Historic England

Military Sites Post-1500

Scheduling Selection Guide

Summary

Historic England's scheduling selection guides help to define which archaeological sites are likely to meet the relevant tests for national designation and be included on the National Heritage List for England. For archaeological sites and monuments, they are divided into categories ranging from Agriculture to Utilities and complement the listing selection guides for buildings. Scheduling is applied only to sites of national importance, and even then only if it is the best means of protection. Only deliberately created structures, features and remains can be scheduled. The scheduling selection guides are supplemented by the Introductions to Heritage Assets which provide more detailed considerations of specific archaeological sites and monuments.

This selection guide offers an overview of military sites and monuments post-dating 1500 which are likely to be deemed to have national importance, and for which scheduling may be appropriate. It aims to do two things: to set these within their historical context, and to give an introduction to the designation approaches employed.

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Front cover
Tilbury Fort, Essex, completed 1684, was designed by the Dutch engineer Bernard de Gomme.

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Introduction

This selection guide offers an overview of military sites and monuments post-dating 1500 which are likely to be deemed to have national importance, and for which scheduling may be appropriate. It aims to do two things: to set these within their historical context, and to give an introduction to the designation approaches employed.

Britain's military sites are eloquent witnesses to the impact of world events on our national story. They also represent the importance of the armed forces in the history of both nation and empire. The range is vast within this selection guide, spanning Tudor forts to monuments of the Cold War. As an island nation, there has always been a concentration on the defence of our shores, seen both in the continuing expansion and development of the Navy and in the provision of coastal defences and fortifications.

Military sites have a very wide range of functions: there are both offensive and defensive structures, as well as supporting military infrastructure such as barracks, administrative sites, prisoner of war camps and factories. The majority of post-medieval military sites were constructed by the Crown, which established a centralised and tightly-run administration responsible for military and naval works.

Some military sites, particularly fortifications, are highly visible within the landscape and are well recognised for their heritage values. Others, such as Second World War anti-invasion or civil defence structures, can be extremely modest and utilitarian but nevertheless have national importance as heritage assets as well as local resonance. The choice of examples for scheduling must necessarily be selective but with the aim of capturing both the unique and the representative. However, some sites, particularly of the twentieth century, were built to standard designs and here specialist knowledge will be required to assess the relative significance of a site for designation.

Broadly speaking, military sites can be divided into the operational and the ancillary (commonly known in the military as 'the teeth and the tail'). Very few sites associated with the latter survive from before 1800, but they increase thereafter and became predominant in the twentieth century. This selection guide provides a brisk survey of the range and chronology of military sites of post-1500 date and sets out the salient principles of selection. The subject is an intricate and complex one: more detailed guidance will often exist on specific topics (see the Select Bibliography), and all cases will have to be judged on their individual merits. This survey is biased towards more recent military sites and structures, large numbers of which are considered for designation each year. It is these more recent sites that provide the greatest challenges for assessment.

The emphasis in this document is on sites and structures that are assessed for scheduling, but it is important to remember that other designation responses are sometimes appropriate. Whilst scheduling was traditionally the approach adopted for military sites, in recent years listing has been increasingly employed for military buildings and structures, particularly of more recent centuries. The concept that a site in use, or capable of re-use, should be listed and if monumentalised or redundant should be scheduled is now out-moded: sites should be

assessed on their individual merits and the most appropriate means of recognising their significances and ensuring their appropriate future management should be the overarching considerations. This will be explored in more detail below. Some military sites, usually spatially extensive, have been designated by local authorities as conservation areas. This can be the most satisfactory way of acknowledging an area or site of special interest, rather than just the key individual components within it – which may still be listed or scheduled if appropriate.

The category of military sites and structures is a particularly broad one, and overlaps are inevitable with other selection guides. A complementary scheduling selection guide, Pre-1500 Military Sites, deals with earlier sites. Reference should also be made to the Maritime and Naval scheduling selection guide. The Military Structures and Maritime and Naval Buildings listing selection guides cover the types of post-medieval structures where listing is generally the favoured designation. War memorials and other monuments are considered under the Commemorative Structures listing and scheduling guides, while the Landscapes of Remembrance selection guide deals with military cemeteries. Selection criteria within the Industrial listing and scheduling guides may also be relevant to military research and development establishments and factories. Additional historical and archaeological detail on particular types of military remains and buildings can also be found within a number of Historic England's Introductions to Heritage Assets (cited where relevant below).

1 Historical Summary

Military sites, and especially defensive ones, have always played an important role in our nation's cultural history. They have been erected to support the Crown and Government, to secure borders against invasion and to project power abroad. Many were necessarily of massive construction and therefore survival rates have been high. But while robust forms of military construction continued late into the twentieth century, as the theatres of war grew in scale there was an increasing move towards the erection of temporary, pre-fabricated, facilities. These by their very nature are more fragile in form, yet many have survived much longer than their anticipated life-spans. What follows is an overview of the field by date categories. Because of the complexity of the subject, the vast range of structures surviving and the particular sensitivities attached to them, especially locally, the fullest treatment is given to twentieth-century sites.

1.1 1500-1700

From the late fourteenth century gunpowder artillery and small arms began to appear on the battlefield, and keyhole-shaped cannon ports began to be inserted in castles and town gates. The first purpose-built artillery fortifications (see Artillery Defences IHA) were constructed at the end of the fifteenth century. During the reign of Henry VIII (1509-1547), continental influences on fortification including concentric plans, low thick walls and D-shaped bastions, and with ordnance mounted at various levels became typical, along with the adoption of the *trace italienne* (Italian line) which was typified by low external walls, projecting bastions and platforms for mounting artillery.

Chains of warning beacons, on high ground, are documented from Roman times, and a formal system may have been introduced before 1324. During the reign of Elizabeth I (1558-1603) a network of warning beacons was prepared to alert the country to the arrival of the ultimately unsuccessful Spanish Armada in 1588. The common place-name 'Beacon Hill' – such as at Beacon Hill, Hoo St Werburgh (Medway) – is believed to have its origins in this system. However, warning beacons are known to have been in use until the Napoleonic wars (their sites then sometimes being taken by semaphore stations) while the lighting of commemorative beacons continues to this day. In all, some 500 beacon sites are known, principally in south-east counties and along the Scottish border. For the most part these employed no permanent structure, although some have a 'fire box' on a pole, and a few a permanent tower or beehive-like stone structure as at Culmstock Beacon (Devon).

From the first half of the sixteenth century a national defence policy emerged, intended to deny the enemy a harbour or anchorage from which to launch an invasion. Individual forts protected harbour entrances, with effective artillery range governing the location of supporting blockhouses. The major artillery castles were self-contained, defensible, and carefully sited. Numerous examples survive along the east and south coasts, at Hurst and Calshot castles in the Solent (Hampshire), for example. The reign of Henry VIII was a period of transition, and during the final years of his life, one of dramatic and rapid development. The

Figure 1
St Mawes Castle, Cornwall is one of a chain of coastal artillery forts built by Henry VIII between 1539-45 to counter an invasion threat from France and Spain. It is among the best-preserved, and the most architecturally elaborate. It has a clover-leaf plan surrounded by outer defences, and was armed with ship-sinking guns.

great defence programme of 1539-1543 (following Henry VIII's break with Rome) marks a high point in the progression from the mural tower to the round tower, from simple gun-tower to concentric fort. Good examples of Henrican coastal artillery castles which formed part of a defensive chain include St Mawes (Cornwall; Fig 1), Camber Castle (East Sussex) and Walmer and Deal castles (Kent), the last two perhaps the finest surviving examples of Tudor artillery castles nationally.

Within two or three years, however, there was a move from the round tower to the square, rectangular or polygonal fortification, with the bastioned systems derived from Renaissance Italy visible for example at Yarmouth, Isle of Wight (the last and most sophisticated addition to Henry VIII's coastal defences, completed after his death in 1547, with the first new-style 'arrowhead' artillery bastions in England – the so-called *trace italienne*) and Pendennis (Cornwall). Town and dockyard defences were also enhanced in this manner, the Elizabethan ramparts at Berwick-upon-Tweed (Northumberland; Fig 2) being a good example, as were the enhanced defences to protect the naval dockyard in Portsmouth (Hampshire) built from the 1580s onwards.

In the Scottish borders, given the volatility of the border regions, there was a need for self-protection which was manifest in defended domestic properties. One such secure type of house was the 'bastle', effectively a defensible farmstead with living accommodation above ground-floor housing for animals. Although there may be earlier examples, most bastles (such

Figure 2
The Elizabethan ramparts at Berwick-upon-Tweed, Northumberland are the most complete bastioned town defences in England; this aerial view is of Windmill Bastion. Superseding Anglo-Saxon defences, this multi-period system – much updated in the seventeenth and eighteenth centuries – surrounds the whole town.

Figure 3
Black Middens Bastle House, Northumberland is a fortified farmhouse built in the late sixteenth or early seventeenth century. The walls are well over a metre thick, and animals would have been housed on the ground floor with living quarters above. The Scottish Borders were a particularly troubled region at this time with much raiding by the infamous Border Reivers.

as at Black Middens, Northumberland; Fig 3) seem to be of the mid-sixteenth or seventeenth centuries. The peak of Border Reiving between rival families or clans (reive meaning to rob or plunder) was during the Tudor period, with a gradual reduction in the construction of bastles after 1603 and the unification of Scotland and England. Defended houses of fourteenth-century and later date are largely absent along what was historically the almost equally troubled Welsh border, reflecting the final cessation of formal hostilities in the late thirteenth century and, somewhat later, informal raiding.

Civil War period defences (1640-1699) consist in the main of siege-works and earthwork fortifications. Temporary fieldworks (see Medieval and Later Fieldworks IHA) were the norm, many of which were built in typical star-shaped form. Some were built as part of siege operations (as at Old Basing House, Hampshire) or to strengthen existing town or castle defences (for example at Donnington Castle, Berkshire, or Fort Royal, Worcester) or defend other strategic locations such as river crossings (such as The Queen's Sconce, Newark-on-Trent, Nottinghamshire). Major defences to some key towns and cities, such as those for Oxford and London, do not in the main survive as upstanding remains but are known archaeologically, and from early depictions. Cromwell's Castle, on the Isles of Scilly, is a rare survival of a Cromwellian fortification (Fig 4).

Figure 4
Cromwell's Castle, Isles of Scilly stands on a promontory guarding the anchorage between Bryher and Tresco. It is one of the very few Cromwellian fortifications to survive in Britain, and was built after the conquest of the Royalist Scillies in 1651.

The reign of Charles II (1660-1685) saw a massive expansion of permanent fortification, partly due to naval and mercantile rivalry with the Dutch, culminating in the raid on the Medway in 1664 – the last major seaborne attack on Britain by a foreign power – and a number of major sea battles. The most visible and impressive survivals today are among the fortifications protecting the Royal Dockyards of Portsmouth and Plymouth, and those on the Thames and Medway, which were based on the design principles of Sir Bernard de Gomme, with regular bastions, demi-bastions, ravelins (triangular projections or detached outworks) and ditches. As well as the dockyard defences, de Gomme designed town defences and forts of which Tilbury Fort (Essex), completed in 1684, is an outstanding example (Fig 5).

1.2 1700-1860

This period saw the growth of a British Empire and the considerable expansion of Britain's armed forces. Naval dockyards such as those at Plymouth (Devon), Chatham (Kent) and Portsmouth (Hampshire) generally eclipsed in scale Army sites of the period and a number of key dockyard structures are highlighted through scheduling (Fig 6).

The Seven Years War (1756-1763) marked a turning point for Britain with major military commitments outside of Europe for the first time. A larger, better trained and equipped army was required and with it came the construction of larger sites, often in expansive grounds, and the arrival of permanent

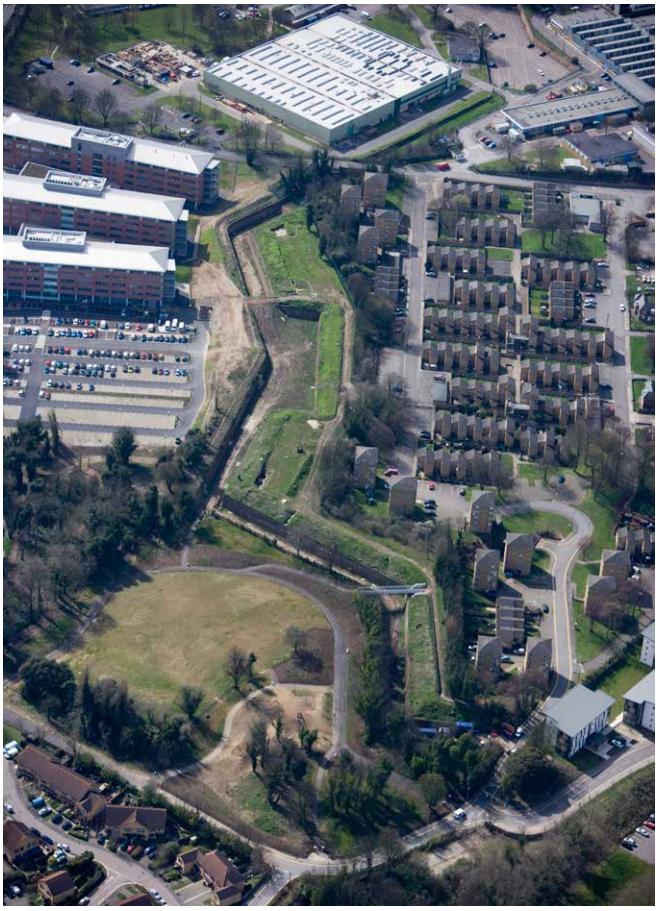

Figure 5 (above)
Tilbury Fort, Essex, designed by the Dutch engineer Bernard de Gomme for Henry VIII and completed in 1684, is one of the finest angled bastioned fortifications in England. Located on the Thames Estuary to command the river and London's seaward approach, its complete circuit of moats and outworks is hugely impressive and substantially intact.

Figure 6 (left)
From 1756 the threat posed by France precipitated the construction of the Chatham Lines in Kent, a system of defensive ditches and ramparts built on the landward side of the highly important Chatham Dockyard. This stretch, the Lower Lines, was added to the earlier defences from 1803. The defences are well preserved and remain a means of delineating the historical militarised zone.

Figure 7
Landguard Fort, Suffolk was built in the eighteenth century and subsequently modified and extended. This photograph shows the parade and barracks accommodation installed in the 1870s.

barracks architecture on an impressive scale (Fig 7). The Board of Ordnance, the government department responsible for the equipment and accommodation of the Army, oversaw a steadily growing programme of works.

Permanent barracks were rare in England before the late nineteenth century but, with the protracted conflicts of the Revolutionary and Napoleonic Wars (1793-1815), there was then a major increase in military building, funded for the first time by direct taxation. This included fortifications, such as the chain of Martello Towers constructed from 1805 onwards along the south and east coasts (as at Dymchurch, Kent; and see Fig 8), which together with detached redoubts (such as at Maker Heights, Cornwall) exemplify the move away from bastioned defences. Nonetheless, the last true bastioned fort to be built in England, Fort Pitt in Kent, was completed in 1813. The Napoleonic Wars led to the construction of some more unusual methods of defence, none more so than the Royal Military Canal in Kent, constructed to isolate Romney Marsh across which it was feared that a French invasion would come; begun in 1804, it was obsolete by the time it was finished in 1809.

Military training structures are also rare but there are surviving training fieldworks at Crowthorne Wood, Berkshire of about 1792 and also the Repository Woods training area in Woolwich, first laid out in 1804, where a Linear Training Fortification of about 1820 survives. This period also saw the erection of large complexes for the processing and safe storage of gunpowder such as at Purfleet (Essex) where a magazine is scheduled. Other such sites (such as the Board of Ordnance magazine at Marchwood, Hampshire, and the major magazine and barracks complex at Weedon Bec, Northamptonshire, of 1804) are protected through listing.

During the period of intermittent warfare between 1756 and 1816, prisoners of war (PoWs), where returned to England, were typically accommodated in local gaols and hulks. Other provision was, however, sometimes made and,

Figure 8
Aldborough Martello Tower, Suffolk was one of a chain of towers built from 1805 along the east and south coasts during the Napoleonic Wars to harass an invading force. The flat roof was a gun platform, with floors below serving for accommodation and a magazine. Neighbouring towers had overlapping fields of fire; in some cases their surrounding ditches survive.

for instance during the Seven Years War, some 3,000 French naval prisoners were held at Sissinghurst Castle (Kent), which was stockaded and provided with huts. Hulks (decommissioned ships, normally at anchor off major naval bases such as Chatham (Kent), Sheerness (Kent), and Portsmouth, (Hampshire)) and local gaols remained in use during the Napoleonic Wars when up to 122,000 prisoners were confined in Britain. Roughly 5,500 were confined in the world's first specially-constructed prisoner of war camp, opened in 1797 at Norman Cross, near Peterborough (Cambridgeshire). This was modelled on an artillery fort, and remained in use until dismantled at the wars' end. Its site is scheduled. The purpose-built prison at Dartmoor, Princetown (Devon), opened for French PoWs in 1809, and these (as at Norman Cross) were later joined by Americans taken in the war of 1812.

Post-1815, the period is conspicuous for the paucity of military building which was undertaken in England. Martial monuments aplenty were erected (which have been listed), but new establishments were seldom opened.

1.3 1860-1914

This period saw the creation of much of the built infrastructure of the Army still in use today, and the first developments of military flight. It also witnessed the strengthening of coastal defences and the creation of the most powerful complex of permanent fortifications ever seen, prompted by an uncertain relationship with Napoleon III's France during the 1850s and an utter determination to safeguard the centres of Britain's hegemony: her naval bases.

Lord Palmerston, the Prime Minster, established a Royal Commission on the Defence of the United Kingdom which, when it reported in 1860, had a massive influence on the country's defences,

promoting a huge investment in the construction of fortifications, particularly in the defence of the Royal Naval Dockyards to safeguard them from landward attack. It was one of the largest maritime defence programmes (along with that of the Napoleonic defences) seen since that of Henry VIII in 1539-1543. This led to a major expansion of the defence system, especially around the naval bases of Chatham, Portsmouth, Sheerness, Devonport (Plymouth) and Dover. Hurst Castle in Hampshire (a Henrican fort) was flanked by two granite-faced wing batteries to protect the entrance to the Solent; extra firepower was needed to oppose faster, more heavily armed and armoured warships. Its casemated guns were protected by iron shields. Also a number of circular forts, such as Spitbank Fort, off Portsmouth, were erected in the Solent for the same purpose. These new forts are sometimes referred to as Royal Commission fortifications or indeed Palmerston's Follies as they were obsolete, due to a changing international situation and advancing technologies, almost before completion.

Advances in artillery were rapid in the later nineteenth century through the introduction first of rifled barrels and then of breech-loading guns, together with more powerful types of gunpowder and new explosives such as cordite and guncotton. These changes necessitated the alteration of existing fortifications, for example to take quick-firing (QF) guns, and the construction of new ones that by the adoption of a typically low profile were intended for concealment rather than visible deterrence. With the new explosives came a requirement for enhanced storage facilities. Barracks and other support functions were increasingly sited away from, rather than being integrated with, front-line fortifications.

Its poor performance in the Crimean War precipitated major reforms of the Army, and permanent training depots and teaching institutions were set up. The Cardwell Reforms of the Army in the early 1870s (Edward Cardwell was Secretary of State for War 1870-1874) ushered in a further phase of planning for military needs, including localised depots and sites for the volunteers and reserve forces, as well as the development of a major military training centre around Aldershot. The Second Boer War of 1899-1902 proved how the country's armed forces had become more fully integrated with civilian society, as attested to by the legion war memorials that commemorate the war.

1.4 1914-1945

This was a short but intense period of major change in response to industrialised warfare on a global scale. Three factors dominated. First, the rise of air power and the creation of a huge infrastructure associated with it. Secondly, the move away from monumentalised permanent quarters and permanent fortification towards temporary accommodation and more specialist technical premises, many of standardised forms. Thirdly, the arrival of the home front, and the greatly increased threat posed to civilians as a result of aerial bombing. Extensive programmes of building, above all during the Second World War, took place to meet these threats and in response to a new kind of warfare. A detailed rehearsal of buildings types, which are more likely to be considered for listing, can be found in the Military Structures and Maritime and Naval Buildings selection guides.

The First World War (1914-1918), known until the Second World War as 'the Great War', was fought on land, at sea and in the air across the globe. Fighting overwhelmingly took place abroad, so the domestic military structures of this war are largely (but not exclusively) related to training and supply, the exception being the necessary response to the new threat of airborne attack (from airship and aeroplane). This manifested itself in airfields, structures for home defence such as anti-aircraft batteries (Fig 9), and early-warning systems such as sound mirrors. Defensive structures including pillboxes and coastal batteries were also constructed although in modest numbers.

Mass-enlistment and (from 1916) conscription on a massive scale was a further feature of the First World War, necessitating training facilities

and camps for troops prior to their embarkation for the Front. Such ephemeral sites have often left few visual marks above ground, but can be understood through archaeology (as can PoW camps). An unusual and emotive site from this period is at Fovant (Wiltshire) where regimental badges were cut into the chalk downland by troops undergoing training in the area across 1916 and 1917; from later in the conflict also survives a similarly chalk-cut figure of a kiwi bird at Bulford (also in Wiltshire, scheduled), created by New Zealand troops in 1919 as they awaited demobilisation. The majority of such memorials were the work of soldiers training here in large encampments before most left for the Western Front. Factories to supply the forces were also newly built or existing facilities enhanced, as were depots.

Military architecture acquired a monumental character in the inter-war period, especially following the move to re-armament after 1934 when the RAF was placed in the front line of deterrent power. The predominantly neo-Georgian domestic architecture of the new service (founded in 1918) was built in this 'Expansion Period' to foster new traditions (while furnishing the new service with an appropriate gravitas), while its technical buildings were developed to serve new technologies. During the inter-war period the Army also favoured neo-Georgian styled buildings for its new messes and barrack buildings, as seen, for instance, at the major training centre of Catterick, North Yorkshire. Motor transport sections and garages also replaced stables as the internal combustion engine was applied to war machines, and the horse was stood down.

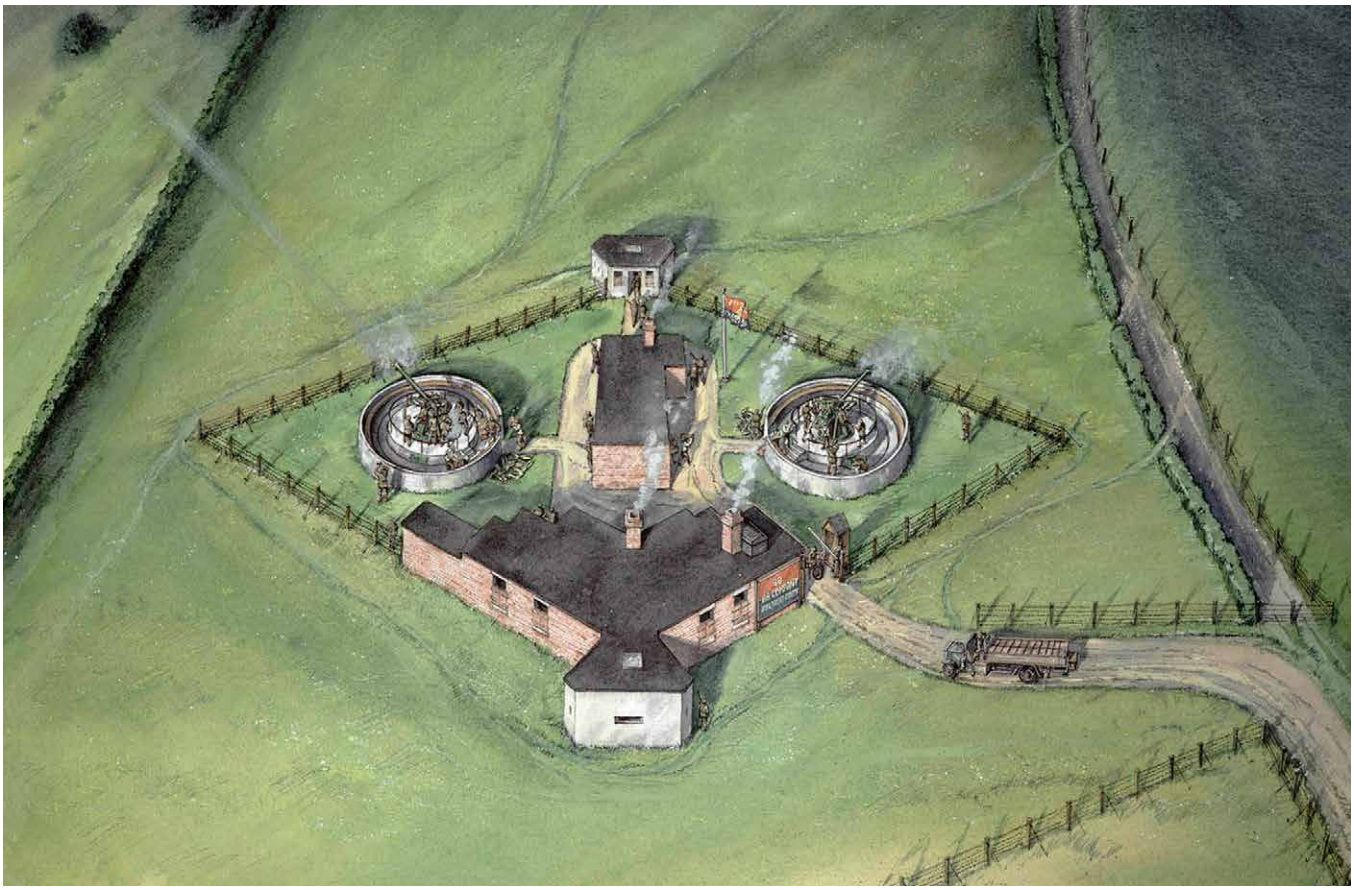

Figure 9
A reconstruction drawing of the Lodge Hill Anti-aircraft Battery, Medway, an extremely rare First World War site-type. It, and the nearby Beacon Hill in Kent, are believed to be the first anti-aircraft batteries in Britain. The site survives well and has two gun emplacements and support structures. Earthworks suggest a temporary battery operated here before the completion of this permanent one in early 1914.

The Second World War (1939-1945) saw an even greater emphasis on the rapid erection of a vast range of structures which, although intended to be temporary, often survive today. Pre-fabricated hutting was a particularly key component of this war, thrown up quickly to provide accommodation for the forces and their associated paraphernalia (hangars for aeroplanes, buildings for vehicle maintenance and so on, which were erected alongside more permanent aerodromes).

Much more than in the First World War, aerial attack was perceived as a very real threat to civilian populations, with thousands of air raid shelters and associated Air Raid Precaution (ARP) Warden posts erected to manage the civilian response. The fear of invasion was also acute, resulting in an extensive network of anti-invasion defences including stop lines and defence areas to slow down the enemy. Initially known as the Local Defence Volunteers, the Home Guard (or 'Dad's Army', so-called because many members were too old for military service) was established in 1940 as part of the anti-invasion measures.

From January 1942 and particularly in the build-up to D-Day in June 1944, large numbers of allied servicemen, mainly Americans (but also smaller numbers of troops from across the British Empire and the Allied nations), were stationed in Britain, requiring an increase in accommodation. Provision was also needed for PoWs, and camps were built in much larger numbers than during previous conflicts.

Aviation and airfields

The twentieth century was the age of flight, and military aviation was of critical importance in its development. The British Army was using balloons from 1890, while airships were under development from around 1911. The first flight by a British Army aeroplane took place in 1908 when Col S F Cody flew at Farnborough (Hampshire). In 1910 a permanent flying school and factory was opened at Larkhill, on Salisbury Plain; an expanded Central Flying School was opened at nearby Upavon (Wiltshire) shortly after. Separate naval and army services formed before the First World War (the Royal Naval Air Service and the Royal Flying Corps) merged to form the Royal Air Force (RAF) in 1918.

Airfields form one of the largest categories of modern military sites in England. About 250 flying stations or aerodromes existed in the summer of 1918, a number that increased to 740 during the Second World War, including those used by the Americans. Many aerodromes which were subject to rebuilding in the inter-war period were front-line operational bases which played a part in the Battle of Britain (1940) or the strategic bomber offensive (1940-1945), which adds to their significance in terms of the richness and poignancy of historical association.

Airfields varied considerably: bomber aerodromes, fighter stations and training bases each had dedicated layouts and structures, and specialist interpretation is often needed to understand the full significance of component parts. Probably the majority of wartime airfields have now been wholly or largely removed, and clearance and adaptation for new uses continues.

Anti-aircraft

As military aviation developed, new sites and structures necessarily emerged to defend the country against enemy aircraft. Initially anti-aircraft positions were of a temporary nature or used moveable guns. England's first pair of permanent anti-aircraft batteries, and probably the world's first, were at Lodge Hill, Cooling (Kent) (begun in February 1913) and Beacon Hill, Hoo St Werburgh (Medway) to protect the extensive and strategically important naval ordnance depots on the Hoo Peninsula. First World War examples of such defences are rare.

Second World War heavy anti-aircraft batteries were once very numerous, particularly in the south-east of England, and their substance means many survive, at least in part. Light Anti-Aircraft sites, also once numerous, rarely survive on account of their mobility and impermanent form. Many associated searchlight sites survive as earthwork or cropmark remains, while concrete barrage-balloon tethering points can also be found in large numbers. The most unusual anti-

aircraft structures of all were those erected in the sea and were essentially anti-aircraft batteries elevated on different types of platforms. Two distinct types were erected. Naval examples were massive concrete towers, four of which were erected in the outer Thames Estuary and the North Sea, whilst Army sea forts (known as Maunsell Forts after their designer) – which were linked metal groups of 'pillboxes' elevated on stilts – were built in six locations in the Mersey Estuary/Liverpool Bay and the Thames estuary.

Anti-invasion

While anti-invasion defences are particularly associated with the Second World War, and were built in vast numbers, there are also examples which date from the First World War (just as there had been for earlier epochs). However, these are much rarer. While many examples of stepped trenches constructed as training earthworks are known (see below), it is clear that other groups were excavated as anti-invasion defences, such as the group at Farthing Down (Surrey), where a much earlier field system and barrow cemetery was subsequently crossed by Second World War anti-aircraft trenches. Dating is always a challenge for these sites, however. The First World War also saw the construction of limited numbers of pillboxes, mainly along the east coast.

Figure 10
Overlooking Brixham harbour, Devon is a rare survival of a near-compete Second World War emergency coastal battery. Battery Gardens, as it is now known, contains an array of wartime structures including searchlights, magazines, observation posts and this 37mm Pom-Pom gun position (now partly restored). This is a very good example of a multi-component monument.

The component parts of defensive lines or stop-lines of Second World War date were constructed in very large numbers, with pillboxes perhaps the most ubiquitous of all components, with perhaps as many as 28,000 erected, and a recent survey calculated that some 6,500 survive. Defence lines also included anti-tank blocks (the pyramidal form known colloquially as 'dragon's teeth'), anti-tank walls and ditches, road-blocks and so on, and were carefully designed to create 'killing zones' in which the enemy, delayed by obstacles, could be pinned down and destroyed.

Coastal batteries survive from both world wars, reflecting the importance of defending our island shores. Broadly speaking those batteries purpose-built during the First World War date can be seen as a continuum of the form of defence building seen in the late nineteenth century and very early years of the twentieth century, such as Sunk Island Battery on the Humber which combined both technical and domestic functions within a field work protected by blockhouses and guns.

Coastal batteries newly built during the Second World War differed in their fabric from their predecessors with the need for rapid construction, and, as a result of the introduction of the aeroplane, sported canopies and camouflage to protect from air attack. A very good example is the near complete emergency coastal battery at Battery Gardens, Brixham (Devon; Fig 10) where a series of structures – gun emplacements, magazines, searchlight stations, observation posts and anti-aircraft defences – are dispersed on a wooded slope overlooking the strategically important Brixham harbour.

Camps

Army camps of this period were vast in number and range, particularly for the Second World War, many of a temporary hutted or even tented form. Sites associated with logistical support and supply are also prolific. Many army camps were transient affairs built either as training and muster camps in preparation for the Western Front or D-Day embarkation for example, and only survive today in buried or earthwork form. South Camp, Seaford, East Sussex (not scheduled) is a good surviving example (in earthwork form) from the First World War, built 1914-1915 as an accommodation and training base for volunteers who had enlisted. Other early examples are known, such as that on Cannock Chase (Staffordshire) where the camp (not scheduled) was very extensive.

As well as camps with a training function other training facilities also survive such as practice trenches or ranges. The camp and practice range on Sutton Common (west midlands) has been scheduled as an archaeological monument, as has the Second World War Bren Gun Carrier testing facility set within the Ebury Hill hillfort near Atcham, Shropshire.

As mentioned above under Anti-invasion, trenches are also known. Both practice and defensible systems survive in England from the First World War, such as the practice trench complexes on Cannock Chase (Staffordshire) where a half-scale trench model is scheduled, and those at Otterburn (North Yorkshire). However, despite being generally thought of as a First World War site-type, Second World War examples are also known.

The layout adopted in the 1790s at Norman Cross (above) set the template for later PoW camps in Great Britain. During the First World War camps proliferated, using a mixture of pre-existing buildings (for instance, Ripon Workhouse, North Yorkshire), or purpose-built camps using 'standard' 60-foot timber huts. By late 1917, over 150,000 PoWs were held in 165 camps, these figures excluding internees and civilian German prisoners. During the Second World War there were nominally 1,026 camps, but in reality there were fewer as the total included agricultural hostels and other billets.

Contrary to popular belief, most Second World War PoW camps were not purpose-built, and many were in requisitioned country houses, cotton mills, disused airfields, military camps, ordnance depots, anti-aircraft gun sites and military hospitals; some were even in unfinished housing estates. Purpose-built PoW camps (for

Figure 11
Harperley, County Durham, a Prisoner-of-War (PoW) Camp built by Italian PoWs late in 1942. It was subsequently, until late 1947, occupied by German PoWs engaged in agricultural work. It is remarkably well preserved – probably the best surviving Second World War PoW camp nationally – with contemporary murals and interior paint schemes.

instance, Camp 100, at St Martin's, Shropshire; not scheduled) did not become a feature of the British landscape until late 1942, with the arrival of Italian PoWs taken during the North African campaign. Such a camp was designed to house 750 prisoners, and consisted of a guards' compound at the entrance, a 6-acre prisoners' compound with about 35 huts, a sewage plant, a playing field and vegetable gardens.

Guard towers were not a common feature, only occurring where prisoners were sorted and classified, or where they were considered ardent Nazis. Some Second World War camps survive, but far more now exist as earthwork sites: a study undertaken for Historic England has shown that their overall footprint and impact on the landscape is more readily discernible than might at first be supposed. Only one camp is currently scheduled – at Harperley, in County Durham (Fig 11) – and this is often cited as the best surviving example nationally, including some huts with decorative painted interiors.

A further camp type is the evacuation camp, opened from 1939 onwards. These accommodated town children removed from the threat of bombing to outdoor rural complexes designed expressly for their better development. None are currently scheduled although key component parts, such as the as the main hall at Sayers Croft (Surrey), have been designated through listing.

Command and operation bunkers

Bunkers including command centres and operations rooms begin to appear as a building type from the late 1930s, in response to the much-increased threat from aerial attack. Functionally and in terms of detailed design they vary, but all share the general principles of a hardened, usually subterranean, concrete structure with a restricted entrance down from ground level. Both listing and scheduling has been employed in the past to highlight significant examples, one scheduled example being the Airfield Defence Headquarters building at RAF Perranporth, Cornwall. Other forms of underground structure were also employed.

Air-raid shelters will be discussed under Civil Defence (below) but some, such as those for the Shorts Factory Tunnels, Rochester, Kent (not scheduled), incorporated underground purpose-built factory facilities. Perhaps the most significant underground complex of the Second World War was that at Corsham (Wiltshire) where a large underground facility, part-using existing quarry tunnels but then much enlarged, accommodated the Ministry of Aircraft Production Factory following the bombing of the British Aeroplane Factory at Filton (Bristol), in 1940. Corsham also had a significant Cold War role as the top-secret Central Government War Headquarters.

Civil defence

Bombing decoys were intricate systems of deception, constructed away from urban areas to draw enemy raiders away from their intended targets. Dummy systems of lighting and street grids were laid out, and pyrotechnics simulated targets under aerial assault. No fewer than 800 sites were constructed: of these, 300 or so attracted bombs – a testament to their effectiveness. Because of their impermanence, survival levels can be variable with control houses, for orchestrating the effects, the most likely to remain. However, there are examples where extensive and legible archaeological landscapes survive, such as the concrete ponds on the Humber foreshore which from 1941 acted as decoys for Hull docks in the East Riding of Yorkshire.

Proven First World War air raid shelters are rare, whereas Second World War examples are very common. Domestic Anderson Shelters were provided from February 1939 to millions of urban and suburban homes, and from the later 1930s all new factories were obliged to provide purpose-built shelters, so their survival is not unusual. Construction methods and the survival of details such as fixtures, fittings and signage can vary enormously, however. While exemplars are more likely to be listed than scheduled, there are examples such as rock-cut shelters which do not qualify for listing as they cannot be defined as structures under the Act. Few are scheduled but one particularly interesting example can be found in the basement of a tower house in Biddlestone (Northumberland). Others were built in to earlier defences, such as those within the nineteenth-century Queenborough Lines (Kent).

Early warning systems and intelligence

Military sites do not have to be in the front line to be of the foremost significance. Intelligence and Communications, for example, play an ever-growing part in modern defence and security, and contributed enormously to victory in the Second World War. The development of radio communication led to new signals complexes and networks: Radar is discussed below. Bletchley Park (Buckinghamshire) was the wartime location of the Government Code and Cypher School but also sat at the centre of a web of intelligence sites and was responsible for deciphering encrypted enemy messages – sometimes of the highest importance. Other sites are representative of the broadcasting of Black Propaganda – misinformation, and other morale-sapping messages – to occupied Europe, and are already included on the National Heritage List for England.

Early warning systems developed from the First World War: systems of acoustic detection of in-coming aircraft grew out of established techniques for locating enemy artillery positions. Early sites were based on acoustic detection and the rare 1920s surviving complexes of sound mirrors along the south and east coasts at Denge (East Sussex), Kilnsea (East Riding of Yorkshire) and Fulwell (Sunderland) are scheduled or listed.

Radio Direction Finding (later known as Radar) developed in the 1930s from experiments conducted at Orford Ness and at Bawdsey Manor (Suffolk). Steel transmitter towers, in lines of four, 350 feet high, carried aerials which sent out electronically generated radio signals: wooden receiver towers brought returning echo signals to the receiver blocks, where crucial information about numbers of enemy aircraft, altitude and direction could be deciphered. The original twenty Chain Home stations stretched from the Shetlands to the Isle of Wight, and were

soon considerably augmented, most notably by separate systems that had developed to detect aircraft at high and low levels (the Chain Home High and Chain Home Low systems) during the war. Examples are variously designated through listing (such as Swingate, Dover (Kent) Grade II but with a very rare surviving 1930s mast designated at Grade II*) or through scheduling (such as Dunkirk, also in Kent, which is a particularly complete and early example of a radar station).

Factories

The years immediately preceding the First World War, and during the conflict itself, saw rapid technological change, responses to which have left their trace in the archaeological record. In particular, there was a massive increase in the number of factories dealing with munitions. Empty shell cases needed to be filled with explosives at filling factories, 36 of which were built between 1914 and 1918. National Filling Factory (NFF) No.1 Barnbow (near Leeds, Yorkshire) was the first purpose-built filling factory to be built nationally for the filling of quick-firing (QF) shells and cartridges with explosives. Begun in mid-1915, and rapidly expanding from then on, the workforce at Barnbow peaked at 16,000 in October 1916, 93% being women (the largest proportional percentage of any National Filling Factory). Similarly, the National Filling Factory at Banbury (Oxfordshire) was one of the earliest purpose-built by the Ministry of Munitions; as was common to this site-type it was decommissioned at the end of its life for safety reasons but survives well in earthwork form and has been scheduled.

Other types of factories included those manufacturing vehicles and aircraft for the armed forces, or telecommunication cables or – during the Second World War – pipelines to supply the D-Day forces. Factories, particularly those upstanding, are more likely to be listed, but as Banbury demonstrates there are exceptions to this rule. See also the Industrial listing and scheduling selection guides.

Operation Overlord and D-Day

The preparations for the Allied invasion of France in 1944, codenamed Operation Overlord, led to the construction of many new buildings and sites. These include pumping stations for the Pipe Line Under the Ocean – PLUTO – as at Sandown, Isle of Wight; embarkation hards; mooring posts or 'Dolphins'; and the construction sites for floating harbours, as at Lepe, Hampshire (not designated). Many sites associated with this hugely significant event to the nation's story, such as tented camps, have left no visible traces. A number of D-Day landing craft maintenance sites on the River Dart in Devon have been scheduled. The Shoeburyness caisson, Essex (a rare surviving part of a Mulberry Harbour – a portable temporary harbour – in this case stranded in English waters) has also been scheduled.

Sites of commemoration

Only a limited number of buildings, particularly in London, still carry evidence of First World War bomb damage. By contrast, numerous towns and cities still bear the scars of the impact of Second World War bomb damage. Some structures, such as bomb damaged churches, have been listed for their memorial value but other scarred structures, such as the bomb-damaged ruins of buildings on Noble Street (City of London) which form part of the Roman London Wall, are elements of a Scheduled Monument.

The range of sites of commemoration is vast. A wide range of objects has been permanently installed or memorialised in this way, from defused floating mines to the Sherman tank installed at Torcross (South Devon) as a memorial to the thousand mainly American servicemen who died there under both enemy and friendly fire during the night of 28 April 1944 when a D-Day training exercise came under German attack. Most memorials are likely to be considered for listing rather than scheduling and our separate Commemoration listing and scheduling selection guides set out our approaches in more detail.

Wrecks and crash sites

See below for a discussion of designation considerations.

1.5 Post 1945: the Cold War and beyond

Throughout the Cold War (conventionally defined as dating between 1945 and 1991, from the end of the Second World War to fall of the Berlin Wall) the threat of mutually-assured nuclear destruction overshadowed spheres of national life – political, economic, scientific and cultural. Some sites were purpose-built, but it was more common to adapt existing defence sites, from naval dockyards to barracks, munitions factories to airfields and anti-aircraft batteries. But there was also a significant amount of new build.

Cold War (and now post-Cold War) structures are distinguished by their severely functional appearance, largely constructed from concrete, steel and earth. Centralised planning and the deployment of standardised and increasingly sophisticated weapons systems resulted in numerous near-identical sites and structural types across the country, representing both the country's continuing role as a global superpower and a significant investment in science and technology.

Other buildings have strikingly innovative forms, such as the massive Rotor (radar) bunkers and War Rooms of the 1950s and the Regional Seats of Government (some of which absorbed earlier War Rooms). Ancillary structures and specialised site types attest to the technological innovation of the time. These include military research establishments including the atomic weapons research sites at Foulness (Essex) and Fort Halstead (Kent), and rocket research and development and testing sites such as at RAF Spadeadam Rocket Establishment (Cumbria). Some of these sites can be as significant for the technological innovations they housed

Figure 12
Hardened Aircraft Shelters to protect aircraft from enemy attack, like this example from the former United States Air Force base at Upper Heyford, Oxfordshire, are one of the most distinctive types of structure built in the later decades of the Cold War. Here a Quick Reaction Alert area containing a number of shelters was constructed about 1980. The guard tower is typical of those constructed to oversee nuclear storage areas.

as for their functional forms, with some sites representing the world's firsts or the absolute cutting edge in terms of research in the nation's defence. The deployment of tested systems necessitated the storage of nuclear warheads at such sites as RAF Barnham (Suffolk), one of the two bomb store sites which housed the first British nuclear bomb, Blue Danube (introduced to service 1954). Guided surface to air missile systems to defend the country against nuclear attack, notably the Bloodhound Mark I (which entered service 1958) and II, created distinctive military landscapes.

Airfields continued to form a significant part of the military estate during the Cold War, and beyond. For much of the 1950s and 1960s, for example, Britain's airborne nuclear deterrent was carried by the V-Force (Victor, Valiant and Vulcan aircraft), for which ten main airfields were provided in the east of England. The V-Force generally made use of pre-war buildings, although the airfields themselves were provided with extended runways and hard-standings. On fighter stations concrete blast walls were added (examples are scheduled at Coltishall, Norfolk), and later Hardened Aircraft Shelters (as at Upper Heyford, Oxfordshire; Fig 12) for protection and servicing of the aircraft themselves. Related to these airfields were the bomb stores and Thor intermediate-range ballistic missiles, with their distinctive triple emplacements, for which some distinctive buildings survive although many were quickly and cheaply erected.

Alongside the RAF, some airfields were used from the 1950s by the United States Air Force Strategic Air Command (SAC). SAC airfields saw a considerable amount of new building, much of it distinctively American in style and execution,

Figure 13
'The Ground Launched Cruise Missile Alert and Mainentance Area' or 'GAMA' site, Greenham Common, Berkshire. Here, in the 1980s, the United States Air Force housed cruise missiles in six shelters secured behind triple lines of high-security fencing. The base was the focus of the Greenham Women's peace protest.

and some to NATO designs. This ushered in a new development in English military architecture: the presence of permanent installations by an allied, yet foreign, power which had been prefigured by the huge American presence during the Second World War. Airfields were typically hardened in the 1970s and 1980s, including the construction of Hardened Aircraft Shelters dispersed at sites like Alconbury (Cambridgeshire) and Upper Heyford (Oxfordshire), while two sites – Greenham Common (Berkshire) and Molesworth (Cambridgeshire) were updated to accommodate ground-launched cruise missiles. This phase of activity can be most clearly seen at the scheduled cruise missile shelters at Greenham Common (Fig 13). This, the final phase of the Cold War, produced very distinctive military landscapes which encapsulate approaches to the defence of the realm, just as much as Expansion Period aerodromes of the 1930s embody the pre-war period.

The development of radar continued through the Cold War and beyond. Perhaps best known is the modernisation programme initiated in the late 1940s which sought to re-establish an effective air defence radar network (known as Rotor). Not only was this the most ambitious military engineering project of the 1950s, but also required the coordination of a massive manufacturing effort to produce the radar sets, consoles and plant. The largest structures built were the twenty-nine underground operations blocks. A fully computerised air defence scheme known as Linesman was developed in the 1960s, and a more integrated and flexible system (United Kingdom Air Defence Ground Environment or UKADGE) in the 1970s. The radar station at RAF Neatishead (Norfolk) has a number of designated structures that reflect the evolution of Cold War radar systems. Early warning during the Cold War era is also evident in the Ballistic missile early warning system (or BMEWS), developed in the United States in the 1950s and introduced in Britain in the early 1960s.

Another site-type of this era is the Royal Observer Corps monitoring post. The Corps had undertaken observation and early warning work throughout the Second World War from purpose-built posts, but in this period its function was to identify evidence of nuclear attack and to monitor radiation. ‘Mini-bunkers’ of this era are relatively common, often lying within earlier strategic sites such as that of about 1960 constructed within the scheduled Napoleonic Fort of Berry Head, Torbay (Devon).

2 Overarching Considerations

2.1 Scheduling and protection

Archaeological sites and monuments vary greatly in character, and can be protected in many ways: through positive management by owners, through policy, and through designation. In terms of our designation system, this consists of several separate approaches which operate alongside each other, and our aim is to recommend the most appropriate sort of protection for each asset. Our approach towards designation will vary, depending on the asset in question: our selection guides aim to indicate our broad approaches, but are subordinate to Department for Digital, Culture, Media and Sport (DCMS) policy.

Scheduling, through triggering careful control and the involvement of Historic England, ensures that the long-term interests of a site are placed first. It is warranted for sites with real claims to national importance which are the most significant remains in terms of their key place in telling our national story, and the need for close management of their archaeological potential. Scheduled monuments possess a high order of significance: they derive this from their archaeological and historic interest. Our selection guides aim to indicate some of the grounds of importance which may be relevant. Unlike listed buildings, scheduled sites are not generally suited to adaptive re-use.

Scheduling is discretionary: the Secretary of State has a choice as to whether to add a site to the Schedule or not. Scheduling is deliberately selective: given the ever-increasing numbers of archaeological remains which continue to be identified and interpreted, this is unavoidable. The Schedule aims to capture a representative sample of nationally important sites, rather than be an inclusive compendium of all such assets.

Given that archaeological sensitivity is all around us, it is important that all means of protecting archaeological remains are recognised. Other designations such as listing can play an important part here. Other sites may be identified as being of national importance, but not scheduled. Government policy affords them protection through the planning system, and local authorities play a key part in managing them through their archaeological services and Historic Environment Records (HERs).

The Schedule has evolved since it began in 1882, and some entries fall far short of modern standards. We are striving to upgrade these older records as part of our programme of upgrading the National Heritage List for England. Historic England continues to revise and upgrade these entries, which can be consulted on the Historic England website.

2.2 Heritage assets and national importance

Paragraph 194 and footnote 63 of the National Planning Policy Framework (July 2018) states that any harm to, or loss of, the significance of a designated heritage asset should require clear and convincing justification and for assets of the highest significance should be wholly exceptional; 'non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets'. These assets are defined as having National Importance (NI). This is the latest articulation of a principle first raised in PPG16 (1990-2010) and later in PPS5 (2010-2012).

2.3 Selection criteria

The particular considerations used by the Secretary of State when determining whether sites of all types are suitable for statutory designation through scheduling are set out in their Scheduled Monuments Policy Statement.

3 Specific Considerations

3.1 Listing or scheduling

Modern military remains have historically been the subject of complementary approaches to designation. Thus listing has been applied to buildings in use: scheduling to those monuments where general re-use is inappropriate, or which are in ruinous condition. There are, however, exceptions to this rule of thumb: in practice, there are listed inert buildings in ruinous condition, and scheduled monuments in active use. The important thing is to identify buildings and sites deserving designation at a national level, and then apply the most appropriate designation regime. Given the very high order of significance demanded for scheduling, and the particular controls it brings, listing may often be the more appropriate approach for modern military remains, especially when their significance can be upheld through the planning system. Moreover, other designation regimes may also be appropriate, such as the creation of conservation areas by local planning authorities.

Our general designation approach is to provide as clear a take on significance as we can, and accord the most suitable form of recognition for the components. One approach, which has been used successfully on a number of sites, is to combine the protection outcomes offered by both listing and scheduling, with outworks and below-ground archaeology being scheduled, while structures above are listed. Two examples where this has been employed are Slough Fort (Medway) of 1867 and Upton Fort, Osmington (Dorset), an early twentieth-century artillery battery. Grading can be an important consideration in such instances, dependent upon the site specific circumstances; listing at a higher grade may allow the more seamless management of the site, regardless of the use of two designation approaches. However, care must always be taken to ensure that the use of two different designation regimes does not unnecessarily overcomplicate the future management of the site.

3.2 Local and national significance

Some categories of military site, particularly from the twentieth century, are legion; others are now rare, despite large numbers having once been built. All have an emotive power which connects local communities with world events of the greatest magnitude and their potential resonance should not be under-estimated. Conservation area designation has been, and will be, appropriate for some ensembles, such as aerodromes (RAF Kenley, Surrey and London Borough of Croydon, is an example), and military structures can be recorded on Historic Environment Records and thereby identified as heritage assets within the planning process (perhaps through local listing). Nevertheless, some structures, following the criteria here articulated, will have an undeniable claim to be recognised as of national importance, and for some of these identified assets, national designation including scheduling may be warranted. Selection must necessarily be applied, however, given the vast numbers of certain types of site.

3.3 Historical importance

Military sites are often evocative witnesses to past conflicts. While all military structures will be of some historic interest, the degrees of historical association will inevitably vary. In selecting sites for scheduling, those which can demonstrate their centrality to national policy, or were demonstrably key to particularly significant military campaigns, or were closely associated with key national figures, will have stronger claims to national importance than others. Re-use and adaptation of military sites demonstrating responses to changing military thinking, threats and technologies, will tend to enhance rather than diminish a site's importance: alteration can thus be a positive consideration.

3.4 Innovation

Sites which demonstrate innovation in their planning, their contribution to national defence strategy, or are innovative in terms of their technology, will have added interest.

3.5 Documentation

Documentation is often relatively abundant for modern military structures, but there are distinct gaps in the record too. A site which has good documentation (which might include design drawings, personal accounts, descriptions and photos of the site in use, and also modern surveys or excavations leading to fuller understanding) may have extra claims to note compared with those with sparse records.

3.6 Regional variation

Although many types of military site for this period are nationally homogenous, conforming to standard designs, others respond to local circumstances in their terrain, building materials or defence strategy. Variation is an important part of regional diversity and it is therefore important that candidates for designation reflect this.

3.7 Rarity/Representativity/Selectivity

Being a rare survival of a site type will strengthen the case for scheduling. In some cases, for example with experimental sites, many are by definition rare or unique. Where this is the case, candidate sites may warrant scheduling if they survive relatively intact and represent developments of national significance. Equally it is important that the schedule is representative of more common types too, so as to capture an exemplary selection. A range of military site-types should be considered for scheduling if they rate highly in terms of survival and/or potential: in the case of mass-produced or frequently encountered sites, a selection of the best and most representative examples is the approach to follow. All periods are eligible for consideration, but with more recent sites, due allowance must be made for numbers of survivals.

3.8 Period

Being strongly representative of a phase or activity, or where a site contributes eloquently to an understanding of defence policy, or technological developments of the day, is likely to be an important claim to national importance.

3.9 Group value

Military structures often do not stand alone: they form parts of ensembles, such as fortification lines, aerodromes, military supply factories or research and development sites. The claim to scheduling can often be greatly strengthened by context, for example when survival of complementary structures creates a legible ensemble, in which the functioning of various parts is strongly sensed and where the military experience is readily captured. Care will always be deployed in identifying a sensible boundary to the area in question, and elements of particular significance will be clearly identified.

3.10 Survival

The case for designation will always be stronger where the survival of a site is good. Sites which retain evidence of their original fittings, including plant and signage, will have stronger claims to designation than those that do not. Wall art – whether sanctioned or unofficial – and graffiti are not uncommon on military sites, but can add to their interest.

4 Considerations by Period

4.1 1500-1700

Military sites of this period will generally be scheduled rather than listed.

4.2 1700-1860

Listing is increasingly applied to military sites from this period. While some sites may merit scheduling in their entirety, others, such as forts with a built component in addition to systems of earthworks, may be given appropriate protection via complementary listing and scheduling, as discussed above. Listing can be deployed to manage the appropriate management of structures such as Martello Towers, especially where they have already been converted to residential use, and by no means all sites from this period are, or will be, scheduled.

4.3 1860-1914

Many older fortifications were overhauled during this period, with artillery housing undergoing extensive reconfiguration to accommodate the huge changes in weaponry, such as rifled and quick-firing ordnance. Such changes added another chapter to the evolution of Britain's defences, and are regarded as significant interventions, deserving of inclusion in designations where they survive well as examples of rapidly changing technologies. Specialist structures, such as unusual training facilities, may also deserve designation because of their national rarity.

4.4 1914-1945

For the period 1914-1945 there was inevitably a massive increase in the construction of sites of great variety. Given this, a selection of the more ubiquitous site-types which merit additional guidance are examined below.

Airfields and aviation

A number of hangars (generally with Belfast truss roofs) and related buildings have been listed from the First World War, but there are no scheduled monuments of this variety. Airfields of the Second World War have been much studied including through a thematic listing programme which has identified the best surviving examples of permanent airfields. Although historically a number of control towers and even hangars have been scheduled, the vast majority of airfield buildings are now more likely to be considered for listing, and this will be our approach in the future. Airfield defences – including pillboxes, Pickett-Hamilton forts and defence control bunkers – have also been scheduled in the past but are increasingly being considered for listing. Bomb and ammunition stores and fuel supply structures could be considered for either listing or scheduling dependent upon their individual characteristics and form. Fighter or blast pens have been scheduled (as at RAF Kenley) and also listed (as at RAF Croughton, Northamptonshire): the latter option is now preferred.

The more intact the complex, the more appropriate national designation will be. Group value is also an important consideration: many ancillary structures will have greater value

through association with other key airfield components, and higher levels of designation may be appropriate at better preserved sites of renown, such as RAF Duxford (Cambridgeshire) or RAF Biggin Hill (London Borough of Bromley). Although all stations contributed to the RAF's war effort, it is appropriate to assign particular significance to those front-line aerodromes which played such important parts in the campaigns of the Second World War.

Designation is not generally an appropriate tool for highlighting the significance of either runways, dispersal pads or other large areas of hard standing: vital as they were for operations, other mechanisms of management will be more appropriate. Indeed, the totality of an aerodrome has not been protected through scheduling: other approaches, such as conservation area protection (as at Old Sarum (Wiltshire), among the best-preserved flying fields of the First World War) have been shown to be appropriate. However, there will be circumstances where the retention and protection of hard standing will be critical to the understanding of the function of a nationally important site and in such instances scheduling will therefore be merited. One such example is the Cold War GAMA (Ground Launched Cruise Missile Alert and Maintenance Area) site, Greenham Common (Berkshire). Here the concrete aprons between the cruise missile shelters were constructed to allow the rapid launch of missiles in extremis, and the triple fence with concrete roads between were also an essential part of the site's tight security. These are scheduled as part of the monument and allow the site to be understood in its totality, including the targeting of the fence by peace protesters.

Anti-aircraft

Anti-aircraft batteries of the First World War are very rare and such sites will therefore be strong contenders for designation, with scheduling being warranted for examples with particular archaeological potential. Given that Second World War and Cold War examples are much more numerous, rarity and survival will be important considerations when assessing sites for scheduling.

Some Heavy Anti-Aircraft sites (for instance, Slade's Green, London Borough of Bromley) have been listed and so it will be important to consider whether the particular management consequences that scheduling can bring will be applicable to individual circumstances with exceptional levels of survival. Many associated searchlight sites survive as earthwork or cropmark remains, while numerous concrete barrage-balloon tethering points are also extant. Given the ubiquity of such sites it will be important to consider carefully claims to national importance, as most sites are likely to be of local rather than national significance.

Light Anti-Aircraft sites rarely survive on account of their mobility and impermanence, so where they do survive well they may be strong candidates for designation, particularly in cases where they are grouped with other features. Again, examples have hitherto been listed so the site specific claims would need to be carefully weighed up in considering whether scheduling was warranted.

As offshore structures the Maunsell Forts of the Thames estuary and North Sea are not eligible for listing, although their rarity may mean that the test of national importance is met (as at Redsands Fort off the north Kent coast). Whether scheduling is appropriate for structures which were not intended for long-life, and which are located in such a hostile environment, will need to be very carefully considered on a case-by-case basis dependent upon whether management through scheduling would be beneficial.

Anti-invasion

Anti-invasion defences of First World War date are much rarer than those from the Second World War. They include batteries, fire control posts and blockhouses, and, where survival is good or particularly illustrative of a type of defence, may merit consideration for scheduling or listing. In the main, although some component parts of Second World War stop-lines have been scheduled historically, listing is now more generally the preferred approach – unless forming part of a nationally important complex where the particular

management benefits scheduling brings would be beneficial. For example, a particularly good stretch of anti-tank ditch with associated remains might be worthy of consideration for scheduling, where earthworks are critical to understanding more hardened components, and where the landscape is little-altered, enabling the original defensive context to be readily sensed.

Camps

Only one PoW camp is currently scheduled, at Harperley at Crook (Co Durham) which was opened in 1942 and which is protected as a key exemplar site. Camps with surviving buildings are more likely to be recognised through the listing of key structures, as at Lippitts Hill (Essex) although consideration could exceptionally be given to well-preserved earthworks, or where there is established potential (for instance, from camp dumps, which can be very revealing of life inside the wire).

Some examples of training facilities have already been scheduled, such as the practice redoubts of 1792 and perhaps Boer War-period trenches on Wagbullock Hill (Berkshire). Twentieth-century trench complexes are worthy of consideration but the challenges of precise dating (examples survive from both the world wars) and of having sufficient information to understand their function (whether as training facilities or as anti-invasion defences) will be key to assessing their significance, as will their legibility and relationship with other complexes.

Command and Operation Bunkers

These structures were frequently of key importance in command structures, but they present particular issues in terms of their future management. By their very nature they are difficult to demolish, so often survive in their essentials by default. However, there are very considerable issues to bear in mind in terms of the long-term survival of original equipment. Exceptionally, removal of key items to a more controlled heritage environment may be appropriate. Sealing and moth-balling is one common approach, which can have implications for fabric left inside; another is careful adaption (secure data storage being a common form of re-use). Where particularly good quality interiors including fixtures and fittings and even painted signage, graffiti or wall art survive, the appropriateness of the management regime following designation will be a particularly important consideration.

Civil Defence

Good surviving bombing decoy sites which demonstrate the complexity of the overall system in a legible form will be worthy of consideration for scheduling. Many sites will not meet this test given the often ephemeral nature of their original form, or will have lost significant component parts through later agrarian change or development.

Air raid shelters are so ubiquitous that most will be of local rather than national significance, and where of national note are more likely to merit assessment for listing. Exceptions could be particularly carefully planned complexes which do not qualify for listing – for example being rock cut – and which are important survivals in terms of understanding air-raid provision and/or underground manufacturing. Some sites will retain painted signage and internal fixtures and fittings such as benches, lighting, sanitary arrangements and plant; where such things survive, the case for designation will be more compelling.

Early Warning Systems and Intelligence

Sound mirrors have been both listed and scheduled but, given their rarity it is unlikely that further examples remain to be discovered. The buildings and structures of radar stations have also been both scheduled and listed in the past, but listing is now the preferred option for what are normally complexes of buildings with, very rarely, surviving original masts (bases survive rather more often, and are of clear interest). As always the rarity and degree of survival coupled with a consideration of the most suitable form of subsequent management should be the guide when considering examples for scheduling.

Factories

In an age of industrial mass-warfare, sites of production can assume a particular importance,

showing the contribution of the Home Front to the conduct of war. The majority of military factory sites which survive in anything like their original form are more likely to be considered for listing, rather than scheduling. There are exceptions to this however, such as the First World War National Filling Factories which were routinely demolished on closure (such that an upstanding example is likely to be very rare) but where earthwork survival is such that the site remains legible.

For expansive complexes with repetitious structures, scheduling a representative part of the complex, or group of structures, may suffice; it might be a consideration as to whether or not a key or representative component part of a site might be scheduled; conservation area status is an alternative for managing extensive landscapes of this type.

Operation Overlord and D-Day

This important operation involved very many places in England, but purpose-built structures still possess particular resonance as witnesses to the seaborne invasion of north-west Europe. Consideration, as ever, needs to be given as to whether scheduling is the most appropriate form of designation for these remains. Structures in the sea, such as the section of Mulberry Harbour at Shoeburyness in Essex are appropriately scheduled given that listing legislation only reaches to low water mark; other remains have been listed. D-Day embarkation hards, as with other forms of harbour or slipway structure, are more likely to be considered for listing, as are components of the pioneering PLUTO system.

Sites of Commemoration

Sites of commemoration, including ruins, have almost invariably been listed on grounds of special historic interest. Bomb craters are unlikely to merit scheduling in their own right; some form of memorial, plaque or information board may help local understanding. Memorials (such as grave markers and war memorials) are also more likely to be more appropriately considered for listing than scheduling.

Wrecks and Crash Sites

Under the 1979 Act it is possible to schedule vehicles, vessels, aircraft 'or other movable structure or part thereof'. In practice, this has seldom been put into effect. Exceptions can be cited, such as the Heinkel He111 German Second World War bomber included as part of a broader scheduling of medieval landscape on Lundy Island, or a sunken barge included within the scheduling of Waltham Abbey gunpowder works. While not ruling out future applications of this approach when scheduling is clearly the most appropriate means of safeguarding remains of this nature in situ, it should be stressed that this will always be an exceptional course of action. The Protection of Military Remains Act 1986 affords protection to all aircraft which have crashed in military service, and our preference is not to duplicate protection mechanisms. The designation of vessels and vehicles lost at sea is also touched on in our Ships and Boats selection guide.

4.5 1945-present

The designation of Cold War sites now tends to involve listing more often as a response than was formerly the case. Scheduling may be warranted where there are particularly important archaeological values needing careful management, and where the significance of the asset is of the highest order. Any asset which is in a seriously declining state may warrant inclusion on our Heritage at Risk Register. These sites can cover considerable areas, and the judicious selection of core structures and zones is essential. As with earlier sites, those which include reminders of earlier phases of military or other activity may warrant particular consideration.

5 Protection through Management or Recording

Scheduling will be warranted for a selection of modern military sites of national importance, but it is not always the most appropriate form of management for military sites. Given that scheduling is discretionary, alternatives can and should be considered on a national and a local level. For large military sites such as airfields, a method of identifying significance and managing whole sites that has been successfully adopted at Old Sarum (Wiltshire; First World War), Kenley (London Borough of Croydon and Surrey; Second World War) and Upper Heyford (Oxfordshire; Cold War) is for the local authority to designate a conservation area, backed up by selective national designation as appropriate.

Management agreements, including Heritage Partnership Agreements, can be a valuable approach whereby owners and other interested parties, including Historic England, can collaboratively agree the approach to the site's future care.

Many modern defensive structures were erected quickly in response to immediate needs, and with little thought to long-term survival. They were never intended to be permanent, which creates challenges in terms of their conservation as monuments.

One alternative for good examples of temporary structures (such as wooden huts) may be to encourage their removal to museum sites where they can receive appropriate care. However, this should very much be a last resort with preservation *in situ* the preferred approach. Another is the concentration of conservation efforts on exemplary sites (such as the Harperley PoW camp, for instance), and the recognition that others will simply not be sustainable in the long term.

Preservation through record can be a valid approach for those sites which do not have longevity either because they were originally intended to have a short-life span or which are severely threatened through unstoppable natural processes (such as the impact of coastal erosion on coastal batteries and other military installations, where retention is just not possible). Appropriate recording, and the depositing of a record in the local Historic Environment Record, should be carried out in cases when such loss is unavoidable.

6 Select Bibliography

The literature on military sites is particularly extensive. The following is but a selection of some of the key works.

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7 Where to Get Advice

If you would like to contact the Listing Team in one of our regional offices, please email: customers@HistoricEngland.org.uk noting the subject of your query, or call or write to the local team at:

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37 Tanner Row
York
YO1 6WP
Tel: 01904 601948
Fax: 01904 601999

South Region
4th Floor
Cannon Bridge House
25 Dowgate Hill
London
EC4R 2YA
Tel: 020 7973 3700
Fax: 020 7973 3001

East Region
Brooklands
24 Brooklands Avenue
Cambridge
CB2 8BU
Tel: 01223 582749
Fax: 01223 582701

West Region
29 Queen Square
Bristol
BS1 4ND
Tel: 0117 975 1308
Fax: 0117 975 0701

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