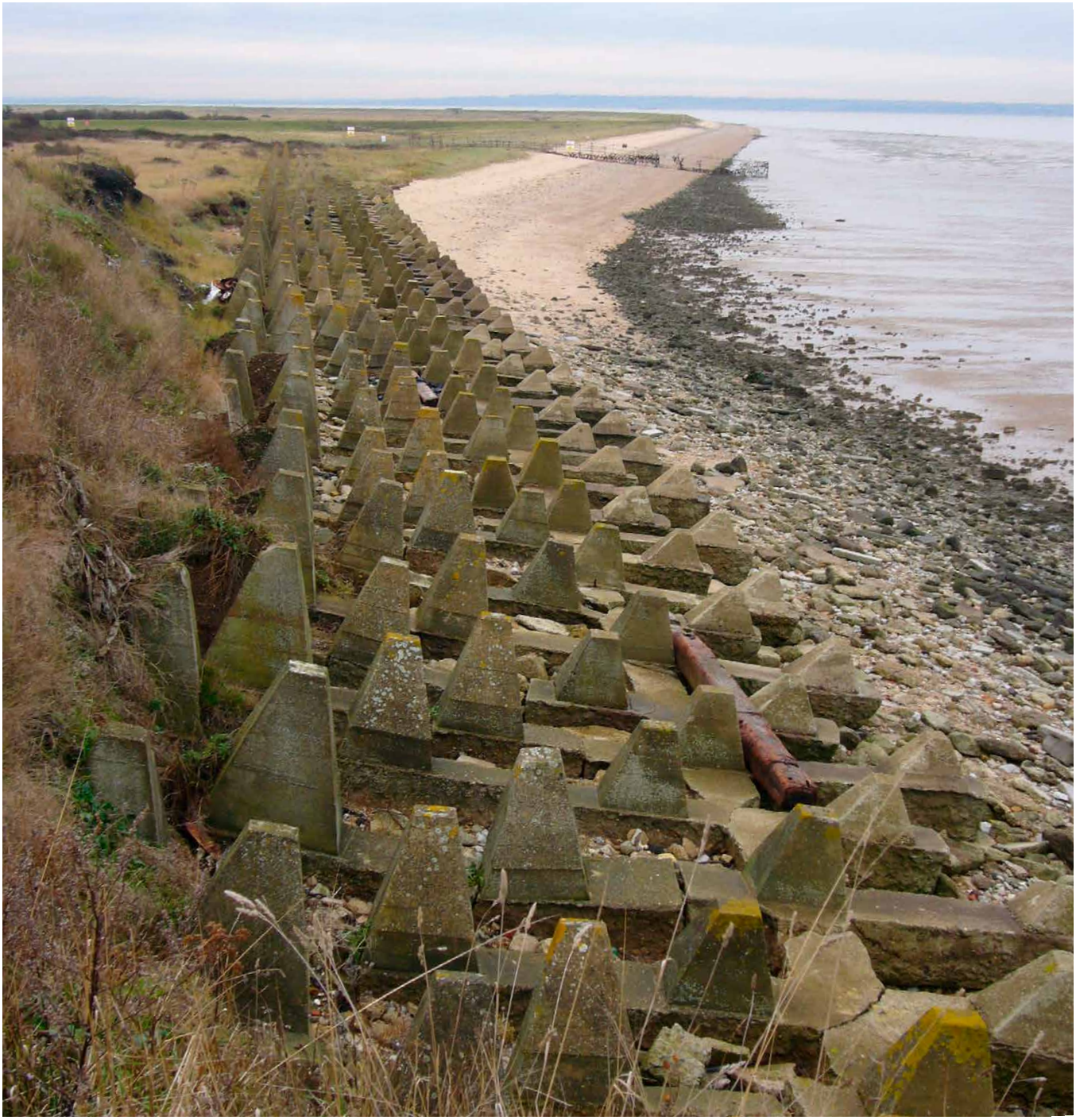
Historic England

Military Structures

Listing Selection Guides



Summary

Historic England's twenty listing selection guides help to define which historic buildings are likely to meet the relevant tests for national designation and be included on the National Heritage List for England. Listing has been in place since 1947 and operates under the Planning (Listed Buildings and Conservation Areas) Act 1990. If a building is felt to meet the necessary standards, it is added to the List. This decision is taken by the Government's Department for Digital, Culture, Media and Sport (DCMS). These selection guides were originally produced by English Heritage in 2011: slightly revised versions are now being published by its successor body, Historic England.

The DCMS' *Principles of Selection for Listing Buildings* set out the over-arching criteria of special architectural or historic interest required for listing and the guides provide more detail of relevant considerations for determining such interest for particular building types. See https://www.gov.uk/government/publications/principles-of-selection-for-listing-buildings.

Each guide falls into two halves. The first defines the types of structures included in it, before going on to give a brisk overview of their characteristics and how these developed through time, with notice of the main architects and representative examples of buildings. The second half of the guide sets out the particular tests in terms of its architectural or historic interest a building has to meet if it is to be listed. A select bibliography gives suggestions for further reading.

This guide outlines our approaches to listing England's military buildings and structures, some of the most eloquent witnesses to the impact of world events on our national story. Military sites are both offensive and defensive: they include fortifications designed to withstand assaults, and bases from which operations could be launched. To these the twentieth century added buildings designed to protect civilians from various forms of air-attack. Some structures are unique; other types, particularly in the twentieth century, were constructed using standard designs, methods of construction and materials. Here, especially, the most careful designation assessment is called for.

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HistoricEngland.org.uk/listing/selection-criteria/

Front cover
Dragon's Teeth erected as an anti-invasion defence on the Isle of Grain (Kent) in 1940. Listed Grade II in 2009.

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Introduction

Britain's military buildings and structures are eloquent witnesses to the impact of world events on our national story. The range is vast, from Hadrian's Wall to Cold War bunkers. Military sites are both offensive and defensive: they include fortifications designed to withstand assaults, and bases from which operations could be launched. To these the twentieth century added buildings designed to protect civilians from various forms of air-attack. Taken overall, the range of military buildings is extremely wide. Some structures are unique; other types, particularly in the twentieth century, were constructed using standard designs, methods of construction and materials (although these do not always survive in large numbers). Specialist knowledge will often be required to assess the relative significance of a site for designation.

Broadly speaking, military buildings can be divided into the operational and the ancillary (commonly known in the military as 'the teeth and the tail'): buildings for fighting, and buildings for living and working. Very few barracks or other 'tail' buildings survive from before 1800, but thereafter numbers increase and become predominant over the next two hundred years. This selection guide provides a brisk survey of the range and chronology of military buildings, 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, and all structures will have to be judged on their individual merits. This survey is biased towards more recent military 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 buildings and structures that are assessed for listing. It is vital to remember that other designation responses are sometimes appropriate too. Scheduling, the designation of archaeological monuments, has been applied to defensive structures for over a century, and a number of twentieth-century sites have been protected in this way (Fig 1). Some military sites, usually spatially extensive, have been designated by local authorities as conservation areas, and this is the most satisfactory way of acknowledging an area of special interest, rather than just the key individual buildings within it. In the text which follows designations are noted only selectively, as especially on larger sites there will be several, possibly under different regimes and at different grades. All are recorded on the National Heritage List for England.

Figure 1
RAF Neatishead, Norfolk. A Type 84 radar, the last large Cold War air defence radar surviving in England. A Scheduled Monument.

As noted, the category of military buildings is a particularly broad one, and overlaps are inevitable with others. Naval buildings are deliberately excluded from this section: they are covered in the Maritime and Naval Buildings selection guide. Military hospitals are touched upon in the Health and Welfare Buildings selection guide. There is also cross-over with places of military production in the Industrial Buildings selection guide, and with communications centres in the Infrastructure: Utilities and Communications selection guide. War memorials and other monuments are considered under Commemorative Structures.

1 Historical Summary

The development of military architecture is intricate and impressively well documented. For works of synthesis, Saunders (1989) and Osborne (2004) are recommended. What follows is a very cursory 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, fuller consideration is given at the end about twentieth-century military buildings.

Figure 2
Dartmouth Castle, Devon, guarded one of the most important harbours in the south-west. It was periodically updated, and in 1481 this gun tower was added – at the time, one of the most important fortifications in England. By 1492 sixteen guns here guarded the mouth of the River Dart: four large 'murderers', and sixteen smaller 'serpentynes'. A Scheduled Monument and Grade I listed building.

1.1 Military buildings up to 1700

Defence was the rationale behind many of our finest archaeological sites, both pre-Roman (such as Iron Age hillforts) and Roman: whatever its intended function, Hadrian's Wall remains one of the great linear defence structures in the world. Early structures have usually only survived where of massive construction, and in the past they have invariably been scheduled. Town defences and coastal fortifications (memorably combined at Berwick-upon-Tweed, in Northumberland) have enjoyed similar protection, but some shorter stretches of wall (as in Bath, in Somerset) have been listed instead.

Early artillery fortifications and coastal defences date from the fourteenth to the early sixteenth century. They range from castles and town walls with gun ports to purpose built stone towers such as that at Dartmouth (Devon; Fig 2), and later with ditch defences and outworks. From the sixteenth century (and specifically in the period

1539-43) a national defence policy emerged under Henry VIII, intended to deny the enemy a harbour or anchorage from which to base an invasion. Individual forts protected harbour entrances, with effective artillery range governing the location of supporting blockhouses. The major castles were self-contained, self-defensible, and carefully sited. Numerous examples survive along the east and south coasts, at Hurst and Calshot castles in the Solent (Hampshire), for example (and see Fig 3). 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 great defence programme of 1539-43 marks a high point of the progression from the mural tower to the round tower, from simple gun-tower to concentric fort. Within two or three years, however, there was a move from the round to the square, rectangular or polygonal, with the bastioned systems derived from Renaissance Italy visible for example at Yarmouth and Carisbrooke castles (both Isle of Wight) and Pendennis (Cornwall).

The Civil War saw further developments in the seventeenth century with siegeworks and earthwork fortifications predominant, while Charles II's reign saw massive expansion of permanent fortification, partly due to naval and mercantile rivalry with the Dutch. Most visible and impressive survivals today are the fortifications protecting the Royal Dockyards of Portsmouth and Plymouth, Thames and Medway based on the design principles of Sir Bernard de Gomme, with regular bastions, demi-bastions, ravelins and ditches. As well as the dockyard defences, de Gomme spent much of his time designing and building defences for the towns themselves. Tilbury Fort (Essex) is an outstanding example of this category of defence.

Political unease at the concept of a standing army discouraged the construction of any permanent military building, bar fortifications. Permanent quarters for troops were exceedingly rare. Military and naval hospitals at Chelsea and Greenwich are the most grandiose military structures in this category of the later period (more information can be found in the Health and Welfare Buildings selection guide).

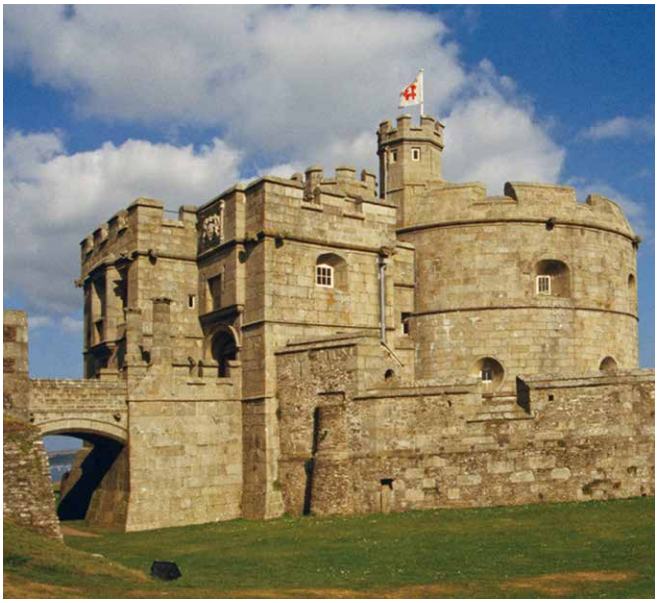


Figure 3
Pendennis Castle, Cornwall. Pendennis and St Mawes castles were built between 1539 and 1545 to guard Falmouth Haven as Henry VIII fortified England's coast against the threat from newly-allied France and Spain. Both were low, squat, artillery platforms, with basic accommodation within for the gun captain and his gunners. The castle was periodically modified over the next century, and withstood a five-month siege in 1646. Listed Grade I.

Previously, most military buildings and structures from this period have been scheduled. Extent of survival, early date, rarity, and their potential for yielding further information, are key determinants. Where buildings continue to be in use, listing may be more appropriate, with scheduling – with the differing management regime it confers – directed to important earthwork remains and buried deposits. Each case will need assessing on its own merits.

1.2 Military buildings 1700-1856

This period saw the rise of empire and the considerable expansion of Britain's armed forces, up to the close of the Crimean War. Naval dockyards generally eclipsed in scale Army sites throughout the period, but structures set in expansive new grounds such as the Royal Arsenal, Woolwich (1717 on) and the Royal Artillery Barracks, Woolwich (1775-1802; both in the Royal

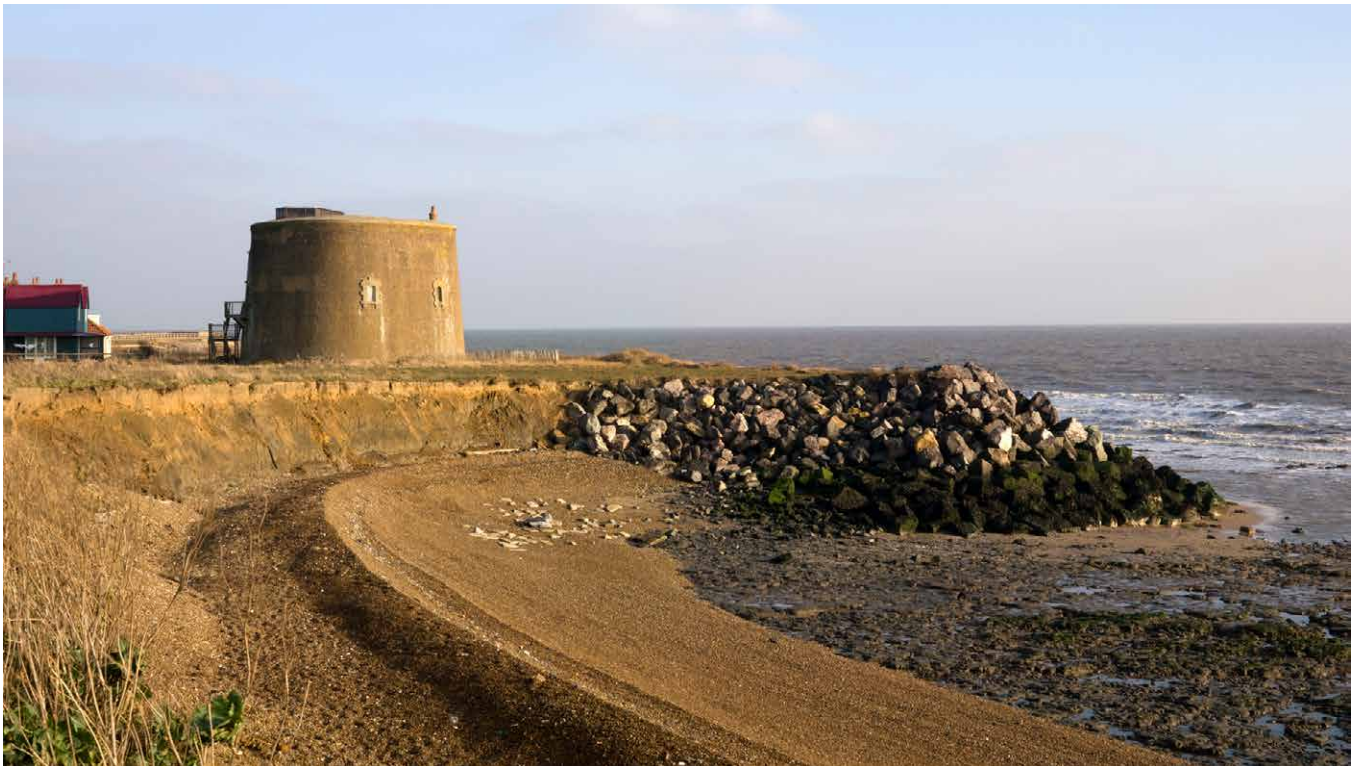


Figure 4
A Martello Tower built between 1808 and 1812 during the Napoleonic Wars at Bawdsey, Suffolk. These formed a series of interdependent gun-towers, intended to delay and harass an invading force. Listed Grade II.

Borough of Greenwich) show the arrival of a permanent military architecture on an impressive scale. 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 continued to be rare and confined to forts but with the outbreak of the protracted Revolutionary and Napoleonic Wars (1793-1815) came a major increase in military building, funded (for the first time) by direct taxation. This included fortifications, such as the chain of Martello Towers along the south and east coasts (Fig 4), which together with detached redoubts (Maker Heights, Cornwall) exemplify the move away from bastioned defences) to infantry and cavalry barracks (Christchurch, Exeter, Weymouth), gunpowder magazines (Purfleet, Essex, and Marchwood, Hampshire) and defended inland depots (Weedon Bec, Northamptonshire).

Listing is increasingly applied to structures from this period, and there will be a presumption in favour of designating all buildings that survive in anything like their original form. Architectural interest is often present alongside functional and technological interest in structures of this period. Some sites, like forts with systems of earthwork outworks, may be given appropriate protection via complementary listing and scheduling, as discussed above.

1.3 Military buildings 1856-1914

This period saw the creation of much of the modern built infrastructure of the Army, and saw 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 rivalry with France during the 1850s and the

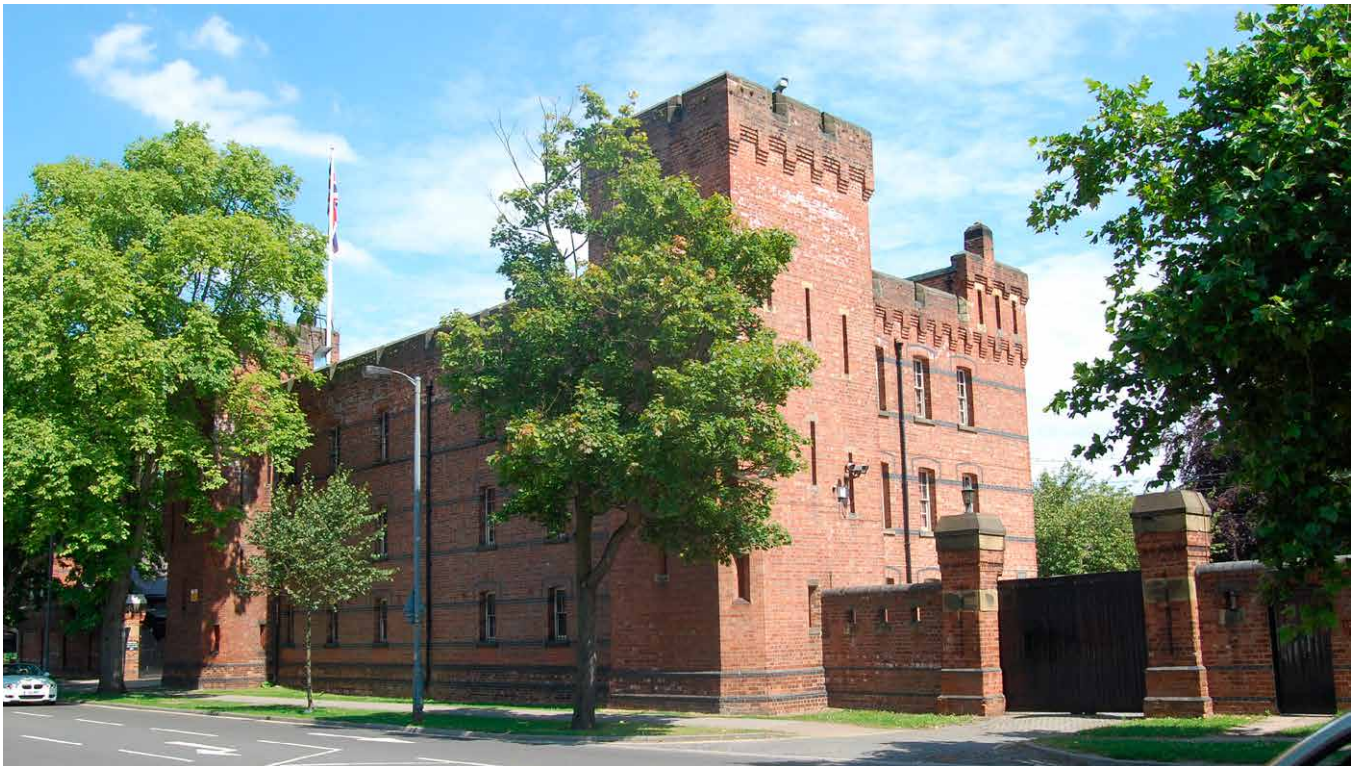


Figure 5
The Keep, Imphal Barracks, York. Built 1877-80 by the War Department. The Keep was a secure armoury, stores, guard house and lock up, and the characteristic building of the Localisation depots. These were part of the Cardwell reforms, which redistributed barracks around the country to encourage local connections, and assist recruitment. This is one of only ten remaining examples of this important symbolic structure. Listed Grade II.

arrival of the steam-powered iron-clad warship, armed with increasingly powerful ordnance. This led to a major expansion of the defence system, especially around the naval bases of Chatham, Portsmouth, Sheerness and Devonport. Rifled and later breech-loading guns had an impact on the design of fortifications, as did more powerful types of gunpowder and new explosives such as cordite. With the new explosives came a requirement for enhanced storage facilities. By the early 1900s, forts were typically low in profile, with concrete gun emplacements, and with barracks and other support functions housed at a safe distance away rather than being integrated into the overall design.

The move to permanent depots for regiments led to the construction of barracks across Britain, as well as the construction of permanent training depots and teaching institutions. Britain's imperial commitments grew continuously, necessitating the creation of a home establishment capable of replenishing forces in the field with trained and rested replacements. The Cardwell reforms of the 1870s ushered in a new epoch of planning for military needs (Fig 5).

On a local level, the volunteer movement of the 1850s onwards led to the appearance in towns of a new building type, the drill hall. These were first built for various Rifle Volunteers Corps, established from 1859-60 onwards to defend Britain against the perceived threat of invasion from France. As well as providing military training, rifle-shooting, fencing and other organised sports, the Volunteers provided a strong social network and lent their members great social caché (partly owing to their military titles and impressive uniforms). Early examples include the drill halls for the Artists' Rifles (1889) and the Bloomsbury Rifles (1882) in Chenies Street (London Borough of Camden; listed Grade II), and many others

survive in towns throughout the country (the Northampton drill hall of 1859 is a classic instance of the baronial brick armoury, that at Bury, Lancashire, listed Grade II, a gaunter ensemble in local stone). Drill halls for the professional forces followed slightly later. The 'drill shed' at Shoebury, Essex (1859-60; listed Grade II) is exceptionally early. Like Shoebury's, most later drill halls are important components in extensive barracks complexes. They share a simple external panache, often of red brick with terracotta details and lettering on the principal elevation, and are occasionally treated in a castellated Gothic or proudly Baroque idiom. The need for large unencumbered internal spaces, as with riding schools, stimulated the early use of steel roofs and experiments with laminated timber trusses (in the nineteenth century) and lamella trusses (in the 1930s), a German system of latticed steel or more usually timber roofing.

More selection is required for buildings from the 1850-1914 period on account of their greater survival. Many fortifications were overhauled during this period, with artillery housing undergoing extensive reconfiguration to accommodate 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. Some barracks were designed with attention to architectural effect, such as the Peninsula Barracks of about 1900 at Winchester (Hampshire), and the naval barracks at Plymouth and Devonport (Devon) and Chatham (Kent), while the majority followed type-designs produced by the War Office. Architectural quality, planning interest, degree of alteration and group value with other related structures will be key considerations here. Specialist buildings, such as military medical quarters, unusual training facilities, and novel forms of structures (such as the naval gun-training platform, shaped like a boat, at Mount Wise in Plymouth), may also deserve designation because of their national rarity.

1.4 Military buildings 1914-1945

The broad developments of this short but intense period, which saw two world wars as well as other conflicts, can be summarised under three main headings. Firstly, 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.

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 (Wiltshire); 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 Flying Corps and the Royal Naval Air Service) merged to form the Royal Air Force (RAF) in 1918. As military aviation developed, so too did the need for new building types, like wide-span hangers with Belfast truss roofs.

Military architecture acquired much of its monumental character in the inter-war period, especially after 1934 as the RAF was placed in the front line of deterrent power. The RAF College at Cranwell, Lincolnshire (1929-33, by J G West of the Office of Works), was an old-fashioned homage to Sir Christopher Wren, while the RAF training base at Hullavington (Wiltshire) was carefully designed and built in local materials in order not to disrupt the landscape setting. Hullavington, where several buildings are listed at Grade II, forms perhaps the most outstanding example, as a whole, of the way in which the planners of new air powers had to take account of political and public concerns over rearmament

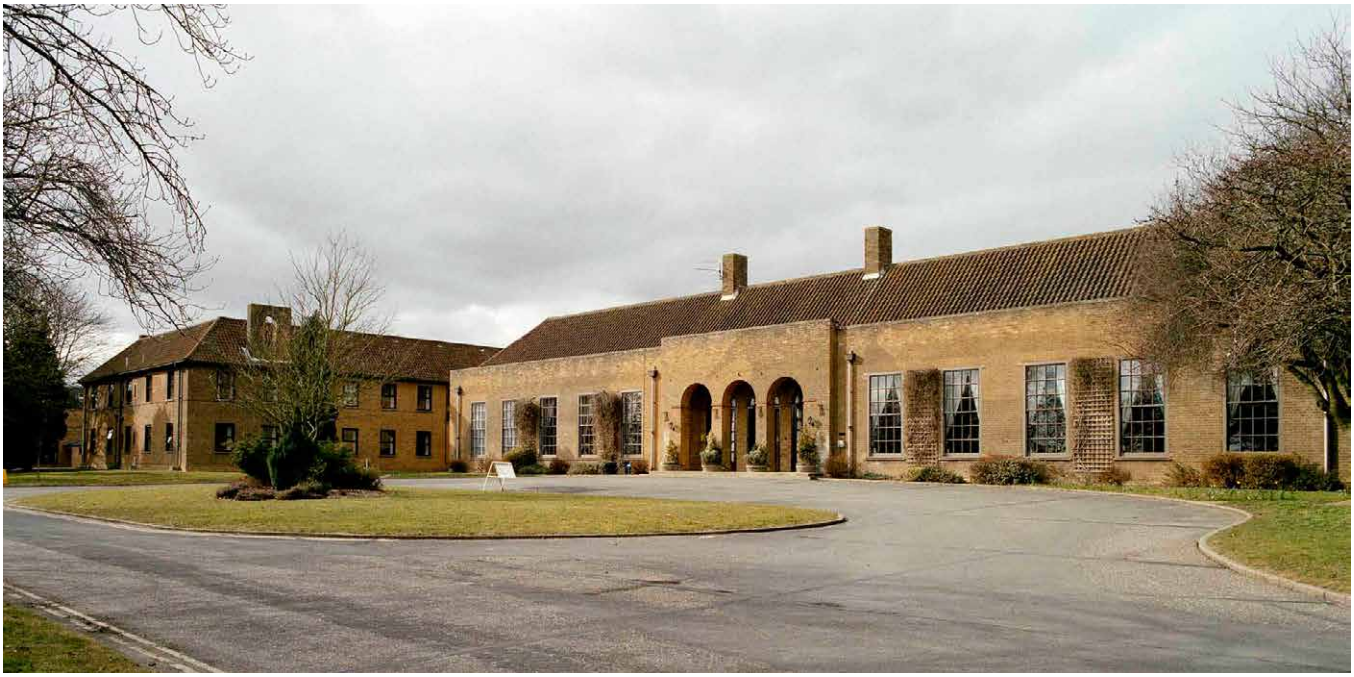


Figure 6
Former RAF Coltishall, Norfolk, late 1930s neo-Georgian style officers' mess. A good example of the type, although not currently listed.

and the impact of these huge sites on the environment. Some building types, like officers' housing, barracks and officers' messes, were executed in a pleasing neo-Georgian style (Fig 6), while other technical buildings were executed in a Moderne style. The officers' mess at RAF Biggin Hill (London Borough of Bromley; listed Grade II), for example, is a good example of neo-Georgian architecture and shows the lengths the youngest branch of the armed forces went to in creating premises that provided a sense of tradition and helped to attract new recruits. Contemporary army buildings, especially officers' messes, were also executed in neo-Georgian, neo-Baroque and Moderne styles, while permanent barracks and ancillary buildings were more utilitarian. In the lead up to the outbreak of war in 1939 temporary wooden Militia camps were built and thin-skinned brick building became the norm on temporary wartime airfields. Army and air force camps of this date exhibit carefully designed plans with distinct functional zones. Many also exhibit a campus-like quality with wide tree-lined roads. In some instances this character may be conserved through conservation area status.

1.5 Operational structures

Aviation sites

Perhaps the largest category of modern military buildings in England is aviation sites. Powered flight has had a profound influence on the human experience of the twentieth century, and on the landscape. Military airfields are typically large and complex sites that were built in great numbers. From modest beginnings in 1909 at the flying field at Larkhill (Wiltshire), already used for observation balloons, an independent Royal Flying Corps was founded in 1912. About 250 flying stations or aerodromes existed in the summer of 1918, a number that had increased to 740 during the Second World War. Their former ubiquity should not be taken for granted, however, as many sites continue to be cleared and adapted for new uses. Many aerodromes which were subject to rebuilding in the inter-war period were front-line operational places, playing a role for example in the Battle of Britain and the Strategic Bomber Offensive, which adds to their significance in terms of the richness and poignancy of historical association.

Figure 7
The watch office (or control tower, as they are more generally known) at RAF Elvington, Yorkshire. Built in 1942, this is one of a very small number of Second World War control towers to survive in this degree of preservation. As well as its architectural interest, this structure has historic and other resonances as Halifax bombers took off from here to take part in the Battle of the Ruhr in early 1943, while in the summer of 1944 the Free French flew from Elvington to support the invasion of Europe. Listed Grade II.

Types of aerodrome varied considerably, from operational stations to training bases; from bomber aerodromes to home defence or fighter use. Layouts and categories of buildings varied accordingly, and specialist interpretation is often needed to understand the component structures. Airfields were increasingly given concrete runways for all-weather flying: the scale of the wartime construction enterprise in this area was vast. The component elements range from architecturally polite messes, station HQs and guard houses, to more functional technical blocks, hangars and control towers (Fig 7). Almost all were built to standard Air Ministry designs, repeated – with variations – across the country.

Aerodromes of 1939-45 and before have received considerable study, and thematic listing has identified the outstanding survivals of permanent airfields (temporary examples lay outside the study, but still deserve consideration where structures survive). While all aerodrome sites have strong local resonance, national designation will only be appropriate for a selection of sites, given the huge numbers involved and the degree of standardisation of structure. The thematic survey focused on the identification of those key sites which best reflect the development of military aviation from 1910 to 1945, and those which are most strongly representative of functionally distinct airfield types: at these selected sites, designations are numerous and statutory protection is of a high order. The relationship of built fabric to the flying field, its character and development, has also been fundamental to the selection process.

Outside these key sites, it is only groups (of buildings, fighter pens and defences) and individual examples of strong intrinsic or associational importance, particularly those with key historical episodes of the Second World War, which have been recommended for protection (Fig 8). Selection principles will include rarity;

Figure 8
Hanger 1, RAF Scampton, Lincolnshire. Scampton's four Type C hangers, designed to house heavy bombers, typify the Air Ministry's careful preparations in the run-up to the Second World War. In spring 1943 617 Squadron, based in Hanger 2, took off from here on the Dambusters' Raid, while later in the war U-boat pens and rocket sites were attacked from here. All four hangers are listed Grade II.

technical or structural interest; group value with related structures; and operational importance (such as direct involvement in an important campaign such as the Battle of Britain or the Battle of the Atlantic). Judgment will be required to assess such candidates for designation. Certain non-adaptable structures, such as blast pens, have historically been designated by scheduling, as have certain defence structures (like the Pickett Hamilton fort) and bomb stores. More recently consideration has been given to listing such structures (including Pickett Hamiltons, at Grade II, as at RAF Worthy Down Hampshire) because of the greater flexibility this offers in terms of maintenance and protection. The totality of an aerodrome cannot be captured through statutory designation alone, and other approaches such as conservation area protection – as at Old Sarum (Wiltshire), the best-preserved flying field of the First World War, and Upper Heyford (Oxfordshire), a key Cold War base – have been shown to be appropriate.

Army buildings

Those of this period range from permanent barracks and officers' messes, to temporary – even tented – structures. Vast amounts of short-life hutted accommodation was erected, particularly in the Second World War, most of which no longer survives but which can be identified through documentation and archaeology. Permanent structures will need to be judged against criteria such as architectural interest, associations with significant military events, and rarity. More impermanent structures will often have undergone alteration over time, and assessment will have to take this into account. As with airfield structures, the designation of individual structures will be sparing, and normally limited to examples of strong intrinsic or associational importance, particularly those with key historical episodes. Army camps have often continued in use, with early examples of prefabricated hutting being repeatedly modernised and upgraded to suit modern needs. Many army camps

however were transient – often tented – affairs, built in preparation for D-Day embarkation for example and only surviving today in buried or earthwork form. Certain training sites, such as the First World War practice trench complexes on Cannock Chase (Staffordshire), a camp and practice range on Sutton Common (West Midlands) and practice trenches at Otterburn (North Yorkshire) have even been scheduled as archaeological monuments. Ancillary structures can be of special interest if they are an integral part of outstanding groups or if they have direct historical associations with specific events, well-known individuals or of broader developments and aspects of the war. Military efficiency and morale is heavily dependent upon logistical support, and the United States Army postal sorting office at Sutton Coldfield, West Midlands (listed Grade II), directly illustrates the volume of personal communication between families and servicemen in the European theatre.

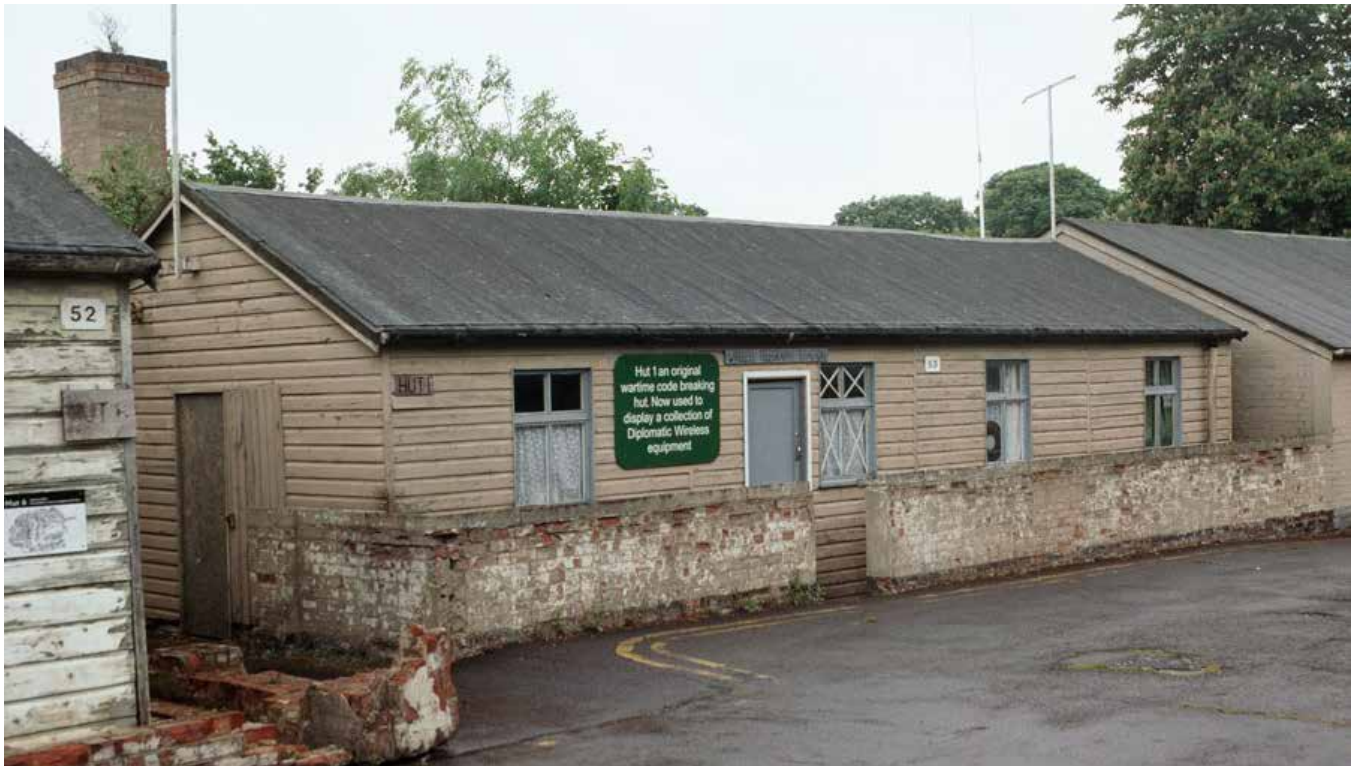
Prisoner of war camps,

These were mostly of Second World War date, and either made use of existing buildings, or were purpose-built, using standard types of hutting but arranged in a distinctive plan form, designed for the control and easy administration of prisoners. Some of these remain standing, but far more now exist as sites: a study undertaken for English Heritage has shown that their overall footprint and impact on the landscape is more readily discernible than might at first be thought. Designation of buildings is exceptional. The camp at Harperley (Co Durham; Fig 9) has been scheduled in its entirety, whereas several huts at Lippitts Hill (Essex) have been listed. In both cases, the interest of individual buildings and of the group as a whole was enhanced by the survival of murals and other artefacts and works of art.

Military sites do not have to be in the front line to be of the foremost significance. Signals Intelligence (SIGINT) and Communications, for example, play an ever-growing part in modern defence and security. The development of radio communication led to new signals complexes and networks. Radar is discussed below. Bletchley Park, in Buckinghamshire, was the

Figure 9
Harperley, County Durham, A Second World War Prisoner of War camp built by Italian PoWs late in 1942, and later occupied by German PoWs engaged in agricultural work until 1947. A Scheduled Monument.

wartime location of the Government Code and Cypher School, and became a renowned centre for decryption and the early development of computing machines: these included the world's first stored programme computer, the Colossus, built here in 1944. Its seemingly unremarkable huts and wartime buildings exemplify the site's development from a cryptography school to a global information hub, receiving and processing information for dispatch to strategic commands and units in the field (Figs 10-11). It witnessed extraordinary events which influenced the course of the war, and many of the structures there are listed accordingly. Other sites are representative of the broadcasting of Black Propaganda – misinformation and the like – to occupied Europe, and some structures associated with this activity have been listed including a radio communications building at King's Standing, Maresfield, East Sussex (listed Grade II), and the Political Warfare Executive Studio at Potsgrove, Bedfordshire (listed Grade II).



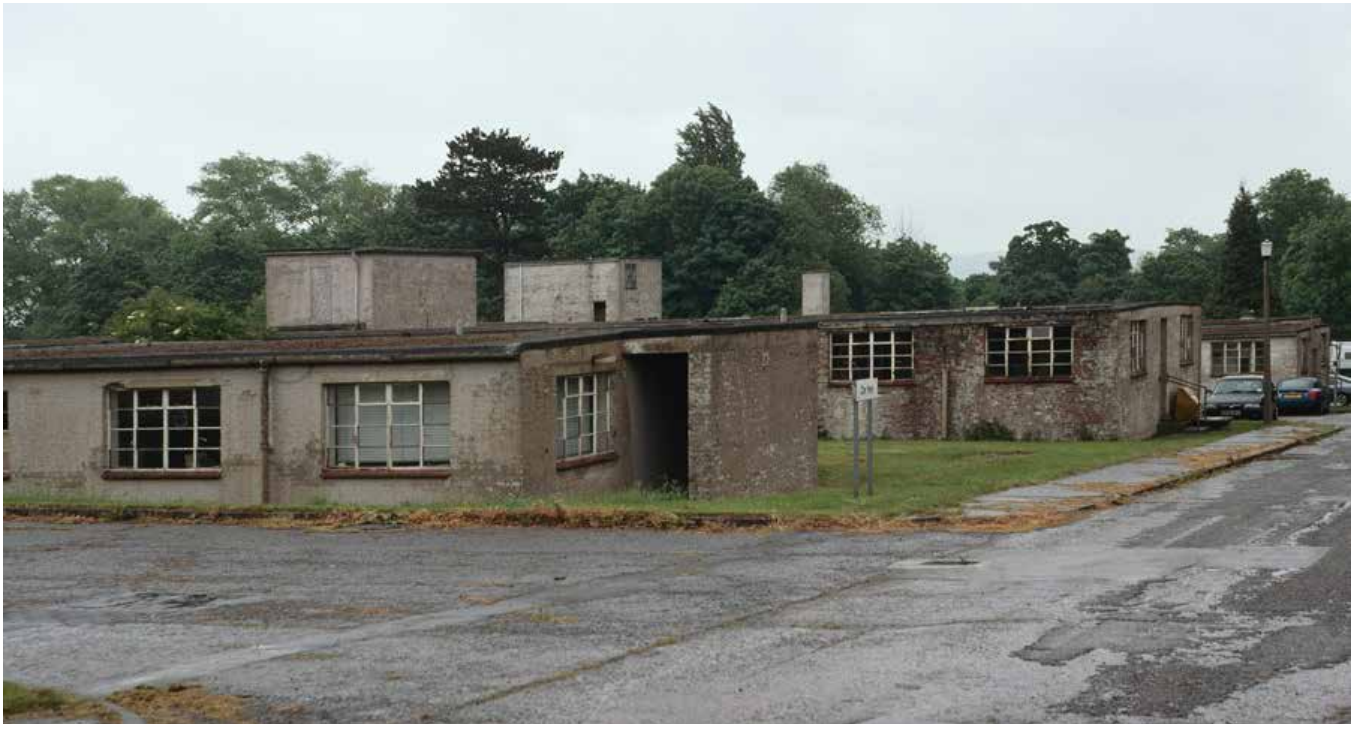


Figure 10 (top)
Hut 1, Bletchley Park, Buckinghamshire. The Government Code and Cypher School was established at Bletchley Park in 1939, and soon became the focal point of inter-service intelligence activities, especially Enigma-encrypted messages. Hut 1, perhaps at first a radio transmission station, was among the first group of huts erected in mid-late 1939, and was extended in 1942. Listed Grade II.

Figure 11 (bottom)
D Block, Bletchley Park, Buckinghamshire. As the Government Code and Cypher School intelligence centre at Bletchley Park expanded in 1942-3, several new office blocks were rapidly constructed. D Block has 13 office spurs off a central spine; at the war's end 700 people worked in the building on the vital work of breaking, deciphering and analysing German Enigma coded traffic. Listed Grade II.

1.6 The Home Front: Military structures

Twentieth-century defensive structures survive in very considerable numbers, especially from the Second World War. All bear witness to the greatest conflict of world history, but claims to special interest vary widely. Discretion is thus required when assessing them for designation: designs were often standardised; construction was often rushed, and materials were often not intended to be durable. Our understanding has advanced considerably in recent years.

Early warning systems

Developed from the First World War. Early sites were based on acoustic detection and the rare surviving complexes of sound mirrors along the south and east coasts at Denge, East Sussex, and Fulwell, Sunderland, are designated. Radio Direction Finding (later known as Radar) developed in the 1930s from experiments conducted at Orford Ness and at Bawdsey Manor, Suffolk. Radar transmitter masts, in lines of four, 350 ft high, carried aerials which sent out electronically generated signals: wooden towers brought signals to the receiver blocks. The original 20 Chain Home stations stretched from the Orkneys to the Isle of Wight, and were 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. While various sites have retained elements of the ground structures such as the transmitter or receiver building, buried reserves (an anti-attack mechanism: each station had underground mini-receiver and transmitter sites so that if bombed, as many were, they could still operate), accommodation buildings and perimeter defences, surviving examples of the iconic masts are very rare (Fig 12): a Grade II listed example remains at Stenigot, (Lincolnshire). Surviving ancillary structures may warrant consideration where they survive well and advance appreciation and understanding of the radar complex. Royal Observer Corps posts provided another layer of defence, passing visual observations up to the RAF chain of command; here degree of survival will be a crucial consideration in assessment. Many ROC posts took advantage of existing buildings, and where there has been designation it has generally been listing.

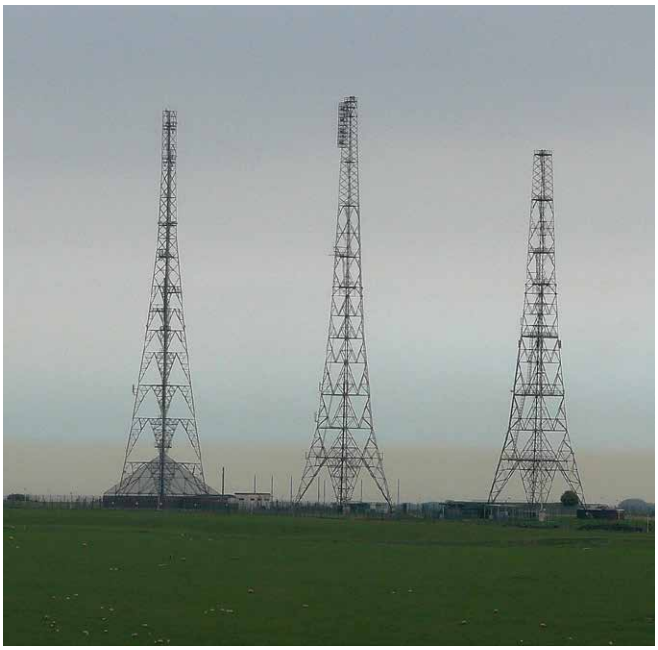


Figure 12
Swingate, Dover, Kent, a Second World War Chain Home radar station. Today only two self-supporting towers (not listed) remain standing, one original and one an early 1950s replacement.

Anti-aircraft batteries

Once very numerous, particularly in the south-east. Survivals in good condition are rare, especially for the First World Wa; an example at Lodge Hill, Kent, is a Scheduled Monument. Some Heavy Anti-Aircraft sites (for instance, Slade's Green, London Borough of Bexley; listed Grade II) have been designated where plan, fabric and the functioning of the battery remains evident. Many associated searchlight sites survive as earthwork or cropmark remains, while numerous concrete barrage-balloon tethering points are also extant. 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. The most unusual anti-aircraft structures of all were the Maunsell Forts of the Thames estuary and North Sea: massive oil rig-like platforms moored far out to sea. As offshore structures they

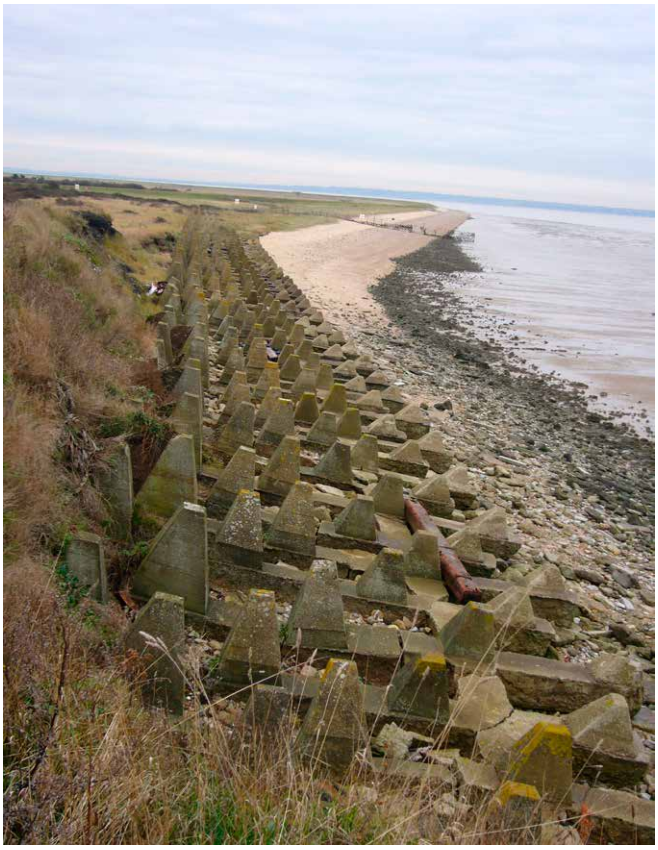
are not eligible for listing, and their unsuitability for monumentalisation due to the hostile environment in which they stand renders them unsuitable for scheduling: a state of affairs that belies their interest.

Bombing decoys

Intricate systems of deception, laid out away from urban areas to draw enemy raiders away from their intended targets. Dummy systems of lighting, and street grids, simulating cities under aerial assault, were laid out on less vulnerable sites. 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 are often low; control houses, for orchestrating the effects, are the most likely to remain. Some of these sites, which can be most clearly appreciated from the air, may deserve designation as archaeological landscapes and some have thus been scheduled; an example is the concrete ponds on the Humber foreshore which from 1941 acted as decoys for Hull docks.

Pillboxes

Strong-points, generally of reinforced concrete, placed at strategic locations, such as at river crossings, or along coastal and inland anti-invasion 'stop lines' which were intended to slow down the progress of an attacking force. Some were designed for machine guns; others, more



Figures 13 (top) and 14 (bottom)
Top: A Type 25 pillbox and anti-tank defences at Kimmeridge, Dorset. These form part of a Scheduled Monument.

Bottom: A Type 22 pill box at Dovedale, Derbyshire, on the Western Command Defensive Line No. 5. Unlisted, but certainly of local interest.

Figure 15
Anti-tank pimples, Isle of Grain, Kent. This 570-metre long line of anti-tank obstacles, principally of a type known colloquially as dragon's teeth, was erected about 1940 along a beach that was potentially a landing place for German forces. Increasingly listing is being used as an appropriate way of designating military structures of the Second World War and Cold War. Listed Grade II.

unusually, housed artillery. A number of pillboxes were constructed along the coast during the First World War, but these are rare in comparison to the thousands built in the early stages of the Second: 28,000 are thought to have been erected, and a recent survey calculated that some 6,500 survive. They frequently formed parts of defence lines, which were belts of defensive structures intended to delay the invader. Claims to special interest will include rarity of type; group relationship with other defence structures (including tank traps and road blocks); survival; and their built form (Figs 13-15). Group value with other historic items (from hillforts to bridges) may be relevant too: that at Bodiam Castle, East Sussex, creates an instructive contrast with its grander medieval neighbour. Others, as at Dover Castle, can be cut into earlier fortifications. Some pillboxes were disguised as civilian buildings: where this camouflage survives the case for designation is much stronger. Given the very considerable numbers of items that survive, considerable discretion should be used in their selection, particular attention being justified for those which directly illustrate their intended function as part of a key defensive line or nodal point. Where fittings like wooden shutters survive, or the pillbox has internal signage, or painted aids to aircraft recognition, or wall art, the case for designation will be strengthened.

Operation Overlord (D-Day)

The preparations for the Allied invasion of France in 1944, Operation Overlord, led to the construction of many buildings and sites. These include pumping stations for the Pipe Line Under the Ocean – PLUTO – as encountered at Shanklin, Isle of Wight; embarkation slipways, at Torbay, Devon; and mooring posts or 'Dolphins' and the construction sites for floating harbours, at Lepe, Hampshire. Where these structures merit designation they are now likely to be listed rather than scheduled. Far more sites associated with

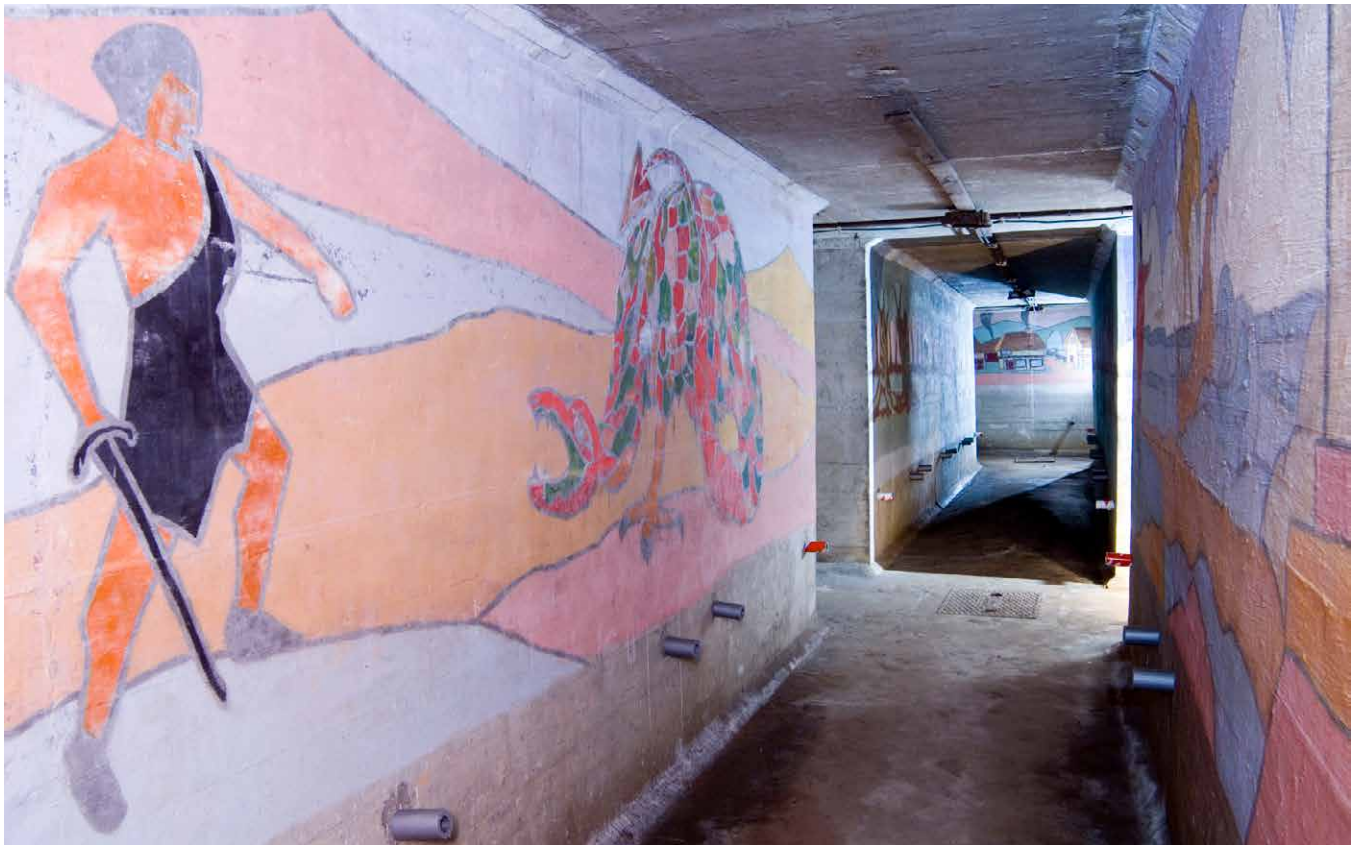


Figure 16
St John's School, Redhill, Surrey, murals on the wall of the school's air raid shelter depicting scenes and characters from British history. Not currently listed.

the renowned event, such as tented camps, have left no visible traces.

1.7 The Home Front: Civilian structures

Air raid shelters

Proven First World War air raid shelters are sufficiently rare to warrant serious consideration for listing. Much greater discretion is required over Second World War examples which in general are fairly common. From the later 1930s all new factories were obliged to provide purpose-built shelters, so their survival is not unusual. Determinant factors will include rarity of type; relationship to other listed buildings; and significance for overall understanding of the development of the category. Painted signs will not generally be enough to warrant designation, although shelters with surviving benches, other fittings and signage will warrant serious consideration. The more common domestic Anderson Shelter was provided to millions of urban and suburban homes during the Second World War. While many survive today as garden sheds, the great majority of these are ruinous and no longer retain original details of their construction, or have been moved. Even so, few ordinary domestic shelters are likely to be listed; exceptional degree of survival will be key.

Air Raid Precaution (ARP) centres

These were built to co-ordinate local government responses to air raids and contained control centres, air filtration plants and other features: sometimes located within municipal buildings, these can be of particular interest when survival is good, and warrant serious consideration for designation. Subsidiary ARP Posts, and even in some cases mortuaries, were also built; their local context, as well as condition, will be considerations – one ARP Post alongside Dover Priory railway station is listed (Grade II) largely as a tangible reminder of the heavy assault Dover's civilian population suffered from the air and from cross-Channel shelling.

Similar considerations apply to other civilian structures, which exceptionally may have the special interest necessary for listing. A firewatcher's post, and the late pre-war factory it stands on top of at Park Works, Borough Road, Kingston upon Thames, were listed at Grade II in 2015.

Evacuation camps

Opened from 1939 onwards, both to remove vulnerable town children from bombing and to create outdoor rural complexes for their better development. Certain key structures, such as the main hall at Sayers Croft (Surrey; listed Grade II), may warrant designation in their own right, but generally the best designation for such complexes will be as conservation areas.

Bomb damage

Numerous towns and cities still bear the marks of the impact of bombing. Ruined churches have long been listed for their memorial value as much as for their intrinsic historical importance, most famously at Coventry Cathedral: other

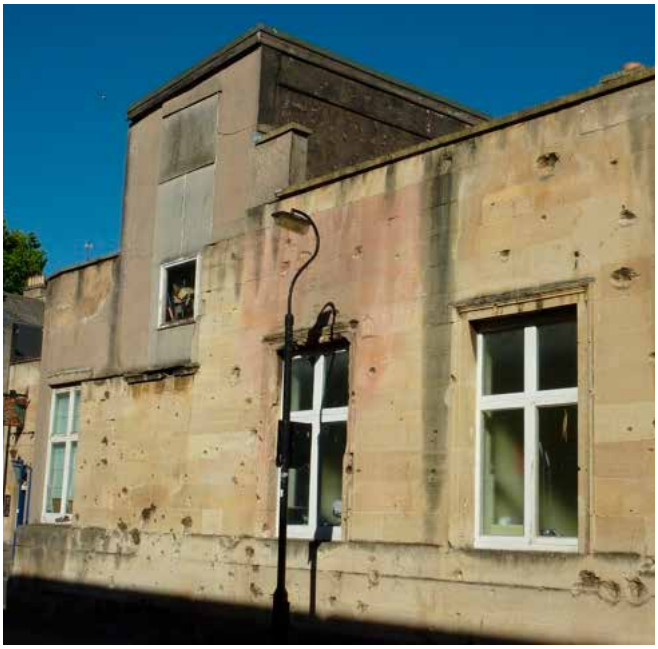


Figure 17
The shrapnel-damaged former Labour Exchange, Milk Street, Bath. Bath suffered terribly in air raids during the spring of 1942 in the so-called Baedeker reprisal raids which targeted strategically relatively unimportant but picturesque English cities. Over 400 people were killed, and thousands of buildings destroyed or badly damaged. It is principally because it serves as a vivid reminder of the raids that this building is designated. Listed Grade II.

examples are to be seen in Canterbury, Dover, Portsmouth, Southampton, Exeter, Plymouth, Bristol, Hull, York and, of course, the City of London. Other listed buildings may well retain the scars from bomb damage as part of their special interest, such as the Victoria and Albert Museum, London. Exceptionally, some buildings have been designated solely because of their war-damaged appearance (as in Milk Street, Bath; listed Grade II, Fig 17). Bomb sites were once all too common; 60 years on and more, this is no longer the case. Designation will only be warranted after careful consideration of the case. Factors such as the visible evidence elsewhere of bombing (such as wholesale rebuilding or gaps in the urban fabric), and the intrinsic appearance of the ruin and any strong commemorative associations will need to be weighed up.

Sites of commemoration

These range from war memorials, to markers of particular events, to plaques recalling civilian losses; a noticeable trend in the later twentieth century was the erection of roadside memorials on the site of wartime aerodromes (especially those of the USAAF) to commemorate the wartime activities which took place, and to remember those who served. The separate selection guide on Commemorative Structures sets out our approaches in more detail for funerary and memorial structures. A wide range of objects has been permanently installed in this way, from defused floating mines now installed as Shipwrecked Mariners' Society collecting boxes, to aircraft – generally now replaced with replicas – placed outside aerodromes as gate guardians. Listing will be warranted for memorials of aesthetic quality; recent ones are generally unlikely to warrant this.

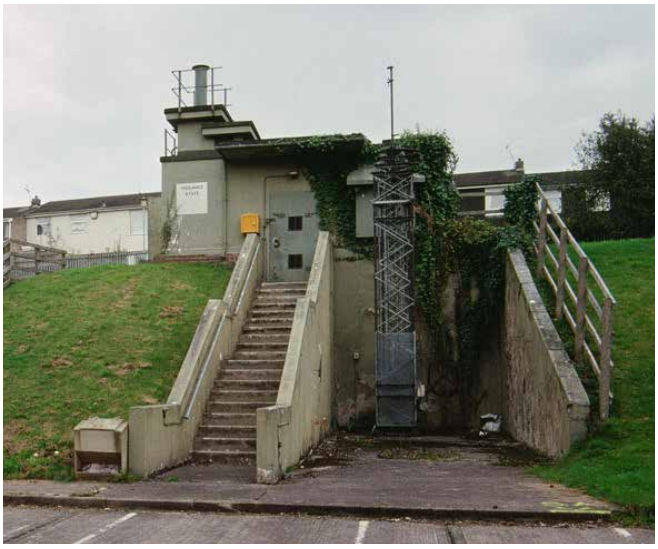


Figure 18
Royal Observer Group Headquarters, Howe Hill, Acomb, York. Part of a national network of monitoring posts set up after 1956 to monitor nuclear explosions and fallout, this was one of only 12 'protected' Group HQs added in the early 1960s. Sixty men and women would have served within in time of war. This was designated as a Scheduled Monument; today listing, with its greater flexibility, would be the more likely approach.

1.8 Post 1945: The Cold War and beyond

Throughout the Cold War 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. But there was also a significant amount of new building. Cold War (and now post-Cold War) architecture is distinguished by its 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 form, such as the massive Rotor (radar) bunkers and War Rooms of the 1950s, the Regional Seats of Government (some of which absorbed earlier War Rooms) of the early 1960s, and the US Air Force Avionics Building at Alconbury of about 1989 (listed Grade II*). Ancillary structures and specialised building types attest to the technological innovation of the time. These include military research establishments including the Atomic Weapons Research Establishment

sites at Foulness (Essex) and Fort Halstead (Kent), Naval research establishments in Dorset and rocket testing sites such as at RAF Spadeadam in Cumbria. The deployment of tested systems necessitated the storage of nuclear warheads at such sites as RAF Barham (Suffolk), one of the two bomb store sites which housed the first British nuclear bomb, Blue Danube. Guided surface to air missile systems to defend the country against nuclear attack, notably the Bloodhound Mark I and II, created distinctive military landscapes.

Airfields

These formed a significant part of the military estate during the Cold War, and beyond. For much of the 1950s and 60s, for example, Britain's airborne nuclear deterrent was carried by the so-called V-force (Victor, Valiant and Vulcan aircraft) for which ten main airfields were provided in the east of England. This made use of pre-war buildings for the most part, although the airfields themselves were provided with extended runways and hard-standings. On fighter stations concrete blast walls were added, and later Hardened Aircraft Shelters 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.

Also from the 1950s some airfields were used 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, and some to NATO design. This ushers in a new development in English military architecture: the presence of permanent installations by an allied, yet foreign, power. 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

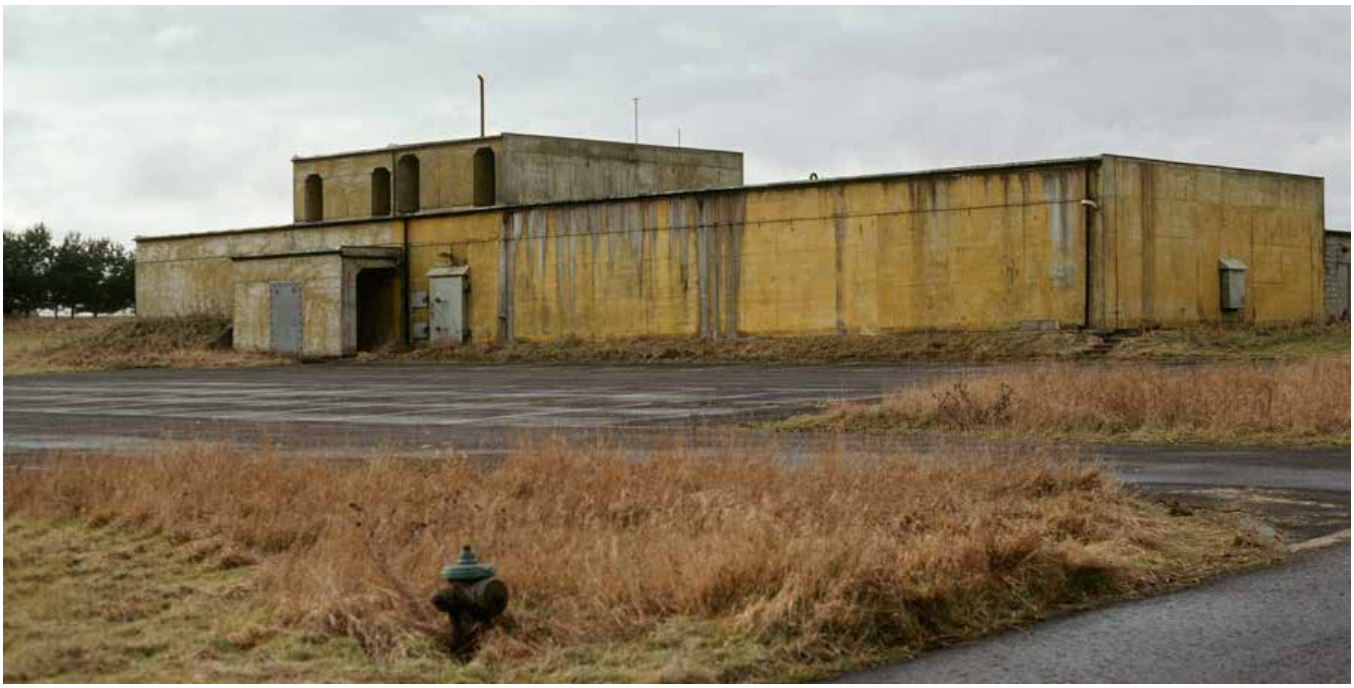


Figure 19
Former Squadron HQ building, Upper Heyford, Oxfordshire. In 1970 this airfield became home to a Wing of USAF F111s, low level nuclear-armed aircraft. Later in the 1970s 56 concrete aircraft shelters and other hardened structures, designed to withstand conventional, chemical and biological attack, were built. Among other designations a Squadron Headquarters (Building 234) is listed at Grade II.

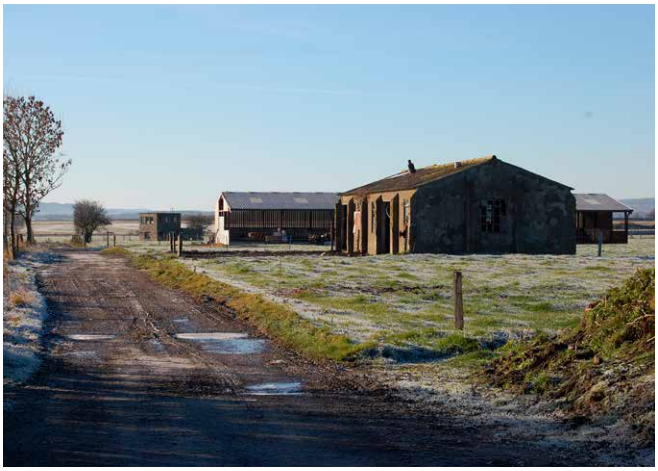


Figure 20
Former satellite airfield at Montford Bridge, Shropshire. Designation of Second World War military buildings is necessarily highly selective. But all have a place in the nation's story, and often retain great local interest. Here pilots were trained 1942-5 on Spitfires and Mustang III fighters. The remaining buildings, on farmland, are unlisted but their role is remembered by local villagers, and by those who served there.

(Cambridgeshire) were adapted to accommodate ground-launched cruise missiles. This phase of activity can be most clearly seen at the (now scheduled) cruise missile shelters at Greenham Common. This, the final phase of the Cold War, produced very distinctive military landscapes which will be seen as encapsulating approaches to the defence of the realm, just as Expansion Period aerodromes of the 1930s embody the pre-war period.

Radar

The development of radar continued through the Cold War and beyond. Perhaps best known is the modernisation programme initiated in the late 1940s, seeking 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 co-ordination of a massive manufacturing effort to produce the radar sets, consoles and plant. The largest structures built were the 29 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.

Cold War sites represent challenges for designation. Some buildings were short-lived; others were designed with very specific functions in mind, and may be challenges for re-use. Other categories were built to standard designs, and may survive on various sites (such as Royal Observer Corps posts). Some buildings will still be in operational use. For many, this represented a fearsome epoch in modern history. However, recent research by Historic England has set out the context in which the buildings and structures were created, and with the passing of time, the historical significance of this period of armed peace becomes ever clearer. Careful assessment has produced recommendations for designation which can inform future decisions. Rarity, group value, military and technological significance, and architectural or structural interest, will be the principal considerations in most cases. Wall art, representing the buildings' former use, or the reaction of servicemen to the spaces in which they worked, may also be a factor in determining significance. Military sites where survival levels are high, as at RAF Upper Heyford, for instance (where a number of structures are designated), are likely to warrant particularly close attention.

Many Cold War structures are as significant for the technological innovations they housed as for their new functional architecture. Where front-line technical equipment (as opposed to plant and services) survives, as in the Operations Room at RAF Neatishead (listed Grade II*), this will generally add to the structure's interest. Other considerations however include the centrality of buildings to British and/or NATO defence policy and their representation of distinct phases of the Cold War.

2 Specific Considerations

2.1 Historical association

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. Government policy is clear that candidates for designation ought to be well preserved in a form which directly illustrates and confirms their historical associations, if they are to be designated on historical grounds. Particularly close links with noted military actions may sometimes be significant.

2.2 Listing and scheduling

More than in any other area, military remains have been the subject of complementary approaches to designation. Historically, listing has been applied to buildings in use: scheduling to those monuments where re-use is inappropriate, or in ruinous condition. In practice, there are listed inert buildings in ruinous condition, and scheduled monuments in use. The most appropriate designation regime will be applied to all candidates, and in some cases a review of the existing designation may be warranted.

2.3 Local and national significance

Some categories of military structures, particularly from the twentieth century, are legion; others are rare despite large numbers having been built. Like war memorials, all have an emotive power which connects communities with world events of the greatest magnitude. Local significance should not be under-estimated. conservation area designation has been and will be appropriate for some ensembles, such as aerodromes (RAF Kenley, London Borough of Croydon, and Surrey, is an example), and most military structures can be recorded on Historic Environment Records and accommodated within the planning process. Nevertheless, some structures, following the criteria here articulated, will have an undeniable claim to listing or scheduling because of their manifest special interest.

2.4 Period

The period of construction may add to a military subject's claims for special interest. For example, if they are definitive examples of the construction employed in a particular phase in our defence policy and contribute to our understanding of this period, their date adds significance. Similarly, if they evidence technological developments that distinguish a particular period, this can enrich the case.

2.5 Rarity

Being a rare survival of its type will strengthen the case for special interest. In some cases, for example with experimental sites, many buildings are by definition rare or unique. Where this is the case, structures with rarity and uniqueness may warrant designation if they survive relatively intact and represent developments of national significance. But it is a paradox that for a period so recent, some categories of building from the

Second World War, and even from the Cold War era – albeit in some cases once quite common – are now extremely rare. It is not the case simply that old sites are rare survivals, and modern sites more common.

2.6 Selectivity

Government policy is clear that in cases of mass-produced or frequently encountered structures, a selection of the best and most representative examples is the approach to follow.

2.7 Site significance and group value

Military structures often do not stand alone: they form parts of ensembles, such as fortification lines, camps, barracks or aerodromes. The claim to designation can often be greatly strengthened by group value factors, 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. With aerodromes the approach has been to concentrate designations at exemplary sites, which survive well. Such an approach may also be relevant to army camps, prisoner of war camps, barracks, research and development sites, industrial complexes and defence areas where pillboxes and associated works form a coherent group. Conservation area designation (as discussed above under aviation sites) is sometimes warranted too, and will often be the best way of registering area significance.

2.8 Survival

The case for listing will always be stronger where the structural integrity of a building remains, with evidence of internal configuration and occasionally plant and fittings, or where it retains its contemporary setting, character and relationship to other buildings, sites and monuments. Wall art – whether sanctioned or unofficial – and graffiti are not rare in wartime buildings, but can add to their interest. Good examples, and ones with a particular historical resonance, will enhance the case for designation.

2.9 Sustainability

Many modern defensive structures were erected quickly in response to immediate needs. They were never intended to be permanent, which creates challenges in terms of their endurance as monuments. For good examples of short-life structures, such as huts, the best approach may be to encourage their removal to museum sites where they can receive appropriate care. The survival of footings and plan-form, and of service roads and overall plan, can aid the legibility and coherence where such structures survive as parts of larger sites, such as prisoner of war camps.

2.10 Extent of listing

Amendment to the Planning (Listed Buildings and Conservation Areas) Act 1990 provides two potential ways to be more precise about what is listed.

The empowerments, found in section 1 (5A) (a) and (b) of the 1990 Act, allow the List entry to say definitively whether attached or curtilage structures are protected; and/or to exclude from the listing specified objects fixed to the building, features or parts of the structure. These changes do not apply retrospectively, but New listings and substantial amendments from 2013 will provide this clarification when appropriate.

Clarification on the extent of listing for older lists may be obtained through the Local Planning Authority or through the Historic England's Enhanced Advisory Service, see www.HistoricEngland.org.uk/EAS.

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