 196 of the NPPF, and would be a question of judgement for the decision maker to determine its acceptability. Therefore, there is no reason why the site should not be included in the Bedford Borough Local Plan and in the Neighbourhood Plan, and (based on the indicative masterplan within the Vision Document) every reason to believe that a future application for the development of the site would be NPPF compliant.

Grade II Listed 6 and 8 Keeley Lane and Grade II listed 4 Keeley Lane

4.52 These listed buildings are included here as they were identified in the LPA consultation response to Wootton Parish Council as having the potential to be affected by the allocation/development of the site. However, they were not identified in the 'scoping' exercise outlined above (see paragraph 4.7).

4.53 The Grade II listed 6 and 8 Keeley Lane (**1373948**) is a pair of 17th or early-18th century altered two-storey houses, brick and partly timber framed with plaster infill. They are rendered and colourwashed with an old clay tile roof and 20th century leaded casements and porch of the ground floor.

4.54 The Grade II listed 4 Keeley Lane (**1263797**) is a 17th century house altered in the 20th century, and is built of concrete rendered timber-framing, with a concrete roof, two hipped dormers and a 20th century gabled porch and leaded casements.

- 4.55 These listed buildings are considered to derive their significance from their architectural and historic interest as examples of post-medieval houses in the vernacular style, albeit much altered in places. They have limited embellishment and phasing, and therefore are considered to have no artistic interest and very limited archaeological interest.
- 4.56 In terms of their setting, historically they were part of a row of terraced houses set back from the roadside at the end of a track terminating in a small courtyard. Today, the southern extent of these terraces appears to have been removed and the houses have separate driveways and plot boundaries. Their setting is considered to contribute to their significance through:
- Their group value with each other, being part of a post-medieval terrace of houses;
 - Their relationship to the wider Keeley Green settlement; and
 - Their individual plots, from where the significance of their built fabric is best appreciated.
- 4.57 By comparison, they have no historic or functional relationship with the site. Due to their set back from the roadside and the effects of the modern built and planted elements of Keeley Green, they have no visual connections with the site either. As such, the site is not considered to form part of their setting or contribute to their significance, and they are not considered to present constraints to the allocation or future development of the site.

Conservation Area

- 4.58 Wootton Conservation Area is located c.710m to the south and is separated by a substantial 'buffer' of modern development. As such, other than the Grade I listed Parish Church of St Mary the Virgin, which has been assessed separately, the Conservation Area cannot be experienced from the site or vice versa. As such, the development of the site will not result in harm to this asset and it will not be discussed further in this report.

Designated Heritage Asset Summary

- 4.59 The site is considered to only contribute positively to the significance of three designated heritage assets, all of which are Grade II listed buildings and comprise (i) 35 Keeley Lane, (ii) 18 and 20 Keeley Lane; and (iii) Pear Tree Cottage. In all instances, there are no historic or functional connections between the listed buildings and the site, and the contribution is purely from the site forming a small part of their wider semi-rural setting. This contribution is experienced in obscured views of limited parts of the site.
- 4.60 As such, design measures are suggested to minimise (if not altogether avoid) the potential for harm to these listed buildings. These comprise (i) offsetting the built form from the north east corner of the site and retention and strengthening of existing planted boundaries; and (ii) retention of the western edge of the site as open space. Such measures do not form constraints of such magnitude that would preclude the allocation or future development of the site.

- 4.61 Any residual harm to the significance of these assets is likely to be very limited or negligible, if any accrues at all, and it is therefore not considered to be to such a degree that would form *in principle* reasons not to allocate/develop the site.
- 4.62 Any such residual harm (if it accrues) would need clear and convincing justification (paragraph 194 of the NPPF) and would need to be balanced against the public benefits of implementing residential development on this site (paragraph 196 of the NPPF).
- 4.63 Therefore, in summary, there is no reason to believe that the site could not accommodate a scheme that would sensitively address the issues regarding the setting of these three listed buildings, and positively address the requirements of national and local planning policy. Notwithstanding the implementation of good design and mitigation measures, in the two instances where a residual level of harm is likely to remain, this would be very small or negligible and at the lower/lowest end of less than substantial harm. This would be weighed against the public benefits of implementing development on the site and is a matter of judgement for the decision maker to decide on its acceptability. As such, there is no reason why the site should not be included in the Bedford Borough Local Plan and the Neighbourhood Plan, and every reason to believe that (based on the indicative masterplan in the Vision Document) a future planning application would be NPPF compliant.

Non-designated Heritage Assets

Palaeolithic to Iron Age (c.500,000 BC-AD 43)

- 4.64 There are no records for previously identified prehistoric archaeology within the site, as recorded on the Bedford Borough HER, although three are within the wider study area.
- 4.65 Some artefacts, comprising a prehistoric core and two flint flakes, and some Iron age pottery and animal remains, were recovered from colluvial deposits (**MBD18686** on **Plan EDP 2**) during a trial trench evaluation (**EBD78**) in 2005, c.270m to the south-west. However, the only located *in situ* remains comprised a pit and ditch from the post-medieval period.
- 4.66 Archaeological fieldwalking (**EBB710**) was undertaken c.530m to the south-east of the site, over an area of 44 hectares (ha). In terms of prehistoric finds, this located a single flake of prehistoric flint.
- 4.67 Otherwise, the findspot of three fragmented vessels of Iron Age and Roman date (**MBD5570**) is recorded c.375m to the south. The HER entry makes clear that the exact location of these finds is uncertain.
- 4.68 On this basis, given the scarcity of finds (particularly considering the number of archaeological investigations in the area – see further below) and their distance from the site, there is no more than a low potential for it to contain prehistoric archaeological remains.

Romano-British (AD43-410)

- 4.69 There is a single record for possible Roman period archaeological remains – although the accuracy of this record is disputed – within the site, as contained within the Bedford Borough HER, and five within the wider study area.
- 4.70 The suggested alignment of a Roman road from Dorchester-on-Thames to Alconbury House (**MBD485**) is mapped in the HER as passing through the eastern edge of the site. However, the HER also identifies that this alignment is disputed and, although some visible evidence for possible aggers has been recorded elsewhere – albeit it is unclear whether they have been verified through intrusive survey – there is no such recorded evidence within the site or the wider 1km radius study area.
- 4.71 The HER also notes that the supposed road links several monastic sites and (if the alignment is correct) may therefore have continued in use until the 16th century. In this regard, it is notable that the aerial photographic evidence (see below) shows that the site was formerly covered with ridge and furrow, with no evidence for a contemporary trackway on this alignment or a related interruption of these earthworks.
- 4.72 Regardless, where this supposed alignment is traced within the site, it is notable that it mostly overlaps with an area of post-medieval quarrying (**MBD5157**) and therefore, even if once present, the majority of remains within the site would have been removed through this later mineral extraction.
- 4.73 Outside of the site, a small collection of Roman features (**MBD15759**), comprising a ditch, a gully and a ditch terminus or pit, have previously been recorded c.90m to the north-east of the site. Finds associated with these features consisted of animal bone, burnt clay and pottery fragments, some of which are recorded as “*near complete vessels*”. On this basis, it was theorised that Roman settlement activity is located nearby to these features.
- 4.74 A trial trench evaluation (**EBB761**), c.150m to the north, located boundary ditches and a gully from the early to middle Roman period.
- 4.75 Otherwise, the remaining records for Roman period archaeology relate to stray artefactual finds, comprising:
- The findspot of three fragmented vessels of Iron Age and Roman date (**MBD5570**). Whilst these are recorded c.375m to the south-west, the HER entry makes clear that the exact location of these finds is uncertain;
 - A bronze coin of Vespasian (**MBD15972**), the indicative location of its recovery being c.680m to the south; and
 - A bronze coin of 3rd or 4th century date (**MBD17746**), found c.230m to the south-east.
- 4.76 Given the findings from the trial trench evaluation c.90m to the north, which were located in a similar topographic and geological position as the site, there is a moderate potential

to encounter Roman period remains within it. If any features or deposits are present, these will most likely be truncated by medieval cultivation and post-medieval quarrying, such that they are unlikely to be of more than 'low' value – that is to say, their state of preservation is unlikely to warrant preservation *in situ* and inform the allocation or future development of the site.

Early Medieval (AD 410-1066)

- 4.77 There are no records for previously identified early medieval archaeology within the site or study area, as recorded within the Bedford Borough HER. As such, there is considered to be a very low potential for the site to contain remains from this period.

Medieval (AD 1066-1485)

- 4.78 There are 2 records for previously identified medieval archaeology within the site, as recorded on the Bedford Borough HER, and there are 14 within the wider study area.
- 4.79 The medieval settlement of Keeley Green (**MBD16980**) is located to the north-east of the site, although the source of evidence for its mapped extent is unclear from the details of the HER entry. It may well reflect the extent of Keeley Green, as it is shown on the Wootton Enclosure Map dated to 1838 (see **Plan EDP 3a**).
- 4.80 Regardless, it is evident that the majority of the site was covered in ridge and furrow earthworks, notwithstanding more recent erosion and impacts (see **Site Walkover** below), and most likely lay within the surrounding farmed hinterland throughout this period. Furthermore, although the HER shapefile for the settlement overlaps slightly into the north-eastern edge of the site, this is an area that has previously been subject to post-medieval quarrying (**MBD5157**) and it is not therefore expected that there is more than a low potential for any medieval settlement to be present within the site bounds.
- 4.81 Beyond the site boundary, further ridge and furrow earthworks, both extant and destroyed, are recorded within the HER. In this regard, earthworks recorded as **MBD10291**, c.320m to the north-east of the site, were once theorised as being aggers connected with the supposed Roman road (**MBD485**), but more recent evidence identifies these as headland deposits related to ridge and furrow cultivation.
- 4.82 In addition, other medieval settlements are located further afield within the study area, including those of Kempston Wood (**MBD16880**), Wood End (**MBD16883**), Bott End (**MBD16979**), Causeway End (**MBD16976**), Taggs End (**MBD16975**) and Church End in Wootton (**MBD16974**). These are all too distant to influence the archaeological potential of the site.
- 4.83 Similarly, the possible locations of moated sites (**MBD3422**, **MBD8276** and **MBD3435**), now entirely or partially destroyed, are also located within the study area. These potential features are also sufficiently distant as not to influence the possibility of encountering related archaeological remains within the site.

- 4.84 The possible position of a fourth moated site (**MBD3434**), is located c.80m to the north-west, although the HER states that the identification is uncertain, and it could equally simply comprise ponds or drainage ditches.
- 4.85 The former location of Keeley Green village green (**MBD11534**) is recorded c.50m to the north-east, although now built over and/or subsumed into agricultural land and gardens. Another former location of a separate village green (**MBD11522**) is located c.840m to the north-west.
- 4.86 Otherwise, roads of possible medieval origin (**MBD11532** and **MBD11535**) are located c. 285m to the north-east and c.550m to the east respectively.
- 4.87 Therefore, as the site was located within the farmed hinterland of surrounding settlements in this period, there is a low potential for it to contain medieval archaeological remains other than those related to former farming practices that are unlikely to be of more than very low value.

Post-medieval to Modern (AD 1485-Present)

- 4.88 There are 2 records for previously identified archaeological remains from these periods within the site, as recorded within the Bedford Borough HER, and a further 14 in the wider study area.
- 4.89 Pre-enclosure (i.e. pre-1838), but post-medieval, quarry pits (**MBD5157**) are located within the eastern half of the site and c.50m to the south. The remains of the pit within the site was noted during the walkover as being up to 1.5m deep in places. Whilst of 'negligible' value in themselves, it is likely that the excavation of these pits will have removed any earlier archaeology located within their footprint (if once present). A trial trench evaluation (**EBB761**), c.150m to the north, located the remains of further post-medieval quarry pits.
- 4.90 A 20th century standard cast iron Lion's Head standpipe (**MBD8283**) was recorded within the north west corner of the site in 1977. However, it is evident from the site visit in January 2019 that this standpipe has since been removed, with only a small pool of water noted in its approximate location.
- 4.91 Records for similar standpipes in the wider study area (**MBD8281** and **MBD8282**) are located c.880m to the south-east and c.760m to the south respectively.
- 4.92 The former locations of kilns, brickfields, clay pits and brickworks are scattered across the study area (**MBD3100**, **MBD2942**, **MBD3099**, **MBD8290**, **MBD8287** and **MBD8289**). The location of a possible post-medieval stack stand (**MBD22023**) is located c.890m to the north.
- 4.93 An extension to Wootton graveyard (**MBD8995**), consecrated in the Victorian period, is located c.780m to the south. A second cemetery (**MBD8996**) is located c.350m to the south-west.

- 4.94 Wootton House and its associated landscaped grounds (**MBD9441**) is located c.760m to the south.
- 4.95 Otherwise, the locations of a demolished post-medieval cottage (**MBD11533**), c.645m to the east, and a demolished farmhouse (**MBD8277**), c.850m to the west, are recorded in the HER.
- 4.96 Based on the evidence contained within the Bedford Borough HER, the site appeared to have a low potential to contain remains from this period, other than features and deposits related to quarrying and farming.
- 4.97 However, as detailed below, cartographic evidence suggests the location for a Victorian building just inside the north-east corner, as depicted on the Wootton Enclosure Map of 1838 (see **Plan EDP 3a**). As such, there is a localised and moderate potential for remains related to this building in the north-east corner, although – given its relatively recent date – any such archaeology is unlikely to be of greater than ‘very low’ value.

Undated

- 4.98 There is no previously identified undated archaeology within the site, as recorded on the Bedford Borough HER, and only one record is identified in the wider study area. This comprises an area of undated linear cropmarks (**MBD9080**), located c.160m to the west of the site, although the HER records that these are likely to be the result of agricultural activity.
- 4.99 These undated remains are not identified as influencing the potential for the site to contain archaeological remains, as identified in the preceding period specific sections.

Previous Archaeological Investigations

- 4.100 The site has not been subject to any archaeological investigations. Where relevant, the results of investigations in the wider study area have been included in the period-specific sections above.
- 4.101 Other than the small number of prehistoric artefacts noted above, a trial trench evaluation (**EBD78**) in 2005, c.270m to the south-west of the site, located evidence of ridge and furrow and a pit and ditch probably from the post-medieval period.
- 4.102 A trial trench evaluation (**EBB930**), c.600m to the south-west of the site, only found remnant ridge and furrow and stray medieval pottery.
- 4.103 A trial trench evaluation (**EBB1059**), c.430m to the south of the site, found only a low level of remains, comprising a probable furrow, a small gully and a probable road side ditch, as well as late post-medieval or Victorian make-up deposits.

- 4.104 A trial trench evaluation (**EBB865**), c.460m to the south-east of the site, located only a modern pit, a post-medieval timber post and residual late medieval pottery and fragments of post-medieval ceramic building material.
- 4.105 Archaeological investigations, comprising fieldwalking and geophysical survey (**EBB710**), were undertaken over a total area of 44ha, c.530m to the south-east of the site. This located a single flake of prehistoric flint, as mentioned above, and otherwise recovered medieval and post-medieval artefacts that are likely to be the result of manuring deposits.
- 4.106 The geophysical survey found a number of small areas of anomalies that are likely to be of modern or geological origin, although an archaeological explanation cannot be ruled out for some. Regardless, there is no evidence in the HER to suggest that these have been intrusively tested, so their interpretation remains conjectural.
- 4.107 A trial trench evaluation (**EBB949**), c.790m to the east of the site, located only evidence for ridge and furrow cultivation, an undated possible pit, a natural hollow and later medieval pottery. This was preceded by a geophysical survey and Heritage Impact Assessment, but for ease of explanation only the shapefile for the trial trench evaluation is shown on **Plan EDP 2**.
- 4.108 A trial trench evaluation (**EBD270**), c.160m to the east of the site, found no archaeological remains, other than modern deposits.
- 4.109 The results of these investigations do not influence the potential for the site to contain hitherto unrecorded archaeological remains, as detailed within the preceding period-specific sections.

Cartographic Sources

- 4.110 The earliest assessed cartographic source to depict the site in detail is the Wootton Enclosure Map of 1838 (see **Plan EDP 3a**). This shows the south, west, east and north-west boundaries of the site as they are today. The internal boundary however is not present; instead there is a division between the agricultural field in the west and south of the site and the quarry pit in the north-east corner. In addition, there is a building shown just inside the north-east corner, which also sits within a plot segregated from the wider site.
- 4.111 By the time of the First Edition Ordnance Survey (OS) map (1883; see **Plan EDP 3b**), the building had been demolished. It is unclear when the quarry pit activity ceased, and therefore whether this building sat within the disused pit or whether its location was subsequently quarried after its removal. Regardless, even if remains are present within the site related to this Victorian building, they are unlikely to be of more than 'very low' value.
- 4.112 Later editions of the OS maps show a broad continuation of the site layout to the present day, with few alterations to its boundaries or internal divisions.

4.113 As such, the cartographic sources confirm the agricultural and quarrying use of the large majority of the site throughout the 19th and 20th centuries. These maps do not demonstrate any evidence for significant archaeological remains as being present on site.

Aerial Photographs

4.114 A total of 64 vertical aerial photographs covering the site and its immediate environs were identified within the collection maintained by the Historic England Archive in Swindon.

4.115 These confirmed the extent of the ridge and furrow earthworks and quarrying activity within the site, as well as its agricultural use throughout the mid- to late 20th century.

4.116 Indeed, the National Mapping Programme data for the site and the surrounding area also confirmed the presence of the ridge and furrow and quarry pit (**MBD5157**) identified in the HER and discussed above in the period-specific sections.

Non-designated Buildings

4.117 The Bedford Borough HER records a number of 'historic buildings' across the wider study area, only the closest of which are shown on **Plan EDP 2**.

4.118 These comprise The Rose and Crown Public House (**MBD5330**) and 29 and 31 Keeley Lane (**MBD8543**), both of which date to the post-medieval period. They are off site and do not affect the potential for the site to contain archaeological remains of potential significance.

4.119 The Rose and Crown Public House is a 17th century building, extended in the 19th century and with extensive 20th century alterations. It is noted in the HER as being of 'local interest' and therefore of 'low' significance. Inasmuch that it derives significance from its setting, it is historically and functionally associated with Keeley Lane, which it fronts onto. Its building plot is much altered in extent and form to that shown on the available historic cartographic sources (see **Plan EDP 3**).

4.120 Whilst it is located on the opposite side of the road to the site, which therefore forms part of its setting, there is no known historic or functional links between the two. In terms of its limited significance, derived from it being a 17th century public house fronting onto Keeley Lane, the site is considered to contribute in only a very limited way to this, the northern extent merely being an area of undeveloped farmland in close proximity to the structure.

4.121 With regard to 29 and 31 Keeley Lane, this is described as an 18th century roughcast building, of two storeys with a double pitched hipped roof, with the south side filled in with a further hipped wing. It is described as having an old clay tile roof with some pantiles. It is also described as having two Yorkshire casement windows on the first floor.

- 4.122 However, it was observed during the site walkover that the appearance of 29 and 31 Keeley Lane does not match the HER description exactly. All windows are modern casements, with no sign of the Yorkshire casements mentioned. There are also no hipped roofs and the tiles are clearly modern. As such, it is likely that this building has undergone further alterations since its inclusion in the HER. Considering that it was likely of no more than 'local' interest to begin with, these further alterations suggest it only has a very low or negligible significance.
- 4.123 It is located within private gardens and fronts onto Keeley Lane, which provide historic and functional links that contribute positively to its significance. The farmland immediately around the house, including the north-west corner of the site, is also considered to make a contribution to its significance, albeit this is very limited/negligible and derives merely from being undeveloped farmland close to the asset.
- 4.124 The development of the northern end of the site is therefore considered to have the potential to only result in very limited harm to the significance of these assets, which themselves only have a low or very low/negligible level of significance. Therefore, there is no reason to believe that these form such a level of constraint that the site should not be allocated for future development.

Site Walkover

- 4.125 The site was visited in January 2019 to assess the current ground conditions and topography within it, as well as to confirm the continuing survival of any known archaeological remains and to identify any hitherto unknown remains of significance.
- 4.126 The presence of ridge and furrow was confirmed across approximately 2/3 of the site. This forms three furlongs of earthworks (i.e. groups of ridges running parallel), with differently aligned furrows and some limited headland deposits. This forms the north-eastern corner of the extensive area of ridge and furrow earthworks that extends across the fields to the south and west (see **Plan EDP 2**).
- 4.127 It appears that this large block of ridge and furrow was previously identified as part of a district wide review in 2017 (Albion Archaeology 2017), where it was described as having "*good survival or multiple components...good amenity value, accessibility and potential for education and display*". However, it was clear during the walkover (as discussed further below) that the description within the 2017 report was not reflective of the portion of this block that lies within the site, where it has been largely quarried away in the 19th century and flattened by modern farming activity, with good survival only on the western edge.
- 4.128 It was noted that the three furlongs of ridge and furrow within the site survive to varying degrees of preservation. The eastern furlong is the least well preserved, having been mostly quarried away in the post-medieval period. The central furlong is moderately well preserved, although the north-east corner – approximately 1/3 of the portion - has been quarried away or otherwise eroded. The westernmost furlong is the only one with 'good'

preservation, with the most pronounced ridge and furrow and headland deposits at each end.

- 4.129 This wider block of earthworks is non-designated and identified as being of local interest/'low' significance, of which the site only forms a small proportion. As detailed above, the furrows within the site are heavily eroded or removed in the east, centre and north of the site. It should also be noted that there is no public access to the site.
- 4.130 As such, contrary to the 2017 report (Albion Archaeology 2017), a detailed review of the ridge and furrow within the site identifies that there is only 'good' survival on the western edge, with the remainder being of poor or moderate survival; and no accessibility or opportunity for education or display.
- 4.131 Otherwise, as mentioned above, the previously recorded standpipe (**MBD8283**) has evidently been removed from the site, with only a small pool of water marking its approximate location. There is an area of lower ground along the northern edge of the site, the cause of which is not entirely clear, although it is noted that the standpipe was located within this area of lower ground, perhaps suggesting a correlation between underlying pipes and the change in level. Alternatively, it could be an earlier alignment or outer edge of an earlier form of Keeley Lane.

Non-designated Heritage Asset Summary

- 4.132 The site has a moderate potential to contain archaeological remains from the Roman period. However, if any features or deposits are present, these will most likely be truncated by medieval cultivation and post-medieval quarrying, such that they are unlikely to be of more than 'low' value – that is to say, their state of preservation is unlikely to warrant preservation *in situ*.
- 4.133 Otherwise, the site has a low or very low potential to contain buried archaeological remains from any other period, apart from 'negligible' or 'very low' value remains related to medieval and later farming practices, post-medieval quarrying and a Victorian building.
- 4.134 Therefore, this assessment identifies that the site has a very low potential to contain archaeological remains of such significance that they would require retention and influence the deliverability or capacity of the site for allocation or future development.
- 4.135 The site contains the north-eastern corner of a larger area of ridge and furrow earthworks that extend for some distance to the west and south. These earthworks are non-designated and identified as being of local interest/'low' significance, of which the site only forms a small proportion. The earthworks within the site range in their quality of survival, from poor to good, with large parts having been quarried away entirely or heavily truncated.
- 4.136 The site is in close proximity to two 'historic buildings', as detailed in the HER. These are the Rose and Crown Public House and 29 and 31 Keeley Lane, which are identified as being of 'low' and 'very low/negligible' significance respectively. Whilst some harm is

possible to these assets through the allocation/development of the site, this would most likely be very limited, and should be seen in the context that they are non-designated and have only a low or very low level of significance to begin with, resulting in an effect that would be no greater than very limited.

- 4.137 Where harm will accrue to non-designated heritage assets through the development of a site, under paragraph 197 the NPPF requires a 'balanced judgement', having "*regard to the scale of harm or loss and the significance of the heritage asset*". In this context, it should be noted that none of the non-designated heritage assets identified as potentially being affected are of greater than 'low' or 'limited' significance and, in the instance of the ridge and furrow and the two 'historic buildings', the level of harm is also 'limited', 'very limited' or 'negligible'.
- 4.138 As such, there is no reason in terms of non-designated heritage assets as to why the site should not be allocated and could not accommodate development in the future.

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Section 5

Conclusions

- 5.1 This Archaeology and Heritage Appraisal has been produced by the Environmental Dimension Partnership Ltd on behalf of Rainier Developments Ltd. It considers the primary archaeological and heritage issues in relation to the proposed allocation of Land on South Side of Keeley Lane ('the site'), Wootton, in the Bedford Borough Local Plan and emerging Wootton Neighbourhood Plan. The following reiterates the key findings of this report.
- 5.2 Only three designated heritage assets are identified as drawing significance from the site, all of which are Grade II listed buildings. However, in each instance the nature of this association is such that the site makes no more than a 'very limited' or 'negligible' contribution, and sensitive masterplanning could minimise or otherwise avoid the potential for harm to these assets through the allocation/development of the site.
- 5.3 In the instances of the two listed buildings where there is likely to be residual harm, this would only be very small or negligible, and unquestionably at the lower/lowest end of less than substantial harm. Any residual harm would need to be clearly and convincingly justified (paragraph 194 of the NPPF) and balanced against the public benefits of implementing a residential scheme on the site (paragraph 196 of the NPPF) and it would be a matter of judgement for the decision maker to decide its acceptability. Therefore, in terms of designated heritage assets, there is no reason why the site should not be included in the Local Plan and the Neighbourhood Plan, and every reason to believe that (based on the indicative masterplan) a future application would be NPPF compliant.
- 5.4 In terms of non-designated heritage assets, the site is identified as having a moderate potential to contain archaeological remains from the Roman period, albeit most likely heavily truncated and of no greater than low value. It has a low potential to contain archaeological remains from any other periods, apart from very low value features and deposits related to medieval and later farming practices.
- 5.5 As such, the site has a low potential to contain archaeological remains that would be of such significance as to warrant preservation *in situ* and influence its capacity or deliverability for residential development.
- 5.6 In terms of the ridge and furrow within the site, this forms one small part of a much wider area of earthworks that extends to the west and south, which is not considered to be of more than local/low value. The ridge and furrow in the north, east and centre of the site has either been removed or heavily eroded by post-medieval quarrying and modern farming practices.
- 5.7 Two 'historic buildings' are close to the site to the west and north, which are identified as being of no more than low or very low/negligible significance. They draw a limited contribution to this from the site, as an area of undeveloped farmland with otherwise no known historic or functional links.

- 5.8 When considering the potential for harm to these non-designated heritage assets, paragraph 197 of the NPPF requires a ‘balanced judgement’, having “*regard to the scale of harm or loss and the significance of the heritage asset*”. In this context, it should be noted that none of the non-designated heritage assets identified as potentially being affected are of greater than ‘low’ value, and, in the instance of the ridge and furrow and the two ‘historic buildings’, the level of harm is also ‘limited’, ‘very limited’ or ‘negligible’. Therefore, non-designated heritage assets are not considered to be constraints of such magnitude that they should preclude the allocation or future development of the site.
- 5.9 In conclusion, it is the finding of this report that the potential impacts of the draft allocation on designated and non-designated heritage assets are of insufficient scale to warrant development being prevented or severely restricted, such as to make its deliverability unviable. Therefore, in archaeological and heritage terms, there is no reason as to why the site should not continue to be allocated, given that there is every reason to believe that it could be delivered in accordance with the relevant provisions of the NPPF and the provision in the adopted Local Plan (2030).

Section 6

References

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Historic England (HE), 2015. *Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning Note 2*. London.

Historic England (HE), 2016. *Conservation Area Designation, Appraisal and Management: Historic Advice Note 1*. London.

Historic England (HE), 2017. *Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (Second Edition)*. London.

Ministry of Housing, Communities and Local Government (MHCLG), 2018. *The National Planning Policy Framework*. London.

List of Consulted Maps

Wootton Enclosure Map, 1838

First Edition Ordnance Survey map 1883

Ordnance Survey map 1901 Edition

Ordnance Survey map 1926 Edition

Ordnance Survey map 1938 Edition

Ordnance Survey map 1969-1970 Edition

Ordnance Survey map 1980 Edition

Ordnance Survey map 1989-1993 Edition

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Images



Image EDP 1: View from the site looking north toward the Grade I listed Parish Church of St Mary the Virgin (**1249239**). Note that there are distant views where the tower and spire are the only visible elements. Also note that it is appreciated in the context of intervening 20th century housing.

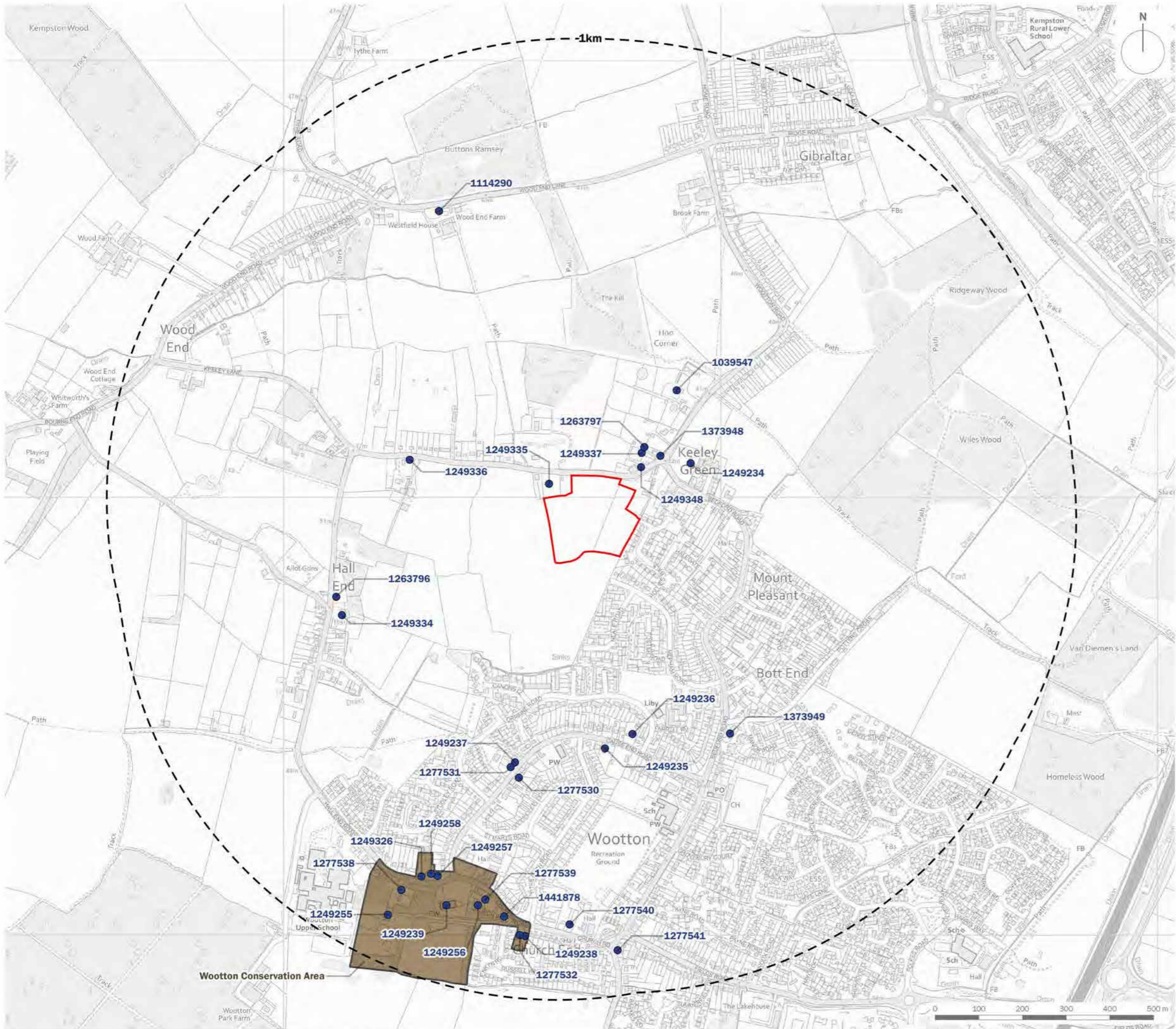


Image EDP 2: View from the north-west corner of the site looking north toward the Grade II listed 35 Keeley Lane (**1249335**), the gable end chimney of which can just be seen in the centre of the photograph.

Plans

- Plan EDP 1** Designated Heritage Assets
(edp5442_d002a 29 July 2019 GY/MM)
- Plan EDP 2** Known Non-designated Heritage Assets
(edp5442_d003a 29 July 2019 GY/MM)
- Plan EDP 3** Extracts from (a) Wootton Enclosure Map (1838); and (b) First Edition Ordnance Survey Map (1883)
(edp5442_d004 29 July 2019 GY/MM)

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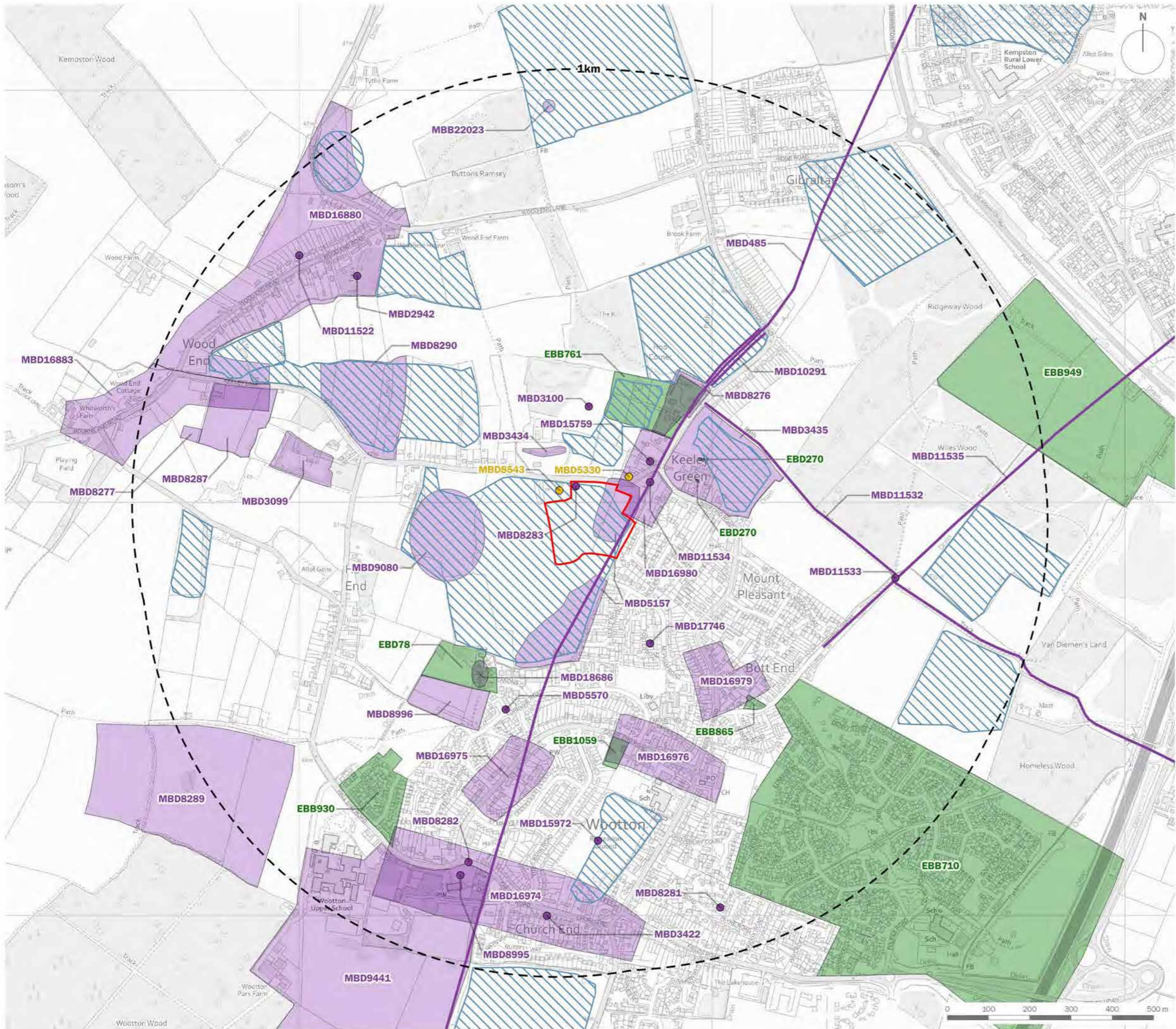


- Site Boundary
- 1km Study Area
- Listed Buildings
- Conservation Area

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project title	Land on South Side of Keeley Lane, Wootton (Site 463)	
drawing title	Plan EDP 1: Designated Heritage Assets	
date	29 JULY 2019	drawn by GY
drawing number	edp5442_d002a	checked MM
scale	Refer to scale bar	QA JTF



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- Site Boundary
- 1km Study Area
- Historic Building
- HER Monument
- HER Event
- Ridge and Furrow

client	Rainier Development Ltd	
project title	Land on South Side of Keeley Lane, Wootton (Site 463)	
drawing title	Plan EDP 2: Known Non-designated Heritage Assets	
date	29 JULY 2019	drawn by GY
drawing number	edp5442_d003a	checked MM
scale	Refer to scale bar	QA JTF



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 Approximate Site Boundary



client
Rainier Developments Ltd

project title
Land on South Side of Keeley Lane, Wootton (Site 463)

drawing title
Plan EDP 3: Extracts from (a) Wootton Enclosure Map (1838); and (b) First Edition Ordnance

date	29 JULY 2019	drawn by	GY
drawing number	edp5442_d004	checked	MM
scale	Not to scale	QA	JTF



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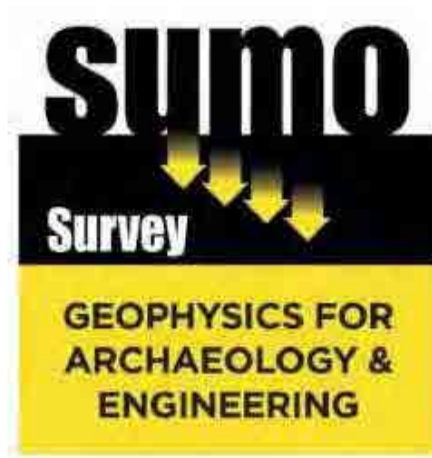
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GROUP** REGISTERED
PRACTICE



Appendix 2
Geophysical Survey Report



GEOPHYSICAL SURVEY REPORT

Land on South Side of Keeley Lane, Wootton, Bedfordshire

Client

The Environmental Dimension Partnership Ltd

For

Rainier Developments Ltd

Survey Report

06377

Date

02 March 2022



Survey Report 06377: Land on South Side of Keeley Lane, Wootton, Bedfordshire

Survey dates 3 February 2022

Field co-ordinator

[REDACTED]

Field Team

[REDACTED]

Report Date

02 March 2022

CAD Illustrations

[REDACTED]

Report Author

[REDACTED]

Project Manager

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Report approved

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1 LIST OF FIGURES

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Figure 03	1:1200	Magnetometer Survey - Colour Plots
Figure 04	1:1200	Magnetometer Survey - Interpretation
Figure 05	NTS	Greyscale Plots / Interpretation / 1838 Wootton Enclosure Mapping / First Edition Ordnance Survey Mapping
Figure 06	1:1200	Minimally Processed Data - Greyscale Plots
Figure 07	1:1200	XY Trace Plots (clipped at +/-15nT)

2 LIST OF APPENDICES

Appendix A	Technical Information: Magnetometer Survey Methods, Processing and Presentation
Appendix B	Technical Information: Magnetic Theory

3 SURVEY TECHNIQUE

3.1 Detailed magnetic survey (magnetometry) was chosen as the most efficient and effective method of locating the type of archaeological anomalies which might be expected at this site.

Bartington Grad 601-2 Traverse Interval 1.0m Sample Interval 0.25m

The only processes performed on data are the following unless specifically stated otherwise:

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes instrument striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

4 SUMMARY OF RESULTS

- 4.1 A magnetometer survey of 3 hectares of land south of Keeley Lane, Wootton has not recorded any magnetic responses that could be interpreted as being of definite archaeological interest. The postulated route of a Roman road from Dorchester-on-Thames to Alconbury House (MBD485) is not visible in the dataset. Former field boundaries have been plotted along with ridge and furrow ploughing.

5 INTRODUCTION

- 5.1 **SUMO Geophysics Ltd** were commissioned to undertake a geophysical survey of an area outlined for residential development. This survey forms part of an archaeological investigation being undertaken by **The Environmental Dimension Partnership Ltd** on behalf of **Rainier Developments Ltd**.

5.2 Site Details

NGR / Postcode	TL 00682 45922 / MK43 9HR
Location	The site is located 5km south-west of Bedford and 15km north-east of Milton Keynes. The survey area is bounded to the north by Keeley Lane and to the east by houses off Hollies walk.
HER	Bedfordshire HER
District	Mid Bedfordshire
Parish	Wootton Civil Parish
Topography	Flat
Current Land Use	Pasture
Geology (BGS 2022)	Bedrock: Peterborough Member – Mudstone Superficial: Head, 2 - Gravel, Sand, Silt and Clay
Soils (CU 2022)	Soilscape 9: Lime-rich loamy and clayey soils with impeded drainage
Archaeology (EDP 2020)	An archaeological and heritage appraisal has been produced by the Environmental Dimension Partnership Ltd on behalf of Rainier Developments Ltd. The suggested alignment of a Roman road from Dorchester-on-Thames to Alconbury House (MBD485) is mapped in the HER as passing through the eastern edge of the site. However, the HER also identifies that this alignment is disputed since some visible evidence for possible aggers has been recorded elsewhere.
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	3 ha

5.3 *Aims and Objectives*

- 5.3.1 To locate and characterise any anomalies of possible archaeological interest within the study area.

6 RESULTS

6.1 *The survey has been divided into two survey areas (Areas 1-2).*

6.2 **Probable / Possible Archaeology**

6.2.1 No magnetic responses have been recorded that could be interpreted as being of definite archaeological interest.

6.3 **Former field Boundary – Corroborated**

6.3.1 A couple of linear responses have been recorded in the dataset which correspond to the location of former field boundaries that are visible on the 1838 Wootton Enclosure Mapping (see Figure 05).

6.4 **Agricultural – Ridge and Furrow**

6.4.1 Broad parallel and widely spaced linear responses are visible on multiple alignments; these anomalies indicate the presence of ridge and furrow ploughing.

6.5 **Ferrous / Magnetic Disturbance**

6.5.1 Ferrous responses close to boundaries are due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil; they are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

7 DATA APPRAISAL & CONFIDENCE ASSESSMENT

7.1 Historic England guidelines (EH 2008) Table 4 states that the typical magnetic response on the local soils / geology is variable. The results from this survey indicate the presence of ridge and furrow ploughing; as a consequence, there is no *a priori* reason why archaeological features would not have been detected. Whilst it is possible that the ridge and furrow ploughing may have obscured any weak anomalies of archaeological interest, if present, it is nevertheless notable that no archaeology was identified whatsoever.

8 CONCLUSION

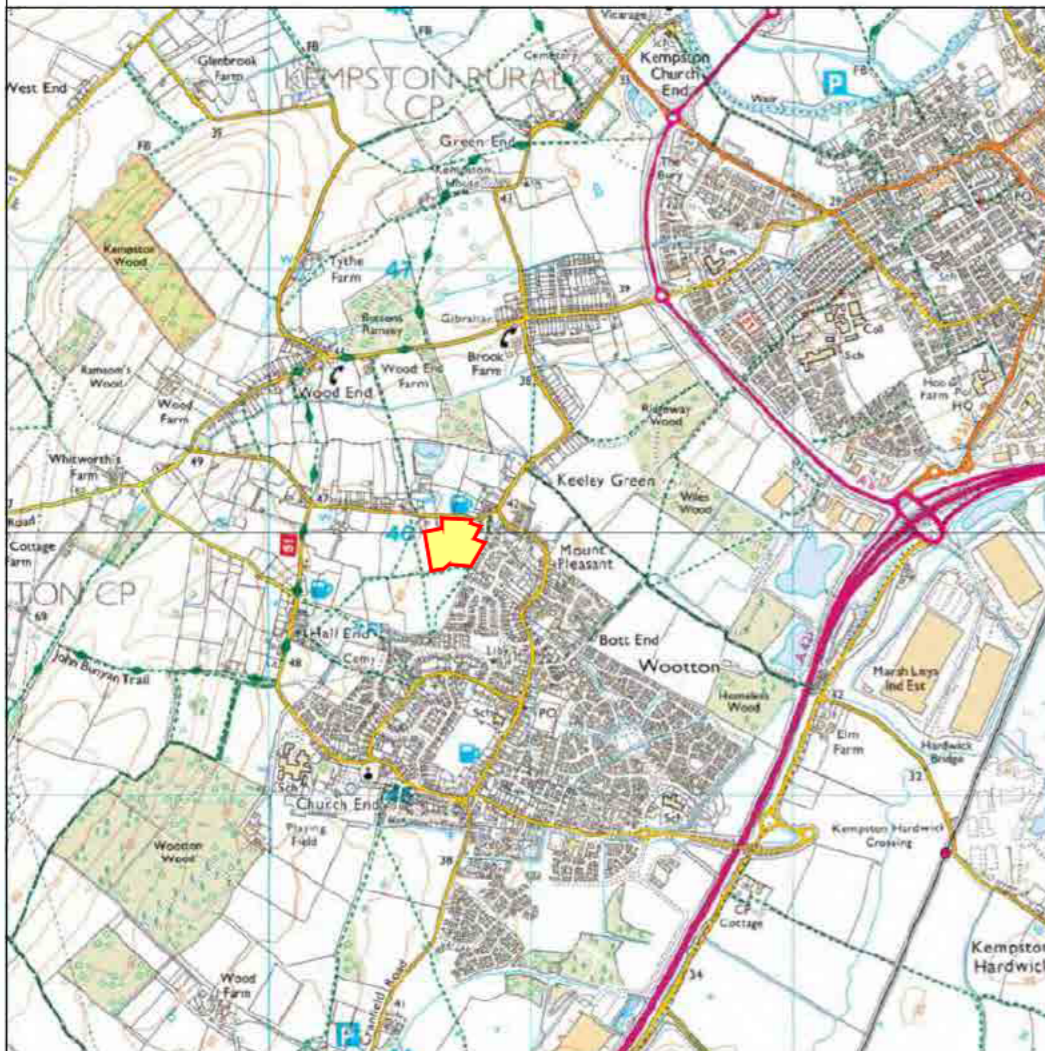
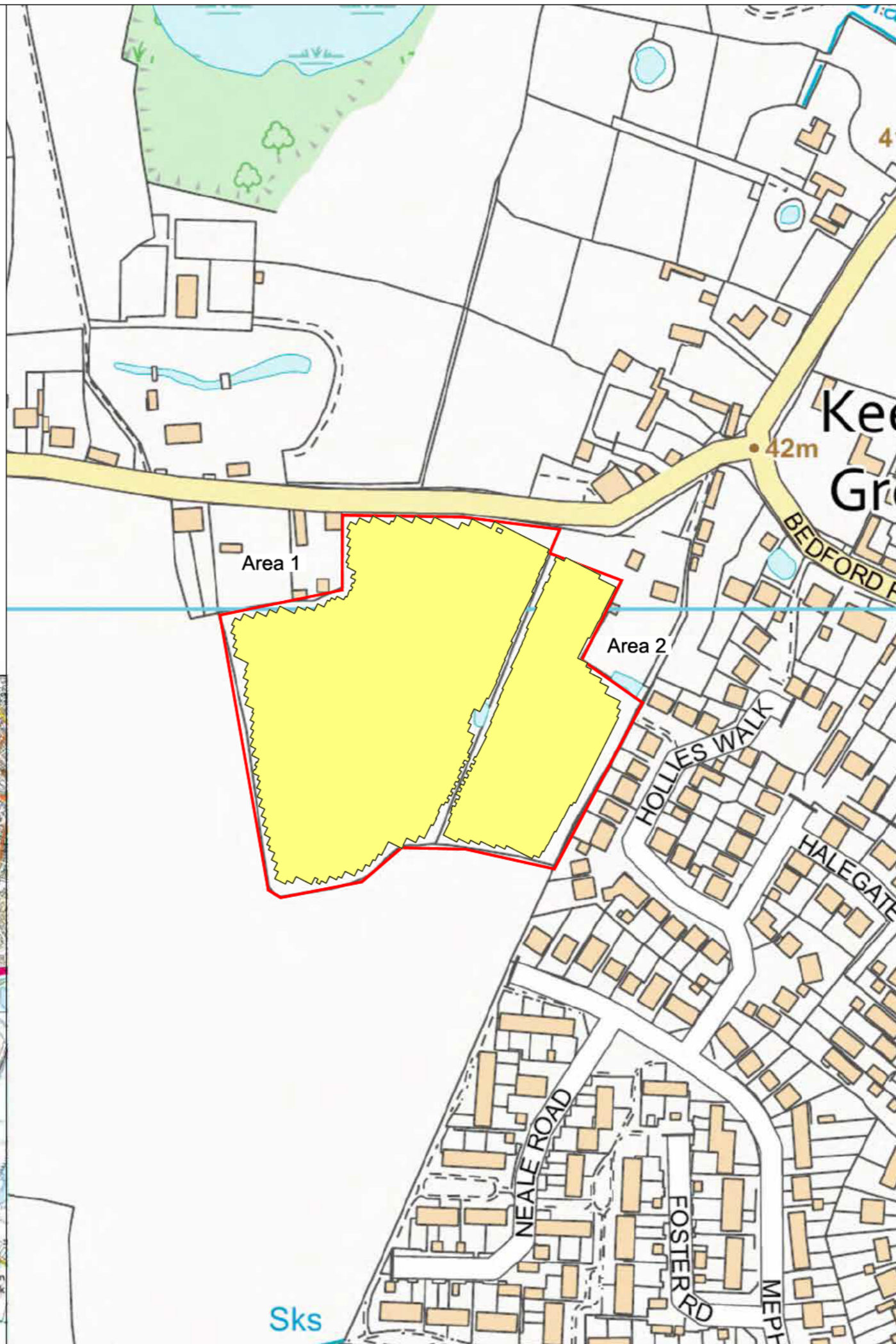
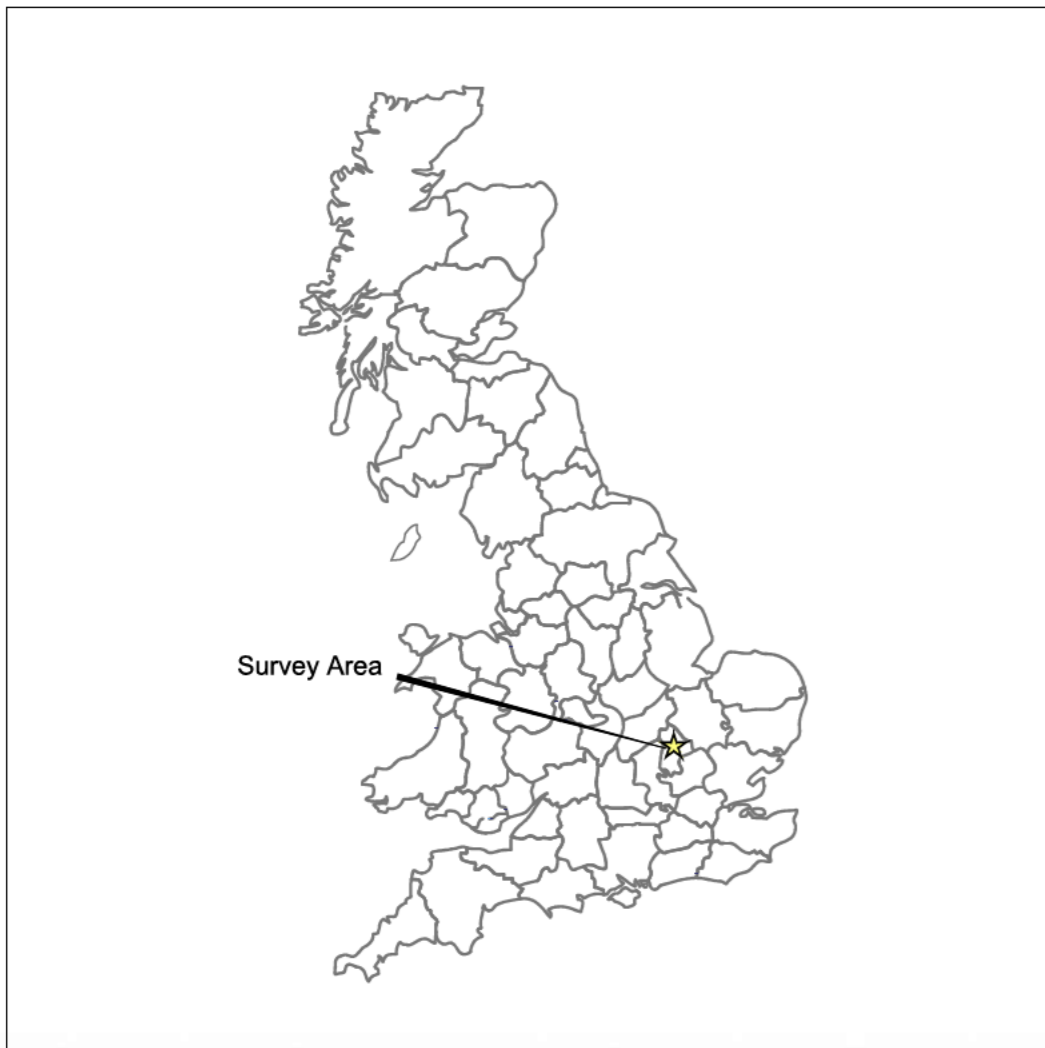
8.1 The magnetometer survey has not recorded any magnetic responses that could be interpreted as being of definite archaeological interest. No evidence has been detected for the postulated alignment of a Roman road from Dorchester-on-Thames to Alconbury House (MBD485) on the eastern edge of the survey area. Former field boundaries are visible in the dataset along with Ridge and furrow ploughing.

9 REFERENCES



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http://www.archaeologists.net/sites/default/files/ClfAS%26GGeophysics_2.pdf
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- EDP 2020 *Land on South Side of Keeley Lane, Wootton (Site 463); Archaeological and Heritage Assessment*. The Environmental Dimension Partnership Ltd, Cheltenham
- EH 2008 *Geophysical Survey in Archaeological Field Evaluation*. English Heritage, Swindon
<https://content.historicengland.org.uk/images-books/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf/>

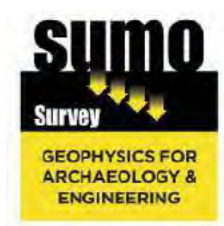
10 ARCHIVE

- 10.1 The minimally processed data, data images, XY traces and a copy of this report are stored in **SUMO Geophysics Ltd.**'s digital archive, on an internal RAID configured NAS drive in the Midland's Office. These data are also backed up to the Cloud for off-site storage.
- 10.2 The Grey Literature will be archived with OASIS and the relevant HER within a period of 12 months

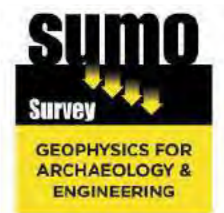
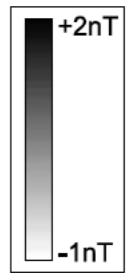
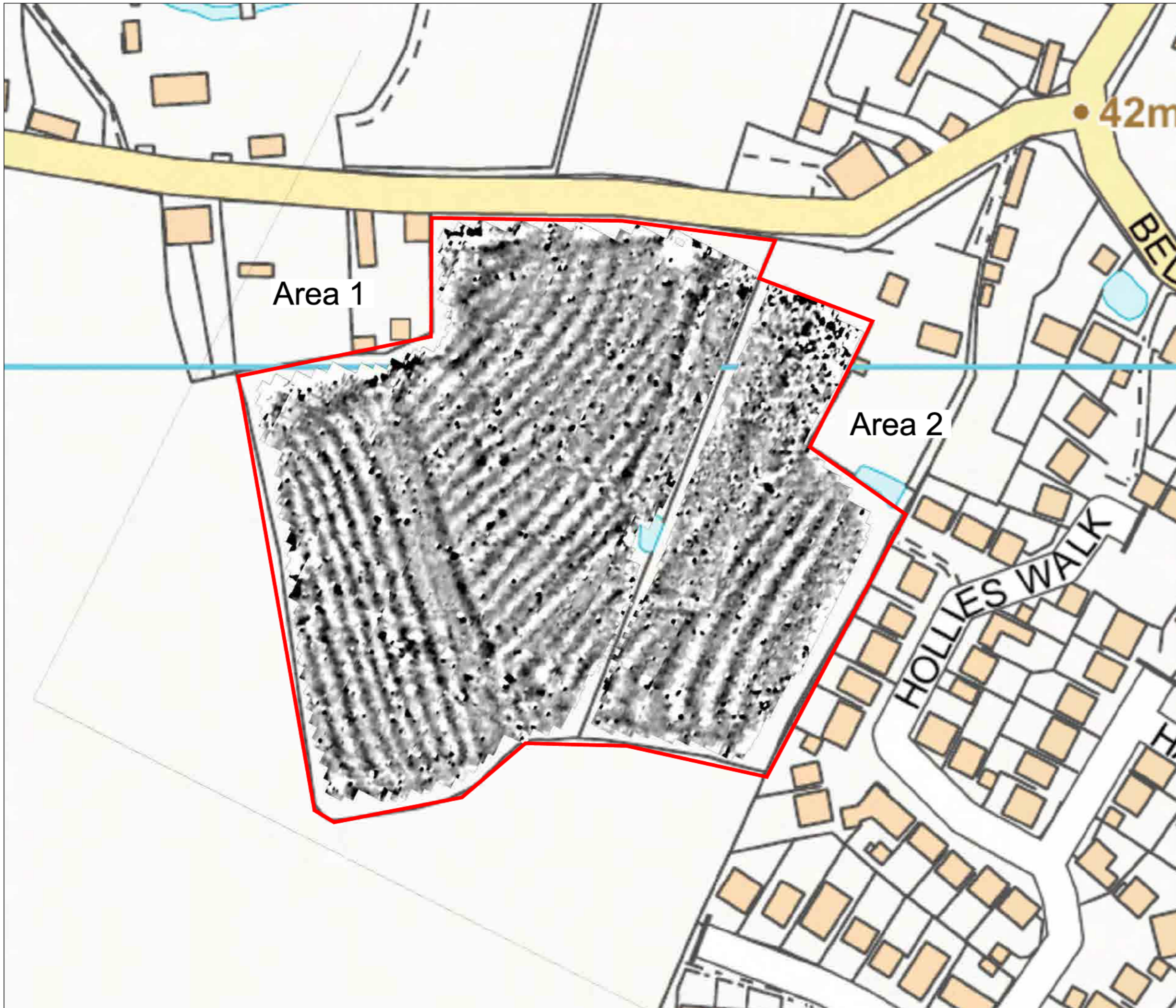


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	Survey Areas	
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Client:	The Environmental Dimension Partnership Ltd	
Project:	06377 - Land on South Side of Keeley Lane, Wootton, Bedfordshire	
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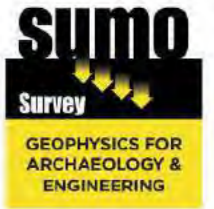
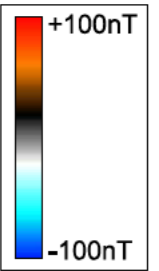
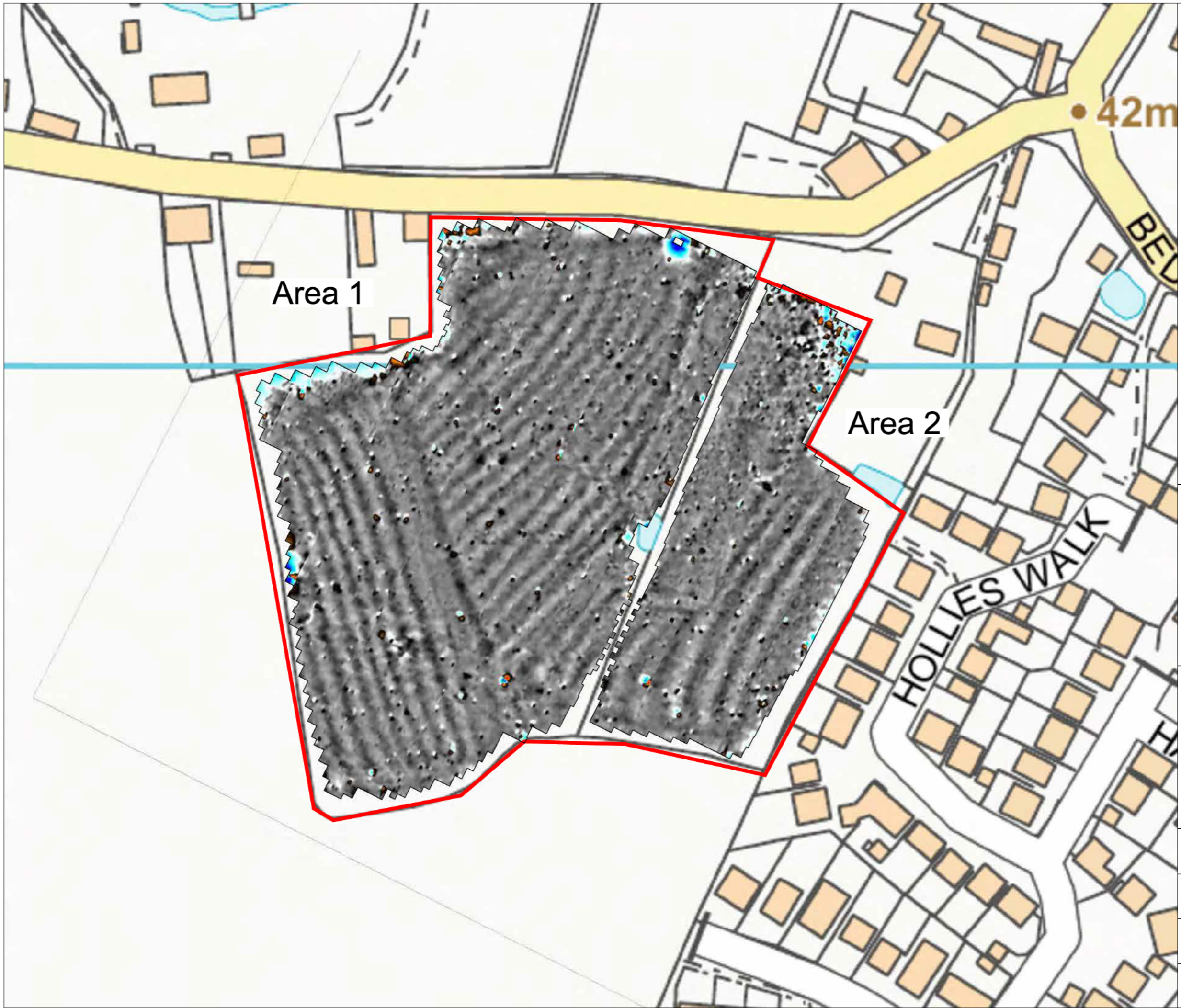
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Magnetometer Survey - Greyscale Plots

Client:
The Environmental Dimension Partnership Ltd

Project:
06377 - Land on South Side of Keeley Lane,
Wootton, Bedfordshire

Scale:
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Fig No:
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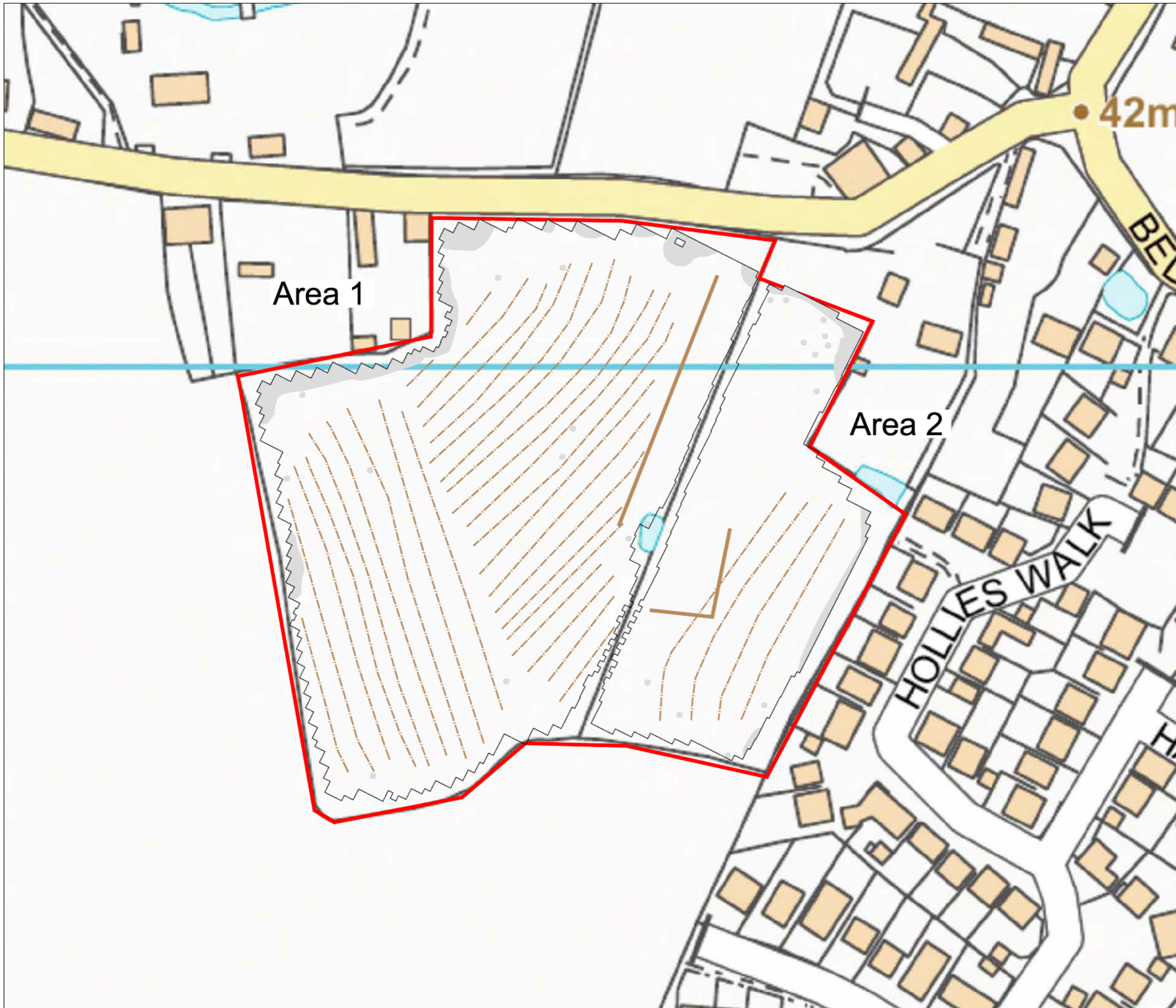
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Client:
The Environmental Dimension Partnership Ltd




Project:
06377 - Land on South Side of Keeley Lane,
Wootton, Bedfordshire

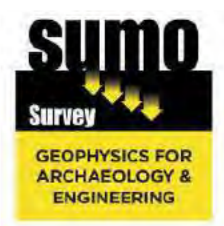
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Fig No:
03



KEY

	Former field boundary (corroborated)
	Agriculture (ridge and furrow)
	Ferrous



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Magnetometer Survey - Interpretation

Client:
The Environmental Dimension Partnership Ltd

Project:
06377 - Land on South Side of Keeley Lane,
Wootton, Bedfordshire

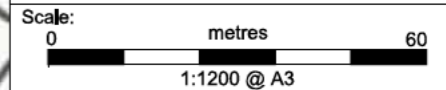
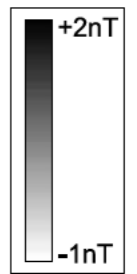
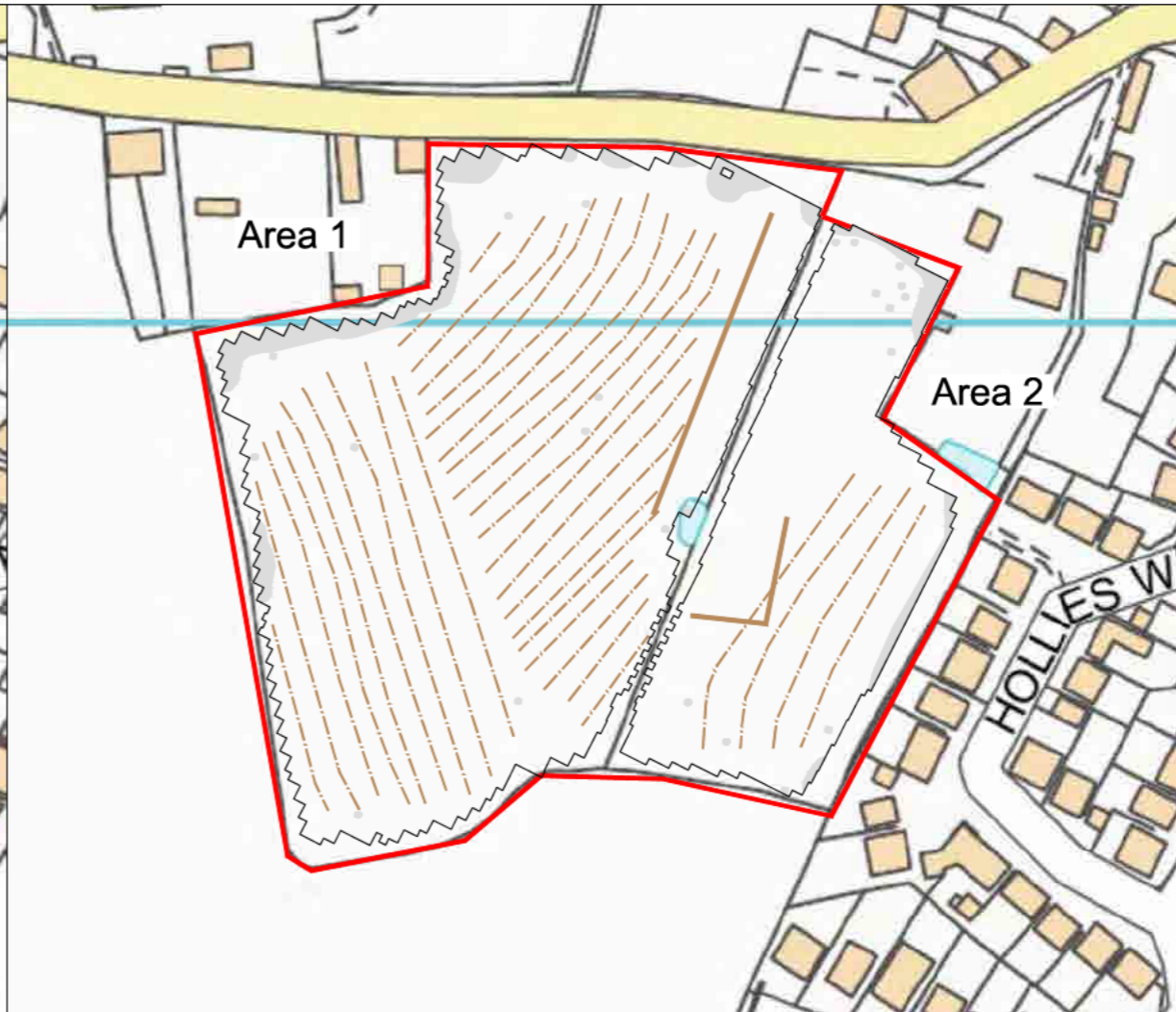



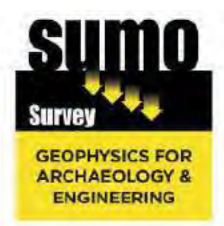


Fig No:
04



KEY

	Former field boundary (corroborated)
	Agriculture (ridge and furrow)
	Ferrous

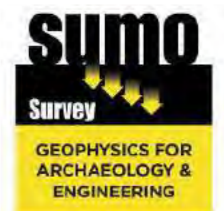
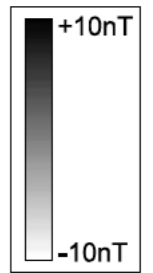
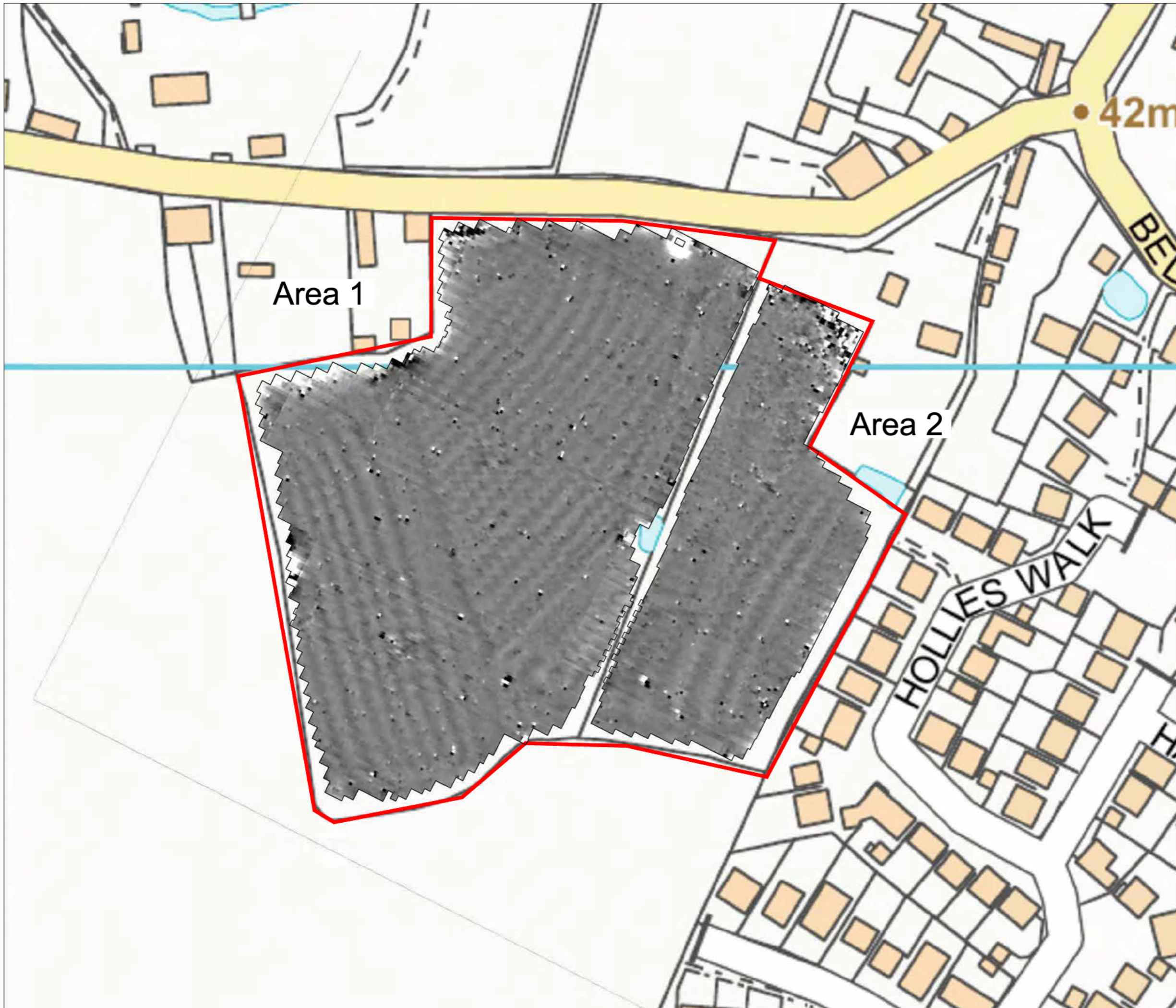


Title: Greyscale Plots / Interpretation /
1838 Wootton Enclosure Mapping (EDP 2020) /
First Edition Ordnance Survey Mapping (EDP 2020)

Client:
The Environmental Dimension Partnership Ltd

Project:
06377 - Land on South Side of Keeley Lane,
Wootton, Bedfordshire

Scale: NOT TO SCALE	Fig No: 05
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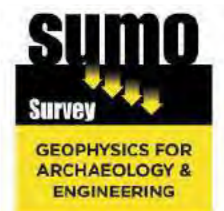
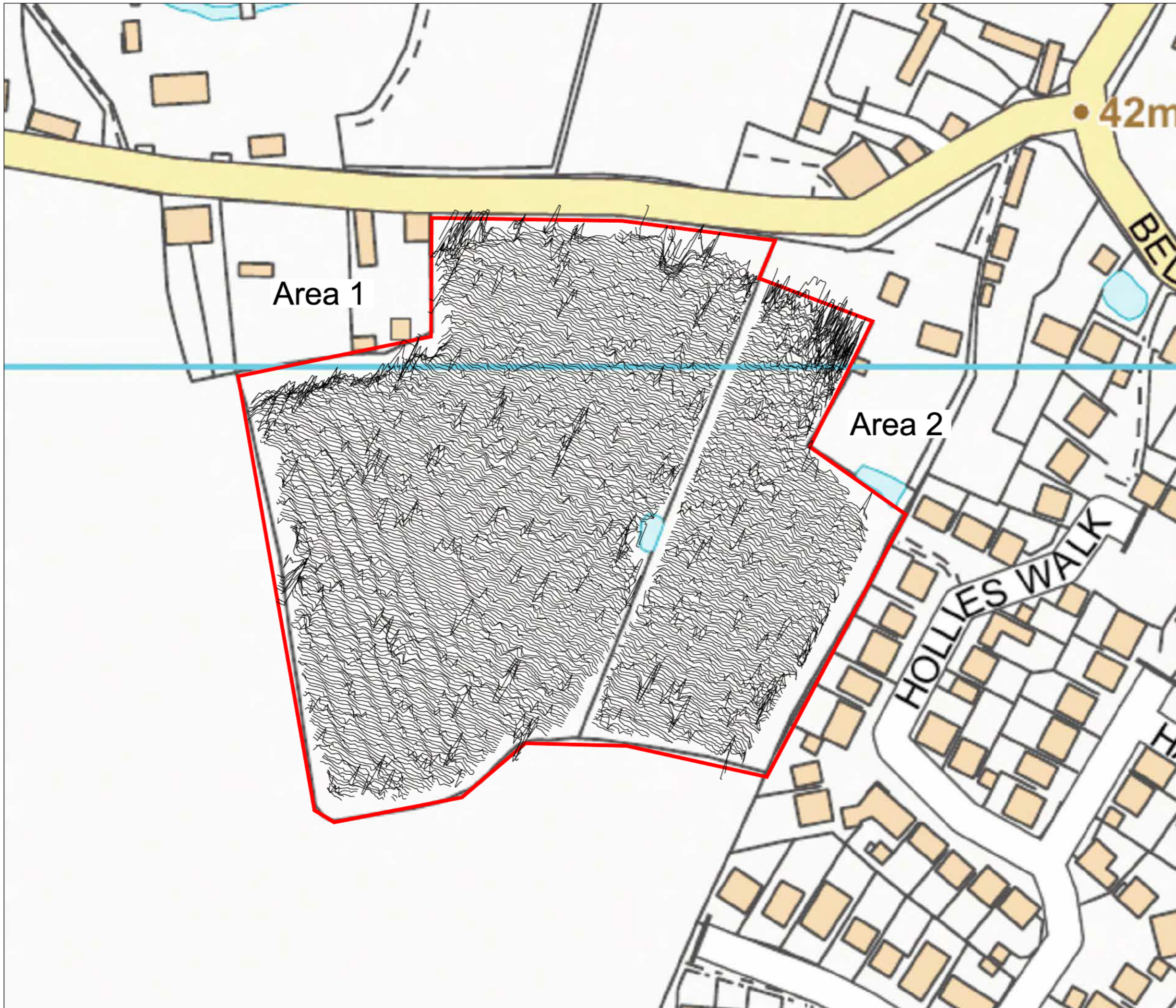
Title:
Minimally Processed Data - Greyscale Plots

Client:
The Environmental Dimension Partnership Ltd

Project:
06377 - Land on South Side of Keeley Lane,
Wootton, Bedfordshire

Scale:
0 metres 60
1:1200 @ A3

Fig No:
06



Title:
XY Trace Plots (clipped at +/-15nT)

Client:
The Environmental Dimension Partnership Ltd

Project:
06377 - Land on South Side of Keeley Lane,
Wootton, Bedfordshire

Scale:
0 metres 60
1:1200 @ A3

Fig No:
07

Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (EH 2008) (then English Heritage), the Chartered Institute for Archaeologists (CIfA 2014) and the European Archaeological Council (EAC 2016).

Grid Positioning

For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. This results in an accuracy of around 0.01m.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1m	0.25m

Instrumentation: **Bartington Grad 601-2**

Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted vertically, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths. The Bartington instrument can collect two lines of data per traverse with gradiometer units mounted laterally with a separation of 1.0m. The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

Data Processing

Zero Mean Traverse	This process sets the background mean of each traverse within each grid to zero. The operation removes striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

Display

Greyscale/ Colourscale Plot	This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.
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Presentation of results and interpretation

The presentation of the results includes a 'minimally processed data' and a 'processed data' greyscale plot. Magnetic anomalies are identified, interpreted and plotted onto the 'Interpretation' drawings.

When interpreting the results, several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as: Abbey Wall or Roman Road. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: Probable, or Possible Archaeology. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification Possible.

Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall, etc.*) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

<i>Archaeology / Probable Archaeology</i>	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
<i>Possible Archaeology</i>	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
<i>Industrial / Burnt-Fired</i>	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
<i>Former Field Boundary (probable & possible)</i>	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
<i>Ridge & Furrow</i>	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
<i>Agriculture (ploughing)</i>	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
<i>Land Drain</i>	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
<i>Natural</i>	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
<i>Magnetic Disturbance</i>	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present.
<i>Service</i>	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
<i>Ferrous</i>	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
<i>Uncertain Origin</i>	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of <i>Possible Archaeology / Natural</i> or (in the case of linear responses) <i>Possible Archaeology / Agriculture</i> ; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical Information: Magnetic Theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

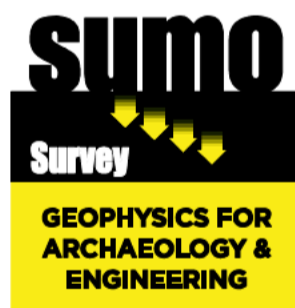
Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried feature. The difference between the two sensors will relate to the strength of a magnetic field created by this feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

















Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services.



- Archaeological
- Geophysical
- Laser Scanning
- Measured Building
- Topographic
- Utility Mapping

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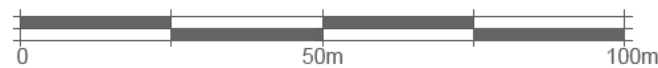
Appendix Ev – Illustrative Masterplan

-  Site boundary
-  Other land under the control of the applicant
-  Vehicle and pedestrian access
-  Pedestrian only access
-  Existing pedestrian route
-  Residential street
-  Shared surface street
-  Private drive
-  Residential development blocks / indicative building locations
-  Focal building locations
-  Public Open Space
-  Existing trees / hedgerows retained
-  Proposed hedgerows
-  Proposed trees
-  Existing field dry ditches
-  Potential attenuation area (subject to drainage design)



Schedule of Concept Masterplan Areas:

Site area (red line) :	1.86ha
Gross Residential Development: (20 homes @ average 26/hectare)	0.78ha
Public Open Space (includes required BNG area for Phases 1&2)	0.99ha
SUDS (indicative area shown includes earthworks)	0.09ha



client:
Rainier Developments Limited

project:
Land at Keeley Lane, Wootton

drawing title:
Phase 2 Concept Masterplan

urbandesignbox.co.uk

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drawn
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status:
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