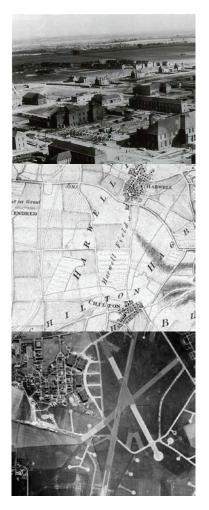
# BUILDING 587, CURIE AVENUE, HARWELL CAMPUS, OXFORDSHIRE

Archaeological Desk-Based Assessment



Client: Nuclear Decommissioning Authority

NGR. 447940 187470 (centre)

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May 2019



The Site					
Site Name	Building 587, Curie Avenue, Harwell Campus				
County	Oxfordshire				
NGR	447940 187470 (centre)				

Client				
Client Name	Nuclear Decommissioning Authority			

Archiving					
Relevant Record Office(s)/Archive Centre(s)  Oxfordshire					
Relevant HER	Oxfordshire				

Staffing				
Desk-based assessment	Jo Dawson			
Report writing	Jo Dawson, Tom Mace and Dan Elsworth			
Report editing	Dan Elsworth			
Illustrations	Tom Mace			

Greenlane Archaeology Ltd, Lower Brook Street, Ulverston, Cumbria, LA12 7EE

Tel: 01229 588 500 Email: info@greenlanearchaeology.co.uk Web: www.greenlanearchaeology.co.uk

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# Summary

Greenlane Archaeology was asked to carry out an archaeological desk-based assessment of Building 587, Curie Avenue, Harwell Campus Oxfordshire. As part of the desk-based assessment, data was obtained from Oxfordshire Historic Environment Record, and available historic mapping and aerial photographs were examined, as well as published and unpublished sources.

The wider area contains remains dating from at least the Mesolithic onwards that have been discovered in a variety of pieces of previous archaeological investigation, with Iron Age to Romano-British being particularly prevalent, and the site is located between two ancient routes. A settlement at Harwell is recorded from at least the 10<sup>th</sup> century.

The study site occupied an area of common land until the start of the 19<sup>th</sup> century, before becoming agricultural land – part of Down Farms – until 1935. It then became part of RAF Harwell, an RAF expansion period airbase. It was situated close to the edge of the airbase complex – to the west of the married quarters on South Drive, and north of B166 (the gas decontamination centre), and apparently had no buildings on it during this period. The site became part of the Atomic Energy Research Establishment in 1946, and was occupied by a succession of buildings, the functions of which remain unclear. Once again, it was towards the edge of the site, to the east of the effluent treatment works, in the area of staff clubs, hostels, and houses.

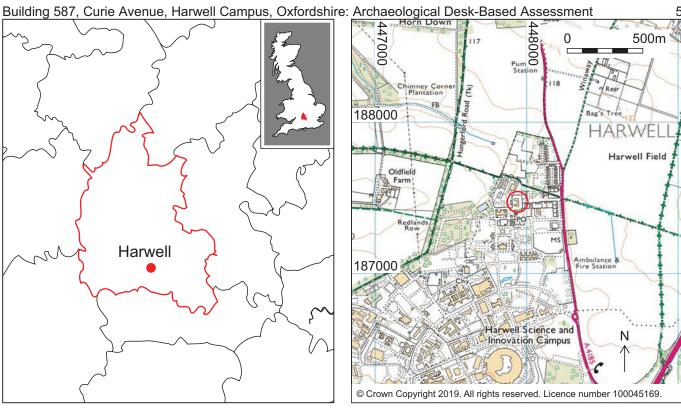
The RAF airbase and AERE site are significant in their own right, and form the only two known sites of archaeological and historic interest present (in part) on the study site. There is also the potential for previously unknown buried archaeological remains to survive, the most likely being of Roman or post-medieval date. The site is likely to have seen substantial disturbance due to the previous buildings constructed on it, including the present one, and potentially contaminated due to the previous uses of the site, so the most appropriate form of further archaeological mitigation would be a watching brief.

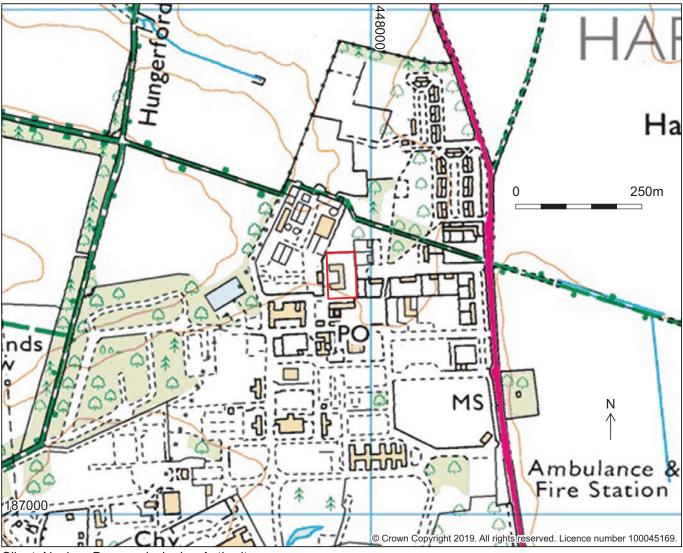
# **Acknowledgements**

Greenlane Archaeology would like to thank the Nuclear Decommissioning Authority for commissioning the project and their agents Avison Young, in particular Olivia Harker, for providing information about the site. Further thanks are due to Jacqueline Pitt, HER Officer at Oxfordshire County Council for providing the historic environment data for the site and Eva Bryant at Historic England for providing information about their archives.

## 1. Introduction

- 1.1 Circumstances of the Project
- 1.1.1 The circumstances of the project are set out in the tables on the inside cover of this report.
- 1.2 Location, Geology, and Topography
- 1.2.1 The site is located approximately 1.6km south-west of the village of Harwell and 1.4km north-west of Chilton, Oxfordshire at approximately 115m above sea level (Figure 1) in the Vale of White Horse district. The site is to the north end of Harwell Campus and has seen considerable modern development. The countryside between the two nearby villages is characterised by arable fields and associated hedgerows, with occasional blocks of mixed woodland plantation (Atkins 2014, 1).
- 1.2.2 The solid geology comprises chalk formations of the Cretaceous period (Wilmot and Morgan 1982, 2), which are generally overlain by Quaternary Head deposits of fine gravel and clay with flint (Atkins 2014, 1; Land Use Consultants 2002, 54).





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Figure 1: Site location

# 2. Methodology

## 2.1 Desk-Based Assessment

- 2.1.1 A desk-based assessment was carried out in accordance with the guidelines of the Chartered Institute for Archaeologists (CIfA 2014a). This principally comprised an examination of early maps of the site and published secondary sources. A number of sources of information were used during the compilation of the desk-based assessment:
  - **HER**: this is the primary source of information recording previously known archaeological discoveries. For each site a grid reference, description, and related sources were obtained for inclusion in the gazetteer (see *Appendix 1*). In addition, details of previous archaeological work carried out within the study area was also obtained from the HER;
  - *Online Resources*: where available, mapping such as Ordnance Survey maps and tithe maps were consulted online:
  - **Greenlane Archaeology**: Greenlane Archaeology's office library includes maps, local histories, and unpublished primary and secondary sources. These were consulted where relevant, in order to provide information about the history and archaeology of the site and the general area.

## 2.2 Archive

2.2.1 The archive of the project will be deposited with the relevant Record Office or Archive Centre, as detailed on the cover sheet of this report, together with a copy of the report. The archive has been compiled according to the standards and guidelines of the CIfA guidelines (CIfA 2014b). In addition, details will be submitted to the Online AccesS to the Index of archaeological investigationS (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public. A paper copy of the report will be provided to the client and a digital copy of the report will be provided for the relevant Historic Environment Record, as detailed on the cover sheet of this report.

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## 3. Results

#### 3.1 Introduction

3.1.1 A total of 10 sites of archaeological interest were identified within the study area during the desk-based assessment (Figure 2; summarised in Table 1 below) ranging from prehistoric to modern in date. Cropmark sites of unknown date include **Site 1** (ring ditch) and **Site 2** (ditch). Sites included in the gazetteer that relate to periods of the study area's history are individually mentioned in the site history (see *Section 4* below).

Site No.	Туре	Period	Site No.	Туре	Period
1	Ring ditch	Unknown	6	Graphite Low Energy	Modern
				Experimental Pile Hangar	
2	Ditch	Unknown	7	Generator house	Modern
3	Oval enclosure	Early Iron Age -	8	Ditch; boundary ditch	Early Neolithic to
		Roman			post-medieval
4	Milestone	Post-medieval	9	Ditch; pit?	Unknown
5	Field system;	Early Iron Age -	10	Military airfield	Modern
	enclosure	Roman			

Table 1: Summary of the gazetteer sites identified within the study area

## 3.2 Desk-Based Assessment

- 3.2.1 The results of the desk-based assessment have been used to produce two main elements. Firstly, all available maps of the area were compiled into a map regression, demonstrating how the site physically developed (*Section 3.3*)). The second purpose of the desk-based assessment is to produce a background history of the site. This is intended to cover all periods, in part to provide information that can be used to assess the potential of the site, but more importantly to present the documented details of any sites that are known (see *Section 4*).
- 3.2.2 Once this information has been compiled the significance of those sites of archaeological interest within the study area, their potential, and the degree to which they are likely to be affected is considered (Section 5) and based on this possible mitigation work is then suggested.

## 3.3 Map and Image Regression

- 3.3.1 *Introduction*: in general, detailed mapping for the site is available from the tithe map (1839) onwards, and a series of wartime aerial photographs help to fill in the gap left by the Ordnance Survey mapping between 1933 and 1960. These allow a good coverage of the whole site to be produced although it was not possible to locate any plans that would identify the purpose of individual buildings or parts of the site in detail.
- 3.3.2 **Rocque's map, 1761**: this is a county-wide map of Berkshire and is the earliest detailed map of the area. It is difficult to locate the site accurately on it, however, due to the scale and manner in which the site subsequently changed. The site is located in an area of large open fields to the west of 'Harwell Fields', to the west of a crossroads (Plate 1).
- 3.3.3 *Tithe map, 1839*: the site occupies and area of open field on the tithe map of 1839 (NA IR 29/2/70 1839; Plate 1: Extract from Roque's map of 1761
- Plate 2). The accompanying apportionment states that the property (#232) was owned by Sir John Chetwode, Bart (Rectorial Glebe), and occupied by Sarah Lay, residing at Princes Harwell Manor, and occupying five fields including this one, called The Down, being 'arable and buildings'.

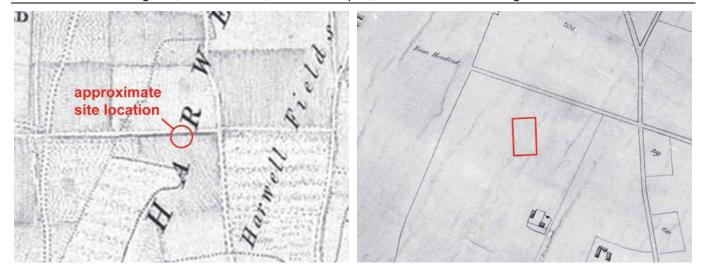


Plate 1: Extract from Roque's map of 1761
Plate 2: Extract from the tithe map of 1839

- 3.3.4 *Ordnance Survey, 1883*: very little of the area has changed since the tithe map (Plate 3; cf. Plate 1: Extract from Roque's map of 1761
- Plate 2). Down Farms is labelled to the south of the area.
- 3.3.5 *Ordnance Survey, 1899*: the site is unchanged (Plate 4; cf. Plate 3).

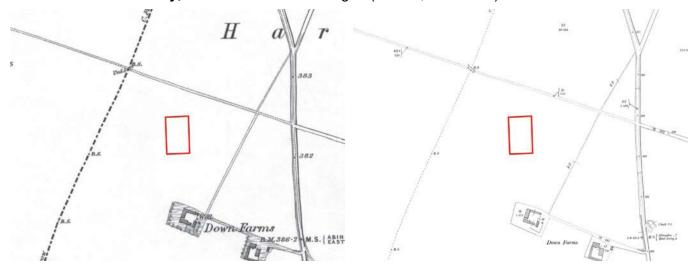


Plate 3 (left): Extract from the Ordnance Survey map of 1883 Plate 4 (right): Extract from the Ordnance Survey map of 1899

- 3.3.6 *Ordnance Survey, 1912*: the site is unchanged (Plate 5).
- 3.3.7 *Ordnance Survey, 1933*: the site is unchanged (Plate 6; cf. Plate 5).

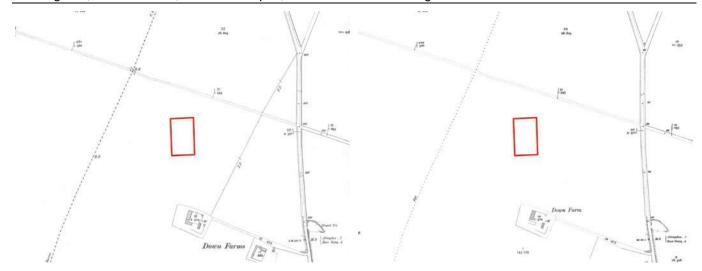


Plate 5 (left): Extract from the Ordnance Survey map of 1912 Plate 6 (right): Extract from the Ordnance Survey map of 1933

3.3.8 **Vertical aerial photograph, 1940**: this vertical view of RAF Harwell (Hance 2006, 20; Plate 7 and Plate 8) apparently shows the airfield before the runways were constructed. Since compulsory purchase of the site occurred in 1935 (*op cit*, 10), and the station came under RAF control in 1937 (*op cit*, 17) this seems unlikely, so the date attributed to the photograph may be incorrect. The site itself shows two boundaries running through its southern half – the northern and eastern boundaries of a double rectangle of land extending to the south. A straight track leading to the houses on South Drive to the north-east also cuts across its northern end.

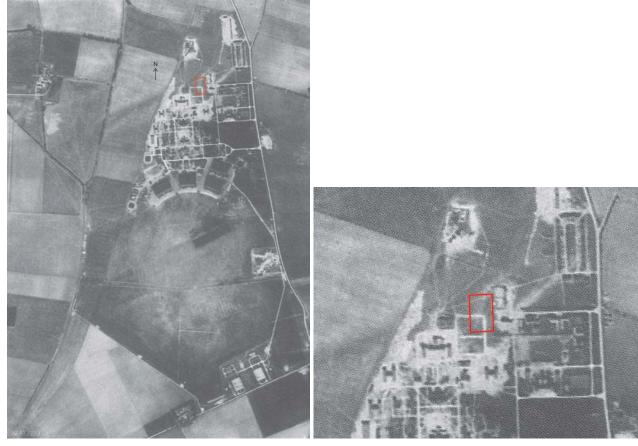


Plate 7 (left): Vertical aerial photograph of RAF Harwell, 1940

Plate 8 (right): Close up of the site from the vertical aerial photograph in Plate 7, 1940

- 3.3.9 **Undated vertical aerial photograph, c1941**: this aerial view (Smith 2018, Plate 9) is very clear and appears to show the new concrete runways, which were contracted to be built in late 1940 (Hance 2006, 21) with no attempt to make them stand out any less, and the buildings uncamouflaged. The site shows a track running from the south-west to the north-east, and a possible donut-shaped structure is cut by it. This could be a crop mark unrelated to the airfield, or it may be a trench of some description. Two boundaries of a rectangular plot of land which extends to the south of the site are shown an eastern boundary in the south-east of the site, and a northern boundary across the centre of the site.
- 3.3.10 *Vertical aerial photograph, 1944*: this aerial view (Smith 2018, Plate 10) of the site shows the RAF airfield with its three intersecting runways, and grid layout of tracks and buildings to the north. The site is very small and difficult to see clearly, but appears to have a track running from its south-west corner to its north-east corner. The ground cover is different to the east and west of this track it is darker on the west. In addition, there is an east/west boundary running through the middle of the site, marking the northern extent of a rectangular plot of land that extends to the south. Buildings at the time were camouflaged, and it cannot be ruled out that some structures may have been present at the time on the site.

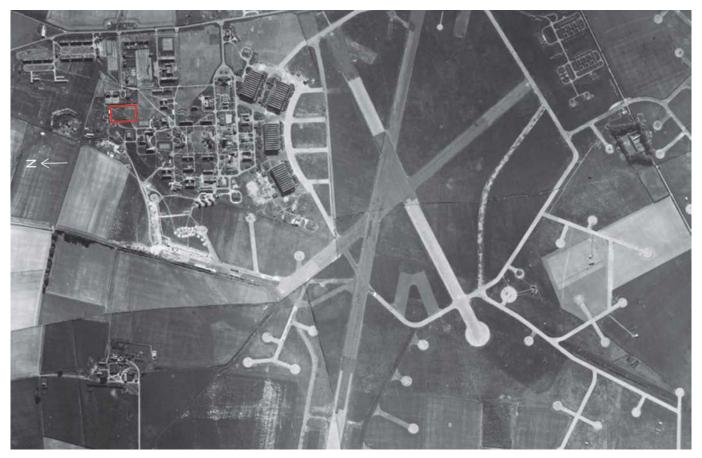


Plate 9: Undated vertical aerial photograph of RAF Harwell, c1941



Plate 10: Vertical aerial photograph of RAF Harwell taken in 1944

3.3.11 *Oblique aerial photograph, 1947*: this photograph (UKAEA 1996, 4; Plate 11, reproduced also by Hance (2006, 53), Plate 12) shows the site apparently empty of buildings, to the west of the west end of South Drive. South Drive was built as officers' housing for RAF Harwell in 1936 (Anon 2011). The buildings to the south of the site are a mixture of RAF buildings, such as the officers' mess in the centre of the photograph and the water tower on the right, and new AEAE buildings such as the metallurgical building to the rear of the officers' mess, which was under construction at the time the photograph was taken (UKAEA 1996, 4). There is one building of note close to the south of the site, identifiable from its distinctive roof, incorporating large quantities of sand as protection from bomb blasts - B166, the gas decontamination centre (Hance 2006, 19). The study site itself has the same boundaries running through it as are shown in the vertical aerial photographs that predate it – and east/west boundary running across the centre of the site, along which some spread out troops appear to be positioned, and a north/south boundary running south from this. The track running towards the north-east corner is shown as a worn broad strip of land.

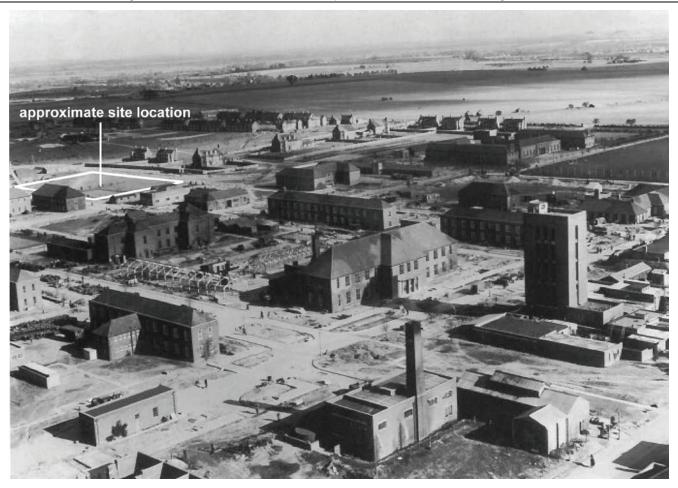


Plate 11: Extract from oblique aerial photograph from 1947

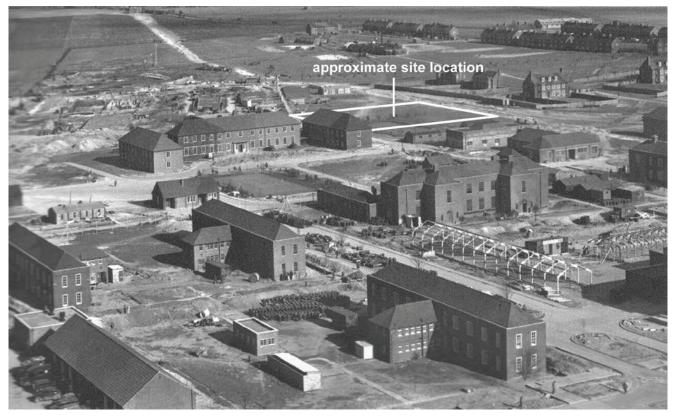


Plate 12: Extract from same oblique aerial photograph as shown in Plate 11, from 1947

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3.3.12 **Oblique aerial photo, c1951**: a photo of a similar area to that photographed in 1947 (Plate 11 and Plate 12), but this time with the site only just appearing on the edge of the image, was taken in c1951 (Ministry of Supply and Central Office of Information 1952, plate 2, opposite 24). It is useful in that it describes the functions of the buildings in the photograph as 'Staff clubs, hostels, and houses outside the Establishment' (*ibid*).

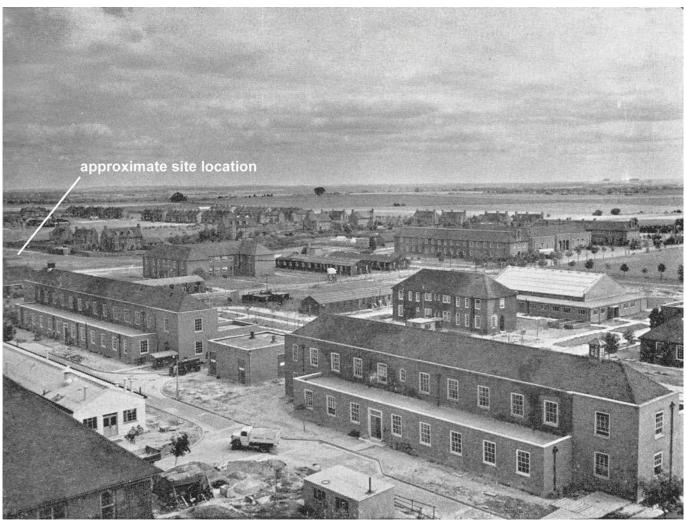


Plate 13: Oblique aerial photograph from c1951

3.3.13 *Plan*, **c1951**: a plan of the effluent treatment plant at AERE Harwell from *c*1951 (Ministry of Supply and Central Office of Information 1952, 61; Plate 14) can be easily matched to the later Ordnance Survey mapping (below, Plate 15) and it can be seen this this lay immediately to the northwest of the site. Three pages are devoted to a detailed description of the processes involved in treating the liquid effluent from the site (*op cit*, 60-63).

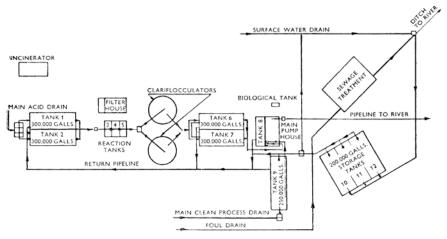


Fig. 7. Effluent treatment plant.

Plate 14: Plan of the effluent treatment plant at AERE Harwell, c1951

- 3.3.14 *Ordnance Survey, 1960*: the site is surrounded by a large development (Plate 15), identified simply as 'Works'. The site is at the north end of these 'works' and a north/south aligned building is shown midway along the west side of the area.
- 3.3.15 *Ordnance Survey, 1967*: the building to the east side of the area has been replaced by four east/west buildings to the west side of the area and the south end of a north/south building intrudes into the area from the north (Plate 16; cf. Plate 15). The 'works' development is labelled 'Atomic Energy Research Establishment'.

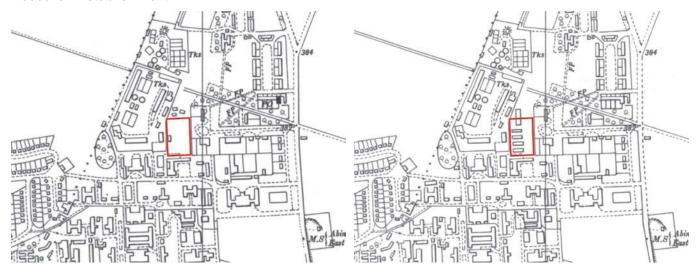


Plate 15 (left): Extract from the Ordnance Survey map of 1960 Plate 16 (right): Extract from the Ordnance Survey map of 1967

3.3.16 *Ordnance Survey, 1981*: this shows a similar arrangement to the previous map, although with five buildings orientated east/west rather than just four.

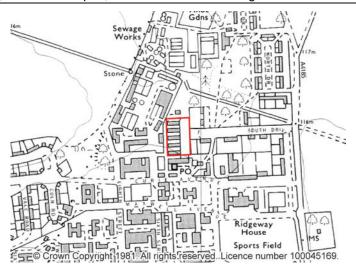


Plate 17: Extract from the Ordnance Survey map of 1981

3.1.17 **Discussion**: the map evidence demonstrates that the site and its immediate surrounding area were largely rural. With the exception of the enclosure of 1804, which seems to have massively reorganised the field pattern and some of the roads from the arrangement shown in 1761, the site saw little change throughout the 19<sup>th</sup> century. It was not until the mid-1930s and the prospect of war that the site developed. The creation of an RAF airbase and then AERE Harwell led to a complete change of the landscape and the historical context in which this happened is included in *Sections 4.5.2-4.5.4* below). The current building on the site (see Figure 1) was clearly constructed after 1981.

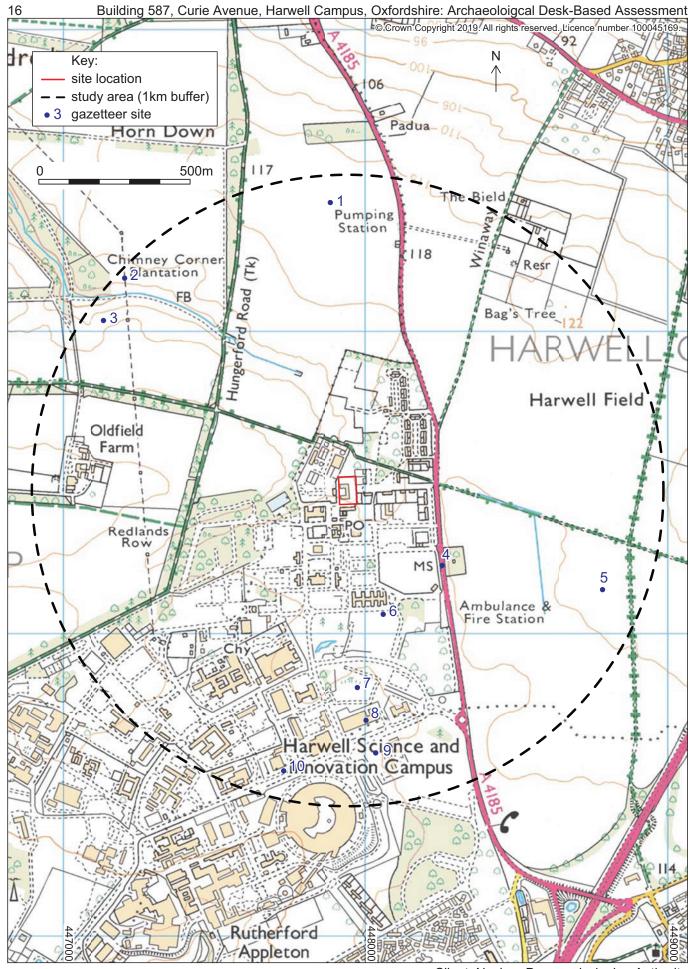


Figure 2: Gazetteer site plan

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# 4. Site History

## 4.1 Background History

4.1.1 The background history to the site helps our understanding of the development and use of the site, where known, making use of the map evidence presented above (see *Section 3*) where relevant. The background to the site is intended to place the results of the project in its local context and in order to do so a brief discussion of the earlier history of its wider environs is also necessary.

# 4.2 Prehistoric Period (c11,000 BC – 1st century AD)

Harwell is skirted to the south by The Ridgeway Path, which is an ancient trackway that dates 4.2.1 back 4,000 years (Hance 2006, 2-3); the Iknield Way lies a short distance to the north of the site and is partly covered by the Harwell Campus site and while this is an ancient route it seems to have gained greatest importance in the medieval period (op cit, 4). Residual Mesolithic and Neolithic/Bronze Age flint artefacts found during excavations at the Rutherford Appleton Laboratory, c170m to the south of the study area (PRN 16803), point to settlement in the area during the prehistoric period (John Moore Heritage Services 2004), and a possible ditch terminus (Site 8), revealed during groundworks at Fermi Avenue in the Harwell Science and Innovation Campus, contained abraded fragments of possibly prehistoric pottery (MoLA 2012a). Bronze Age features are also recorded at Chilton (PRN 16999), c430m outside the study area to the south (PRN 16999; Thames Valley Archaeological Services 2005), and four Bronze Age barrows used to be visible 'along the line of a hedgerow' c500m to the south of the study area, but these have since been destroyed (PRN 7585). A probable Bronze Age round barrow, with a diameter of between 15m and 20m, has also tentatively been identified from aerial photographs c160m to the north-west of the study area (PRN 27854). Excavations at the Rutherford Appleton Laboratory have also yielded evidence of early to middle Iron Age settlement, including major boundary ditches associated with a sub-rectangular enclosure (John Moore Heritage Services 2003). The famous White Horse figure cut into the chalk at Uffington, c18km to the west, from which the Vale of White Horse district takes its name, is also thought to date from the Iron Age (Vale of White Horse District Council 2006, 77).

# 4.3 Romano-British to Early Medieval Period (1<sup>st</sup> century AD – 11<sup>th</sup> century AD)

- 4.3.1 The Roman period is well-attested in the area, particularly further to the south in the area around Chilton. A possible Roman farmstead, occupied throughout the Roman period from the second century AD onwards, is recorded *c*470m to the south of the study area (PRN 16761; John Moore Heritage Services 2002), and occupation of the Late Iron Age settlement at Chilton, recorded during groundworks at the Rutherford Appleton Laboratory, appears to have continued up to the late fourth century AD (John Moore Heritage Services 2003). Further Roman age sites and features are known (PRN 16999; Thames Valley Archaeological Services 2005), including Chilton Roman villa, *c*710m to the south of the study area (PRN 28707; Thames Valley Archaeological Services 2017) and a possible Roman well, found *c*480m to the south of the study area during works at the Rutherford Appleton Laboratory (PRN 26488).
- 4.3.2 Faint earthwork remains of a number of linear banks at **Site 5**, thought to be field boundaries, have tentatively been identified as Iron Age to Roman in date, but the date of these earthworks is uncertain. These earthworks possibly comprise an eastern outlier of a large field system *c*100m to the east of the study area (PRN 11065). Other sites of probable Roman date within the study area include two conjoined oval enclosures (**Site 3**), visible as cropmarks, although the site could equally be early Iron Age. The larger enclosure measures 30m by 50m and the smaller enclosure, attached to the eastern end of the larger one, measures 20m by 25m. A small pit (**Site 9**) which contained a small quantity of Oxfordshire Romano-British pottery has also been excavated at the Harwell Research Complex (AC Archaeology 2014).
- 4.3.3 Two early medieval *grubenhauser* were found beneath the Roman villa at Chilton (PRN 28707; Thames Valley Archaeological Services 2017), *c*710m to the south of the study area.

# 4.4 Medieval Period (11<sup>th</sup> century AD – 16<sup>th</sup> century AD)

4.4.1 Harwell is first recorded in documentary sources in the 10<sup>th</sup> century, with the manor of Bishop's Harwell or Lower Manor granted to the Bishopric of Winchester in the reign of Edward the Confessor and held by Bishop Stigand (Ditchfield and Page 1923, 484-492). Land was also claimed by the monks of St Swithun, some in a grant supposedly made by King Edgar in 956 although this is of uncertain authenticity (*ibid*). Harwell is recorded in the Domesday survey of 1086 as comprising 10 hides, and by the 13<sup>th</sup> century part of it had been granted by the bishop to a Wulward (*ibid*). Remains of medieval date are not well-recorded within the study area, although medieval and earlier field systems, identified from aerial photographs, used to be more apparent in the area, but in some cases modern ploughing has destroyed all trace on the ground (e.g. PRN 11065, *c*100m to the north-east of the study area). The Iknield Way, a short distance to the north of the site, was granted special status early in the medieval period as one of the four named 'Royal roads' (Hance 2006, 4).

# 4.5 Post-Medieval Period (16<sup>th</sup> century AD – present)

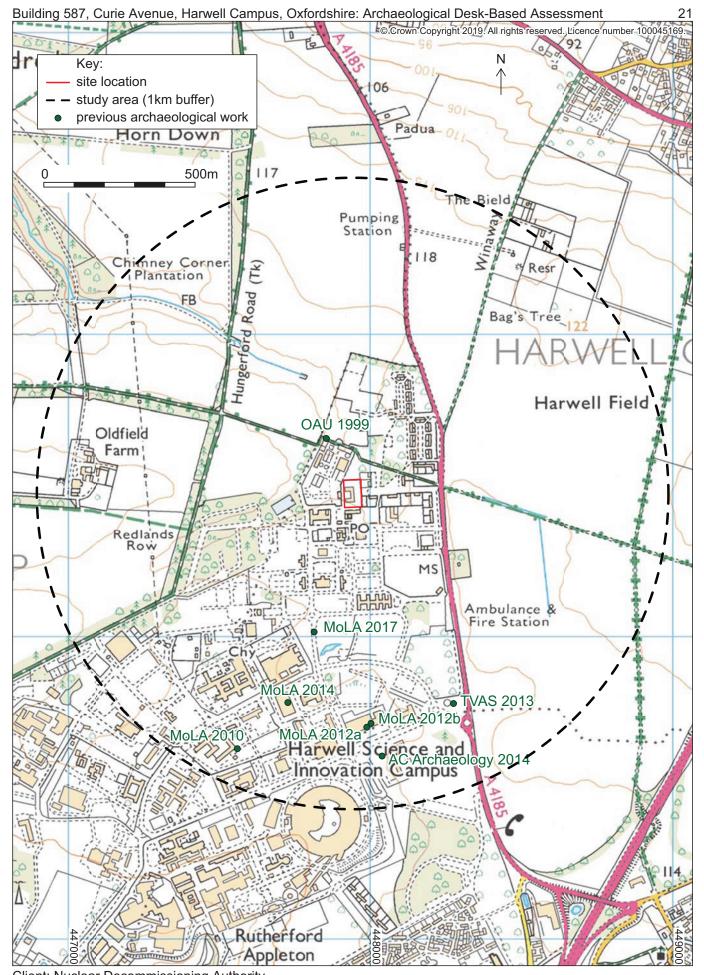
- 4.5.1 The fields were enclosed in the 17<sup>th</sup> and 18<sup>th</sup> centuries at which time 'corn was the major cash crop on the chalklands ... the fertility of the thin chalk soils [being maintained] by folding ... sheep flocks on them' (Land Use Consultants 200, 55-6). Sites of post-medieval date recorded inside the study area on the HER include the milestone inscribed "Abingdon 7, E. Ilsley 4" (Site 4) and sites of modern date recorded on the HER include: the GLEEP hangar, located on the former site of RAF Harwell, subsequently the headquarters of the UKAEA (Site 6); the site of the Tandem Van de Graaff Building (Site 7; now demolished); and the former WWII airfield and glider base (Site 10). RAF Harwell airfield was established in the 1930s and was the site of the former Atomic Energy Research Establishment (AERE) after the Second World War (Hind 2010, 21). The AERE was part of the UK Atomic Energy Association (UKAEA) from 1940-1990 where prototype nuclear reactors were built (Hind 2010, 27 and atomic research facilities contributed considerably to the economic growth of the area during the 20<sup>th</sup> century (Atkins 2014, 4).
- 4.5.2 **Down Farms** (c1804-1935): the buildings at Down Farms and the associated large fields are shown on the tithe map of 1839. They are not shown on the plan of the area dated 1761, at which time the area is clearly common land, and so Down Farms probably relate to the enclosure of 1804 (NA MR 1/375 1804). During this period the site lay within a field named 'The Down' (see 3.3.3, above). The farm presumably continued in operation until the compulsory purchase of the land by the Air Ministry for RAF Harwell in 1935 (Hance 2006, 10).
- 4.5.3 **RAF Harwell**: construction work on RAF Harwell started in June 1935 (op cit, 11). The three readily available vertical aerial photographs (Plate 7 to Plate 10) showing the airfield appear to show that the buildings and connecting tracks and roads were constructed first, with a large open area for take-off in any direction, followed by the laying out of grass runways, which were upgraded to concrete runways in 1940 (op cit, 21). Later still, the buildings were camouflaged to make them less obvious aerial targets. The airfield was built during the RAF expansion period (1935-1939; Lowry (ed) 1995, 107), and all airfields of this period followed a similar pattern as follows 'The new aerodromes were generally arranged around a circular or, if possible, rectangular grass-surfaced landing ground, which permitted a 1,100 yard (1006m) run in any direction. The buildings were usually grouped into a semi-circular arc on one side of the airfield, with the hangars fronting on to the landing ground. The remaining aerodrome buildings were built in a compact layout behind the hangars, usually in a set order, like the layers of an onion: Technical Site, Station Offices, Officers' Mess, Sergeants' Mess, Airmens' Mess, Married Quarters, and Officers' Married Quarters.' (op cit, 107-8). In the absence of plans, the aerial photographs provide the only readily available evidence for what occupied the site area during this period. It does not appear to have contained any buildings, but to have been an area of open ground with roads/tracks/boundaries running through it, towards the northern edge of the airfield, close to the Married Quarters and Officers' Married Quarters on North Drive and South Drive. A possible donut-shaped structure within the site boundary is shown in the photograph from c1941, and as stated above this could be a cropmark unrelated to the airfield, or it may be some form of trench.

4.5.4 AERE Harwell and its successors: the decision to set up an atomic energy research establishment at Harwell airfield was announced by the then Prime Minister, Clement Attlee, on 29th October 1945 (Hance 2006, 41). The firm of Chivers won the contract to construct the first buildings in 1946, and continued to be Harwell's main resident contractor for the next 40 years (op cit, 44). Close to the site, an effluent treatment plant was constructed (see 3.3.13, above), with detailed measures in place to decontaminate all the water used at AERE Harwell, and ensure that radioactivity had fallen to safe levels, and that the pH was correct (Ministry of Supply and Central Office of Information 1952, 60-63). As AERE Harwell continually evolved, the proposed development site saw a succession of different buildings. Those that are known from the Ordnance Survey mapping are a single building orientated north/south in 1959 (Plate 15), four buildings orientated east/west and the southern end of a building orientated north/south in 1967 (Plate 16), an additional building orientated east/west joining the former four by 1981 (Plate 17) and finally the C-shaped building, B587 (Figure 1), currently occupied by Radioactive Waste Management Ltd (Crown Copyright 2018). It is possible that there were other buildings at other times not covered by the mapping. The numbering of buildings on the AERE Harwell site was done sequentially but 'somewhat erratically' based on when the buildings were constructed, from 220 up to 775, carrying on from the sequential numbering of the buildings at RAF Harwell, which went up to 202 (Hance 2006, 49). In the absence of readily available site plans from AERE Harwell, the functions of the various buildings that were on the proposed development site at different times are not known.

## 4.6 Previous Archaeological Work

- 4.6.1 Seven previous pieces of archaeological investigation are known within the study area (see Figure 3 and Appendix 3):
  - The Harwell Rising Main, Dicot, Watching Brief, 1999: no archaeological features were observed and only one residual Roman pottery sherd was recovered during groundworks along the line of the Harwell Rising Main (OAU 1999);
  - Harwell Science and Innovation Campus, Historic Area Assessment, 2011: this report identified the potential for survival of prehistoric and Roman remains where little or no construction had previously taken place, and that where known to be present, these remains have been found be near the surface (MoLA 2010);
  - Fermi Avenue, Harwell Science and Innovation Centre, Evaluation, 2012: four evaluation trenches were excavated; two features were found in Trench 1: a ditch terminus and a large ditch (Site 8; MoLA 2012b);
  - Fermi Avenue, Harwell Science and Innovation Campus, Watching Brief, 2012: groundworks
    relating to the construction of new buildings, roads, and parking bays were monitored by a MoLA
    archaeologist (MoLA 2012a). A large ditch was observed in the southern area of the site (Site 8);
  - New Antennae Site, Harwell Science Park, Watching Brief, 2013: a watching brief was carried
    out during the stripping of a small area before the construction of new antennae structures along
    with a number of test pits on the route of the cable trench. No archaeological deposits were
    encountered (TVAS 2013);
  - Harwell Research Complex, Evaluation, 2014: ten machine excavated trenches totalling 300m by 1.9m dug over the 1.5ha development site recorded an undated linear ditch and a probable pit and prehistoric and Roman pottery (see Site 9; AC Archaeology 2014);
  - Hi-Tech Terrace Site at Harwell Science and Innovation Campus, Desk-Based Assessment, 2014: archaeological remains of later Prehistoric and Roman periods possibly survive within the site, though their survival is predicted to vary (MoLA 2014). Archaeological remains will be affected by all but the most superficial groundworks or construction, including preliminary soil stripping;

20	Building 587, Curie Avenue, Harwell Campus, Oxfordshire: Archaeological Desk-Based Assessment
•	<b>N-S Link Road, Harwell Science and Innovation Campus, Watching Brief, 2015</b> : ground stripping in the area of the proposed road revealed modern brick foundations, rubble demolition and modern services, but no significant archaeological features were observed (MoLA 2017).



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Figure 3: Previous archaeological work

## 5. Discussion

#### 5.1 Introduction

5.1.1 The discussion of the results of the desk-based assessment is intended to determine the archaeological significance and potential of any known remains (above or below ground) and the potential of these remains and for any further, as yet unidentified, remains being present. The system used to judge the significance of the remains identified within the development area, or those thought to have the potential to be present within the development area, is based on the criteria used to define Scheduled Monuments (DCMS 2013, Annex 4; *Appendix 1*).

## 5.2 Significance

5.2.1 The level of significance of the two sites present within the site boundary is categorised according to each criterion as high, medium, or low, and an average of this is used to produce an overall level of significance for each site (see Table 2 below: H=high, M=medium, L=low).

Site Name	Period	Rarity	Documentation	Group value	Survival/ condition	Fragility/ VuInerability	Diversity	Potential	Overall significance
RAF Harwell (part)	М	М	М	Н	L	M	М	L	L/M
AERE Harwell (part)	М	М	Н	Н	Н	L	М	M	M/H

Table 2: Significance by site

5.2.2 As can be seen both sites have a broadly medium level of significance, although this is primarily on the basis of a relatively high documentary and group value since they both formed part of much larger complexes.

#### 5.3 Potential

5.3.1 Details of the archaeological remains present within the study area are presented in the results of the desk-based assessment (Section 3; Figure 2; Appendix 2) and the importance of these sites is discussed above (Section 5.2). The potential for as yet unidentified archaeological remains to be present, however, is based on the known occurrence of such remains in the study area and local environs (see Section 4). Where there are no remains known within the study area the potential is based on the known occurrence within the wider local area. The degree of potential is examined by period and the results are presented in Table 3 below. In each case the level of potential is expressed as low, medium, or high.

Period	Present in study area?	Potential
Palaeolithic	No	Low
Mesolithic	No	Medium
Neolithic	Yes	Medium
Bronze Age	No	Medium
Iron Age	Yes	Medium
Roman	Yes	High
Early Medieval	No	Low
Medieval	No	Medium
Post-medieval/modern	Yes	High

Table 3: Potential for unknown archaeological remains by period

5.3.2 In terms of considering Table 3 Bronze Age and Iron Age/Roman sites are well known from the surrounding area, in the latter case they are also known from within the study area, so there is some likelihood of similar remains being present within the site. In addition, several Roman sites are recorded just outside the study area to the south in the area around Chilton (see Section 4.3). It is also worth noting that several of the known sites recorded in the HER (within the study area and nearby) are multiperiod. Mesolithic and Medieval sites are not specifically recorded within the study area but are known from the wider area, and the proximity of the medieval (and early medieval) settlement of Harwell means that remains from this period are relatively likely. There are also several sites of unknown date from within the study area, whose contribution to this assessment is difficult to establish.

## 5.4 Disturbance

5.4.1 Given the presence of a standing building on the site, the map evidence that shows that other buildings immediately preceded this, and the fact that the site was used as an RAF base, there is inevitably going to be significant disturbance to the site. Although it has not been possible to establish what the previous buildings on the site were used for, the likelihood of any remains of archaeological interest surviving is very low. Given the previous uses of the site there is also the possibility that dangerous materials such unexploded ordnance or contaminated radioactive waste might be present.

#### 5.5 Conclusion and Recommendations

- 5.5.1 The study site occupied an area of common land until the start of the 19<sup>th</sup> century, before becoming agricultural land until 1935. It was then part of an RAF expansion period airbase, situated close to the edge of the airbase complex, to the west of the married quarters on South Drive, and north of B166 (the gas decontamination centre), and apparently had no buildings on it during this period. The site became part of the Atomic Energy Research Establishment in 1946, and was occupied by a succession of buildings, the functions of which remain unclear. Once again, it was towards the edge of the site, to the east of the effluent treatment works, in the area of staff clubs, hostels, and houses.
- 5.5.2 The RAF airbase and AERE site are significant in their own right, and form the only two known sites of archaeological and historic interest present (in part) on the study site. There is also the potential for previously unknown buried archaeological remains to survive, the most likely being of Roman or post-medieval date.
- 5.5.3 Depending on what proposed development plans there are for site, and taking into account the highly disturbed nature of the site and potential risk of contamination, the most appropriate form of further archaeological mitigation would be a watching brief.

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# **Appendix 1: Significance Criteria**

After DCMS 2013, Annex 1: 'Principals of Selection for Scheduled Monuments'

- i) Period: all types of monuments that characterise a category or period should be considered for preservation;
- ii) Rarity: there are some monument categories which in certain periods are so scarce that all surviving examples which retain some archaeological potential should be preserved. In general, however, a selection must be made which portrays the typical and commonplace as well as the rare. This process should take account of all aspects of the distribution of a particular class of monument, both in a national and regional context;
- iii) Documentation: the significance of a monument may be enhanced by the existence of record of previous investigation or, in the case of more recent monuments, by the supporting evidence of contemporary written records;
- iv) Group Value: the value of a single monument (such as a field system) may be greatly enhanced by its association with related contemporary monuments (such as a settlement and cemetery) or with monuments of different periods. In some cases, it is preferable to protect the complete group of monuments, including associated and adjacent land, rather than to protect isolated monuments within the group;
- v) Survival/Condition: the survival of a monument's archaeological potential both above and below ground is a particularly important consideration and should be assessed in relation to its present condition and surviving features;
- vi) Fragility/Vulnerability: highly important archaeological evidence from some field monuments can be destroyed by a single ploughing or unsympathetic treatment; vulnerable monuments of this nature would particularly benefit from the statutory protection which scheduling confers. There are also existing standing structures of particular form or complexity whose value can again be severely reduced by neglect or careless treatment and which are similarly well suited by scheduled monument protection, even if these structures are already listed historic buildings;
- vii) Diversity: some monuments may be selected for scheduling because they possess a combination of high quality features, others because of a single important attribute;
- viii) Potential: on occasion, the nature of the evidence cannot be specified precisely but it may still be possible to document reasons anticipating its existence and importance and so to demonstrate the justification for scheduling. This is usually confined to sites rather than upstanding monuments.

# **Appendix 2: Site gazetteer**

Site Number: 1 HER No: 27899

**Site name**: Undated ring ditch **NGR**: SU 4788 8842 (point)

Sources: HER Designation: None

Monument type: RING DITCH

**Description**: The cropmark remains of a small ring ditch of unknown date seen centred at SU 4788 8842 and mapped from aerial photographs. The site is defined by a single ditch and has a diameter of

approximately 11m. **Period**: Unknown

Site Number: 2 HER No: 27896

Site name: Undated ditch NGR: SU 4720 8817 (point)

Sources: HER
Designation: None
Monument type: DITCH

**Description**: The cropmark remains of a single short length of linear ditch of unknown date was seen centred at SU 4721 8817 and mapped from aerial photographs. It is aligned east-north-east/west-south-

west and can be traced for 75m.

Period: Unknown

Site Number: 3 HER No: 12150

**Site name**: Conjoined Iron Age or Roman oval enclosures

NGR: SU 4713 8803 (point)

Sources: HER Designation: None

Monument type: OVAL ENCLOSURE

**Description**: Two conjoined oval enclosures of unknown Prehistoric date were seen as cropmarks centred at SU 4714 8802. Both are defined by a single ditch. The larger enclosure measures 30m by 50m and is centred at SU 4714 8802. The smaller enclosure is attached to the eastern end of the larger and is less elongated. This is centred at SU 4718 8803 and measures 20m by 25m. Both enclosures were visible as cropmarks and mapped from aerial photographs.

Period: Early Iron Age to Roman - 800 BC to 409 AD

Site Number: 4 HER No: 10131

Site name: Milestone at SU 4825 8722, A4185

**NGR**: SU 4825 8722 (point)

Sources: HER; Historic England 2019; Ordnance Survey 1883

**Designation**: Listed Building (Grade II)

Monument type: MILESTONE

**Description**: Milestone. Probably early 19<sup>th</sup> century. Stone. Triangular post with curved top, inscribed

"Abingdon 7. E. Ilslev 4".

Period: Post-medieval - 1801 AD to 1832 AD

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Site Number: 5 HER No: 27851

Site name: Enclosure thought to be part of larger field system

NGR: SU 48780 87140 (point)

Sources: HER Designation: None

Monument type: FIELD SYSTEM; ENCLOSURE

**Description**: Possible outlier to large field system (PRN 11065; SU 49280 87920 (point)). The faint earthwork remains of a number of linear banks which are thought to be field boundaries of unknown date. These cover a large area centred at SU 4840 8700, located within the following grid references: SU 4504 8840, SU 4570 8830, SU 4560 8595 and SU 4496 8609. The majority of the banks are aligned

north/south. All were seen as faint earthworks and mapped from aerial photographs.

Period: Early Iron Age to Roman - 800 BC to 409 AD

Site Number: 6 HER No: 26394

Site name: GLEEP (Graphite Low Energy Experimental Pile) hanger [sic]

**NGR**: SU 4805 8705 (point)

Sources: HER; English Heritage 2004b

**Designation**: None

Monument type: AIRCRAFT HANGAR; HANGAR; LABORATORY (all since demolished)

Description: Located on former site of RAF Harwell, now the headquarters of the UKAEA. GLEEP

hanger demolished and made safe.

Action report made while hanger was in process of being decommissioned and made safe, with fuel rods and control rods were removed from the reactor in 1994/5. Although English Heritage recommended that surviving elements of GLEEP be subject to preservation by record, it was unclear if it was safe enough to do so, and was demolished sometime before 11<sup>th</sup> October 2004 with no further action.

Period: Modern

Site Number: 7 HER No: 26393

Site name: Site of Tandem Van de Graaff Building (Building 477)

**NGR**: SU 4796 8681 (point)

Sources: HER; English Heritage 2004a

**Designation**: None

**Monument type**: GENERATOR HOUSE (demolished)

**Description**: Former site of RAF Harwell and formerly part of the headquarters of the UKAEA. Building 477 housed the Tandem Van de Graaff accelerator. Dismantling and demolition of the accelerator began

in 2005 and was completed by 2009.

Period: Modern

Site Number: 8 HER No: 27631

Site name: Possible Later Prehistoric and Post-Medieval ditches at

Fermi Avenue

**NGR**: SU 47998 86708 (point) **Sources**: HER; MoLA 2012a; 2012b

**Designation**: None

Monument type: DITCH; BOUNDARY DITCH

**Description**: Evaluation revealed a possible prehistoric ditch terminus and a large post-medieval boundary/drainage ditch.

Evaluation revealed a shallow ditch terminus which extended beyond the limit of the excavation to the east and contained small, abraded fragments of possibly prehistoric pottery. A large ditch 2.95m wide and 0.75m deep crossed the trench on an east/west alignment. The evaluation showed that there is low potential for survival of ancient ground surfaces, but some potential for survival of cut features. The remains are of low significance (MoLA 2012a).

Evidence of a large ditch was observed within the southern area of the site. Dating and cartographic evidence suggest it is probably the parish boundary ditch between Harwell and Chilton parishes, first mentioned in a charter dated AD 973. The manorial boundaries in the AD 973 charter seem to be little different from those of the modern parish of Harwell. The wide date range (Roman to post-medieval) of the finds retrieved from within the ditch support the likelihood of an early creation date, a long period where the ditch was open and in use, and a gradual silting up as the ditch fell out of use as a physical marker of the parish boundary (MoLA 2012b).

**Period**: Early Neolithic to Post-medieval [DITCH (Later Prehistoric - 4000 BC? to 42 AD?); BOUNDARY DITCH (Post-medieval - 1540 AD to 1900 AD)]

Site Number: 9 HER No: 28341

Site name: Linear Ditch and Probable Pit at Harwell Research

Complex

NGR: SU 4803 8660 (point)

Sources: HER; AC Archaeology 2014

**Designation**: None

Monument type: DITCH; PIT?

**Description**: Undated linear ditch and a probable pit. A small number of finds were recovered including

prehistoric and Roman pottery and fired clay.

An evaluation identified very limited evidence for archaeological activity on site comprising a linear ditch and a pit (AC Archaeology 2014). The linear ditch was undated, but its absence on 19<sup>th</sup> century maps means it is most likely a former boundary relating to pre-Victorian land division. The only dateable feature on site was a small probable pit which contained a small quantity of Oxfordshire Romano-British pottery (there is a discrepancy in the report as to whether the pit contained a sherd of prehistoric pottery or Romano-British pottery). Features may be linked to areas of activity already known to the south and south-west of this site.

Period: Unknown

Site Number: 10 HER No: 29029

**Site name**: Former RAF Harwell **NGR**: SU 4772 8654 (point)

Sources: HER; Hance 2006; Smith 2018

**Designation**: None

Monument type: MILITARY AIRFIELD

**Description**: Former WWII airfield and glider base; initially constructed as a grass air field in 1935, RAF Harwell opened in 1937. At the outbreak of WWII it became part of No. 38 Group, Bomber Command. Concrete runways were added in 1941. It became a glider base in 1944 in preparation for the D-Day Normandy landings. Later in 1944 RAF Harwell was also used for SOE operations. The site was handed

over to the Ministry of Supply in 1945

Period: Modern

# **Appendix 3: Previous Archaeological Work**

Event ID: EOX253

Site name: The Harwell Rising Main

**NGR**: Centred SU 4785 8765 (10m by 10m)

**Sources**: HER; OAU 1999 **Type**: WATCHING BRIEF **Dates**: 01/10/1999 - 30/11/1999

**Description**: Watching brief maintained during groundwork along the line of the new Harwell Rising Main. No archaeological features were observed although a single residual Roman pottery sherd was

recovered during the topsoil strip.

Event ID: EOX3216

Site name: Harwell Science and Innovation Campus

**NGR**: SU 47556 86624 (point) **Sources**: HER; MoLA 2010

Type: AERIAL PHOTOGRAPHY; HISTORIC AREA ASSESSMENT

Dates: 01/07/2011 - 31/07/2011

**Description**: The potential for survival of prehistoric and Roman remains is likely to vary across the site, but is predicted to be high where little or no construction has previously taken place. Where present, archaeological remains have been found to lie directly below the ground surface or topsoil. Archaeological remains present within the site are likely to be affected by all but the most superficial groundworks or construction, including preliminary topsoil stripping. Therefore, in areas not previously investigated, targeted archaeological evaluation by means of trial trenches may be required to further assess their nature, extent and significance.

Event ID: EOX3280

Site name: Fermi Avenue, Harwell Science and Innovation Centre

NGR: SU 47998 86708 (point) Sources: HER; MoLA 2012b Type: TRIAL TRENCH

Dates: 23/01/2012 - 27/01/2012

**Description**: Evaluation consisted of four evaluation trenches excavated over four days; two features were found in Trench 1; a ditch terminus and a large ditch (see **Site 8**). Site is of local significance.

Event ID: EOX3326

Site name: Fermi Avenue, Harwell Science and Innovation Campus

NGR: SU 47984 86695 (point) Sources: HER; MoLA 2012a Type: WATCHING BRIEF Dates: 21/05/2012 - 27/06/2012

**Description**: Groundworks relating to the construction of new buildings, roads, and parking bays were monitored by a MoLA archaeologist. Features were observed and fully recorded in the southern area of the site (see **Site 8**); no archaeological remains were present in the northern area. Natural ground was observed in the west area of the site. Evidence of a large ditch was observed within the southern area of

the site.

Event ID: EOX5508

Site name: New Antennae Site, Harwell Science Park

NGR: SU 4827 8677 (point) Sources: HER; TVAS 2013 Type: WATCHING BRIEF Dates: 25/11/2013 - 09/12/2013

**Description**: Watching brief carried out during the stripping of a small area before the construction of new antennae structures along with a number of test pits on the route of the cable trench. Antennae base measured 6m by 5m, the generator 2m by 2m and the communications area 6m by 4m. No archaeological deposits were encountered.

Event ID: EOX5554

Site name: Harwell Research Complex

**NGR**: SU 4803 8660 (point)

**Sources**: HER; AC Archaeology 2014 **Type**: EVALUATION; TRIAL TRENCH **Dates**: 01/04/2014 - 30/04/2014

**Description**: Evaluation ahead of the construction of a new office building with associated car parking and landscaping. Ten machine excavated trenches totalling 300m by 1.9m dug over the 1.5ha development site. Limited archaeological evidence recorded (see **Site 9**).

Event ID: EOX5910

Site name: Hi-Tech Terrace Site at Harwell Science and Innovation Campus

**NGR**: SU 4772 8677 (point) **Sources**: HER; MoLA 2014

**Type**: DESK-BASED ASSESSMENT **Dates**: 01/11/2014 - 30/11/2014

**Description**: Desk-based assessment required in advance of construction of a single storey building with service areas and parking. This is an addendum to an earlier study covering the site. Archaeological remains of later Prehistoric and Roman periods possibly survive within the site. Potential for survival is predicted to vary, with good survival in area of site between footprint of the former building and area of tarmac of existing car park. Archaeological remains will be affected by all but the most superficial groundworks or construction, including preliminary soil stripping.

Event ID: EOX6141

Site name: N-S Link Road, Harwell Science and Innovation Campus

NGR: SU 4781 8701 (point) Sources: HER; MoLA 2017 Type: WATCHING BRIEF Dates: 12/05/2015 - 15/06/2015

**Description**: The watching brief report was commissioned from MoLA by United Kingdom Atomic Energy Authority. Ground stripping in the area of the proposed road reached depths of between 0.5-1m. Modern brick foundations and rubble demolition deposits in the areas surrounding the foundations were sealed by 0.2-0.3m of a mid-grey-brown silty clay topsoil and turf. Modern services were also observed truncating some areas of site. No archaeological features or natural were observed.