

Archaeological Observation

South East Water

Swinley Forest Strategic Water
Main

Bracknell

Berkshire/Surrey

south east water

Report Specification:

Compilation:

Jessica Cook BSc

Artwork:

Holly Litherland BA

Editing:

George Children MA MCIfA

Final Edit & Approval:

Neil Shurety Dip. M G M Inst M

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Cover: View south showing probable Second World War structural remains revealed on Route 1 of the pipeline scheme

General Enquiries: E: info@borderarchaeology.com | T: 01568 610101

Border Archaeology Regional Offices

Bristol

Park House, 10 Park Street,
Bristol, BS1 5HX
T: 0117 907 4735

Leeds

No 1 Leeds, 26 Whitehall Road,
Leeds, LS12 1BE
T: 0113 3570390

Leominster (Administration)

Chapel Walk, Burgess Street,
Leominster, HR6 8DE
T: 01568 610101

London

23 Hanover Square, London, W1S 1JB
T: 020 3714 9345

Milton Keynes

Luminous House, 300 South Row,
Milton Keynes, MK9 2FR
T: 01908 933765

Newport

Merlin House, No1 Langstone Business Park,
Newport, NP18 2HJ
T: 01633 415339

Winchester

Basepoint Business Centre, Winnal Valley Road,
Winchester, SO23 0LD
T: 01962 832777

Bristol | Leeds | Leominster | London | Milton Keynes | Newport | Winchester

Border Archaeology Limited: Registered Office: 45 Etnam Street, Leominster, HR6 8AE

Company Registration No: 07857388



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1 Executive Summary

Border Archaeology Ltd was instructed by South East Water to undertake a programme of archaeological observation during the course of engineering groundworks relating to the Swinley Forest Strategic Water Main Scheme Swinley Forest Bracknell (NGR: SU 88547 65947 - SU 87184 64665; NGR: SU 87184 64665 - SU 88059 63308).

The scheme of works comprised two separate pipeline routes originating at Crowthorne Service Reservoir and covered a total distance of approximately 3.3km. For the purposes of the observation, these two constituent pipeline routes were recorded as Route 1 and Route 2. Route 1 extended southeast to a connection point approximately 90m south of the Wish Stream in Paschal Wood, which forms the unitary authority boundary between Surrey Heath and Bracknell Forest, whilst Route 2 ran northeast to Penny Hill to the southwest of a forest access point from the A322 Bracknell Road (figs.1 & 2).

Topsoil was removed along each route to establish a working easement and a subsequent phase of trenching excavations were carried out for the installation of the new main. The engineering methodology employed to carry out this second phase of groundworks severely restricted identification of archaeological features or deposits and was thus not subject to observation.

The Crowthorne Service Reservoir which form the central point of the site are located to the east of the Romano-British settlement of Wickham Bushes, a Scheduled Ancient Monument (SAM 1016330), and the route itself bisected the course of a Roman road known locally as 'The Devil's Highway' and a further possible Roman road that ran between the settlement and The Devil's Highway.

The area has been used for military exercises since the 18th century and parts of Swinley Forest remain in Ministry of Defence (MoD) ownership. Approximately 700m at the SW end of the pipeline route is owned by the MoD whilst the remainder is Crown Estate. Visible remains of military use in the vicinity of the pipeline include a series of five Napoleonic earthwork redoubts (SAM 1016331) and a cluster of five possible tank traps associated with defensive works undertaken during the Second World War.

Additional evidence of the 20th -century military activity landscape was encountered beneath the topsoil during the course of the groundworks. The well-preserved base of a possible Second World War storage tank or similar structure was recorded immediately southeast of the tank traps and whilst no record of the structure exists, comparison with plans of similar structures recorded elsewhere strongly supports such an interpretation.

No further evidence was recovered during the course of the observations relating to the two Roman roads which are presumed to have been disturbed during the creation of the existing forest landscape.

2 Introduction

Border Archaeology Ltd (BAL) was instructed by South East Water to undertake a programme of archaeological observation during the engineering groundworks phase of the Swinley Forest Strategic Water Main Scheme Swinley Forest Bracknell (centred upon NGR: SU 87184 64665) extending for a distance of approximately 3.3km within Bracknell Forest and Surrey Heath (*fig. 2*).

Copies of this report will be provided to South East Water, Roland Smith of Berkshire Archaeology and Tony Howe Senior Planning Archaeologist Surrey Council.

3 Site Description

The site lies within Swinley Park Plateau Forest and Heaths, an area of conifer plantation established in Bracknell Forest and Surrey Heath in the early 19th century. The area lies at over 75m AOD rising to 100m AOD at its most southerly extent, forming a lowland plateau.

The site was in military use prior to the establishment of the existing woodland and continued to be utilised by the military throughout the 19th and 20th centuries. The site also occupies an Iron Age and Romano-British landscape represented by the hillfort of Caesar's Camp and the settlement of Wickham Bushes and its associated road and track network.

The site has not been subject to modern development and any buried remains were thus considered likely to be well preserved.

The site comprised two constituent pipeline routes:

- Route 1 - Paschal Wood to Crowthorne Service Reservoir
- Route 2 - Crowthorne Service Reservoir to Penny Hill.

Route 1 was approximately 1.4km in length extending from a connection point in Paschal Wood (SU 88059 63308) c.90m S of the Wish Stream (which forms the unitary authority boundary between Surrey Heath and Bracknell Forest) and continuing for a further c.800m parallel to the forest track to Lower Star Post (SU 87466 64066). At this point, the route diverted to avoid a possible Second World War Tank Trap (HER MRM16285) before continuing c.600m to Upper Star Post (SU 87152 64534), where it crossed the course of the Roman Road known locally as 'The Devil's Highway'. The route then split into two sections that joined existing pipework at the Crowthorne Reservoir (SU 87184 64665) with a short section of c.85m located on the SE side of the reservoir. The first approximately 700m of this route was located within land owned by the Ministry of Defence, the remaining 700m falling within land owned by the Crown Estate.

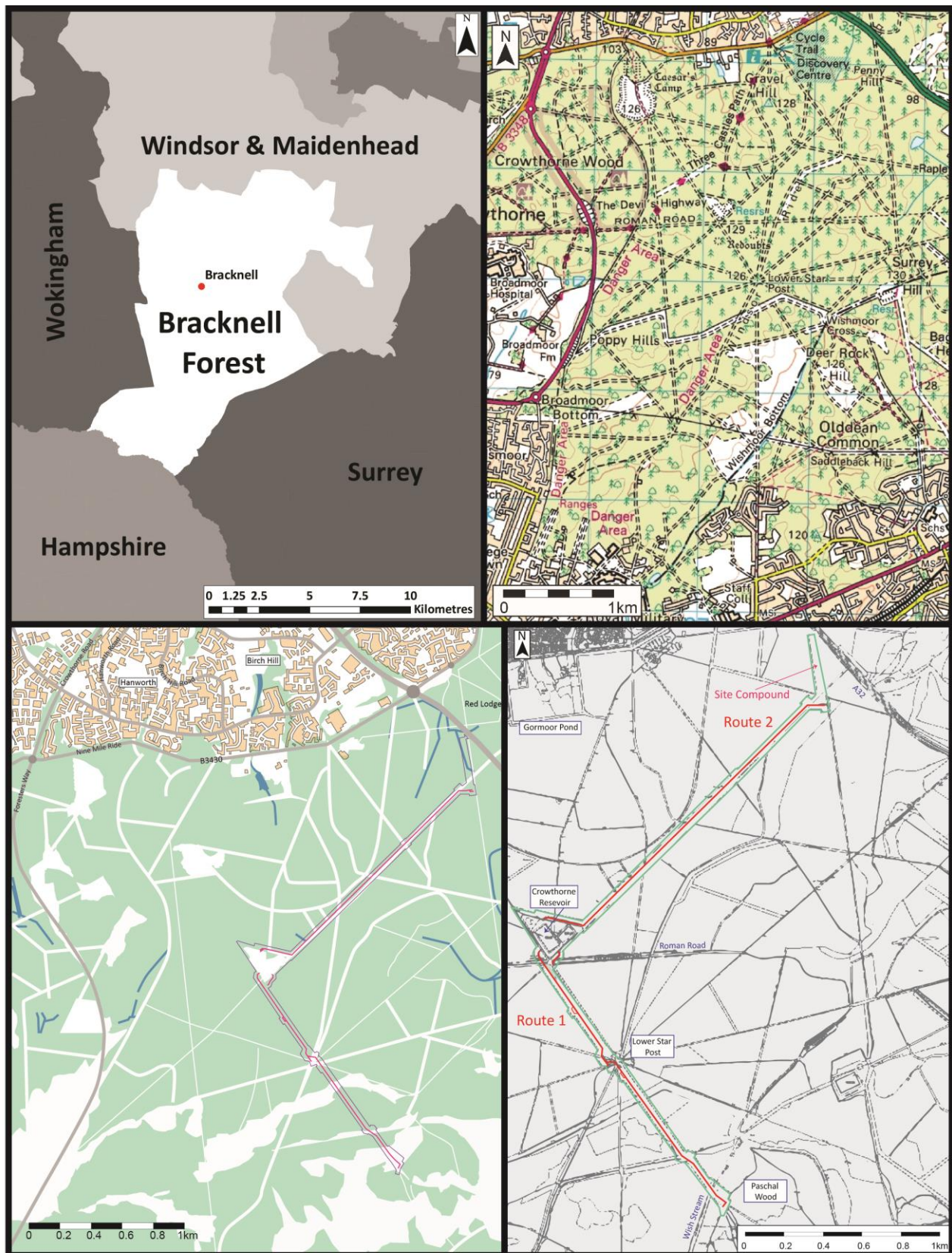


Fig. 1: Site location plan

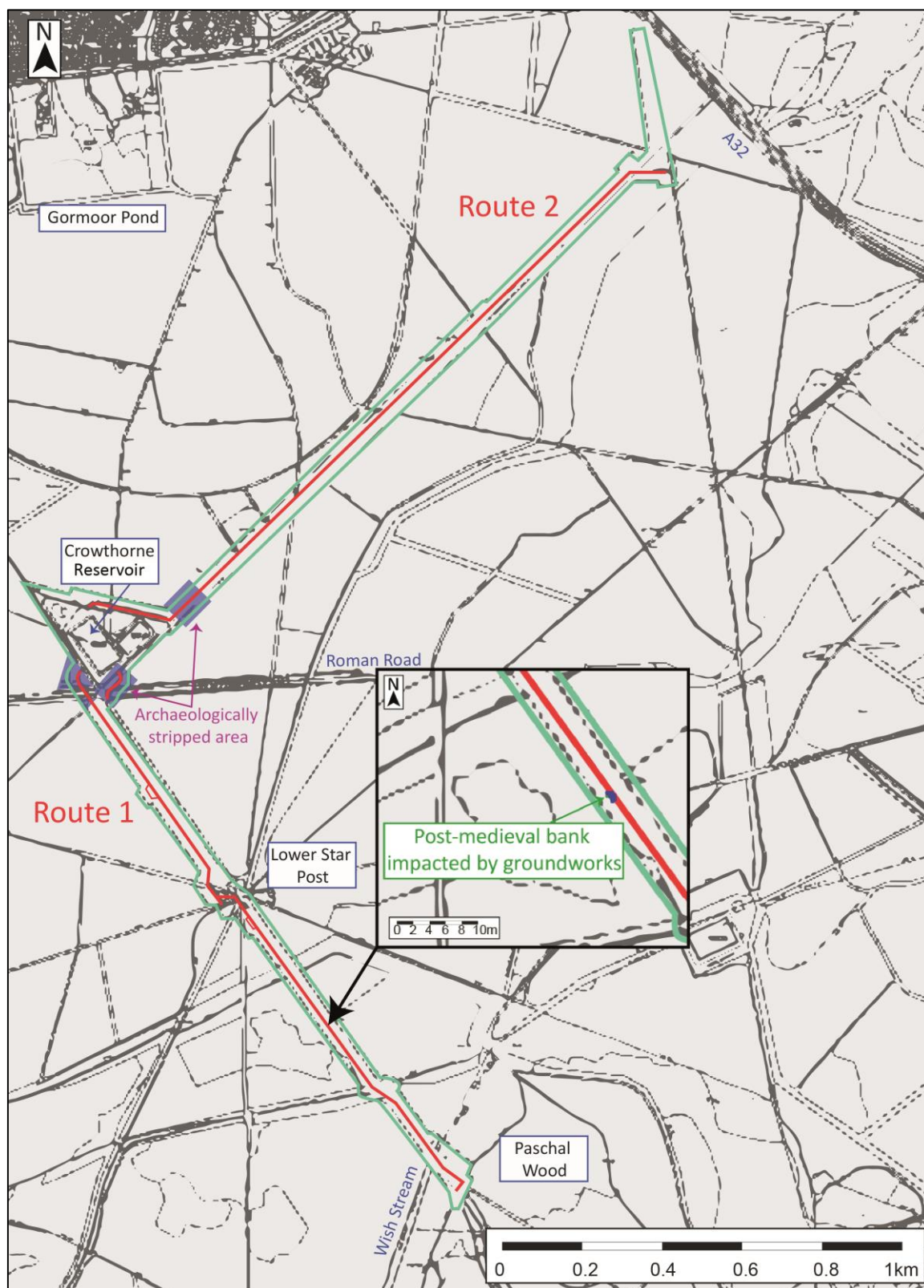


Fig. 2: Plan showing location of groundworks

Route 2 extended over a distance of approximately 1.9km from the Crowthorne Service Reservoir NE to Penny Hill, where it joined existing pipework in the forest track at SU 88547 65947. A compound measuring 285m × 20m was also present at the N end of this route, adjacent to Windsor Rise.

Another phase of groundworks was carried out at Ringmead Nine Mile Ride in proximity to the Iron Age hill fort known as 'Caesar's Camp', which is the subject of a separate report.

3.1 Soils and Geology

Two predominant soil types have been identified in the immediate vicinity of the site, consisting of paleo-argillic podzols of the SOUTHAMPTON series (634) and stagnogley-podzols of the Holidays Hill series (643a). The first of these is characterised by lowland heath habitats, coniferous and deciduous woodland. The soils in these areas are composed of well-drained very acid, very flinty sandy soils with bleached subsurface horizon. The geology is plateau gravel and river terrace drift.

The Holidays Hill series consists of wet lowland heath habitats and coniferous woodland. These comprise naturally very acid sandy over clayey and loamy over clayey soils, locally with humose or peaty surface horizons, slowly permeable subsoils and slight seasonal waterlogging. They are underlain by Tertiary and Cretaceous sand, loam and clay (SSEW, 1983). The soil conditions within this area are generally characterised by a thin layer of sandy soil directly over subsoil.

4 Historical and Archaeological Background

A discussion of the historical and archaeological background to the scheme compiled in 2013 (Barratt 2013) is based upon consultation of the Berkshire Historic Environment Record (HER) and all archaeological monuments and features within the study area, and for that of the Ringmead Nine Mile Ride scheme of works, were identified as heritage assets prior to the commencement of groundworks (*fig. 3*); those considered likely to be impacted by the engineering works were subject to a full, archaeologically monitored machine strip to the depth of the underlying geology (as distinct from topsoil removal carried out over the majority of the route). Any extant features to be impacted were subject to archaeological survey prior to the commencement of works.

4.1 Prehistoric

Although there is little to no evidence for significant archaeological sites and features relating to prehistoric activity in the immediate vicinity of the pipeline route, evidence from the wider landscape confirms the area witnessed both occupation and funerary activity during the Neolithic, Bronze Age and Iron Age periods.

Archaeological investigations and the discovery of flint tools in the vicinity of an area subsequently identified as the Middle/Late Iron Age hillfort of 'Caesar's Camp' indicate a late Neolithic presence, continuing into the early Bronze Age (HER MBF569, MBF8118 and MBF7421).

A sherd of possible Bronze Age pottery was also discovered at Wickham Bushes, later to become the site of a Romano-British settlement (HER MRM 15946).

Extensive evidence of Bronze Age funerary practice has been discovered in the Bracknell Forest. A cemetery comprising a group of four barrow features and a rectangular platform was identified on a triangular summit by Thomas Welch in the late 1970s (Grew *et al.* 1980, 396) (HER MBF 632; MBF 633; MBF 634; MBF 635; MBF 636). A large isolated mound in Bramshill Forest known since the early modern period as 'Windmill Stem' is also understood to have originated as a Bronze Age burial mound which was later reused as a windmill mound during the post-medieval period (MBF638).

Caesar's Camp hillfort is a Scheduled Ancient Monument comprising a single massive rampart bank enclosing an area of more than 10ha (MBF 569). The rampart attains a height of 4m in places and is up to 15m wide. A further bank and ditch extend along the E side of the monument, together with several others at different points around the perimeter (MBF 7414). The original entrance is located at the southern extent of the monument, where the original causeway is believed to survive as a buried feature.

Limited archaeological investigation within the monument has revealed pottery scatters (MBF 7422; MBF 7423; MBF 7425) and a large storage jar (MBF 7424) in addition to pits of a Middle/Late Iron Age date (MBF 7413). Geophysical survey covering part of the site revealed pits, tracks and possible building structures below the present ground level. Occupation appears to have continued into the Late Pre-Roman Iron Age (LPRIA), evidence of which included a gravel floor laid across a silt-filled ditch (MBFF 625), shallow ditches and gullies (MBF 627) and a coin of the early 1st-century British leader Cunobelin (MBF 569).

4.2 Roman

A section of the important Roman Road between the provincial capital of *Londinium* and the cantonal capital of the *Atrebat*es at *Calleva Atrebatum* (Silchester) (Margary's 'Route 4a') runs through the woods of the study area and remained a visible feature in historical times, when it acquired the name 'Devil's Highway' (MWK 1733).

Margary's interpretation of the alignment of the road in this vicinity traces it from the Thames crossing at Staines heading SW towards the entrance of Bagshot Park, at which point its alignment turned to continue roughly westwards for the remaining 17 miles to Silchester (Margary 1955, 76-9). This interpretation has been challenged by Thomas Welch, who claimed that the road followed an alternative course, forming a loop intended to take in the Roman sites at Wickham Bushes and Rapley's Farm (MBF 1765). Whichever interpretation proves to be correct, there were evidently minor Roman roads and trackways in the vicinity, these being reflected in the 'rides' that still run through the forest (MBF 1768).

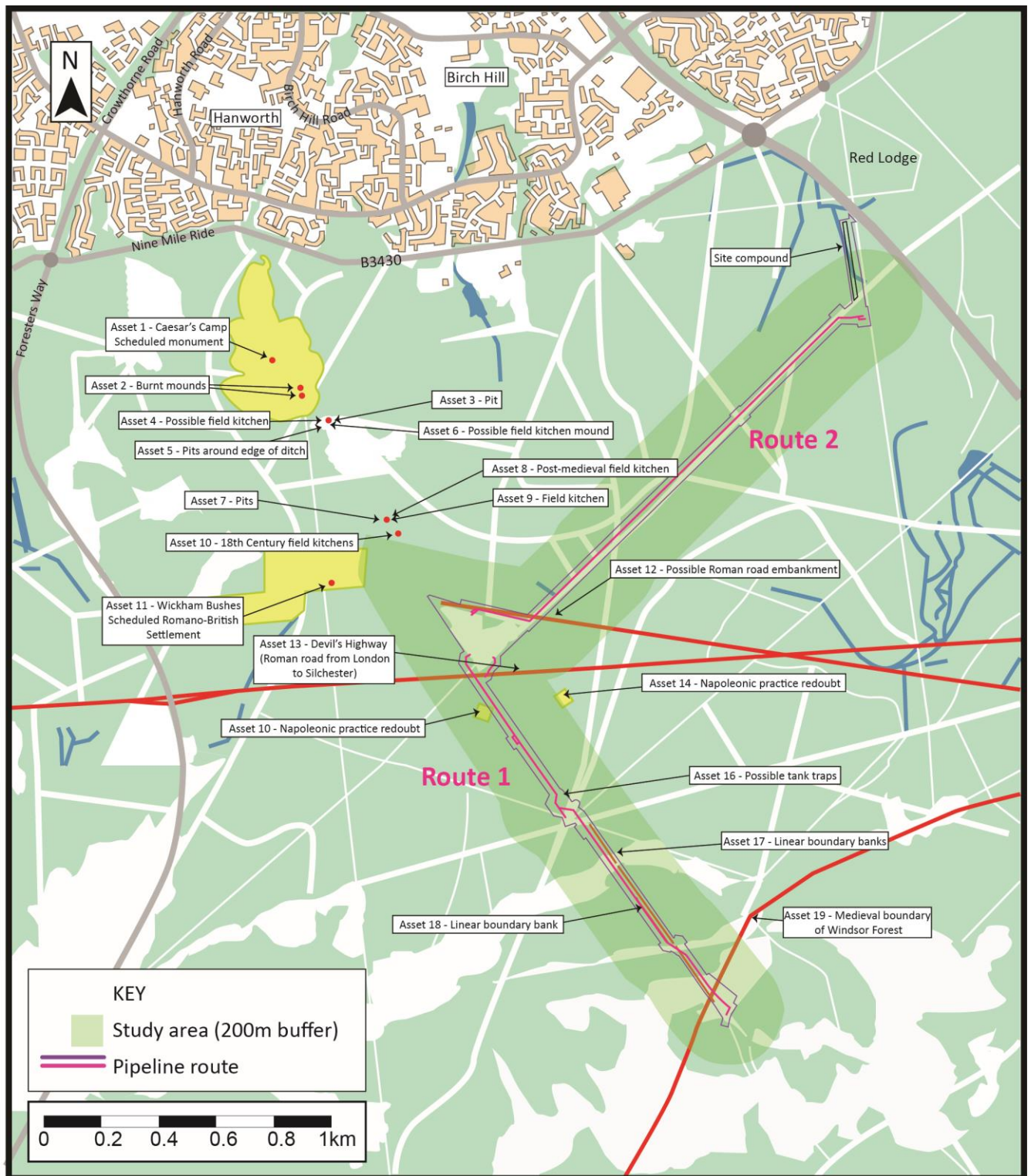


Fig. 3: Plan showing identified heritage assets in study area and wider landscape
(Based on plan supplied by Jacobs)

Following construction of the road, the small linear settlement or town at Wickham Bushes was established. The settlement is a Scheduled Ancient Monument and lies to the W of the Crowthorne Service Reservoir (MBF 623) in relatively close proximity to the pipeline route.

The settlement was occupied throughout the Roman period and included dwellings, agricultural structures and small, semi-industrial workshops. The buried remains of a number of large, multi-room buildings with tiled roofs have been identified. Large quantities of pottery, a brooch and other artefacts suggest a series of successive phases of occupation well into the 4th century AD (MBF 628; MBF 631; MRM 15793; MRM 15969; MRM 16394).

Within the wider landscape, archaeological fieldwork in the vicinity of Rapley Lake has also revealed evidence of late Roman industrial and settlement activity at a probable metalworking site (MBF 4018).

4.3 Medieval

Little archaeological evidence for medieval activity has been identified within the boundary of the study area. Only two finds have been recorded, both at the Caesar's Camp earthwork. These included a single medieval nail and a ceramic pipkin handle, dated to the 13th/14th century (MBF 7426; MBF 7427).

The area formed a part of the township of Sonning, which comprised the present parishes of Sonning, Ruscombe, Arborfield, Sandhurst, Hurst and Wokingham and was a part of the 'Charlton' hundred, which was held in demesne by the Bishop of Salisbury (Ditchfield & Page 1923, 198; Williams & Martin 2002, 141).

Sonning was a large and profitable holding, assessed at 60 hides and worth £50 per annum to its lord during the reign of Edward the Confessor. However, the Domesday survey of 1086 recorded only 24 hides and its annual value had fallen to £40 (Williams & Martin 2002, 144).

The manor of Sandhurst was a late development, first mentioned in a document dated 1316 (Ditchfield & Page 1923, 206-10). At that time, it was still held by the Bishop of Salisbury, although it had passed into the possession of the Abbey of Chertsey by the end of the 15th century (*ibid*). The manor was surrendered to the Crown at the Dissolution, before being acquired by a succession of lay landowners after 1562.

4.4 Post-medieval

The study area remained common heathland for much of the post-medieval period. The local plateau gravels were exploited for building materials by local residents and a post-medieval gravel pit is recorded at Caesar's Camp (MBF 7419). Other features possibly associated with low-level land use during the period included a boundary ditch or gully and a fence post, both discovered at the same site (MBF 7418; MBF 7420). A prominent post-medieval linear boundary bank at Lower Star Post was shown on the Ordnance Survey 1st Edition map of 1876 (MRM 16283).

The early 1790s represented a period of increasing concern for the British government as the tumultuous events surrounding the French Revolution unfolded on the Continent. Although war between Britain and Revolutionary

France did not break out until 1793, the study area witnessed initial efforts the preceding year to place the army on a war footing and at least five practice earthwork redoubts and associated monuments were established in a line extending some 2km along the edge of the Easthampstead Plain plateau (MBF 572; MBF 573; MBF 574; MBF 575; MBF 576; MBF 577; MBF 578).

Associated features included a sub-square redoubt at Caesar's Camp, roughly 40m across (MBF 586), likely to represent a reviewing mound enabling officers to observe and direct manoeuvres taking place on the plain below. A trench system, understood to have been contemporary with the redoubts, was also recorded; these and other trenches were also used for infantry training during subsequent conflicts (MBF 6692; MBF 6693; MBF 6694).

Troops on exercise were fed by military field kitchens, probable evidence of which has been discovered in the study area (MBF 579; MBF 580; MBF 582; MBF 583; MBF 584). Several of the latter features have been truncated by tree-planting activity, which appears to have commenced following the end of the Napoleonic Wars in the second decade of the 19th century.

The N and NW extent of the study area also encompasses evidence of 18th -and 19th -century elite landscapes, including the 19th -century gardens of South Hill Park (MBF 6298) and the remains of the Hut on Hut Hill, which formerly belonged to the 9th Marquis of Queensbury (MRM 16532).

In 1812, the Royal Military College moved from Great Marlow in Buckinghamshire to Sandhurst, where it purchased an estate of 450 acres from William Pitt, Earl of Chatham (Ditchfield & Page 1923, 206-10). By the 1840s, the College owned an estate of nearly 700 acres in the parish, large areas of which had been planted with trees by the middle of the century.

The tithe apportionment of Sandhurst revealed the extent to which the sandy heathland in the parish had been planted with conifers by the early 1840s (TNA IR 29/2/107). Although the tithe map is damaged and in poor condition, the forest appears to have been part of the Crown's estate of 765 acres in the parish (TNA IR 30/2/107). The accompanying apportionment described the entire estate as 'plantations of firs', which appears to have been planted only relatively recently. By the early 20th century, up to 149 woods and plantations had been established in the parish (Ditchfield & Page 1923, 206).

4.5 Modern

A small number of features probably dating to the late 19th and early 20th centuries are first shown on the 1911 Ordnance Survey map. These included the Keeper's Cottage (since demolished) and an associated well at Caesar's Camp (MBF 570; MBF 571).

As noted, parts of the Bracknell and Swinley Forests had been used for infantry training by the British Army for more than two centuries and the area continued to be militarily important during the Second World War.

An arrangement of five octagonal concrete blocks is located on the pipeline route at Lower Star Post. Each block measures 1.6m high and 1.8m wide and has evidence for timber shuttering. These concrete blocks probably

represent a number of anti-tank (AT) obstacles that would have formed part of the 'Stop' line of static defences erected across southern England during the summer of 1940, following the evacuation of Dunkirk, and it is probable that they have been removed from their original defensive context (MRM 16285).

5 Methodology

The programme of archaeological work was carried out in accordance with practices set out in *Standard and guidance for an archaeological watching brief* (ClfA 2014), *Standard and guidance for archaeological excavation* (ClfA 2014), *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (ClfA 2014) and *Management of Research Projects in the Historic Environment: The MoRPHE Project Manager's Guide* (Lee, 2015). Border Archaeology adhered to the *ClfA Code of conduct* (2014) and *Regulations for professional conduct* (2015) throughout the programme of work.

5.1 Archaeological Observation

Intrusive ground-works within the specific study area comprised an initial topsoil strip to establish a working easement of 15m. Topsoil removal was carried out under archaeological observation using a machine equipped with a toothless ditching bucket. A secondary phase of pipe-trenching was subsequently undertaken for the insertion of the new main. The box insertion technique employed for this purpose precluded identification of archaeological features or deposits and these engineering operations were thus not subject to observation.

However, prior to the commencement of groundworks, several areas of the route had been identified as having high potential for encountering archaeological remains and these specified areas were subject to a full archaeological strip extending to the depth of the natural geology.

An archaeologist was present during all works potentially affecting archaeological remains and the presence/absence of archaeological features was noted and recorded to a satisfactory and proper standard, consistent with ClfA guidance (2014).

5.2 Recording

Full written, graphic and photographic records were made in accordance with BAL's *Archaeological Field Recording Manual* (2014). Records included:

- A *pro-forma* context record for each stratigraphic unit
- Plans of excavated areas showing the extent of the area (tied into the Ordnance Survey National Grid and located on a 1:2500 plan), the extent of all stratigraphic units, and appropriate detail within stratigraphic units
- A photographic record of all stratigraphic units - including a representative photographic record of the progress of the archaeological work. The record was made using a high-resolution digital camera and an appropriate scale was included in each photograph; all photographic records were

indexed and cross-referenced to written site records. Details concerning subject and direction of view were maintained in a photographic register, indexed by frame number.

5.3 Excavation

All archaeological deposits identified as appropriate for further investigation were examined according to established criteria for the excavation of archaeological remains (ClfA 2014). Excavation is herein defined as: ‘...a programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological deposits, features and structures and, as appropriate, retrieves artefacts, ecofacts and other remains...’ (ClfA 2014, 4).

Hand-excavation of archaeological deposits was undertaken for the recovery of stratigraphic data, with the extent and character (colour, texture, boundary characteristics etc.) of each archaeological context being defined by trowelling prior to excavation.

Excavation of features and deposits was sufficient to establish their date and character and was undertaken strictly within engineering parameters. The excavation of pits and other non-structural intrusions allowed for their stratigraphic recording and for the identification of any related material.

6 Results

6.1 Route 1

Item	Context No.	Type	Interpretation	Discussion	Finds					Dating
					Small Find	Pot	Bone	Misc.	Sample No.	
1	(100)	Layer	Humic layer	Loose, dark brown humic material; easement wide to a thickness of 0.1m.						Modern
2	(101)	Layer	Topsoil	Loose dark brown sterile silty sand; easement wide at an average thickness of 0.15m.						Post-Medieval
3	(102)	Layer	Subsoil	Loose mottled light grey and mid brown ashy silty sand and gravels; easement wide to an average thickness of 0.11m						Post-Medieval
4	(103)	Layer	Natural Substrate	Moderately compacted mottled light yellow & mid orange-yellow sterile sand & sandy gravels; easement wide to L.O.E						N/A
5	104	Structure	Base of emplacement	Concrete; octagonal or sub-octagonal in plan; measured 12.6 × 12.6 × 0.1m; not excavated (retained <i>in-situ</i>).						Modern
6	105	Structure	Brick wall of emplacement	Masonry; circular in plan; red brick - size of materials: 230 × 100 × 60mm; firm grey mortar bonding; measured 12m (diameter) × 0.08m; not excavated (retained <i>in situ</i>).						Modern
7	106	Structure	Brick wall of emplacement	Masonry; semi-circular in plan; red brick - size of materials: 230 × 100 × 60mm; firm grey mortar						Modern

Item	Context No.	Type	Interpretation	Discussion	Finds					Dating
					Small Find	Pot	Bone	Misc.	Sample No.	
				bonding; measured 10 × 0.23 × 0.2m; not excavated (retained <i>in situ</i>).						
8	107	Structure	Brick wall of probable drain	Masonry; square in plan (forming chamber); red brick – size of materials: 230 × 100 × 60mm; firm grey mortar bonding; measured 0.8 × 0.8 × 1m; not excavated (retained <i>in situ</i>).						Modern

Route 1 extended over a distance of 1.4km from Paschal Wood (NGR: SU 88059 63308) to Crowthorne Service Reservoir (NGR: SU 87184 64665). The probable base of a storage tank or similar structure relating to Second World War military activity was encountered during the course of the observation (*fig. 5*) but no further archaeological features or deposits were present.

The stratigraphic profile comprised a humic deposit (100) of rich organic composition overlying topsoil (101), which sealed an ash-rich subsoil (102) above the natural substrate (103). The identified structure was encountered directly beneath the humic layer (100).

Deposits (101) and (102) differed in terms of composition from typical agricultural topsoil and subsoil deposits and represent the gradual build-up of soils (101), with the underlying ash-rich material (102) either representing imported deposits brought in to aid plantation by the creation of shallow linear banks or the potential largescale clearance of heathland by burning prior to the establishment of woodland. It is also possible that the subsoil (102) was formed through a combination of both, utilizing the results of any *in-situ* burning in the plantation process.



Plate 1: View NW of Route 1 easement showing depth of topsoil strip and ash-rich subsoil

The structure itself (centred upon NGR: SU 87480 64038) was approximately 12.5m in diameter and comprised a concrete octagonal or sub-octagonal base (104) upon which was constructed a circular brick wall (105) with an outer semi-circular brick wall (106) on the eastern edge and a sloping concrete lip on the internal face; it is possible that this outer wall (106) may originally have comprised a full circle. Wall (105) was represented only by a single brick course giving a height of 0.1m whilst the outer wall (106) survived to two courses and a maximum height of

0.21m (*Plate 2, fig. 4*).

The base of the structure, which appears to have been cast in several sections, was perforated by two rectangular voids at its SE and S edges. The larger of these was located on the SE side and measured 6m × 2m, with a 0.1m depth to the concrete, whilst the smaller void measured 0.8m × 0.5m, again with a depth to the concrete of 0.1m.



Plate 2: View SE of structure (104)

To the immediate W of the structure was a square chamber of brick construction (107) measuring 0.8m × 0.8m × 1m and probably representing a drainage access chamber or similar (*Plate 3*). Both the main structure itself and this possible drain feature were preserved *in-situ* (by means of pipeline diversion) with ground clearance and reduction operations in close proximity to the structure carried out under archaeological supervision strictly within the limits of the amended pipeline route.

No evidence of associated rubble building material was encountered in the immediate vicinity, which might suggest either that the surviving remains represented the original dimensions of the structure, rather than simply the base for a building, or that the original superstructure had been demolished and the site cleared.

Initial on-site interpretation, based on the structure's plan and its proximity to five Second World War tank traps, suggested a military function such as an ant-aircraft artillery emplacement or searchlight base. Examination of military records relating to the area, however, found no evidence relating to the structure and neither date nor

function could thus be ascertained. Consultation with Berkshire HER and Historic England suggested the structure may be the base of a static storage (water) tank, although in the absence of any documentary reference this observation is based solely on comparison with similar structures.

The route also ran close to one of five Napoleonic practice redoubts (SAM 1016331) and associated monuments forming a linear distribution extending over a distance of some 2km along the edge of the Easthampstead Plain and which relate to troop training of troops in advance of the Napoleonic conflicts of the late 18th century.

The redoubt (*Plate 4*) was located to the SE of Upper Star Post, c.15m from the pipeline route, and survived in a fairly well preserved condition; the working width of the easement was reduced in this area. No evidence of associated features or deposits was encountered during the works.

At the NW extent of Route 1, the pipeline bisected the course of the Roman road referred to locally as 'The Devil's Highway', a section of the major route running between *Londinium* and *Calleva Atrebatum* (Silchester). The course of the Roman road has also previously been bisected in this area by an existing forest ride and no visible evidence of the road or its associated *agger* was noted in the immediate vicinity.

An area of approximately 40m × 20m was stripped in the vicinity of the Roman road under archaeological supervision to the level of the natural geology (in contrast to the topsoil strip observed over the majority of the route). No evidence of the original road or associated features was encountered (*Plate 5*) and it would appear likely that the existing rides crossing this section of The Devil's Highway would have substantially disturbed any earlier deposits.

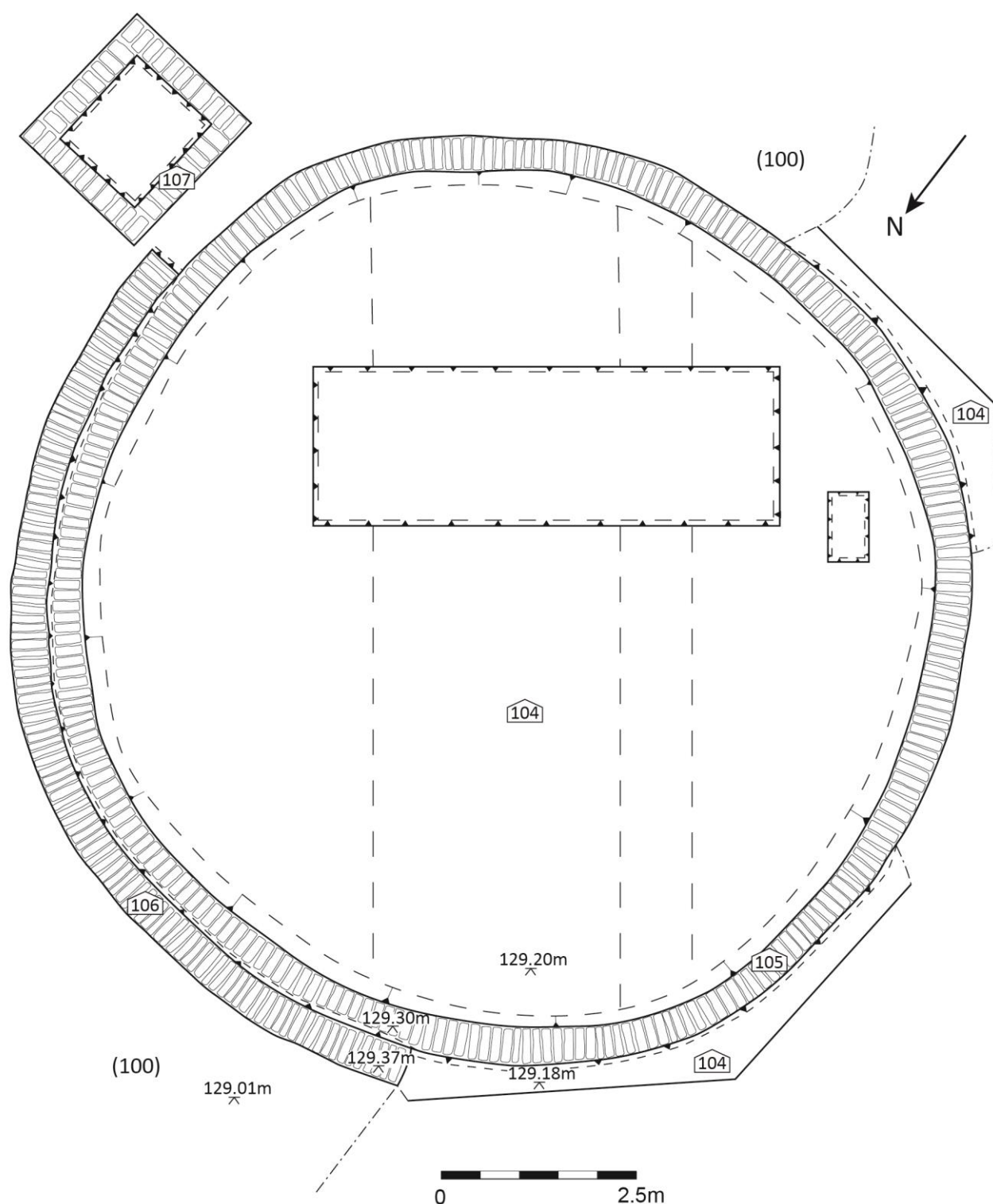


Fig. 4: Plan of structures (104) and (107)

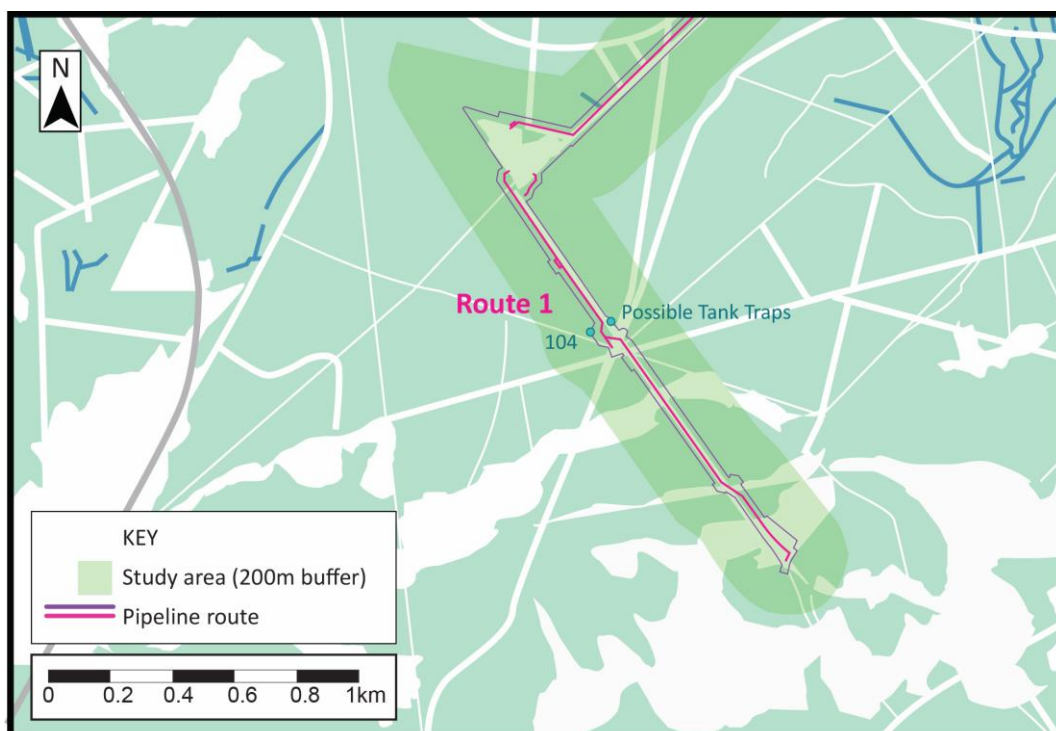


Fig. 4: Plan showing location of structure (104) in relation to tank traps



Plate 3: View ESE of brick drain or similar feature (107) (surrounding soil unexcavated to prevent structural damage)



Plate 4: View WNW of Napoleonic redoubt located in close proximity to Route 1



Plate 5: View SW showing stripped area to the NW of the junction of forest ride and The Devil's Highway

The Route 1 pipeline also bisected or ran close to several post-medieval banks at its SE extent. The pipeline route crossed the line of the medieval boundary of Windsor Forest at the terminus. The embankment demarcating this boundary is of unknown but probably modern date and has previously undergone partial truncation by a modern un-metalled access road in this area; no further disturbance was caused by the groundworks.

Two additional linear banks were noted further to the NW of this boundary, near Lower Star Post. One of these, first recorded on the 1st -Edition Ordnance Survey map of 1876, attained a height of up to 0.7m in places and ran parallel to the pipeline over a distance of approximately 780m. Opposite this, on the W edge of the ride, another post-medieval bank was directly impacted by the groundworks. This bank extended only for a distance of 20m and had a height of less than 0.2m. It is not shown on the 1876 Ordnance Survey map and is thus presumed to be of a later date. Prior to the commencement of pipe-trenching the feature was surveyed.

No additional features or deposits associated with any of these embankments were encountered during the course of the groundworks.

6.2 Route 2

Item	Context No.	Type	Interpretation	Discussion	Finds					Dating
					Small Find	Pot	Bone	Misc.	Sample No.	
1	(200)	Layer	Humus layer	Loose, dark brown humic material; easement wide to a thickness of 0.1m.						Modern
2	(201)	Layer	Topsoil	Loose dark brown sterile silty sand; easement wide to an average thickness of 0.18m.						Post-Medieval
3	(202)	Layer	Subsoil	Loose mottled light grey & mid brown ashy silty sand & gravels; easement wide to an average thickness of 0.13m						Post-Medieval
4	(203)	Layer	Natural substrate	Moderately compacted mottled light yellow & mid orange-yellow sterile sand & sandy gravels; easement wide to L.O.E						N/A

Route 2 extended over a distance of some 1.9km from Crowthorne Reservoir (NGR: SU 87184 64665) to Penny Hill (NGR: SU 88547 65947). An additional 285m × 20m compound was excavated at the N end of the route, adjacent to Windsor Rise. No features or deposits of archaeological significance were present in either the route area or the compound.

The stratigraphic profile was the same as that in Route 1 and comprised of an organic humic deposit (200) overlying the topsoil (201), which sealed an ash-rich subsoil (202) which, in turn, sealed the natural substrate (203) (*Plate 6*); again, the soils appear to have formed from the gradual accumulation of material and either the deliberate introduction of material or the widespread burning of the heathland prior to the establishment of the woodland, or possibly a combination of the both processes.



Plate 6: Route 2 easement, view to the NE

At the SW end of the route the pipeline bisected the course of a partial embankment previously interpreted by Welch as forming part of a Roman road serving the settlement site of Wickham Bushes, although the accuracy of this interpretation is unconfirmed.

However, no evidence for any embankment was identified during the archaeological survey carried out prior to the commencement of the groundworks or during the easement strip, when the specific area of the junction of this feature with the pipeline route was subject to a full archaeologically observed soil removal to the level of the natural geology (as opposed to the topsoil strip carried out across the majority of the route) (*Plate 7*).

This absence of embankment evidence within the immediate vicinity of the pipeline is not indicative of the survival of the feature as a whole, as the partially surviving sections noted by Welch (200m WSW and 600m ENE of the route) lie 2-300m from the pipeline route. It is possible that the bank was removed in this area during the establishment of the woodland or the more recent surfacing of forest rides.



Plate 7: View NE of stripped area at junction of the pipeline route with course of the possible Roman road embankment

7 Discussion

The programme of archaeological work revealed only a single feature of archaeological significance, this paucity of finds being partially attributable to engineering constraints. The feature, which was identified towards the SE extent of the route, comprised a roughly octagonal concrete structure (104/107), evidently of Second World War date, which appears to represent the base for a military structure such as a building, anti-aircraft artillery or searchlight emplacement or storage tank.

Topsoil was removed within the 15m -wide easement and this was found to have a maximum depth of 0.3m. Although the underlying natural geology was partially visible in places (*Plate 8*), for the most part, this level, at which it could be expected that archaeological features and deposits might be encountered, was obscured by a covering of ash-rich subsoil (102 & 202). Additionally, the secondary pipe-trenching phase of works could not be archaeologically observed owing to the employment of a box-insertion technique as distinct from conventional open-cut trenching using a machine and toothless bucket.



Plate 8: View to the NE of the easement in Route 2 showing partial exposure of areas of natural geology

However, the scheme also encountered little to no evidence relating to the heritage assets identified prior to the commencement of works as likely to be directly impacted by the route. This may be due to potential disturbance having occurred as a result of tree-planting or the surfacing of forest rides.

The pipeline route falls within the wider landscape of the Iron Age hill fort of Caesar's Camp and the Romano-British settlement of Wickham Bushes (Monument No. 247836) located to the S (NGR: SU 8645 6488). The settlement was established along a minor road running from the main road linking *Londinium* and *Calleva Atrebatum* (Silchester), which is situated less than 400m to the S (Margary's 'Route 4a') (Margary 1973). Although the precise route of this road, known locally as 'The Devil's Highway', is subject to debate, it would appear that the settlement lay N of its projected course, as indicated by several stretches of *agger* (Ford 2005, 3). It should be noted however that the results of trial-trenching carried out in 2006 on this projected road line some 1.2-2.4km W of the NW terminus of Route 1 identified only tentative evidence of road construction activity. Five trenches measuring 6-8.5m were opened but no conclusive evidence of a road surface or flanking ditches was revealed; only the presence of cobbles in two of the trenches provided any trace of the road itself and, whilst they could have represented reused elements of the original surface, they were clearly not *in-situ* (Colls 2006).

Welch has suggested that the road deviated from its presumed course to service Wickham Bushes, although the evidence for this is inconclusive (M. Young, cited in Ford 2005, 3) and it might more plausibly be suggested that the settlement was integrated with the road system via a network of minor tracks (Ford 2005, 3).

The pipeline bisected the projected course of The Devil's Highway, as generally accepted, at the NW terminus of Route 1 whilst the SW terminus of Route 2 crossed the line of an embankment observed by Welch and interpreted by him as representing the course of the road where it deviated from its route to access the settlement. No evidence of *agger* or flanking ditches was encountered during the present programme of work, which may be attributable to disturbance resulting from tree-planting activity. It should also be noted that area subject to observation was relatively limited has additionally been impacted by a modern forest ride. It is also worth noting that the extant sections of road seen by Margary were flanked by roadside ditches set 83ft (25m-26m) apart; it could thus be the case that the constraints to which the present programme of work was subject limited the potential to identify any such widely-spaced features and lack of discovery is not therefore indicative of an absence of remains.

No evidence was encountered indicative of features associated with the Napoleonic practice redoubts that formed part of the 18th -19th century military landscape established in the area. This is more likely due to the temporary use of these features and the subsequent plantation of woodland affecting the survival rate of associated smaller features and artefacts than to any observational constraints.

During the Second World War, the area is believed to have been used as a training ground in preparation for the D-Day landings in June 1944. This area which is situated close to the military training college at Sandhurst attests to fairly intensive wartime use. The innermost of the GHQ stop lines ran through the forest and a number of defensive features such as pillboxes, ditches and other anti-tank features have survived to the present. Of these, the five Second World War concrete tank traps located at Lower Star Post within Route 1 were identified as an existing heritage asset prior to the commencement of the groundworks and the pipeline re-routed to avoid them.

Additionally, however, initial clearance of the organic humic layer (100) in this area revealed further evidence of military activity: a large concrete structure (centred upon NGR: SU 87480 64038) was revealed in close proximity to the tank traps. The roughly octagonal structure (104) had a double row of circular brick walls, of which the outer wall either retained its original semi-circular plan or else survived in only a partially complete form. The structure measured approximately 12.5m in diameter and was considered to be a possible emplacement for the positioning of a searchlight or anti-aircraft artillery or other heavy weapon (*Plate 2, cover*), again dating from the Second World War period, based on its proximity to the tank traps. Subsequent examination of military documentary sources, however, failed to identify any record relating to the structure and consultation with Berkshire HER and Historic England indicated that an emplacement would have typically had a gravel floor rather than a substantial concrete one (R. Thomas pers. comm. 2015).

It is suggested that, whilst the structure is indeed likely to be of Second World War date, it is in fact more likely to represent the base of a static storage tank containing water or fuel. The rectangular void would have formed a pumping sump at the base of the tank, although this would have required a lining in order to function. There is a

possibility that the structure represents an unfinished tank or less likely that the lining has subsequently been removed (R. Thomas pers. comm. 2015).

During the Second World War several different construction methods were used for building static storage tanks. Study of notes and scale drawings forming part of the Home Office Records of this time, specifically from the Chief Engineers Department relating to air-raid precautions and civil defence, shows that, although a concrete base appeared to be standard, the tank itself could have been formed from pre-cast concrete units, paving flags, timber or brick walls.

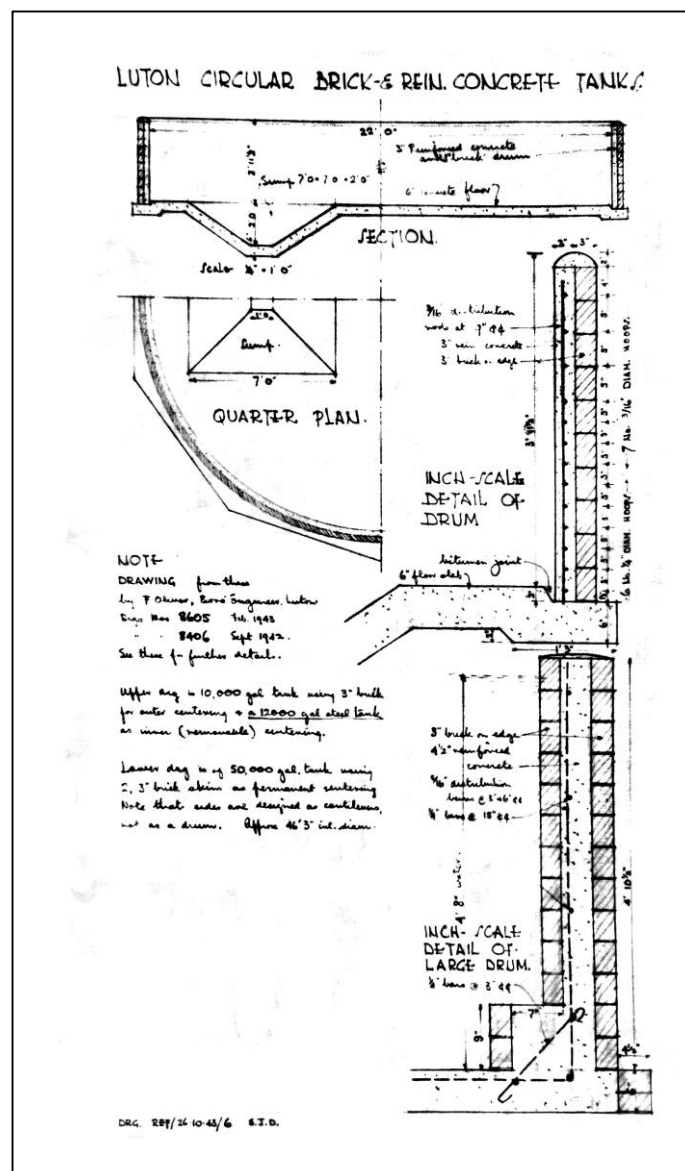


Fig. 5: Example of a specification for the construction of a static storage tank
 (Drawing TNA 449, forming part of a collection of notes on emergency static water tanks)
 (Reproduced by courtesy of The National Archives)

Comparison of (104) with the engineering drawing shown above (*fig. 5*) relating to a standard construction specification for a water storage tank clearly indicates points of similarity, including the octagonal base and circular walls, as well as the overall dimensions of 46' 3" (14m) and sump width of 7ft (2m). This strongly suggests that (104) comprises the standard base for a static water tank and that the possible drainage chamber (107) located to the E of the main structure probably relates to the pumping or sump mechanisms.

Although this may explain the function of the structure, its purpose remains unclear. However, if it is the same as the tank shown above, then it is a possibility that its purpose was also the same. With respect to the structure in Luton, the title of emergency static water tank and inclusion of the drawing within records relating to air-raised precautions and civil defences clearly indicate its function and any comparison between the two suggests that (104) was probably an emergency water store for combating potential forest fires.

However, as no records exist for this specific structure then it is also likely that it may have been used, or intended for use, to supply equipment or machinery during any possible D-Day preparations. The possibly hurried nature of such preparations may explain why the structure is potentially unlined or unfinished.

In spite of the overall lack of archaeological features identified, these results confirm the previous findings in relation to the preservation of the Roman roads and associated features present within this landscape and it would appear likely that further evidence has been recorded pointing to the role of Swinley Forest in the defence of Britain.

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10 Cartography

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Ordnance Survey 3rd Edition Berkshire 6-inch map 1913

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