ARCHAEOLOGICAL SURVEY OF A WWII ANTI-TANK DITCH, HINTON CHARTERHOUSE, BATH. B&NES SMR BN11296 – MBN11296.

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ABBREVIATIONS.

ADS	Archaeological Data Service.
AP	Aerial Photograph.
AT	Anti-tank.
B&NES	Bath and North East Somerset
BEF	British Expeditionary Force.
EH	English Heritage.
GHQ	General HeadQuarters.
GPS	Global Positioning System.
HG	Home Guard.
MA	Master of Arts.
NGR	National Grid Reference.
NMR	National Monuments Record.
RCHME	Royal Commission on the Historic Monuments of England.
SLG	Stop Line Green.
SMR	Sites and Monuments Record.

ACKNOWLEDGEMENTS.

In the preparation of this report, I would like to acknowledge, with many thanks, the assistance given by the landowner of Hog Wood, Mr & Mrs R M Coles who gave kind permission for the survey to be conducted, as well as Bob Sydes, B&NES County Archaeologist who initially assisted me with the Sites and Monuments Record.

Additionally, many thanks go to my colleagues Richard Davis and Katie Page-Smith who gave me assistance in the field, my brother Peter J Rowe, who assisted in the geophysical survey of the site, as well as my parents who provided valuable knowledge of the tense war-time situation of 1940.

Finally, special thanks go to Catherine Price, my partner, who not only assisted me on the earthwork survey on the coldest, wettest day in October, but also helped me with the collation of the background information needed for the preparation of this report.

My thanks to you all.

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ABSTRACT.

Recorded during a RCHME survey of the nearby Carthusian Monastic complex in May 1995, the full extent of the remaining anti-tank ditch found within Hog Wood had not been documented, with publications and references to this ditch being seen as limited.

When studying available aerial photographic as well as cartographic evidence, questions were posed with regard to the extent and location of the anti-tank ditch, in particular the issue as to whether a crop mark on aerial photograph NMR 15343 No: 30 dated 4 Aug 95 was that of a ditch and not a footpath, as the Ordnance Survey map had suggested.

Believed to continue, the length of the anti-tank ditch from Hog Wood to the A36 was confirmed by the vertical aerial photograph RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46.

Concluding that the location of a diagonal crop mark seen on the aerial photograph was indeed that of a ditch and not a footpath, to verify this notion further, a geophysical survey was completed on site.

Using a fluxgate gradiometer FM256 and a resistance meter RM15, eight 20m x 20m were surveyed, verifying as a result that the ditch does continue, running south-easterly in a diagonal direction from the southern end of Hog Wood, towards the main A36 road.

Linked to the surviving section of AT ditch within Hog Wood, a measured earthwork survey was completed using an Electronic Total Station (GTS–210 Series) instrument and taped offsets from a control framework of eight points.

Displaying dimensions of *c.*5m at the top / *c*.2.5m at the base and *c*.2.5 - 3m deep, the AT ditch, flanked on BOTH sides by a bank measuring *c*.0.5m in height, is contemporary in measurements and construction style with that of a flat-bottomed *two-way* Anti-tank ditch.

Supported by pillboxes and zig-zag / crennaltated infantry slit trenches, the pillbox / AT ditch affinity notion as suggested by Wills (1985) can be seen clearly evident at Hog Wood, with three pillboxes and two slit trenches associated with the ditch demonstrating that a strategic relationship was employed.

With additional miscellaneous earthworks briefly detailed in this report, further archaeological investigation is needed at Hog Wood, with more detailed research into the national defensive network of Great Britain during the early 1940s and in particular Bristol's Outer Defence line a priority.

With this in mind, in order to improve both local as well as national records when understanding the defensive structure set up in Great Britain during WWII and in particular, at a local level, *Stop Line Green,* it is recommendation that the enhanced Sites and Monuments Record (as contained in Section 9) is adopted and entered.

1 – INTRODUCTION.

1.1 Recorded during a Royal Commission on the Historic Monuments of England (RCHME) survey of the nearby Carthusian Monastery in May 1995 (Appendix A),
a surviving section of an anti – tank ditch can be seen cut within Hog Wood, Hinton Charterhouse, near Bath (NGR ST773595) (**Fig.1**).

1.2 Forming part of the '*Stop line'* Anti – invasion defence network of Great Britain during World War II, the site was duly entered in limited form onto the Bath and North East Somerset Council's (B&NES) Sites and Monuments Record (SMR) (BN11296 – MBN11296 - Appendix B).

1.3 In order to enhance the SMR entry, the site was subsequently surveyed in October 2004 by Philip R Rowe BA (Hons) of the University of Bristol as part of the MA course in Landscape Archaeology.

1.4 The report presented herewith is the findings of the October 2004 archaeological survey that employed the use of both earthwork as well as geophysical surveying techniques. Advice with regard to the geophysical results was sought from Dr. Christopher Gaffney, GSB Prospection, whilst Richard Davies, Katie Page-Smith, Catherine Price and Peter J Rowe provided assistance in the field.

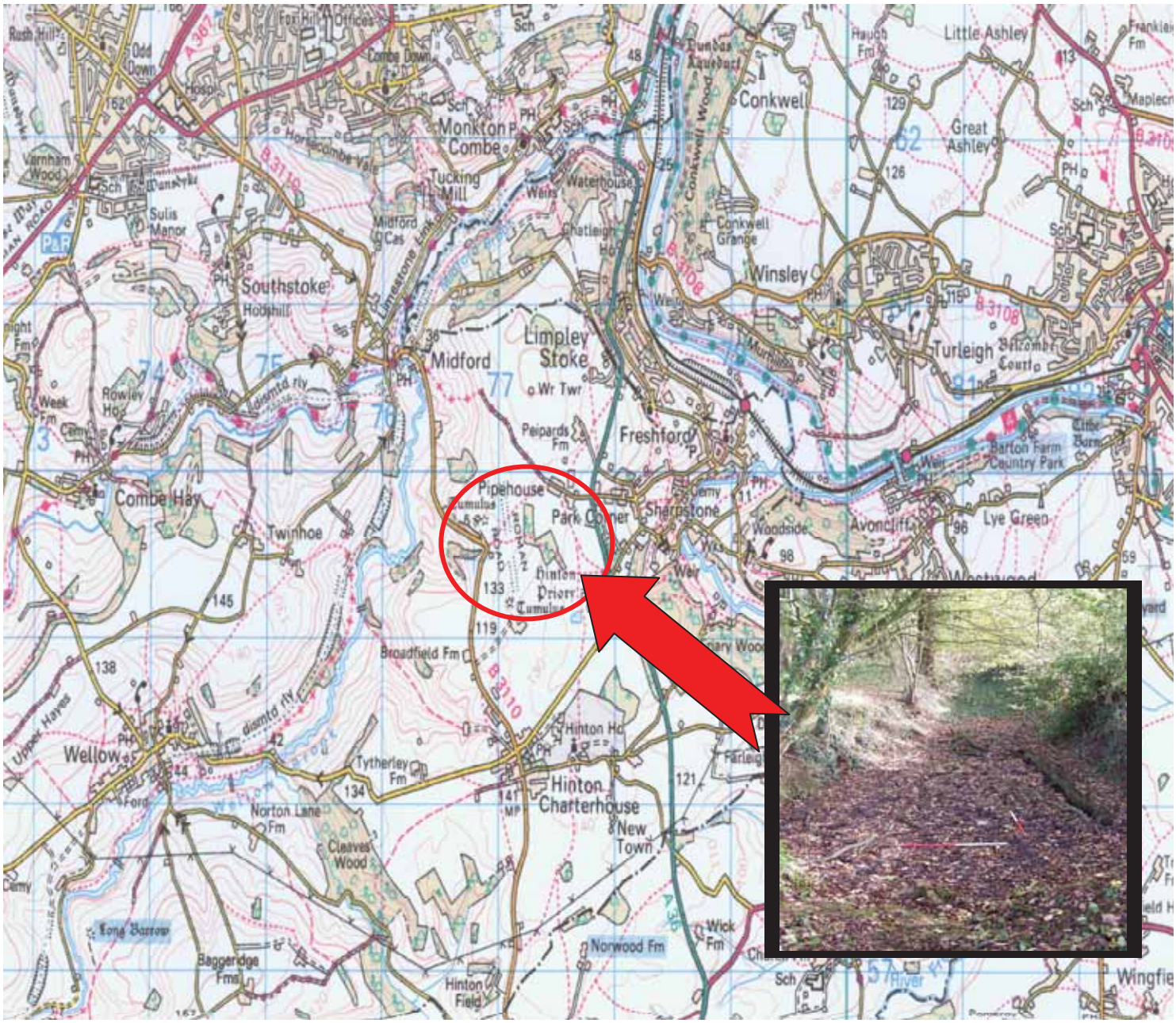

Fig.1 – 1:50000 OS Map: location of Hog Wood in relation to Hinton Charterhouse (©Memory-Map: 2003 Crown Copyright Ordnance Survey). Insert: Slide detailing the east end of the anti-tank feature (Author).

2 – METHODOLOGY.

2.1 Desktop Study.

2.1 .1 Following receipt of SMR BN11296 – MBN11296 from B&NES County Archaeologist, initial searches were made of all indices of information held at English Heritage's (EH) National Monuments Record (NMR) in Swindon, as well as the 'online' catalogue of the Archaeological Data Services (ADS) '*Defence of Britain'* database (Appendix C & D).

2.1.2 To supplement information received, aerial photographic evidence was additionally obtained from the NMR, with further information on the network of Great Britain's World War II anti – invasion defences being collated from various publications on the subject, though detailed references to the Bristol area and in particular to the Hinton Charterhouse stretch of anti-tank ditch were somewhat rather limited [1].

2.1.3 Cartographic evidence for Hinton Charterhouse, Bath was primarily procured from the Bath Central Library, with copies of the 1884, 1904, 1932 and 1961 Ordnance Survey (Scale 1:10000) attached at Appendix E. Additionally three-dimensional topographic mapping for the region was obtained using Memory-Map software (Scale 1:50000), whilst the geological information for the area was attained from Sheet 281 Solid and Drift Edition (Frome), Geological Survey of Great Britain (England & Wales) (1985 – Scale 1:50000).

2.2 Fieldwork.

2.2.1 With permission gained from the landowner, Mr. R Coles, assistance in the field from Richard Davies, Katie Page-Smith and Catherine Price resulted in a 1:1000 scale earthwork survey being conducted in Hog Wood on Saturday 23rd and Sunday 24th October, 2004. Using an Electronic Total Station (GTS–210 Series) instrument and taped offsets from a control framework, a measured earthwork survey was accomplished with the subsequent plan / conclusions detailed in Section 6.

2.2.2 Additionally, to resolve questions posed during the desktop study of the photographic as well as cartographic evidence, a detailed geophysical survey using a Fluxgate Gradiometer FM256 and Resistance Meter RM15 was undertaken in an adjacent field south east of Hog Wood, Hinton Charterhouse. Aided by Peter J Rowe, a survey of twelve 20m x 20m grids was completed on Sunday 31st October, 2004 with the concluding results and interpretations being contained within Section 7 of this report (original data / processing information attached at Appendix F).

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[1] More research is evidently required into the home defence of Great Britain, with archaeological investigation a priority if we are to fully understand the defensive infrastructure set up during the early part of World War II.

3 – GEOLOGY, TOPOGRAPHY AND CURRENT LANDUSE.

3.1 Geology

3.1.1 Taken from Sheet 281 Solid and Drift Edition (Frome), Geological Survey of Great Britain (England & Wales) (1985–Scale 1:50000) that details the pre-Quaternary rocks and superficial / quaternary deposits, the study area of Hinton Charterhouse, Bath can be seen located on an upper plateau of humus deposited over Forest Marble (mainly clay with shelly limestone and sandstone) and surrounded to the North, East and West by deposits of Great Oolite limestone and Fuller's Earth (mainly clay), all of the Jurassic Great Oolite Series (**Fig.2**).

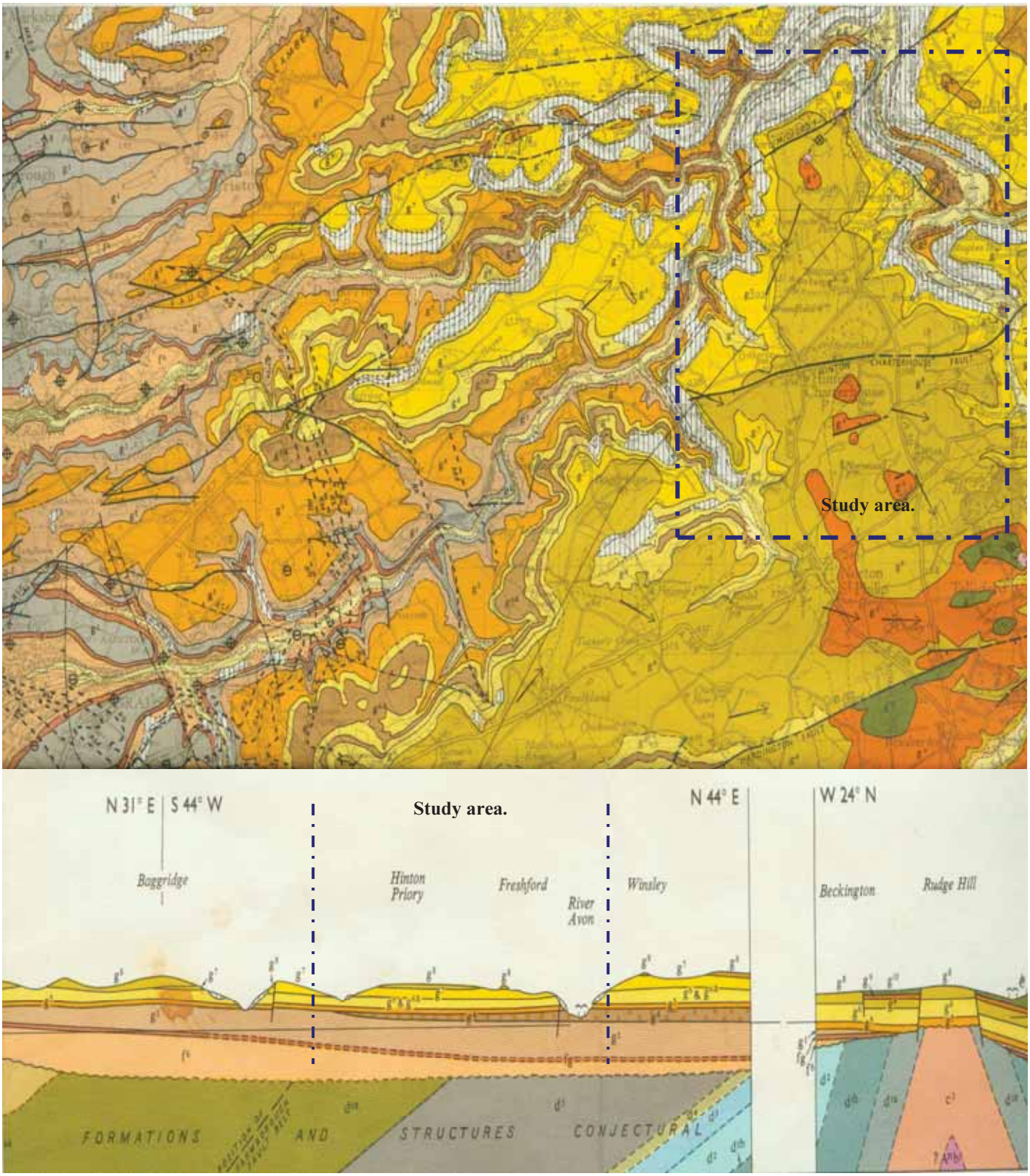

Fig.2 – Study area of Hinton Charterhouse (highlighted) (© 1965 Crown Copyright Ordnance survey).

3.2 Topography

3.2.1 Located at the southern end of the Cotswold hills, *c*.1.25km north of the village of Hinton Charterhouse and *c*.3.5km southeast from the City of Bath, the case study site of Hog Wood and its adjacent fields can be seen situated on high ground (*c*.105m elevation above sea level [1]) between the A36 and B3110, at a point where the topography of the spur naturally narrows (**Fig.3**).

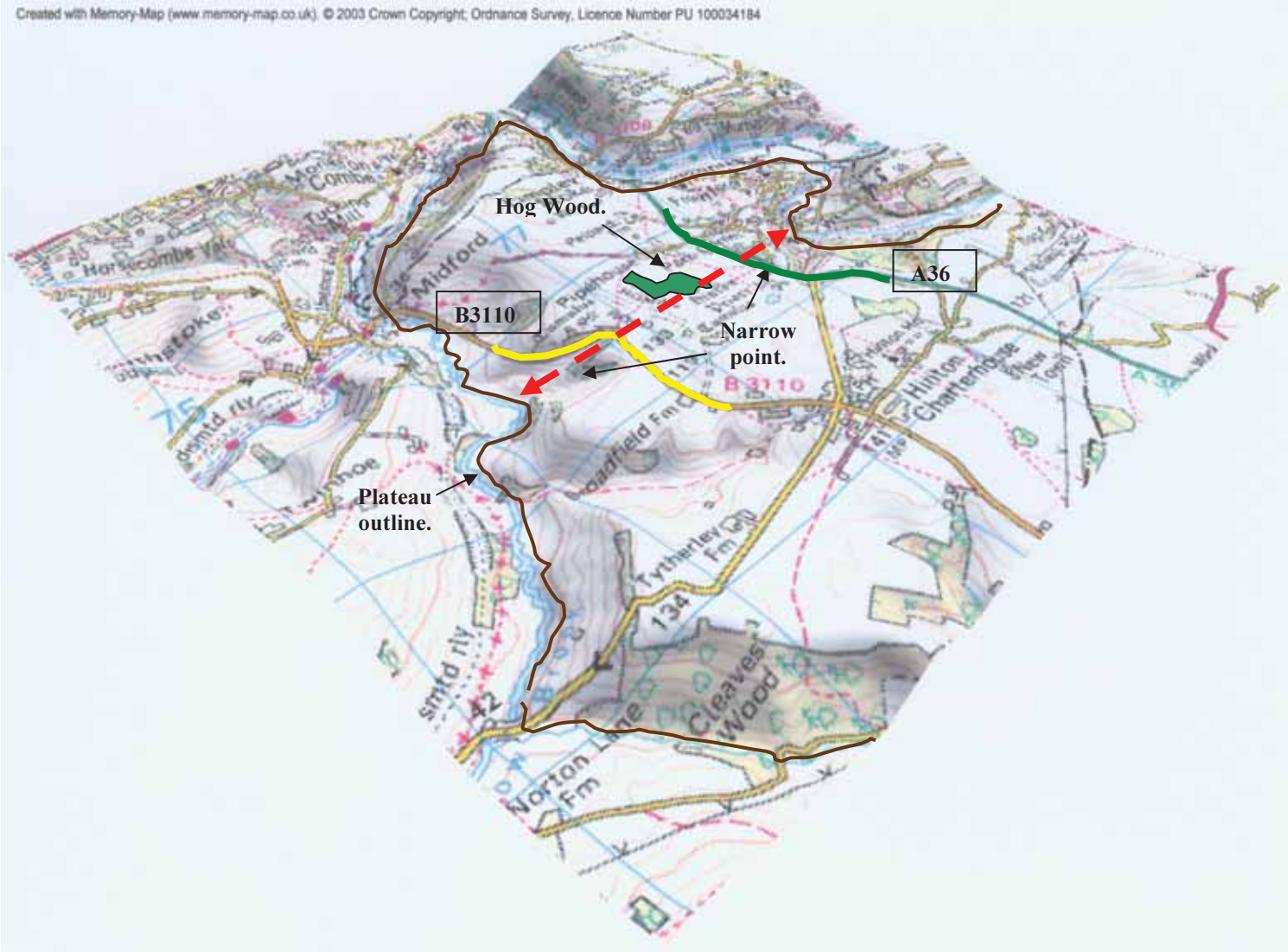

Fig.3 – 3D – Topographical view demonstrating the narrowing of the plateau upon which Hog Wood is situated (©Memory-Map: 2003 Crown Copyright Ordnance Survey).

3.3 Current Land Use

3.3.1 Classing Hog Wood as a copse, agricultural land use within the wood is limited, if not impossible, hence the excellent preservation of the anti-tank ditch and associated pillboxes / slit trenches. Of the area surrounding the wood however, widespread agricultural use is evident, with the field immediately to the southwest of Hog Wood under crop and the fields to the northeast / southeast used as pastoral land.

[1] Information obtained using a handheld Garmin *Etrex* 12 Channel GPS system (accuracy to 5m).

4 – HISTORICAL BACKGROUND.

4.1 As the anti-tank ditch cut within Hog Wood relates primarily to the events faced by Great Britain during the period of 1939 – 1942, the following section will only detail in brief the situation that prompted the construction of said features within the landscape, as well as the principles behind the defensive network that was set up during this period of time.

4.2 War Is Declared

4.2.1 In response to the invasion of Poland by the *Wehrmacht* two days previously, Britain and France officially declared war upon Germany on the 3rd September 1939. Immediately, in order to secure the western end of Europe from invasion (France, Holland, Belgium etc), Britain mobilised her armed forces, with the British Army being seen deployed to continental Europe and France the very next day as the British Expeditionary Force (BEF).

4.2.2 For the next seven months there followed a very tense stand off between the opposing forces, with few very limited engagements taking place. Often described by historians as the '*Phoney War'*, this inaction provided the BEF with valuable time in order to construct static defensive positions along France's borders, with Wills (1985) noting that within the British sectors, well over 400 pillboxes were constructed and 40 miles of anti-tank ditch excavated, all supplemented by rivers and canals.

4.2.3 This '*Phoney war'* however was to be short lived, with German forces making great use of the spring weather and invading Denmark and Norway in April 1940, though not without encountering heavy resistance. Faced by an ill equipped BEF in comparison to the heavily armoured and mobile *Wehrmacht,* the eventual defeat and withdraw of the BEF from Norway was seen primarily as only a minor setback, with the heads in Whitehall now turning all their attention to continental Europe and in particular France.

4.2.4 Despite experiencing their first taste of defeat to this new, more mobile form of warfare ('*Blitzkrieg*' or '*lightening*' war), the commanders of the British and French forces were still highly confident that their static lines of defence on the French borders ('*maginot*' line) could and indeed would repel any threatened invasion. A sure confidence that was all too soon dispelled by early May 1940, when German mechanized forces using their mobility to great advantage, advancing almost unopposed across Europe, through Belgium and Holland before turning towards France.

4.2.5 Bypassing the static '*maginot*' line of defence completely, a possibility that was never envisaged by military planners, the Allied Forces were taken completely by surprise and so as a result with the majority of troops committed to these lines, had no ability to defend France '*in depth'* or mount any sort of effective counter attack.

4.2.6 Unable to deal with the advancing German mechanized forces, defeat for the Allies was only a matter of time, with the order to evacuate the remnants of the Allied forces (in particular the BEF) from France being given in late May 1940 under the codename '*Dynamo*'.

4.2.7 Once evacuated from the beaches of Dunkirk, the English Channel was now the only obstacle from German forces, a fact that the now Prime Minister, Winston Churchill, was all too aware of, realising that in all probability Great Britain would be the next country to be invaded by the seemingly unstoppable *Wehrmacht*'s '*Blitzkrieg*' campaign.

4.3 Britain Stands Alone

4.3.1 In response to this imminent threat of invasion, one that was never even considered possible up until this point in time, the British Government ordered the immediate formation of a Home Defence Executive, with General Sir Edmund Ironside appointed as Commander-in-Chief Home Forces (Ruddy: 2003).

4.3.2 Charged with the construction of a nationwide defensive network, it was soon realised that this task was by no means an easy feat, with the majority of armourments needed to equip such a network lying abandoned on the beaches of Dunkirk and the surrounding French countryside.

4.3.3 With a potential front line almost twice as long as the one previously held in France by both the

French and British Armies combined, Ironside had at his disposal only one weak and one under equipped armoured division, in addition to 15 infantry divisions that possessed only one sixth of their allotted field artillery. A fact illustrated by Lowry (2004) who writes how the First London Division, detailed to protect a vital 70 mile stretch of coastline in Kent, had in their armoury NO Anti-tank (AT) guns, No medium machine guns, a small percentage of AT rifles and only 23 field guns.

4.3.4 To counter this ever increasing threat of invasion whilst making best use of the available resources to hand, Ironside along with his staff compiled a detailed defence plan (**Fig.4**) in which the 500 miles of coastline that was within range of dive-bombers was to be fortified, whilst the rest of the country was divided into '*stop lines*' of defence (Wills: 1985).

Fig.4 – Britain's network of defences 1940-1942 (Lowry: 2004).

4.4 Stop Lines

4.4.1 Based on First World War military tactics and strategies that relied heavily on the formation of static linear defences, the concept of the '*stop line*' was simple, its main objective being the delay and ideally prevention of an enemy advance, especially their armoured formations, upon major cities such as London as well as major ports (Bristol etc). In doing so, valuable time could be gained by the defending troops allowing as a result re-enforcements to arrive at any given location in order to counter attack.

4.4.2 Drawing upon lessons learnt upon continental Europe only months previously where the German use of the tank over an open plain was seen to be so highly effective, it was crucial that these *stop lines* would

be able to limit the mobility of the tank. To achieve this, natural features such as rivers, valleys etc, as well as man made obstacles such as railway cuttings, canals and ditches were incorporated into the *stop lines*, in effect channelling the enemy advance along a route of the defenders choosing.

4.4.3 Splitting the country into sections (**Fig.5**), the backbone of the home defences and the main *stop line* was that of the GHQ line which ran outwards from the east coast, northwards towards Edinburgh and westwards towards Highbridge, Somerset. With a prime objective of protecting London as well as the industrial Midlands, the GHQ line, using natural and man made topographical features formed an almost continuous line that contained a concentration of pillboxes for rifle, machine gun and AT guns, as well as other anti-tank obstacles.

4.4.4 Guarded during the early part of the war by mainly regular troops, the GHQ line and coastal areas were seen as Britain's first line of defence, with a second line of defence consisting of road blocks manned by the Home Guard (HG), whose primary task was to '*harry*' the advancing German troops with guerrilla style tactics and weapons ('*Molotov'* Cocktails etc). It was in these zones between the coastal areas and the main GHQ lines that it was believed the enemy could and would be contained (Wills: 1985).

4.5 Stop Line Green

4.5.1 To bolster the GHQ line still further, additional *stop lines* (**Fig.5**) were constructed around the country in places that were deemed of strategic importance, though it is the south of England and its numerous ports and naval bases that were given the heaviest fortification.

4.5.2 Bristol, deemed strategically important due to its location and port [1], was one of the first areas to have constructed around it its very own *stop line,* codenamed *Green*.

4.5.3 Starting on the Bristol Channel coast at Highbridge, Somerset, *Stop line Green* (SLG) ran along to Freshford, turning then onwards to Stroud before ending at Upper Framilode, 6 miles southwest of Gloucester. Known locally as the Bristol Outer Defence Line, the detailed route of SLG was decided on as early as June 1940 (Green: 1999) and consisted of 319 pillboxes (48 bullet proof only) placed strategically along a front of *c*.91 miles (20 of which were made up of excavated anti-tank ditches as found at our case study site) (Wills: 1985).

4.6 Anti-Tank Ditches

4.6.1 Excavated in enormous numbers during the summer of 1940 to 1941, the construction and form the '*artificial*' anti-tank (AT) ditch was to take was closely monitored and governed by periodic orders that came from GHQ Home Forces and its various subordinate formations.

4.6.2 Differing from the many '*natural*' anti-tank ditches that were subject to improvements during the same period of time, such as the widening and deepening of rivers and streams etc, national figures for the exact total lengths of both '*artificial*' and '*natural*' obstacles employed during World War II has yet to be traced, though it is suggested by Dobinson (1996) to run into the *hundreds of miles* category.

4.6.3 Working on a profile adopted as a product of chronology, the '*artificial*' anti-tank ditch can be categorized into two distinct types, that of a *one-way ditch* and a *two-way ditch*, with the difference between them being as simple as whether the obstacle was intended to stop an enemy advance from only one direction or from both (Dobinson: 1996) (**Fig.6**).

4.6.4 Profiles

4.6.4.1 One-Way Ditch

First appearing on the 9th June 1940 as a GHQ Home Forces specification that detailed the widths and depths etc that the AT ditches should be excavated too; the *artificial* obstacle dimensions were primarily based on what type of armoured vehicle the defenders were likely to oppose during that period in time (Dobinson: 1996).

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[1] If invaded, Bristol would be a prime port to evacuate the government and Royal family to Canada from.

Fig.5– Map denoting the main GHQ line (Red) as well as the other main stop lines of 1940 – 1942 (SLG – Green) (Wills: 1985).

Fig.6 – A freshly excavated '*artificial*' one-way anti-tank ditch, Farnham (Surrey) District, July 1940 (IWM H 2473 (Lowry: 2004)).

4.6.4.2 Drawing upon lessons learned in France when faced with the lightening onslaught of the German '*Blitzkrieg*' campaign, the one-way anti-tank ditch was constructed too two specifications, the first 0.91m deep / 2.4m wide was for use against soft skinned / lightly armoured vehicles of the mechanized infantry regiments and the second, slightly larger 1.5m deep / 4.6m wide ditch was for use against the perceived '*spearheading*' heavily armoured regiments) (Dobinson: 1996).

4.6.4.3 Based on pre-war military manuals, the basic design concept of the *one-way* AT ditch was simple, on the defenders side would lie a near vertical, ideally revetted face, whilst opposing the direction of the perceived enemies advance would be a slope facing upwards. (**Fig.7**).

4.6.4.4 By constructing the ditch to these measurements, it was hoped that the ditch beam would be greater than the tank's and so in turn trapping the vehicle at the bottom against the vertical face if it tried to cross it. Calculations that with hindsight have proved quite accurate, with the five main operational tanks of the *Wehrmacht*, the PzKpfW 38(t) and Panzers I – IV ALL having a centre of gravity less than 4.6m which would of caused them to topple into the larger of the two ditches should they have attempted to cross it.

4.6.4.5 In the case of the armoured personnel carrier SdKfz 251, its centre of gravity was greater than the2.4m width and so would of crossed the smaller ditch unhindered, though still fallen fowl of the larger one (see Appendix G).

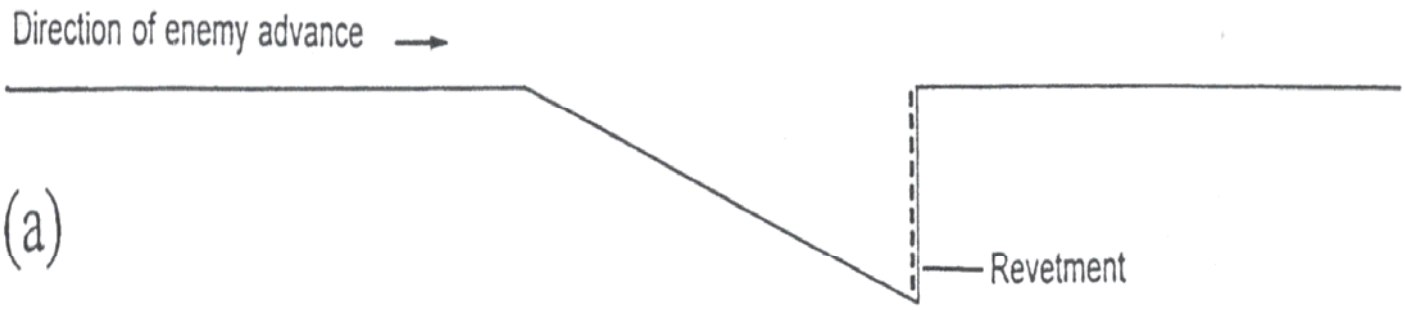


Fig.7 – 'One-way' Anti-tank ditch profile (Dobinson: 1996).

4.6.4.6 Two-Way Ditches

Used in mainly two forms by the Home forces between 1940–1941, the *two-way* ditch was intended to be used in areas where the advance of attack could perceivably come from either direction. Though in practice to construct defences for both sides was almost impossible due to equipment and manpower restrictions, therefore one side of the obstacle would almost always of been constructed to be more extensively defended than the other.

4.6.4.7 Used extensively by V Corps in September, 1940, the first of the two forms was that of a flat bottomed AT ditch (**Fig.8**), measuring 4.4m wide at the top and 2.4m deep, though this was soon revised to 1.5m depth for normal ground and 2.1m in difficult, avoiding the expense of revetting the ditch faces with much needed wood (Dobinson: 1996).

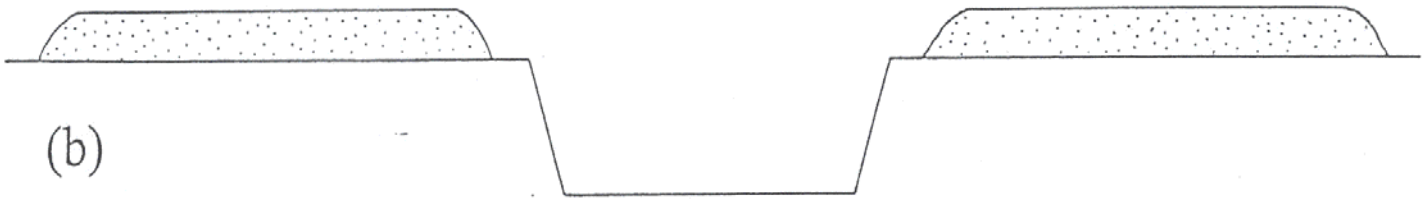


Fig.8 – 'Two-way' flat-bottomed anti-tank ditch profile (Dobinson: 1996).

4.6.4.8 The second of the two main forms of *two-way* AT obstacle was that of a V-profile ditch (**Fig.9**), first introduced into the *stop line* construction programme early summer 1941 by GHQ Home Forces, who issued instructions for all new AT ditches to be 2.7m deep and 5.5m wide. This new profile was the result of recent military experiments which concluded that V form of the *two-way* ditch made the best obstacle, was highly resistant to being broken down by explosives and was easy to excavate, doing away with the need for any kind of revetment (Dobinson: 1996).

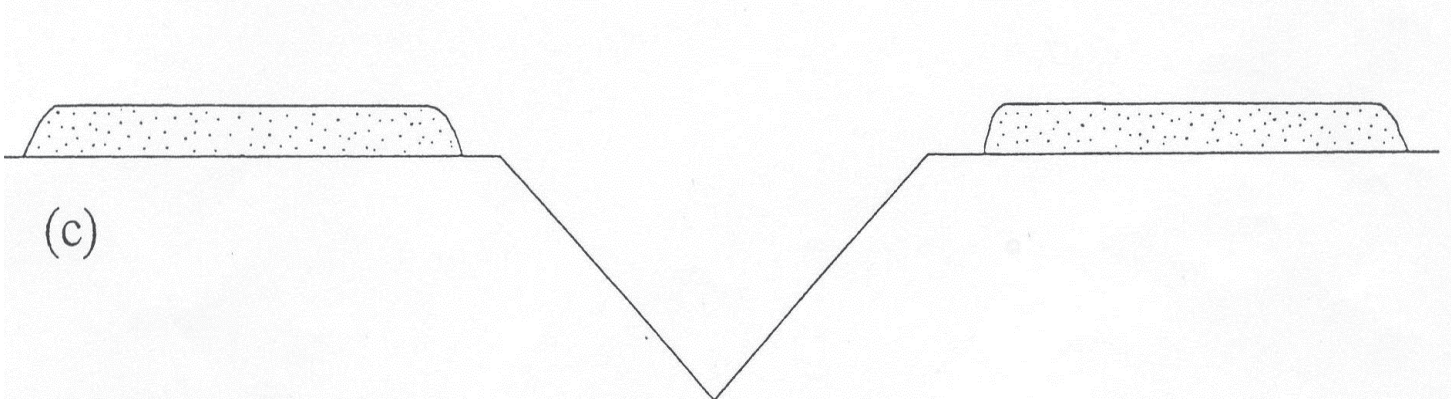


Fig.9 – 'Two-way' V bottomed anti-tank ditch profile (Dobinson: 1996).

4.6.5 **Planform**

To create an extra obstacle for the tank to cross, limiting in turn the driver and commanders view by putting the vehicle at a 45º or so angle to the ground (**Fig.10**), as well as exposing the tank's weak underside to infantry AT weapons, both forms of the *two-way* AT ditch was flanked on either side by flattened mounds of spoil *c*.0.61m high and *c*.5.8m wide.

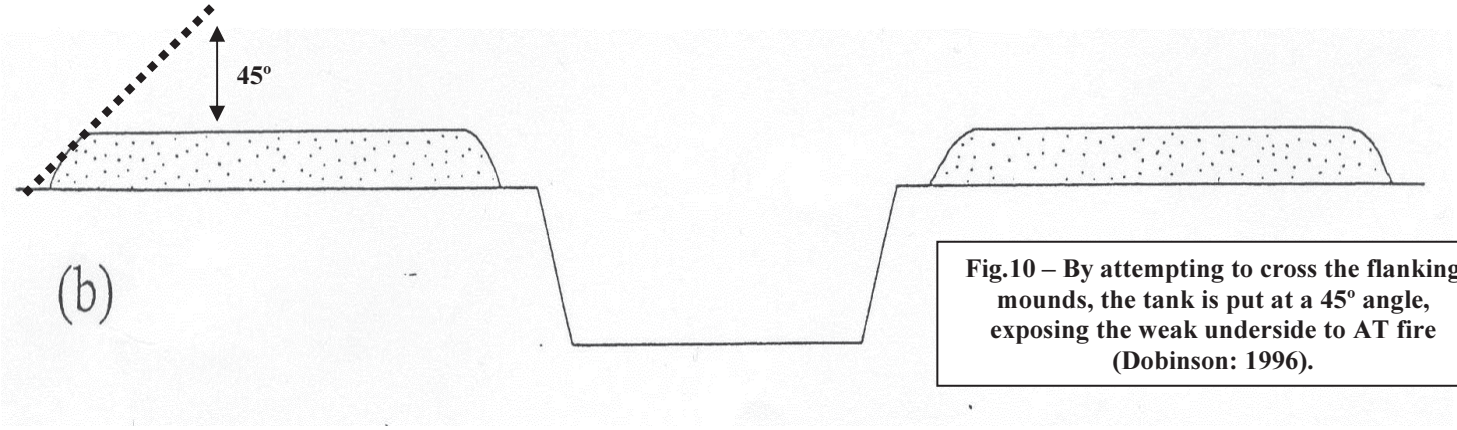


Fig.10 – By attempting to cross the flanking mounds, the tank is put at a 45º angle, exposing the weak underside to AT fire (Dobinson: 1996).

4.6.5.1 In addition, to provide the defenders with excellent fields of fire from both pillboxes as well as slit trenches that covered the area of the perceived enemy approach, the artificial AT ditch (both *one-way* and *two-way*) was excavated in a zig-zag pattern (Dobinson: 1996), affording a small section of infantry the ability to defend a wide area.

4.6.5.2 This relationship between the pillbox and the zig-zagging AT ditch is best seen using contemporary aerial photographic evidence, a notion used by Wills (1985) in **Fig.11**, where an aerial view of Crondall in Hampshire clearly demonstrates the 1940s defence works and the pillbox / AT ditch affinity.

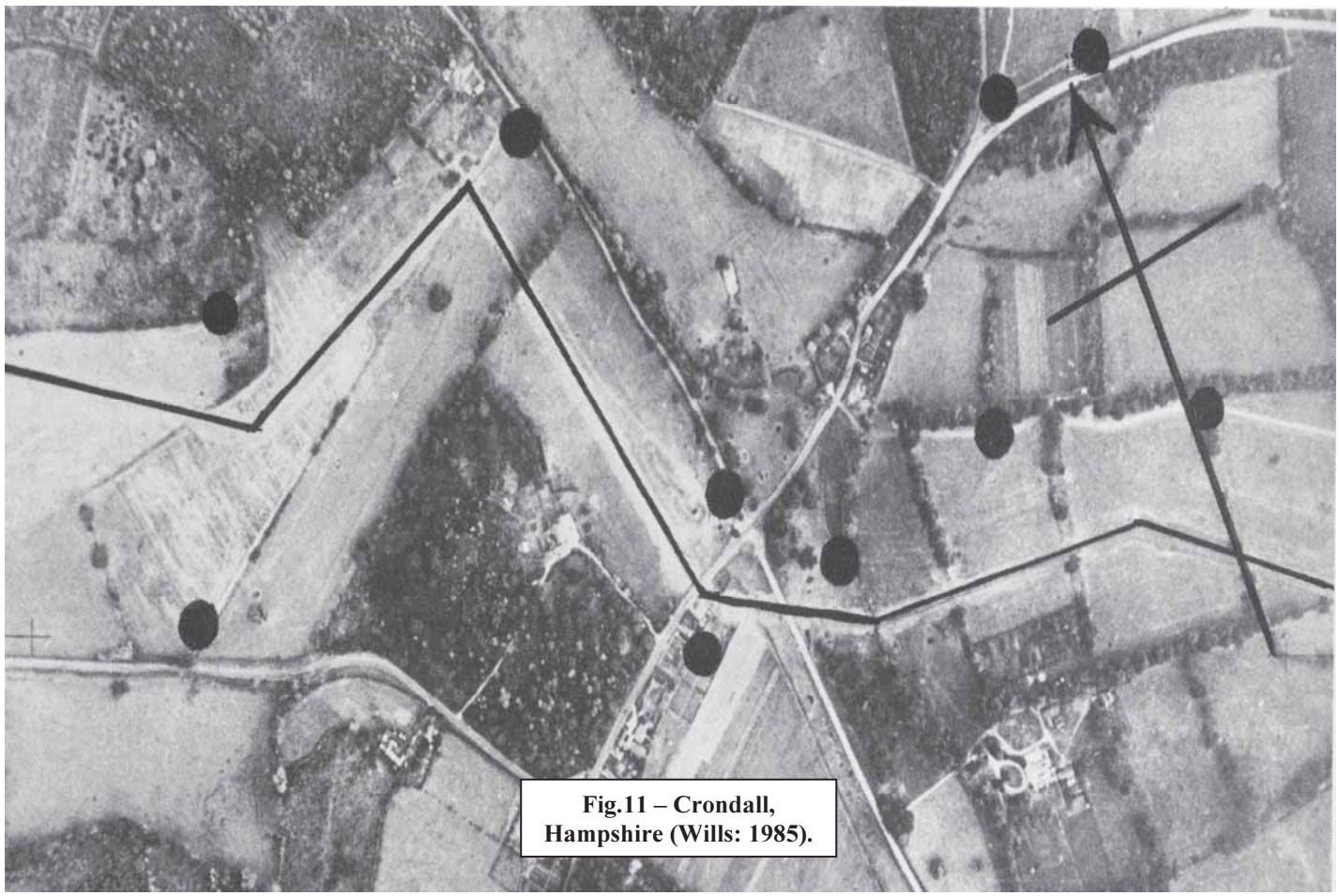


Fig.11 – Crondall, Hampshire (Wills: 1985).

4.6.5.3 An association clearly demonstrated in the 1940 defence works at the case study site of Hog Wood, Hinton Charterhouse, near Bath.

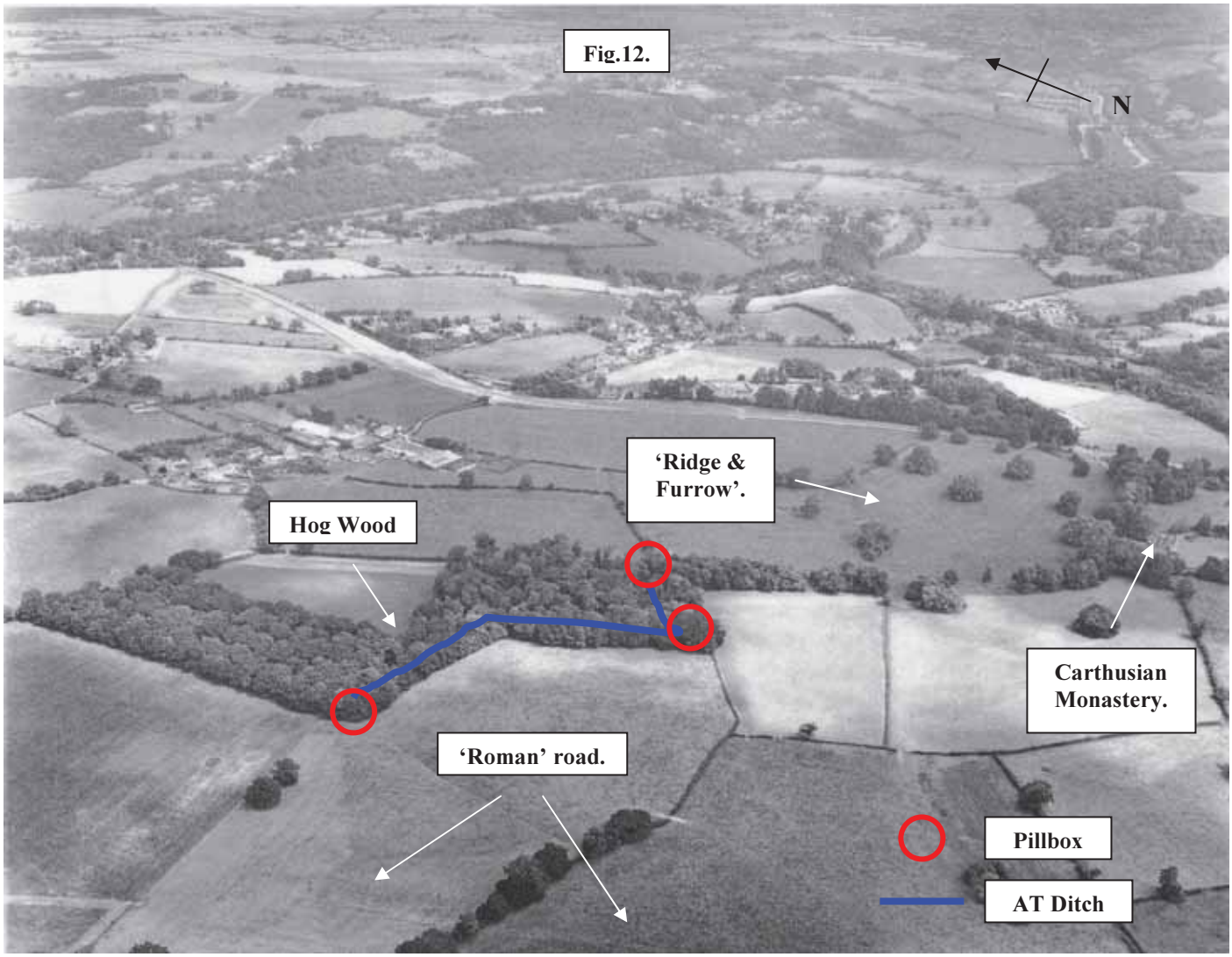
5 – AERIAL PHOTOGRAPHIC EVIDENCE.

5.1 A trawl of the Oblique Section of aerial photographs located at the NMR's Aerial Photographic Department in Swindon was undertaken in October 2004 by P.R.Rowe, whilst a request for print NLAP: 3G/TUD/UK/15/25 No: 5106 dated 14 Jan 46, as referred to in the RCHME report on The Carthusian Monastery (Appendix A), was requested from the NMR's Vertical Photographic Section in November 2004.

5.2 Intending to use the photographic evidence to both demonstrate the pillbox / AT ditch relationship as referred to by Wills (1985) previously, as well as enhance the B&NES SMR entry, the trawl of the oblique collection proved limited, with very few frames of the case study site being available.

5.3 Despite this limitation, two oblique examples of high quality, NMR 2133 No: 1102 dated 19 Jul 82 and NMR 15343 No: 30 dated 4 Aug 95, were chosen and reproduced with the kind courtesy of the English Heritage NMR, Swindon.

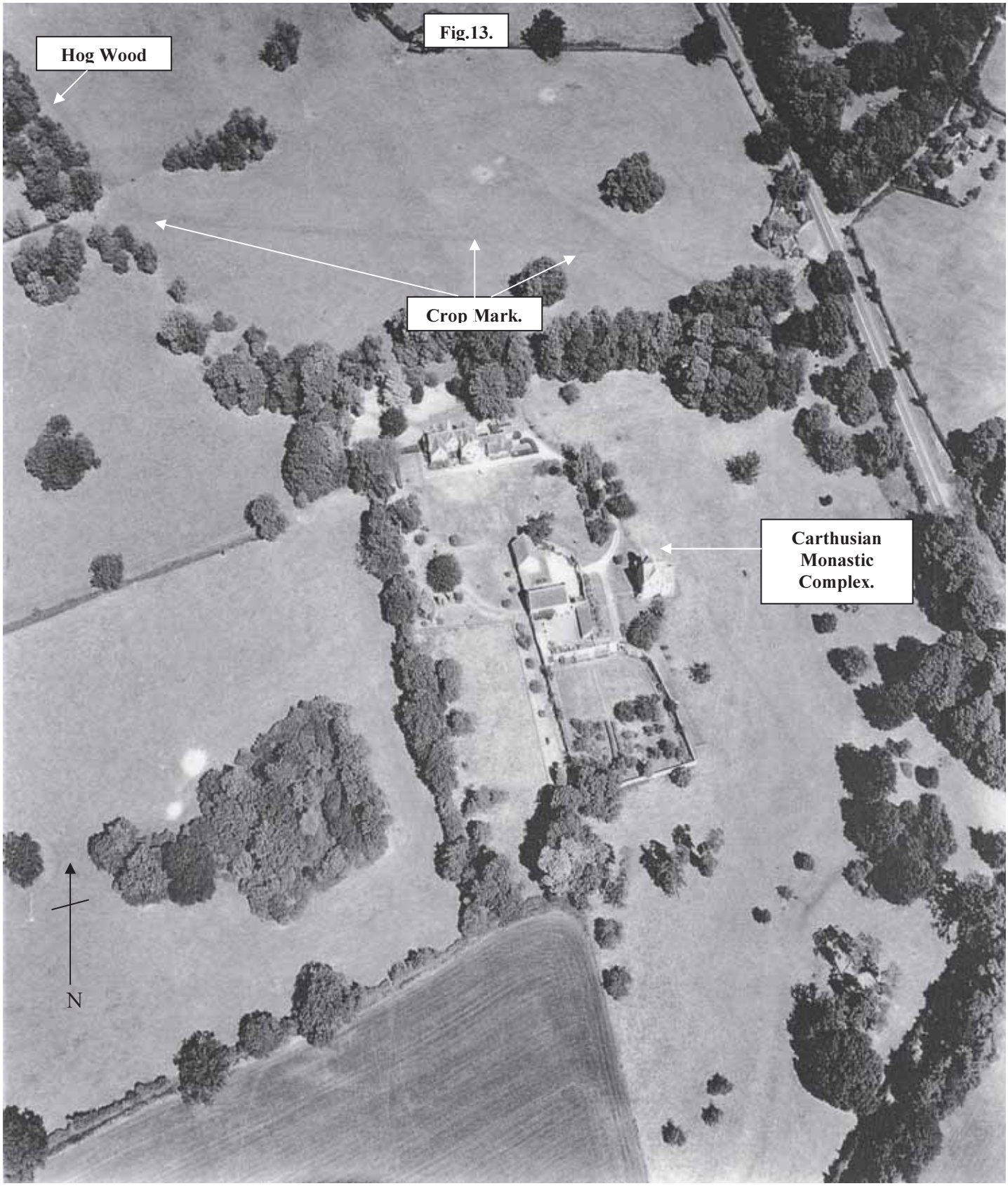
5.4 Frame NMR 2133 No: 1102 dated 19 Jul 1982 (**Fig.12**) clearly demonstrates the size, shape and dimensions of Hog Wood, with its commanding position upon the highest point evident when compared to the surrounding landscape.



NMR 2133 No: 1102 dated 19 Jul 1982 - © English Heritage NMR

5.5 Visible within this frame are various archaeological features (as identified in **Fig.12**), though interestingly the AT ditch cannot be seen, demonstrating the effectiveness of its camouflage from the air, afforded by it being placed within woods.

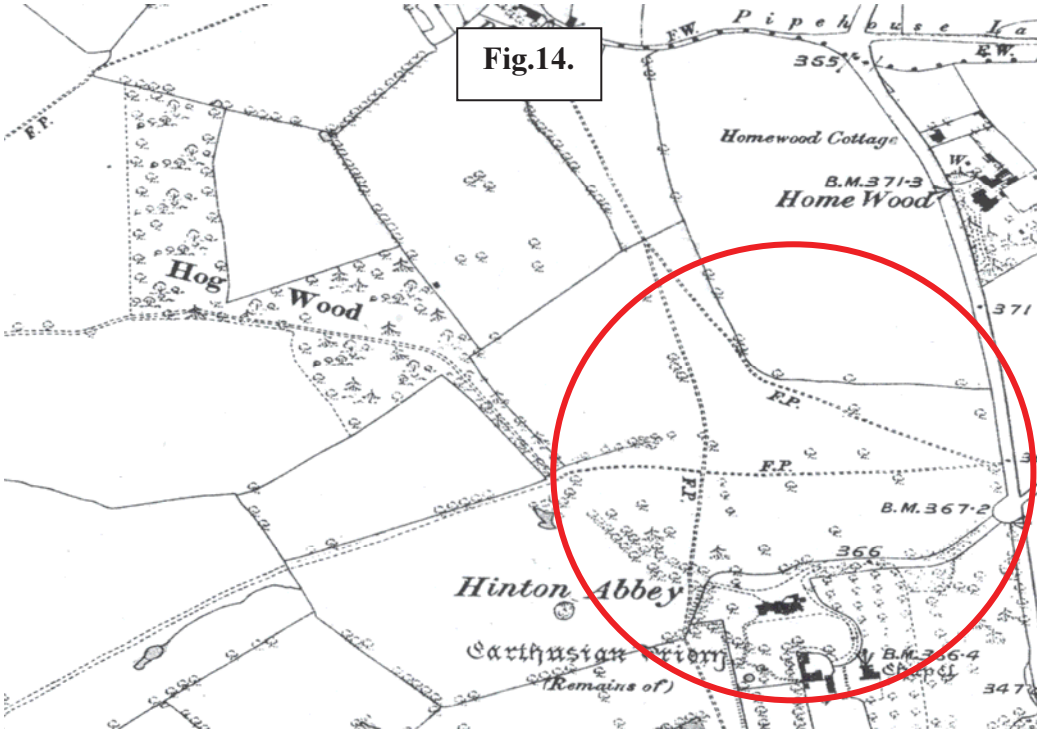
5.6 When studying frame NMR 15343 No: 30 dated 4 Aug 95, a photograph of the Carthusian Monastic complex, located in the top left of the frame can be seen the southeast corner of Hog wood with a clear crop mark running out easterly in a diagonal across the field to the A36 road (**Fig.13**).



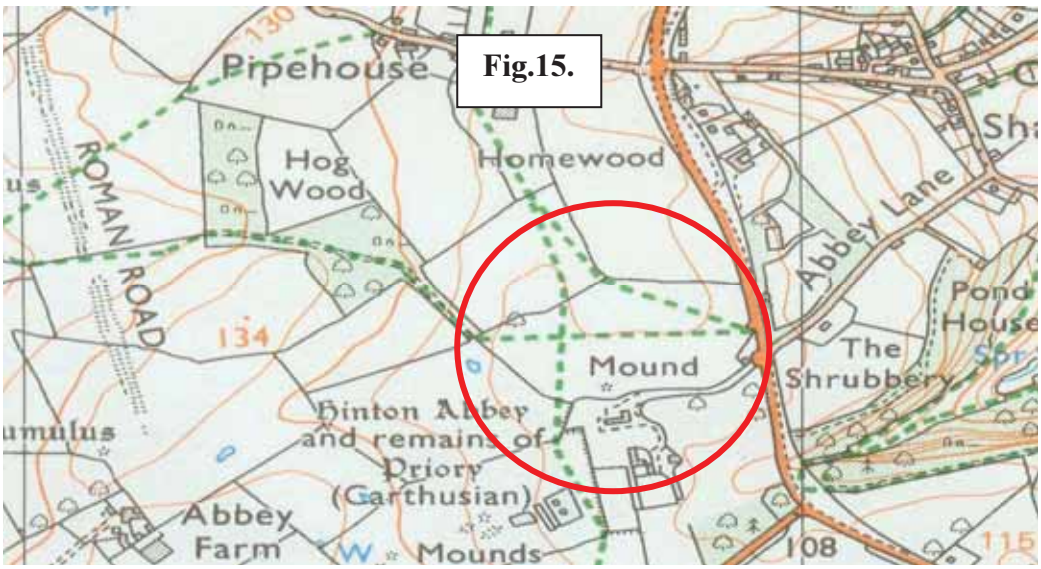
NMR 15343 No: 30 dated 4 Aug 95 © English Heritage NMR

5.7 Noted in the RCHME earthwork survey as being part of the AT ditch, the feature was duly recorded onto the B&NES SMR to this effect, though cartographic evidence did originally suggest an alternative notion.

5.8 Using the Ordnance Survey map of 1884 for the Hinton Charterhouse area (Scale 1:10000) (**Fig.14**), the location of the unidentified crop mark is clearly marked as a footpath, suggesting that possibly the feature seen in frame NMR 15343 No: 30 dated 4 Aug 95, is in fact a reminisce of said footpath and not a continuation of the AT ditch.



5.9 A discrepancy that can be seen to continue with modern Ordnance Survey maps (Scales 1:25000 (**Fig.15**) & 1:50000) clearly depicting a diagonal footpath running southeast from the corner of Hog Wood to the A36, though for some unknown reason omitted from the 1904,1932 and 1961 editions (Appendix E).



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5.10 Conclusion

5.10.1 This debate however can be concluded by viewing the vertical aerial photograph RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46 [1], taken in the immediate post-war period that clearly shows the location of the crop mark as a ditch (**Fig.16**).

5.10.2 With regard to the question of a pillbox / AT ditch affinity at Hog Wood, as **Fig.12** demonstrated, the siting of 3 pillboxes along the ditch line clearly suggesting a strategic relationship was employed, one that was widely used in the national defensive network of Great Britain in the early 1940s.

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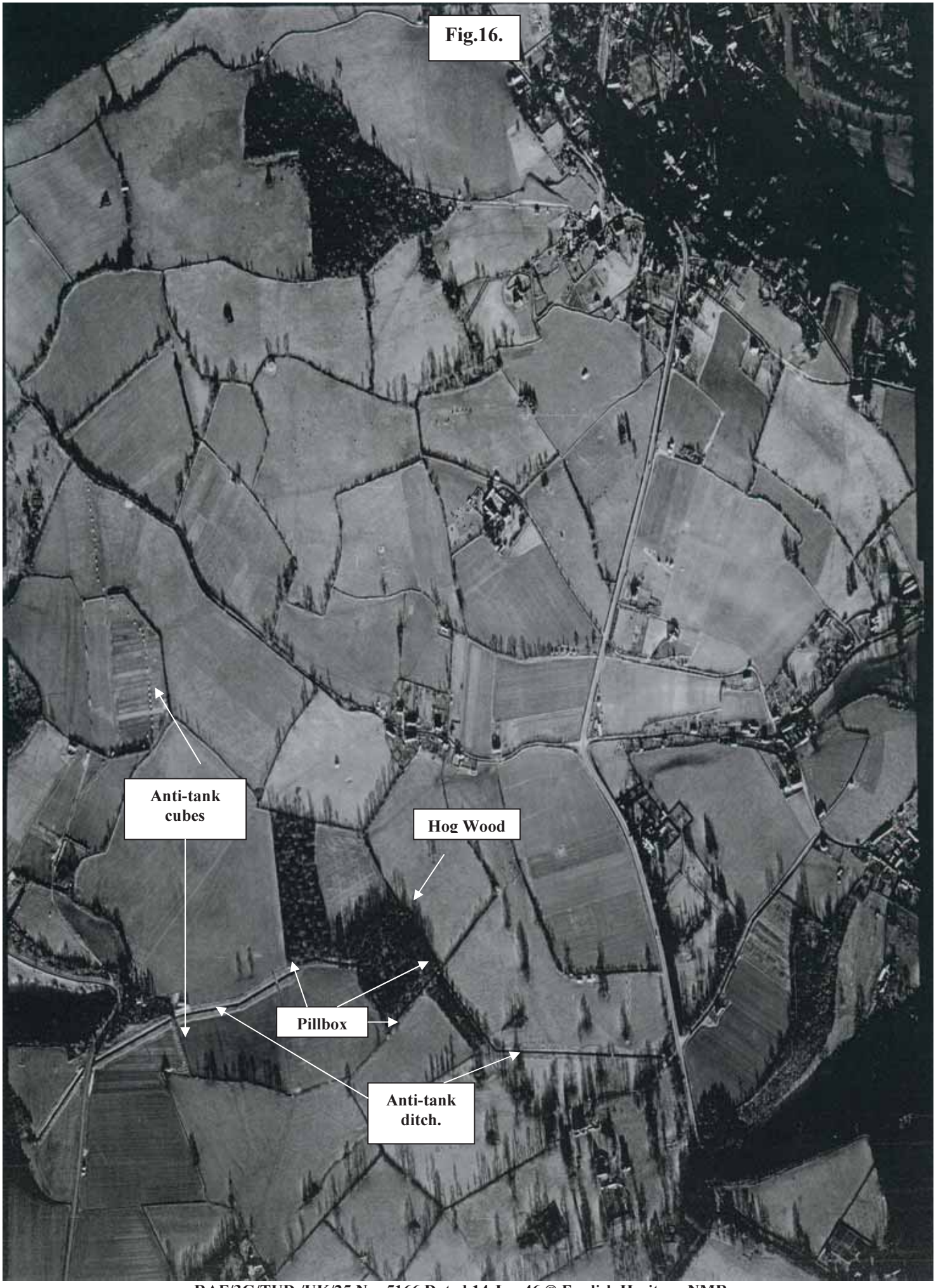
[1] The reference NLAP: 3G/TUD/UK/15/25 No: 5106 dated 14 Jan 46 stated in the RCHME report and the B&NES SMR is incorrect, with the correct one being RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46.



RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46 © English Heritage NMR

6 –GEOPHYSICAL SURVEY.

6.1 Although clearly depicted in the aerial photograph RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46 (**Fig.16 – Previous**), in order to substantiate the ditch continuation notion a detailed geophysical survey of a field to the southeast of Hog Wood was undertaken in October 2004.

6.2 Working on the principle that iron particles contained within soil align themselves upon magnetic north, creating in turn weak permanent magnets, then disturbed soil as found in a ditch would have mixed alignments, creating as a result magnetic anomalies.

6.3 Using a hand-held Geoscan Fluxgate Gradiometer FM256 that comprises of two fluxgates mounted vertically apart; the Gradiometer was used to measure (in nanoTesla (nT)) the differences, if any, in the magnetic field between the two fluxgates, when passed across the field.

6.4 Surveying a total of eight 20m x 20m grids that had been laid out in a vertical pattern running approximately northwest to southeast (**Fig.17**), 10m east / 30m south of Hog Wood, the resulting findings of the survey were subsequently processed using Geoplot v.3.0 (**Fig.18A / B**).

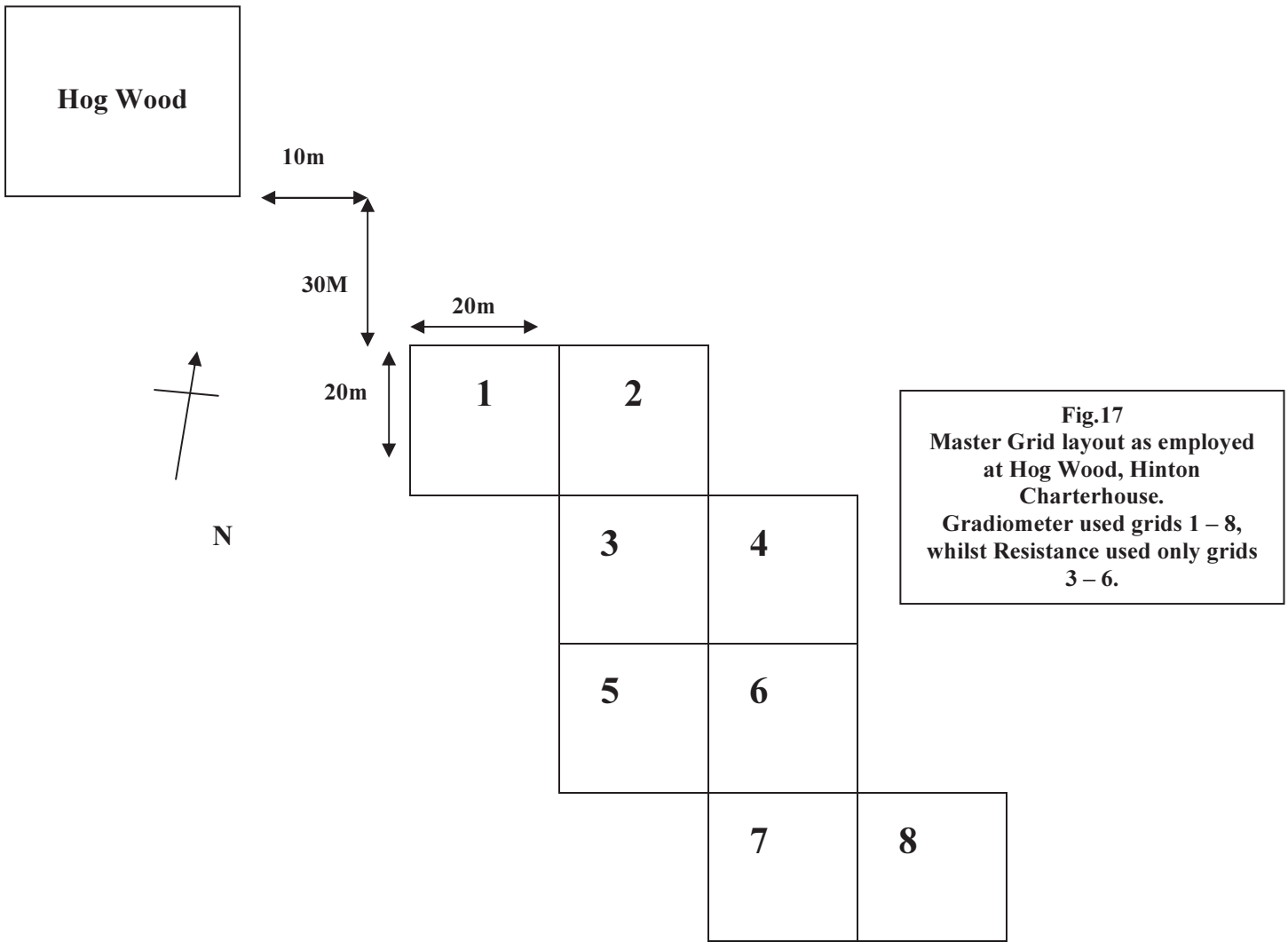


Fig.17
Master Grid layout as employed at Hog Wood, Hinton Charterhouse.
Gradiometer used grids 1 – 8, whilst Resistance used only grids 3 – 6.

6.5 To support the Gradiometer readings, a Resistance Meter RM15 was additionally employed on site, surveying as a result the four middle grids (3–6). Taking measurements in Ohms, the RM15 records the resistance posed to an electric current that has been passed between two mobile probes in comparison to two remote (static) probes that measure background variations (**Fig.19A / B**).

6.6 In the case of a ditch, the disturbed soil having fragmented edges attracts more moisture, thus allowing an electric current to pass easier through it, resulting in a lower Ohm reading when compared to the constant background reading.

6.7 Conclusion

6.7.1 The geophysical survey results, as verified by Dr.C.Gaffney (pers.con), supports the notion that the feature shown in frame NMR 15343 No: 30 dated 4 Aug 95, is indeed a ditch and not a footpath, though the ditch when excavated could have followed a previous footpath.

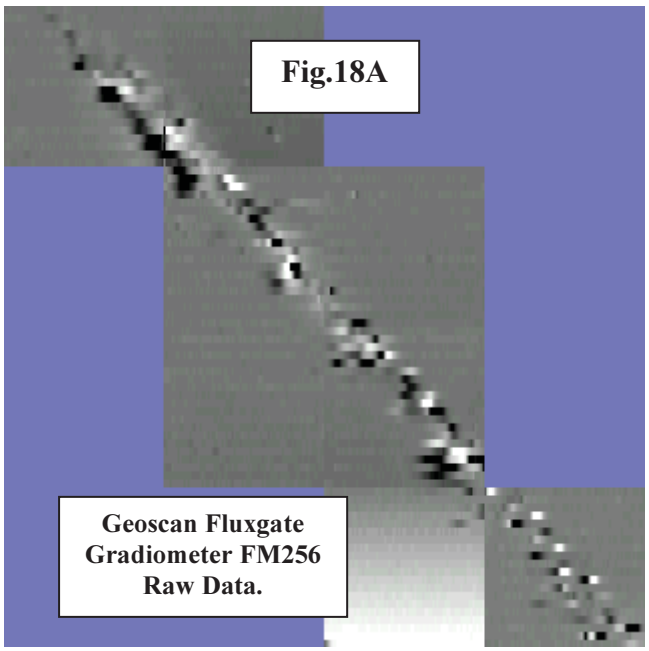


Fig.18A
Geoscan Fluxgate Gradiometer FM256 Raw Data.

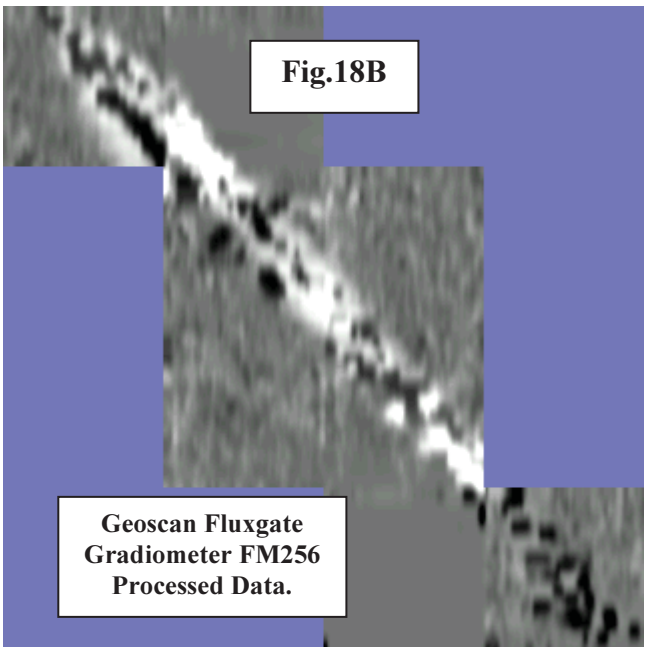


Fig.18B
Geoscan Fluxgate Gradiometer FM256 Processed Data.

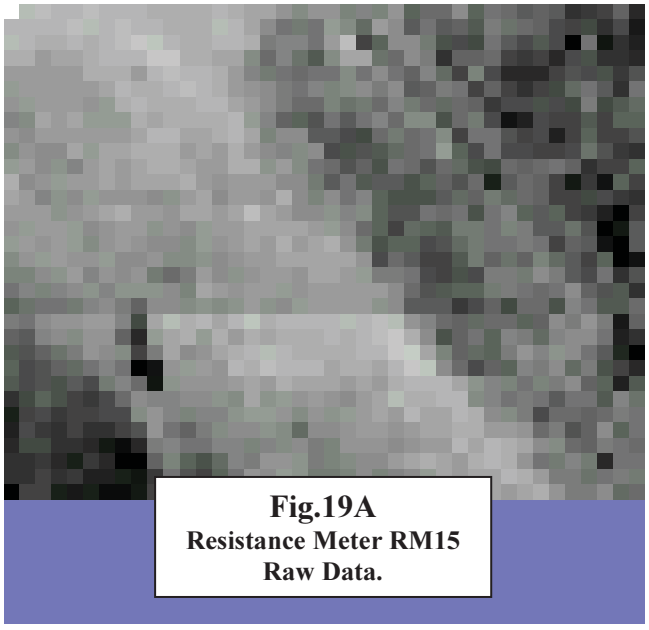


Fig.19A
Resistance Meter RM15 Raw Data.

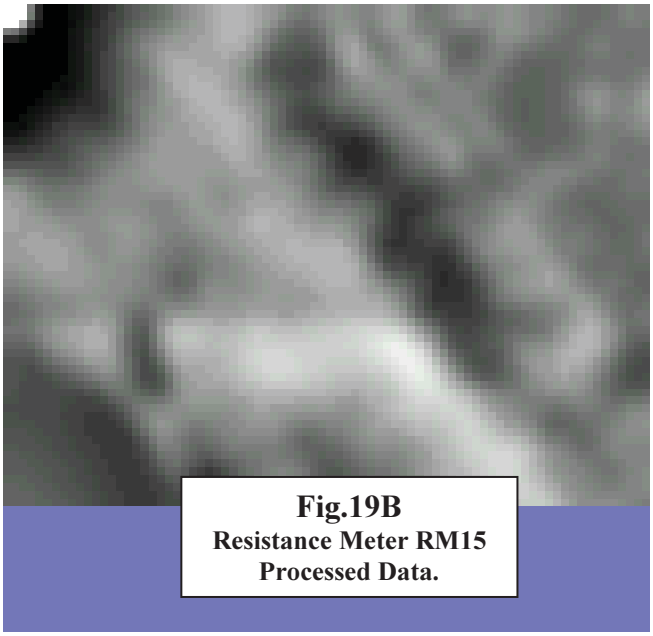


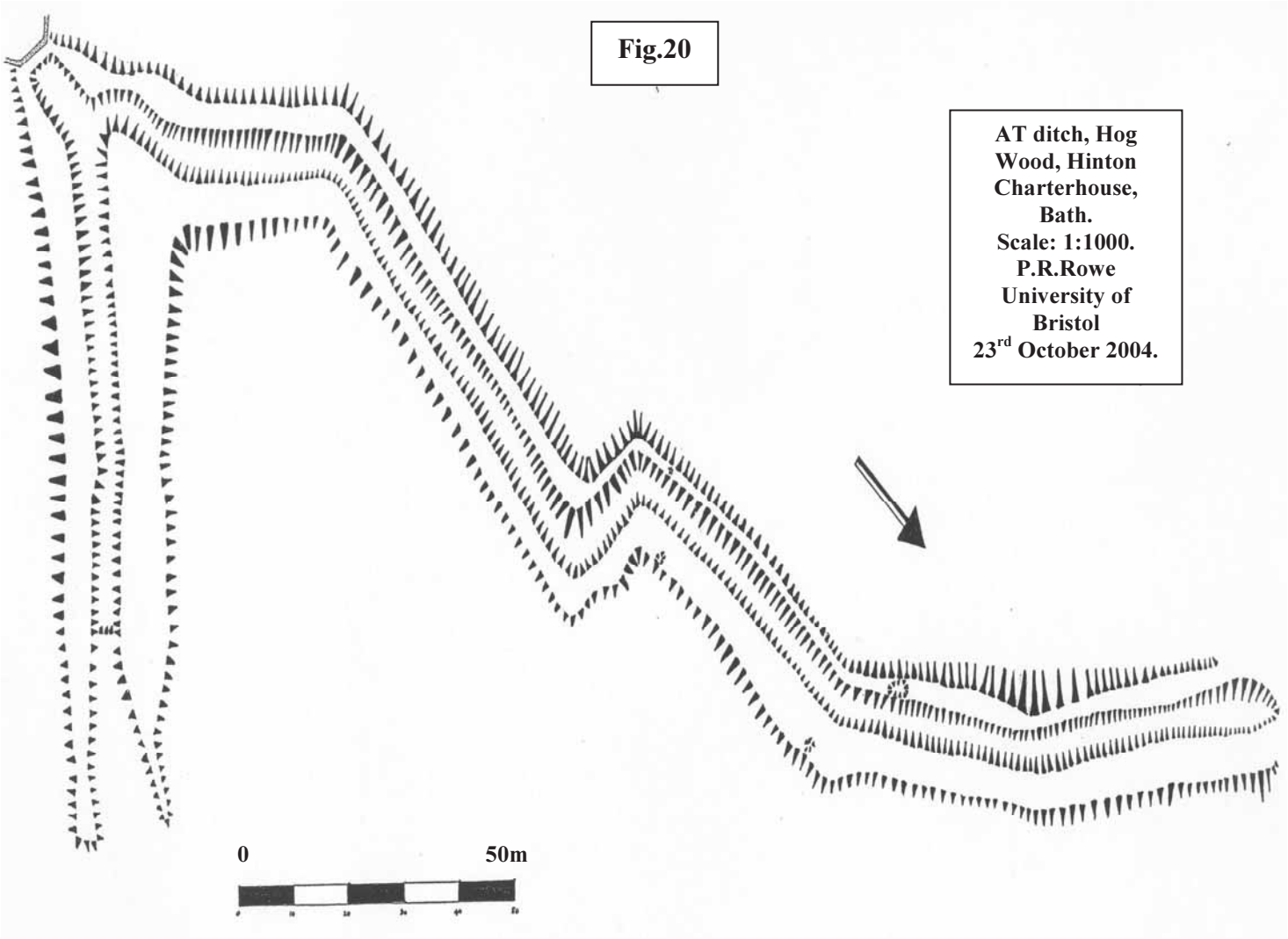
Fig.19B
Resistance Meter RM15 Processed Data.

7 – EARTHWORK SURVEY.

7.1 Anti-Tank Ditch

7.1.1 Situated at a naturally high point in the landscape where the topography of the plateau begins to narrow northwards towards Bath, *c*.1.25km north of the village of Hinton Charterhouse. The surviving anti-tank earthwork can be seen located in the southern part of an irregularly shaped copse known as Hog Wood.

7.1.2 Totalling *c*.350m in length, a measured 1:1000 scale earthwork survey using an Electronic Total Station (GTS–210 Series) instrument and taped offsets from a control framework of eight points, was completed in October 2004, with the resulting plan **Fig.20**.



7.1.3 Clearly seen to zig-zag into Hog Wood on the 1946 aerial photograph (RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46)(**Fig.16 – Previous**), the AT ditch continues along the southern edge of Hog Wood, making seven changes of direction in the process, the smallest being only 15m and the longest directional change being *c*.100m (**Fig.21**).

7.1.4 Flanked on BOTH sides by a small embankment that measures approximately 0.5m in height, the average width of the AT earthwork is *c*.5m at the top / *c*.2.5m at the base and *c*.2.5 - 3m deep (**Fig. 22 / 23**). Measurements / construction style contemporary with those seen associated with the flat-bottomed *two-way* Anti-tank ditch.

7.2 Miscellaneous Earthworks

7.2.1 Found associated with the AT ditch were three Type 22 (FW3/22) pillboxes (Ruddy: 2003) (**Fig.24**) located at strategic positions along the ditch, and two crennalated infantry slit trenches (one parallel to pillbox c and one running in a diagonal direction along the southeast section of Hog Wood (**Fig.25**).

Fig.21

The zig-zag pattern of the AT ditch, as viewed from a pillbox (Author).

Fig.22

Top of the AT ditch bank (Author).

Fig.23

AT ditch bottom (Author).

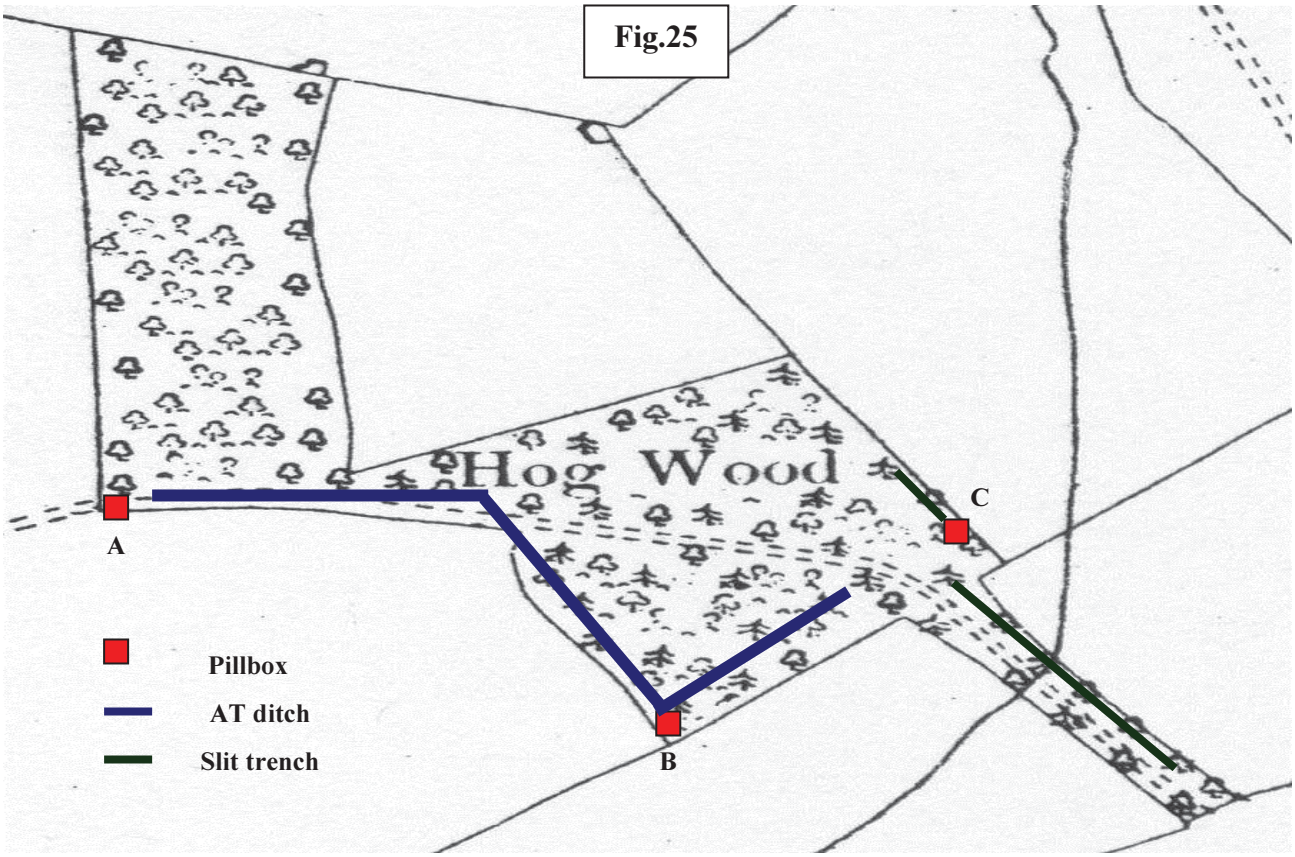


Fig.25

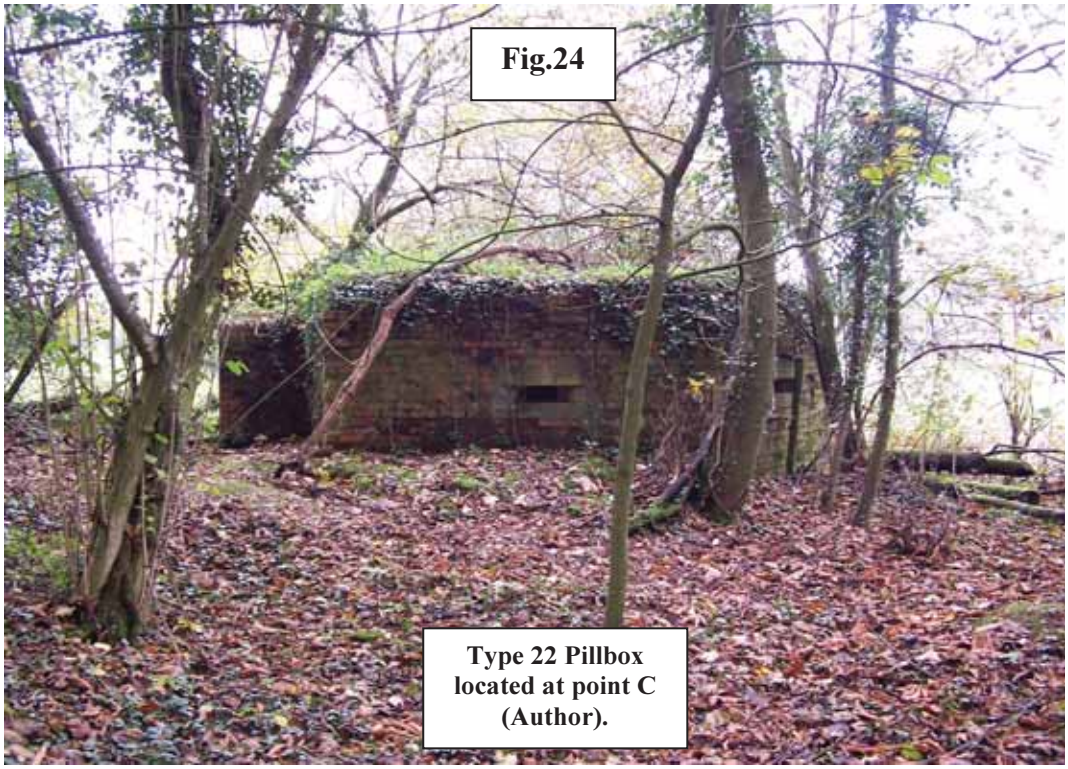


Fig.24

Type 22 Pillbox located at point C (Author).

7.2.2 In addition, located in a field southeast of Hog Wood can be seen a shallow linear hollow that runs in a diagonal line for *c.*69.20m towards the gate lodge house that is situated on the A36.

7.2.3 Elevated *c.*99m above sea level [1], the hollow, *c*.3.63m wide and flanked on either side by a small embankment (< 0.15m in height) (**Fig.26**), was originally recorded during the 1995 RCHME survey and is the backfilled remnants of the AT ditch that originally continued out of Hog Wood, linking Wellow Brook with the A36 (as identified in Section 5) [2].

7.2.5 Supported by aerial photograph RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46 (**Fig.27**), a further zig-zag infantry slit trench that runs for *c*.100m can be seen situated to the east of the AT ditch continuation, *c*.60-70m from the A36.

7.3 Conclusion

7.3.1 With the earthwork dimensions being *c.*5m at the top / *c*.2.5m at the base and *c*.2.5 - 3m deep, the ditch, flanked on BOTH sides by a small embankment measuring *c*.0.5m in height, is contemporary in measurements / construction style with those associated with the flat-bottomed *two-way* Anti-tank ditch.

7.3.2 Supported by a network of crennalated infantry slit trenches, the miscellaneous earthworks that have been detailed, though briefly mentioned in the 1995 RCHME report, have had, to date, no detailed surveys conducted upon them, making this area ideal for further archaeological investigation.

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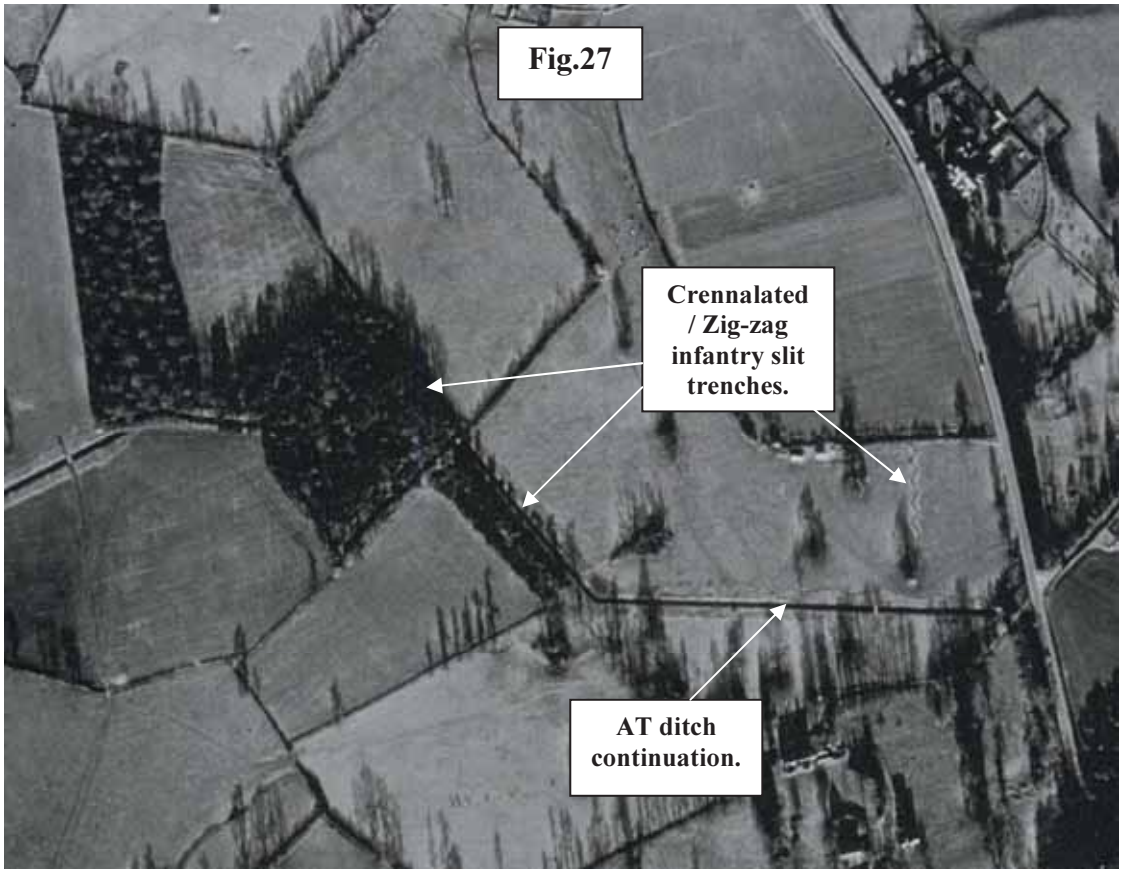
[1] Information obtained using a handheld Garmin *Etrex* 12 Channel GPS system (accuracy to 5m).

[2] Aerial Photographic Evidence – AT ditch continuation identified initially from crop mark in NMR 15343 No: 30 dated 4 Aug 95, before being confirmed in RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46.

Fig.26
Shallow hollow southeast of Hog Wood depicting the continued line of the AT ditch (Author).



RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46 © English Heritage NMR

8 – SUMMARY AND CONCLUSIONS.

8.1 Originally recorded in a 1995 RCHME survey of the nearby Carthusian Monastic complex, the exact extent of the anti-tank ditch sited within Hog Wood had not been fully documented, with publications and references to the ditch being limited in numbers.

8.2 Reviewing the available aerial photographic as well as cartographic evidence together, initial questions posed with regard to the extent and location of the anti-tank ditch was soon resolved, with the continuation of the anti-tank ditch from Hog Wood to the A36 being confirmed on the vertical aerial photograph RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46.

8.3 Concluding that the location of a diagonal crop mark seen on aerial photograph NMR 15343 No: 30 dated 4 Aug 95 was a ditch and not a footpath, in order to substantiate this notion further, a geophysical survey was conducted on part of the site.

8.4 Using a fluxgate gradiometer FM256 and a resistance meter RM15, a geophysical survey of the site verified that the ditch did continue, running in a diagonal south-easterly direction from the southern end of Hog Wood, towards the A36 main road.

8.5 Linking this to the surviving section of AT ditch within Hog Wood, a measured survey of the earthwork was completed using an Electronic Total Station (GTS–210 Series) instrument and taped offsets from a control framework of eight points.

8.6 Revealing average dimensions of *c.*5m at the top / *c*.2.5m at the base and *c*.2.5 - 3m deep, the ditch, flanked on BOTH sides by a small embankment that measures *c*.0.5m in height, is contemporary in measurements and construction style with those associated with the flat-bottomed *two-way* Anti-tank ditch.

8.7 Supported by a network of both pillboxes and zig-zag / crennalated infantry slit trenches, the notion of a pillbox / AT ditch affinity as suggested by Wills (1985) is clearly evident at Hog Wood, with the siting of the three pillboxes and two slit trenches along the ditch line clearly demonstrating a strategic relationship being employed.

8.8 With the miscellaneous earthworks detailed in this report, though briefly mentioned in the RCHME report, not surveyed and with such limited documentary evidence available, further archaeological investigation, in my opinion, is needed, with more detailed research into the national defensive network of Great Britain during the early 1940s, a priority.

8.9 With this in mind, in order to gain a better understanding of the defensive structure that was set up in Great Britain during WWII and in particular, on a local level, *Stop Line Green,* it is this reports recommendation that the enhanced Sites and Monuments Record (as contained in Section 9) is adopted and entered.

9 – ENHANCED SITES AND MONUMENTS RECORD.

9.1 Bath and North East Somerset Council Monument Full Report

SMR Number	Site Name	Record Type
BN11296-MBN11296	Anti tank ditch	Monument

Anti-tank ditch that formed part of the GHQ Stop Line '*Green*' anti-invasion defence of WWII.

Monument Types and Dates
ARTIFICIAL ANTI-TANK DITCH (World War II –1939 AD to 1945 AD)

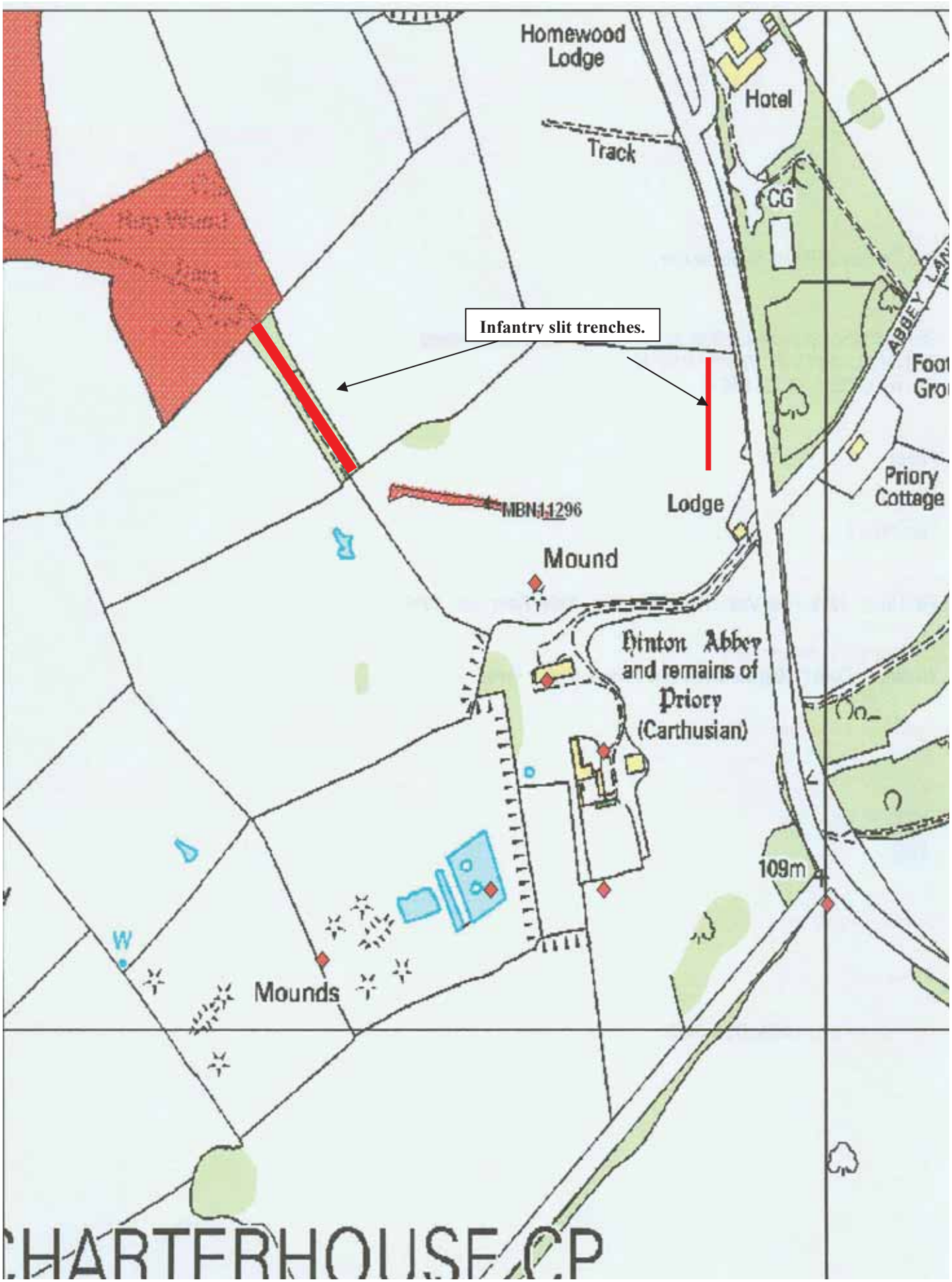
Description and Sources
Description
Extending originally from Wellow Brook to the A36 as part of the World War II *Stop Line Green* anti-invasion defence, a remaining section of an artificial anti-tank (AT) ditch can be seen cutting through Hog Wood in a zig-zag pattern.
Stretching for 350m, the construction of the AT ditch is contemporary with that of a flat bottomed *two-way* AT ditch and was intended to be used in areas where the advance of attack could perceivably come from either direction.
Believed constructed late 1940, the line of the AT ditch can be followed out of Hog Wood in a south-easterly direction to the A36, though all that remains is a shallow hollow way.
Defensive features associated with the ditch include three Type 22 pillboxes and two crennalated / zig-zag trenches located within Hog Wood, as well as a zig-zag trench at ST779595.

Sources

(1) Unpublished document: Archaeological Survey of a WWII Anti-tank ditch, Hinton Charterhouse, Bath – P.R.Rowe, University of Bristol: Jan 2005.

Location
National Grid Reference
ST 773 596 to ST 775 594

Administrative Areas
Civil Parish Hinton Charterhouse, Bath & North East Somerset
Address/Historic Names – None recorded
Designations, Statuses and Associated Legal Designations – None recorded
Other Statuses and Cross-References – None recorded
Ratings and Scorings – None recorded
Land Use
Associated Historic Landscape Character Records – None recorded
Other Land Classes – None recorded
Related Monuments – None Recorded
Finds – None recorded
Associated Events/Activities – None recorded
Associated Individuals/Organisations – None recorded


Homewood Lodge
Hotel
Track
CG
Infantry slit trenches.
Priory Cottage
MBN11296
Lodge
Mound
Hinton Abbey and remains of Priory (Carthusian)
109m
Mounds
CHARTERHOUSE C.P

10 – BIBLIOGRAPHY AND REFERENCES.

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Bath and North East Somerset Council – *SMR Record BN11296 – MBN11296*

© **Crown Copyright** Ordnance Survey Maps.

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© **English Heritage NMR – Aerial Photographs -** RAF/3G/TUD /UK/25 No: 5166 Dated 14 Jan 46, NMR 2133 No: 1102 dated 19 Jul 82 and NMR 15343 No: 30 dated 4 Aug 95.

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Personal Communication – Dr.C Gaffney, GSB Prospection **–** 6th Dec 2004**.**

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11 – APPENDICES.

11.1 A) RCHME Report – The Carthusian Monastery at Hinton Charterhouse – 1996.

Summary

The Carthusian charterhouse at Hinton was founded by Ela, Countess of Salisbury in 1227, forty-nine years after the foundation of the first Carthusian house in England, at Witham. Following the dissolution of the priory in 1539 most of the buildings, apart from the chapter house and refectory, were destroyed. A manor house was built in the late 16th century on the site and incorporates pan of the monastic guest-house. Since the Dissolution the estate operated as a farm until the early 19th century when this was moved to a new location; an attempt was then made to construct a rather modest pleasure garden.

The remains of relatively well-preserved earthworks of the monastic cloister and monks' cells lie to the south of the chapter house and refectory, within an area that has been an orchard since at least the late 18th century. Other earthworks within the surveyed area include fish ponds, which were possibly monastic in origin but were later adapted as ornamental ponds; pillow mounds; landscape park features such as tree mounds; and a Second World War antitank ditch.

Introduction

The site of the Carthusian charterhouse at Hinton (ST75NE2), centred at ST777591, was surveyed by Royal Commission on the Historical Monuments of England (RCHME) in May 1995. The survey forms one element of a collaborative project with English Heritage and the University of Bristol on the Carthusian Monasteries in England and Ireland. A geophysical survey was also undertaken at this time by Geophysical Surveys of Bradford within the presumed area of the monastic precinct.

Historical Background

The Carthusians followed a hermit-like existence and their monasteries reflected their desire for an ascetic life of contemplation and solitude. The monasteries were designed for a small congregation and as a consequence their communal buildings were small. The early monasteries were in isolated rural locations, although some of the later English charterhouses, such as those at Hull, Coventry and London, were in urban areas. As well as having granges for their support they also had "lower" houses, or correries, for the lay brethren. In England there were only two houses where it can be shown that the priory and correrie were in separate locations: Witham and Hinton, although there may have been others (Aston 1993, 147); at all the other monasteries the lower and upper house were together. In order to maintain solitude each monk lived in his own small house with an enclosed garden at the rear. These small houses, or cells, were arranged around three sides of a rectangular cloister, with the communal buildings such as the refectory, chapter house and church, positioned on the fourth side.

The second English charterhouse was established at Hatherop (Glos.) in 1222 by William Longespee, a son of Henry II and the husband of Ela, Countess of Salisbury. This foundation, however, did not succeed, and on the death of Longespee in 1226 the monks appealed to Ela since they felt that the site and endowments were insufficient for their needs. The charterhouse was consequently moved to Hinton in 1227 and the endowments increased by conferring to the monks the manors of Hinton and Norton. The site chosen for the priory was within a deer park, thus the monks were able to maintain their life of relative isolation and solitude. Henry III confirmed the grant of Norton and Hinton to the Carthusians in 1228 and in 1232 the monastery was completed and dedicated to St. John the Baptist and All Saints (Dugdale 1830, 4). A correrie for the lay brothers was probably established at this time about a mile away on the west bank of the river Frome at the hamlet of Friary (ST75NE41).

Throughout the 13th and 14th centuries there were further gifts and endowments, principally in the surrounding area, together with the advowsons of the churches at Norton and Hinton. The Carthusian desire for solitude and a life of prayer seems, however, at variance with some of the grants, for example, in 1254 Henry 111 granted the monks the right to hold a fair at Norton; controversy surrounded this decision since it affected the

neighbouring fairs at Bath and Bristol, nevertheless the fair continued until 1345 (Hogg 1975, 22). A grant of free warren was also conferred on the monks in their manors of Hinton and Norton by Henry V.

Following the final seizure of the remaining alien cells and priories in 1414 their revenues were given to the new colleges, such as Eton and the new religious houses, such as the Carthusians (Knowles 1971, 43). In 1529 the monks at Hinton were the beneficiaries of one of these grants when the alien Augustinian priory of St Radegund at Langelete (Longleat, Wilts) was confiscated and given to the monks.

The dissolution of the monasteries was initiated by the Act of Succession and the Act of Supremacy in 1533-34. No sooner had the Act of Suppression of the Smaller monasteries been passed than a number of requests were made to Cromwell from the local gentry, and others, for their estates. Since the endowments of Hinton were greater than £200 a year, the priory escaped the first confiscations in 1536. Sir Walter Hungerford, however, become steward of all their lands, and an application was also received in 1537 from Sir Henry Longe, the Sheriff of Wiltshire and the king's commissioner for Wiltshire, for the chance of taking the estates on a fee-farm rent (Scott Holmes 1969, 121).

In January 1539 the commissioners for the West Country, Dr. John Tregonwell and Dr. William Petre, arrived at Hinton to confiscate the monk's property; however, the monks refused to surrender and it was not until 31 March that the prior, Edmund Hord, together with sixteen monks and five lay- brothers, signed the Act of Surrender and the monastery was finally dissolved. At this time the annual value of the priory amounted to £262 13s. The pensions granted to the monks shows that whilst the prior received the most, two of the 16 monks received nearly £2 more than the others. A further individual received just over half the pension of the lay-brothers (Hogg 1975, LXIV).

Following the surrender, the priory estates were allocated to several purchasers between 1539-1546. The site of the charterhouse was first sold to Sir Walter Hungerford of nearby Farleigh Hungerford for 21 years (Collinson 1791). However, Sir Thomas Arundel, an Augmentations Receiver, caused considerable damage to the church and other monastic buildings during Hungerford's brief absence (Scott Holmes, 1969, 122) and thereafter the buildings appear to have rapidly decayed.

Sir Walter Hungerford's tenure of Hinton Charterhouse was short-lived since he was beheaded the following year and the property reverted to the crown. Henry Longe then acquired a lease on the priory site in 1540 (BL. Add MSS 15,561 f.15). The priory estate was granted to John Bartlett in 1546, however, he appears to have been a mere speculator, since it was soon sold to the Matthew Colthurst, (Hogg 1975, LXIX) one of the Auditors during the Dissolution. An insight into the landscape around Hinton at this time can be gained from Leland's laconic description in his *Itinerary*, the area was clearly well wooded and he describes Hinton Grange, 900 metres south of the priory, as "*great and welle buildid, that longid to Hinton-priorie of Chartusians. This priory stondith not far of from the graunge*" (Toulmin Smith 1964, fo.34), the lack of any description of the priory perhaps implies that it was far less impressive. The estate remained in the Colthurst family until 1578 when Edmund Colthurst sold it to Sir Edward Hungerford (Hogg 1975, Plxix). Hogg ascribes the building of the manor house at the priory to Lord Hungerford (ibid). This view is also supported by a rent roll dated 26 April L582 when Henry Story held from Lord Hungerford "*the mansion house with backside, pidgeon house, garden and orchard thereto adjoining in all estimated 4 acres which is a fair house for a gentleman to dwell in all covered with slate with court, gardens and orchard very orderly and is enclosed with a stone wall…with fish ponds and fishes with free access*" (WRO 442/1). In 1616 the manor was granted to Prince Charles, the future King Charles 1. It came into the Hungerford possession 1660.

The Hungerford's retained the estate until 1684 when Mr Henry Baynton of Spye Park (Wilts) bought a number of their estates including Norton, Hinton and Hinton Abbey (SRO. DD/ML 2). An indenture of 1686 granted to Henry Baynton " *all the capital messuage and farm normally called or known by the name of the priory or abbey of Hinton"* (ibid). At the beginning of the 18th century the estate was sold to Walter Robinson whose family retained it for nearly 230 years. In 1743 there was a lease between Stocker Robinson and William Smith for "*the house called the Dairy House, with garden and orchard thereto adjoining and another garden called the Potato Garden the Mow barton the ox stall the stable the wainhouse adjoining two pigsties the upper part of thye chapel……"* (SRO DD/FL 4). Thirty eight years later, on the death of Stocker Robinson, the property descended through the female line. Captain Symonds, the husband of one of the heirs,

carried out considerable alterations to the house and estate, probably between 1820 and 1830 (SLL). In 1933 Major P Fletcher, who was responsible for the archaeological excavations in the 1950s, bought the whole estate.

Archaeological and Architectural Background

(*The letters and numbers in brackets refer to letters on the survey plan*).
The only archaeological excavations of the priory were undertaken by Major P Fletcher and his sons between 1950-1959 (Fletcher 1951 & 1959). The method of excavation involved digging a trench along the line of walling; very little area excavation appears to have been undertaken apart from within a few cells and the area of the Little Cloister. Further work was carried out in the 1960's, although the results of these investigations have yet to be published. Excavation notes, plans and photographs are held at the Somerset Local History Library (SLL) in Taunton.

The excavations revealed the layout of most of the priory and sections of a precinct boundary wall. The church, located on the north side of the chapter-house, was 96ft. (29.3m) long and 26ft." (7.9m) wide internally. It was probably a five-bay structure with five long narrow windows, each with a single lancet. The walls of the church were 4ft. (1.4m) thick resting on foundations 6ft. (1.8m) thick.

The Little Cloister, and what is thought to be the kitchen, were located to the west of the chapter house. The cloister had a tiled pentice walk 8ft (2.4m) wide. Between the Little Cloister and the refectory was also a passage to the Great Cloister. The kitchen lay to the east of the refectory and contained a hearth.

Surrounding the Great Cloister were fourteen cells. On the northern side a roofed cloister alley 20ft. (6.1m) wide was revealed. Each cell measured c3½ ²ft. (9.6 ²m) and consisted of a large room C20²ft. (6.1²m) with a hearth and an L-shaped area around two sides, possibly with a pentice roof. A doorway led to the monk's garden. The cell entrances leading to the cloister alley were all found, except on the south side where the area had been disturbed during the erection of the modern garden wall. At the northeast corner of the Great Cloister was a passage, which was thought possibly to have been used by the lay brothers. A fifteenth cell was also excavated to the west of the refectory.

Although there were clear indications of post-Dissolution activity within the monk's cells, the excavation plan ignores this evidence and very little regard is given to this period in the excavation notes and report; instead Fletcher is content to record only the monastic features. This view is supported by a letter in 1956 when he says that "*I do not propose to put in all the detail as it is all very vague and I am convinced is post monastic* ……." (SLL. 1). Nevertheless, from the limited information available, it is clear that some of the cells on the west side had been converted to sheep pens or cattle sheds by blocking up doorways on the cloister alley side and removing the opposite ends of the cells; in cell 11 a probable cattle trough was also found.

Sections of a precinct boundary wall were found in places on all four sides of the monastery, although the location is not recorded. The boundary lay between 50-60 ft (16.8-18.4m) from the back of the monk's garden wall and was c2½ft. thick (although in his first report Fletcher records the boundary wall at 105ft from the garden wall (1951, 162)). The best-preserved portion appeared to be on the west side.

Further excavations, for which only the notes survive, were carried out to the north of the Church. At (a) an area 6x1 Oft (1.8x3m) revealed a wall composed of large, roughly shaped stones varying in size but with clear traces of mortar. The wall turned at right angles along a NS/EW axis. A drain was also found below the wall. This detail accords with the earthwork and geophysical surveys.

As well as excavation, parchmarks were also recorded (SLL. 2). Although the plan is dated 1906, this is probably an error. The parchmark plan is of the area to the north of the chapter house; here a number of walls were recorded which appear to confirm some of the evidence from the two surveys in this area.

Two monastic buildings are up standing at Hinton: the chapter house and the refectory. The present manor house also incorporates a small part of the former monastic guesthouse whilst sections of the masonry of the stables, located to the north of the refectory, are possibly post-medieval. The monastic buildings have been discussed at length (Hogg 1975), and only brief summary is included here. Measured drawings of the chapter

house are held at the Collections Management Unit at the National Monuments Record Centre (63/00564 – 63/00569).

The chapter house, located on the north-east side of the Great Cloister, is a three-bay structure probably dating from the foundation of the monastery, although there have been later modifications. On the ground floor there are traces of a stone altar under the east window and a moulded piscine and aumbry. The library is thought to have occupied the two west bays on the upper floor, whilst the third bay and the roof were post-Dissolution dovecots. Foxcroft ascribes these dovecots as being monastic (1895, 95) but this has been dismissed (Hogg 1975, 78). Externally, on the south and west sides, is a pentice for the roof of the cloister alley; on the north side there is a sidile and the splay of a window of the church, whilst on the east side is the likely location of the sacristy. After the Dissolution it appears that the chapter house was used as an agricultural building and the floor level raised. Fletcher dug a trial trench in the chapter house but found no trace of the original floor (SLL excavation notes).

The building on the northwest side of the Great Cloister is generally regarded as the refectory. It comprises two stories: a vaulted undercroft with a hall above. Externally there are later stone steps on the north side. The upper floor has been altered and adapted, possibly as a winehouse (SRO DD/FL4, and p3 above); it is thought that this floor was more likely to have been the refectory (although Foxcroft interpreted it as the guests' dormitory (1895 95) with the ground floor being used for service rooms and stores. This arrangement of refectory above service rooms has been noted at another charterhouse, at Gaming in Austria (Hogg 1975, 83). The west chamber on the ground floor contains a large hearth and serving hatch and, although Foxcroft interpreted this as the kitchen (1895, 95), Fletcher excavated what he interpreted as the kitchen to the east of the refectory block (see above) and he suggests that the west chamber was in fact either the prior's, or perhaps another monastic official's cell (Fletcher 1959, 78). Hogg doubts this interpretation and suggests that it may have been used by the lay brethren (Hogg 1975, 85).

The manor house, dating to the late 16th century, is located 65m north of the refectory, and incorporates elements of. A monastic building, probably the guesthouse. The building is orientated east west with two wings on the south side. At the east end there is a low single storey extension to the main block. Initial investigation suggests that only a small part of the monastic building survives, this is located on the north side close to the present door. The whole of the south side appears to be Elizabethan, with later alterations.

Apart from the surviving monastic buildings and manor house there is also a stable block measuring 10 x 9m with external stone steps on the northern side to an attic. The dating of this building is at present problematic, but is probably post-Dissolution. To the south of the refectory there are two pigsties dating from at least the mid 18th century (SRO DD/FL4).

Earthwork Survey and Interpretation

The numbering of the cells adopted in the report reflect those given by Fletcher during his excavations (Fletcher 1958-59, and annex D).

The Communications

The priory earthworks lie within a trapezoidal shaped field on relatively flat ground at 130m above OD and cl km north of the village of Hinton. The field forms part of a larger terrace above a north/south spur overlooking the river Frome. The spur at this point is heavily wooded and is known as Friary Wood. To the west, the ground continues to rise towards Abbey Farm before descending to Wellow Brook, a minor tributary of the river Frome. The geology of the surveyed area is Forest Marble of the Jurassic Age, i.e. mainly clay with shelly
limestone and sandstone (Geological Survey, 1965).

The priory is approached from the east along a drive from the A36 road. Prior to the turnpiking of the road in the 18th century this track continued east towards the river Frome at Freshford to meet the main road from Bath; it also continued west from the priory around the eastern side towards the grange and village of Hinton (Day & Masters map, 1782). Another track led east from the priory, through Friary Wood, towards the hamlet of Friary, the probable site of the correrie.

A track also leads from the manor house in a northerly direction, through a tree-lined avenue and Hogg Wood, to the Bath to Hinton road. This track was probably constructed in the early 19th century (Greenwood map, 1822), and by 1849 was known as the "carriage drive" (annex A). The pillars of the entrance gate at the junction with the Bath to Hinton road, and those on the gate at the junction with the A36 road, are of the same design and were probably erected in the early 19th century during Symonds' "improvements" to the estate (SLL. 3).

The Charterhouse

The Great Cloister lies to the south of the communal buildings and is now largely contained within a walled garden. The north side is defined by the southern wall of the chapter house and refectory, whilst to the south by the garden wall; the east and west sides can be seen as a low bank c0.2m high; overall the cloister measures c65x70m. Internally no earthwork details were evident, nevertheless, the geophysical survey shows several narrow linear bands of high resistance within the walled garden; these were interpreted as either gravel paths, or possibly stone/brick drains, but they were thought not to be monastic (Geophysical Survey, 1). The linear bands are, however, on a slightly different alignment to the garden wall and it is therefore also conceivable that they are not contemporary with the existing wall.

The monk's cells lie on the east, south and west sides of the Great Cloister, thus forming a rectangle. Each cell consists of two elements: a living area and a garden. On the eastern
Side four cells were recorded, each measuring c20x20m. The northern side of cell 1 extends east, beyond its garden wall. Exposed walling can also be seen at this point. Cells 2, 3, and 4, are arguably the best preserved at Hinton and each comprise a sub-rectangular terraced enclosure c10x10m with a scarp, c0.2m high defining the outer garden wall. The outer garden wall continues onto the southern side. The earthworks here are less well preserved, but elements of four possible cells are evident including an exposed section of the walling of cell 5. On the western side the garden wall continues as a low, broad bank, c5m wide. On this side there are five possible cells. At (b) part of a cell has been left exposed following Fletcher's excavations.

On the north side of the Great Cloister lay the communal buildings, with the refectory to the
west and the chapter house the east. The area between the refectory and chapter house has been adapted as a yard and gravel path with grass-verges. No earthworks were evident on this side, but excavation indicated that it was the kitchen area and Little Cloister (see above). On the north side of the chapter house, at ©, is the site of the church; this area has also been landscaped although part of the walling of the north side of the church is exposed. Between the communal buildings and the manor house the ground has been levelled and landscaped to form a lawn and consequently little earthwork evidence survives. However, at (d), a sub-rectangular raised platform 10x10m suggests the possible location of a structure; this has been confirmed by the geophysical survey.

To the south of the manor house is a linear hollow c10m wide with a broad bank 8m wide and c0.3m high on the south side. This feature is on a different alignment to the charterhouse. To the west of the hollow is a sub-circular mound 8m diameter x c1m high.

The monastic buildings appear to be contained within a boundary bank, a possible precinct boundary, which, at its full extent, also incorporates the present manor house. Overall the boundary measures c185x145m. The manor house, which is thought to have been the monastic guest-house (see above), lies close to the north-western corner of the boundary; to the east a bank 55m long x 0.2m high extends east towards a slight hollow-way. On the western side, the boundary is defined as a broad bank c0.2m high, which is partly masked by a sunken fence, or ha ha. A large sub-circular mound, cl.5m high, is possibly the northwest corner, which has been later, adapted as a tree mound. To the south the boundary is initially marked by the ha ha, but becoming a more substantial bank c0.2m high to the east. It can be traced to the north as a bank with a slight external ditch towards the hollow-way. Incorporated into the eastern side of the boundary is a sub-rectangular depression 15x5m in area and c0.2m deep, this feature may have been a former pond associated with the priory's water supply.

To the south of the precinct boundary is a hollow-way c8m wide and c0.5m deep that also skirts the eastern side of the priory. A number of irregular depressions lie on the east side of the hollow-way with another on the north, which cuts into the precinct boundary. These depressions are probably stone quarries; one is shown on

an estate map of 1849 (annex C). To the east of the priory the track appears much narrower and is terraced into the slope; further north the track branches to the north-east towards Freshford and to the north-west.

To the east of the track the ground is deeply incised as it descends towards the river Frome. On higher ground, are a number of irregular shaped platforms, c10x5m, these are enclosed and have a scarp elm high on the north and by a scarp edge on the south side. Overall this enclosure measures c50x30m, with a possible entrance, 10m wide, on the western side.

Miscellaneous Earthworks

The rectangular field to the west of the monastery, known as Pond Clefe in the late 18th century (annex A) is enclosed on three sides by a bank and external ditch surmounted by a quick-set hedge. On the eastern side the field boundary is marked by a stone-lined ha ha, clm high with a ditch cl.5m wide. In places, however, the stone revetting has tumbled into the ditch, caused in part by tree roots encroaching through the stonework. To the west of the ha ha are three sub-rectangular ponds, now heavily overgrown with trees and scrub. The eastern pond, the lowest, measures 60x30m with two sub-circular islands, c2m high, slightly west of the centre. The eastern side of this pond is revetted with a stonewall clm high and is the same construction as the ha ha wall. A shallow overflow channel on the southeastern side leads to an oval soakway. This pond is the largest in the group and is separated from the central pond by a bank c2.5m high. Water flowed into the eastern pond through a sluice on the northwest side; to the south is a narrow leat 2m wide, which connects these two ponds. The central pond appears regular, almost dam-like, and measures 45x8m; a sluice in the centre on its western side connects this pond to the third pond. The third pond, which is also the highest, is stone revetted on its eastern side in a similar manner to the eastern pond and ha ha, and is clm deep. On the northeastern side is a sub-circular mound 1.5m high which affords a good view of the manor house to the northeast. Water for the two westerly ponds was provided from the channel to the west.

On the southern side of the eastern pond (e) is a partially embanked sub-rectangular depression c10x5m. Whilst on the eastern side there is a slight bank extending towards the ha ha and 2 sub-rectangular enclosures, c0.1m deep.

On the northern side of the ponds there are two linear banks with drainage channels on the western side. The two banks are c0.2m high. Further ditches to the northwest are modern shallow drainage ditches, draining into the eastern pond. The field boundary bank on the northern side formerly extended east but has been modified with the construction of the ha ha.

30m beyond the western pond is a ditched enclosure cl8m diameter with a tree mound c0.3m high in the centre. A slight ditch extends from this enclosure for c15m. On the south side are two elongated mounds c0.5m high, the easterly one measures c13x8m whilst the one to the west measures 22x8m.

To the north of Pond Clefe is a field known as The Great Mead in the 18th century (annex A). Only three features are of note here, the first is a ditched tree enclosure c20m diameter; close to the western field boundary is an amorphous depression which is a probable spring; the third feature is slight traces of ridge and furrow, c8m wide, that extends in an east/west direction over much of the field.

To the west of Pond Clefe is another hedged enclosed rectangular field. In the west, on higher ground, is a sub-circular tree mound c20m dia. Beyond, is an elongated mound 0.5m high and 20x7m enclosed by a ditch, c0.lm deep. Another tree mound is evident to the south. There are also slight traces of drainage channels, probably modern, in the northeast of the field.

In the field to the north of the manor house is a shallow linear hollow leading from the southern side of Hogg Wood towards the gate lodge beside the A36 road. The hollow is c5m. wide and c0.1m deep. This feature formed part of a Second World War anti-tank ditch system (NLAP: 3G/TUD/UK/15/25 No. 5106 dated 14 Jan 46; ST75NE42).

Interpretation

The earthwork survey coupled with the geophysical survey and excavated evidence, enables a more comprehensive interpretation of the charterhouse at Hinton to be made. Significantly, the remains of the Great Cloister and the monk's cells appear to have only been partially affected by the post-Dissolution developments

that tend to mask or destroy so many other monastic institutions. As a consequence the earthworks of the Great Cloister and cells are remarkably well preserved.

The charterhouse covers an area of c4ha. The earthwork and geophysical surveys accord well with the documentary and excavated evidence. At the Dissolution sixteen monks and five lay brothers surrendered to the king's commissioners. Whether the lay brothers had moved from the correrie to the priory by this time is unclear. Thirteen monk's cells and gardens have been identified from the earthwork and geophysical surveys and a further two were located during excavation. This disparity would suggest that another cell at least lay to the north of the Great Cloister; by analogy with other Carthusian charterhouses this area was probably the site of the inner court that would have contained buildings, possibly including additional cells for the monks and lay brothers. Only minor scarps were evident from the earthwork survey since the area has been landscaped for the lawn, however, geophysical survey and parch mark evidence would suggest a number of possible structures in this area. Whether they are of monastic or of post Dissolution origin remains problematic. The line of high resistance projecting north from the northeast side of the chapter house near C is probably a post-Dissolution wall, which is shown on an engraving (annex C).

The monastery was enclosed within a precinct boundary, which is some 20-30m beyond the back wall of the monk's garden, and also incorporates the manor house. Within this boundary there appears to be a dividing wall between the inner court and the remainder of the monastery to the south. This dividing wall is defined by a bank, at (f), and the north side of the stable block, and enclosing an area of 140xl40m. Although excavation demonstrated that the boundary was constructed of stone, this is only apparent on the geophysical survey on the west and part of the south sides.

An understanding of the water management on the monastic site remains incomplete. Excavation revealed the water ring conduit north of the refectory and in cells 4, 8, and 14; sluices were also uncovered. The geophysical survey also identified a linear band of high resistance close to the monk's garden wall, which was interpreted as either a wall or possible
Drain: this may form part of the course of the water supply around the cells. The source of the water supply, and its route around the priory is open to speculation. Conceivably fresh water could have been come either from the area of the three ponds to the west, or more likely, from a spring in Great Mead field. Evidence for the supply of water from a spring in this field is provided from two accounts in an 18th century survey. In 1784, £6 16s. 6d. was paid for "*conveying the water from the Great Mead to the House and for claying the trenches*". Two years later further work was carried out at a cost of £10 16s 6d. when 355 yards (326m) of pipe was laid to bring the water from the spring in the Great Mead to the Abbey House (DD/ML 34). At this distance from the manor house there is an amorphous depression, which was probably the location of the spring. Within the Great Cloister it is unlikely that there was a conduit house as at the London charterhouse, although the geophysical survey showed linear bands of low resistance (see above). A conduit house may have been located on the northwest side, possibly near the ornamental pond. Wastewater from the monastery was probably collected at the pond (g) and then directed east down the valley towards the river Frome.

To the east of the monastery at (h), is an enclosure with a number of possible building platforms set above the track leading towards the correrie. This enclosure possibly formed part of the outer court of the monastery or may represent a later development.

Following the Dissolution of the monastery in 1539 it appears that an enclosed manor-house was built on the site of the former guest-house while the remainder of the estate was adapted as a farm with the Great Cloister being used as a possible yard. By the mid 18th century another building had been constructed to the east of the manor house, slightly to the north of the precinct boundary. At this time the manor garden lay to the north of the house, away from the "business" end of the estate.

During the early 19th century a number of changes to the house and estate were carried out by the owner, Captain Symonds, in order to make it a "gentleman's residence". Not least amongst the changes was the relocation of the farm to the top of the hill to the site of Abbey Farm, initially called Pengethley Farm (SLL. 4), and the creation of a landscape garden. The garden appears to have been a relatively modest affair and included a broad embanked "walk" from the house to the west of the refectory, a yew hedge appears to have been planted on the west side of the house and mounts with an ornamental garden pond. The ha ha was probably constructed at this time since it seems inconceivable that it was in existence when the farm was so

close to the house. To the west, trees were planted at strategic places to afford a good view from the house, and the three ponds in Pond Clefe were refurbished; this included the construction of a re-inforced wall on the eastern side of two of the ponds. These ponds were possibly former monastic fish ponds constructed on the line of a spring, which may have one of the sources of water to the monastery. The mound on the northern side of the Pond may have been a mount, particularly since the line of the ponds from this point gives a direct view of the house. The sub-rectangular enclosure to the south of the ponds may represent the location of a possible summerhouse. By at least 1849 the area of the Great Cloister had become a new enclosed garden with an orchard to the south and west, (annex C).

In 1820 the Rev. J Skinner investigated the mounds in Pond Clefe and suggested that the round mounds were barrows. Apart from traces of charcoal from two of them there appears to be no other evidence for this suggestion and they are probably tree mounds or pillow mounds. The sub-rectangular mounds at (j), (k) and (1) are possibly pillow mounds. The east-facing slope would be ideally suited for rabbits since they would be sheltered from the prevailing wind.

The anti-tank ditch cutting through the field to the north of the manor house probably formed part of the GHQ defence line during the Second World War (Wills 1985, 11). This section extended from Wellow Brook to the A36 and included a linear anti-tank ditch part of which can be seen on the plan; crennalated trenches at ST770595, and zigzag trenches at ST779595, near the present gate-house; and six pill boxes (NLAP: 3G/TUD/UK/15/25 No. 5106 dated 14 Jan 46).

The monastic earthworks and standing buildings at Hinton are arguably the earliest surviving example of a Carthusian charterhouse in England and as such the site is particularly important in understanding the development of the Carthusian order. The survival of the Carthusian plan owes much to its later-use as a farm with substantial orchards, and also the lack of other building developments or landscaping on the same scale as many other charterhouses. The Great Cloister appears to have been fossilised within an enclosed garden, whilst the monk's cells were initially used as farm buildings before going out of use. It was only in the 19th century that any major work on the estate was carried out and a pleasure garden created following the removal of the farm.

Method

The survey was carried out using a TC2000 Total Station to establish a control framework and modern geographical detail such as field boundaries and buildings. The earthworks were surveyed using taped offsets from the control framework.

Annexes

A. Hinton Charterhouse 1785. (Copy of Crocker map).
B. Copy of a 18th century engraving of the chapter-house at Hinton Charterhouse
C. Copy of sketch map of Hinton Charterhouse – 1849.
D. Fletcher's excavation plan (1959).

(annexes (B) and (C), with a large-scale excavation plan are held with Fletcher's excavation notes in Somerset Local History Library).

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a. British Library (BL).

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Add Ch. 40135. Assignment of mortgage etc. 1700.

b. Somerset Record Office (SRO)

DD/FL4. Indenture between Stacker Robinson and William Smith, 20 Feb. 1743.
DD/ML 2. No 16. 1686. Indenture of lands belonging to Edward Hungerford to Henry Baynton of Spye Park, Wilts.

DD/ML 34. Hinton Abbey Estate Accounts 1789.
DD/RG 36. Parsons. S., Survey of the Manors of Norton St Philip and Hinton 1638.

c. Wiltshire Record Office (WRO).

WRO 442/1. Hungerford Rent Roll for Hinton Charterhouse 26 April 1582 (p155-157).
WRO 442/2. Hungerford rent Roll for Hinton Charterhouse 1599 (p247).

d. Duchy of Cornwall Office (DCO).

Survey of Manor 1606-8.

e. Somerset Local History Library (SLL).

Major Fletcher's excavation notes, plans and documentation on Hinton Charterhouse.
1. MSS 16 Aug. 1956.
2. Parchmark plan dated 10 & 12 Sep 1906.
3. Letter dated 3 Oct. 1955.

Maps

Day & Masters, 1782. Map of County of Somerset.
Greenwood, 1822. Map of the County of Somerset from Actual Survey made in 1820 & 1821.
SRO DD/FL (c/2763) – 1785 Cracker map of Hinton Charterhouse.
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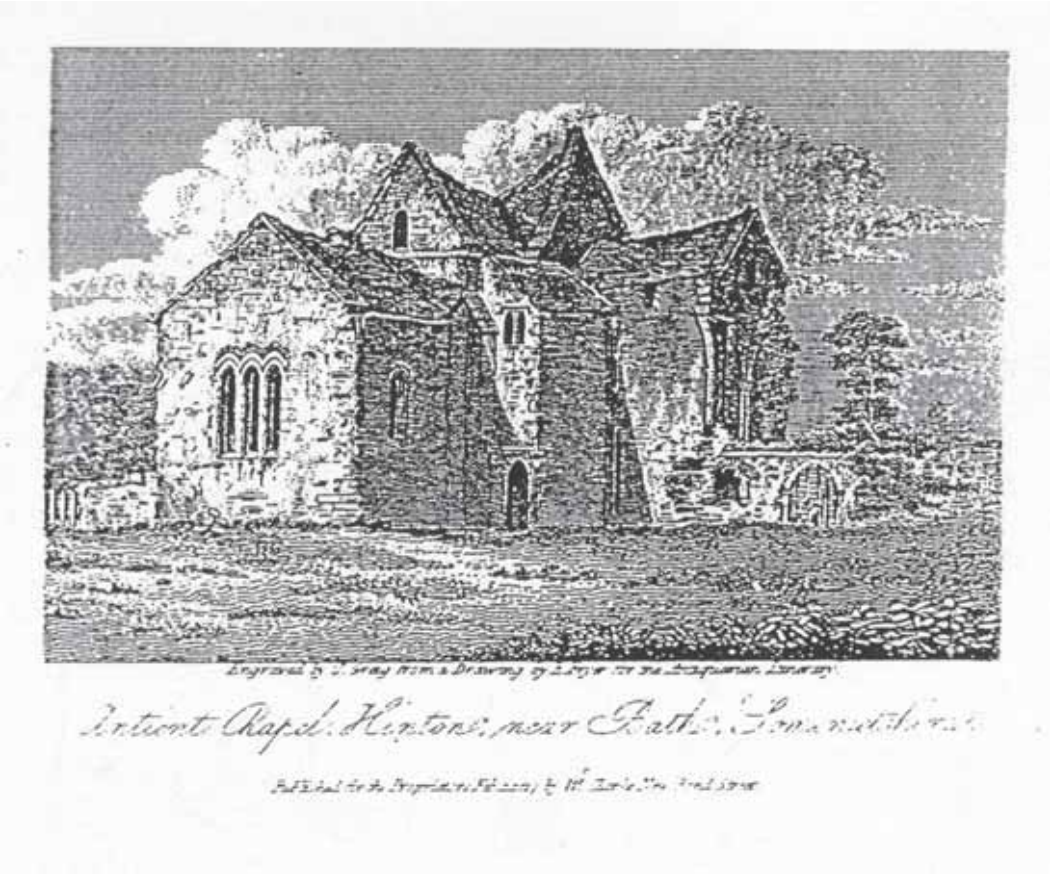
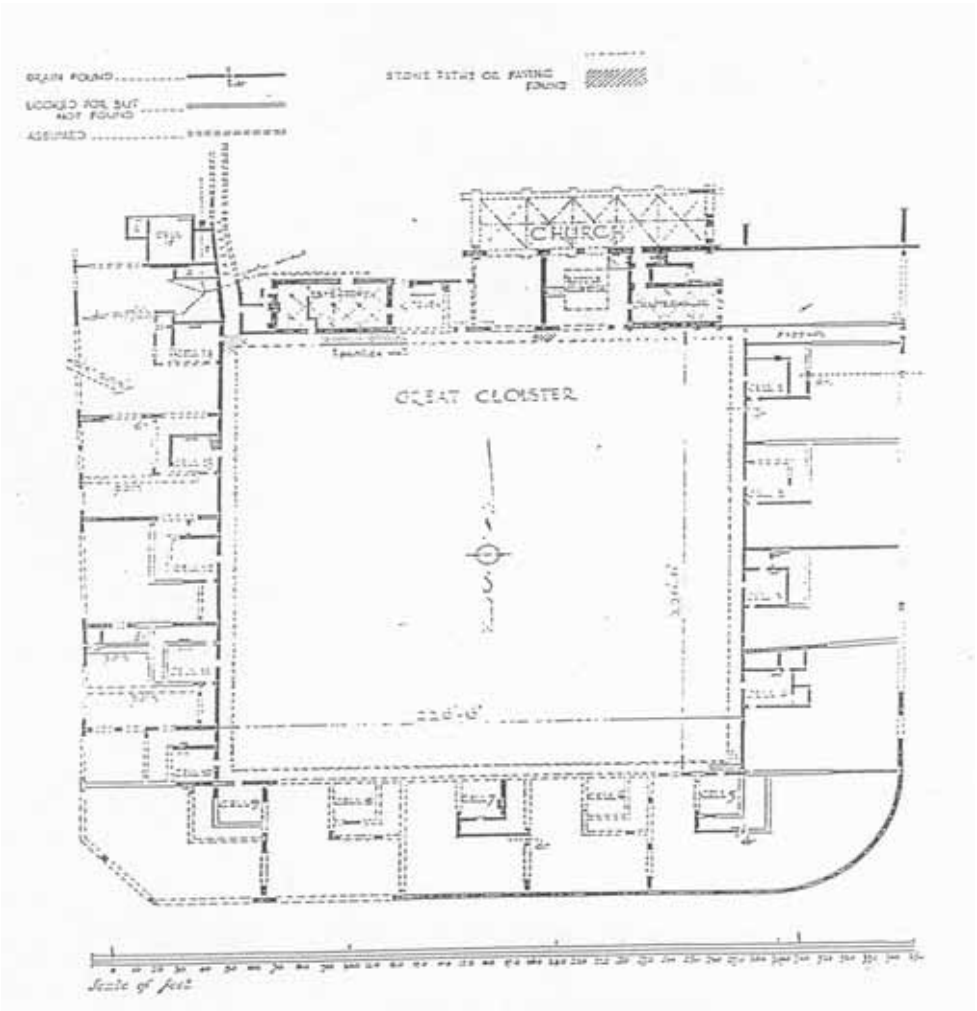
ANNEX A –


HINTON CHARTERHOUSE
Hop Garden
Abbey Lease
Great Mead
Pond Clefe
a
b
c
d
a Mansion house
b Barton
c Coneyger
d Garden

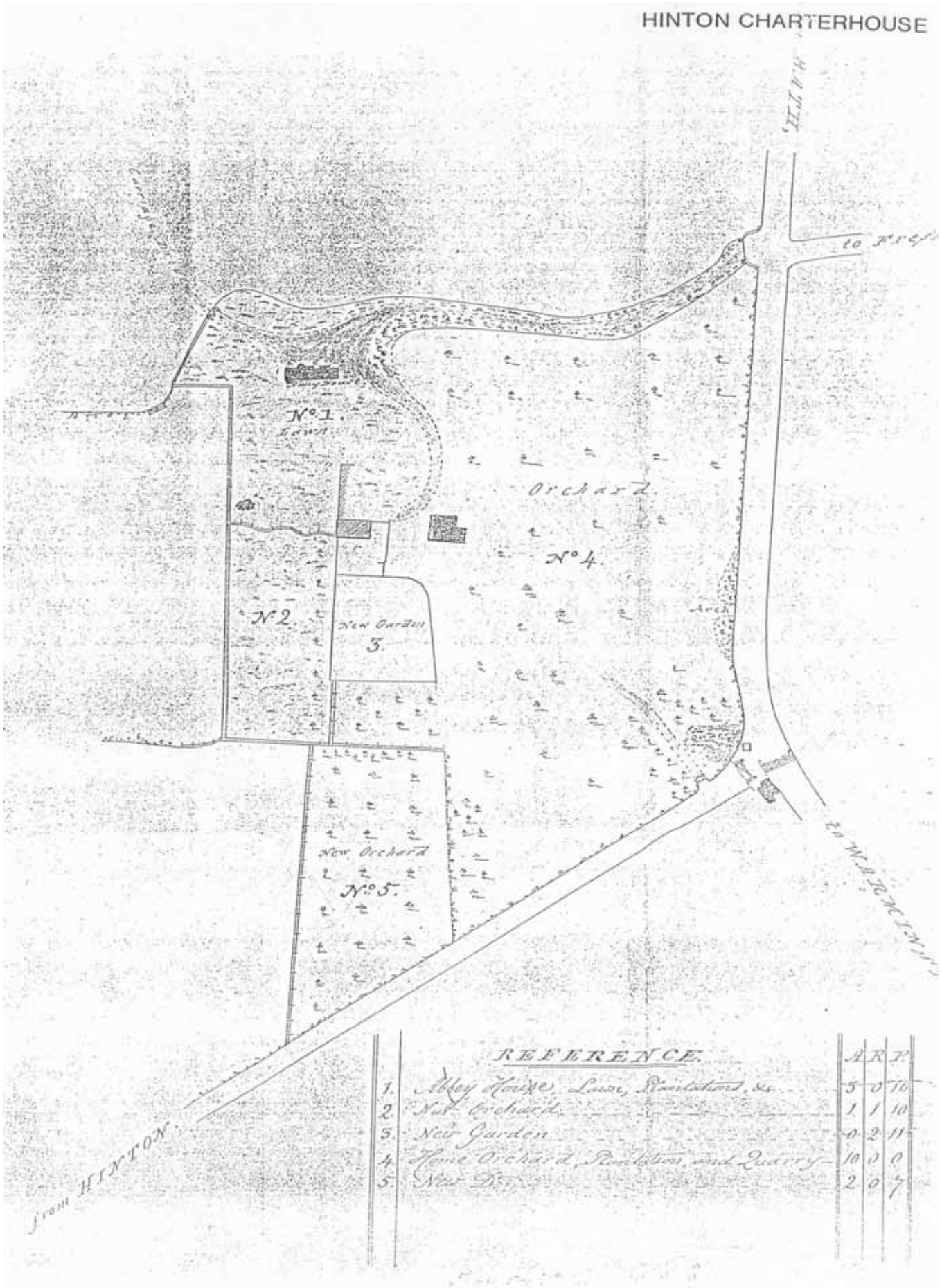
ANNEX B –



ANNEX D –



ANNEX C –


HINTON CHARTERHOUSE
to Frest
No 1.
Lawn
Orchard.
No 4.
No 2.
New Garden
3.
New Orchard
No 5.
to WARMINSTER
from HINTON
REFERENCE.
1. Abbey House, Lawn, Plantations, &c
2. New Orchard
3. New Garden
4. Home Orchard, Pasture, and Quarry
5. New Do.
A R P
5 0 10
1 1 10
0 2 11
10 0 0
2 0 7

11.2 B) Sites and Monuments Record –

Bath and North East Somerset Council Monument Full Report *22/10/2004*

SMR Number	Site Name	Record Type
BN11296-MBN11296	Anti tank ditch	Monument

Anti tank ditch forming part of the GHQ defense line during the second world war

Monument Types and Dates
TANK TRAP (World War II –1939 AD to 1945 AD)

Description and Sources
Description

"the anti tank ditch cutting through the field to the north of the manor house probably formed part of the GHQ defence line during the Second World War This section extended from Wellow Brook to the A36 and included a linear anti-tank ditch part of which can be seen on the plan; crennalated trenches at ST770595, and zigzag trenches at ST779595, near the present gate house, and six pill boxes." [1]

Sources

(2) Unpublished document: Royal Commission on the Historical Monuments of England. 1996. The Carthusian Monastery at Hinton Charterhouse.

Location
National Grid Reference

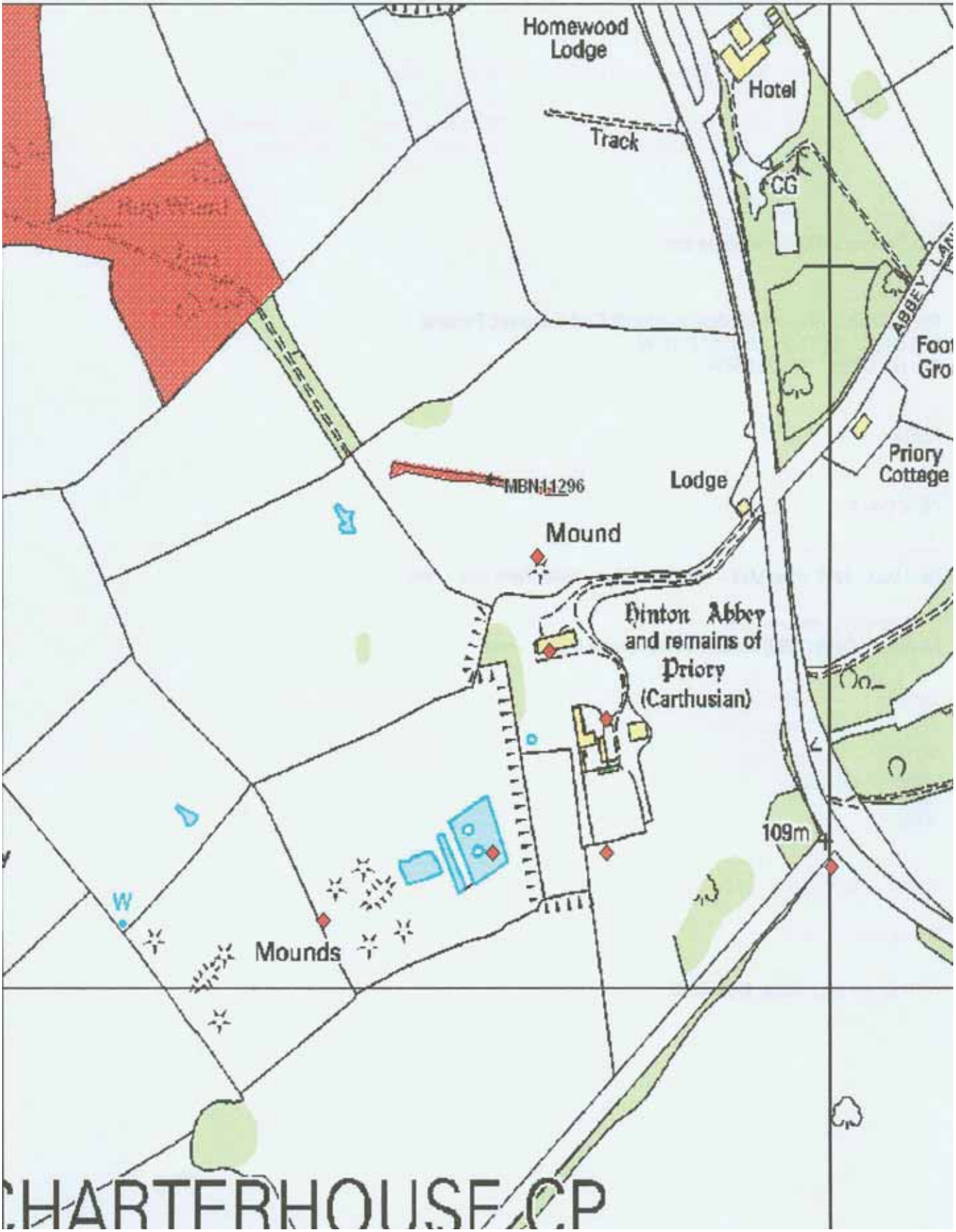
ST 77694 59378 (point)	ST75NE	Area

Administrative Areas

Civil Parish	Hinton Charterhouse, Bath & North East Somerset

Address/Historic Names – None recorded
Designations, Statuses and
Associated Legal Designations – None recorded
Other Statuses and Cross-References – None recorded
Ratings and Scorings – None recorded

Land Use
Associated Historic Landscape Character Records – None recorded
Other Land Classes – None recorded
Related Monuments – None Recorded
Finds – None recorded
Associated Events/Activities – None recorded
Associated Individuals/Organisations – None recorded


Homewood Lodge
Hotel
Track
CG
ABBEY LANE
Foot
Gro
Priory Cottage
MBN11296
Lodge
Mound
Hinton Abbey and remains of Priory (Carthusian)
109m
W
Mounds
CHARTERHOUSE C.P

11.3 C) National Monuments Record –

NMR MONUMENT REPORT

Unique Identifier: 1030155 **NMR Number: ST75NE42**

Location

Hinton Charterhouse (Civil Parish)
Bath And North East Somerset (District)
Avon

OSGB Grid Reference ST 762 596 to ST 779 594 (linear)

Summary
An anti tank ditch with associated pill-boxes extends from Wellow Brook to Hinton Abbey.

Status **Other Identifiers**

Notes
An anti tank ditch was recorded during the earthwork survey of the Carthusian monastery at Hinton Charterhouse (ST 57 NE 2). The ditch extends from Wellow Brook in the east to Hinton abbey in the west. Associated with the ditch were 6 pill-boxes and slit trenches.

Sources

Related Events and Archives
Any event and or archive records linked to this monument are outlined below. For further details please contact the NMR (see covering letter) quoting the Unique Identifier and NMR Number of this monument record and the identifying numbers and titles of items of interest.

Related Event Records There are no related event records for this monument

Related Archive

File Number
AF1031827 RCHME: Hinton Charterhouse, Avon

Principal Items
1031829 Hinton Charterhouse/ink survey measured survey May 1995 pen and ink 1:1000
1031830 Hinton Charterhouse/pencil measured survey May 1995 pencil 1:1000 survey
1031831 Hinton Charterhouse report May 1995 typescript

11.4 D) Archaeological Data Service 'online' catalogue

ANTI TANK DITCH

Searches: Basic Map Search by resource Advanced Help

Click for Defence of Britain Database record | **Maps from old-maps.co.uk** | **Street map from Multimap** | **Aerial photo from Multimap** | **Search for other sites in the area**

Description
See Defence of Britain database entry

Location
Hog Wood to A36 road
Grid ref. LL – 2d 19' 22" W 51d 20' 1" N
Grid ref. LL – 2d 19' 19" W51d 19' 57" N
Grid ref. LL – 2d 19' 1" W 51d 19' 55" N
Grid ref. OSGB – ST 7751 5952
Grid ref. OSGB – ST 7757 5940
Grid ref. OSGB – ST 7792 5933

Subject type
Anti Tank Ditch

Period
World War II

Intervention type
Field Visit –1998, Field Visit –1996,

Associated identifiers
AIP Record Number RAF aerial photographs: 106G UK 1415 F/20 (3453-3455)

Record maintainer (Contact details)
Council for British Archaeology (CBA)

Depositor's Id No.
SO015369

Resource Name (description) | **Type** | **Accessioned**
Defence of Britain Archive | Collection | 7 Jan, 2002

Send an enquiry about this record

Tell us about an error in this record

ADS Record ID – CBA_DOB-15369.

Section of anti-tank ditch. Plotted from air photograph. See also UORN 8552. (Source: Air Photograph 1946/04/14)

Type of site ANTI TANK DITCH

Location Running from Hog Wood, near Hinton Abbey, Freshford, E to the A36 road.

Area Freshford, Bath and North East Somerset, England

Grid Reference ST 7751 5952
ST 7757 5940 (Scale: 1:10560)
ST 7792 5933

Period WW2

Condition Infilled

Materials Earthworks

Recorder (Defence of Britain Project)

Defence Grouping GHQ Line Green - Stop Line – Burnham on Sea to near Melksham (where it joins with GHQ Line: Blue) and then north to the River Severn at Newnham. This line is also known as the Bristol Outer Line. Manned by VIII Corps.

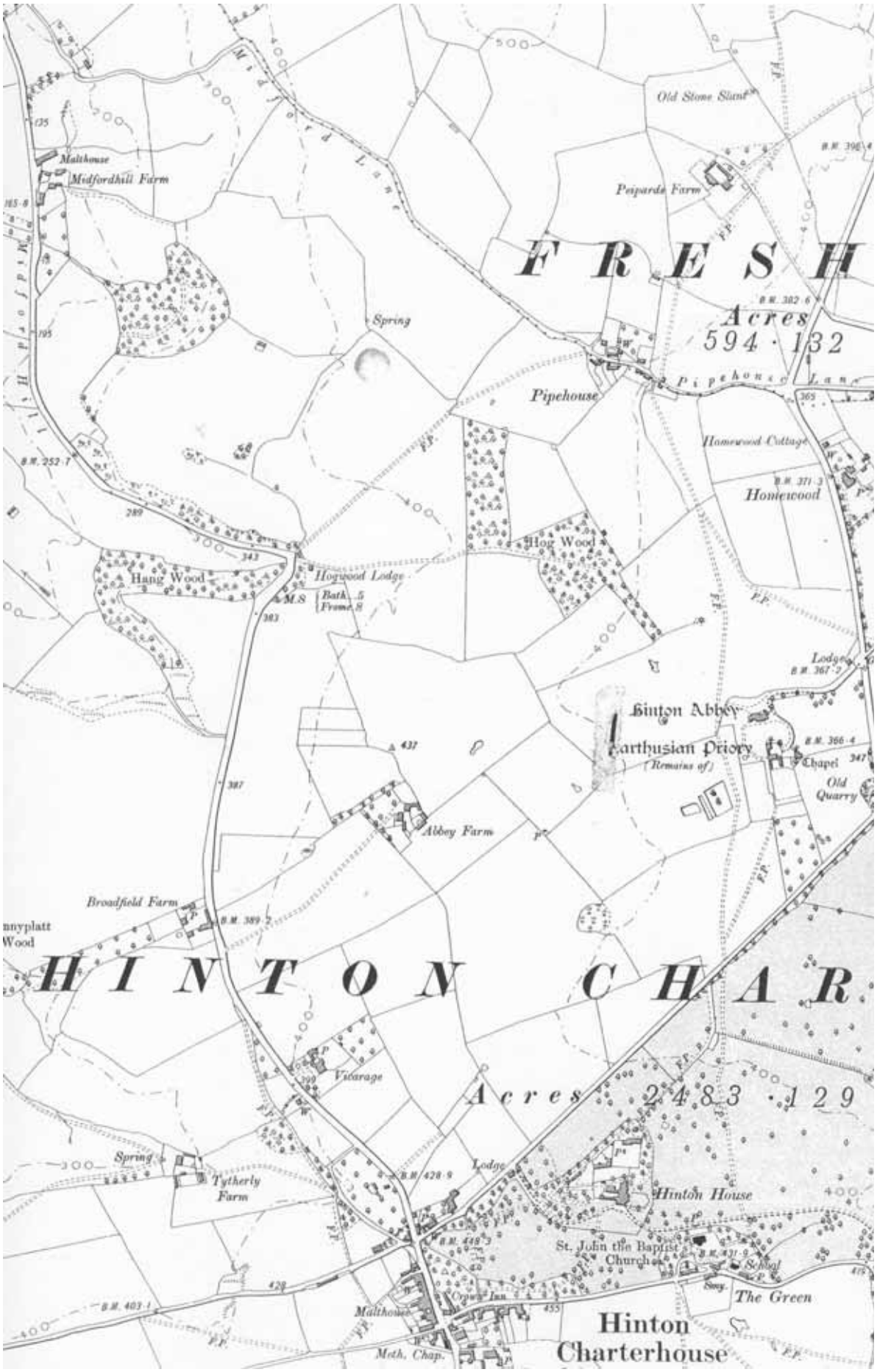
Reference 1946/04/14 106G UK 1415 F/20 (3453-3455)

Event Construction, In the period 1940 1941
Infill, In the period 1946 1950

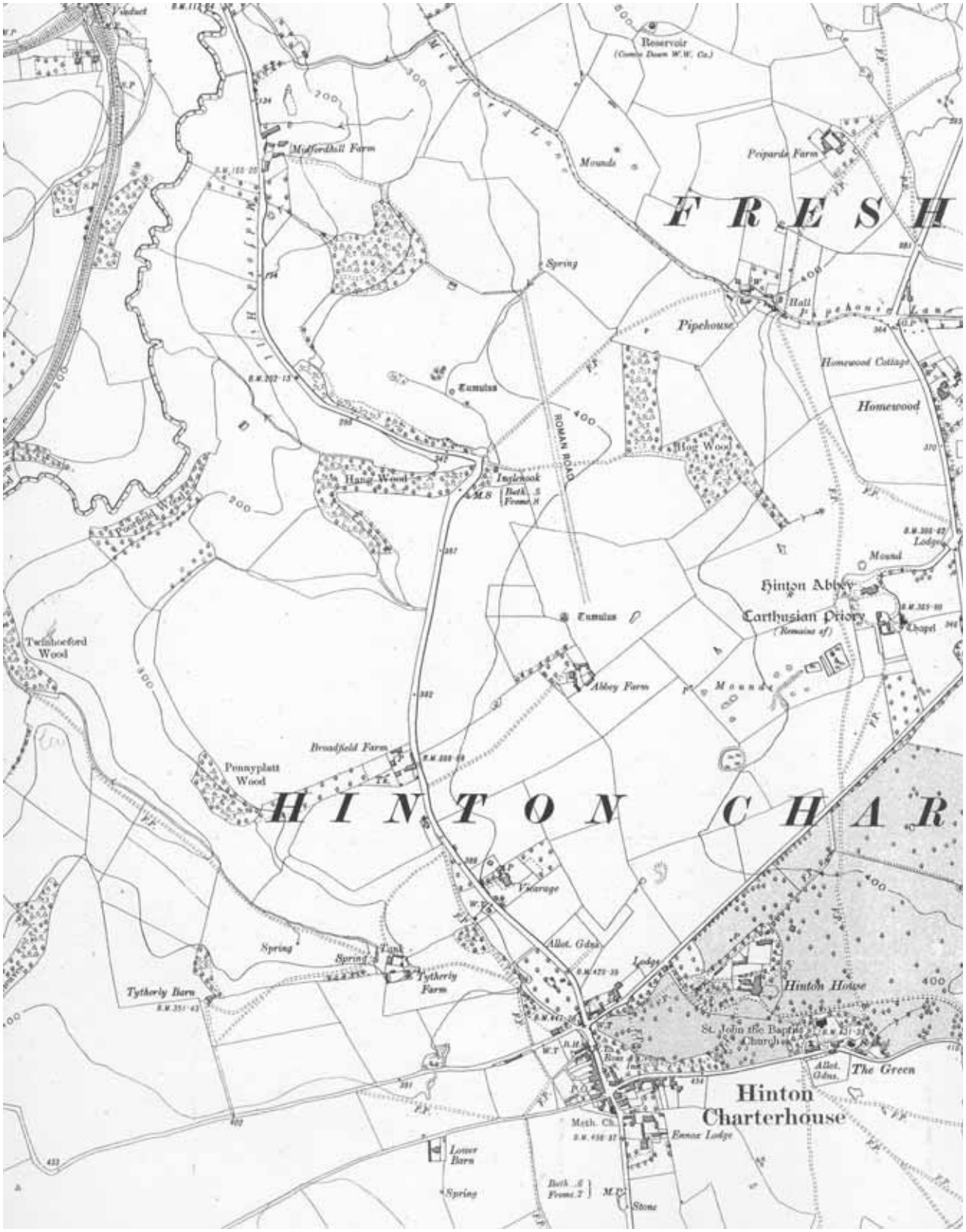
11.5 E) Ordnance Survey Maps (Scale 1:10000) –

1884

1904


Midford Lane
Old Stone Slant
Malthouse
Midfordhill Farm
Peiparde Farm
FRESH
Acres
594 · 132
Spring
Pipehouse
Pipehouse Lane
Homewood Cottage
Homewood
Hog Wood
Hang Wood
Hogwood Lodge
M.S
Bath 5
Frome 8
Lodge
Hinton Abbey
Carthusian Priory
(Remains of)
Chapel
Old Quarry
Abbey Farm
Broadfield Farm
HINTON CHAR
Acres 2483 · 129
Vicarage
Spring
Tytherly Farm
Lodge
Hinton House
St. John the Baptist Church
School
The Green
Crown Inn
Malthouse
Meth. Chap.
Hinton Charterhouse

1932

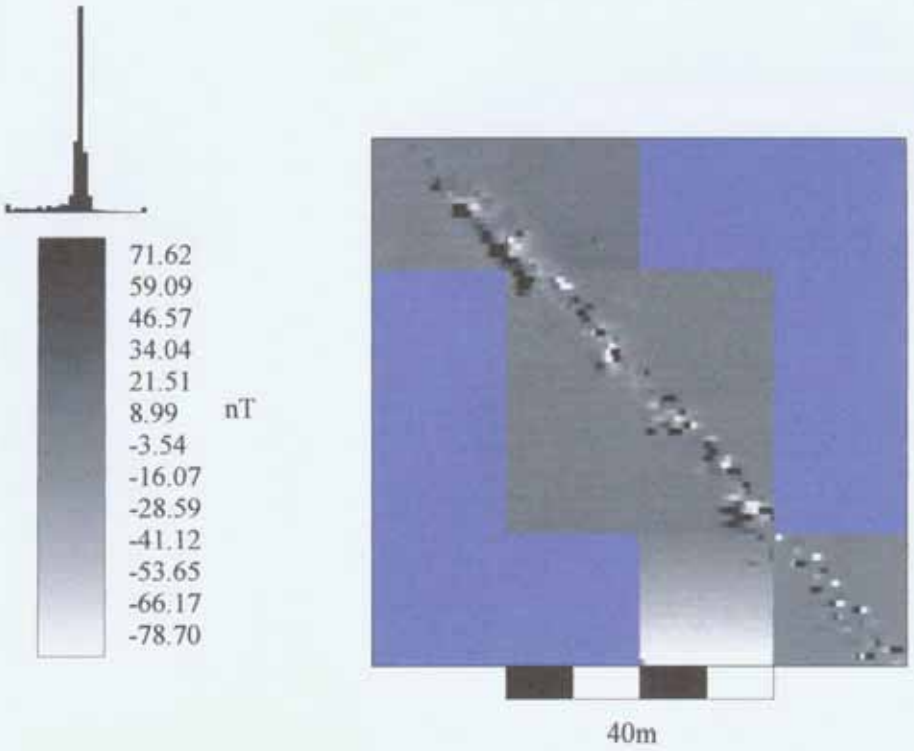

Reservoir
(Combe Down W.W. Co.)
Midford Hill
Midford Hill Farm
Mounds
Peipards Farm
F R E S H
Spring
Hall
Pipehouse
Homewood Cottage
Homewood
Tumulus
ROMAN ROAD
Hang Wood
Ingleknook
Hog Wood
Mound
Hinton Abbey
Carthusian Priory
(Remains of)
Chapel
Tumulus
Twinhoeford Wood
Abbey Farm
Mounds
Broadfield Farm
Pennyplatt Wood
H I N T O N C H A R
Vicarage
Spring
Tank
Spring
Tytherly Farm
Tytherly Barn
Allot. Gdns.
Lodge
Hinton House
St. John the Baptist Church
The Green
Allot. Gdns.
Hinton Charterhouse
Meth. Ch.
Ennox Lodge
Lower Barn
Spring
Stone

1961


HINTON CHARTERHOUSE
Pipehouse
Park Corner
Sharpstone
Homewood
Hor Wood
Freshford Mill
River Frome
Tumulus
Hinton Abbey
Remains of Hinton Priory (Carthusian)
Abbey Farm
Mounds
Old Quarry
The Rookery
Hinton House
St John the Baptist Church
The Green
Hinton Charterhouse
Ennox Lodge
Tytherley Farm
Lower Barn
Stroud Farm
New Town
Kingscoped Wood
Norton Barn
ROMAN ROAD
Abbey Lane

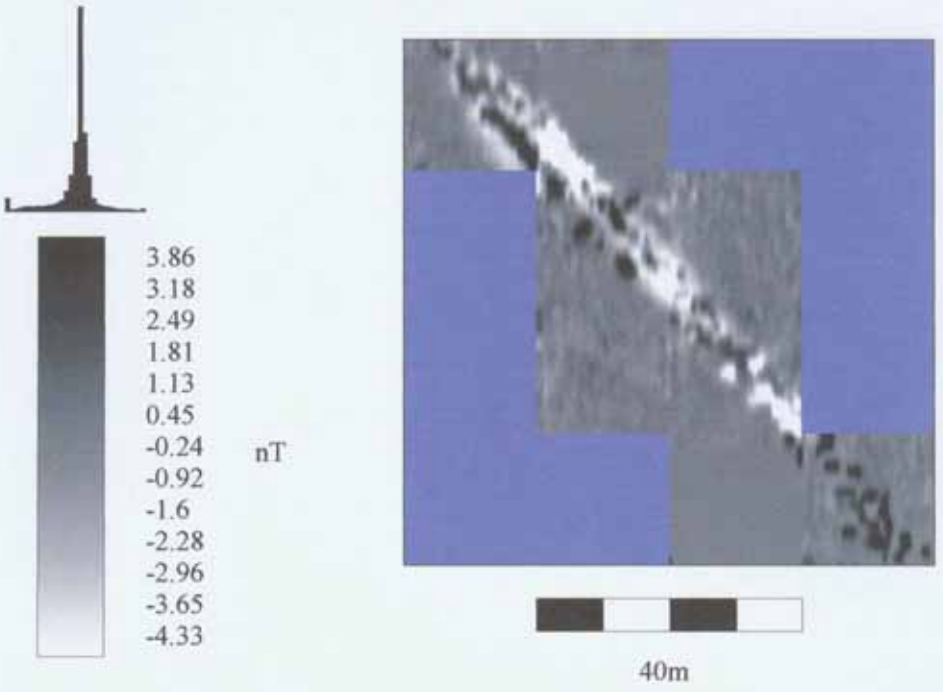
11.6 F) Original Geophysical Survey Data / Results -

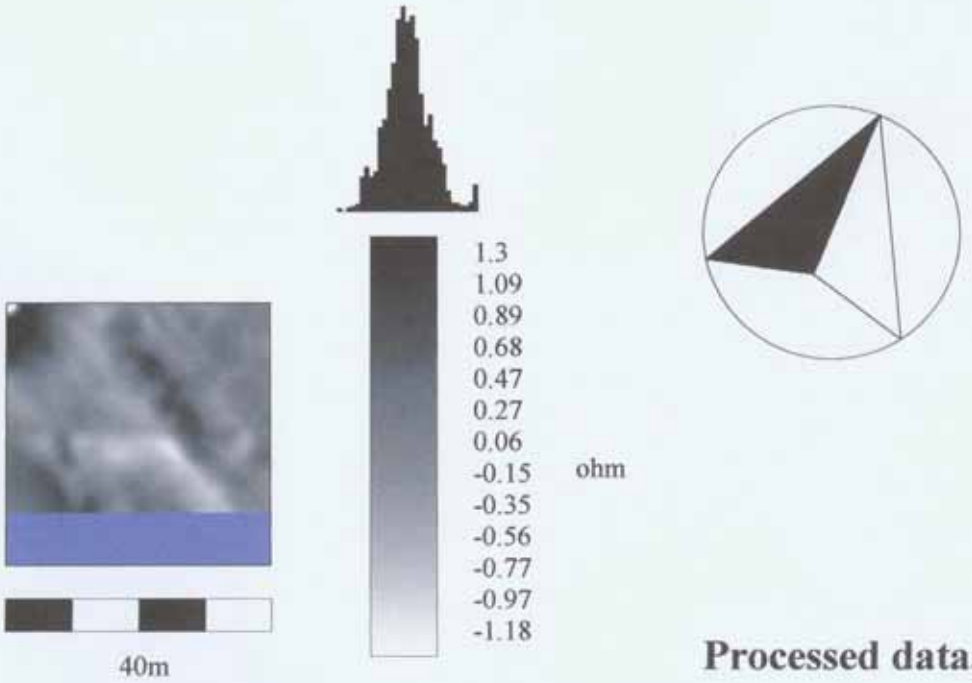
Anti-tank ditch, Hinton Charterhouse, Nr Bath.
Gradiometer FM256 & Resistance Meter RM15 Survey.
B&NES SMR - MBN11296.



Raw data.

Anti-tank ditch, Hinton Charterhouse, Nr Bath.
Gradiometer FM256 & Restistance Meter RM15 Survey.
B&NES SMR - MBN11296.





Processed data.

Processing History –

Fluxgate Gradiometer FM256

Clip Min = .4 Max = 4
Zero Mean Traverse, Grid = All, LMS = On, Thresholds not applied.
Destagger Grid 1, X Dir shift 1
Destagger Grid 2, X Dir shift 1
Destagger Grid 3, X Dir shift 1
Destagger Grid 4, X Dir shift 1
Destagger Grid 5, X Dir shift 1
Destagger Grid 6, X Dir shift 1
Destagger Grid 7, X Dir shift 1
Destagger Grid 8, X Dir shift 1
Despike X = 3, Y = 3 Thr = 3 Repl = Mean
Despike X = 1, Y = 1, Thr = 3 Repl = Mean
LPF X = 2, Y = 2 Wt = G
Interpolate Y, Expand X2 Sin X/X
Interpolate X, Expand X2, Sin X/X
LPF X = 1, Y = 1 Thr = 3 Repl = Mean
Despike X = 1, Y = 1 Thr = 3 Repl = Mean
Interpolate Y, Expand X2, Sin X/X
Interpolate X, Expand X2, Sin X/X

Resistance Meter RM15

Clip Min = .10 Max = 10
HPF X = 10, Y = 10 Wt = U
LPF X = 2, Y = 2 Wt = G
LPF X = 1, Y = 1 Wt = G
Interpolate Y, Expand X2, Sin X/X
Interpolate X, Expand X2, Sin X/X

11.6 G) Armoured Vehicle Centre of Gravities.

Vehicle / Type	PzKpfw 38(t) Tank	Panzer I Tank	Panzer II Tank	Panzer III Tank	Panzer IV Tank	SdKfz 251/1 Tracked Infantry
Weight	9700Kg	5500Kg	10000Kg	22300Kg	25000Kg	7810Kg
Length	4.546m	4.02m	4.64m	6.41m	7.02m	5.80m
Centre of Gravity	2.273m	2.01m	2.32m	3.205m	3.501m	2.90m
Ability to Cross ditch	X	X	X	√X	√X	√X

Information gathered from Trewhitt: 1999.