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Gosport Heritage Action Zone (HAZ): An Assessment of Aerial Photographs and Lidar

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SUMMARY

The town of Gosport owes its origins and development to its association with the Royal Navy and the Naval dockyards at neighbouring Portsmouth established by Henry VIII. From the 15th century, when the earliest defences were built at the harbour mouth, a series of defended batteries and fortified lines have been constructed along the coast and within the town.

The Gosport Heritage Action Zone is part of a partnership project undertaken to raise awareness of the historic environment of Gosport in order to inform the delivery of heritage-led regeneration of the town. The aerial investigation and mapping project, summarised in this report, complements other ground survey research by Historic England on selected archaeological sites, and research carried out on the historic fabric of the town itself. This report attempts to place the town in its historic context and investigate how its history, particularly the naval and military sites and defences have shaped the town we see today.

Aerial photographs available to this project covered almost a century, documenting the changes to Gosport and its environs from the earliest aerial photograph taken in 1923 to the present day. They also capture remains of the town's military defences from the 15th century to the Second World War, as well as fragments of settlement from earlier periods visible as cropmarks in and around the town.

In particular, RAF aerial photographs taken during and after the Second World War offered a detailed view of the impact of that conflict on the town. The presence of the docks at Portsmouth and the naval installations, supply bases and airfields in and around Gosport made it a prime target throughout the war. Aerial photographs captured the installations, defences and a record of the catastrophic bomb damage suffered by the town. RAF photographs also record the preparations for the D-Day landings in Stokes Bay which was chosen as the site of one of the Mulberry Harbour manufacturing sites 1943-44. Post-war photographs recorded the subsequent emergency replacement housing in the form of prefabricated housing estates and the rapid construction of housing developments to address the housing shortage.

CONTRIBUTORS

The mapping and report were undertaken and researched by Fiona Small.
All aerial photographic analysis and mapping was carried out by the author. Unless otherwise credited, the copyright for all illustrations belongs to Historic England. UAS mapping and photography was undertaken by Steven Baker, Olaf Bayer and Dave Went. Aerial photography was undertaken by Damian Grady.

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DATE OF SURVEY

The survey and mapping were undertaken between November 2018-January 2019 and the report completed in February 2020.

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Cover image: Aerial photograph of Gosport, looking north east towards Portsmouth Harbour, HEA 33939_026 04-NOV-2020. ©Historic England Archive.

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INTRODUCTION

Gosport today occupies the south-eastern end of a peninsula which forms the western side of the mouth of Portsmouth Harbour. Gosport's existence and development are intrinsically linked to neighbouring Portsmouth dockyard which, from the Tudor period, became England's principal naval port and dockyard, and much of Gosport's history and fabric is directly linked to servicing and defending the Navy.

Gosport grew from a small fishing village across the water from Portsmouth to the main victualing and equipment manufacturing centre serving the Navy and the port. With the rising importance of the docks and increasing threats from abroad through Henry VIII's reign, defences were necessary to defend the Royal Navy based in Portsmouth and strengthen the country's coastline. The first defences were built at Portsmouth in 1520 followed by a programme of country-wide coastal defences from the 1530s to 1540s. A network of defences and forts were built along the Solent coastline and guarding the entrance to Portsmouth Harbour. These defences and the concentration of naval and military establishments which subsequently grew up around the ports of Gosport and neighbouring Portsmouth have shaped the function, layout and architecture of the entire town and its surrounding area.

Gosport, in common with many coastal towns, suffered considerable losses to the urban fabric and its population as a result of intensive bombing during the Second World War which initiated the widespread redevelopment of the town in the post-war years. Since the end of the Second World War, Gosport, in common with other towns closely associated with the armed forces, has witnessed a large reduction in establishments, personnel and support jobs. More recently, a further programme of planned reduction in the size of the armed forces was initiated in the 1990s with disposals of military land and buildings for demolition and redevelopment – this has further changed the face of the historic areas of Gosport.

Project background

Partly in response to the rapid changes taking place in Gosport, Historic England has undertaken detailed review of historic remains within and around the town as part of its contribution to the Heritage Action Zone (HAZ) initiative.

The HAZ programme seeks to highlight the role that the historic environment can play in urban regeneration, and Gosport is one of 20 areas selected as a HAZ since 2017. Research undertaken by Historic England teams, in partnership with the local authorities and other local partners, aims to increase understanding and raise awareness of the historic environment within each HAZ, and to engage with the local community. More Specifically, this research was designed to:

- Provide HAZ partners with baseline information on the history and development of Gosport and the contemporary issues facing it;
- Inform a programme of work to be undertaken by Historic England's regional Planning and Development teams;

- Promote public awareness of Gosport's historic environment in order to achieve a greater appreciation of the town's distinctive character.

As part of Historic England's contribution to this research a detailed survey from aerial photographs and airborne laser scanning (lidar) data was undertaken of the entire Gosport HAZ area (Fig 1) with targeted field survey of surviving earthwork and military sites.

This report is concerned with the aerial component of the Historic England survey which was undertaken by the Aerial Investigation & Mapping (AI&M) team. The research involved analysing a range of historic and modern aerial photographs and lidar data for traces of historic sites from prehistory to the Cold War.

The principal aims of the aerial assessment were to:

- Provide an overview of the archaeological remains in and around the town that are visible on aerial photographs and lidar images;

- Assess their contribution to the understanding of the history of the town of Gosport from prehistory to the present day;

- Record key aspects of the development of the town

PROJECT AREA

The project covered an irregular area approximately 35sq km encompassing the extent of the Gosport HAZ (Fig 1).

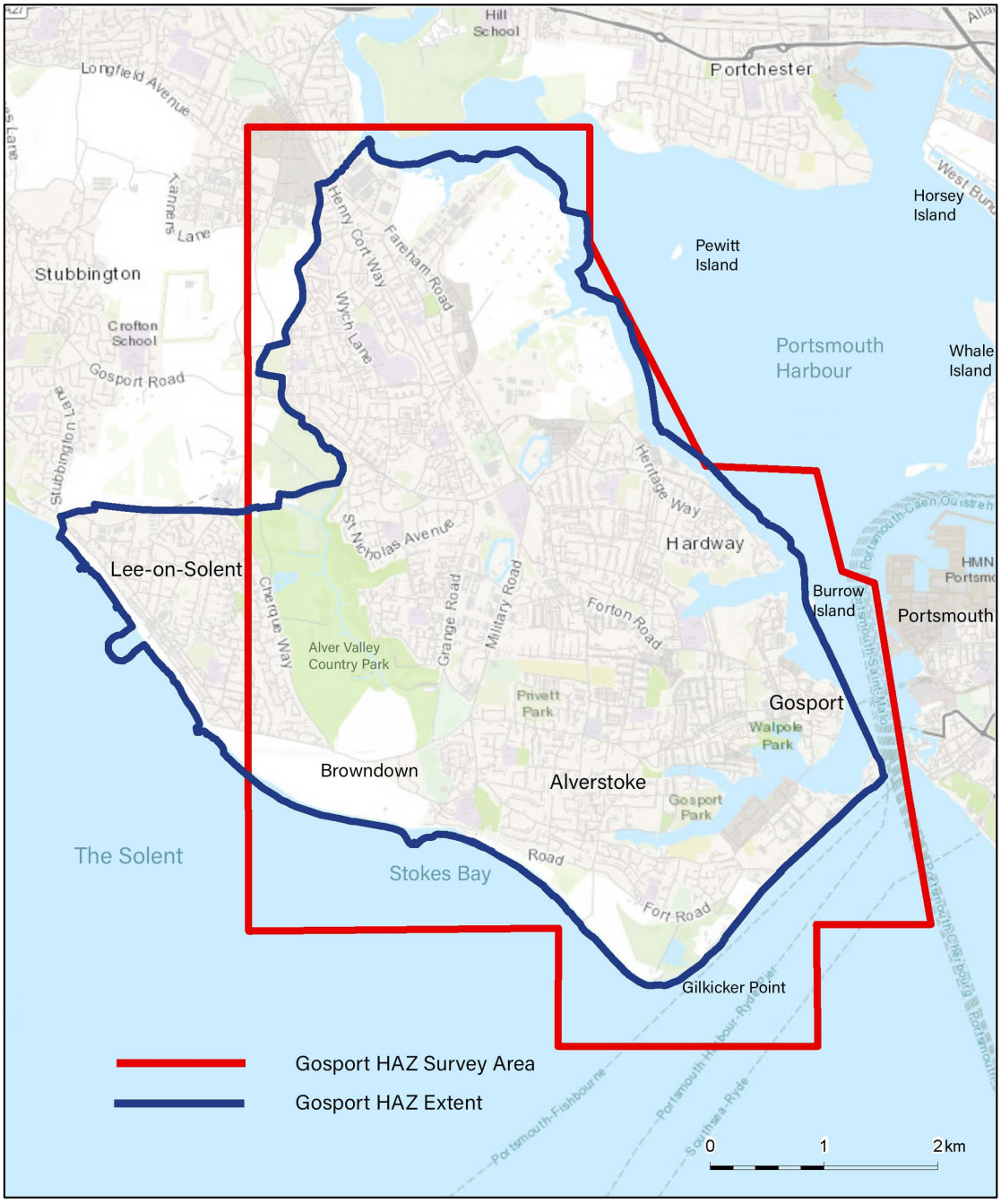


Figure 1: The extent of the Gosport Heritage Action Zone Gosport HAZ mapping area. Map background ESRI Topography.

Figure 2: Location map of the south coast and the Solent area.

The landscape of the Solent coastline is part of the broad coastal plain of south-east Hampshire which extends from the shore to the base of the chalk escarpment which rises abruptly to form the western edge of the South Downs. The coastal landscape has been shaped by millennia of natural deposition and erosion forming a series of broad curving shingle beaches with the deep tidal inlets.

The Gosport peninsula extends north-west/south-east between the inlet of Hamble-le-Rice on Southampton Water and the mouth of Portsmouth Harbour at its south-eastern end. It is bounded for most of its length on the southern side by the eastern arm of the Solent, and on its north-eastern shore by the shallow sheltered tidal waters of Portsmouth Harbour with its numerous tidal inlets and creeks.

From the shoreline the ground rises to a maximum elevation of 10m above Ordnance Datum along the central axis of the peninsula. The south-western shore faces onto the Solent and the north-eastern coastline of the Isle of Wight. South of Lee-on-Sea the broad shingle beach at Browndown extends east-south-east for over 1.5km then curves gently around the long shallow arc of Stokes Bay to the southernmost tip of the peninsula at Gilkicker Point. The coast rounds the point through 90 degrees heading north-east to the mouth of the narrow channel leading into Portsmouth Harbour, guarded by Fort Blockhouse on the Gosport side and the town and fortifications of Portsmouth across the water to the east. Portsmouth harbour opens out into a large shallow sheltered tidal basin approximately 3.5km north-south by 4km east-west, with numerous creeks and inlets known as lakes, and the remains of Portchester Roman fort at its northern end. The River Wallington flows into the north-westerly corner of the harbour.

The geological makeup of the area is dominated by Quaternary sedimentary deposits of marine-derived silts, sands and clays of the Bracklesham and Barton Group of the Palaeogene Period which outcrop along the axis of the Gosport peninsula. These are subdivided into several distinct groups: Gosport lies within a band sand, silt and clay of the Wittering Formation (formed approximately 23 to 66 million years ago) which extends west-north-west through the Alver Valley, and east-south-east across the harbour entrance and through Portsmouth and Southsea. To the north of this, is a narrow band of Whitecliff Sands Member (23 to 66 million years ago) and a broader band of clays, silts and sands of the London Clay Group which extend along the north-eastern shore within Portsmouth Harbour (BGS 2021).

To the south of Gosport, a band of Quaternary deposits of alluvium - sands, silts and clays of fluvial origin from the Selsey Sand Group (formed between 41 to 48 million years ago) extends west-north-west along the coastal strip from Haslar, through Browndown to Lee-on-Solent. South of this a band of clays, silts and sands of the Barton clay formation outcrop in a narrow strip between Stokes Bay and Lee-on-Solent, and a second smaller outcrop across the southern tip of Gilkicker Point. The broad beach at Browndown (South) is made up of Quaternary Storm Beach deposits of coarse-grained gravel or shingle (ibid).

Superficial deposits across the entire area are dominated by Quaternary river terrace deposits from a large post-glacial riverine environment. Within this, deposits of Quaternary peat occur along the length of the River Alver (ibid).

Crops and pasture over these deposits free-draining will readily parch or form cropmarks in dryer conditions. Inland, buried archaeological remains have been detected within the remaining arable fields and open areas of grass within parks and airfields around and within the urban areas of Gosport and its surrounding villages.

There has been extensive quarrying of the sand and gravel deposits, particularly along the course of the River Alver in the latter half of the 20th century. Much of the area now forming the Alver Valley Country Park between Lee-on-Solent Golf Course in the north-west and Privett Road/Grange Road to the south-east is infilled or made ground and as a consequence no archaeological remains survive in this area.

The River Alver, a relatively small watercourse rises from a series of springs and surface water drainage around Chark Common and Foxbury at the centre of the peninsula, originally flowing south-south-east through Browndown into a marshy area known as Gomer Ponds where, instead of flowing into the sea at Stokes Bay, marine erosion and deposition of beach material in an easterly direction has historically forced the river to flow eastwards behind a shingle spit, through the Alverstoke Marsh, reaching the sea on the eastern side of Gilkicker Point at the southern end of the peninsula. The course of the river was altered in the late 18th to early 19th centuries firstly at the eastern end to form part of the defences around Fort Monckton. Then Royal Engineers set about draining the Alverstoke Marsh in 1847, and in 1860 the entire watercourse from Browndown to the Gilkicker was remodelled into a system of canals controlled by sluices forming part of the defences known as the Gosport Lines (Fort Gilkicker 2021). Inland, the river flows from its source south-east through the Alver Valley Country Park and past Browndown following a straightened course before the canalised river empties

into stokes Bay south of the Battery No. 2. The Parts of the dried-up course of the original river can still be traced inland from Stokes Bay, as can parts of the now infilled Lines (ibid).

Within the harbour there are four islands, three of which are owned by the Navy or Ministry of Defence. Whale Island (*c*. 475m by 727m) on the eastern side of the harbour is linked by a bridge to Portsmouth and is home to the Navy Command HQ. Horsea Island in the north-east was originally two small islands which have been joined by reclamation and are now linked to the mainland. Dominated by its 1,000m long pond, this was home to a torpedo testing facility from 1889 to 1939, a D-Day landing craft maintenance depot during the Second World War, and now the Defence Diving School (Small 2020). Pewitt Island is as small undeveloped island in the north-western corner of the harbour opposite the mouth of the Wallington River and is currently a nature reserve (Hampshire & Isle of Wight Wildlife Trust 2021). Lastly, Burrow Island, a small wooded island lying just offshore opposite the Royal Clarence Marina, Gosport is accessible by a spit at low tide. Also known as Rat Island, it is owned by the MOD and was the site of Fort James, a 17th-century fortified tower (Williams 1979, 2), and later used for the burial of convicts and prisoners in the 19th century (Caton 2011).

Earlier Archaeological Surveys

South East Rapid Coastal Zone Assessment Survey

Between 2009 and 2011 the coastal area of Gosport was mapped from aerial photographs and lidar by Wessex Archaeology during the aerial survey stage of the South East Rapid Coastal Zone Assessment Survey (Hamel and Lambert 2011). This was part of a countrywide programme of multi-disciplinary Rapid Coastal Zone Assessment Surveys (RCZAS) initiated by English Heritage (now Historic England) which recorded England's coastal archaeology. The RCZAS survey was generally limited to the coastal strip and mapped complete 1km Ordnance Survey grid squares in the Gosport area. Beyond the coastal strip, some larger important sites such as airfields were also mapped.

Historic England Stokes Bay Lines

Between 2015 and 2019 a programme of archaeological and architectural research was undertaken by Historic England which focused on the development of the Stokes Bay coastal defences from the late 16th to mid-20th century (Williams and Bayer 2019). This included the mid-19th century Stokes Bay Lines and associated forts, and later structures associated with the construction of Mulberry Harbour structures in preparation of the D-Day landings.

Methods, scope and sources

The Aerial Investigation & Mapping component of Gosport HAZ mapped and recorded archaeological features visible on aerial photographs and lidar for an area of 35sq km encompassing the southern end of the peninsula, including the entire town of Gosport and the Alver Valley which bounds the western side of the town. (Fig 3). The latter included current, and former, open areas (visible on historic aerial photographs) to the

west of the Gosport which offered clear potential for the identification of archaeological remains, whether levelled or buried (visible as cropmarks) or surviving above ground (as earthworks).

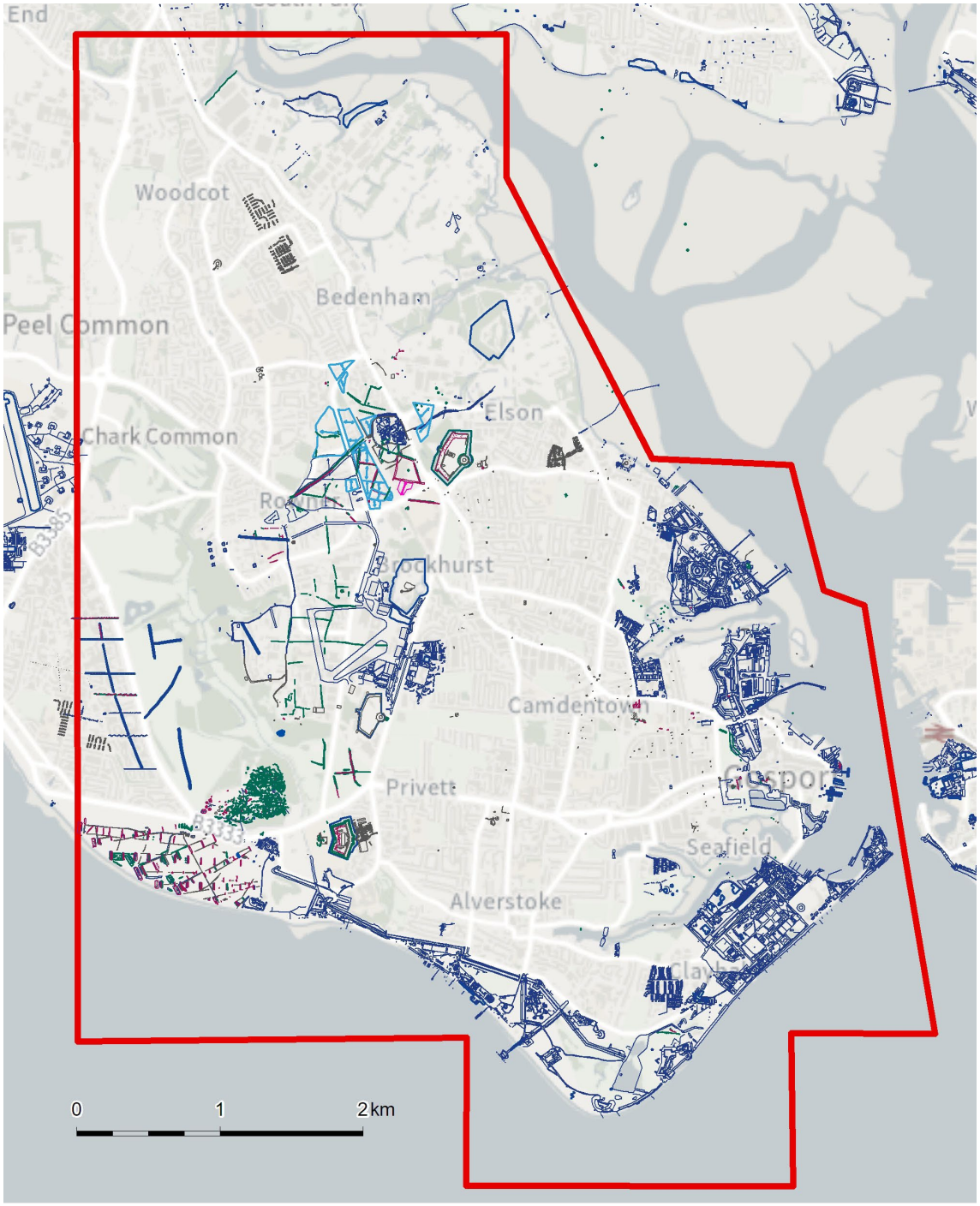


Figure 3: The extent of the 2011 RCZAS mapping (dark blue) with new mapping in HE standard mapping colours © Historic England. Map background ©ESRI Topography.

Drawing on other aspects of the overall HAZ project, including detailed surveys of selected earthwork sites in the Alver Valley, these included the remains of an extensive

system of First World War practice trenches on Browndown Warren , the remains of a nearby small medieval motte and bailey at Apple Dumpling Bridge (Bowden, 2023) and a probable Bronze Age bowl barrow (Bayer et al 2023). The aim of the project was to use aerial photographs and lidar to produce a brief archaeological narrative for the town and environs, from prehistory to the present, to complement these other reports.

In common with other AI&M projects, all archaeological features visible on all available aerial photographs and lidar were mapped and recorded to AI&M (formerly NMP – National Mapping programme) standards (see Appendix 1). This included 18th-19th century coastal defences and Second World War military structures. However, in addition to standard AI&M approaches, the project included an assessment of other Second World War-related features such as areas of bomb damage, allotments, and post-war prefab housing within the town.

The coastal strip of the Gosport peninsula has previously been mapped from aerial photographs as part of the Rapid Coastal Zone Assessment (RCZAS) – (Hamel & Lambert 2011). The Gosport HAZ survey used the same historic aerial photographs available to the earlier survey, but also accessing new specialist aerial photographs taken by Historic England as well as newly acquired historic photographs and a range of more up-to-date on-line photographic sources (APGB, Google Earth and Bing) and Environment Agency lidar data which were not available at the time of the earlier survey. The HAZ survey also utilised low-level photographs taken by Historic England of the First World War trenches at Browndown using a (UAD) drone. These were processed to generate a georeferenced model of the trenches using Structure from Motion (SfM) software.

The mapping is available via the Historic England Archive, while the accompanying monument records, comprising descriptions and sources for each site, are available online via the Heritage Gateway Methods and sources.

NB. The area to the north of Privett Road known as Browndown Warren is referred to by the MOD as Browndown (North), whilst the area of the artillery ranges on the beach to the south are known as Browndown (South). Where unspecified, the author is referring to the general area of Browndown.

THE RISE OF GOSPORT IN THE SHADOW OF PORTSMOUTH

The lower reaches of the river Alver flow through a low-lying shallow valley which was an area of marsh cut off from the sea by the shingle spit which forced the river to flow south-east before reaching the sea at Haslar Lake. The marshes were drained and reclaimed from the medieval period for agricultural land and remain as such to the present day. A series of small settlements grew up in the parishes of Alverstoke and Rowner, located along the better drained lands on the northern side of the valley.

At the time of Domesday in 1086 the lands were divided into two manors – Alverstoke and Rowner. Alvestoke was held by the Bishop of Winchester, recording a relatively large settlement with a population of 50 households. The manor at Rowner was considerably smaller, comprising 14 household at Domesday. It was held by William Mauduit, a minor landowner but a personal companion of William the Conqueror. The manor had passed into the hands of William de la Falaise by the late 12th century who held it until the later 13th century when, following a felony by his grandson (also called William) it was granted in 1277 to Sir William le Brune, chamberlain to the king, '*to hold jointly with his wife Isolde, a lady of the household of Queen Eleanor, by the yearly payment of 40s. to the king's exchequer in lieu of service*'. The manor has remained in the ownership of the Brune family ever since (VCH 1908, 218-219).

Alverstoke had, unusually, become a separate 'liberty' since the villagers themselves held the manor under the monks of Winchester Cathedral Priory (VCH Hants III, 202-3). It is said to have been bestowed on the manor by a noble Saxon lady, Alwara, for the soul of her husband Leowin (ibid).

In 1204 Bishop Godfrey de Lucy granted the Priory the income from the '*newly built town on the port in Alverstok*' which was almost certainly referring to Gosport in all but name. The heart of Gosport town still preserves the layout of a planned medieval town. It resembles that of the borough of Portsmouth which was founded and laid out in 1180 by John Grisors, suggesting Gosport was also laid out at some time in the 12th century (Hoad 1981, 1-30; Quail 1994). Though still not mentioned in any surviving documentation by name, Gosport at this time appeared as a compact town of three parallel streets dividing four deep blocks of tenements – High Street, the broad central street, flanked by North Street and South Street with additional back lanes beyond (English Heritage 2014, 21).

Gosport's history and development has been intrinsically linked for centuries with its proximity to Portsmouth which grew in importance as a port and naval base centred around the large shallow harbour. There is no mention of Gosport in Domesday Book, suggesting it was neither of significant size nor value to be individually noted, but it would have been included within the parish of Alverstoke (Stokehurst – A Brief History. The Old Rectory, Alverstoke, Gosport, 1).

It was not until the 1284 that name 'Gosport' was recorded, appearing in legal documents when '*the manor of Alverstoke with Gospor*t' was transferred to the Bishop of Winchester (ibid). This association suggests Gosport was still the lesser of the two settlements in local importance, and it was not until the 13th century that separate

courts were held in Alverstoke and Gosport, with the first mention of a bailiff of Gosport in 1463 (ibid).

During the 14th century the balance began to shift with the rising in importance of Gosport serving the burgeoning port of Portsmouth across the water. By the 16th century Gosport appears to have been administered from Alverstoke and was somewhat disparagingly described by John Leland in the 1530s as '*a little village of fishermen approached (from Tichfield) by much heathy and fern ground*' (ibid). A 16th-century detailed coloured map of the Isle of Wight by John Rudd dated 1570 also shows Gosport as a small settlement, smaller than Alverstoke (or Stoke as it appears here), whilst Portsmouth is depicted as a town within fortified walls (Figs 4 and 5).

The large tidal inlet of Portsmouth harbour with its narrow defendable entrance opening onto the sheltered waters of the Solent has offered an ideal location for safe anchorage since at least the Roman period when Portchester castle was built at the northern end of the harbour establishing the port and haven.

The maritime importance of the safe harbours and ports of the Solent continued into the post-Roman period and the Anglo-Saxon Chronicles record the building of a fleet and naval battles between King Alfred and the Danes in the Solent in the summer of AD 897 (Moore 2012). It is not clear when Portsmouth became established as a port, but in 1194 the town was granted its first Royal Charter by King Richard I who ordered the construction of a dockyard there, thus sowing the seeds of the town's long naval history and that of neighbouring Gosport.

As the port grew in importance, defences and look-outs were constructed to defend the Solent coast and its havens and harbours. In 1417 there is the first mention of a blockhouse (literally, to block the harbour entrance) on Blockhouse Point at the harbour entrance (Williams 1979, 8). This was paired with a similar tower on the Portsmouth side, known as the Round Tower, which was built around 1415. A chain was slung between the two towers to control access to the port (Historic England 1999 and 2020a).

Henry VII established the English Navy and the first permanent royal dockyard at Portsmouth, where in 1495 he ordered the construction of the world's first dry dock. The Royal Navy was formally founded by Henry VIII in 1546, based at Portsmouth (Naval Dockyards Society).

Meanwhile, across the entrance to the harbour, the small fishing village of Gosport developed into a town with the main function to service the growing Navy.

Figure 4: A 1570 manuscript map of the Isle of Wight. Part of an atlas of William Cecil Lord Burghley, Secretary of State to Elizabeth I, detailing plans of principle settlements and fortifications to illustrate domestic matters. © British Library. (Reproduced with the kind permission of the British Library).

Figure 5: Detailed extract of 1570 manuscript map of the Isle of Wight (above) illustrating the settlements at Gosport, Stoke (Alverstoke) and Portsmouth and new fortifications of Hasleworth Castle and Southsea Castle. Portsmouth within its defensive walls can be seen across the water opposite the lesser settlement of Gosport. © British Library. (Reproduced with the kind permission of the British Library).

Portsmouth and its harbour became the centre of the burgeoning national naval facilities from the 16th century onwards. The Solent, with its deep anchorages and the gently sloping shingle beaches to the south of Gosport, extending west along Stokes Bay, made the threat of attack from the sea an increasing possibility. To address this threat, from the 16th century onwards a system of fortifications was constructed around both towns on either side of the harbour entrance and a series of forts were constructed along the Solent coast. The first defensive structure was constructed *c*. 1539-45, comprising a bulwark and a new blockhouse placed on the peninsula at Hasil Worth Point (which became known as Hasil Worth or Hasleworth Castle) to the south of Gosport to protect the harbour entrance (English Heritage 2014, 20; VCH Hants III, 202-3; 2; Friends of Stokes Bay, 2020). Hasleworth was replaced in the 1780s by Fort Monckton, and a line of six new redoubts constructed in a line along the edge of the marshes overlooking Stokes Bay (Williams and Bayer 2019, 3).

The religious tensions initiated with Henry VIII's split with Rome to enable his divorce from Catherine of Aragon fuelled the development and expansion of the defences and naval forces to protect the country from the threat of attack and invasion by Spain and other Catholic supporting countries which culminated in the arrival of the Spanish Armada in 1588 in the reign of Elizabeth I.

A map of the area by Burt dating to 1587, just one year before the Armada attacked, depicted the walled '*Garrison Towne of Portsmouth*' opposite the sizeable, but un-walled town and '*Key*' at Gosport (Fig 6). Gosport appears larger than the neighbouring settlement of Alverstoke and is depicted as rows of buildings and additional dotted outlines. These possibly indicate the sites of further structures yet to be built, suggesting planned expansion. Also marked are Haselworth Castle '*Beaten Down by King Phillip*', *Alverstoke Marshes*, *Gamoore Pond* (Gomer) and '*The Grang*' (Rowner Grange) which is marked as being owned by Mr Brewin. Overlooking Stokes Bay are '*Browne Downe*' and '*Beacons*' with three beacons depicted on the shore. Other than the small village of Forton with a tide mill at the head of Forton Creek, no other settlements are noted on the peninsula at this time.

In addition to the coastal defences, the mouth of Portsmouth Harbour was protected by a succession of chains strung between the opposing shores, which could be raised by means of a capstan and floats to obstruct the passage of craft through the narrow entrance (Williams 1974, 14). A similar arrangement was employed in the Medway (Saunders 1967). The earliest chain was established in 1420, fixed to the Portsmouth Round Tower by a great iron ring (ibid) paired with a similar tower on the Gosport side. This was replaced at intervals over the next 200 years. The chain was later replaced by a floating boom fixed with cables to a capstan (Williams 1974,16-18), and like the earlier chain, renewed and altered in its makeup through the 18th and into the early 19th centuries (ibid).

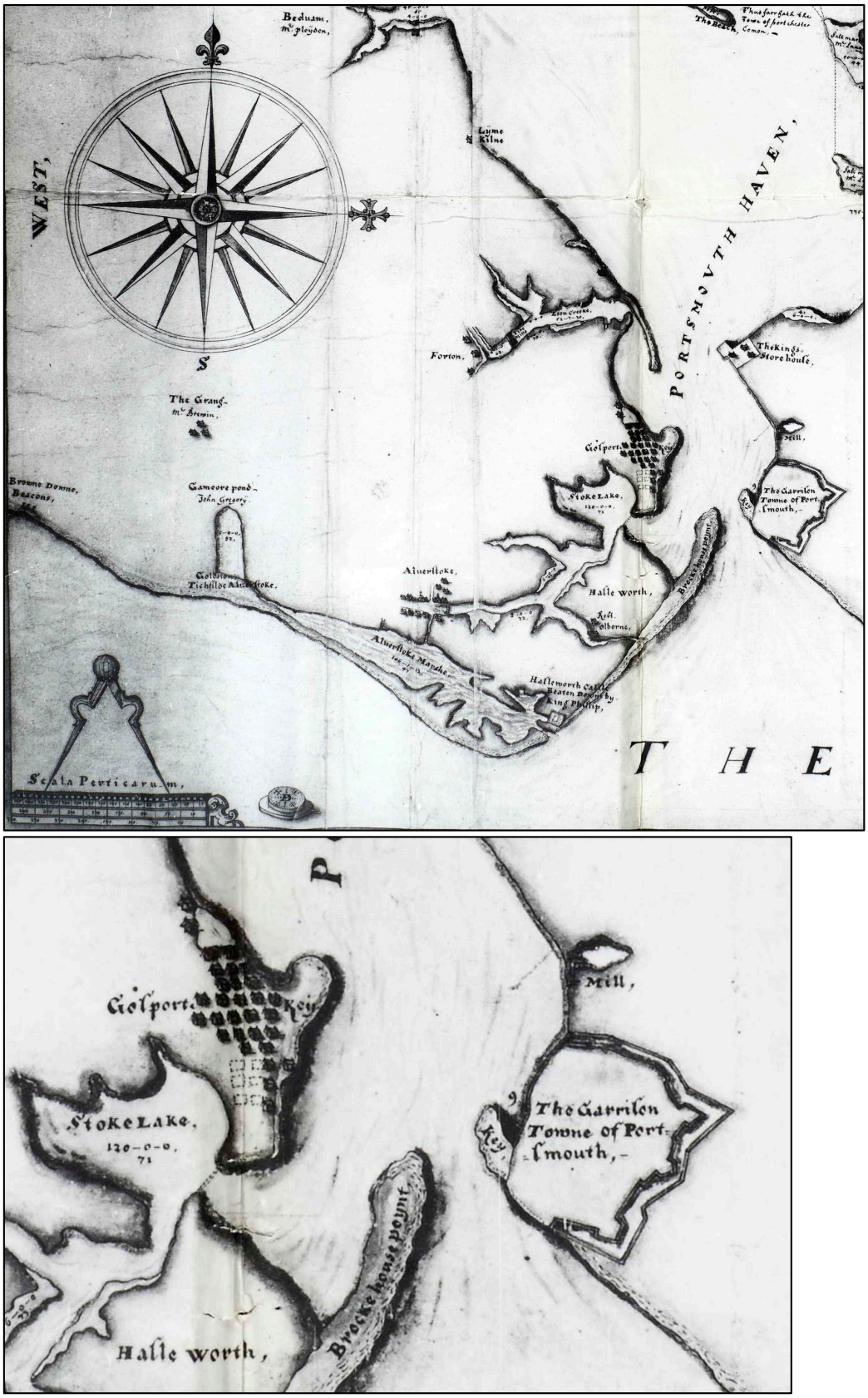


Figure 6: Extracts of Burt's map of the Solent 1587. REF: HRO377363271 COPY/120/1 Titled: British Museum map of Hayling, Havant, Portsmouth and Langstone. Reproduced with permission of Hampshire Museums.

Portsmouth's dockyards continued to expand through the 17th century. Gosport had become the victualling centre supplying the dockyards and the fleet at Portsmouth. The industries which grew up in the town included, amongst other things, a brewery making ale as well as ships biscuits, timber yards and rope making – a group of long buildings on Roap Row were marked in fields to the north-west of Gosport town on a map of 1676 by a Dutch military engineer called Bernard de Gomme (English Heritage 2014, 21). Though growing faster than surrounding settlements such as Alverstoke (the parish to which Gosport belonged), Gosport remained a small town, primarily a fishing village, until the start of the Civil War when in 1642 work was started by the occupying Parliamentarians on a fort with gun platforms at Gosport to bombard the Royalists who held Portsmouth. The defences were secretly erected behind screens, but once unveiled and the first guns fired across the water, in the face of the superior firepower the Royalists rapidly surrendered Portsmouth (Williams 1974, 22).

Following the Restoration in 1660, the defences of Portsmouth and Gosport were reviewed. Charles II engaged Sir Bernard de Gomme, his chief engineer, to repair the fortifications at Portsmouth and design new defences for Gosport. Work on the **Gosport Lines**, a series of reinforced earthen ramparts and moats surrounding the town, was ordered by the king to commence on 29th January 1677, but were found to be inadequate and unfinished in 1683. The two forts, Fort Charles and Fort James, commissioned at the same time. **Fort Charles** was built on the seafront in the centre of the town and **Fort James** on Barrow Island in the harbour to the east, to prevent the town being taken and the entrance to the harbour and docks being compromised. A redoubt to take 20 guns was also built on the site of Fort Blockhouse. However, both forts were declared inadequate in the early 18th century and were stripped of their remaining guns in 1742 (Williams 1974, 32).

In 1748 work commenced on the rebuilding and strengthening de Gomme's original earthen Gosport Lines. This programme of work took over 50 years to complete, eventually encircling the town and the Royal Clarence Victualing Yard. To the north of the town on the opposite side of Forton Lake creek, a separate fortification was built to enclose **Priddy's Hard** (ibid), which was to become the Priddy's Hard Armament Depot. The land for Priddy's Hard was purchased in 1750 and the encircling fortifications had been completed by 1757to prevent unauthorised access to what was to become the Grand Magazine. This held around 4,500 barrels of gunpowder, supplying ammunition and producing weapons for the fleet (Gosport Heritage 2020). Such was the security and secrecy surrounding the magazine at Priddy's Hard, the entire site appeared as a blank hole on all OS map editions published from c1843 to 1980, as were the defences around the town and the Royal Clarence Victualing Yard.

With the increased threat of invasion caused by wars of the late 18th century including the American War of Independence (1775-1783), long planned improvements to the defences of Stokes Bay began to be implemented. Fort Blockhouse, which was built on the site of the earlier battery built in 1708-*c*. 1714, was expanded in 1799. **Fort Monckton** (completed in 1790) was constructed on the coast north-east of Gilkicker Point, and six redoubts and three temporary gun platforms were erected along Stokes Bay on the edge of the marsh to the north-west of Fort Monckton between 1782 and 1783. These new military developments (including the temporary gun platforms) are

recorded on a detailed map of 1782 produced to record the locations of military encampments (Fig 7).

Figure 7. 1782 map of the Gosport and Portsmouth areas detailing military encampments and defences. Titled: Extract of the Plan of the Encampments in the Neighbourhood of Portsmouth under the command of the Rt Hon. Lieu. Gen. Lord George Henry Lennox, Plan 1st July to 13th November 1782. Reproduced with permission Royal Collection Trust / © His Majesty King Charles III 2024.

In 1851 Napoleon III seized power and there were renewed fears of war with France. A state of hysteria whipped up by the press was compounded by the French starting construction of their first ironclad ship *La Gloire* in 1858, altering the balance of naval sea-power and effectively rendering wooden ships obsolete. In direct response, Britain developed the *Warrior*, but also set about reviewing coastal defences, appointing a *Royal Commission to Consider the Defences of United Kingdom* in 1859 to evaluate and design a system of defences to protect the fleet and the coast from invasion. Their report

of 1860 highlighted the vulnerability of major naval bases and ports along the south coast. The Commission recommended provision of batteries of coastal defence guns at sea level to secure ports, and a layer of inland defences around these ports to protect against a landward attack from enemy invaders who had landed elsewhere (Osborne 2011, 87-89).

In the Solent region layers of new defences were constructed. The western and eastern entrances to the Solent were strengthened at the Needles and Spithead. Four new innovative forts (Spitbank, Horse Sand, No man's Land and St Helens) were constructed in open water. New batteries were constructed along the Solent coastline and improvements made to the existing forts of Gilkicker, Monckton and Browndown (ibid).

Inland, two lines of defences were constructed to cut off Portsmouth and Gosport from a landward attack. They included a number of new forts known as **Palmerston forts** after their initiator, the then Prime Minister Henry Temple, 3rd Viscount Palmerston. These forts were all brick-built with slightly archaic designs, which included moats and drawbridges, keeps, a curtain wall and a central parade ground (ibid). The water in the moats could be controlled through a system of canals to enhance the defences should there be an assault (Fort Gilkicker 2021).

A line of eight new forts were also placed along Portsdown Heights, (the imposing chalk escarpment marking the start of the Downs) extending from below Farnham to the high ground overlooking Langstone Harbour. Meanwhile, between 1859 and 1860 a separate line of five new **Palmerston forts**, which became known as the **Gomer-Elson Line**, was constructed from Browndown to Elson to protect the western flank of Gosport. A third line of defences known as the **Hilsea Lines** was constructed across the neck of Portsea Island, and finally, to bolster the coastal defences of Gosport, a line of defences known as the **Stokes Bay Lines** were built along the coast from Fort Blockhouse to Browndown (Williams and Bayer 2019, 3).

The Stokes Bay Lines

The Stokes Bay Lines replaced the six existing 18th-century redoubts along the coast with five new batteries set at intervals along a new 2.8km long linear earthwork comprising rampart with a moat on the seaward side. Additional gun batteries were constructed from the outer moat of Fort Monckton to Browndown, creating a continuous *c*. 5.5 km long defensive line (ibid).

The earthwork moat and rampart of the Stokes Bay Lines were constructed in a series of angled sections to give maximum coverage of flanking fire from artillery over the coastline without the danger of crossing fire and taking advantage of the low-lying strip between the beach and slightly higher ground to the north formerly occupied by the meandering course of the River Alver. This last section of the Alver River (where it entered the sea) was in-filled and diverted into the moat to the west of Battery No. 2, with the water level controlled with sluices. Each of the five new batteries – numbered 1-5 going north-west– was built within or immediately behind the ramparts of the Lines and designed specifically to offer maximum artillery coverage at its location.

Batteries 1, 3 and 4 were set at the same height as the adjacent ramparts. Batteries 2 and 5 were larger and more substantial and were set above the level of the ramparts. (Williams and Bayer 2019, 9-10).

The Gomer-Elson Line

The Gormer-Elson Line (Fig 8) was a chain of five forts built facing inland (westwards) to protect Gosport from the Winchester-Southampton direction. The line comprised (from south to north) Fort Gomer, Fort Grange, Fort Rowner, Fort Brockhurst and Fort Elson (Fig 9). All were built between 1853 and 1863, however, this line of defence was altered before the forts were completed, rendering them functionally obsolete. With the exception of Fort Elson, none were armed as intended, but were variously employed as barracks and a range of naval storage, training and operations establishments. All were polygonal forts with a moat and rampart and spaced 1,000 yards from centre to centre. The three middle forts were virtually identical in design. Fort Gomer and Elson featured two different designs. The original intention was to link them all with a defensive ditch, but this plan was abandoned due the cost. (Williams & Williams 1972 and 1973; Williams 1979, 62-3).

Fort Gomer was constructed between 1853 and 1858 with a chevron-shaped plan and brick-built barrack blocks to the rear (east). This was used to supply artillery for deployment along the Stokes Bay Line (Williams 1979, 59-60). It served as a training facility and barracks through the 19th and early 20th centuries for troops including those preparing for the Boer War and First World War.

During the Second World War prior to the D-Day landings, Fort Gomer was used as barracks for the Canadian Army Reserve armoured regiment known as the Fort Gary Horse whilst undertaking amphibious assault training between 1943-4. On 4th March 1944 the 1st Hussars (6th Armoured Division) moved to the fort to prepare for the D-Day landings (Palmerston Fort Society 2005; Saville 1946).

Fort Grange was built between 1858 and 1863 with the six-sided polygonal design it shared with three of the other northern forts: Rowner, Brockhurst and Elson. It had two moats; the inner moat and keep remain and were used as a military HQ until 1910 (ibid).

Fort Rowner (c1858) was used primarily as barracks for the Navy and then as a degaussing establishment, de-magnetising vessels. It was subsequently used as a Heavy Anti-Aircraft (HAA) battery during the First World War (ibid).

Fort Brockhurst, constructed between 1858 and 1862, was variously used as a depot, barracks and HQ for various regiments. During the First World War it was armed with a 3-inch HAA gun, served as a troop recruitment centre in the early years of the war and became a demobilisation centre for returning troops in 1917. It continued to be occupied by the Army through the Second World War, when the fort sustained damage from German bombing, until 1957 when the Army left (ibid).

Figure 8: Location of the main 17th-19th century defences including the Gomer-Elson forts, the Stokes Bay Lines, The Gosport Lines, coastal forts and barracks around Gosport. Background ESRI Topography.

Fort Elson was built between 1853 and 1858. Its plan, though also polygonal, appears different from the other four forts. It was armed with landward facing artillery by 1872 which were upgraded in 1886, before being disarmed in 1901. It was re-armed in 1914 and used as a barracks and a store for munitions such as depth charges and torpedoes during the Second World War (Historic England 2020 NRHE).

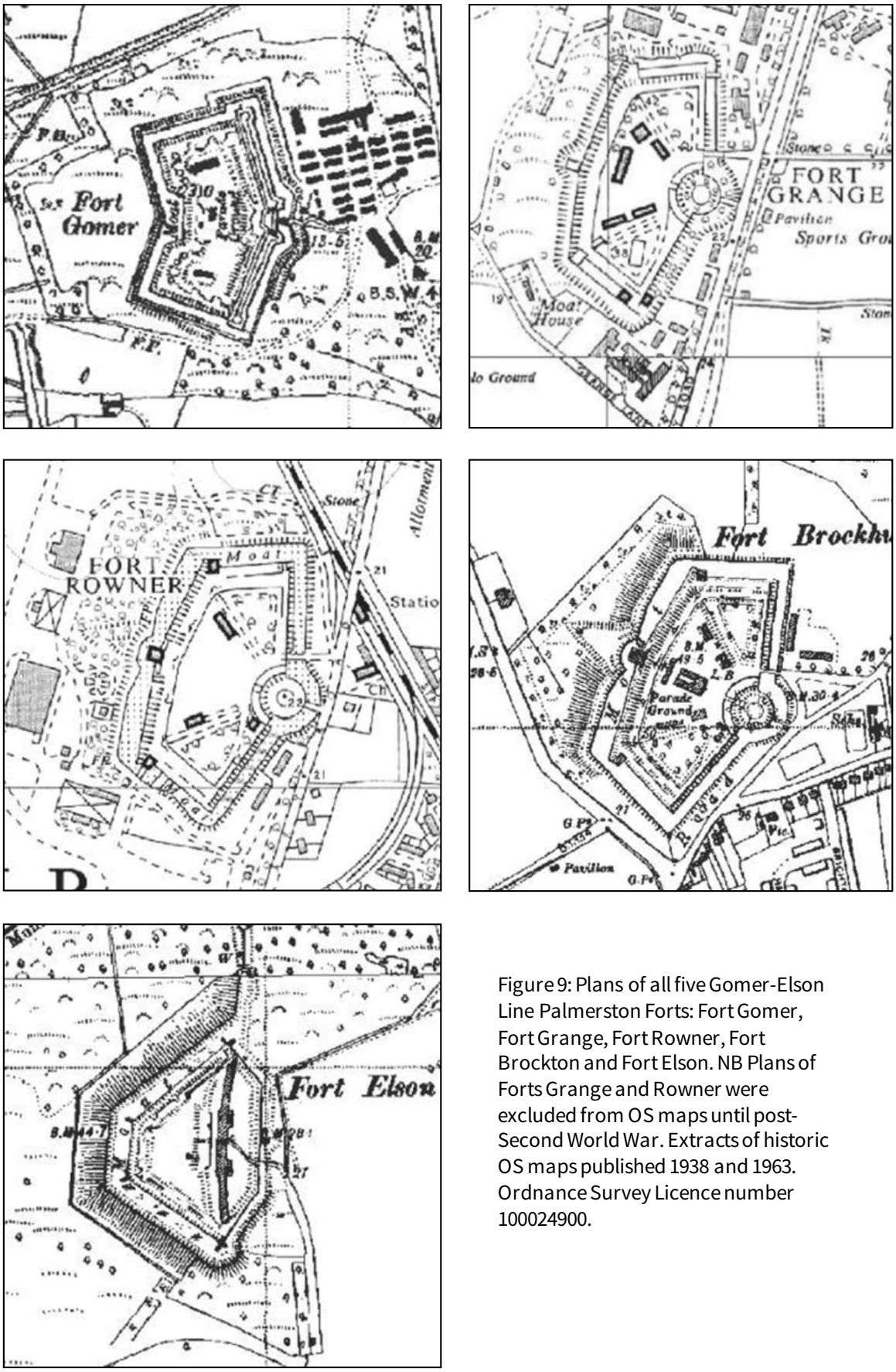


Figure 9: Plans of all five Gomer-Elson Line Palmerston Forts: Fort Gomer, Fort Grange, Fort Rowner, Fort Brockton and Fort Elson. NB Plans of Forts Grange and Rowner were excluded from OS maps until post-Second World War. Extracts of historic OS maps published 1938 and 1963. Ordnance Survey Licence number 100024900.

Fort Monckton

Fort Monckton (Fig 10) was rebuilt in in the 1880s as part of the Palmerston Fort programme. It differed in plan again, with three pointed bastions on the landward side and two facing the sea (separated by a straight curtain wall faced with Portland Stone) akin to a halved star shape in plan. On the landward side it had a dry ditch and beyond that an outer water-filled ditch or lake formed by the mouth of the diverted River Alver. The Stokes Bay Lines moat flowed into the lake which was regulated with a sluice at its seaward end. The fort was armed and occupied from 1872 by the Royal Engineers, used for submarine mine and searchlight training. It continued to be used for submarine mining training by various detachments until 1893. The Royal Engineers were in occupation until at least 1924 and the fort is still in the hands of the military as an active installation (Friends of Stokes Bay 2020). During the First World War the fort housed an Anti-Aircraft searchlight, and during the Second World War the Gun Operations Room for the Gosport Anti-Aircraft defence. It was also armed with a twin six-pounder gun (ibid).

Fort Gilkicker

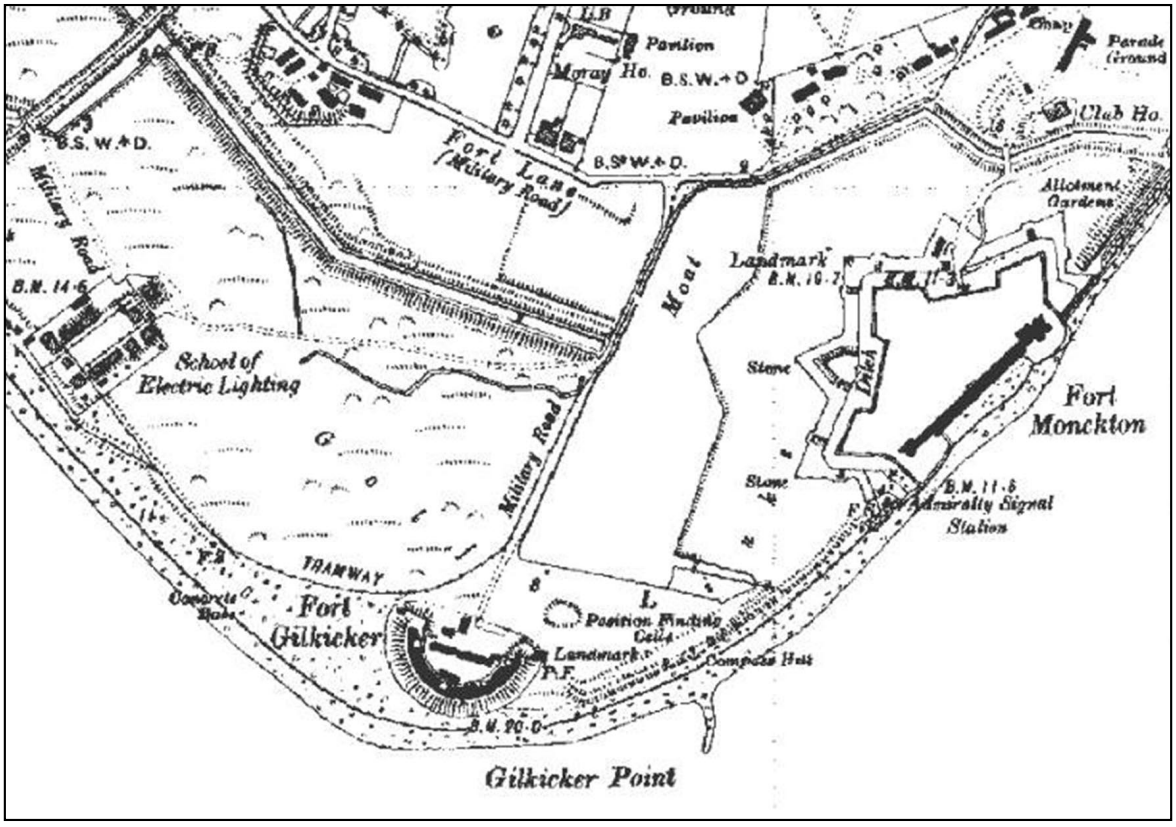


Figure 10: Extract of OS map published in 1938 showing Fort Gilkicker, Fort Monckton and the south-eastern extent of the Stokes Bay Lines terminating at the Moat behind Fort Monckton. None are depicted on earlier editions of OS mapping. Ordnance Survey Licence number 100024900

Fort Gilkicker (Fig 10), another of the Palmerston forts, was a replacement of a slightly earlier fort known as the Monckton Auxiliary Battery built in 1856. The new fort, an auxiliary battery for Fort Monckton, was constructed between 1863 and 1871 on Gilkicker point at the eastern end of Stokes Bay overlooking the anchorages and the western approach to Portsmouth up the Solent. Rather than polygonal, this fort was designed as a semi-circular arc with 22 seaward facing casemates housing a range of guns. The fort was disarmed in 1905 and used as married quarters for Royal Engineers stationed at Fort Monckton. It saw brief action during D-Day, acting as a signal station relaying messages from the Allied beaches in Normandy during Operation Overlord. It was passed to the Ministry of Public Buildings and Works in 1956 and used for storage and workshops. In 1986 it was purchased by Hampshire County Council with the intention of converting it to luxury accommodation. There have been a number of proposed schemes but, though planning permission has been granted, the project as yet to come to fruition (Friends of Stokes Bay 2020).

THE AERIAL EVIDENCE OF EARLY SETTLEMENTS

The setting of the Gosport peninsula and the surrounding landscape of low-lying islands and tidal inlets with abundant resources would have provided ideal conditions to support prehistoric communities. However, despite there being an abundance of evidence for human activity from finds of flint and stone tools from the Mesolithic and Neolithic periods, there is very little physical evidence of settlement, agriculture, funerary and ceremonial sites from the Neolithic, Bronze Age or Iron Age periods. Equally, despite the presence of the Roman fort at Portchester within Portsmouth Harbour and the significance of the harbour during the Roman occupation of Britain, there have been remarkably few Roman sites or finds from the Gosport area.

The first significant traces of settlement and agriculture in the area date from the later medieval period onwards and are largely recorded in the areas outside the town of Gosport. There have been relatively few significant finds noted during construction and development within the town. From the Tudor period there is a massive expansion of settlement as Gosport develops from a small fishing village to an important port and settlement servicing the rapidly growing Naval port at Portsmouth. It is possible that these extensive port developments and successive waves of defence constructions have masked and destroyed traces earlier sites not recognised or recorded at the time.

Later prehistoric

Evidence for later prehistoric activity in the survey area is surprisingly sparse. There are no records of Neolithic sites and only four possible Bronze Age barrows have been identified. One single round barrow (NRHE 461580) survives as a mound at SZ5789 9956 on the western edge of Browndown Warren at the southern end of the Alver Valley. The mound is faintly visible on 1940s RAF aerial photographs but is now overgrown with heath vegetation and small trees. In the past it was considered dubious – dismissed as a 'highly *suspicious tump*' in the Ordnance Survey Name Book entry of 1936 made by OGS Crawford (NRHE 461580, Authority 1).

The second entry to this description in 1936 records: "*It is situated on WD [War Department] land, much trenched for bombing practice, but is certainly no part of such work though a shallow trench has been cut in it. It is bigger than any common round barrow that I have seen; was apparently ringed with a ditch; the locality has produced flints of Bronze Age type; and to confuse matters, I recently found in a rabbit burrow in the mound itself a large sherd of black pottery with obvious signs of wheel turning, presumably Roman. This is the one solitary piece of pot I have ever discovered in the locality*." (NRHE 461580, Authority 2)

The site was investigated as part of the fieldwork undertaken for the Historic England Gosport HAZ in January 2020. This found the mound to be in a relatively good state of preservation, surviving to a height of 2m and measuring 23.4m north-south and 23.8m east-west. The encircling ditch is 30.5m in diameter and between 0.3m and 1m deep. These dimensions, though large, are still well within the accepted size range of barrows. However, its relatively good state of preservation could indicate a later date, possibly a medieval windmill mound (Bowden 2023). It is not uncommon for windmill mounds to

be fashioned from existing mounds such as round barrows, so the mound may still have a more complex history. The 1936 OS observations noted the mound had been damaged by trenching, presumably by soldiers training on Browndown Warren for the First World War. There is also evidence of further potential disturbance to the mound during the Second World War visible on aerial photographs taken by the RAF between 1942 and 1946. These show activity on the mound associated with a HAA gun battery (NRHE 1413411) located immediately to the north. (see below)

Three further possible bowl barrows, a group of badly damaged mounds, are located in the gardens of two houses at Alverstoke. Two of the mounds lie within the garden of Bury Lodge (NRHE 462022, but all three have yet to be confirmed as Bronze Age round barrows.

Iron Age and Roman

There are very few monument records for Iron Age and Roman activity in and around Gosport either as chance finds or during re-development and construction. Roman sites have been identified in the vicinity of Fareham close to the Roman fort and port at Portchester at the northern end of Portsmouth Harbour which was used as a haven for Roman ships. Across the harbour was the small Roman town of Clausentum (Bitterne) located on the eastern bank of the River Itchen within present-day Southampton (Historic England SAM). However, there is surprisingly little evidence of Roman settlement in the Gosport area despite its proximity to Portchester and Portsmouth Harbour. The only two significant Roman sites have been recorded in the area. The first is the site of a what was described as a 1st to 2nd century low-status settlement with parts of an associated field system found during excavations adjacent to Grange Road, Rowner in advance of re-development for housing in 2009 (King 2009). The second site is that of a possible kiln at Lee-on-Solent Golf Club suggested by unverified finds (NRHE 234425). No Iron Age sites were identified from aerial photographs or lidar.

Early Medieval

There are records of early medieval settlements known from 10th century charters at Alverstoke, Elson, Gomer and Rowner. Traces of an Early medieval/Anglo-Saxon settlement was identified during excavations in Grange Road, Rowner in the 1970s (located close of the Roman settlement identified in 2009 (King 2009)). Features included pits, hearths and gullies, and slight evidence of timber structures. Pottery evidence from the site indicated occupation was from the last quarter of the 8th century to the 10th century (Lewis and Martin 1973, 38-51; Medieval Village Research Group 1971, 27-28; NRHE 234467).

Medieval

At the time of Domesday in 1086 the lands were divided into two manors – Alverstoke or *Alwarestoch* and Rowner. There is no trace of the manor houses for either manor, but a large farm at Rowner to the north of Browndown known as Grange Farm could be the

on the site of Charke Grange, part of the manor of Rowner which was granted to Quarr Abbey in 1247-8. The existing farm has some surviving elements of 16th and 17th-century fabric, but most of the house has been rebuilt (NRHE record 234413)

Motte and Bailey at Apple Dumpling Bridge
Just to the south of Grange Farm the earthwork remains of a small motte and bailey castle are located on a slightly elevated position at Apple Dumpling Bridge at (SU 58436 00100) on the northern end of Browndown Warren (Figs 11 and 12).

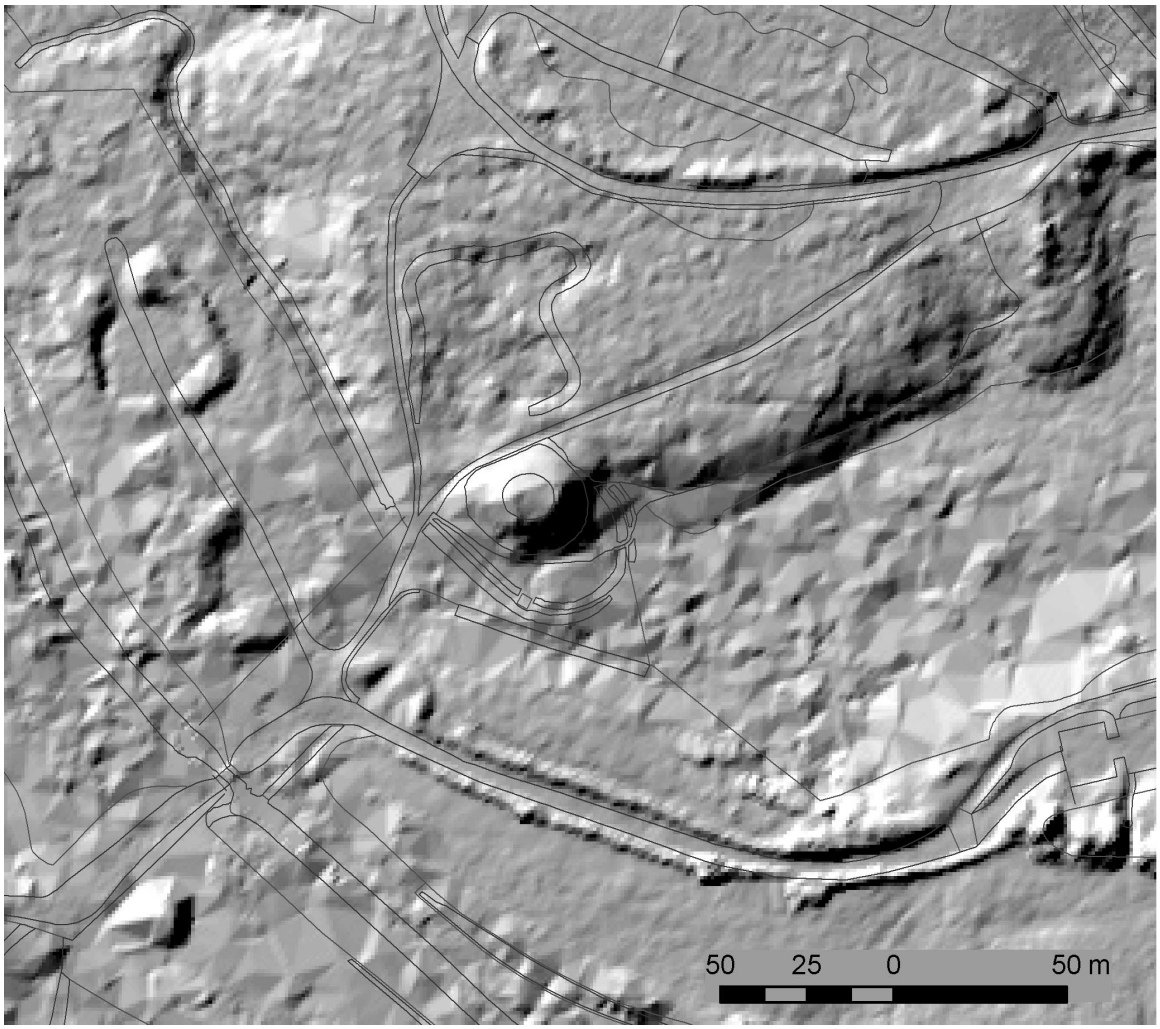


Figure 11: The earthwork mound of the motte and bailey at Apple Dumpling Bridge on Environment Agency 1m DTM lidar. The poor quality of the model is due to tree cover and dense vegetation masking much of the site. © Historic England; source Environment Agency. Base map © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

The castle is a scheduled monument (LE 1008694) and comprises a mound approximately 30m in diameter (15m at the top) rising only 2m above the general ground level to the north, but up to 4.5m above the bailey to the south-west. Only traces of the mound and ditch have been recorded from lidar, but a detailed field survey carried out by Historic England in 2020 as part of the Gosport HAZ identified a bank, up to 3m wide and rising up to 1.5m above the surrounding ground level, looping around the bailey from the north eastern side of the motte, terminating at a track along the western

side of the site. There is slight evidence of a ditch around the north eastern side of the motte, but it is not visible further west and here survives only as a buried feature (Bowden 2023).

Typically, such earthen and timber castles dated from between the late 11th and the end of the 12th centuries. The castle at Apple Dumpling Bridge was probably built by either William Mauduit who held the manor at Domesday, or William de la Falaise to whom the manor passed in the late 12th century. Though relatively small the mound would have been topped with a palisaded enclosure containing a number of tightly packed buildings, with the baily below surrounded by an earthen ditch and bank, together forming a small defended stronghold. This castle would have functioned as a coastal look-out, possibly an outpost of the King's castle at Portchester which was itself a re-purposed Roman fort and was sited at a possible crossing of the River Alver which passed to the south of the mound. The south side of the castle is flanked by a marshy channel known as Dead Man's Hollow (Bowden 2023). During the Second World War the river crossing was again reinforced, this time with a Type 26 variant brick and concrete pillbox (NRHE 1422249) built between 1940 and 1942 into the bailey ramparts on the southern side overlooking the track and crossing at SU5842 0008. This formed part of the anti-invasion stop line which extended up the Alver Valley.

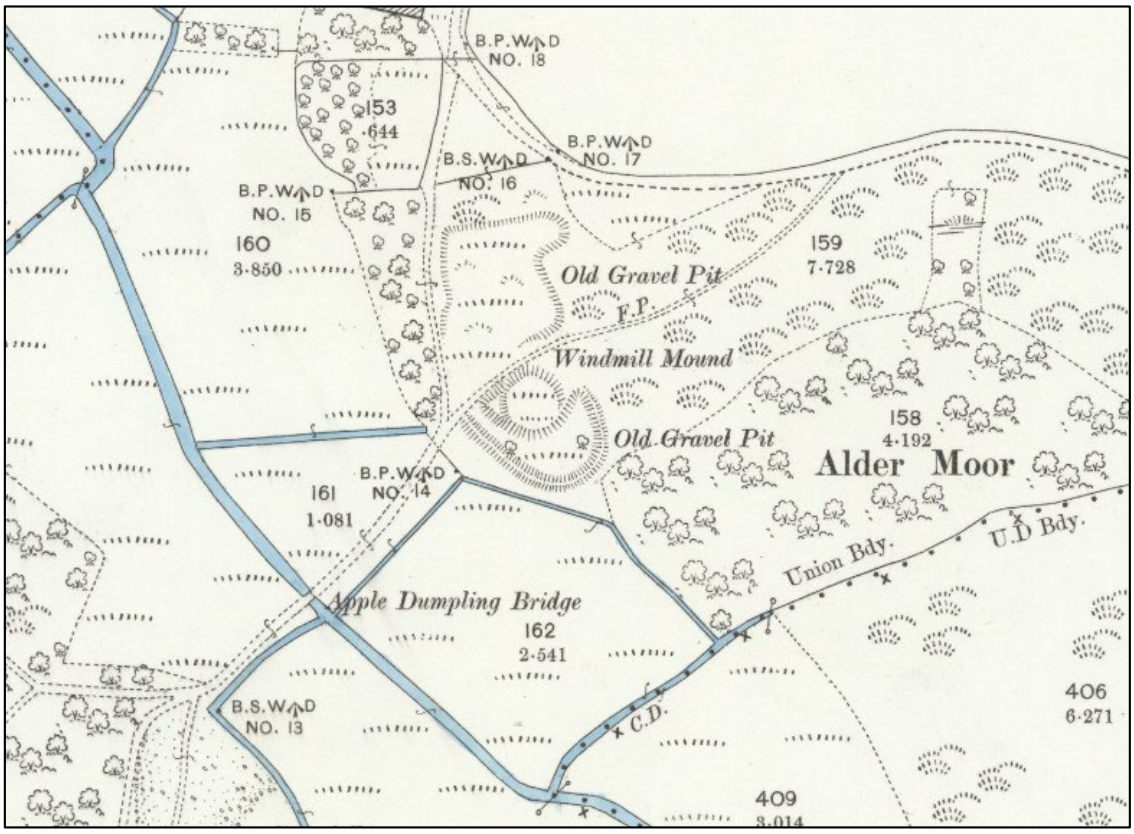


Figure 12: The earthwork remains of the motte and bailey castle at Apple Dumpling Bridge on the northern edge of Browndown Warren depicted on the 1898 OS map as a Windmill mound. Subsequent editions show it correctly labelled. Ordnance Survey 25 inch to the mile. Revised 1896, published 1898 (National Library of Scotland) Reproduced with the permission of the National Library of Scotland. https://maps.nls.uk/index.html

The monument was first marked on early Ordnance Survey maps as a ‘windmill mound' but was subsequently recognised through fieldwork as a motte and bailey castle and recorded as such on later editions of OS maps. It is certainly not uncommon for a mound such as a round barrow or motte to be re-purposed as a windmill mound in the medieval and post medieval. At Apple Dumpling Bridge we may be seeing evidence of fossilised local history or folk memory of the site of a later use of the site.

Post medieval field systems

Historic aerial photographs taken prior to post-war expansion and development of Gosport have revealed the cropmarks of fragmented ditched field boundaries and rectilinear enclosures in Rowner parish, extending in a broad north-south band between Privett and Bridgemary, on the eastern side of the Alver Valley.

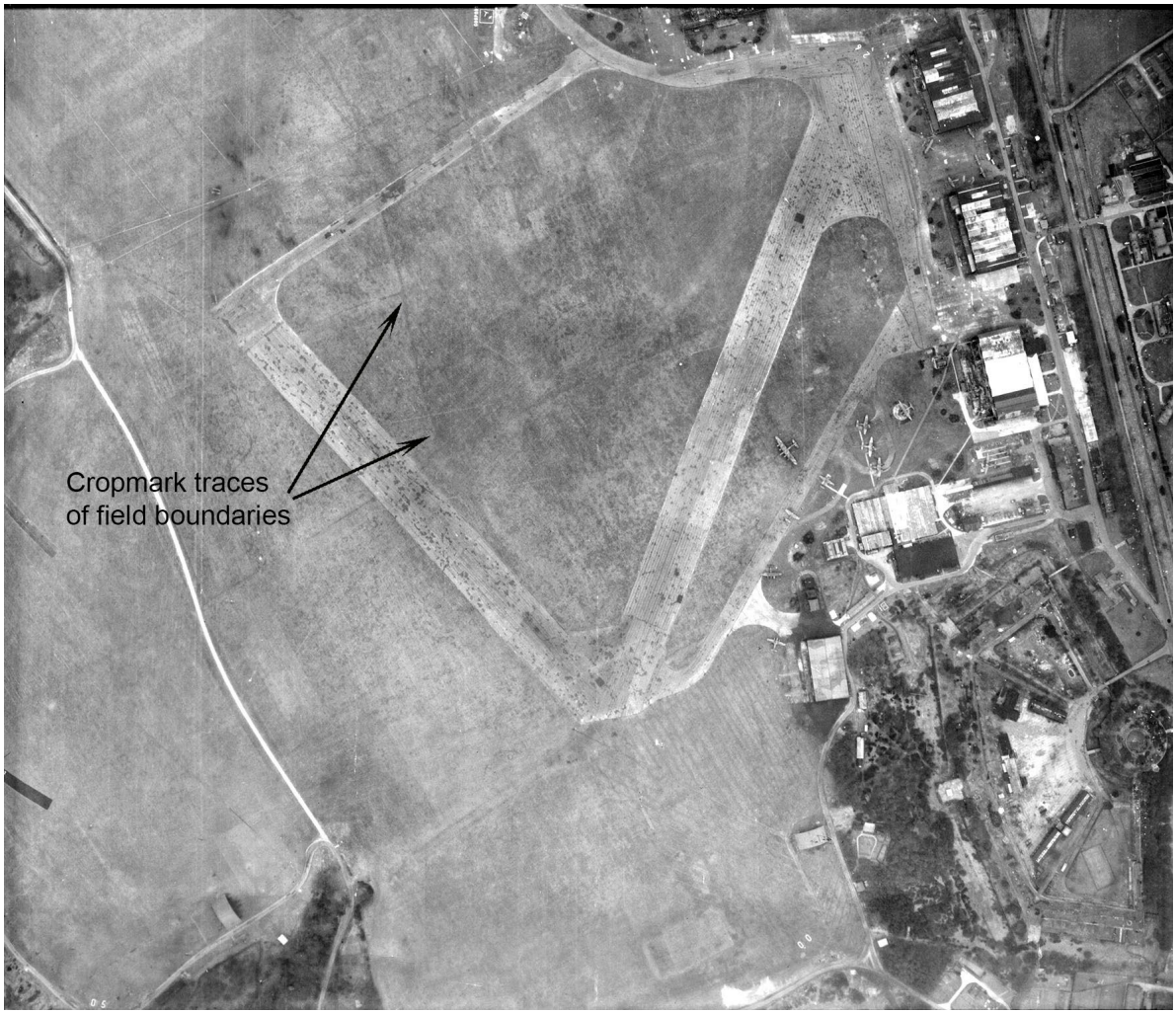


Figure 13: Faint traces of former field boundaries visible as cropmarks at RAF Gosport. Extract of RAF/106G/UK/1240 5102 13-MAR-1946, Historic England Archive (RAF Photography).

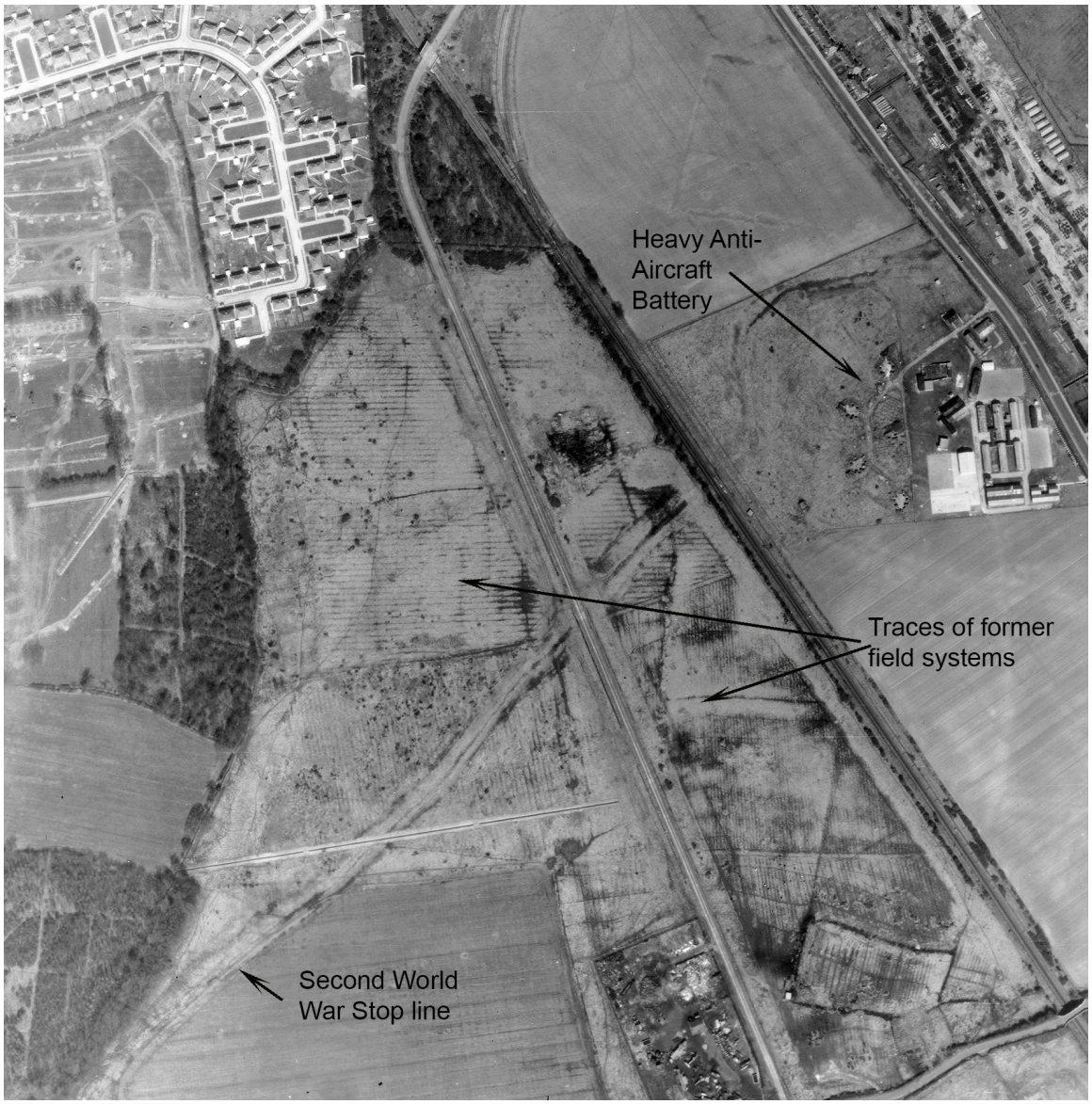


Figure 14: Cropmark and slight earthwork traces of the pattern of former fields and cultivation ridges at Rowner to the west of Fort Brockhurst cut by the later railway line and roads. Also visible are the levelled remains of Second World War stop line can be seen extending north-east - south-west through these. Extract of RAF/CPE/UK/2463 5152 26-FEB-1948 Historic England Archive (RAF Photography).

The central, most cohesive portion of these boundaries was seen in grass in the centre of the former RAF Gosport to the west of Fort Rowner and Fort Grange, on RAF photographs taken in 1946 (Fig 13). A map of the military encampments around Portsmouth and Gosport dated 1782 records in remarkable detail the towns, forts and rivers as well as the individual fields and parcels of woodland (Fig 15). The fragments of boundaries visible as cropmarks in the parish of Alverstoke, Rowner and Stubbington correspond to fields depicted on the map indicating they are the remains of the remains of a Parliamentary Enclosure parcelling of land with some fossilized elements from the open-field system and cultivation. Further cropmarks and slight earthworks of a similar pattern of former fields containing traces of narrow ridge and furrow were seen to the north of these, west of Fort Brockhurst, on RAF photographs taken in 1948 (Fig 14).

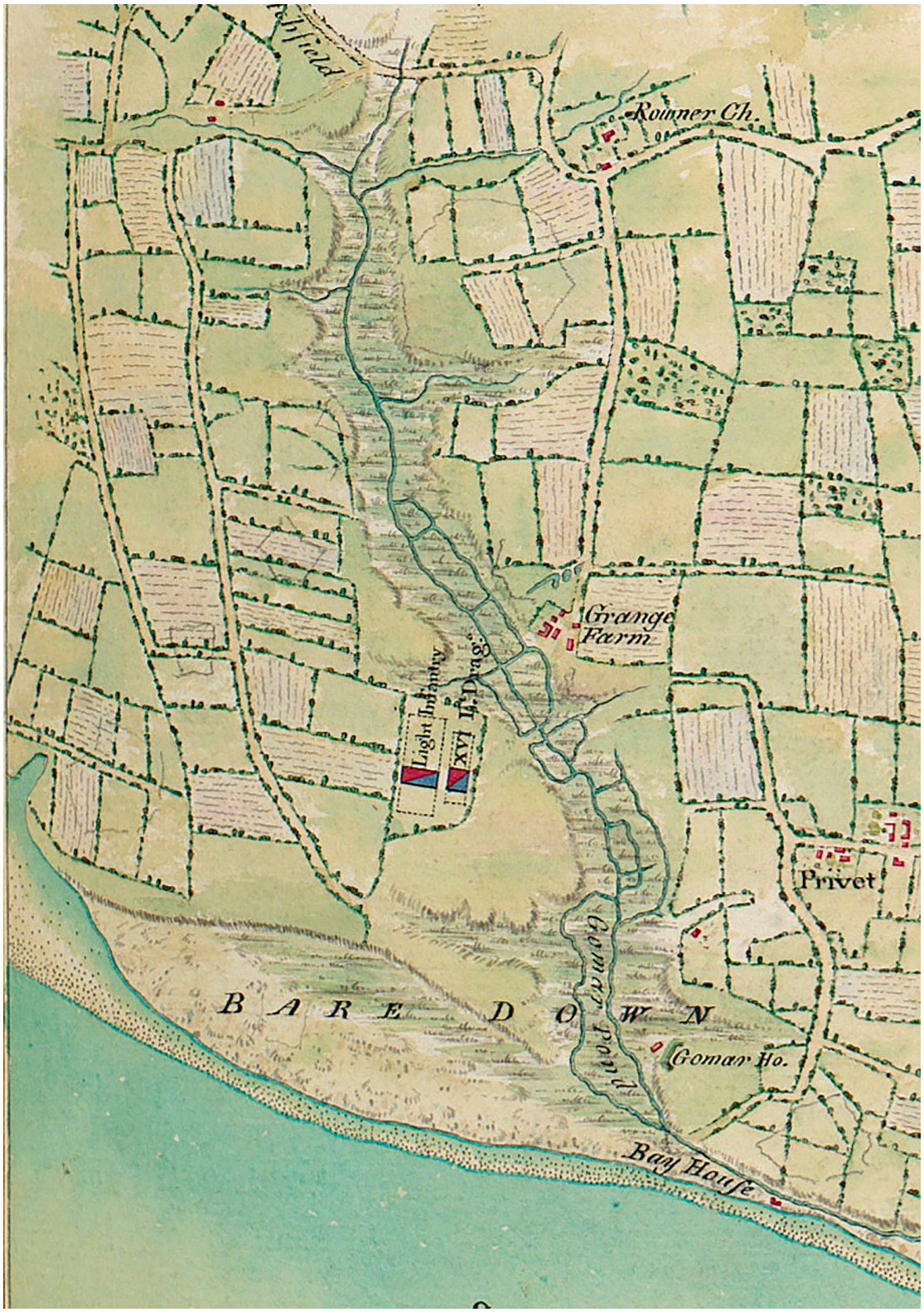


Figure 15: Extract of a 1782 plan of Brown Down (Bare Down) and the Alver Valley titled: *Plan of the Encampments in the Neighbourhood of Portsmouth under the command of the Rt Hon. Lieu. Gen. Lord George Henry Lennox, plan 1st July to 13*th *November 1782*. Traces of a few of these field boundaries and lanes on the eastern side of the River Alver have been seen as cropmarks on RAF aerial photographs taken in 1946 (figs 13 and 14 above) prior to development of the area of the Alver Valley. Reproduced with permission of Royal Collection Trust / © His Majesty King Charles III 2024.

The former fields have been cut through by the later railway and road. During the Second World War Holbrook HAA gun Battery was sited to the east of the railway and the course of an anti-tank ditch of the Holbrook-Rowner stop line cuts north-east - south-west through the fields, curving around the HAA battery. By the time this photograph was taken the stop line had been levelled, the HAA battery decommissioned and a large estate of post-war housing was under construction to the north.

The map of 1782 also shows two regiments of the Light Infantry and 16th Light Dragoons camped on the north-western edge of the uncultivated heathland triangle of Browndown Warren, or Bare Down as it is called here. The valley of the River Alver flows south-east into Gomer Pond on the eastern side of Browndown Warren before flowing east-south-east, just inland of the shore to a pond in Stoke's Marsh and then into the sea at Fort Monckton. The lower parts of the Alver were straightened in the late 19th century, but here the river is shown looping and meandering, possibly the result of management such as water meadows.

A network of ditches seen on aerial photographs to the east of the river transpires to be part of the former road leading north out of Privet with a lane from the river to the east joining at a junction just north of the village. Other parts of this lane and boundaries were at a later date followed by the perimeter road laid out around Gosport Airfield during the Second World War. Immediately to the east of Grange Farm is a group of perpendicular ditches or boundaries which lie within one of the fields but are not depicted as hedge lines on the map of 1782. It is therefore possible that they may be associated with the medieval grange. This area was the subject of a desk-based assessment by Oxford Archaeology for Gosport Borough Council in advance of a planning application for a cemetery (Oxford Archaeology 2010). This assessment did not ascertain the origin or date of these boundaries.

More recent OS mapping and aerial photographs show that most of the land containing the remnant field boundaries has since been developed. Fragments still survive in playing fields south of Fort Grange, and between Grange Road and Privett Road. Traces of one boundary can also still be seen in the playing fields of Alver Valley Schools.

The Alver Valley has been extensively quarried for sand and gravel since the Second World War. The entire western side of the valley between Lee-on-Solent and Rowner – extending north-west-south-east from Broom Way in the north to Privett Road in the south-east, with the exception of the heath at Browndown Warren – is now made ground. Similarly, the triangle of land between the River Alver and Grange Road, immediately to the east of Browndown Warren, was also quarried. These areas are reported to have been variously back filled with a combination of domestic and unknown fill (Gosport Borough Council 2003, 26). No traces of any buried features were identified on the post-war photographs of the Alver Valley taken prior to the various phases of extraction there, and any physical trace of human activity in these areas will have been removed with the quarried aggregates. Today, the south-western edge has been developed for housing, expanding Lee-on-Solent, whilst the majority has been landscaped and now forms the Alver Valley Park.

THE AERIAL PHOTOGRAPHIC EVIDENCE OF GOSPORT'S HISTORIC DEFENCES

The defences around Gosport and the immediate coastline have evolved and expanded over the centuries with successive conflicts and the increasing sophistication of naval warfare and weapons. Obsolete defences were replaced by new ones or incorporated into the later works. Significant elements of Gosport's earlier defences survived into the 20th century, but post-war development has led to the removal of most of the earthen fortifications around the town to allow for its expansion. Four of the five 18th-century Palmerston Gomer-Elson forts, Fort Gilkicker and Fort Monckton remain, as do part of the earthworks of the Gosport Lines, but Fort Gomer and most of the Stokes Bay lines have been in-filled or removed.

The Gosport Lines

Aerial photographs taken during the Second World War capture the town of Gosport before the programme of post-war development seen in most towns and cities across the country. This was a time of recovery and repair and an opportunity for renewal after the years of deprivation and suffering of the war. These photographs show substantial earthwork remains of the outer water-filled moat and earthen ramparts of the Gosport Lines still surviving around most of the town. These earthworks formed a crescent shaped barrier which at this time still clearly contained the core of the old town of Gosport along with the Naval barracks and Royal Clarence Yard, and constricted the road network and entry points to the town.

At this time a portion of the defences had been already been levelled for the construction of the swimming baths immediately north of the Cockle Pond, and at the western end of High Street the ramparts had been levelled to accommodate some expansion of the town. The most complete surviving section of the lines are those constructed around the site of the former Royal Clarence Yard and the separated defences around Priddy's Hard north of Forton Lake (Fig 17). However post-war development and planning has seen portions of the defences levelled and encroached upon by the expanding town. Recent aerial photographs and Environment Agency lidar illustrates just how much of the 18th and 19th-century defences survive. A portion of ramparts of Bastion No.1 with a blind section of the moat remain around the south-eastern part of the town from behind the flats overlooking Haslar Marina. This section of the lines can be traced to Haslar Road. Crossing over the road in a westerly direction, the next section to South Street has been completely levelled, but the ghost of the Lines is fossilised in the outline of the Walpole Park Car Park which follows an angular course around the northern side of the Cockle Pond and boating lake. The remainder of the main town ramparts have been removed completely, the site partially overlain by post-war development including a superstore, the western edge of St George Barracks and the adjacent playing fields. However, the outline of the moat can be seen as a cropmark zig-zagging northward through the playing fields of Arden Park between the barracks and Spring Garden Lane, indicating sub-surface survival of the in-filled moat (Fig 16).

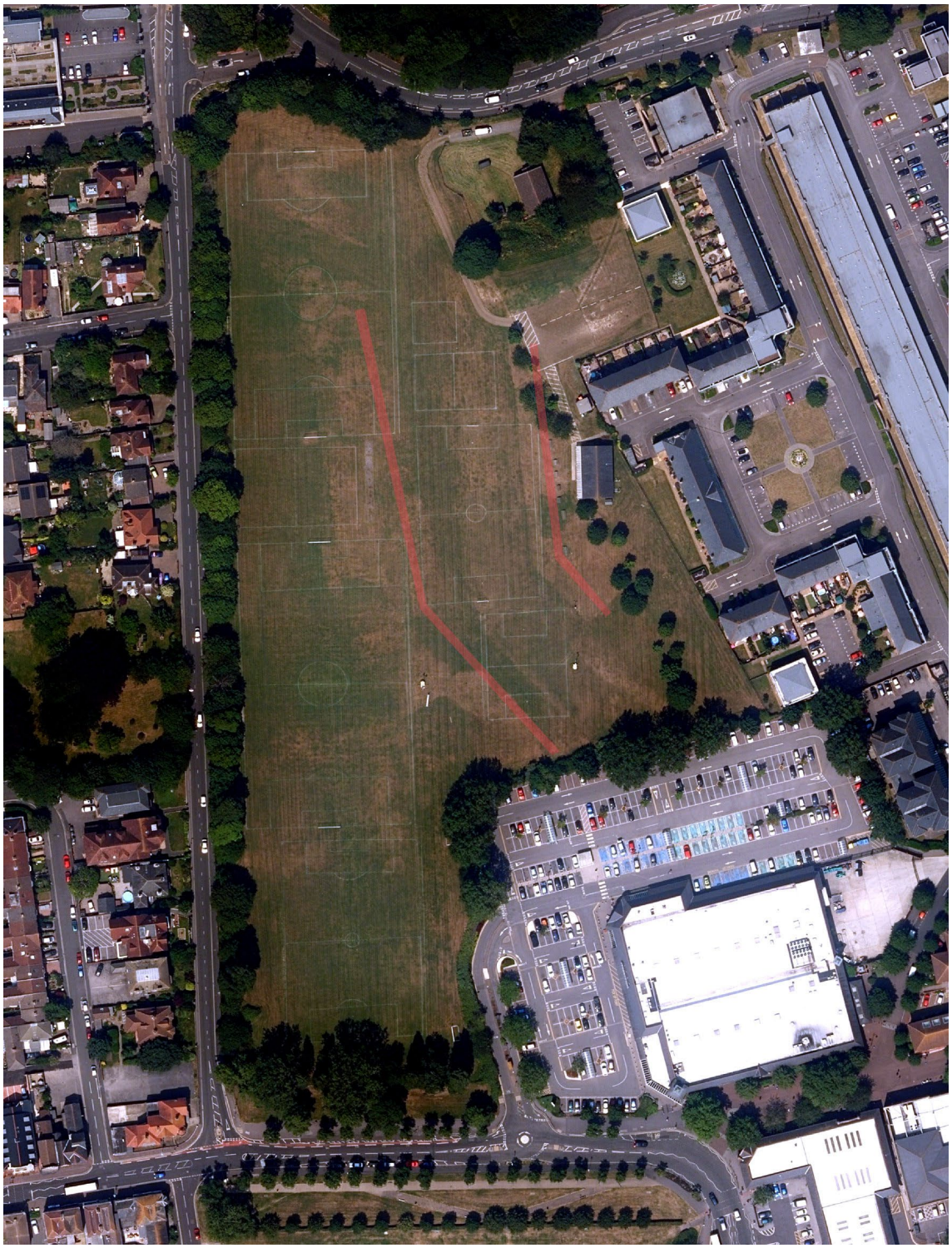


Figure 16: Dark cropmark traces of the in-filled moat of the Gosport Lines under the playing fields in Arden Park (indicated within the red lines). ©Bluesky International/Getmapping

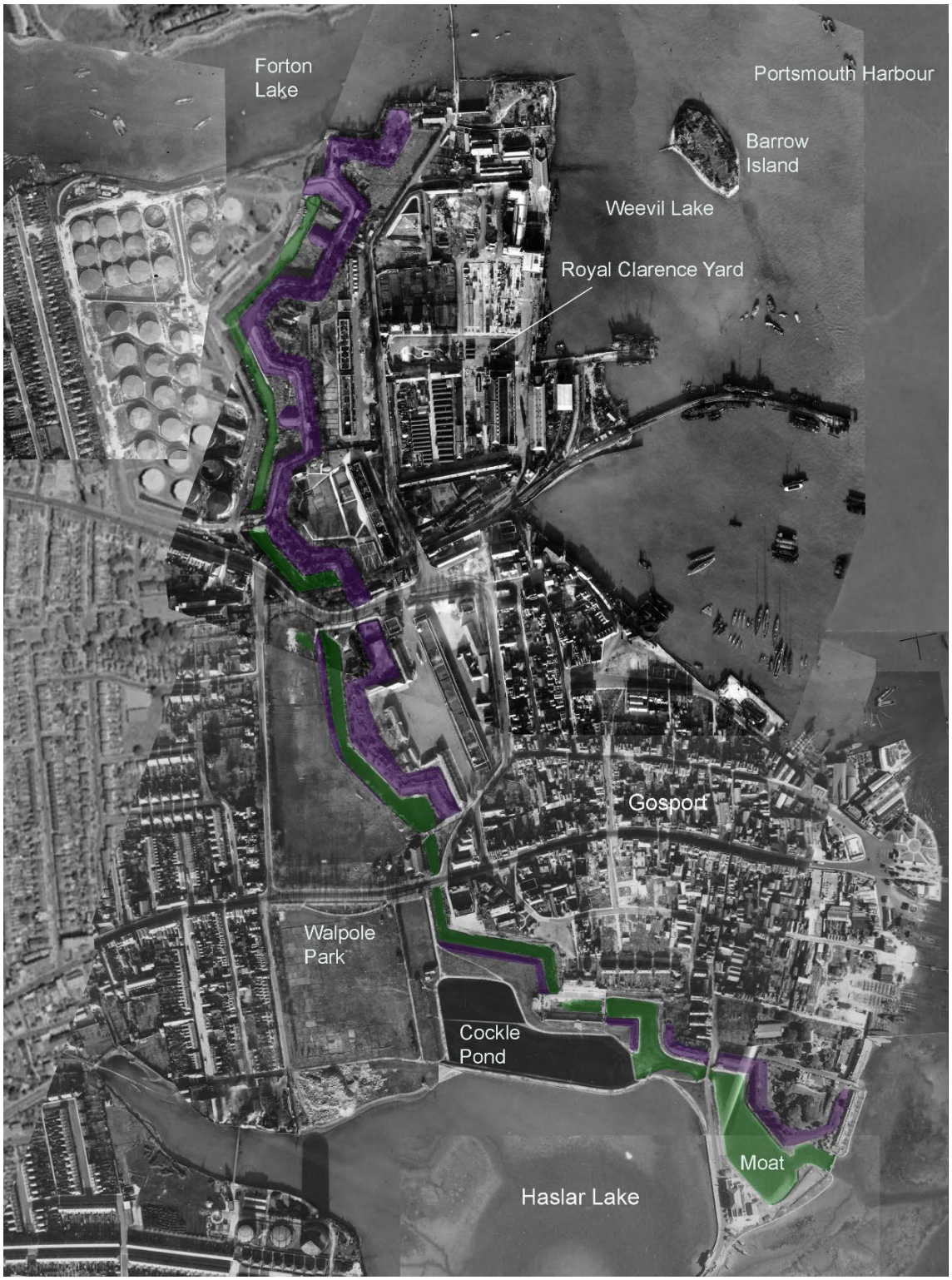


Figure 17: A photomosaic of a number RAF aerial photographs from 1940 and 1946 illustrating the course of the Gosport Lines surviving immediately at the end of the Second World War. Ditches and moats are marked in green and earthen ramparts in purple. Historic England Archive (RAF Photography).

Figure 18: The earthwork remains of the ramparts and moat around the former Royal Clarence Victualing Yard, now the Royal Clarence Marina (looking east). A paved cycle/walkway now follows the course of defences. The moat around this section of the defences still contains water which drains into Forton Lake (bottom left). HEA 26941_003 26-JUN-2018 © Historic England Archive.

The northern defences around the former Royal Clarence Victualing Yard, now the Royal Clarence Marina, survive in reasonably good condition with the earthen ramparts and most of the outer water-filled moat visible between the marina and the remains of the Second World War Naval fuel depot. A tarmac cycle/walkway now follows the line of the ramparts running between trees which have been allowed to grow up (Fig 18).

Across Forton Lake, a tidal creek to the north, the earthworks and brick caissons of the Priddy's Hard Fort also remain, enclosing and cutting off the small peninsula. The defences and selected buildings surviving within the fort are now protected by scheduling and listing (Scheduled Monument 1010741). The site now houses "Explosion" the Museum of naval firepower (Royal Navy 2022a).

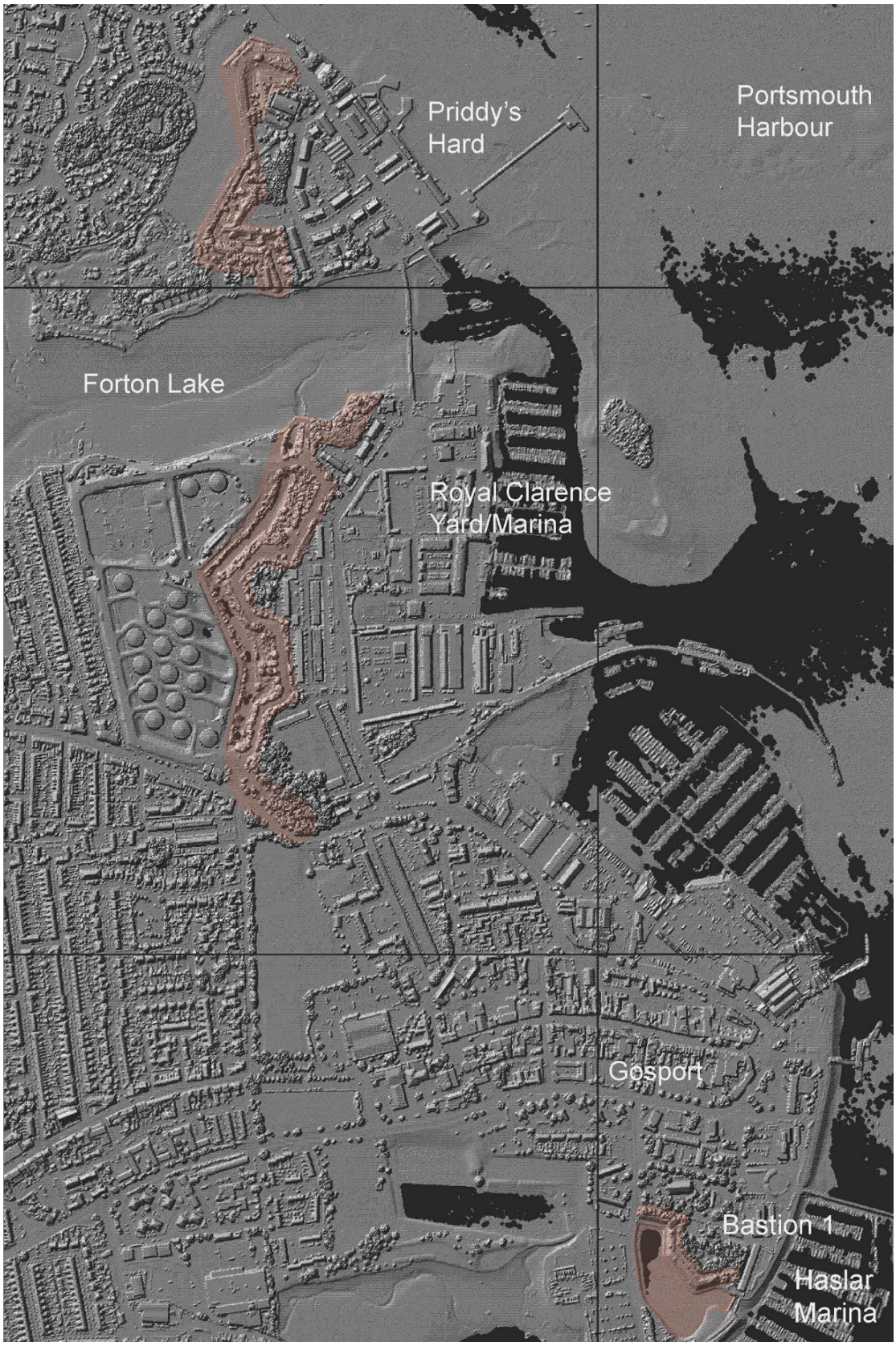


Figure 19: Environment Agency lidar mosaic of Gosport with the extent of the surviving remains of Gosport Lines highlighted in pink. NB the black areas are standing water at low tide. DSM data visualisation © Historic England; source Environment Agency.

The Stokes Bay Lines

The defences of the Stokes Bay Lines were maintained into the 20th century with new guns installed into the batteries and forts, but they rapidly became obsolete and the Lines were disarmed by 1907 (Moore 2010, 12). The batteries were re-armed during the First World War and remained in use by the Army until after the Second World War. Historic RAF vertical photographs taken in 1942 (Fig 20) recorded the remains of the moat, complete for its entire length, but the earthen ramparts, though present, are more difficult to make out. Batteries 2, 4 and 5 are also clearly visible. Batteries 1 and 3, are less obvious and harder to see from this photograph.

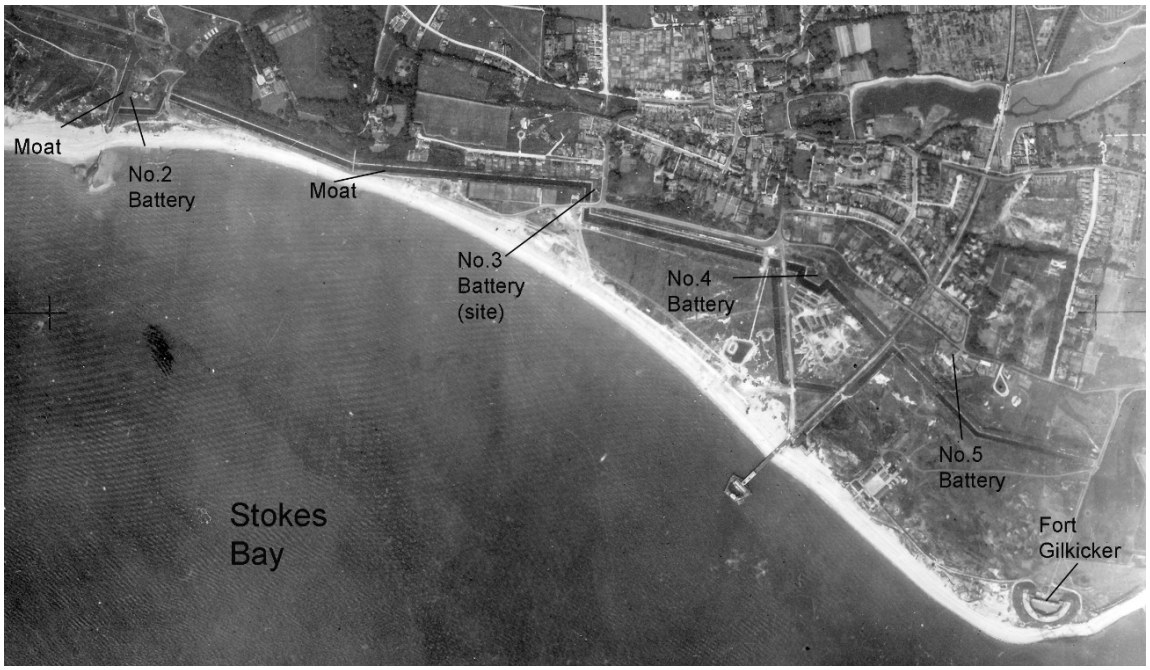


Figure 20: Extract of high-level RAF photograph taken in June 1942 showing the Gosport Lines and batteries. Also visible are military installations, barrage balloons and evidence of wartime military defensive activity along the coastal strip. RAF/FNO/13/8785 6006 24-JUN-1942 Historic England Archive (RAF Photography).

The Stokes Bay Lines were infilled gradually between the 1950s and 1990s, the rampart pushed into the moat along with refuse and rubble (Friends of Stokes Bay 2020). The course of the linear defence's moat can be traced as a cropmark, visible at times in the grass along much of its length, and in parts as a shallow earthwork ditch (Figs 21 and 22). The parts of the Lines which do survive above ground have been identified and surveyed on the ground by Historic England and the results published in a Historic England Research Report: *Stokes Bay Gosport –Five Centuries of Coastal Defences* (Williams and Bayer 2018). The use of both historic and recent aerial photographs helps to illustrate the extent and complexity of the Lines, putting the main elements of this feature in context. Some elements of the defences had already been removed before the earliest photographs were taken. No.1 Battery was demolished in the 1930s to make way for the road to Lee-on-Solent which passes to the east of No.2 Battery (Friends of Stokes Bay 2020).

At the western end of the Lines part of the moat around Battery No. 2 survives as a water-filled channel which carries the now canalised River Alver to just above the beach (SZ5860 9883) immediately to the west of No.2 Battery. No.2 Battery remains well preserved and now houses the Historical Diving Society's Museum of Diving (Fig 21).

Figure 21: The western end of Stokes Bay Lines and No.2 Battery visible on aerial photographs taken in 2016. The line of the in filled moat can be seen as a broad dark line in the grass to the north of the road. To the south of the road two car parks now occupy the aprons for vehicles ready to depart via the D-Day embarkation hards G1 and G2. GOOGLE EARTH 11-SEP-2016 © Landsat/Copernicus.

Figure 22: The course of the Stokes Bay Lines moat can be seen as a cropmark passing to the north of Stokes Bay Sailing Club where it zig-zags before continuing parallel to the southern side of the road. Google Earth 11-SEP-2016 © Landsat/Copernicus.

Proceeding south-east from Battery No. 2, the course of the moat can be traced for c440m as a dark cropmark extending along the northern side of the Stokes Bay Road. Both the moat and the road change to a more ESE direction (at SZ 5916 9870) where

the entrance to Stanley Park meets Stokes Bay Road from the north, the road then curving away slightly from the lines in the direction of the beach.

The lines can be seen heading eastwards as a slightly dished linear earthwork, running between the hedge at the end of the gardens to the north and a broken hedge line to the south (Fig 22). This section can be traced for *c*. 550m where, at the site of Battery No.3 (SZ 5970 9860), it changes through 90 degrees, heading south for *c*. 30m as a shallow north-south aligned earthwork ditch to the point where it is crossed by the Stokes Bay Road close to the corner of the Sailing Club car park (Fig 22 and 24). The lines can then be traced as a slight parchmarks on aerial photographs from the Sailing Club car park through playing fields to a N-S aligned path which is a remnant hardened track associated with the D-Day Phoenix construction site and embarkation hards (see below).

Figure 23: Traces of the south-eastern end of the infilled Stokes Bay Lines visible in the parched grass as darker lines (marked with a central red line). The sites of No. 4 and No. 5 Batteries are also visible. Google Earth 01-JAN-2005 © Landsat/Copernicus.

Continuing eastwards, the moat can then be traced as a very faint cropmark to Lifeboat Lane. This complete section from the Sailing Club car park can also be seen as a faint earthwork on the lidar images (Fig 23). From this point the Lines split into two, forming an elongated island around No. 4 Battery. One arm extends south, running parallel to the western side of Lifeboat Lane. There is a very slight hint of this on the lidar, and a dark cropmark can be seen in the grass on aerial photographs. This section of the Lines (visible as a clear dark mark in the grass) then changes direction just before the car park of the-lifeboat station, crossing the road and heading east. It changes direction again to an east-north-east course, heading for No. 5 Battery and the northern arm of the Lines. This is section is less clear, partially obscured with vegetation with a path leading along its axis.

The site of No. 4 Battery is overgrown with vegetation, but aerial photographs indicate the presence of some remaining buildings and structures.

The second, northerly branch of the moat leads extends south-east visible as an intermittent cropmark/parchmark, passing around the southern side of No. 4 Battery which is incorporated into the defences. The Lines continue on this course, passing to the south of No. 5 Battery 375m south-east of No. 4 Battery. The moat changes direction one last time at SZ 6060 9794, heading SSE for the final 287m of the defences which terminate at the lake to the east of Fort Gilkicker.

The remains of No. 5 Battery are scheduled (List Entry Number: 1001829) but have been much altered. The battery was decommissioned in 1904 and was not brought back into service during the First World War. The 1932 Ordnance Survey Map shows a number of buildings within the site marked as 'Royal Naval Camp', but it is not known when the Navy took the site over. It subsequently became a centre for naval research on diving and submarine rescue (Bayer & Williams 2018, 10). Post Second World War, the site became the Royal Navy Physiological Research Laboratory and additional buildings were added between the 1950s and 1970s It was later taken over by QinetiQ and remained as a military research facility until it closed in 2012 (Historic England 2015). The buildings are now vacant but inaccessible (Friends of Stokes Bay 2020).

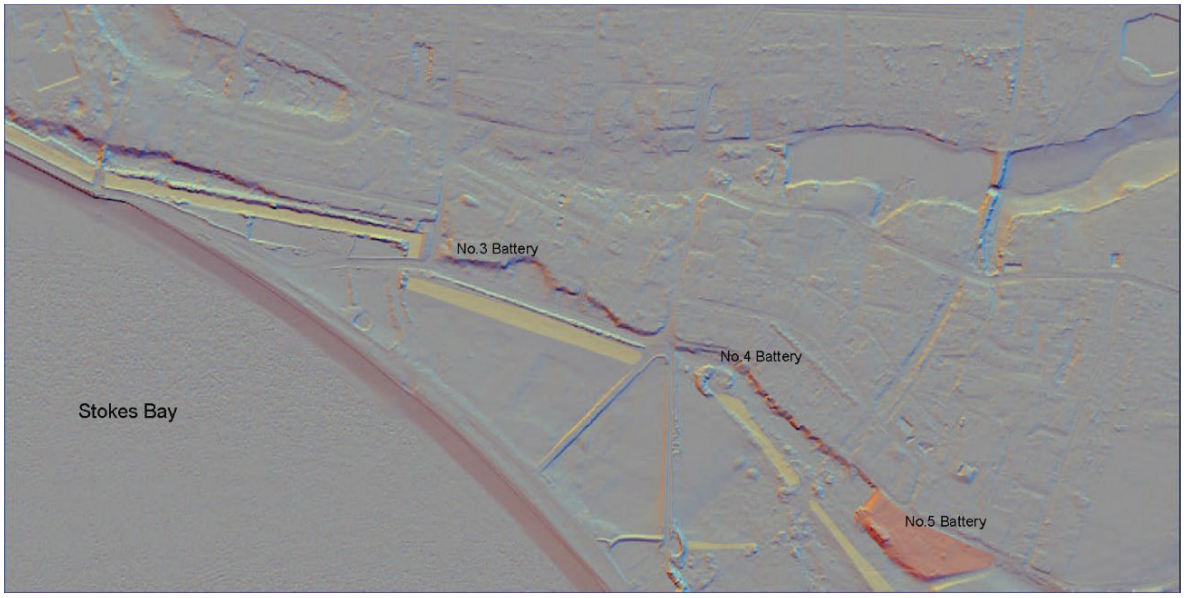


Figure 24: Environment Agency lidar highlighting sections of the moat of the Stokes Bay Lines visible as a slight depressed linear (shaded yellow) and the site of No.5 Battery (shaded red). Buildings have been removed by DTM processing). 16 Direction DTM data visualisation © Historic England; source Environment Agency.

Part of this facility encroaches onto the line of the levelled earthworks and in-filled moat of the Lines, but other sections of the Lines are faintly visible as a broad dark linear cropmark. The moat passes from there into the western part of the Gosport and Stokes Bay Golf Club where the final change in direction occurs at SZ 6056 9794. From this point onwards the final ESE stretch of the moat is less clear. It follows the course of a fairway in the golf course but cannot be traced beyond one of the golf greens at SZ 6068 9790. The lake formed by the re-directed River Alver has been partially in-filled and

divided into two to form an hour-glass shaped pond with a narrow causeway. The northern third is roughly oval; the remaining southern part below the in-fill retains its original rectilinear shape with the channel at its SE corner leading eastwards to a sluice above the beach.

The Palmerston Forts of the Gomer-Elson Line

Of the five 19th-century Gomer-Elson Line Palmerston forts, all remain in varying states of completeness, except **Fort Gomer**, the southern-most fort (SZ 5880 9930) which was demolished in 1964 to make way for a housing development (Fig 25). The remaining four have served differing purposes and remain in varying states of repair. Both **Fort Grange** and **Fort Rowner** are currently in the hands of the Navy, serving as parts of HMS Sultan – the shore-based training establishment and home of the Defence School of Marine Engineering (DSMarE) – and the Royal Naval Air Engineering and Survival School (RNAESS) (Royal Navy 2022). Fort Rowner (Fig 26) also still retains its water-filled moat.

Figure 25: Vertical aerial photograph of Fort Gomer (demolished in 1964) the southern-most of the five Gomer-Elson Line forts in 1946 in use as wartime army barracks. Extract of RAF/106G/UK/1240 5084 13-03-1946 Historic England Archive (RAF Photography).

Fort Grange has been structurally altered (Fig 27) and has had all its earthen ramparts levelled and its moat infilled and. What remains of the fort is designated as a Scheduled

Monument (List Entry Number: 1001807) and Grade II listed building (List Entry Number: 1233816) (Victorian Forts 2020).

From 1900 **Fort Brockhurst** (Fig 28) was used as a depot, headquarters and accommodation for various regiments. It was taken over in 1962 by the Ministry of Works when the Army left and was designated a scheduled monument in 1967 (List Entry Number: 1013401) The fort has been in English Heritage guardianship since 1984. It houses extensive reserve collections and both the fort, and the collections are open to the public (Historic England 2020). The ramparts and moat are now obscured by dense tree growth.

Figure 26: Aerial view of Fort Rowner in 2011. HEA 26944_010 19-APR-2011 © Historic England Archive.

Fort Elson (Fig 29) (SU 5989 0289) is the most northerly of the five Gomer-Elson Palmerston forts. It lies within the naval military munitions depot at Frater and is a Scheduled Monument (List Entry Number: 1001841). The range of original buildings survives but appears unused and derelict with visible evidence of vegetation growing on the roof. The ramparts and moat are heavily overgrown with vegetation and trees making them virtually impossible to discern from aerial photographs. They also produced poor returns on the available Environment Agency lidar due to the density of vegetation. On aerial photographs taken in 2011 the presence of the fort is defined by the pattern of planting and differential tree growth across the site (see Fig 29).

The Coastal Forts

Fort Gilkicker (Fig 30) (SZ 6066 9749) is designated as a Scheduled Monument and Grade II* Listed Building (List Entry Numbers: 1001789 and 1276716). It was deemed surplus to requirements and sold to Hampshire County Council in 1986. Three separate planning applications have been put forward for re-development of the site into high quality apartments, but none of the schemes have so far come to fruition. The barracks are largely intact but were empty and boarded up when photographed in 2019. The Gosport and Stokes Bay Golf Club extends around the landward side of the fort.

Fort Monckton (Fig 31) (SZ 6107 9785) was designated as a Scheduled Monument in 1971 (List Entry Number: 1001844) and the former Officers' Mess and Central Magazine are Listed at Grade II and Grade II* respectively (List Entry Numbers: 1445604 and 1445601). Fort Monckton and its ancillary buildings remain in use by the government with no access to the public. The earthen outworks of the fort still survive in good condition and most of the original built fabric and features survive (Historic England List Entry 2020). Additional buildings and car parks occupy the site. The moat which extended from the eastern end of the lake to the northern edge of the fort's glacis has been infilled and only survives as a slight ditch, more so towards its eastern end. This outer area is occupied by part of the Gosport and Stokes Bay Golf Club.

Figure 27: Aerial view of Fort Grange. HEA 26942_013 19-APR-2011 © Historic England Archive.

Figure 28: Aerial view of Fort Brockhurst. HEA 26945_010 19-APR-2011 © Historic England Archive.

Figure 29: Aerial view of Fort Elson. HEA 26944_033 19-APR-2011 © Historic England Archive.

Figure 30: Aerial view of Fort Gilkicker. HEA 26941_048 19-APR-2011 © Historic England Archive.

Figure 31: Aerial view of Fort Monckton. HEA 26941_024 19-APR-2011 © Historic England Archive.

BROWNDOWN MILITARY TRAINING AREA

The construction of the first blockhouse - Haselworth Castle (1539-45), marked the beginning of a permanent military presence on Stokes Bay which continues to the present day. Successive and more extensive defences around the burgeoning port and dockyards at Portsmouth saw a rise in the number of soldiers billeted in the area and a number of military camps became established on the peripheries of Gosport.

Evidence of an early military presence can be seen on a map of 1782 which shows camps of the Light Infantry and the 16th Light Dragoons regiments camped at Browndown and Hereford and Cheshire regiments camped north of Fort Monckton.

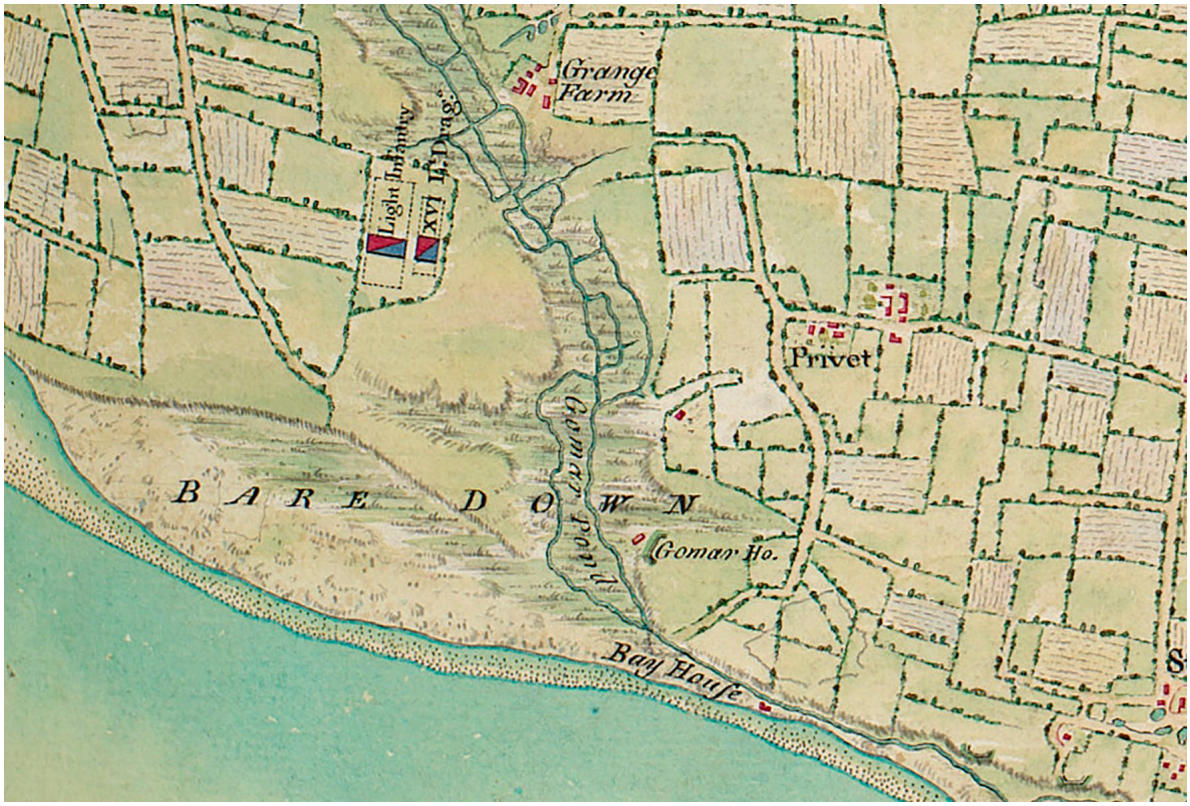


Figure 32: Extract of 1782 plan titled: Plan of the Encampments in the Neighbourhood of Portsmouth under the command of the Rt Hon. Lieu. Gen. Lord George Henry Lennox, plan 1st July to 13th November 1782. Showing the location of encampments of the Light Infantry and 16th Light Dragoons on the north-western edge of Bare Down or Browndown Military Camps. Reproduced with permission Royal Collection Trust / © His Majesty King Charles III 2024.

Around the time this map was published, 25 acres of land had been purchased by the military at the eastern end of Stokes Bay for fortification works. These never came to fruition, so the land was returned to the Delme family in 1839, only to be repurchased in 1851 by the military along with adjacent parcels of land totalling 156 acres for new fortifications in the face of increasing aggression from France (Friends of Stokes Bay 2020). The heathland of Browndown Warren, immediately north-west of Fort Gomer was included in this military acquisition and became a military training area (ibid), referred to today as Browndown (North) by the MoD.

The campground at Browndown was established in 1856 on a level strip of land just above the beach to accommodate soldiers of the British German Legion or Anglo-German Legion, a body of German soldiers recruited to fight for the British in the Crimean War. They were encamped at Browndown between August and November 1856 and had even been visited by Queen Victoria and Prince Albert by boat from Osborne House on 23rd August (Friends of Stokes Bay 2020). An early Ordnance Survey map (survey dated 1856) does not record any military camps, buildings or ranges yet at Browndown, though temporary structures such as these could have been beyond the scope of the OS surveyors.

Aerial photographs taken in 1923 (Fig 33) show the hutted camp at Browndown with its adjacent campground, military ranges on the beach below, and earthworks of the First World War training trenches on the heath at Browndown to the north. The camp underwent a number of developments, enlargements and reorganisations in layout and buildings over the years and Privett Road has been widened and altered.

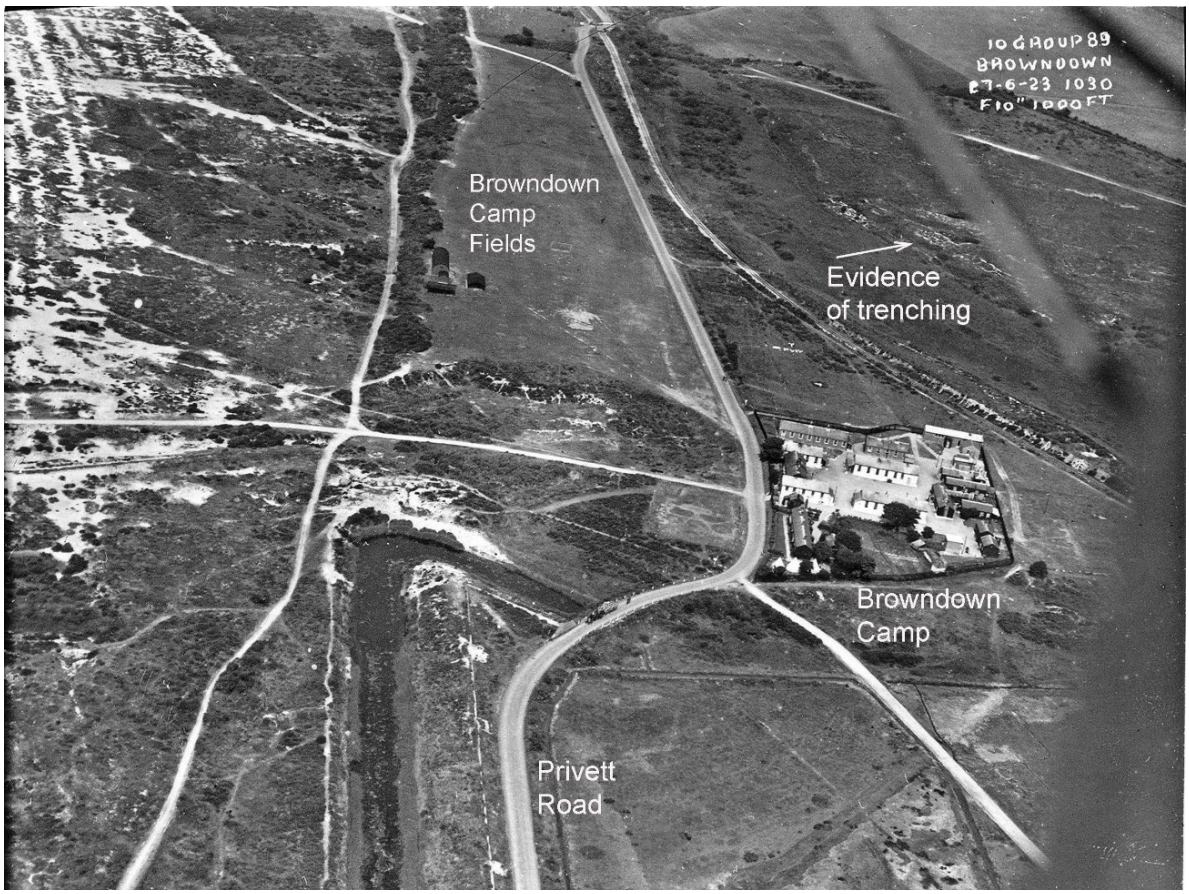


Figure 33: Aerial view looking west along Privett Road in June 1923. The northern part of Browndown ranges can be seen in the left of the photograph and the road from Gomer Fort to the ranges can be seen coming in from the bottom-right-hand corner. CCC/8602/665 27-JUN-1923 –
© Historic England. Crawford Collection

Browndown Heath (Browndown North) and Browndown Ranges (Browndown South) on the beach below are still both owned by the MoD and used periodically for military training but allow public access between periods of active training.

Browndown Ranges – Browndown (South)

Following the first military encampment of the German soldiers of the British German Legion at Browndown in November 1856 the beach to the south of Browndown at the western end of Stokes Bay started to be used as a permanent rifle range by volunteers and regular troops for annual training and competitions. Later referred to as Military Training Area (South), this broad shingle expanse located between the high-water mark and a low cliff proved ideal for a range with firing points directed westwards into the Solent (ibid). Troops were quartered at nearby Fort Gomer which was linked to the ranges at some point by a military road with further temporary accommodated in a tented encampment known as Browndown Camp Field located above the beach. An additional, more permanent hutted camp was added in 1877 to the east of the now well-established ranges and connected to the military road. The first phase of the ranges was recorded on an Ordnance Survey map of 1877.

Aerial photographs taken during and after the Second World War record the ranges on Browndown Beach as they were in the 1940s, as well as the traces of numerous former ranges with their firing points and butts which appear not to have been fully removed as the range developed (Figs 35 and 36). All faced out to sea in a westerly or south-westerly direction, the alignments varying slightly through time. The butts were elongated mounds, probably beach material, positioned close to the high-water mark with a line of targets placed immediately in front on the landward side. Each range or lane had up to six firing points at 100-yard intervals. The more recent ranges appear to be bounded by lateral linear markers down either side lane. Traces of the oldest ranges can be seen on the photographs but are only visible in the south-eastern third of the beach. They clearly lie beneath, and are largely obliterated by, the later more substantial ranges. Where traces of the older 19th-century ranges survive, they appear as a single E-W axial line (appearing on the aerial photographs as a broken line of vegetation growth) broken at 100-yard intervals by traces of short banks at the firing points, terminating at the western end with a slightly more substantial mound of the butts. These short mounds are depicted as such on the Ordnance Survey map of 1877 which records a total of eight separate ranges with firing points and butts extending out across the beach from east to west, firing out into the Solent, fanning out gently to avoid the danger of crossing fire.

In the last decade of the 19th century the ranges were developed with 800- and 1,000-yard ranges and saw a change in alignment laid out over the earlier ranges (see Fig 34). An integrated tramway was also installed to move targets to and from the repair shop. With the ranges expanding a new halt was added in 1894 on the Lee-on-Solent railway line opposite the range repair shop so troops using the ranges could travel by train rather than marching in from the nearby forts (Friends of Stokes Bay 2020). Historic Ordnance Survey maps from 1896 to 1932 show this late 19th-century arrangement of ranges and tramways remained in use until the 1940s and would have been the ranges used by troops preparing for action prior to being sent to France to fight in the First World War.

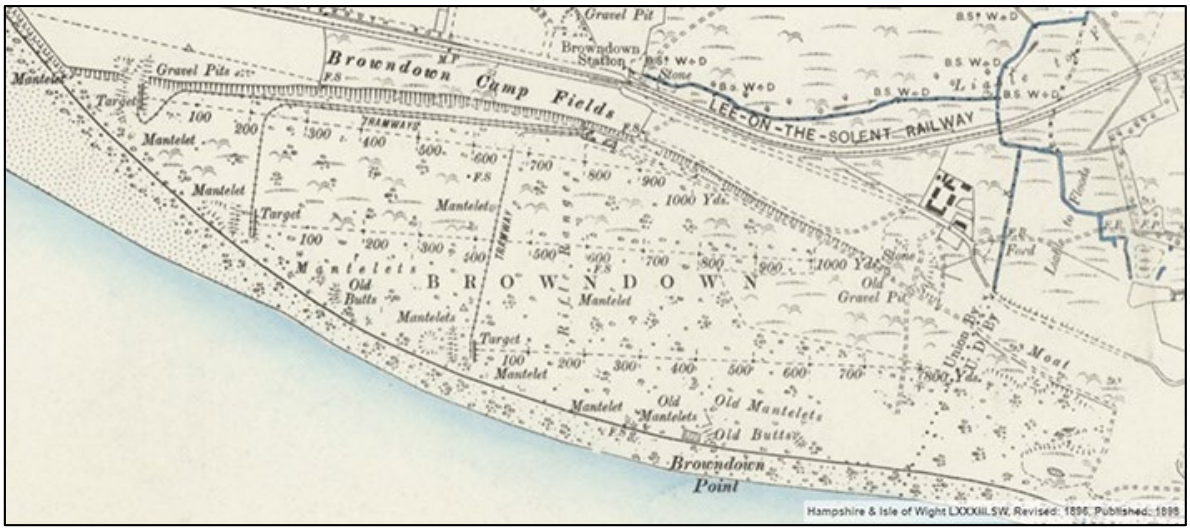


Figure 34: OS map of 1898 illustrating the new layout of the ranges and the newly installed range tramway and new railway halt on the Lee-on-Solent line. Ordnance Survey 25 inch to the mile. Revised 1896, Published 1898 (National Library of Scotland) Reproduced with the permission of the National Library of Scotland. https://maps.nls.uk/index.html

Troops were schooled in stationary firing or advancing and firing exercises. One personal account of a soldier training on the First World War training ranges on Cannock Chase describes the process of advancing towards the target, shooting from each 100 yard firing point: "a series of advances from 600 yards, keep advancing then lying flat and firing, up again, forward, get in trench, fire over parapet, up again etc". (Jones 1992, 11).

Aerial photographs taken during the Second World War and the Ordnance Survey six-inch map published in 1942 record the installation of three new ranges on a new north-east south-west alignment over the top of the old ranges. They appear more substantial, with longer butts (the largest of the three measuring over 90m in length). The course of the tramway was also altered to serve the targets of these new ranges. Recent ground photographs held by Friends of Stokes Bay show the firing points of the most recent ranges each constructed with a concrete wall on three sides facing the target and tapering away to form a sloping wedge, containing the core of beach shingle and sand.

The old Victorian tramways were replaced in the 1960s with an ex-mine railway track which was finally removed in 1990, though traces of some tracks can be seen amongst the remains of the old ranges (Friends of Stokes Bay 2020). It is possible to identify details from the aerial photographs, such as the size and position of the targets on the Second World War ranges by the shadows cast by the individual target plates and the impact marks of the artillery rounds are gouged into the face of the butts. Elsewhere there are excavated areas which are probably for removal of sand and shingle for construction of the butts and target embankments.

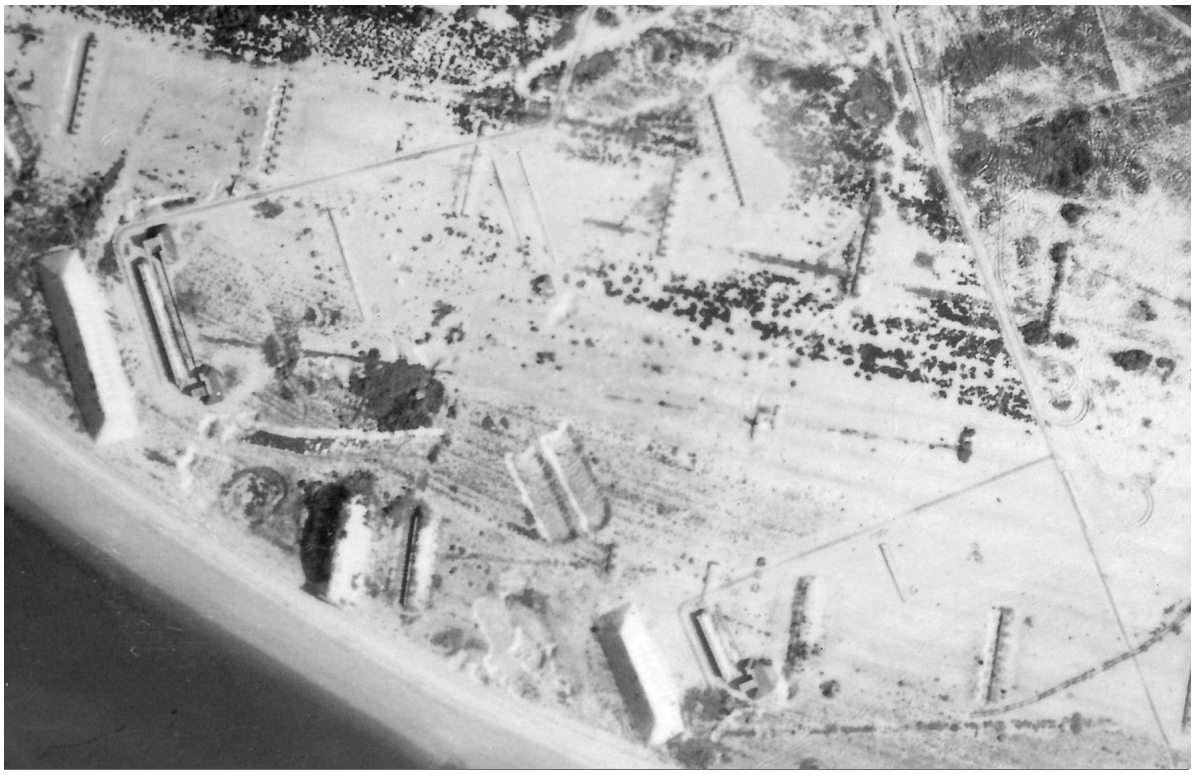


Figure 35: Aerial view of part of the ranges at Browndown (South) showing a number of overlapping ranges from different periods. The largest and most substantial range (in use at the time of the photograph) is served by the tramway. Extract of RAF/3G/TUD/UK/163 VP2 5110 20-APR-1946 Historic England Archive (RAF Photography)

Following the Second World War the ranges continued to be used for a number of purposes. As well as artillery practice on the ranges themselves, the beach was used for hovercraft trials in the mid-1960s and the base for the Hovercraft Trials Squadron. It is still in use as a training ground for Royal Marines undertaking exercises such as amphibious assaults onto the beach. Browndown Camp was sold in 2011 by the MoD as part of its disposals programme but the beach and campground were retained (Friends of Stokes Bay 2020).

Today, the beach has become obscured by encroaching vegetation. The beach, a rare shingle habitat and now recolonised with heathland vegetation, was declared a Site of Special Scientific Interest (SSSI) in 1985 (designatedsites.naturalengland.org.uk). It is clear from modern aerial photographs and lidar images (Figs 37 and 38) that many of the extant earthworks visible in the 1940s on aerial photographs have been eroded or lost in the intervening decades or are masked by the returning vegetation.

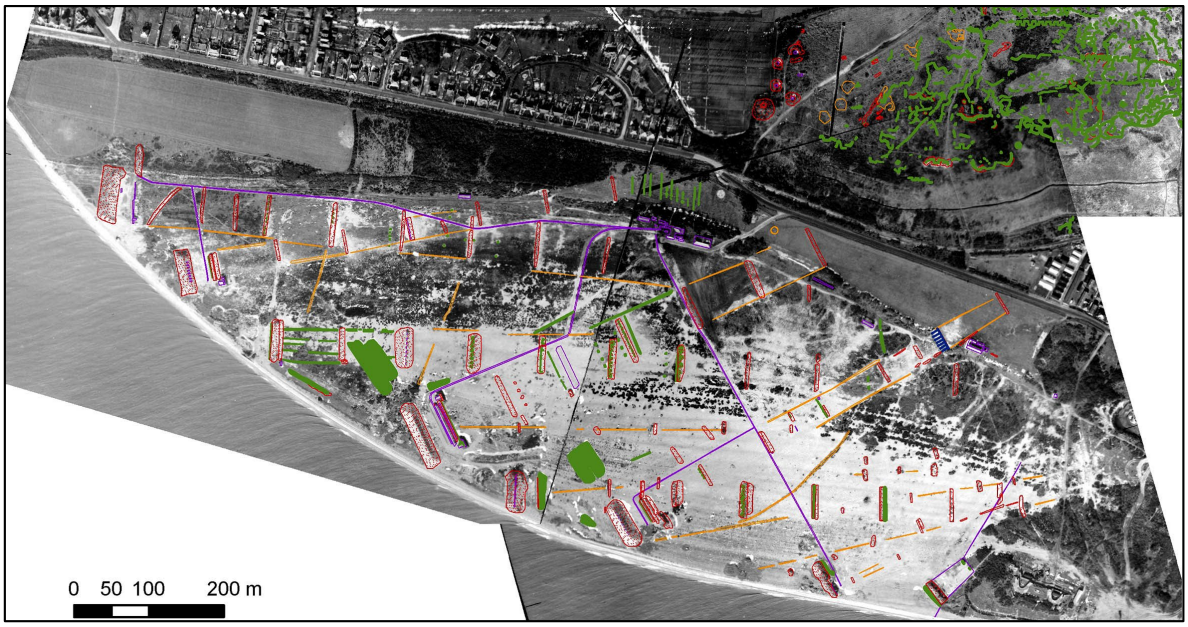


Figure 36: A photomosaic derived from 1948 RAF photographs showing the entire extent of the Browndown ranges overlaid with the aerial mapping. At least 17 separate ranges of differing age, length and alignment are visible. The older ranges survive as faint marks or earthworks in the sand of the beach. The branches of the tramway (purple) can be seen running from the main buildings and repair shop on the north side of the beach. Extracts of RAF/CPE/UK/2463 5034, 5040 and 5090 26-Feb-1948 Historic England Archive (RAF Photography).

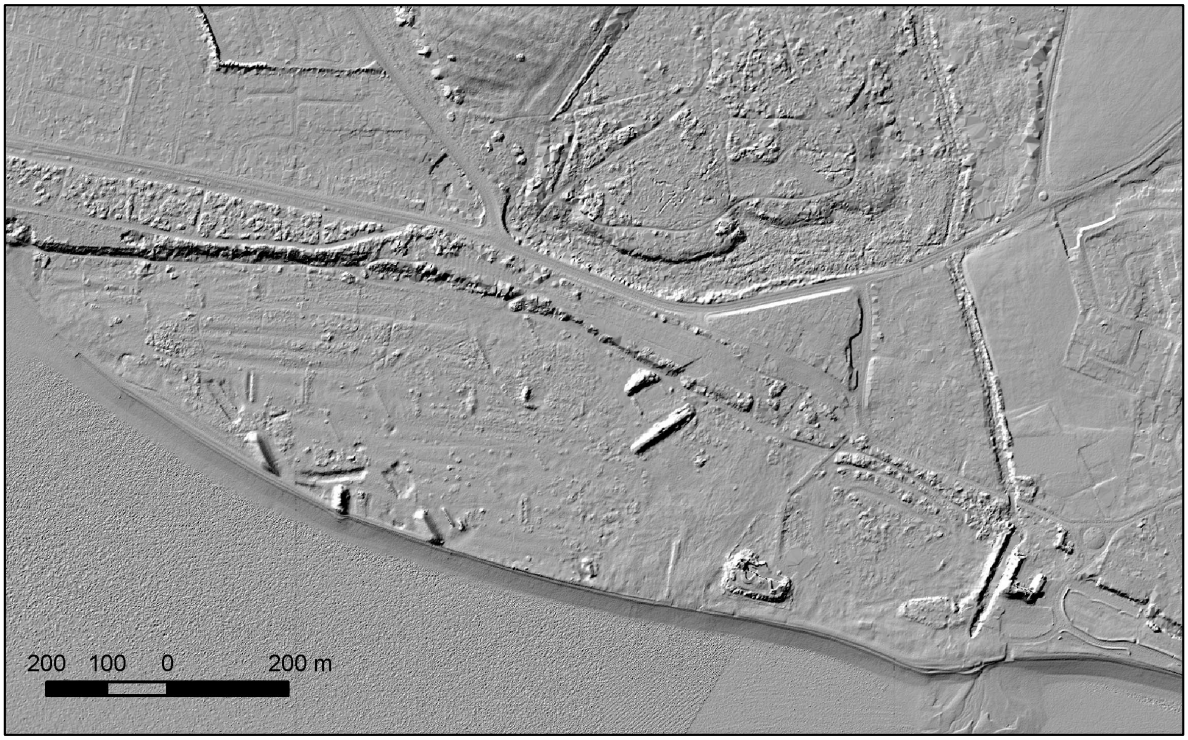


Figure 37: Environment Agency 1m DTM lidar of the beach at Browndown showing the earthwork (shingle) banks and ditches of the rifle ranges and the underlying linear striations in the beach shingle deposits. DTM 16 Direction data visualisation © Historic England; source Environment Agency.

Figure 38: Aerial view of the shingle beaches at Browndown with the remains of the historic artillery ranges overgrown with heath vegetation. Google Earth 15-SEP-2019 ACCESSED 07-MAY-2020. © Landsat/Copernicus.

FIRST WORLD WAR TRENCHES AT BROWNDOWN (NORTH)

Browndown Warren on the western edge of Gosport forms part of the Ministry of Defence (MoD) training estate. Within this area of heathland lies the extensive earthworks of a series of elaborate trenches believed to be the remains of a First World War training area. These features were first recorded as military practice trenches from 1940s RAF aerial photographs in 2011 as part of the South East Rapid Coastal Zone Assessment National Mapping Project (SERCZA NMP) (Hamel and Lambert 2011, 24). The site was subsequently identified on a 1950s aerial photograph by Robert Harper, Conservation Officer at Gosport Council in 2014 (Kennedy 2014). As part of the Gosport Heritage Action Zone HAZ initiative, a programme of aerial survey from historic and recent aerial photographs and lidar images in tandem with a field investigation was undertaken by Historic England's Aerial Investigation and Mapping and Archaeological Investigation Teams between autumn 2019 and 2020. A detailed field survey was carried out in the northern half of the trench system in January 2020 when the blanketing vegetation had died down to its lowest state of coverage giving better access to the earthwork remains of the trenches.

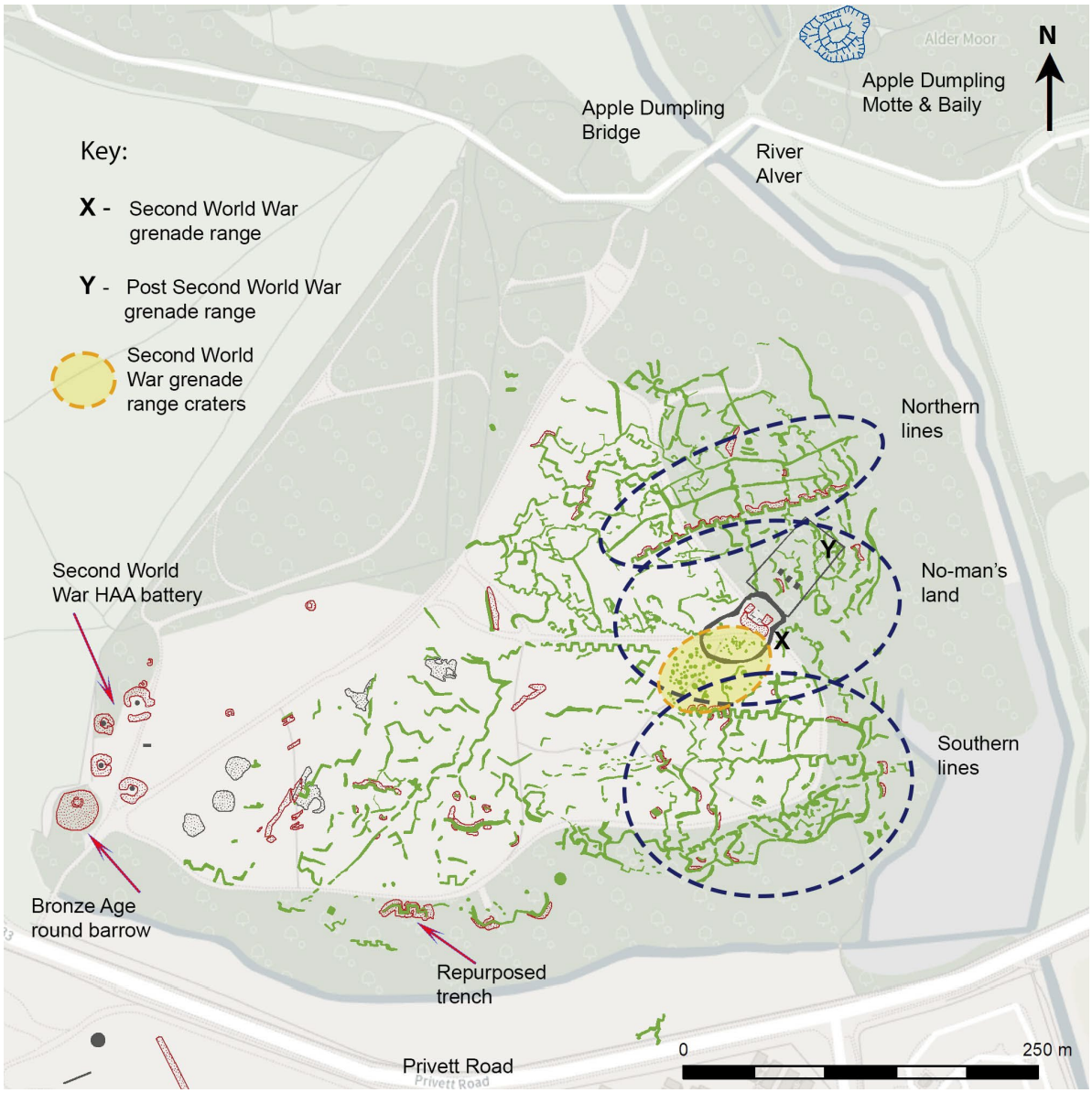


Figure 39: Map of the extent and probable layout of First World War practice trenches at Browndown mapped from aerial photographs and lidar. The earthwork remains of a Second World War HAA gun emplacement and Bronze Age round barrow can be seen on the western edge of the site. Mapping © Historic England. Base map © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

Because of the dense bracken and gorse covering the site today, which has proved almost impenetrable to lidar, historic aerial photographs taken during and after the Second World War have been key to mapping the extent of the trench system.

The results of the survey reveal traces of historic trenching extending across the core of the common. It is clear that this represents a number of phases of trenching, but at its core it is still possible to make out the pattern of a standard 'textbook' First World War trench layout with two main blocks of trench with opposing front lines facing one another across a no-man's land on the eastern side of thon specific military training operations which took place across Browndown and the Alver Valley in the late 19th to early 20th century, but there is currently no known official documentation or maps recording the digging of entrenchments on Browndown Warren. The first known

visible record of the trenches an aerial photograph taken in 1923 which shows trenching on the southern edge of Browndown Warren, suggesting the trenches were in use during First World War date (Fig 33). The only contemporary reference found so far is a mention of trench digging in 1914 in the personal diary of James Thompson a Royal Marine awaiting embarkation. Though brief, this entry confirms Browndown was active and trenches were being dug in 1914, with some of the trench system, if not all dating from the First World War. The entry reads:

Monday 10 August 1914. At Portsmouth.
Fell in at 8 o'clock and marched to Browndown for trench digging. Fell in again at 5 pm. For drill etc, and signal exercise. A signal class detailed to work under a Signal Sergeant instead of with the Battalion.... (Widecombe-In-The-Moor 2020).

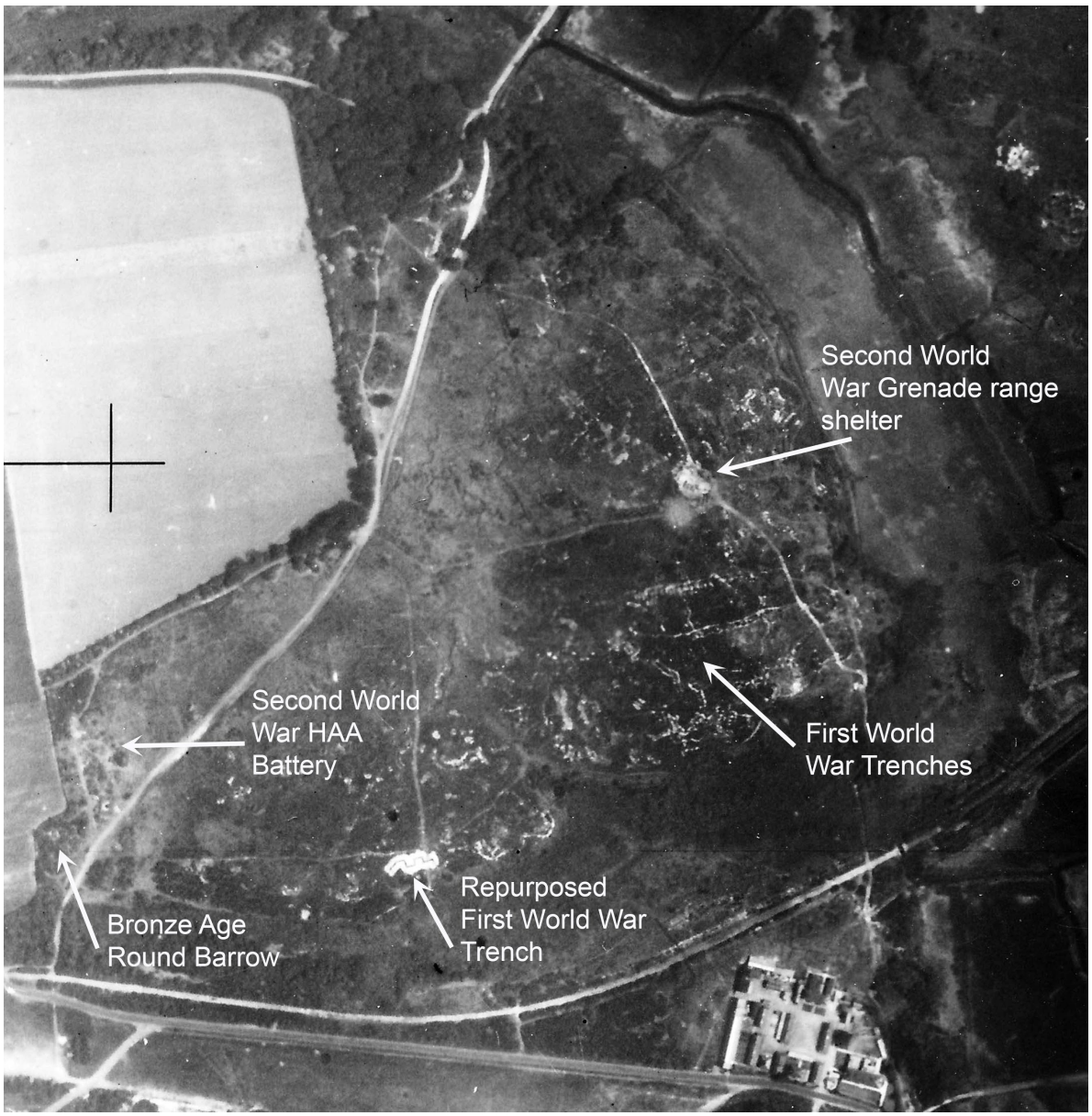


Figure 40: Aerial view of Browndown (North) during the Second World War. Extract of RAF/HLA/623/V6113 21-JUN-1942 Historic England Archive (RAF Photography)

RAF aerial photographs taken in 1942 indicate that the trenches had been abandoned and were overgrown by the Second World War and the Warren was being used as a grenade training range. A Heavy Anti-Aircraft Battery (HAA) (Solent P40) was located on the south-western edge of the common incorporating the mound of a Bronze Age round barrow. A nearby length of new zig-zag ditch, 185m south-east of the HAA battery, may have been serving as an emergency air raid shelter for the crew. Also, during the war, a grenade training range was established in the centre of the abandoned trenches, followed by a later post-war grenade range immediately to the north-east of the first range.

The remains of the trenches and other military features identified from aerial photographs, lidar and from field survey are described in full in a separate dedicated Historic England Research Report: Browndown Ranges (North), Gosport (Bayer et al. 2023).

Figure 41: Aerial view of the trenches at Browndown (north) in April 1946. Extract of RAF/3G/TUD/UK/163 Vp2 5110 2-APR-1946. Historic England Archive (RAF Photography)

Figure 42: View of the remains of trenches on in the centre of Browndown Warren in 2011 looking south-east. HEA 26943_036 19-APR-2011 © Historic England Archive.

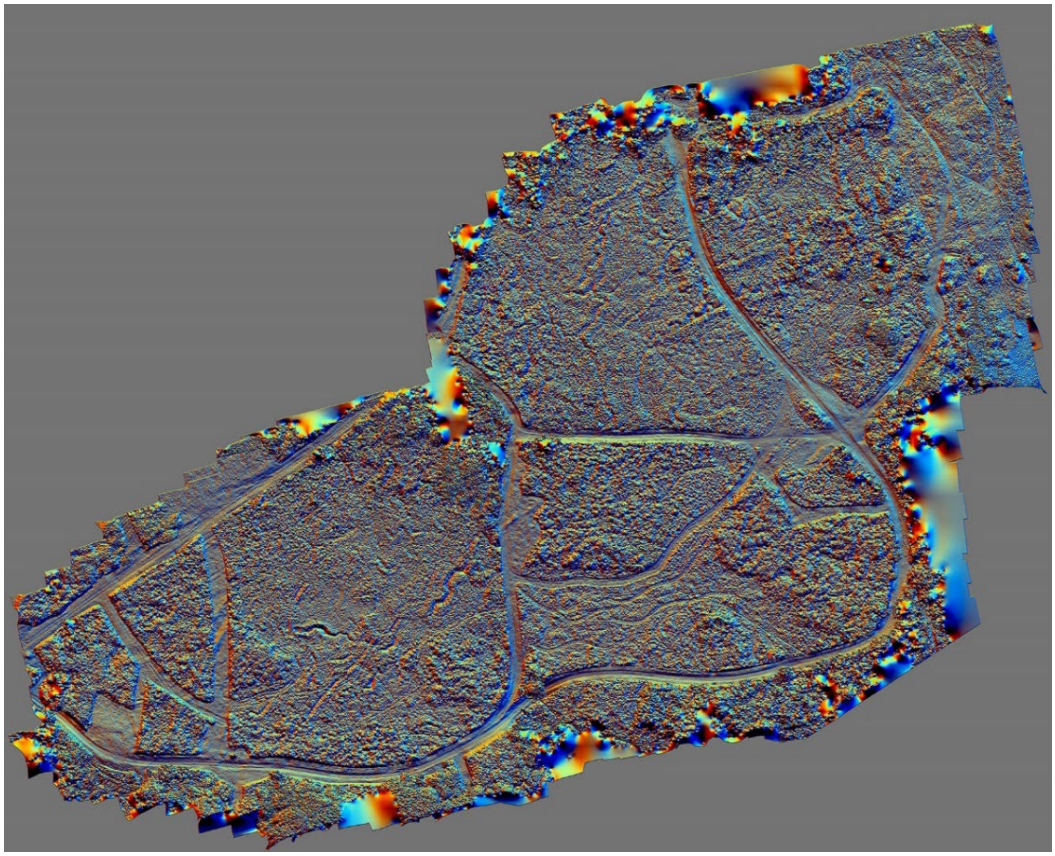


Figure 43: A mosaic of low-level aerial photographs of Browndown (north) taken in 2020 by Historic England and processed using Structure from Motion (SfM) software to create a 3D 16-direction model of Browndown trenches. © Historic England

GOSPORT THROUGH THE SECOND WORLD WAR

Second World War defences

With the onset of the Second World War, the south coast of Britain was prepared for invasion and attack from the sea and air. Defences included coastal artillery, anti-aircraft gun emplacements and searchlight batteries supported by radar and radio stations. Following the fall of France in 1940 the south coast became Britain's front line where the anticipated German invasion would most likely arrive, and it would ultimately be one of the key embarkation points of a counter-invasion of occupied Europe.

The beach defences formed the 'coastal crust', with gun emplacements, land mine fields and layers of passive obstacles such as beach scaffolding, barbed wire, anti-tank obstructions and barrage balloons. Further inland stop lines were established as further obstacles to halt the onward movement of a successful invasion.

The Solent ports were key naval and logistical bases. Their supply and munitions depots, shipbuilding and industry made Portsmouth, Gosport and Southampton prime targets for enemy attack and their defence of utmost importance.

Though numerous and extensive, the defences of the 'coastal crust' were largely removed immediately after the end of the war. With the exception of more robust structures such as concrete pillboxes and gun emplacements, most have left little trace. Evidence for most of these transient features comes from aerial photographs taken during or immediately after the war.

The South East RCZAS survey (Hamel and Lambert 2011) recorded all features including the military installations, airfields and defences along the coast extending 1km inland from the mean high-water mark. Because these were mapped and recorded in considerable detail, they have not been re-mapped as part of the HAZ research. However, the current project has reviewed this narrow coastal strip, mapping features visible on newly acquired photographs and higher resolution Lidar not available at the time of the RCZAS survey, as well as all the remaining unmapped inland areas within Gosport HAZ project area. This has identified a wide range of features, the majority relating to the Second World War defences in and around Gosport.

Gosport's Airfields

There were two active airfields in the Gosport area: Gosport and Lee-on Solent. Both had their origins in the development of Naval aviation in First World War and functioned primarily as training and experimental airfields for naval aircraft through the inter-war period and the Second World War. Although the airfields were training facilities, they were considered valid targets and suffered significant bombing raids throughout the war.

Gosport (centred at SU 5888 0078) was established in 1912 with the expansion of the Royal Flying Corps (RFC) and became the home of Royal Naval Air Service (RNAS) squadrons through the First World War, functioning as the shore-based airfield for aircraft from carriers based at nearby Portsmouth. With the formation of the RAF in

1918, after the war Gosport was maintained as a Coastal Aviation Station as part of No.10 Group. It subsequently became home to the Torpedo Development Unit, flying Sopwith Cuckoos, and later the Torpedo Spotter Reconnaissance Squadron.

The airfield continued in this and similar roles through the inter-war period, housing the Air Torpedo Development Unit in 1938 (Brooks 1996, 68-69). With the mounting hostilities at the build-up to the Second World War Gosport was expanded, its tarmac runways (which had been needed for training naval aircraft) were removed and replaced with grass, and larger hangars and air raid shelters were constructed.

Figure 44: Aerial view of RAF Gosport in 1946 with two grass runways, camouflaged hangars and planes visible. RAF/ 106G/UK/1240 5102 13-MAR-1946. Historic England Archive (RAF Photography).

Aerial photographs taken during the and after the war (Fig 44) show the airfield with two relatively short runways in a V formation, the western runway *c*. 470m long aligned NNW-SSE and the eastern runway *c*. 590m long which was aligned north-east-south-west. A taxiway linked the northern end of the western runway to the main airfield buildings and hangars which were located on the eastern side. A second taxiway linked the southern point of the runway V to hangars on the south-eastern side of the airfield which were adjacent to Fort Rowner, one of the 19th-century Palmerston Forts. There

were further dispersed hangars and buildings to the south and west around a perimeter road.

Figure 45: Aerial view of Lee-on-Solent airfield and seaplane base in 1946. Extract of RAF/CPE/UK/1794 4022 21-SEP-1946 Historic England Archive (RAF Photography).

Gosport continued throughout the war to serve as a training and experimental facility for aerial deployment of torpedoes and mines, hosting various squadrons in rotation. The airfield was subjected to numerous bombing raids through the war, suffering considerable damage in several raids, particularly on 12th and 16th August 1940.

At the end of the war the airfield was returned to the navy as HMS Siskin and operated until 1952 when it closed. It was gradually subsumed beneath encroaching naval housing from the late 1950s (Brooks 1996, 70-76).

Lee-on-Solent (SU 56280192) has a long history of marine aviation with both an airfield and slipway. It was established in July 1917 as the Naval Seaplane Training

School located to utilise the gently sloping shingle beaches to the west of Lee-on Solent which were ideal for seaplane slipways. Its primary function was to monitor German U-boat activity and attacks on shipping which had intensified during the First World War. At the beginning of 1918 Lee-on-Solent was transferred to the newly created RAF. After a brief period of inactivity, it reopened in June 1920 as a seaplane training base – the School of Naval Co-operation – which operated until 1938. During this period the airfield was constructed, completed by early 1933, and it remained a base for naval aviation throughout its whole life (Birtles 1999, 85; Brooks 1996, 81-82). With war brewing again it became Station HQ to administer Home Fleet Catapult flights and serve Fleet Air Arm (FAA) flights. It was taken over again by the Navy in 1939, becoming HMS Daedalus but retained its role as a seaplane training school training FAA squadrons destined for aircraft carriers - including flying and torpedo bomber reconnaissance training. The airfield and its facilities were expanded and prepared for war with defences, air raid shelters and camouflage. Post-war it continued its training role as the FAA's main technical training establishment. In 1959 it absorbed the Air Electrical School and was renamed HMS Ariel. Hovercraft trials were undertaken here in 1962, and the site was renamed once again as HMS Daedalus. The airfield remained in use as a naval aerodrome fulfilling a variety of naval and civilian functions (Brooks 1996, 91-92), but most flying had ceased by 1981, and it finally closed in September 1996 (Birtles 1996, 85).

Second World War anti-invasion defences

As well as the threat of invasion from the sea, measures were taken at the start of the Second World War to counter the threat of aerial invasion. The runways of both RAF Gosport, on the western edge of the town and RAF Lee-on-Solent were potential invasion landing grounds. Similarly, large fields, open moorland and mudflats were also considered to be in danger of being used for landing grounds for enemy planes and gliders. To counter this, obstacles were either dug or constructed across vulnerable open areas to hinder landing and damage aircraft landing gear preventing planes from take-off again. A number of methods were employed across the country. One common type was the trench and mound anti-glider obstruction which had a central ditch flanked at intervals by piles of up-cast soil. Other types comprised lines of short ditches with an opposing linear bank of the up-cast material (Lowry (ed) 1996, 95). The latter type was seen on aerial photographs in fields between Lee-on-Solent and the River Alver (Fig 46). The obstructions here were extended further by a grid of posts, placed at intervals through the fields and along the field boundaries which lacked a hedge line. These posts were only visible on a particularly clear set of aerial photographs taken in 1942 (Fig 46). It is not possible to tell if the posts here were strung with wire between them. They cannot be discerned on later photographs, either due to the clarity and scale of the photographs or simply that they had been removed. The crops appear to be growing around them, so they may have been removed for cultivation. Also visible are two individual gun emplacements along the lane running north-west- south-east between the fields. The anti-glider ditches remained until the end of the war.

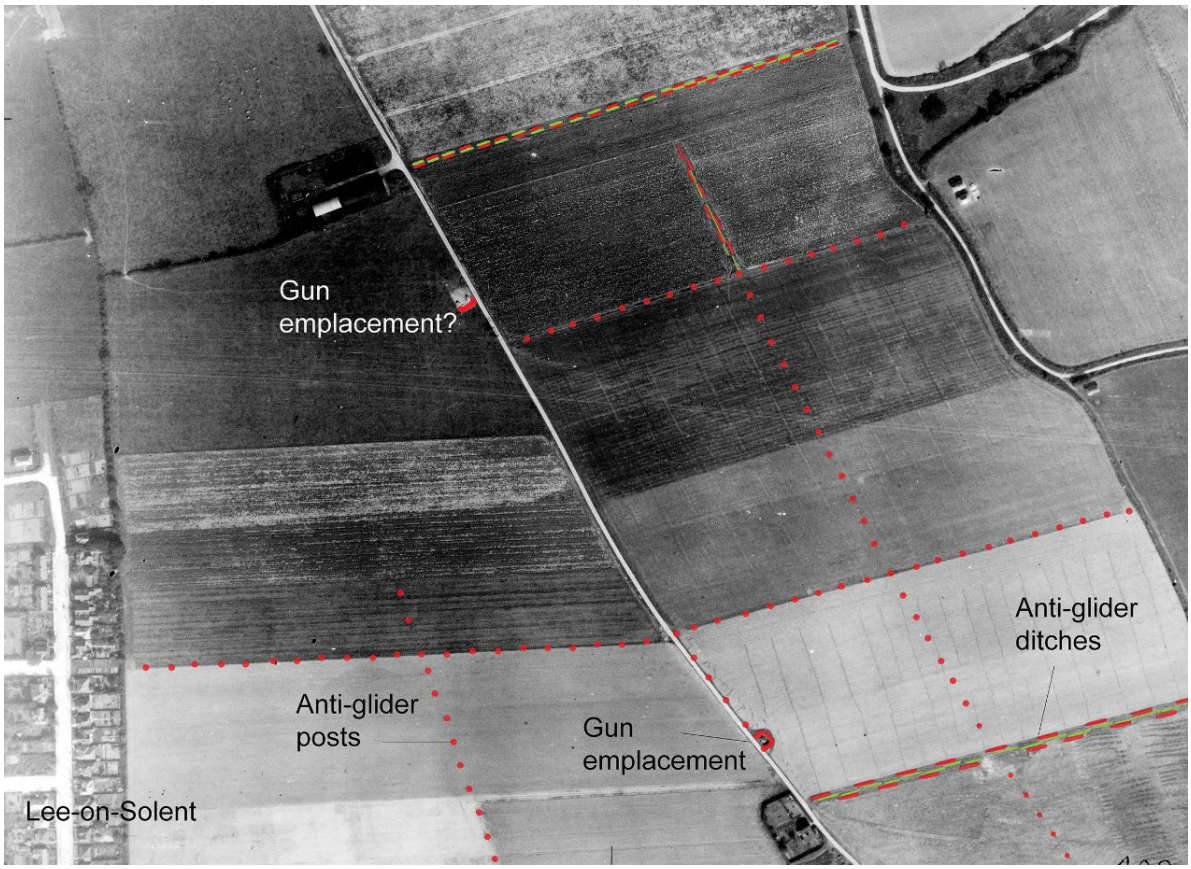


Figure 46: Mapped transcription of the layout of Second World War anti-glider ditches, anti-glider posts and gun emplacements in fields to the east of Lee-on-Solent overlain on an extract of RAF/NLA/45/V 5041 12-SEP-1942. Historic England Archive (RAF Photography).

If the enemy succeeded in a seaborne or airborne invasion, or a combination of both, it was imperative that they should be halted in their tracks and prevented from progressing further inland to secure territory and towns. Across the country a network of anti-invasion measures was employed to repel a German attack. Inland of the first line of coastal defences or coastal crust, further lines of defended linear obstacles known as stop lines was established. These lines needed to be capable of stopping tanks, vehicles and troops. This was done with substantial V-shaped anti-tank ditches and a variety of obstacles such as concrete blocks (anti-tank cubes), roadblocks with metal bars and posts, barbed wire and minefields, all protected with gun emplacements in regularly and strategically placed bullet-proof and shell-proof pillboxes. Access points onto railway lines via bridges and road crossings were strengthened as were road junctions and bridges with roadblocks and lateral tank proof defences. A line of pillboxes was placed along the Alver Valley to the east of Lee-on-Solent protecting the southern side of RAF Gosport. One of these (a type 26 variant pillbox) is located on the southern side of the motte and baily castle remains overlooking Apple Dumpling Bridge where it crosses the River Alver NE of Browndown Warren (NRHE 1422249).

Over 50 stop lines were built across the country from 1940. The GCHQ Line was the main stop line protecting London and the industrial heartland. Numerous other lines branched off this with aim to contain and hem in any advancing invasion forces. One of

these stop lines called the Meon Line extended from the coast west of Gosport (just outside the extent of the HAZ survey area) northwards to Fareham, following the Meon River to West Meon, then linking to the River Itchen in the west and then onto Kingsworthy to the north of Winchester (Osborne 2011, 169).

As part of the anti-invasion defences, large centres such as Portsmouth and Southampton were designated 'Places of Resistance' and ringed with fortifications. (Osborne 2011, 171). A stop line known as the Holbrook-Rowner Stop line was constructed around the northern side of Gosport from the western edge of Portsmouth Harbour to St Mary the Virgin at Rowner, where it reached a marshy ground at a tributary of the River Alver (Historic Gosport 2020).

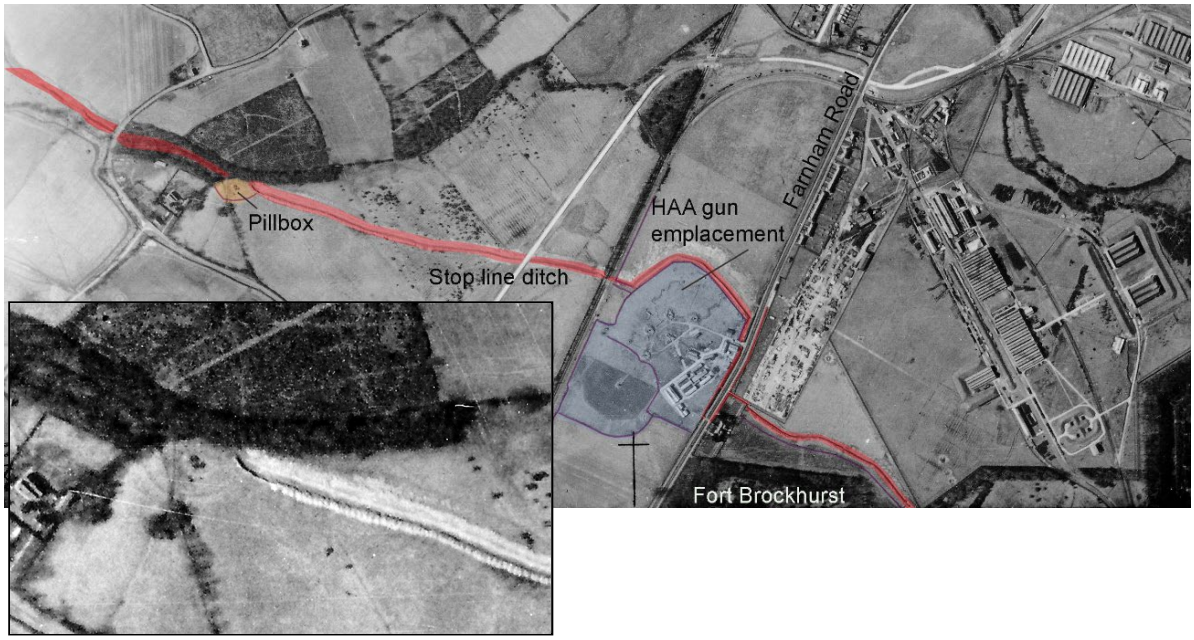


Figure 47: Part of the Holbrook-Rowner stop line seen on photographs taken in March 1942. The line skirts around Holbrook HAA gun Battery and continues into the trees along line of the stream. The stop line is marked red, barbed wire in purple. Inset is a detail of the ditch with piles of up-cast material on the lower side, approaching a defended 'nodal point' with a pillbox surrounded on the open side by a linear grey arc of the protective barbed wire entanglement. Extracts of RAF/HLA/426/RV 6041 24-MAR-1942 Historic England Archive (RAF Photography).

This stop line was made up of a number of sections of ditch and bank augmented with pillboxes and lengths of anti-tank cubes where it crossed roads and the railway. It also appears to have incorporated natural features such as woodland. On photographs taken in March of 1942 (Fig 47) the anti-tank ditch appeared freshly excavated with the up-cast ditch material clearly visible as a bank on the southern side. One section of ditch extended *c*. 600m north-east - south-west from between Fort Brockhurst and Fort Elson to the north. At the south-western end of this section the ditch and bank terminated, being replaced by a line of anti-tank cubes which lead to a double roadblock on the main Fareham Road. A line of anti-tank cubes extended 145m north-north-west following the western side of the road before curving around the heavily defended Holbrook HAA battery (now the site of Gosport Leisure Centre) as a ditch and bank reinforced with double lines of barbed wire on the inside.

The stop line then crossed the course of the railway line which was heavily defended with anti-tank cubes for some distance to the north and south of this crossing point. The ditch then proceeded south-westwards for another 650m to a defended nodal point with a pillbox surrounded with barbed wire (just south-west of the present B3334 at Rowner). The stop line then appears to have used the woodland as a natural barrier before continuing over Rowner Lane in the direction of the River Alver to the south-west.

Much of the northern suburbs of Gosport have undergone considerable re-development since the war. The Farnham road has been widened and altered and the railway line of the former Gosport and Stokes Bay Railway Line has been removed and its course now followed by Henry Cort Way. A section of the anti-tank ditch was visible as a slight cropmark in open ground between Fort Brockhurst and Heritage Way until the site was redeveloped as the Brockhurst Gate Retail Park. A line of 24 anti-tank cubes seen on historic aerial photographs could still be seen extending from the Farnham Road into this same area of land. They were still visible on aerial photographs taken in 2005 before the site became too overgrown for them to be seen from above and survived intact until 2017/2018 when the removal and realignment of remains of the stop line were included in the planning application of 2017 for the retail park. Despite objections by Historic England the cubes were lifted, sustaining some damage, and realigned (Historic Gosport 2020).

The most recent Google Earth aerial photographs taken in 2020 show the concrete cubes on the edge of the retail park adjacent to the Farnham Road. The western section is made up of nine cubes which appear, when compared with the historic aerial photographs taken in 1942, to be in their original position, but the eastern cubes have been relocated as planned, aligned NNW-SSE skirting around the edge of the car park. Six of the original 24 cubes appear to have been removed from the western end when the road was widened to accommodate the junction (Fig 48).

Figure 48: Aerial view of anti-tank cubes crossing Farnham Road during 1942 forming part of the Second World War stop line of concrete (top) and the remaining re-located cubes in 2020 overlain with the transcribed course of the stop line (purple) mapped from the historic aerial photographs (bottom). Extract of RAF/NLA/45/V5063 12-SEP-1942 Historic England Archive (RAF Photography) and Google Earth 09-15-2019 ACCESSED 20-APR-2020 © Landsat/Copernicus.

Gun emplacements and batteries

Gosport was defended by a range of Anti-aircraft emplacements to counter the continual threat of aerial bombardment of the docks, industrial sites, RAF Gosport and the town itself. There were 20 HAA (Heavy Anti-aircraft) batteries covering the Portsmouth, Southampton and Isle of Wight area with the Sector Control for the entire Solent Sector AA (Anti-aircraft) sited at Fort Fareham. Three of these HAA batteries were dedicated to covering the Portsmouth/Gosport area which was controlled locally from the Gun Operations Room for Gosport AA defence located at Fort Monckton (Dobinson 2001, 578; Moore, 2010, 36; Friends of Stokes Bay 2020).

On the western edge of Browndown Warren a HAA battery listed as Solent P40 (Dobinson 2001, 578 covered the western end of Stokes Bay, and Gilkicker HAA battery covered the south-eastern end of Stokes Bay. A third site, Holbrook HAA battery, was located further inland on the north-western edge of Gosport, close to RAF Gosport and the naval military munitions depot at Frater.

Browndown (Solent P40) HAA battery

Browndown (Solent P40) HAA battery (centred at SZ 5792 9961) was established with four gun 3.7-inch static guns between March and June 1942 (NRHE 1413411). The battery had not been built when the site was photographed in March 1942 but can just be seen on photographs taken in June 1942 (Fig 49). Four embanked gun emplacements formed an arc open to the east with a single rectangular hut, probably the command post, located at the centre of the arc. No apparent associated accommodation for the battery has been identified from aerial photographs suggesting the crew were billeted elsewhere.

The only available aerial photographs to show the site in use are those taken in June 1942. By 1946, when next photographed (Fig 49), the site had been cleared, but there are traces of an arc of three cleared areas in the vegetation to the east of the track. It is entirely possible these are the locations of later additional gun emplacements.

The site is criss-crossed with a network of paths between guns and the command post, indicating the site had been manned. Four possible smaller dispersed gun emplacements could also be seen as small curvilinear embanked enclosures immediately to the north and east of the HAA installation. To the south-east of the gun emplacement photographs taken in June 1942 show a single length of crenelated trench which appears to have been cleared and excavated, probably the emergency air raid shelter/refuge for the crew of the HAA battery. A path can be seen leading from this trench to the HAA site (Fig 49 top).

This gun emplacement is situated immediately to the north-east of the site of a large circular mound believed to be the remains of a Bronze Age round barrow (NRHE 461580) located at SZ 5789 9956. There is the suggestion of clearance of the vegetation on the top of the mound and paths leading from the HAA battery barely visible on the 1942 photographs which may be evidence of activity associated with gun emplacement.

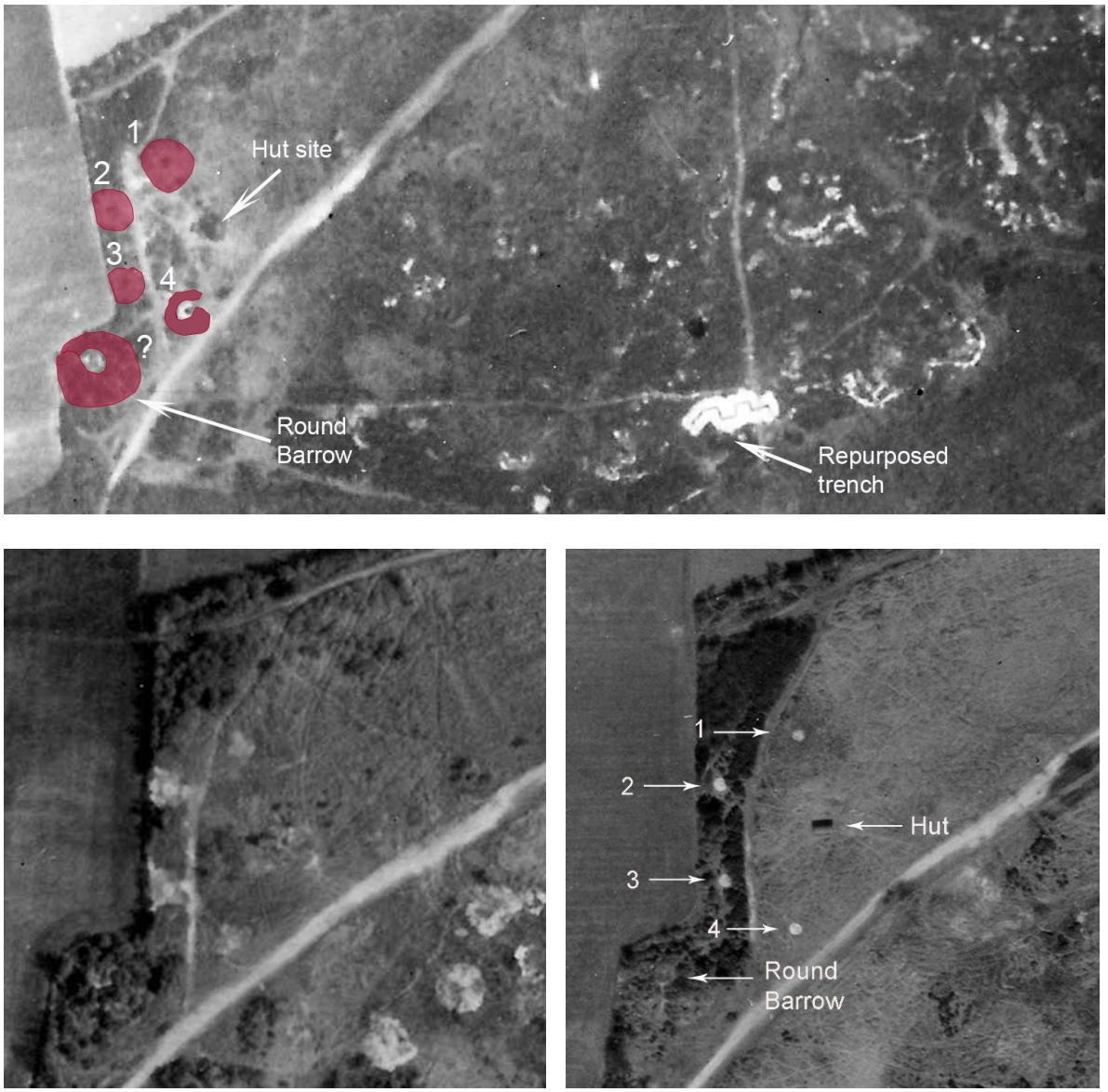


Figure 49: Traces of Browndown (Solent P40) HAA battery on Browndown (north) in June 1942 (top) where the gun emplacements (numbers 1-4) can be seen as earthworks. April 1946 (lower left) and April 1951 (lower right) the site had been stripped of guns and enclosures, exposing four circular guns holdfasts. The single command post hut is visible at the centre of the arc of guns. Extracts of RAF photographs: RAF/HAL/623/V 6113 21-JUN-1942, RAF/3G/TUD/UK/163 5110 20-APR-1946 and RAF/540/453 4214 05-APR-1951 Historic England Archive (RAF Photography)

During a field visit to Browndown by Historic England in April 2021, slight earthwork traces of the northern-most gun emplacement (Fig 49, No.1) were identified across the current track, and the circular reinforced concrete base of the southern-most gun emplacement (Fig 49, No.4) was also identified in the undergrowth adjacent to the current path (Fig 50). The remains of the gun holdfasts and an outer kerb of steel column sections, possibly reused bullhead railway track (Wayne Cocroft 2023, pers. comm), can be seen protruding from the concrete. It is possible that similar remains of the other gun emplacements also survive beneath the vegetation.

Figure 50: The surviving remains of the southern-most gun position (No.4 on fig 64) of the Browndown Second World War HAA battery. Beneath the grass and moss is the circular reinforced concrete base pad with the radial cable duct (top) and embedded with the recesses for the gun holdfast bolts and an outer ring of steel column sections. Photograph © Fiona Small 01-April-2021

Holbrook (Solent P4) HAA battery

Holbrook (Solent P4) HAA battery was located between the railway line and Fort Brockhurst (Fig 51a). This is now the site of Holbrook Primary School and no surface remains survive (Friends of Stokes Bay 2020). The octagonal chicken-wire false datum mat and central gun laying radar platform were clearly visible on aerial photographs taken in 1942 (Fig 51b). The course of the Holbrook-Rowner stop line around the north-western edge of Gosport can be seen skirting around the northern half of the battery as a substantial anti-tank ditch (Fig 47).

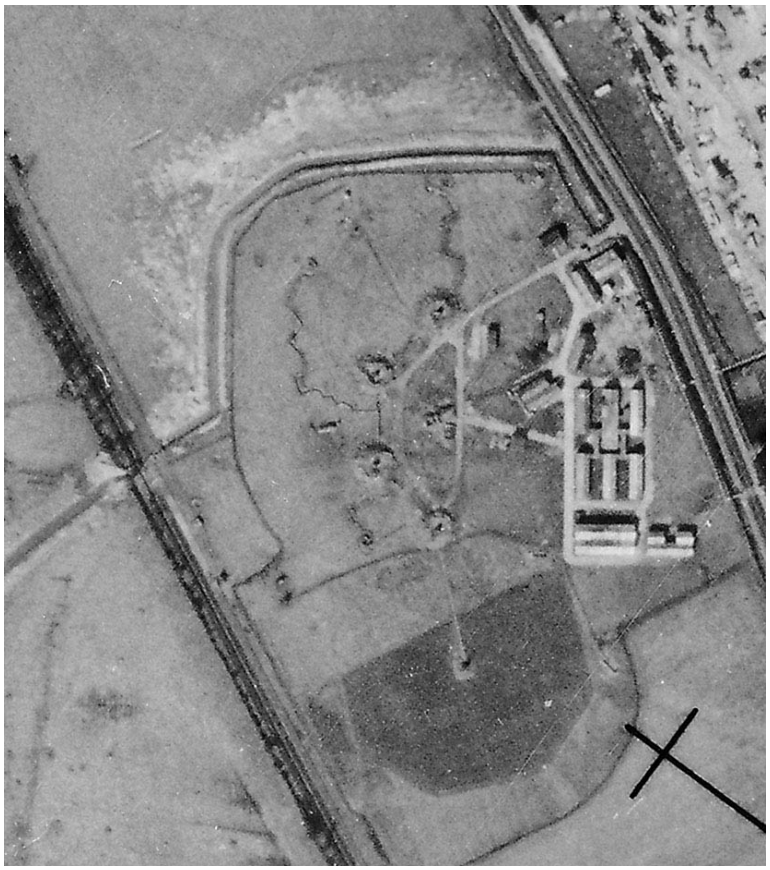


Figure 51a Aerial view of Holbrook (Solent P4) HAA gun emplacement with its octagonal false datum mat and central GL radar platform are visible to the south. (north to the top). Extract of RAF/HLA/426/RV 6041 24-MAR-1942 Historic England Archive (RAF Photography).

Figure 51b: Aerial view of Gilkicker (Solent 3) HAA at east Stokes Bay (north to the top). Extract of RAF/3G/TUD/UK/163/VP2 5186 20-APR-1946 Historic England Archive (RAF Photography).

Figure 52: Cropmarks of the north-eastern and south-eastern gun emplacements at Gilkicker (Solent P3) HAA Battery on Stokes Bay (looking south). The buried reinforced concrete foundations of the octagonal gun holdfasts are visible, ringed by ammunition lockers and link by a paved road. HEA 33561_039 26-JUN-2018 Historic England ©Historic England Archive.

Gilkicker HAA Battery (Solent P3)

Gilkicker HAA Battery (Solent P3) (List Entry Number: 1473423) was located at SZ 6024 8917 on an island within the loop of moat of the 19th-century Gosport Lines, seaward of Battery No. 4. It was armed with four 4.5-inch guns and a GL (Gun-laying) Mark II radar in 1942 with a command post and hutted encampment in the north-western half of the site which can be seen on aerial photographs taken in 1942 (Figs 51b and Fig 52). Following the war, it was retained as an off-site Nucleus Force Battery (Dobinson 2001, 578)

The octagonal false datum mat for the GL radar (a standard feature at such large batteries) cannot be seen on aerial photographs taken in 1946. It would not have fitted within the island with the gun emplacements and buildings, so was probably located either to the south-east or north-west beyond one of the arms of the moat. The north-western area became incorporated within the Phoenix caisson construction yards on Stokes Bay. Though the site has long-since been cleared, parts of the site, including traces of the octagonal bases of the gun emplacements with the central gun holdfast, and outline of the square ammunition lockers around the inner side can still be seen as parch marks in the grass on photographs taken in 2018 by Historic England (Fig 52). Also visible are traces of the roadway and building foundations over part of the site.

Barrage balloon sites

Typical of all built-up areas and centres of industry, Gosport was heavily protected with barrage balloons which were placed around the town to impede enemy aircraft. The balloons and their cables created dangerous obstacles to planes, deterring low flying machine gun and bomb attacks. Flying at up to 1,524m above the ground, their purpose was to force enemy aircraft to fly high, making targeting less accurate, bringing them into the range of anti-aircraft guns and making them easier targets for fighter planes. Balloons and their equipment were generally mobile, transported on specialised lorries in a deflated state with a supply of hydrogen cylinders and re-inflated on arrival. They were raised to the height of the approaching bombing sortie on instruction from the raid plotters (Lowry 1996, 63; BBC 2005).

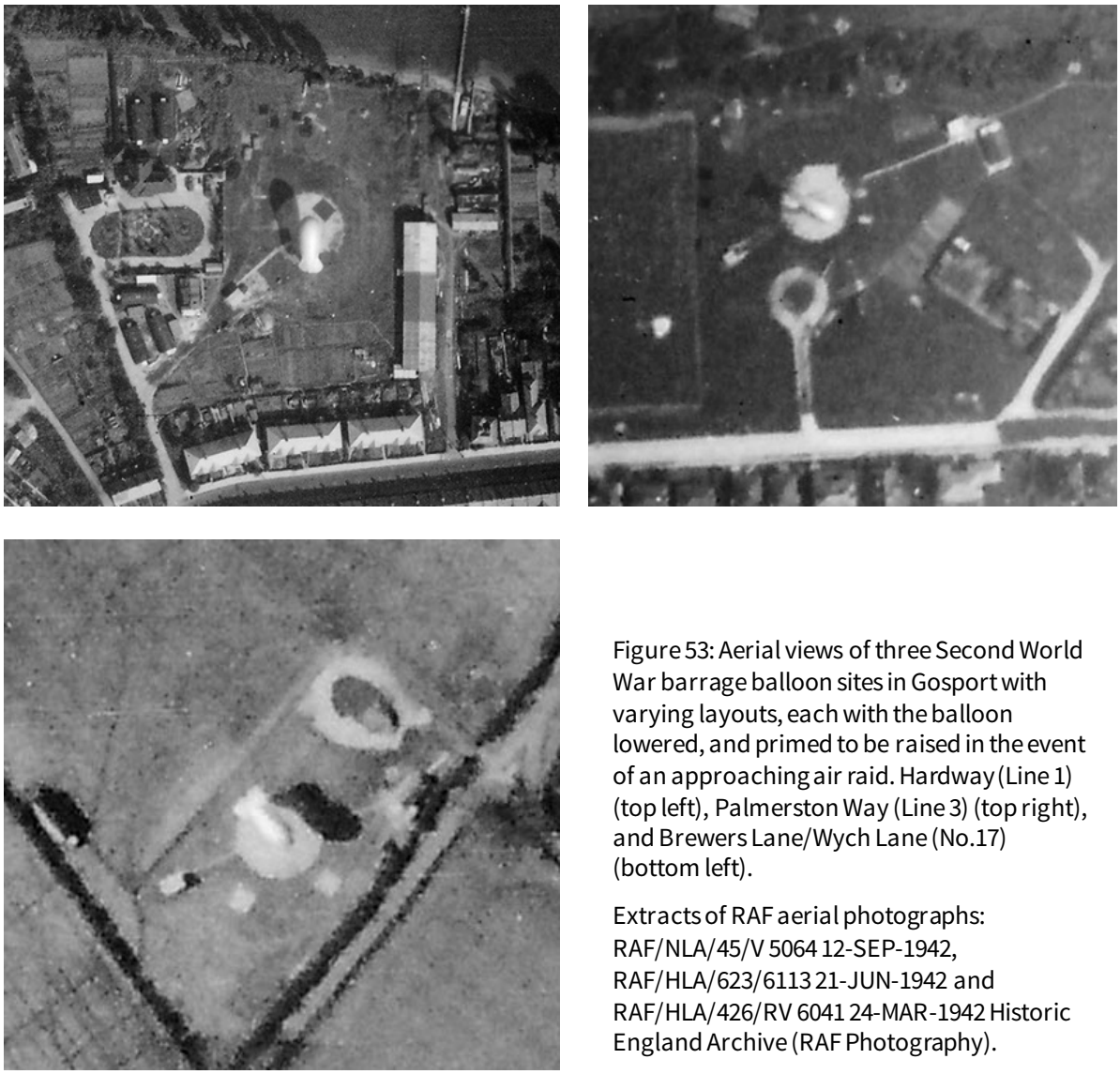


Figure 53: Aerial views of three Second World War barrage balloon sites in Gosport with varying layouts, each with the balloon lowered, and primed to be raised in the event of an approaching air raid. Hardway (Line 1) (top left), Palmerston Way (Line 3) (top right), and Brewers Lane/Wych Lane (No.17) (bottom left).

Extracts of RAF aerial photographs: RAF/NLA/45/V 5064 12-SEP-1942, RAF/HLA/623/6113 21-JUN-1942 and RAF/HLA/426/RV 6041 24-MAR-1942 Historic England Archive (RAF Photography).

The layout of each site varies slightly, but all have a central tether point surrounded by a ring of cylindrical concrete tethering blocks, usually set in a circular concrete pad. The balloon was raised and lowered using a winch mounted on a truck which was parked on the adjacent hard standing with its characteristic paved turning circle.

Gosport had 24 balloons manned by 933 Barrage Balloon Squadron Auxiliary Air Force, divided into three flights or lines of eight balloons each. Nineteen sites have been identified (Historic Gosport 2020) 13 of which (underlined below) have been identified on aerial photographs taken during the war. Some can be seen with the lowered balloon visible tethered close to the ground, but primed to be raised in the event of an approaching air raid (Figs 53 and 54):

Line 1: Hardway, Fort Brockhurst, Fort Rowner, Fort Grange and Fort Gomer.
Line 2: St Vincent Playing Field, Ann's Hill Cemetery and No. 10 balloon at Privett Road.
Line 3: Walpole Park, Blockhouse Field, Fort Gilkicker, School of Electric Lighting, No. 5 Battery, Palmerston Way and No. 6 Battery Gosport Park.
Other sites: No.12 Junction of Avery/Welch Road, No.17 Junction of Brewers Lane/Wych Lane, No. 18 Wych Lane and No. 20 Fleetlands Farm, Gosport Road (ibid).

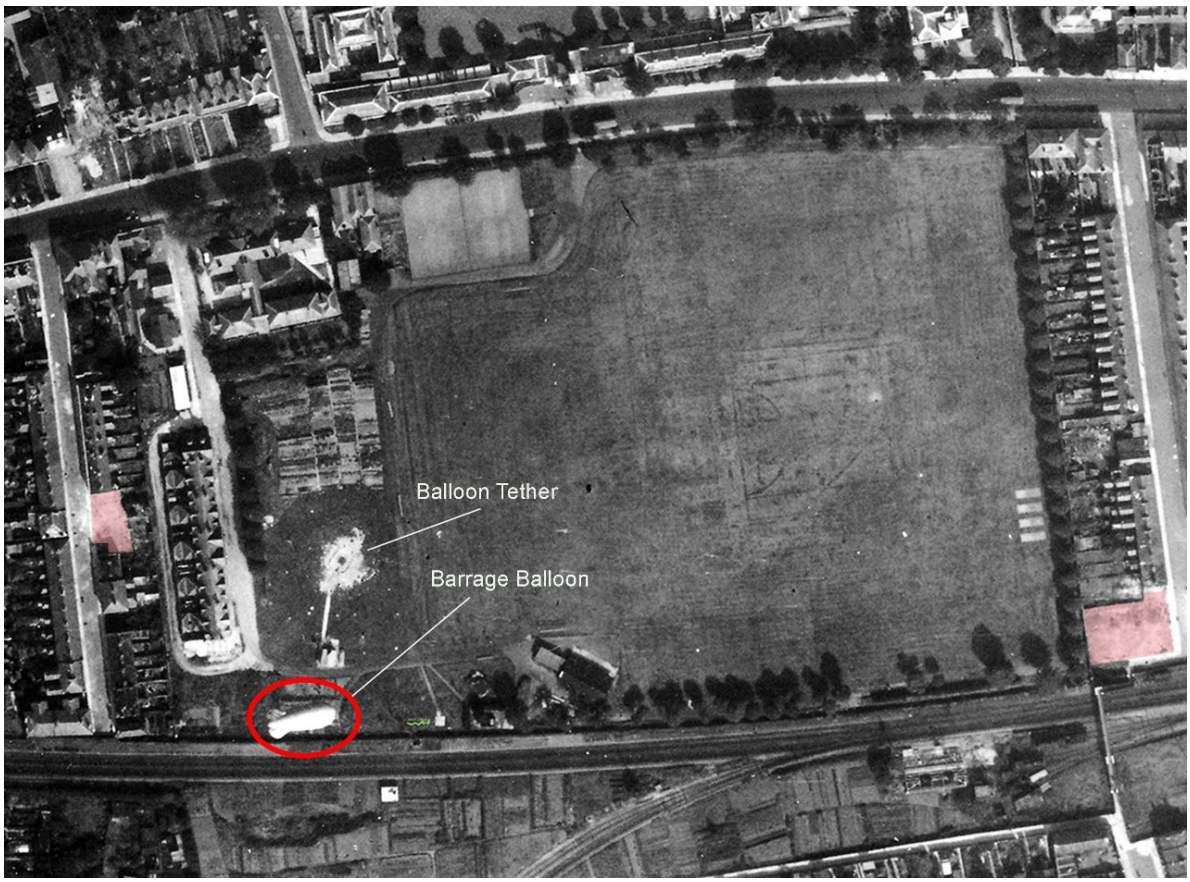


Figure 54: Aerial view of the barrage balloon site at St Vincent Playing Field with the lowered (but airborne) balloon visible bottom left adjacent to the railway line in 1942, two years after an air raid which killed most of the barrage balloon site crew. Also note the gaps in the adjacent rows of housing from bomb damage marked in pink. Extract of RAF/NLA/45/IPRU 5048 12-SEP-1942 Historic England Archive (RAF Photography).

Stokes Bay and the Preparations for D-Day

D-Day defined the start of the final phase of the Second World War. This was the culmination of two to three years of preparations for the amphibious assault phase of Operation Overlord, codename Neptune, which landed over 850,000 men, 150,000 vehicles and 570,000 tons of supplies on the beachheads. In the build-up to the offensive a number of sites were established for the construction of specialised landing and docking structures, which were constructed at secret sites around the British Isles which were brought together to be towed over to the Normandy coast for the final assault.

Stokes Bay was one of two sites chosen for the manufacture of the B2 concrete Phoenix caissons for the Mulberry Harbour component which were designed to be partially sunk to form the breakwaters for the pier heads and floating roadways. Between 1942 and 1943 the entire coastal strip between No. 2 Battery and south of No. 4 Battery (reaching inland as far as the moat of the Stokes Bay Lines) was closed off to accommodate two adjacent construction yards (Phoenix Site 1 and 2) Each had its own slipway of parallel metal rails extending down the beach into the intertidal zone (Fig 55).

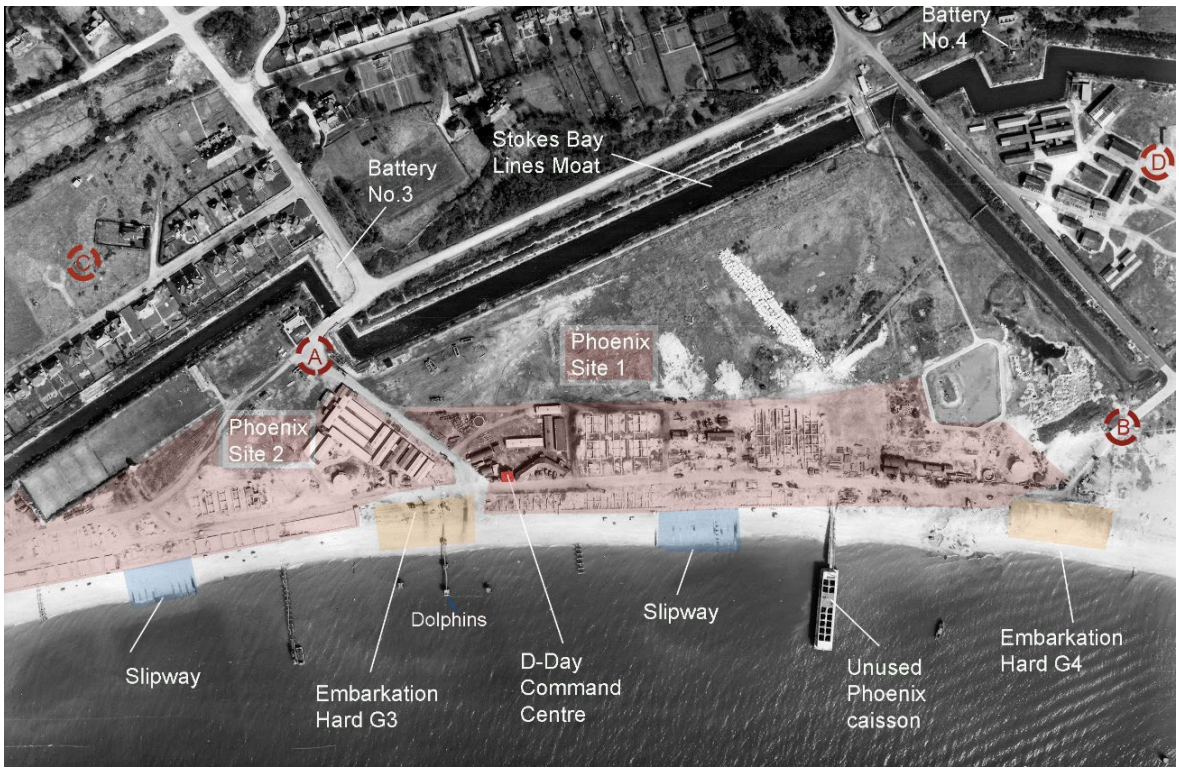


Figure 55: An aerial view of Stokes Bay taken in March 1946, nine months after D-Day, showing the abandoned phoenix construction sites with caisson construction bases, buildings and slipways still in place. The darker areas of sea are probably dredged areas to accommodate the floating caissons and landing craft approaching the embarkation hards. A and B (ringed in red) are improved road spurs to the hards, C marks the site of a barrage balloon site tether and D the accommodation for the HAA gun emplacement. Extract of RAF/106G/UK/1322 5025 28-MAR-1946 Historic England Archive (RAF Photography).

The Phoenix caissons were partially constructed above the beach on raised structures of parallel block walls. Each caisson was a hollow concrete rectangular box sub-divided internally into 20 compartments so the structure would float. Once completed to 20ft (6.1m) in height, they were winched off and launched sideways down the slipways and moored offshore from a 'dolphin' structure on the end of a pier for completion to the full height of 35ft (10.7m). Once completed, they were towed away and sunk to conceal them at one of two sites off Dungeness and Selsey until they were needed. They were then re-floated for their journey to the Normandy coast. Fourteen Phoenix caissons were made in Stokes Bay, and a further ten were made elsewhere at Langstone Harbour and at Lepe to the east to the mouth of the Beaulieu River.

Figure 56: Aerial view of the abandoned Phoenix Caisson Site 1 in April 1946. The rectilinear pond (bottom right) is the Paddling Pool which developed from the remnants of the Stoke Marshes after the river was redirected in the 19th century. The concrete path was built in the 1930s by Gosport Borough Council. RAF/3GTUD/UK/163/PIII 5185 20-APR-1946 Historic England Archive (RAF Photography).

The Phoenix caisson sites were cleared away after the end of the war and all buildings were removed. The area is now occupied by playing fields, a car park and the Stokes Bay Sailing Club. However, traces of the sub-surface foundations of the block wall supports

for the caissons and other structures visible on aerial photographs taken in 1946 (Fig 56) can still be seen as parchmarks in the grass to the east of the sailing club boat compound (Fig 57). NB This was also the site of the D-Day command centre for the Stokes Bay embarkation operations which survives as part of the club house building.

Figure 57: Aerial view of Stokes Bay Sailing Club with parchmarks of the foundations of Phoenix Site 1 visible in the grass with parts of the concrete paved strip between the beach and promenade. The car park to the west (left-hand edge of photograph) was the site of the complex of buildings between the two construction sites. The course of the access road to the embarkation hard can be seen heading between the boat pound and the car park. HEA 33561_036 26-JUN-2018 ©Historic England Archive.

Stokes Bay Embarkation Hards

The gently sloping beach at Stokes Bay also provided an ideal location for four of the seven embarkation points in the Portsmouth area. These were just a few of the many embarkation hards sites prepared in the build up to D-Day around the coast of the British Isles from which the troops, vehicles and supplies would depart on a fleet of landing craft on 6th June 1944 for the Normandy beaches. The Stokes Bay hards were constructed in May and June 1942. Hards G1-G4, as they were coded, were located at intervals from west to east around the bay. G1 was positioned furthest west, close to Battery No. 2 on the Stokes Bay Lines. G2 was located immediately to the west of Phoenix site 2. G3 was located between the two Phoenix sites, and G4 on the eastern side of Phoenix site 1.

Each of the hards consisted of a concrete paved hard standing for vehicles above the beach and a concrete apron leading down to the top of the beach. Pre-cast concrete block matting (colloquially known as 'chocolate blocks') was laid on the beach shingle. These concrete mats fitted together to provide a flexible surface to support the movement of vehicles from the shore to beached landing craft. Just offshore, each hard had a pier with free-standing mooring points called dolphins to secure moored landing craft. Land access to the hard was via a combination of improved existing roadways and newly constructed roads able to withstand intense use by wide and heavy trucks, and armoured vehicles such as tanks. Hards G3 and G4 were reached via newly widened spurs of concrete road from the existing roads over the moat of the 19th-century Stokes Bay Lines.

Traces of all four of the Stokes Bay embarkation hards still survive. The footprints of the concrete aprons of the western two hards G1 and G2 survive as car parks concealed by tarmac. On the beach patches of the now fragmented 'chocolate block' concrete matting can be seen on the shingle, green with algae growth when photographed in June 2018 (Fig 58). Traces of the concrete apron for vehicles arriving at the hard, can be seen as parching in the grass on the landward side of the road at G2 embarkation hard, mirrored by a slight widening of the road and bend in the pavement (Figs 59 and 75). To ensure the vehicles could be driven off forward on arrival at the Normandy beaches they had to turned and reversed onto the waiting landing craft (Fisher 2020, pers. comm)

Figure 58: Dislocated fragments of the precast sections of 'chocolate block' concrete matting from G1 embarkation hard scattered across the shingle beach at Stokes Bay. 21-MAY-2021. (Photograph © Fiona Small).

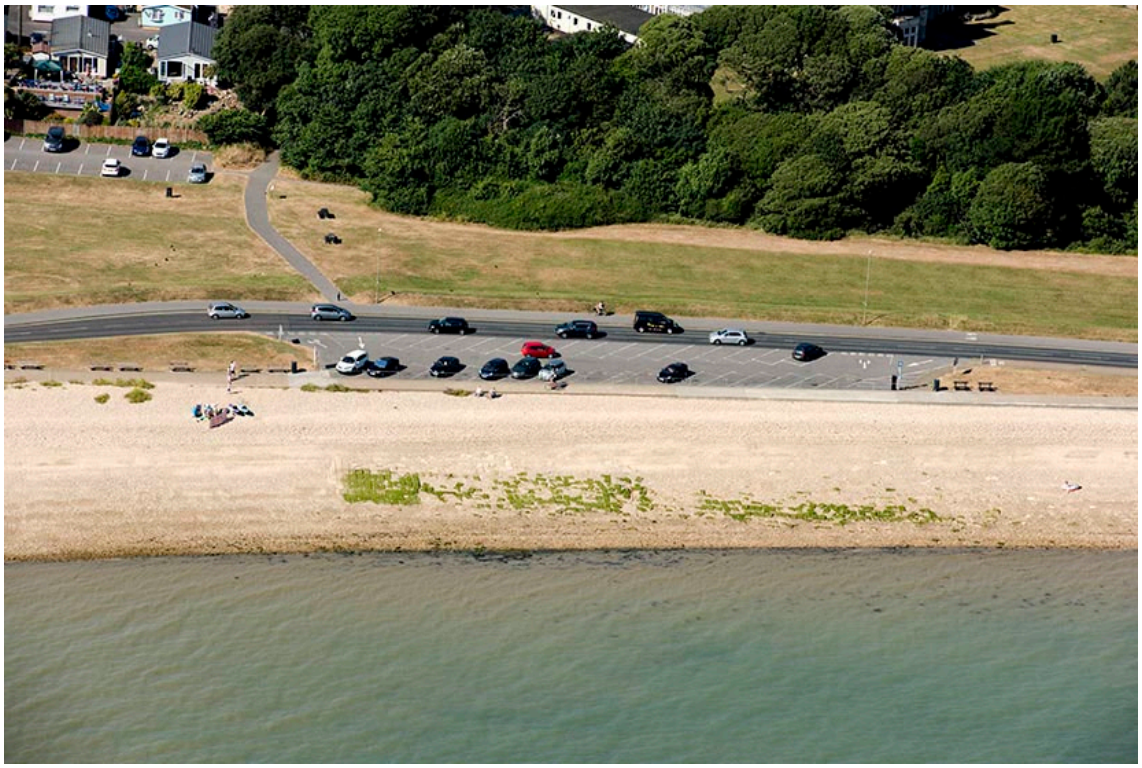


Figure 59: The remains of D-Day embarkation hard G1 on Stokes Bay, outlined by the modern car park. Traces of the remaining fragments of the 'chocolate block' concrete matting can be seen on the beach below the car park, green with algal growth. HEA 33562_004 26-JUN-2018 © Historic England Archive.

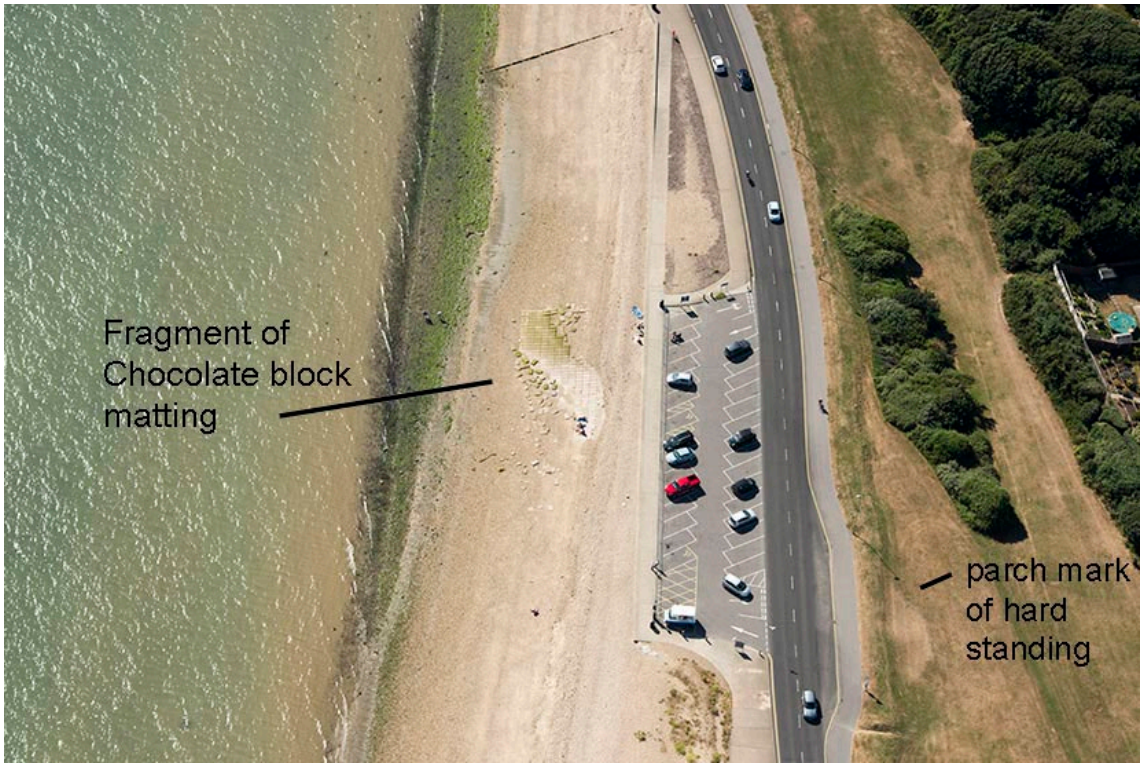


Figure 60 The remains of G2 Hard looking west with fragments of concrete chocolate block matting on the beach and parchmarks of the hard standing for vehicles approaching the hard before embarkation onto waiting landing craft. HEA 33562_027 26-JUN-2018 © Historic England Archive.

Hard G3 was located at SZ 59649841 between the two halves of the Phoenix Caisson construction yard and hard G4, just to the east of the eastern Phoenix construction Yard 1 (Fig 55). Very little of the remains of G3 hard survive (Fig 61) Part of the concrete apron survived between the modern promenade and the beach and was visible on RAF aerial photographs taken in 1946 and 1948, but this appears to have been removed as part of the development of the Stokes Bay Sailing Club which now occupies the site and the current concrete apron in front of the club is modern. The eastern half of the current Club House building was the D-Day command centre for the Stokes Bay embarkation operations (Friends of Stokes Bay).

The site of G4 embarkation hard has left little trace (Fig 62). The course of the access road to the embarkation hard is defined by the north-western side of the lifeboat station car park, but no trace of the slipway or chocolate block matting can be seen on the beach. Immediately to the west are traces of the concrete apron associated with the Phoenix Caisson site which is visible as a strip of fractured concrete between the present-day promenade and the beach.

Figure 61 The former location of G3 embarkation hard at Stokes Bay Sailing Club. The concrete areas and slip way are modern. The access road to the hard is fossilised in the north-eastern side of the car park. HEA 33560_034 26-JUN-2018 © Historic England Archive.

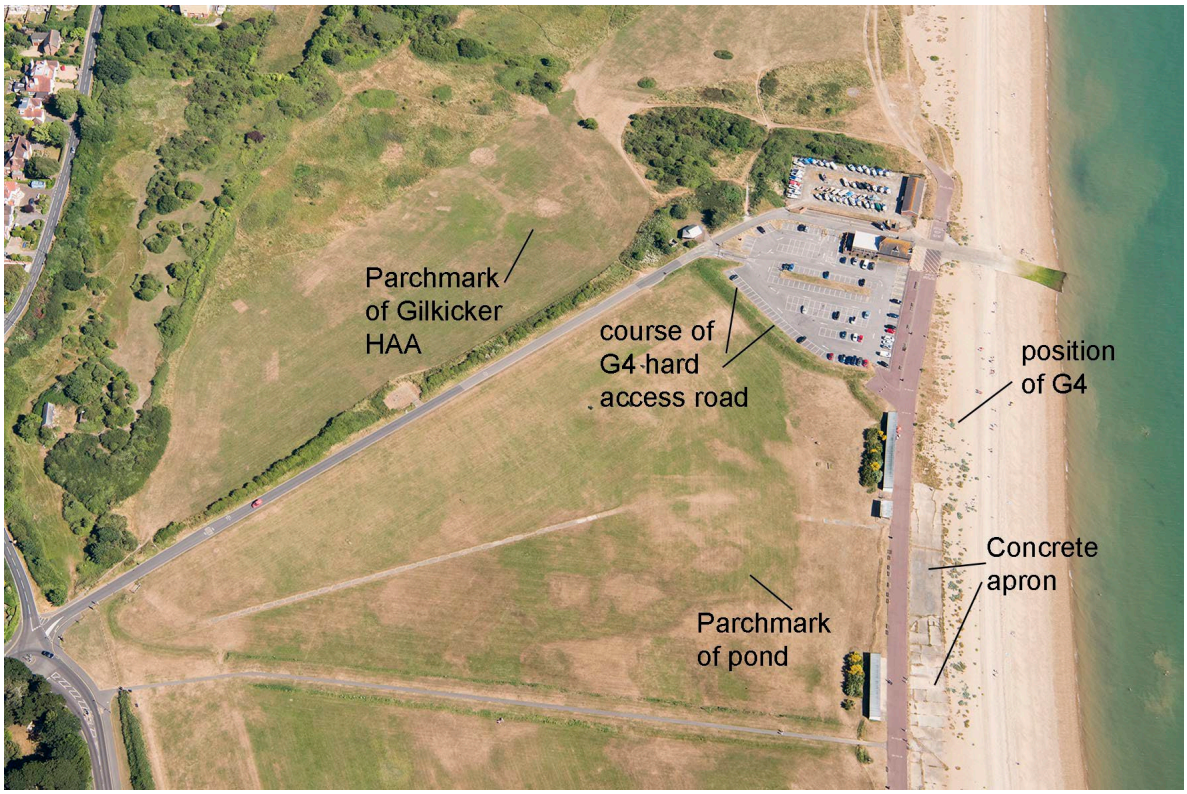


Figure 62: Aerial view of the site of G4 embarkation hard on Stokes Bay with concrete traces of the concrete apron associated with Phoenix Site 1. North of the beach parching in the grass reveals traces of the former local paddling pond with its concrete path and the gun emplacements of Gilkicker HAA battery. HEA 33561_032 26-JUN-2018 © Historic England Archive.

The concrete path is all that remains of the popular local paddling pool which had developed from an earlier pond, a remnant of the Alverstoke marshes after the river was directed into the Stoke Lake by the Royal Engineers in the 19th century in an attempt to drain the marsh. The path was constructed in the 1930s by Gosport Borough Council from the corner of Anglesey Road and Stokes Bay Road with a short spur linking the pond to the promenade. During the war the pond sat within Phoenix Site 1 and may well have served as a water supply for the works. It was finally infilled in 1961 due to issues with water purity. The concrete path to the pond is still visible and faint traces of the pond can still be seen as an indistinct cropmark in the grass on aerial photographs taken in 2018 (Fig 62) (Friends of Stokes Bay).

Figure 63: Aerial view of Gosport's GF embarkation hard and mooring dolphins at the bottom of South Street in July 1945. Extract of RAF/106G/UK/491 5065 08-JUL-1945 Historic England Archive (RAF Photography).

A fifth separate embarkation hard was also prepared on the harbour front at Gosport at the site of the present-day ferry terminal. This site, designated as GF Hard, is visible on aerial photographs taken in July 1945 and comprised a broad concrete slipway at the bottom of South Street (Fig 63). A row of fixed dolphin tether points linked together with narrow walkways formed narrow pier extending from the hard into the harbour giving access to the adjacent moored landing craft. The same photograph also shows evidence of widening and hardening of the roads leading through the town to the embarkation point in preparation for the passage of lorries and armoured vehicles (S Fisher 2020, pers. comm). A contemporary photograph of the hard at Gosport taken in 3rd June 1944 held by The Imperial War Museum (Fig 64) shows the preparations for embarkation underway with two landing craft, in this case Landing Craft Tanks (LCTs), in the process of loading men and armoured vehicles. The narrow central walkway can be seen in use by troops between the moored landing craft. In total over 800 LCTs took part in Operation Overlord.

Figure 64: Photograph of two landing craft being loaded with tanks and equipment at Gosport GF embarkation hard, taken 3rd June 1944, prior to D-Day, held by the Imperial War Museum. Reproduced under IMW Non-Commercial Licence © IWM A 23731.

Each LCT was capable of carrying 10 tanks or other heavy armoured vehicles, and troops (National Museum of the Royal Navy 2020). Following the initial offensive, a continual supply chain of craft was established from ports such as Gosport and Southampton along the south coast to maintain the Allied forces through the beachheads at Normandy.

Other preparations for the D-Day landings involved the development and production of assault craft. Between April 1943 and May 1944, a number of locations were selected by the 79th Armoured Division for testing of amphibious tanks known as Duplex Drive Tanks. A site adjacent to Browndown Ranges on Stokes Bay was chosen for saltwater testing (B Wing). The tanks were adapted to float using a raised concertina screen, waterproofing and additional propulsion. Tanks could be launched directly from landing craft LCTs mid-channel. Once afloat, they could propel themselves to the shore and

wade up the beach once the tracks engaged, lowering the waterproof skirt to reveal the tank once ashore.

RAF aerial photographs taken in 1946 show the site of the Duplex tank storage area and associated facilities on the shore (Fig 65). The tank installation had concrete hard standings to accommodate 60 tanks in the grounds of Bay House. Fuel tanks, maintenance buildings and the facilities for testing and drying tanks were installed close to No. 2 Battery on Stokes Bay and troops were billeted at Fort Monckton. Tanks were loaded onto waiting LCTs from the slipway and mooring dolphins for G1 hard for sea trials in the Solent and in Osborne Bay on the Isle of Wight (http://www.duplexdrivetanks.co.uk/DUPLEXPAGES/SALT1.html).

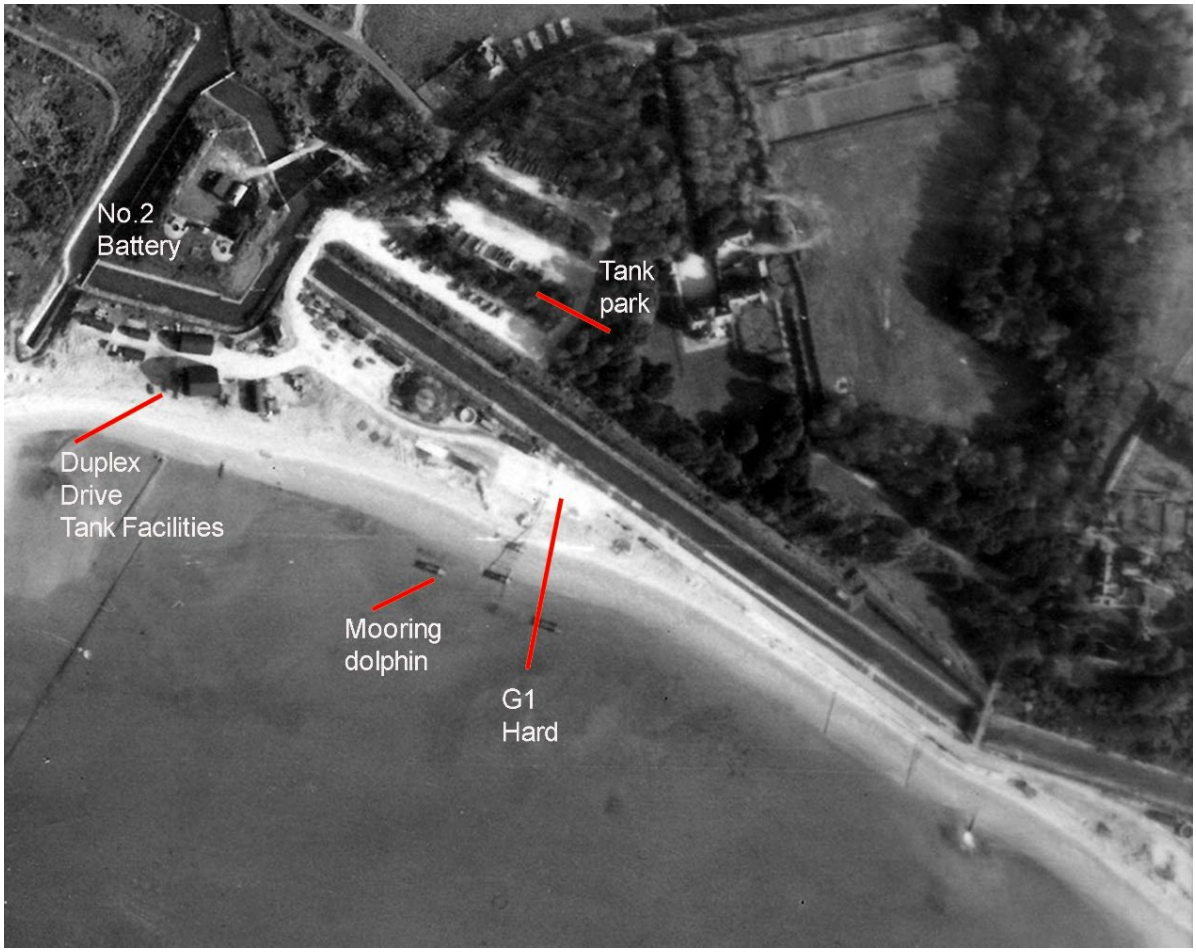


Figure 65: Aerial view of the site of the Duplex Drive Tank saltwater testing facility and G1 embarkation hard adjacent to No. 2 Battery on Stokes Bay. Extract of RAF/3G/TUD/UK/163/PIII 5110 20-APR-1946. Historic England Archive (RAF Photography).

Gosport under attack

With the close proximity to the docks and Naval facilities at Gosport and Portsmouth, the town and surrounding area suffered intensive bombing throughout the war. RAF reconnaissance photographs taken of the town on 12 August 1940 (Fig 81) show the

results of the first 11 months of bombing on the centre of Gosport with several large blocks of levelled buildings across the town. But this particular photograph is taken just two or three hours before the first daytime raid was launched on towns (including Gosport) along the south coast with devastating effects.

The raid comprised several hundred planes which split into a number of smaller raids. The air-raid warning sounded in Gosport just before midday, followed almost immediately by a prolonged and devastating bombardment which killed numerous civilians and serving personnel.

The largest single loss of life that day was suffered by the crew of the 933 Barrage Balloon Squadron at the St Vincent Sport Ground, off the Forton Road, north-west of the town centre. When the alert sounded, all the crew and two groundsmen took refuge in the air-raid shelter which then took a direct hit, killing all 12 men within. The only survivors were two crewmen who had left the shelter to observe the raid from the adjacent slit trench (Balloon Barrage Reunion Club 2020). Aerial photographs taken two years later in October 1942 show the barrage balloon in place on the western edge of the sports ground (Fig 54).

Five years on from the air raid of 12th August 1940, RAF aerial photographs again recorded the town centre on 8th July 1945 (Fig 66). The terrible results of repeated bombing raids with loss of entire blocks within the town can clearly be seen. What is less obvious from this photograph is the damage to the remaining buildings and the human cost the war had on the town.

With no underground network or sub-surface facilities, and a presumably high water table, surface air raid shelters were the only option for protection of the population of Gosport from the unrelenting air raids. The Air Raid Precautions (ARP) Act of 1937 placed a statutory obligation on local government to provide shelter and anti-gas precautions (gas masks) to the civilian population. As a result, by September 1939 over 1,500,000 domestic air raid shelters – mostly Anderson shelters – were issued to households with an income under £250 per annum (Lowry 1996, 66). There followed a nationwide programme of communal shelter construction in March of 1940 to provide emergency refuge in streets and public spaces for those (school children and workers) caught in daytime raids away from home. Surface shelters were constructed on the streets in town centres and areas of terraced housing. These were typically of brick and pre-cast concrete construction such as the Raid-Safe shelter. They could to hold up to 50 people but were widely considered less than ideal (ibid) and became increasingly unpopular with the public though the war.

All Air Raid Precautions matters for the entire Gosport area were coordinated from the Air Raid Precautions Centre at the Alverstoke Civil Defence Control Centre in The Avenue, Alverstoke (see below).

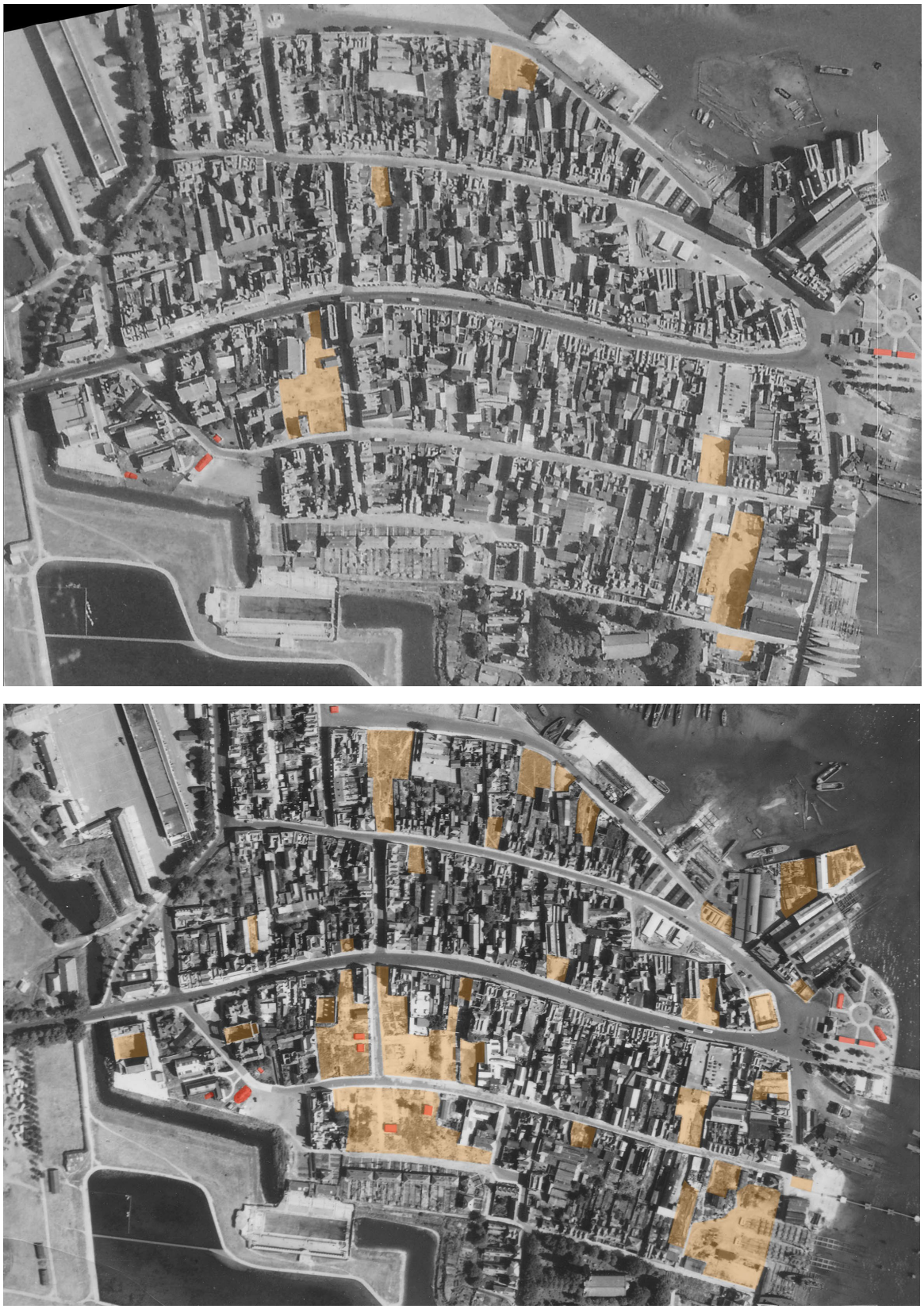


Figure 66 Aerial views of Gosport on 12th August 1940 (top) and 8th July 1945 (bottom), after five years of bombing. Cleared bomb sites are marked in orange, air raid shelters in red. Extracts of RAF/255A/BR247 12-AUG-1940 and RAF/106G/UK/491 5065 08-JUL-1945 Historic England Archive (RAF Photography).

A number of these street surface shelters are visible on wartime aerial photographs of Gosport spaced out along the terraced streets to the west and south-west of the main town (Fig 67).

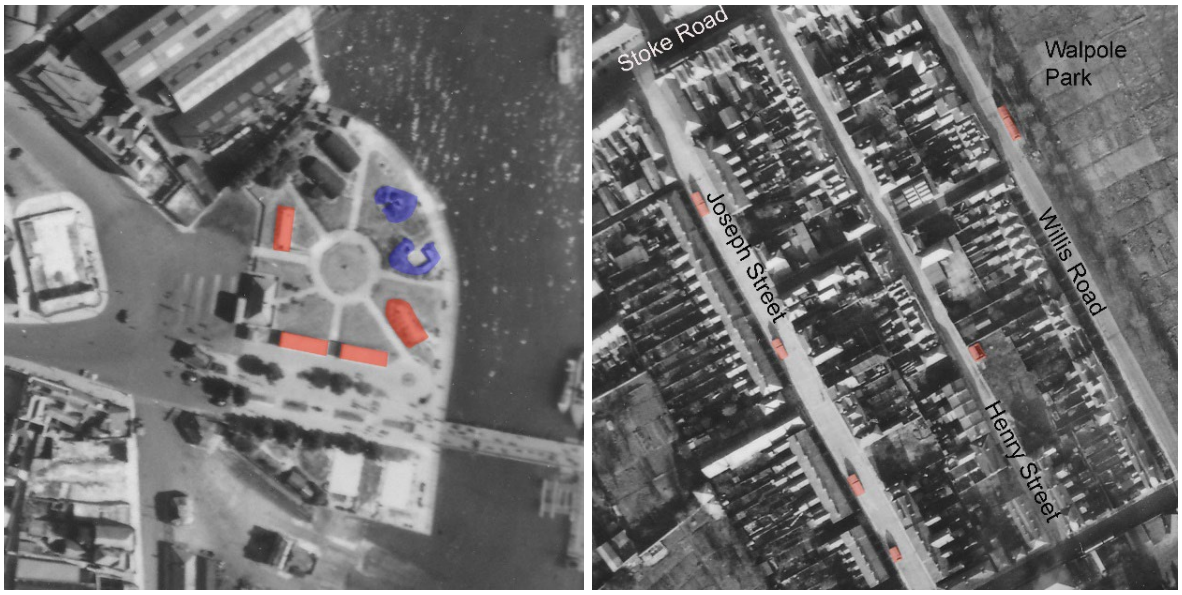


Fig 67 Public air raid shelters constructed across Gosport during the war (shaded red). The left-hand image shows a mixture of semi-sunken (shaded purple) and surface shelters in gardens to the north of the ferry terminal. The right-hand image shows surface shelters constructed in the streets to the west of Walpole Park, which itself is divided into allotments. Extracts of RAF/106G/UK/491 5065 08-JUL-1945 and RAF/106G/UK/1104 6016 04-JAN-1946 Historic England Archive (RAF Photography).

Covered trench shelters were semi-sunken roofed structures constructed using the 'cut and cover' method whereby the usually prefabricated shelter was constructed in a trench and then covered with excavated soil. They were entered via a flight of steps flanked by blast walls. Accommodation was basic with benches for seating, rudimentary sanitary arrangements and mostly lit by candles (ibid, 67). A number of these have been recorded around the town in open spaces and parks where they are visible as a low oblong mound with an entrance and escape hatch and ventilation. Examples of at least two covered shelters can be seen in 1945 located in the gardens to the north of the ferry terminal, Gosport which along with two probable flat-roofed surface shelters (Fig 67).

Open trench shelters were also used throughout the war as emergency refuge on military sites, factories and other industrial facilities. They varied in size, but were essentially a revetted trench, V or U-shaped in profile, which was zig-zagged in plan to reduce the effect of a blast. Examples of these have been seen at a number of sites across Gosport such as the oil depot north of the centre of town and at barrage balloon stations such as St Vincent Recreation ground (Fig 54).

Semi-sunken communal shelters offered more protection. One such type commonly used was the Stanton shelter - a barrel-roofed brick and concrete shelter partially buried for protection from bomb blasts (Lowry 1996, 70-71).

In addition to the larger communal shelters constructed across the town, numerous smaller flat-roofed shelters have been noted on historic aerial photographs (Fig 68). Most are located in back gardens, but are widely dispersed along each row of houses, each possibly serving a number of households. They are identical in size and shape, measuring approximately 3m by 2m with a blast wall across one of the ends protecting the entrance.

Figure 68: Dispersed domestic air raid shelters in gardens across Gosport (ringed in green). Bomb sites on Queen's Road and Blake Road are marked (A). Extract of RAF/NLA/45/IPRU/5 048 12-SEP-1942. Historic England Archive (RAF Photography).

Alverstoke Civil Defence Control Centre

The Alverstoke Civil Defence Control Centre was built on the east side of The Avenue, Alverstoke the Air Raid Precautions Centre between December 1940 and February 1941. The Control Centre acted as the ARP Report Centre for the entire Gosport area,

and was used to coordinate information on bombing raids and the deployment of teams for emergency rescue and repair work.

It was constructed as a low single storey semi-sunken building with a flat roof located in the corner of a school playing field away from Gosport town centre to protect it from the worst of the air raids targeted on the town and port. After the war all civil defence buildings in Gosport were removed except for the control centre. The site remained in use as a post war civil defence building through the Cold War and was used for various purposes until the mid-1970s. The site survives intact and was listed as Grade II (List Entry Number 1393943) in 2010 because of its rarity and state of preservation (Historic England 2010). In 2023 the site became home to the reference library, archive and store for The Diving Museum (Historic Diving Society 2023).

Figure 69: Aerial view of Alverstoke Civil Defence Control Centre in playing fields off the Avenue, Alverstoke in 1951. Extract from RAF/540/453 4220 05-APR-1951. Historic England Archive (RAF Photography).

Gosport and the National Housing Crisis

By the end of the Second World War there was a serious nationwide shortage of housing. This was not only as a result of the severe losses to housing stock due to the war-long bombing campaigns of the Luftwaffe, but a housing crisis which had been brewing since the First World War. This led to concerted programmes of house building and attempts to improve the quality and quantity of social housing. Under the Housing Act of 1919 the provision of houses became a national responsibility and half a million

new houses were promised, but the weakening economy of the early 1920s meant that nationally only 213,000 new houses were built before funding was cut.

Gosport was able to meet part of its inter-war housing needs, being one of the first towns to secure a contract in 1928 to build 600 of John Laing plc's *Easiform Permanent houses* (HMSO 1944, 53). They were a part-prefabricated house which employed an innovative cast-in-situ concrete system, circumventing the shortages of bricks and bricklayers after the First World War (Historic England 2020). They were developed in 1919 and launched at the Palace of Housing exhibit at the Wembley British Empire Exhibition. Those initially purchased for Gosport were the second design which incorporated a cavity. Gosport went on to purchase five batches of houses from Laing for Easiform houses in the interwar period and following the Second World War (HMSO 1944, 53).

The Housing Act of 1930 had placed the onus on local councils to clear their slums and provide subsidised housing for the poor of the inner cities. Despite 1.1 million houses being completed, this still fell short of the intended goal and all work ceased abruptly with the outbreak of the Second World War. The housing problem was rapidly exacerbated by the catastrophic effects of aerial bombing raids across the country. Outside London, the hardest hit towns and cities were those along the south and east coast of England, and centres of industry and military or naval importance. Gosport suffered heavy losses throughout the war due to its close proximity to Portsmouth and the dockyards. It was also a target as a support and supply base to the Navy with barracks, hospitals and fuel depots. The presence of the airfields of RAF Gosport and RAF Lee-on-Solent presented further targets to the west of the town.

As the war progressed and existing housing stock was lost or damaged, the pressing need for replacement housing increased. Prefabricated housing was being developed in the USA and this was seen as the solution to the British housing crisis (Blanchet 2014, 14. In May 1943 Winston Churchill announced his Temporary Housing Programme. Because many of the American designs were wooden framed and ill-suited to the damp British weather the Government opted for a home-grown solution, coming up with a prototype temporary steel house known as the Portal Bungalow after Lord Wyndham Portal, the First Commissioner of Works and Public Buildings. However, steel being in short supply, alternative materials were utilised (Gilbert 2011, 1). Thirteen different variations of prefab house were eventually produced from 11 different manufacturers, based on the 'Portal' prototype and designs from prefabs developed in other countries (Gilbert 2011, 2; Blanchet 2014, 14). The simple and seemingly utilitarian design of these two-bedroom bungalows offered comparative luxury to many who had never experienced a fitted kitchen bathroom, indoor toilet or running hot water, heating and an airing cupboard. Each was set in a garden and many were provided with a shed, often re-purposed Anderson air raid shelters (Gilbert 2011, 4; Blanchet 2014, 14).

Alongside the temporary prefabs, nearly half a million prefabricated or part-prefabricated permanent houses were manufactured and erected in the first decade after the war across Britain. These Precast Reinforced Concrete (PRC) houses, such as the Laing Easiform, were still regarded as prefabs but were built to last longer than other

prefabs which had an intended lifespan of around 10 years, but in reality, many have out-lasted their life expectancy by decades (Blanchet and Zhuravlyova 2018, 48).

Gosport's Prefab Housing Estates

By the end of the war Gosport had lost somewhere in the region of 500 houses and a further 11,000 had been damaged. The bombing had also killed 111 civilians and wounded 289 (Prefabmuseum.uk 2020). The old town had lost a considerable number of its older buildings and whole streets had been levelled. The opportunity was taken to fill these voids with new developments, changing the character of the town and the layout of streets which had remained unchanged for centuries. In the area to the south of South Street flats and a new shopping precinct were constructed in 1966. The town hall, bus station, library, post office and several schools were also built at this time (Historic England 2014, 34).

Aerial photographs taken in the first years immediately after the war record the progress of post-war development across Gosport and the surrounding districts. There is evidence of rapid construction of emergency temporary housing. Seven separate estates have been identified from aerial sources across the town, utilising undeveloped pre-war building sites and vacant infill within the town or on farmland at the edges of the built-up areas such as at Lee-on-Solent. Unlike Portsmouth, and other towns such as Ramsgate (Small and Barber 2020, 57-58), there appears to be no evidence for small-scale infill of one or two isolated prefabs in old bomb sites within the town (Prefabmuseum.uk 2020).

The estates around Gosport varied in size and used a range of prefab designs (flat and pitched roof bungalows). Each individual estate was entirely made up of a single type of prefab, presenting compact rows of identical house units. It is not always possible to identify the specific type of house used from aerial photographs alone. However, it is known that 41 *Uni-Seco* prefabs were purchased and constructed on Dolphin Close and Crossland Close (Fig 71) to the south of the town, on the southern side of Workhouse Lake (Prefab Museum 2020). These flat-roofed two-bedroomed bungalows made of asbestos cement on a steel frame were visible on an RAF vertical photograph taken on 4th January 1946 (RAF/106G/UK/1104 6016) and on oblique aerial photographs taken in April 1950 (Fig 70). The latter source clearly shows each house was provided with the standard arc-roofed garden shed likely to be repurposed stocks of Anderson air raid shelters, a practice seen elsewhere in towns such as Ramsgate (Small and Barber 2020, 55

The prefabricated nature of these houses meant they could, depending on their design, be transported whole or in sections, placed on a waiting foundation and be

Figure 70a: (top) Uni-seco prefab estate at Dolphin Close and Crossland Close, Gosport. Extract of PPFO/540/317 0059 22-APR-1950 Historic England Archive (RAF Photography).

Figure 70b (Bottom) A rare surviving example of a Uni-seco type prefab on the Excalibur Estate, Catford, the type constructed at Dolphin Close and Crossland Close, Gosport. Historic England Archive DP167487 29 July 2014. Photograph by James O Davies. © Historic England.

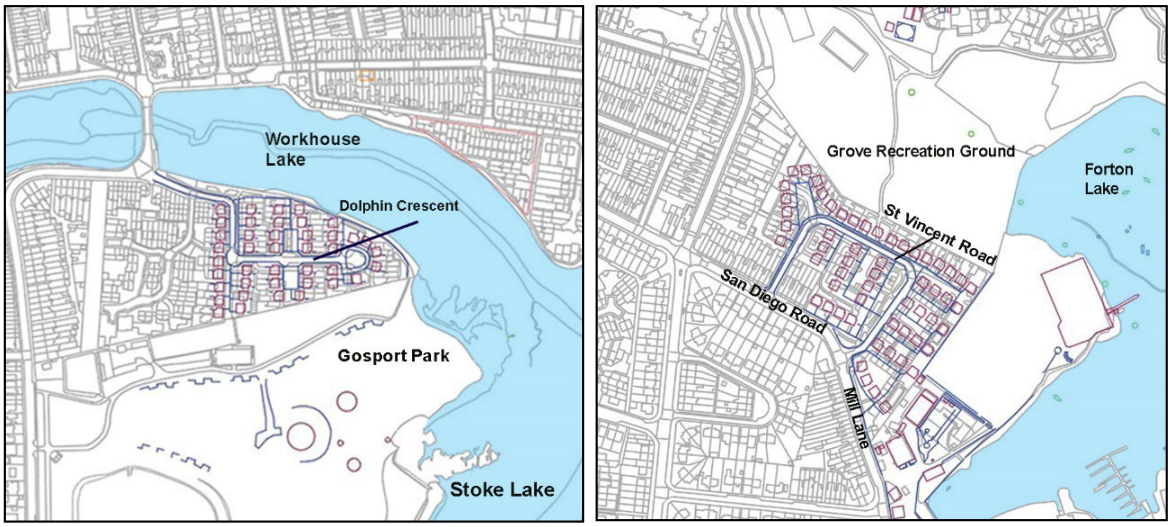


Figure 71: Extracts of mapping illustrating the former sites of prefab estates at Dolphin Crescent, Haslar (left) and Vincent Road, Elson (right). Mapping © Historic England. Base map © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

Figure 72: Two estates of prefab houses at Lee-on-Solent photographed in 1954. Note the adjacent allotments, an ever-present feature of wartime and post-war Britain. Extract of RAF 82/1006 0363 31-AUG-1954. Historic England Archive (RAF Photography).

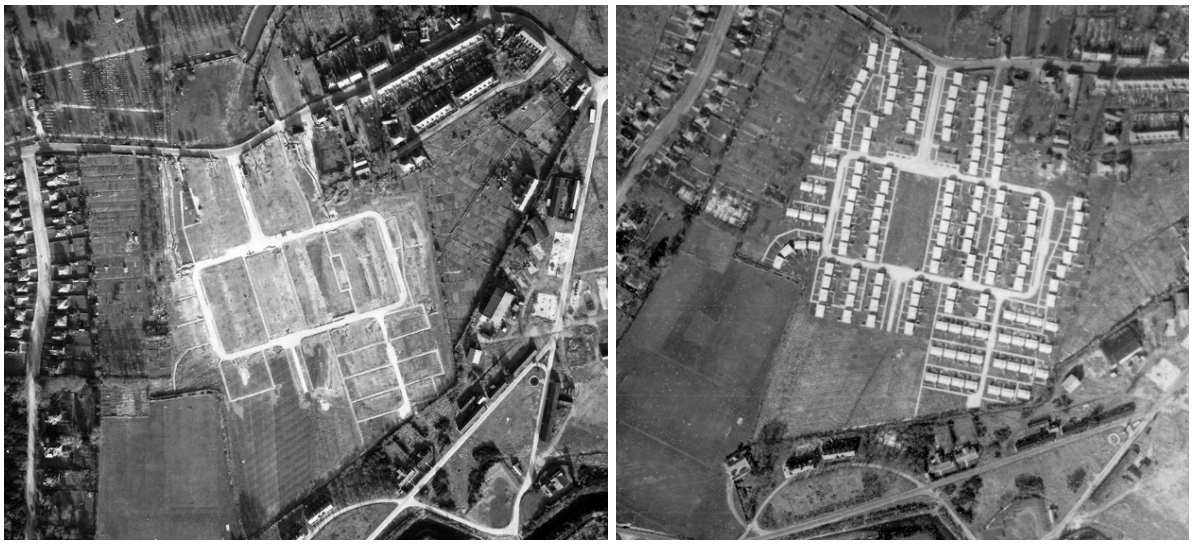


Figure 73: Aerial photographs showing the prefab housing estate at Haslar, between Fort Road and Clayhall Road, adjacent to the Monckton Sports Ground during and after construction. RAF/106G/UK/1104 6021 04-JAN-1946 and CPE/UK/2463 5018 26-FEB-1948 Historic England Archive (RAF Photography).

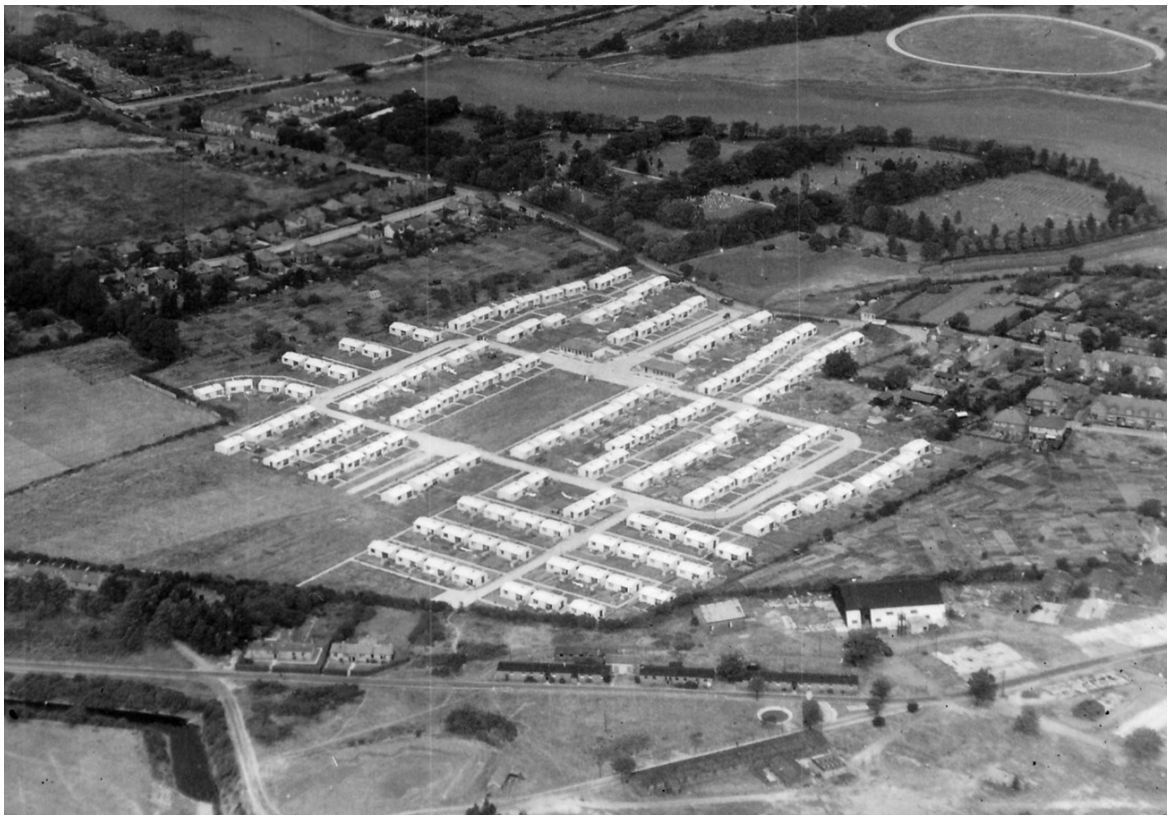


Figure 74: Oblique view of the prefab estate at Haslar. Fort Road is visible in the foreground and Clayhall Road bounds the northern edge. Stoke Lake and Gosport Park can be seen beyond the wooded Royal Naval Cemetery. CAL/UK/8 0370 22-AUG-1947. Historic England Archive (RAF Photography).

finished in hours. Lee-on-Solent received two adjacent groups of prefabs which were opened in March 1946 (Fig 72). The local newspaper reported the arrival of these new prefabs described as: '*an aluminium construction, in four sections with a gabled roof*', reportedly assembled and completed inside and out within two hours of delivery (Hampshire Telegraph and Post March 29, 1946). Though the design is not named in the article, these could be AIRHO (Aircraft Industries Research Organisation for Housing) prefabs, also known as the Aluminium Bungalow, launched in 1945 by a group of aircraft manufacturers diversifying immediately post-war to avoid mass unemployment and financial losses (Blanchet and Zhuravlyova 2018, 96).

An estate of 148 prefabs was recorded immediately to the north-east of the Monckton Sports Ground north of Fort Road, Haslar on oblique and vertical aerial photographs (Figs 73 and 74). The oblique photographs, of which there are very few from this period, reveal the elevations of the houses which clearly have a pitched roof. They are possibly Arcon Mark V prefabs – an asbestos cement clad steel-framed unit launched by a consortium of architects and the construction firm Taylor Woodrow in April 1943 (Blanchet and Zhuravlyova 2018, 95 and 100). The outline of the semi-prepared streets and utilities trenches can be seen on vertical photograph (Fig 73), taken the same day the already completed estate at Dolphin Close was also photographed.

Figure 75: An estate of 61 prefabs on Ham lane and Naish Drive, Elson visible on RAF vertical photograph taken in October 1946. Extract of RAF/CPE/UK/1768 4016 07-OCT-1946 Historic England Archive (RAF Photography). Mapping © Historic England. Base map © Crown Copyright and database right 2020. All rights reserved. Ordnance Survey Licence number 100024900.

A small estate of 61 prefab units was also identified on the north of Elson Road on either side of Ham Lane visible on 1946 aerial photographs (Fig 75). These were subsequently redeveloped, and the street plan altered, but the outline of the western part of the former estate can still be seen preserved in the property boundaries between the different housing developments (Fig 75).

By far the largest concentration of prefabs was to the north of the town at Bridgemary where two large estates of standard temporary prefab bungalows were constructed alongside estates of permanent housing, including a large number Easiform permanent prefabricated houses, the first of which was ceremonially opened by the Mayor of Gosport, reported in the local papers:

Bridgemary Houses – Opening By MP

"After Sir Dymoke White, Bart., MP for the Division unlocked the front door of one of the new Council houses on the Bridgemary Estate, The Mayor of Gosport handed the keys to tenants of the first of ten of what is to be a neighbourhood of 1000 houses. It was the official opening of the estate on May 16, by Sir Dymoke White, and the ten new houses form part of the contracts placed by Gosport Corporation with Messrs. John Laing and Sons Ltd., for 200 Easiform houses to start the estate. The houses, pleasantly varied design have light airy rooms. In the programme to provide Gosport with post-war housing the committee planned for 600 prefabricated temporary houses of which 230 were completed. More were promised in the future. Permanent houses are more difficult because of the shortage of men and materials. The Corporation had had some experience of Easiform houses, and had placed contracts first for 50 houses, and later another 150, and 90 houses in various stages of construction could now be seen the site. They hoped to have another batch ready in a few days, and from then a continuous stream of four a week. When the estate was fully developed, it would have churches,

schools, cinema, shops, playing fields, recreation grounds, allotments and a pub" (Hampshire Telegraph and Post, Gosport Journal Friday May 26, 1946) (British Newspaper Archive).

Figure 76: Easiform terraced houses in Gosport photographed in 1949. Location unknown © Historic England Archive. John Laing Collection ref: JLP01_12_012.

RAF photographs taken in 1946 (Fig 77) show the partially built Bridgemary Estate bisected diagonally by the course of the Gosport and Stokes Bay Railway Line (now Henry Court Way). Also visible are two groups of square flat-roofed houses (of 89 and 90 units each) which are almost certainly temporary prefab bungalows. Some empty foundation still blocks awaiting their prefab can be seen. The estate appears to have been constructed on the footprint of pre-war housing estate which was stalled by the outbreak of the war.

The partially built estate of larger two-storey houses on the western side of the railway are harder to differentiate from standard semi-detached houses from high-level vertical aerial photographs but are probably the permanent prefab houses of the Bridgemary Estate described in the newspaper article of May 1946. These post-war estates were built entirely on previously undeveloped farmland.

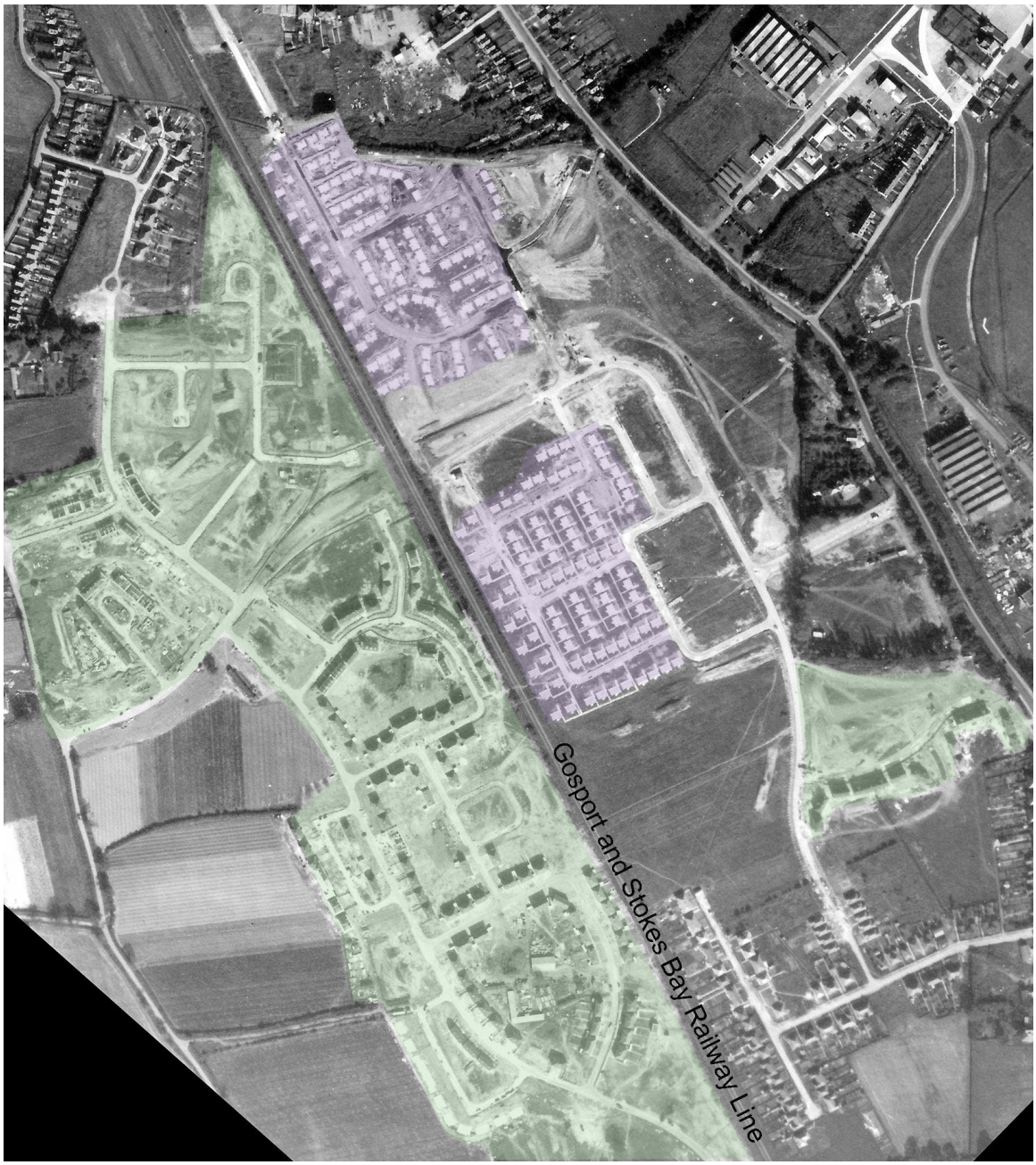


Figure 77: Extract of a RAF vertical photograph showing new housing estates under construction at Bridgemary on either side of the former railway line. The two probable temporary prefab estates are centre and top (purple). The partly built estate of larger two-storey houses lies on the western side of the railway (green) with further houses to the east. RAF CPE/UK/7168 3062 07-OCT-1946. Historic England Archive (RAF Photography).

DISCUSSION

The town of Gosport has grown up at the mouth of the natural safe haven of Portsmouth Harbour opposite Portsmouth, the oldest naval port in England. Both towns are Navy towns through and through; Portsmouth home to the Royal Navy and the Naval dockyards established by Henry VIII; Gosport a hub for maintenance and victualling the fleet.

Both towns have grown up interdependent upon each other and are essentially two halves of a bustling Naval centre simultaneously linked and separated by the busy harbour mouth. Were it not for the need to accommodate the tall ships of Royal Navy passing in and out of the dockyards and Portsmouth Haven, in all probability Gosport and Portsmouth would have been linked by a bridge.

From the 15th century, when the earliest defences were built around Portsmouth and at the harbour mouth, a series of defended batteries and fortified lines were constructed around Gosport and along the coastal approaches. Through the centuries there have been development and modification of these defences in response to changing threats and advances in naval warfare, shaping the character and architecture of the town. In common with many towns across the country, post-war development saw the beginning of the removal of these now outdated defences to enable development and expansion of the town.

So much of Gosport's history is tied up in its Naval past and present, but there is remarkably little evidence of the earlier settlement before the medieval period. The abundance of records for prehistoric finds of stone axes and tools bears testament to the long history of human exploitation of the area's rich natural coastal and marine resources. Similarly, though Portsmouth Haven was a significant Roman harbour with Portchester fort at its head, there are remarkably few historic records other than chance finds during development in and around the town, and very little tangible evidence of Roman activity in the on the Gosport peninsula.

It was hoped that historic aerial photographs dating from the 1940s to the present day would reveal traces of buried archaeological sites in open areas around the town, but very few traces of earlier settlement or activity have been identified around Gosport.

To some extent this absence can be explained by the extensive pre-war development to the west and north of the old town and the site of Gosport Airfield which may have masked any earthwork or levelled archaeological sites when in use but has subsequently been built upon. The remaining open areas of farmland to the west of the town have at times presented some cropmark traces, mostly of medieval and post medieval cultivation and former field boundaries indicating there is potential for cropmark generation. There have been no earlier (later prehistoric or Roman) features identified, possibly because these remains still lie beneath the medieval cultivation, have been destroyed or covered by the towns phases of defences or simply because the photographs were taken at times which failed to coincide with the appearance of cropmarks or parch marks.

The Alver Valley has been subjected to extensive aggregates quarrying since at least the end of the Second World War which has effectively removed all trace of buried archaeological remains in much of the undeveloped land north and east of Lee-on-Solent. Browndown Warren, with its rare First World War practice trenches, has survived alone as an island surrounded by made ground and reclaimed marsh, probably saved from quarrying because of its role as an active training area on the MoD estate.

Across the wider survey area, historic aerial photographs may not have revealed traces the early remains as hoped, but have they have provided a valuable snapshot in time of the town in the throes of the Second World War – capturing both wartime military activities and structures as well as the remaining 16th to 19th-century military defences around the town before they were lost in programmes of post-war development and regeneration. They also recorded post-war developments such as the estates of emergency prefabricated bungalows and more permanent prefabricated houses which have now become part of the historic fabric of the town.

Aerial photographs have also proved invaluable sources for illustrating the transient wartime defences such as Gilkicker HAA battery (fig.52) and the immense programme of preparations for the final offensive of the D-Day landings in June 1944 in the form of the extensive Mulberry Harbour manufacturing site on Stokes Bay (fig.57), interspersed with embarkation hards for troops and equipment destined for the Normandy Beaches. Though little remains of these sites above ground, the cropmarks, slight earthworks and enigmatic patches of concrete which pass largely unnoticed and unrecognised on the ground are suddenly thrown into context when viewed from above.

APPENDIX 1 – METHODS AND SOURCES

Aerial Sources

All available aerial photographs held by the Historic England Archive, Swindon were reviewed as prints or born-digital files. This included oblique and vertical aerial photographs taken by the RAF and commercial companies for non-archaeological purposes at intervals from the 1940s to the 1990s. Specialist archaeological oblique aerial photographs taken at intervals from the 1930s to present 2019.

Georeferenced digital vertical photographs were supplied to Historic England through the Aerial Photography for Great Britain (APGB) agreement by Next Perspectives.

Other online sources of vertical aerial photographs, Google Earth (taken at intervals from 2000 to 2019) and Bing Maps (possibly 2018) were also consulted.

The Cambridge University Collection of Aerial Photography (CUCAP) online catalogue lists a number of photographs which cover the area, but this collection is currently closed and only a small number of images that are held as duplicate prints in the Historic England Archive could be consulted.

Other Sources

Historic England Archive GIS (Historic England Archive Monument data, historic maps and Ordnance Survey Mastermap)

Historic maps

BGS (British Geological Survey) Available online at: http://mapapps.bgs.ac.uk/geologyofbritain/home.html

The National Library of Scotland maps https://maps.nls.uk/index.html

Hampshire HER records, Historic England research records (National Record of the Historic Environment Record), published and unpublished excavation reports and a range of on-line and published sources and historic maps were used to aid interpretation of the archaeological remains.

Assessment and mapping

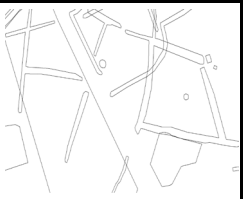
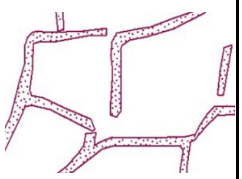
All available aerial photographs were viewed under magnification and in stereo where possible. Digital photographs were viewed on screen.

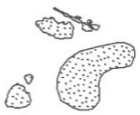
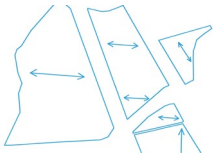
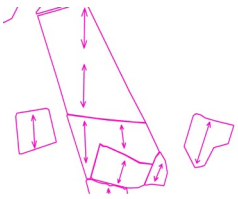
Georeferenced and rectified digital images were produced of key photographs using the University of Bradford AERIAL 5.36 rectification programme. Ordnance Survey Mastermap and the APGB orthophotos were used as control to correlate the aerial photographs to the base map. Height data at 2m resolution was used to improve the accuracy of rectifications. Where good control information is available on the photography and source used for control, the accuracy of rectifications is commonly within ±1m of true ground position. In areas with poor control and/or high topographic variation this error may be larger (Evans 2019, 44–5).

Lidar data were processed using the Relief Visualization Toolbox 2.2.1 (Kokalj and Somrak 2019; Zakšek, Oštir and Kokalj 2011) to produce 2D visualisations as GeoTIFF images. The visualisations were viewed in the GIS. Lidar data were also viewed in 3D in Quick Terrain Reader and Modeler.

All archaeological features from the Neolithic to 20th century military remains visible as cropmarks and earthworks on aerial photographs and lidar were mapped across the entire survey area. This included sites previously recorded by earlier aerial surveys, which were re-mapped to achieve the best fit with newly mapped features, benefitting from more modern and accurate georeferencing. Features were recorded according to morphology using Historic England mapping conventions.
Archaeological features were mapped as line and polygon data within a geodatabase using ArcMap 10.7.1 in accordance with Historic England's 'Standards for Aerial Investigation and Mapping Projects' and Aerial Investigation and Mapping Technical Specification. See Table 1.

Table 1. Mapping layer content and drawing conventions, based on AI&M standards.

Layer name	Layer content	Layer colour	Feature type	
MONUMENT _POLYGON	Polygon encompassing features within a single NRHE record	Black	Polygon	
BANK	Polygon for features such as banks, platforms, mounds and spoil heaps	Red	Polygon	

DITCH	Polygon for features such as ditches, hollows, pits or hollow ways	Green	Polygon	
EXTENT_OF_ FEATURE	Polygon outlining a feature or group of features such as industrial complexes	Grey	Polygon	
RIDGE_AND_ FURROW_ EXTANT	Polyline depicting outline and arrow indicating the direction of a field of ridge and furrow	cyan	Polygon and polyline	
RIDGE_AND_ FURROW_ LEVELLED	Polyline depicting outline and arrow indicating the direction of a field of ridge and furrow	magenta	Polygon and polyline	
STRUCTURE	Polygon for built features including stone, concrete, metal and wood	Grey	Polygon	
SCARP_ SLOPE_EDGE	Polylines in form of a schematic T-hachure depicting break of slope	Blue	Polyline	

Textual data were recorded in an attribute table. Monument polygons were created to outline the extent of a single monument.

Monument recording was undertaken in the Historic England Research Records database (Warden). The records are available via Heritage Gateway (www.heritagegateway.org.uk).

Data will be supplied to the HERs. Mapping will be available via the HERs, the Aerial Archaeology Mapping Explorer (https://historicengland.org.uk/research/results/aerial-archaeology-mapping-explorer/), and the project-specific GIS portal.

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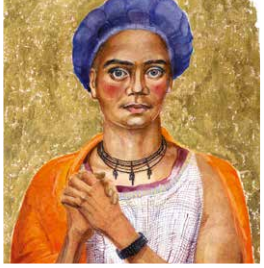



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