

RAF BICESTER BUCKINGHAM ROAD BICESTER

HERITAGE REPORT
PROPOSED BICESTER MOTION FAST BUILDINGS
NOVEMBER 2019

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WORLLEDGE ASSOCIATES

Worledge Associates is a solutions-orientated heritage consultancy, committed to the effective management of the historic environment. We help our clients identify the heritage significance of their historic site, navigate legislative and policy frameworks, and find design resolutions. Our clients, who include public authorities, private individuals, community groups, and corporations, have praised our positive approach to managing change, and our eye for quality design.

Worledge Associates was established by Nicholas and Alison Worledge in 2014. Nicholas came to private practice with 35 years' experience working in heritage management for local authorities. This intimate knowledge and understanding of council processes, planning policy, and practice helps Worledge Associates support clients in securing positive outcomes. Since 2014, Worledge Associates has advised on a range of development projects for domestic, commercial, military, and educational use. Now supported by a small team of dedicated researchers and specialists, Worledge Associates is ever-growing and has widened its remit to offer content development and training. Every member of our team brings a unique set of skills to the business, but we all believe in the capacity of the historic environment to contribute to our collective economic, social, and cultural well-being.



Fig 1: RAF Bicester. View of Ultra Heavy Fusing Point Building from gantry

EXECUTIVE SUMMARY

Military Airfields highlight the complex relationship between war and space. They are the physical imprint that war left behind. An imprint, that as Jean-Lois Cohen (2011:14) has observed, came to occupy the visual realm in 'numerical form' – in numbered buildings, grouped defences, and miles of tracks and runways.

Their development captures both a particular moment in time as well as understanding of time. Their survival on the one hand, evidences the wartime period, helping us to 'fix' war in spatial-temporal terms. While on the other, their layouts reveal the more transient aspects of the 'war process', highlighting a certain preoccupation with speed and efficiency. Wartime architecture was overall concerned with provisioning, producing and distributing the means of warfare. The siting of airfield buildings and the routes connecting them were a manifestation of how the military sought to manage time and organise airfield functions in the most efficient and effective manner.

Each war, underpinned by its own strategic imperatives, tended to produce its own forms and 'spatial signature.' Bomber airfields in particular developed as a response to the post WWI political landscape – as an outcome of military reflections on the devastating impact of aircraft during the former war. Their siting and layouts were a manifestation of Sir Hugh Trenchard's philosophy of Offensive Deterrence doctrine, which in light of the preceding conflict, envisaged fleets of self-defending bomber stations as key elements in the future defence of Britain. Their continued development and expansion was, as Robin Higgam (1998: 87) has observed, largely centred on their "organizational perspicacity and adaptation of technology." Bomber bases adapted to meet both the strategic imperatives of the changing inter-war and later wartime situation as well as in response to new technological innovations.



Fig 2: RAF Bicester in its historic agricultural landscape (© Bicester Heritage)

RAF Bicester is recognised as a rare survival of a 1930s military airbase. Because of its limited use during and after the war it has survived better than any other to provide evidence of Hugh Trenchard's 1930s military offensive strategy in layout, building design, use and the functional interrelationships between those buildings. The flying field retains the form and extent of runways that would have existed at the outbreak of war in 1939. The flying field is special because they survive as grass runways, where elsewhere others have been 'upgraded' to concrete. The airbase, which includes the domestic and married quarters (though not in the same ownership) the flying field, peripheral areas and technical base) lie within a designated conservation area (though not the old quarry area) and many of the buildings and other structures are either listed or scheduled. The conservation area was designated in 2002, when it was known that the airfield was surplus to MoD requirements, at which point many of the buildings, structures and landscape were in a poor state of disrepair and included on Historic England's Heritage at Risk Register.

Since Bicester Heritage purchased the site in 2013 much has been achieved in repairing and re-using many of the redundant buildings on the Technical Site. Historic England has recognised the use of the former Technical Site at RAF Bicester for the range of motor engineering, historic car storage and associated uses is 'a good fit' for the site (pre-application advice letter dated 14th May 2018). There is much more that remains to be done, including the repair and sustainable reuse of the hangars and other buildings within the Technical Centre and bringing the flying field and peripheral areas into use as a part of the whole.

The region within which RAF Bicester is located has gained the reputation as the 'Motor Engineering Valley'. The cluster of high-performance motor engineering and innovation businesses in the area is growing with a history and focus that is intrinsically linked to the aeronautical industry and the re-purposing of military airfields. Bicester Motion recognises the unique nature of the site

and the opportunity to '*create something truly special that builds on the emotive passion when in and around these buildings*'. (Regeneration Strategy -Business Case). These proposals form part of the long-term strategy set out in the masterplan (Ridge and Partners), to repurpose the use of the flying field and peripheral areas. Historic England explains that conservation led development can demonstrate what can be achieved, *with passion, creativity and confidence*, to find solutions for what appears to be intractable problems to the conservation of heritage assets (Historic England, *Constructive Conservation*, 2013).

For RAF Bicester the heritage led business model seeks to promote leisure, tourism and business initiatives in a way that sustains what is special about the airbase, whilst creating something new, innovative and inspiring, as the next chapter in the site's history. The vision is to achieve this in a way that adds to people's understanding and enjoyment of a historic place, demonstrating that 'constructive conservation' is about embracing change for the benefit of the historic environment, the economy and for our health and wellbeing. Measures of the success will be exhibited in the restoration of the buildings and the landscape. This demonstrates the creative re-use of a redundant military airbase, the conservation of a site's history and the values it holds for people is not dependant on preserving a 'time capsule'. There is a more powerful story that can be told by allowing the place to continue to evolve and not freeze framed.

National policy and the local authority's approach to this site is to ensure that the historic assets are given a new use, making sure that those elements are properly integrated as a part of any new development. This ensures that new development is sensitive to the site's significance, as a whole and its constituent parts.

This is not about stopping change or 'freeze framing' the site; that runs counter to government and Historic England policy and practice. This is a challenging exercise to repurpose a redundant

military airbase. Development needs to allow the history of the site to be read and experienced, at the same time providing a platform for creating a 21st century history. Fundamental to this approach is the acknowledgement that new development will be visible, which will change our experience of the site, from within and without. It cannot remain a time capsule and survive. New development associated with economic identity of the region (as a motor engineering and innovation hub) is proposed that can extend our experience of the place and add to the values that are currently attributed to it. This is not about erasing its history or how we experience it, it is about adding to it.

The masterplan is being used to ensure a holistic approach illustrating how the proposed new development areas relate to each other and contribute to the integrity and history of the airbase. The proposed new FAST buildings are located beyond the perimeter track in the south east corner of the airfield. FAST will incorporate storage facilities for existing historic cars on the site, and will also accommodate a range of users such as FormulaE motorsport, battery technology businesses, automotive technology businesses. The focus is on sponsoring and encouraging innovation in design and technology to be experienced by visitors as well as corporations. The pursuit of innovation and creative solutions reinforces the site's history at the cutting edge of technology.

The wider masterplan incorporates proposals to support the overall aim of re-purposing the airfield to support its long term survival.

The scale and siting of the proposed FAST buildings have been informed by the open nature of the flying field and the identified views of the airfield from within and without. As well as this the historic functional interrelationships that existed between the various parts of the site and its buildings have been considered.



Fig 3: Character Areas

SUMMARY OF SIGNIFICANCE

In brief the heritage significance the site holds can be summarised as follows:

- The architecture and design of buildings and other structures is characterised by continued attempts to innovate and refine;
- High historic integrity with a significant number of surviving buildings and structures. In particular the alignment of the perimeter track survives from its 1939 construction.
- Interrelationships as planned groups helps to explain how the site operated and the interdependence between buildings and spaces;
- The layout and routes connecting surviving structures, are key to our understanding the military logic that underpinned the base's development;
- It is a 'site of memory' evoking particular emotive and sentimental meanings and serving as spatial coordinates of identity, helping people to recall, recognise and localise their memories;
- Certain purpose- built structures within the site also provide a focus of commemoration and remembrance, for example the watch tower;
- The airbase evidences each period of airfield design;
- Its historic integrity though has been eroded by the loss of the panhandle areas, evidencing later phases of change;
- The spatial relationship within and between the core areas (Technical Site, Domestic Site, Married Quarters and Flying Field) with views across the flying field to the open countryside beyond;
- It is the most complete airbase to have survived from the pre- 1934 period without modification or adaptation;
- The different parts are unified by military purpose – a historically designed interdependence;
- The art and design of dispersal underpins the layout of buildings;
- There is a strong functional relationship between the siting of buildings and between the flying field and the structures that sit adjacent to it;
- The watch tower design and siting evidence its important functional role;

- The openness of the flying field (defined by the perimeter track);

SUMMARY OF IMPACT

The proposed development subject to this application (the 'FAST buildings') will preserve the significance of the heritage assets (listed buildings, scheduled monuments, conservation area, and wider flying field) as follows:

- Understanding and experience of the unifying military purpose to the various parts of the airfield as it presently survives will be preserved and enhanced;
- The principle of dispersal that underpins the layout of buildings will be preserved. Indeed, the proposals extend the principle of dispersal by colonising the peripheral areas rather than intensifying development within the Technical Site;
- The proposed new development will exhibit innovation and excellence in design inception and built form, to ensure that they do not undermine the identified architectural and historic qualities the site and its individual buildings possess;
- The layout of the airfield and the routes to the various parts will be preserved. The alignment of the perimeter track, an important component to understanding how the airbase operated, will be preserved and will continue to mark the limits of the flying field;
- The spatial relationship between existing buildings on the technical site will be preserved;
- New buildings will be introduced into a peripheral area, preserving the openness of the flying field, utilising an area which lies outside the perimeter track with a setting that has already undergone change (e.g. road realignment, introduction and loss of panhandle areas);
- The significance and setting of the key surviving military

buildings – in particular the hangars and the watch tower, will be preserved;

- The spatial relationship between the core areas will remain. Understanding of the design principles that govern the development of the airfield will remain unaffected;
- What remains of the airfield's historic rural context will be preserved;
- The views across the site, in as much as they may hold any aesthetic value are a modern construct. The importance of the views in explaining the functional aspects of the site's layout will be preserved. Public views from the adjoining Skimmingdish Lane are limited and do not perform any role in the history of the site.

This new development, as well as preserving the site's significance, will also introduce new experiences consistent with the history of engineering and innovation.

- The powerful stories associated with the memories the buildings and site embody will remain. This presents the opportunity for the new development to create new experiences and new memories rooted in the site's history of innovation and experiment;
- The evidence associated with airfield design and the special interest RAF Bicester holds for its grass runways, pre-war design and layout will be preserved. New development will change how we experience the airfield. There is the potential for the changes to add to our experience and understanding of the place;
- Historically experienced from a vertical perspective, the airfield is now understood from ground observation with the opportunity to be given a new perspective and meaning.

In summarising the nature and extent of the impacts the report

concludes that the development will preserve the significance of affected designated heritage assets. In that the proposals will involve new development on land that previously formed an undeveloped part of the airfield, with access out to panhandle areas, there will be some harm to the setting of the designated heritage assets. This harm will be less than substantial and has been minimised by design and landscaping. As explained in the planning statement (Edgars) it is considered that there are compensatory public benefits to outweigh the harm.

PURPOSE OF THIS DOCUMENT

This report examines the historic evidence of the site, and assesses its heritage significance, to inform an assessment of the impact of the proposed development at the south part of the airfield beyond the perimeter track. National Planning Policy and advice and Local Planning Policy provide the methodology for assessing the nature of any impacts (benign, harmful or positive). This establishes a framework for determining how any harm can be minimised and the terms within which any residual harm can be accepted. This is set out to ensure that it is clear to all that the Government's objective for the historic environment is understood. This ensures the ensuing discussion in the report about impacts is fair and balanced in its approach, following good practice as advocated by Historic England.

Historic England reminds us that it is not the scale or quantum of development that needs to be assessed but the impact on the site's heritage significance (including the contribution the setting makes to that significance). This is confirmed in the Planning Practice Guidance.

Whilst there may be landscape considerations to take into account, any impact on landscape character will not be covered in this report, unless those impacts relate to any heritage values the site holds. It is important to read this report in conjunction with the Landscape Visual Impact Assessment (Anthony Stiff Associates 2019).

PART A - MILITARY AIRFIELDS & RAF BICESTER

BOMBER AIRFIELDS: A BRIEF ACCOUNT OF THEIR DEVELOPMENT



Fig 4: WW1 British army recruiting poster c1915 showing a Zeppelin looming over St Paul's Cathedral. The Zeppelin was a motor driven airship widely used by the German Imperial Navy from c1915. Although these were rigid, highly flammable craft, they had relative success in campaigns against civilians in England where early air defences had been inadequate. Their greatest impact however would be psychological. Their use changed warfare, causing a shift from the 'gentlemanly rules' (where two opposing armies faced each other across a field), to bringing realities of war to civilian in the home front. This fear of death from above was used by the government to help the recruitment drive.



Fig 5: St Paul's Cathedral survives heavy bombing raid during the Blitz (29 December 1940)

Bomber bases emerged largely as a response to the events of the First World War and the destructive impact that had been witnessed of the German air raids campaigns of the period. The aeroplane, as a technology of war, had introduced a new military gaze whose clarity (in contrast to the 'hazy' perspective of trench warfare) had transformed the geography of conflict, revealing the

anatomy of the landscape with a new unnerving precision. The devastating effects of this new gaze on populations and built development would ultimately necessitate the military's complete reconceptualization of both and call for a new understanding of the territorial landscape and what it meant to protect it.

This new thinking in Britain would come in the form of Sir Hugh Trenchard's philosophy of Offensive Deterrence - a doctrine that envisaged fleets of self-defending bomber bases as the instruments believed most likely to ensure swift victory in the event of a future conflict. For Trenchard, bomber bases were to form a key part of the New Air Defence of Great Britain. His

ideas would see new airfields grouped geographically with stations initially trained to deter aggression from France whose rapid aerodrome development was emerging as key threat to the U.K by the early 1920s. Bomber stations were situated in the western areas (centred on Berkshire, Hampshire, Oxfordshire and Wiltshire) with fighter stations located mainly for defence around

London (in Cambridgeshire, Essex, Kent, Middlesex, Surrey and Sussex).

EARLY DEVELOPMENT 1923-4

Once sited, bases continued to develop in line with Trenchard's thoughts as well as in response to emerging aircraft technologies and evolving local and world events.

The early expansion of the RAF often saw the introduction of completely new layouts and ranges of permanent buildings replacing many of the temporary WWI structures. New or re-developed airfields were, in contrast to the linear layout of former WWI bases, also now arranged according to Trenchard's dispersal principles.

EXPANSION PERIOD 1934-39

By 1933 Germany had re-emerged as a new threat and some reorientation of bases was required. Impending conflict also necessitated further expansion of the RAF and by November of 1935 then Prime Minister Baldwin had authorized rearmament plans. This second expansion phase would lead to a large-scale rebuilding programme.

The new inter-war airfields "were characterised by their distinctive and comfortable neo-Georgian headquarters buildings, messes and married quarters." Elevation treatments often varied from airfield to airfield, "offering a discreet mixture of neo-Georgian, Art-Deco and utilitarian styling." All structures were "built to a high standard finish using brick, stone and roofing materials chosen to blend as harmoniously as possible with the hues of the surrounding countryside." These were generally laid out to a roughly circular arrangement with technical buildings usually located alongside and to the rear of hangars. Bomber airfields in particular, due to the large aircraft they operated, often needed larger hangars and more technical accommodation.



Fig 6: Aircraft were popularized during the First World War to help armies with reconnaissance and aerial bombing. These raids involved throwing bombs over the side of the aeroplane by either the pilot or co-pilot. By the outbreak of the Second World War, new tactics and technologies would enable crews to find their targets with greater precision.



Fig 7: View looking east through the centre of the Technical Site'

WWII DEVELOPMENT 1939-1945

With the outbreak of war, airfield development and expansion needed to respond to rapid technological innovations (in aircraft and weaponry) as well as to an ever evolving political/military landscape. This response was not just in the form of built development but also in the introduction of new organisational structures. As bases acquired new functions to meet wartime demands, new systems had to be developed, not only to manage the bases themselves, but to coordinate the entire war effort – from the dispersal of populations and assets to the distribution of supplies among others.

Key to these new systems were those centred around the management of time. Speed and efficiency were considered particularly central to winning the war effort. New or expanded wartime bases were thus largely characterised by the introduction or modification of their built and layout features in ways that helped maximise the efficiency of their processes or functions. “The RAF carried out 59 different functions on stations” all of which had to be incorporated in standard designs on 575 new stations and on 210 older stations that had to be altered.

Efficiencies were achieved through a number of designed interventions. Inter-war stations saw the significant internal re-design of numerous buildings in a bid to improve their administrative efficiency. Time and monetary savings were also sought in the early construction stages of new wartime buildings through the selection of materials - with particular emphasis being placed on those that enabled speedy construction. The inter-war Expansion Period buildings, often of brick construction, had proved costly and slow creations. The evolving demands of war now called for more temporary and rapidly erected structures. These, such as the ubiquitous Nissen Huts, were often of prefabricated materials.



Fig 8: British troops erecting Nissen Huts during WW1. The huts would become quite ubiquitous during the Second World War due to their easy of construction. ©IWM

Further economies were achieved through the design process itself. The outbreak of war presented the Works Directorate with an opportunity to design and construct comprehensive range of specialist buildings of considered uniformity. Building plans were prepared around standard type designs so that buildings of the same design could be erected at many stations, with only minor modifications being required to suit local conditions.

ROUTES, RUNWAYS & 'THE WAR PROCESS'

Of particular significance to these war time efficiency measures were the various airfield routes. Wartime airfields witnessed the

addition of lengthy new runways and tracks (as well other hidden service 'routes' for electricity, drainage and water) all of which were designed to reduce the obstacles presented by the often-extensive distances existing across airfield areas.

The latter distances, created as consequence of the dispersal policy – which necessitated the segregation of airfield zones for defensive reasons – along with the general wartime need to expand bases to accommodate new peripheral areas - sometimes of entire separate fields - all placed certain time pressures on bases. New routes connecting these areas to the



Fig 9: Watch Tower at RAF Bicester. The base stands out in its continued use of brick - with the latter material used even in the construction of early wartime additions such as the Bomb stores. This is thought to have been driven by recommendations made the Royal Fine Art Commission with the aim of maintaining the 'aesthetic coherence' of the base.

activities of the technical site were thus vital to overall airfield efficiency.

Early foundations had already been laid through Trenchard's trident layout which saw buildings organised along the various axis' according to their associated functions. These ideas were now expanded to incorporate the introduction of new 'specialist' buildings and airfield peripheral areas such as the bomb stores- usually dispersed across greater distances than those of the early RAF expansion phase.

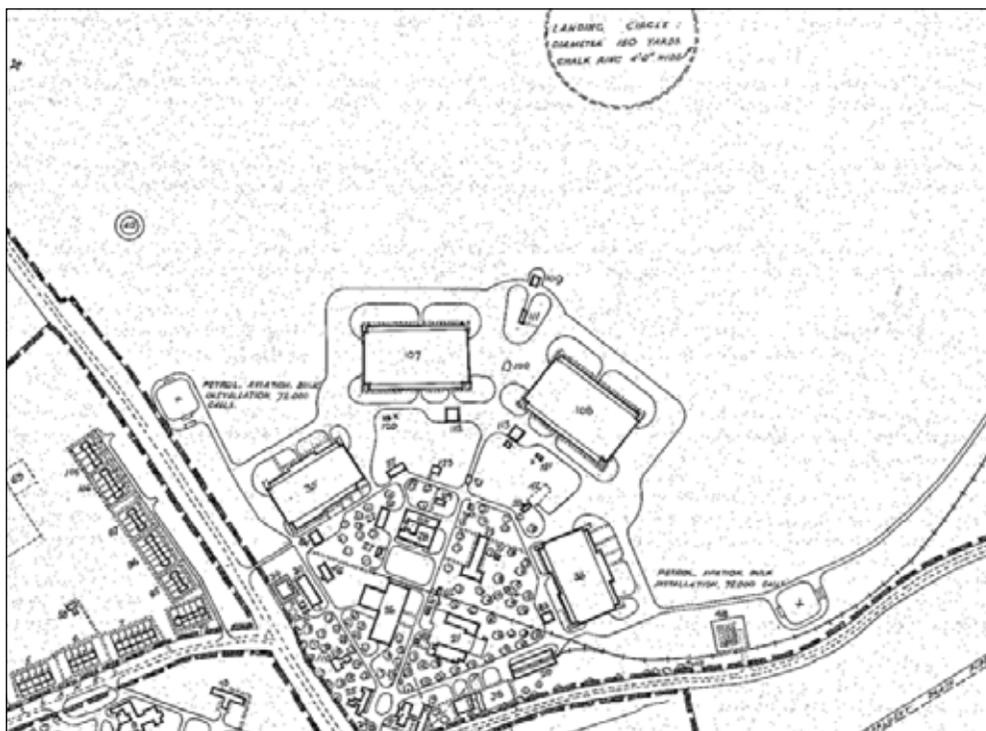


Fig 10: Trident Plan

Runway, taxi-track and hardstand development was also driven by the technological revolution in aircraft. While the legacy of the First World War had been the grass fields, technological advancements ultimately came to necessitate new types of aircraft facilities. Bi planes, capable of taking off grass strips in almost all weathers, soon gave way to much faster, more heavily armed monoplanes. The Hawker Hurricane entered production in 1937, followed shortly after by the Supermarine Spitfire and later by the introduction of the significantly larger the four-engine Short Stirling in 1939.

These heavier aircraft required longer runways, ideally of concrete. "A frantic campaign for runway construction began in 1939." This entailed the introduction of a "triangular three-runway system...generally favoured for the majority of the RAF's airfields during World War 2, particularly those of Bomber command." More land was often required to lengthen the main runway, usually oriented along a NE/SW axis to take advantage of the prevailing wind. "From December 1940, all new bomber airfields in the UK were to be constructed with one paved main runway of 1,400yd and two subsidiaries of 1,100yd in length. By



Fig 11: View of section of the Perimeter Track at RAF Bicester. The track was tarmacked but with an asphalt finish to help camouflage the area

1942 the requirements had changed still further" extending the main runway to 2000yds. By the close of the war however, there were doubts whether the three-runway layout was necessary at all on heavy bomber stations since these subsidiary runways were in fact rarely used. Further advancements in aircraft technology would ultimately make the remaining two subsidiaries superfluous.

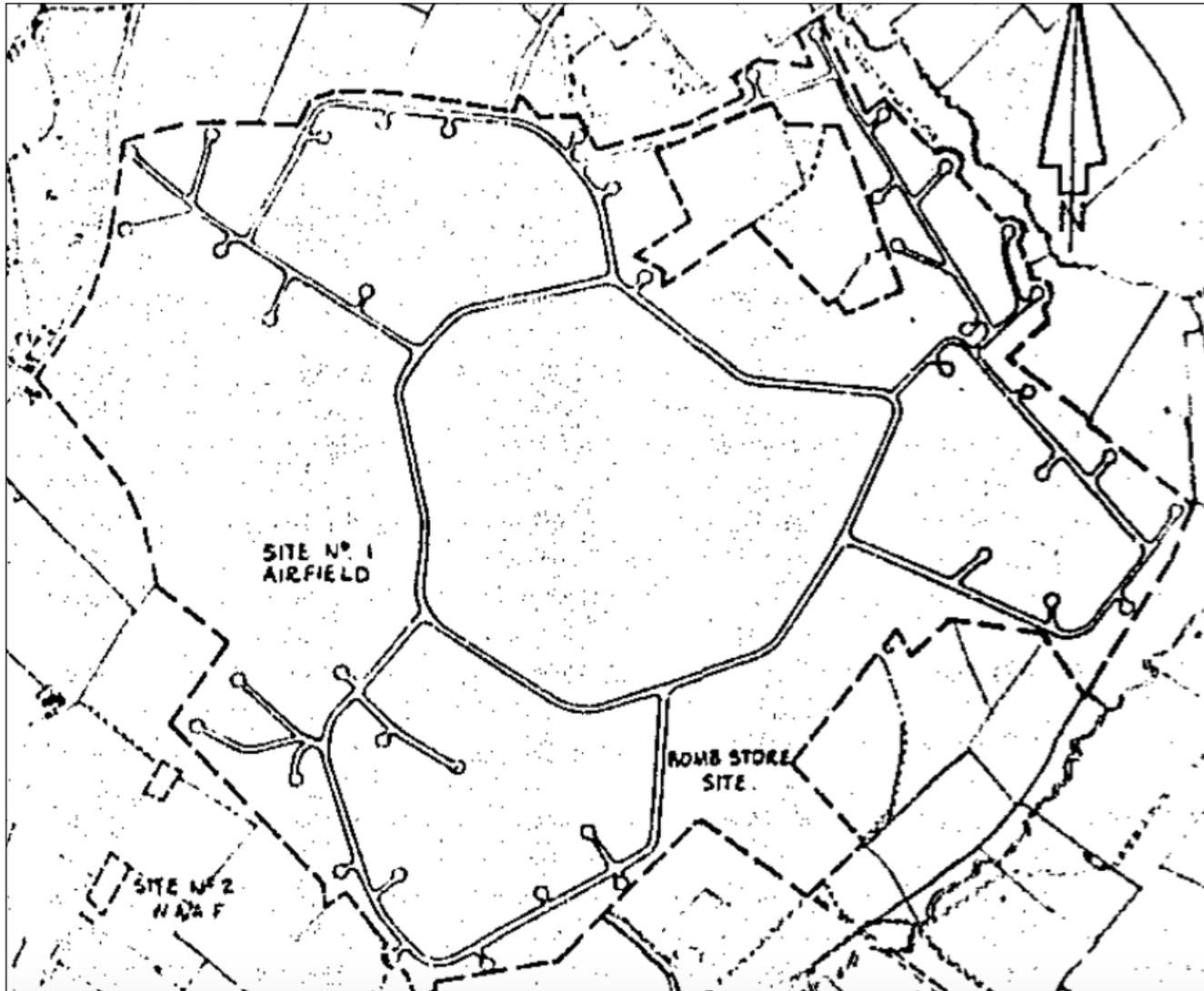


Fig 12: Section of 1945 RAF Plan showing extensive dispersal system at Bicester with marshalling areas sited at various irregular points off the perimeter track.

PERIMETER TRACKS & AIRCRAFT DISPERSAL AREAS.

By 1940 runways were normally connected by a perimeter taxi track around which were erected disposal pens- revetment like structures of brick and earth (with air raid shelters within) in which aircraft were parked ready for take-off and protected from all but a direct bomb blast." The track had various shapes and sizes of aircraft dispersal – with the more common dispersal types being the 'loop' or 'spectacle,' 'D shape' and 'frying pan.' The latter was comprised of 150 ft diameter hard standings "approached by an access track and sited irregularly around the airfield boundary."

The new dispersal pan system allowed squadron aircraft to be scattered around an airfield perimeter - with aircraft only being returned to the central maintenance area for major engineering and repair work. By 1942 however, this system was no longer workable. Increased aircraft numbers meant that 'frying pan' areas were clogged up. This led to the introduction of the 'spectacle' type of hard standing, sited immediately off the perimeter track. The latter "became the standard dispersal and marshalling areas on bomber stations."

BOMB STORES & DEFENSIVE STRUCTURES

Most bomb store areas were introduced on airfields following the collapse of the Geneva convention - as part of the preparations for the anticipated conflict. They were designed to store various bomb related equipment from high explosive, incendiary and fused bombs to tall units, small bomb containers, bomb components (such as detonators and delay pistols), and small-arms ammunition. These areas, in line with dispersal principles, were always located some distance from the main Technical Site. Their history of development can be summarised in four distinct phases; WWI; expansion period; early wartime; and late wartime.

WWI BOMB STORES were semi sunken buildings measuring 40ft by 14ft 6. These early designs were characterised by 8 ft high reinforced concrete walls, the lower 6ft of which was below ground level with the upper 2 ft hidden by an earth bank. The

latter supported a roof consisting of standard timber trusses with purlins clad with asbestos sheeting and a central steel exhaust vent. Bombs were loaded on to a wooden sledge mounted on runners which was then pushed towards the entrance and down a slope to the door where the bombs were offloaded and stored.

EXPANSION PERIOD BOMB STORES were of a classical symmetrical layout and comprised of "two sets of six detached brick- and concrete HE store buildings (3054/36) arranged back to back in two rows of three." These were protected by traversed blast walls sited between each store and round the edge of the group. "Each store was fitted with a high-level gantry, complete with block and tackle to lift bombs in and out of the building, and three sets of double steel doors."

Expansion period bomb store areas also comprised of a number of other buildings including twin or triple-compartment incendiary and pyrotechnic stores. These, as Francis (1996: 56) has observed, were built of rendered brick with felt-covered flat concrete roofs and had compartmentalised internal layouts with up to five shelves and two air vents.

Other structures at this time also included up to three fusing-point buildings (two for heavy bombs and one for small bombs). These were arched sheds of curved RSJ and corrugated iron construction, covered with earth and turf. "There was also a facility for the temporary storage of fused and ready-use weapons, consisting normally of four open compartments all fitted with lifting gantries."

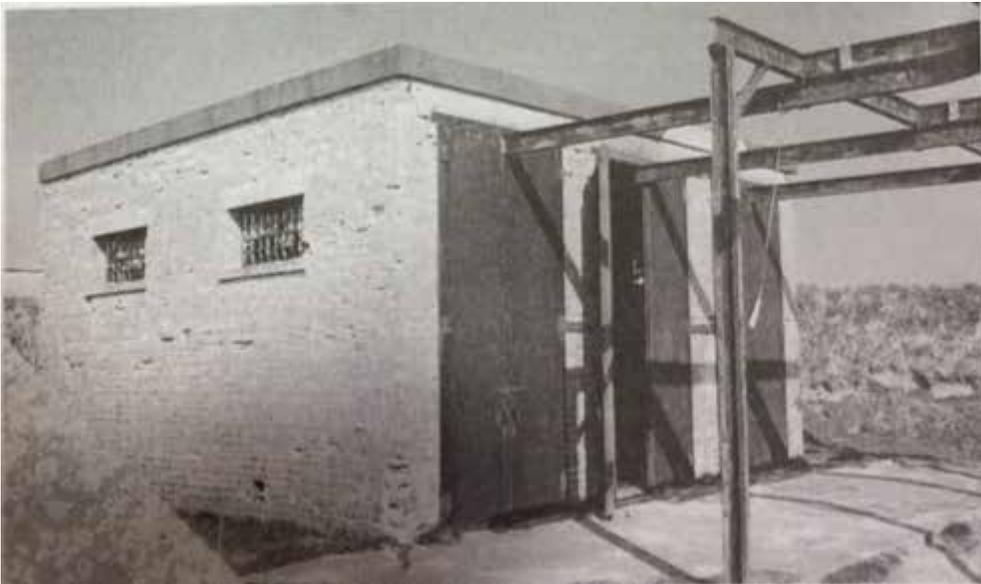


Fig 13: Expansion Period High Explosive Bomb Store- drawing number 3054/36 - also found at the former RAF Bicester (Francis 1996: 41)



Fig 14: Example of a 'Ready Use Pyrotechnic Store at Ingham c1983 (Francis 1996: 53)



Fig 15: Bomb store area at RAF Wick. Showing the earth traverse walls and the surviving steel frame structure for the bomb hoisting cranes (Francis 1996: 42)

EARLY WARTIME BOMB STORES adopted a simpler design (c.f. drawing 5416/40). New stations built during the first two years of the war had detached 3 ft square open stores protected by traverses, each capable of storing up to 24 tons of HE Bombs. These were stored around the edge of the structure so that cranes and loading vehicles could enter.

LATE WARTIME BOMB STORES had a completely redesigned plan with the aim of the new stores being to increase handling efficiency. The new design (drawing no 3164/42) “consisted of up to four open compartments arranged side by side, each protected by traverses and with an access road for lorries at one end and another for bomb trolleys at the other end. The compartments were built with a slight slope so that the ‘upper’ lorry road could be used to fill the dump, gravity being used to position the bombs. The ‘lower’ trolley road was used to empty it by means of a simple lifting device.”

A further provision in later stations was the “drive through 36 ft length Nissen hut fusing points, located between the bomb dump and the airfield. Incendiary bombs were stored in a number of ways. One method known as Type C 1932/43 was an open storage area with a U-shaped traverse wall; another was Type B on the same drawing which consisted of two temporary brick buildings, built side by side, separated by a traverse wall or Nissen hut.”

The activities of the bomb stores area ultimately communicated with those of station armoury at the main Technical Site. Station armourers at the Bomb Stores area had the task of selecting the appropriate bombs and fusing them. These were then loaded onto bomb trolleys which were driven by MT staff around the

perimeter track to the squadron armourers waiting at the aircraft dispersal area. The latter armourers would then winch the bombs and their carriers into aircraft – calculating the placement of each bomb so as to balance out the aircraft.



Fig 16: No. 49 Squadron RAF at Scampton, Lincolnshire C 1940. Armourers fitting fuses to 250in GP bombs on their trolleys before loading them into the Handley Page Mark I. (© Imperial War museum)

DEFENSIVE STRUCTURES

The construction of bomb stores often correlated with that of airfield defence structures as a response to the ongoing demands of war. The latter structures constituted a significant aspect of Britain's Second World War anti-invasion preparations. They were part of a large-scale response to the threat of a German armed forces invasion and were strategically located along the airfield peripheral areas and as protective rings around 'high value' buildings such as hangars. Their specific siting was usually determined by local commanders who were further instrumental in their design and material construction – a fact that often resulted in structures of some considerable improvisation and innovation. Their particular frequency on an airfield usually reflected its overall significance within the wider defence matrix.

PILLBOXES were given the highest priority in airfield defence and are today part of the few remaining examples of the British anti-invasion operations of the early war years. They were usually erected in groups with interlocking fields of fire and were intended to protect "airfields against commando-style raids by German paratroops or marine units." Their purpose was to slow down enemy progress in the event of invasion, containing them within airfield boundaries until further reinforcements arrived. Their significance had been realised earlier during the RAF expansion period (c1927) by military strategists such as General Ironside who considered them a key defensive strategy against invading enemy tanks, observing that pillbox defended areas were;

"difficult to locate and reconnoitre from the air" making them "real stumbling blocks to the enemy seeking for great mobility and attacks against flanks and rear."

These defensive structures would come in numerous variants and local designs only a few of which have been discussed here (a more comprehensive study of Pillbox typology has been outlined by the Pillbox Study Group). Most basic pillbox structures from the 1940s onwards were designed by the directorate of Fortifications and Works to be easily constructed by soldiers or local labourers at identified defensive positions. Others were the work of a number of private companies contracted by the military who built defensive structures to own designs.

THE RETRACTABLE PILLBOX or Pickett-Hamilton Fort was designed by Francis Norman Pickett and Donald St Aubyn Hamilton – an engineer and architect respectively – and adopted by the Air Ministry as an innovative solution to the defence of open spaces. Unlike conventional defences, the structure was intended to be inconspicuous when not in use thereby limiting

obstacles to flying traffic and enabling normal airfield operations to continue.

Three of these were generally installed on the landing areas of grass airfields. Their construction was formed from two large-diameter concrete pipes - one sliding inside the other. The top of the inner pipe was flush with the grass surface when the pillbox was in the closed position. The inner pipe could then be raised by hydraulic means when required and two defenders could fire through the loopholes cut in the pipe (Brice 1984:168). The concealed nature of the pillbox in its closed position “allowed for an element of surprise particularly in the event of a landing of enemy parachute or airborne troops.”

MUSHROOM PILLBOXES (thus colloquially termed due to their ‘mushroom like’ shape) or the FC Construction Type as otherwise

referred, were, like the latter Pickett-Hamilton type, also largely confined to airfields - being predominantly found on expansion period airfields in the eastern counties. They were intended to defend airfield boundaries from ground attack and offered all round visibility and field of fire.

The structures were characterised by a ‘parasol’ roof supported on a cruciform wall which stood in a sunken circular pit. Roofs were predominantly domed although flat variants – arguably a ‘quirk’ of the particularly contractor’s poring technique rather than any military consideration – can also be found. All FC Construction company pillboxes with the 360-degree embrasure had a tabular rail around the interior below the embrasure supporting a gun mount. Once fixed, the gun could then be readily moved around the pillbox and positioned as required.



Fig 17: Retractable ‘Pickett-Hamilton’ pillbox in closed position on a grass airfield. The structure was designed to optimise the element of surprise in the event of an invasion. Speed was therefore of the essence. The initial lifting mechanism used to raise the inner cylinder - originally consisting of an 8-ton aeroplane jack - proved rather slow (taking 3 minutes to open). It was later replaced with a pneumatic ram operated with compressed air that allowed for the structure to be raised more quickly.



Fig 18: Retractable ‘Pickett-Hamilton’ pillbox fully raised. Once open the pillbox could be operated by two men. Such defences were largely constructed during the ‘invasion crisis of the early war years (1940-1941).



Fig 19: Mushroom Type Pillbox at RAF Bicester



Fig 20: Disguised Pillbox (Mallory & Ottar 1973: 133)

The pillboxes were often found mixed with other defensive structure types – a curiosity the Pillbox Study Group observes remains unresolved. At Oakington for instance we find 6 FC type and 6 other types. While at Bicester the mushroom pillboxes are found in conjunction with seagull trenches and Type-27 pillboxes. A similar configuration exists at the former RAF Hinton-In-The-Hedges where we find two mushroom pillboxes and 3 seagull trenches sited in close proximity.

TYPE 27 PILLBOXES or **FW3** defences were one of six designs (designated Type 22 to 27) that were issued by the directorate of Fortifications and Works between June and July of 1940 equipped with rifle and machine gun emplacements for the protection of airfields from enemy troop landing and parachuting.

They were basic prefabricated structures with embrasures available precast from the factory produced to standard design - although there was some local improvisation to adapt structures to local conditions and needs.

The degree of protection varied. The Type 27, the largest of the FW3 designs and now more uncommonly found, were octagonal structures with 36inch thick walls and embrasures suitable for rifles or light machine guns. They also comprised of a central well open to the sky to allow for its flexible use as a light anti-aircraft position.

TURRETS, including the Alan William steel turret and single-man Tett turret, were other additional one-man and two-man defence positions on airfields. The Allan William turret was positioned on the airfield boundary and consisted of curved steel plates welded into a dome-shape and mounted on a curved rail to provide a 360-degree field of fire. It was entered from a small tunnel on the aerodrome side, which was provided with a sheet steel roof. Inside were a set of handlebars for turning the turret to face the desired direction.”

All pillboxes would have been camouflaged – with detailed instructions regarding their concealment being offered by the military through commissioned publications such as the Home Guard Manual of Camouflage. Those not designed to be retractable were dug into the ground to provide the lowest possible profile while others had raised soil mounds bounding them on the sides and covering the roof. Those not readily concealed in this manner were painted or covered with camouflage netting to break up their outline. Local materials were also key in helping structures blend within their surrounding context. In built up areas it was sometimes common to find pillboxes built into existing buildings while others were constructed to look like something else entirely.

RAF BICESTER

RAF Bicester is recognised (c.f. Historic England; Conservation Area Appraisal; scheduling document) as the best-preserved of the bomber stations that were constructed as part of Sir Hugh Trenchard's expansion of the RAF – to the extent that it retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force. Its history of development articulates how the base has adapted in response to evolving technological advancements and to events on the world stage – the latter of which have often corresponded with the airfield's changing functions.

A BRIEF HISTORY OF THE STATION

Bicester was initially established as a 3 squadron Training Depot Station c1918 for the preparation of pilots for service in front line units in France. It continued to function as such until its training role stopped, and the station was closed in March of 1920. Military flying resumed in 1928 following the re-development and extension of the site to form a 1 squadron bomber station. The latter was part of the Central Area of the Wessex bombing zone. This included stations such as Abingdon, Bircham Newton and Upper Heyford, all of which were developed and re-oriented in response to the re-emergence of Germany as a powerful military threat.

Many of the Royal Air Force's most advanced bombers of the time were stationed at Bicester prior to the Second World War and base was increased in size to cope with larger aircraft of the period including Sidestrand and Overstrand bombers. The site continued to function as a bomber station until the outbreak of the Second World War when its role changed once again to that of training. It continued in this role as an Operation Training Unit until October of 1944 – being one of two (including Upwood), principal medium wartime bomber training units in Britain.

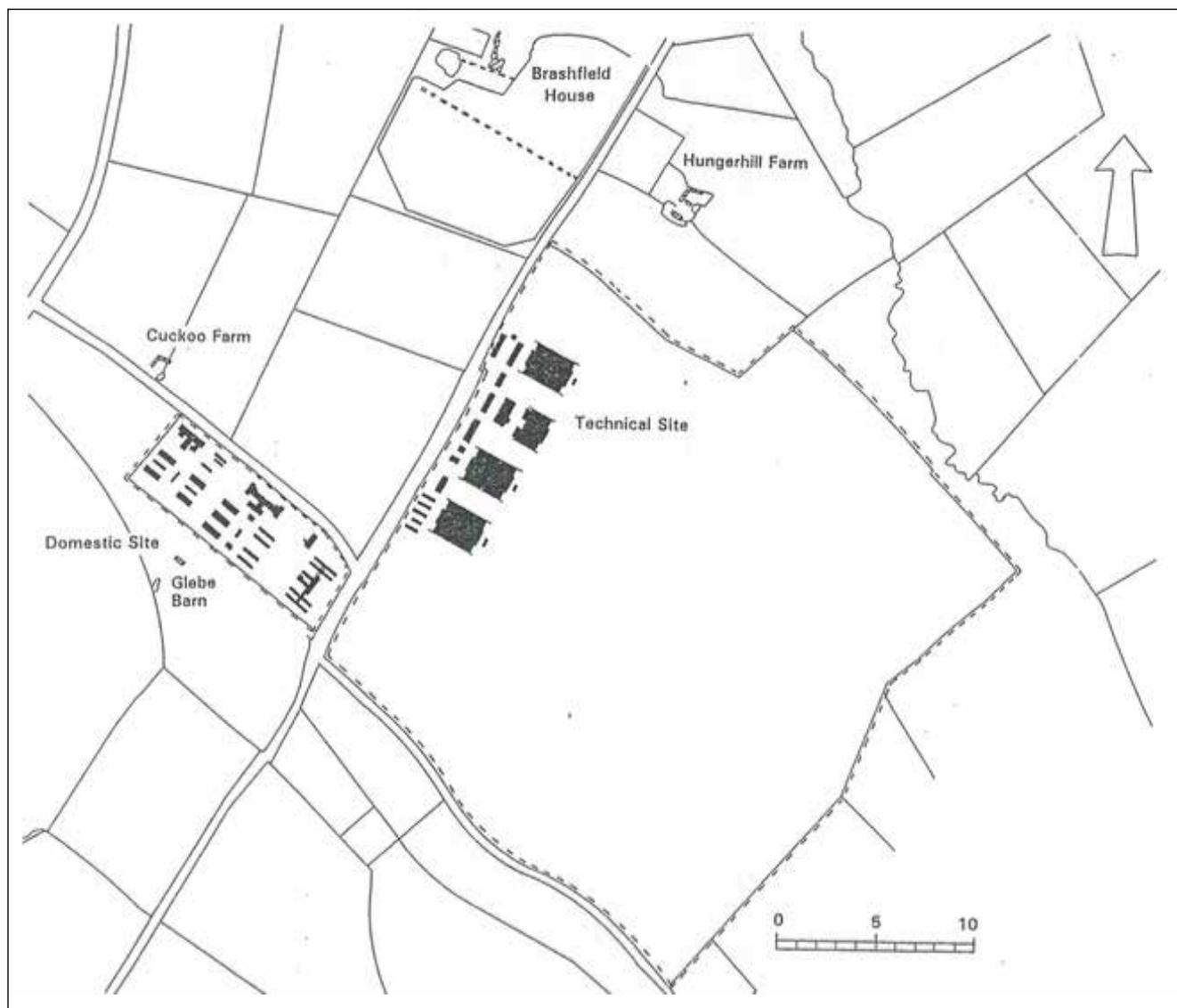


Fig 21: Bicester 1918. Plan showing layout and boundaries of the WW1 airfield (Francis 1996)

From 1943 however, the station had also acquired a new function as a Forward Equipment Unit and airfield was used to store vital equipment necessary for the invasion of north-west Europe. In the four years following the war (until 1949), Bicester functioned as a sub-site for a large Maintenance Unit at Milton. The base was also home to a number of other units including the Parachute Packing Service and the 40 Group Maintenance Command. In 1953 the base became home to 71 Maintenance Unit - established at the site as the principal aircraft salvage unit for the south of England.

Regular flying resumed in the early 1960s. By the mid 1970s however, a drive to economise had much reduced the strength of the RAF and Bicester was ultimately closed down in March OF 1976 when the station was then handed over to the Army. It was reopened on 22nd of November 1978 as a home to the United States Airforce in Europe (USAFE). The latter converted a number of technical buildings into their offices and a medical storage facility. The domestic site was converted into a USAFE Emergency Military Hospital. The latter closed down in 1994 with the closure of Upper Heyford. "Post-war redevelopment and encroachment by quarrying has removed most of Second World extensions to the flying field."

THE TECHNICAL SITE: A BRIEF ACCOUNT OF IT'S DEVELOPMENT, CHARACTER & LAYOUT

Built development has generally adapted to meet the changing functions of the base and to reflect the evolving military philosophies and strategic imperatives. Bicester's fabric and layout retains its identifiable early RAF expansion character - planned around dispersal principles.

WWI LAYOUT: The earliest (1918) plan of Bicester was typical of the newly established Training Depot Stations of the time in both its layout and quantity of buildings. The aerodrome covered an area of 180 acres with a landing area of 1,150yards by 1,000 yards. 30 acres were occupied by station buildings which were arranged in a linear pattern divided into two areas; the technical site (situated between Buckingham Road and the landing ground), and a domestic sited located along Skimmingdish Lane.

EARLY EXPANSION (1924-1927): The WWI camp was demolished in 1920. A new bomber airfield was planned in 1925 in line with changes in the defensive structure and the implementation of Sir Hugh Trenchard's new Air Defence of Great Britain Scheme. Under the latter scheme, Bicester and Upper Heyford were to be new permanent 3 squadron bomber airfields. Unlike Upper Heyford however, political fluctuations within the RAF, coupled with other financial constraints, would see planned building works at Bicester stalled and only 2 of the planned 6 hangars were eventually built. The completed layout however was designed with thoughts of future expansion in mind and space

was left to allow for the construction of 4 more hangars should they be required in the future.

The station was reopened in January of 1928 - the 10th base to be completed in that month. The needs of the new station had called for a different plan from that of the earlier aerodrome. To begin with, a significantly larger base was required. A new Air Ministry boundary was established with the acquisition of further land to the north and south (C1926/7). Hungerhill Farm was acquired to the north of the site. "Land was also required for an Air Ministry Railway which was used to bring in coal and other supplies." The aerodrome boundary was also extended slightly to the south "to give a maximum take-off run of 1,390 yards."



Fig 22: RAF Site Plan. Proposed development January 1926. Plan highlights the expanded airfield boundaries to the north and south



Fig 23: RAF Site Plan 1935 showing proposed bomb stores development to the south with the track linking the stores to the technical site not yet constructed. Not all proposed stores were ultimately built.

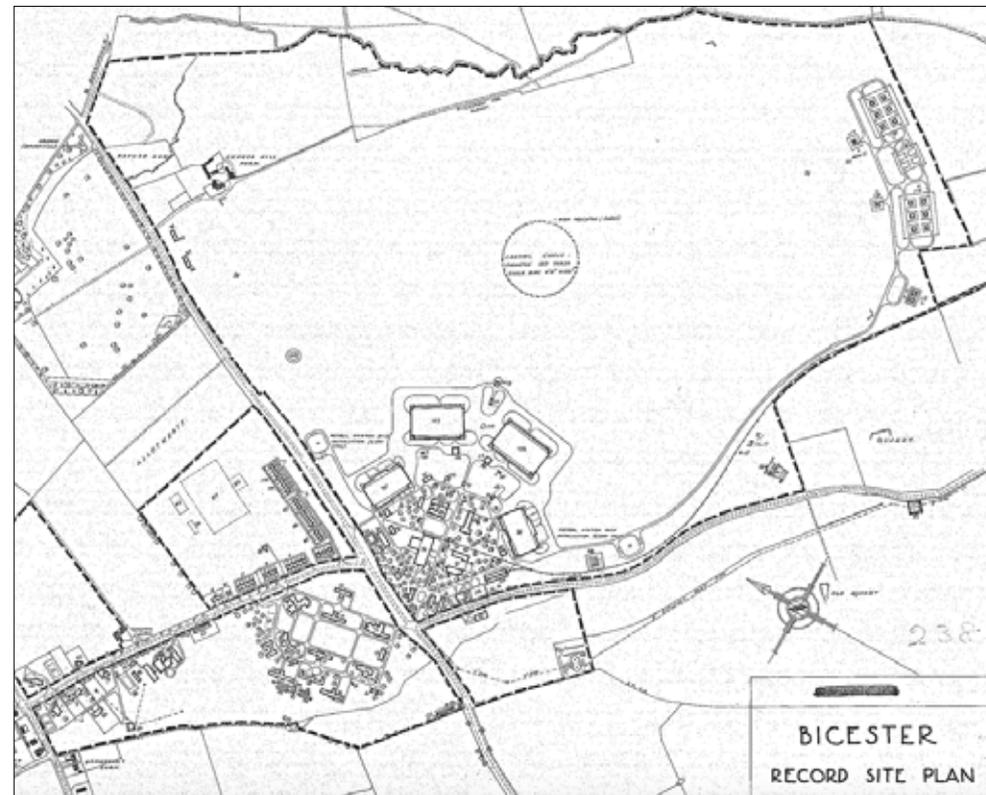


Fig 24: RAF Site Plan, Bicester 1939, showing newly constructed bomb stores with connecting road.

The station also included a number of newly introduced buildings types such as the Operation Block, Parachute Store and Watch Tower. Other buildings, such as the Engine Test House, Main Stores and workshops were larger in size than those that had previously existed.

EXPANSION PERIOD (1934-39): The rearmament plans of 1933 saw further expansion of the RAF. A number of schemes were proposed between 1935 and 1939 only 5 of which were passed by cabinet (A,C,F,L & M). The implementation of these schemes

would see further built development at Bicester.

Several buildings were constructed following the first contract under Scheme A. These included one Type E Barrack Block, MT Sheds, an Ambulance Garage and a Stand-By St House among others. A number of existing buildings such as the Station Offices and Power House were altered. The second contract (1936) under Scheme F saw the construction of two of the latest Type C hangars. 4 temporary wooden barrack huts with separate Latrine Blocks and Bath Houses were also erected. The latter structures

were demolished in early 1939 when the last two storey Type E block was built. Scheme L of April 1938 saw the completion of two hangar aprons and the addition of a number of new buildings including, more prominently, the Watch Office with Tower. Scheme M of November 1938 would see further contracts placed for major building works to bring the station in line with other new expansion era airfields. These new buildings included the Link Trainer, FFMT Shed among others.

SITE ARCHITECTURE

While the general layout and siting of the buildings at Bicester epitomize the principals that underpinned the planning of military airfields as a whole during the second half of the 20th century, an assessment of the individual buildings on the site reveals a representative picture of the era in which they were constructed.

Although it was largely the case that building methods and materials took primacy over aesthetic considerations in the development of airfield structures, with both aspects being particularly studied for their predictable behaviours, aesthetic concerns did not disappear altogether.

A sense that form needed to align with the function of a building prevailed with prominent structures such as the Guard House and Station headquarters being built in neo-Georgian styles that were thought commensurate with the functional activities of the buildings and more importantly, with the status of their high-ranking inhabitants. An overly austere architectural style, it was believed, would not have had a reassuring effect on the public.

This neo-Georgian style- especially favoured during the first expansion period of the RAF - would ultimately come under heavy criticism for not only making the buildings 'too obvious' on the ground but, more importantly it appears, for their 'untutored and unconvincing' execution (Holder, 2016). The buildings, it was argued, were an architectural embarrassment on the international stage, particularly in comparison with the imposing classical military architecture of Italy. A solution had to be found and in November of 1931, Ramsay MacDonald, the then Prime Minister, would instruct the Royal Fine Arts Commission, in consultation with the Society for the Preservation of Rural England, to become involved in airfield design.

Leading architects of the time, including Sir Edwin Lutyens, Sir Reginald Blomfield, and Giles Gilbert Scott, were engaged as consultants. Blomfield was a particularly outspoken opponent of modern architecture, preferring a more traditional late Victorian vernacular, and Lutyens and Scott were strong advocates of the rationality, symmetry and order inherent in Neo-Georgian and

Classical styles.

The impact of these endeavors could be observed by the end of the 1930s. Airfield architecture became more adventurous. Styles began to particularly change with the appointment of P.M.Stratton to the Office of Works. Technical buildings such as hangars had always been more modern in design with smaller building displaying classical elements. Stratton now encouraged Art Deco characteristics, in the use of flat roofs, glazing details in windows and increased usage of horizontal shapes. A development best exemplified at Bicester by the Watch Tower. Sited beyond the central tip of the trident, its construction in reinforced concrete and use of metal Critall style windows epitomizes some of the key defining features of Modernism.

Although no particular architect can be attributed to the design of the various buildings at the RAF Bicester the site, the assemblage of buildings stands at the forefront of innovation and design and serves as a significant record of a tumultuous period in British history.⁶

THE GUARDHOUSE GV II

Dated 1926, the guardhouse is constructed of dark brick in Flemish bond (with some stretcher bond) and is characterised by a slate gambrel roof which sweeps down over a non-enclosed verandah to the front. The latter is supported by four chamfered concrete posts with broad impost blocks set to a shallow concrete platform. There are two doorways (one of which is blocked) leading from this central area with a further two located in the flat (concrete) roofed bays found on either end of the building. Centred over the verandah is a bell tower which would have housed the air raid siren.

Contained within the guardhouse's long rectangular plan were the guardroom and office along with some cells - the latter of which would have housed the individual(s) up on charge. Typically, Guard House cells had no door on the WC or shower, and were equipped with only a plank bed with a pillow board.

The building follows a neo-Georgian style, typical of British military and civic architecture of the time, that distinguishes it from the more utilitarian workshops and stores. As the first point of contact for the base, the structure needed to convey a sense of gravitas which was believed to be communicated by the Classical architectural style. The application of classic geometric principles, with their emphasis on order and rationalism, was seen as particularly appropriate to the activities of the Guardroom, which would have been used for the delegation of guard duties, control of road transport in and out of the station, checking in of visitors, among other tasks.

The style mirrors that of the Station Offices, emphasising the relationship between the two buildings and the parity of their status.

STATION OFFICES & HEADQUARTERS GV II

Also dating to 1926 the Station Offices building, as with the Guardhouse situated directly opposite, is one of the first examples of permanent designs for the RAF. The building is constructed of dark red brick in English bond with hipped asbestos-cement slate roofs.

It consists of a symmetrical, Classical floorplan, opening out from a central entrance. This symmetry is can also be observed in its elevations. Recession of the central section throws the sides forward to create wings. The rational order of the classical style – an architectural treatment also afforded to the Guardhouse – was in keeping with the building's key operational and administrative functions.

The Headquarters provided offices for the Commanding Officer (CO), engineer, clerks, accounts, administration, as well as lecture rooms and a library. It might possibly have also housed a meteorological office, wireless and telephone rooms. It later housed a camera obscura used in training to check that a pilot was able to maintain a straight course, ascertain wind speed and direction, and to simulate bombing.



Fig 25: The Guard house, prominently sited at the entrance of the site and built in a neo-Georgian style thought commensurate with the activities carried out with it and with the status of its occupants.



Fig 27: The Station Offices and Headquarters. Situated directly opposite the Guardhouse, the application of the neo-Georgian treatment to its design is also meant to symbolically emphasise the status of its occupants and serves as a strong visual marker of the relationship between the two buildings.



Fig 26: The Parachute Stores. The design of the building - featuring a high central area- is particularly informed by its function. The Stores at Bicester were a prototype, first seen here before being adopted in airfield sites elsewhere across the country.

PARACHUTE STORE GV II

Dating to 1926, this is a rectangular gabled structure of red, stretcher bond brickwork construction. As with the aforementioned buildings, its design too was closely allied with its intended function. From 1927, parachutes had become standard equipment for all aircrew, who had to be measured for their own personal chute.

The storage of this new equipment necessitated a particular type of structure. It needed to be one with a high enough central area to enable parachutes to be hung. It also called for a building of certain depth since the chutes needed to be laid out on long table during their monthly inspections. The designs also had to take into account issues of ventilation. Condensation caused major issues and stoves were needed to keep the space warm and dry.

The need to maintain minimum temperature of between 55-65 degree Fahrenheit meant that the design featured a lobby with an outer door that was to be closed before the inner door was opened in order to maintain constant conditions inside. The parachutes would be winched up to the ceiling on pulleys to dry without touching the floor, then lowered into trays to prevent them getting dirty. They would then be transferred to the tables for laying out, inspecting, and packing before the parachutes were finally stored on racks.



Fig 28: The Armoury and Lecture Room



Fig 29: The Main Stores

POWER HOUSE

The Power House is situated on the Western Avenue, opposite the former Parachute Store. The building once housed the power generator and pump house. It was used as the filming location for Alan Turing's code breaking machine in *The Imitation Game* (2014).

LUBRICANT STORE GV II

The store is a simple rectangular gabled structure comprised of two sections; a higher unit with a raised floor and external loading platform and a lower one with its floor at normal level. It was built for the storage of oil and other liquids. It is one of the original buildings, set close to an A Type hangar of the same period (Historic England: List Entry)

ARMOURY & LECTURE ROOMS GV II

The armoury and lecture rooms building was erected in 1926, with a cross-wing added in 1934. The long T-plan two-storey range, with tall casement windows, containing laboratory lecture rooms, offices, workshop and a library, continues as a one-storey flat-roofed unit with the armoury, ammunition testing bays and machine-gun stores.

MAIN STORES GV II

Also built in 1926, this one-storey building was used for general storage of items such as clothing and furniture. Raised loading bays eased loading onto railway carts for transport around the base.



Fig 30: Southern most Type A Hangars



Fig 31: Western most Type A Hangar



Fig 33: Northern most C Type Hangar



Fig 32: Southern most C Type Hangar

2 X 'A' TYPE HANGARS GV II

Designed in 1924, these four-storey structures were built to accommodate the De Havilland DH9A, the largest projected twin-engined bomber. 12 craft could be stored in each of the two hangars. Six 'A' Type hangars had been planned for the site, but only two were built, as a governmental review of Trenchard's proposals resulted in a cut in funding and the number of aircraft in a squadron being reduced from 18 to 12, necessitating less hangar space.

SECOND EXPANSION PERIOD, 1934 - 1939

RAF Bicester was further extended as part of Trenchard's 1934 Second Expansion Period in preparation for WWII. Building during this phase was largely carried out in red brick, to provide continuity with the existing structures, but also incorporated a more Modernist approach.

With the acquisition of land from Hungerhill Farm, the runway was extended to the south to give a longer take-off run, and the aerodrome was enlarged (see 1938 site map).

2 X 'C' TYPE HANGARS GV II

In 1936-37, two more four-storey hangars, this time in the 'C' Type design, were erected in order to provide more aircraft storage space. The steel structures were built with brick side walls, roof timber purlins, timber boarding, and asbestos slates. In 1938, new hangar aprons were added.



Fig 34: Fire Party House

LINK TRAINER BUILDING GV II

The Link Trainer, invented by Edwin Link in 1929, was a flight simulator that provided an inexpensive alternative to pilot training in a real aircraft.

FIRE PARTY HOUSE GV II

Built in 1938 to house the duty fire crew (who had previously been stationed in the Guardroom), the Fire Party House is constructed of dark brick in a Flemish bond pattern, with a garage front and a rest room to the rear. It follows the style set during the 1920s expansion, with timber sash windows and a hipped slate roof. This currently houses Historic Promotions events management.

WATCH OFFICE WITH TOWER GV II

Also built 1938, this structure (which today would be more commonly known as a Control Tower) is positioned on the edge of the airfield to provide it with the best views of the flying field, and is of a 'Fort' design. It's relatively late introduction to the station reflects the lack of importance the Air Ministry gave to the ability to control traffic within the flying zone. An office on the ground floor faces the aerodrome, with a rest area and toilet to the rear. A spiral staircase leads to the Watch Tower, and a ladder leads up to the roof where meteorological instruments would have been set up. Red brick walls provide consistency with the other buildings on the base, while the roof areas are constructed in concrete to provide greater protection against incendiary bombs and bomb fragmentation. This element is more in keeping



Fig 35: Watch Tower

with a utilitarian Modernist style, as are the typically Modernist metal Crittall style windows.

At the beginning of World War II, only the duty pilot would be stationed in the Tower, logging the planes as they took off and landed. As the sky grew busier, it became necessary to increase the number air traffic or operations ('Ops') personnel in the building. They were equipped with radios, and red and green Aldis lamps or flares. The duty pilot remained on the staff to offer technical advice.

In 1939, in preparation for the impending war, bomb stores, pillboxes, and a connecting road were built to the east of the technical site.

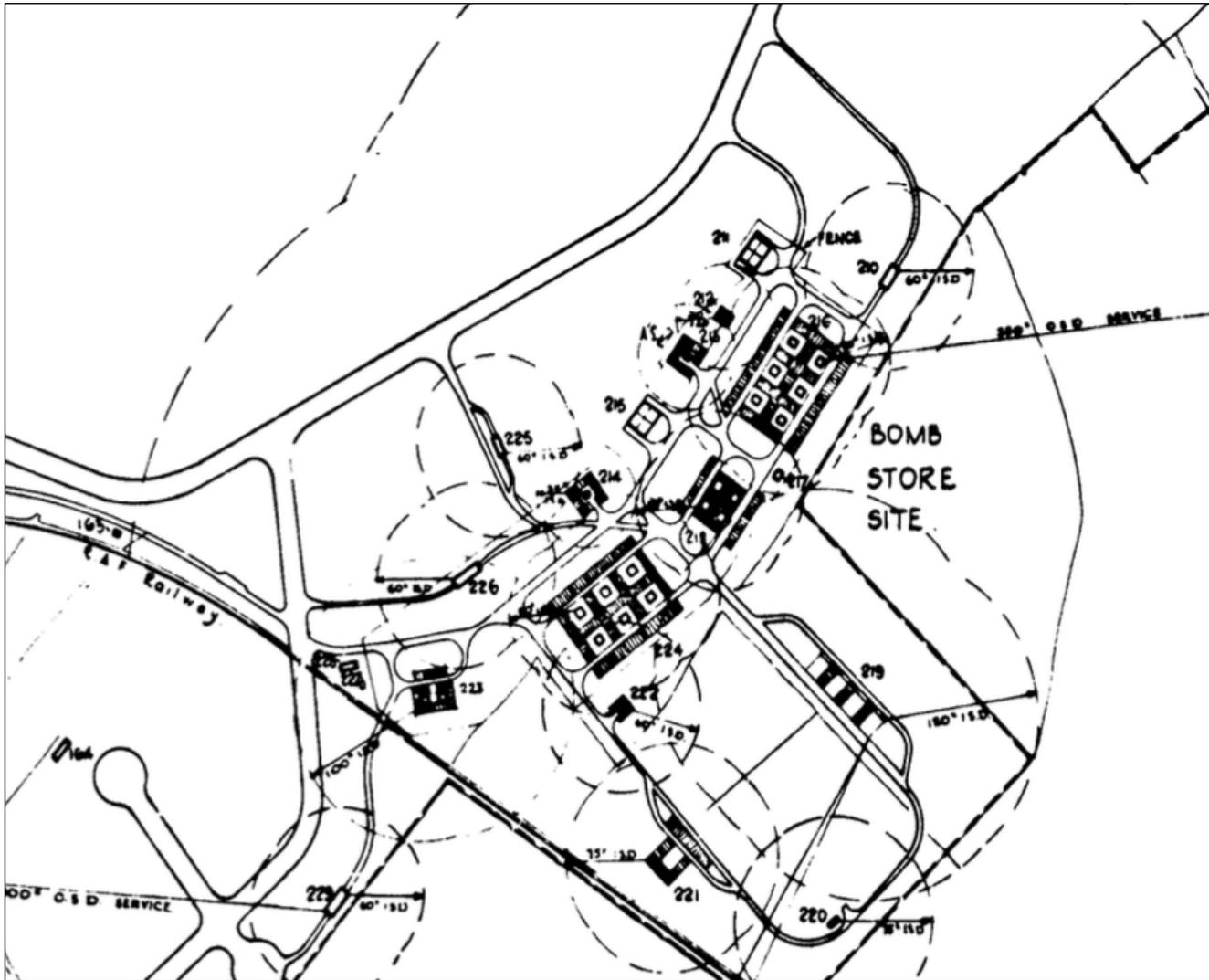


Fig 36: RAF Bicester Plan showing the expanded Bomb Store area (C1942). Now demolished

THE BOMB STORE BUILDINGS

The Bomb Stores were a response to the collapse of the Geneva disarmament talks and the subsequent necessary expansion of the RAF. They were originally among a key range of buildings planned under the first Expansion Period contract (Scheme A) in anticipation of a future war. Initial proposals were to build new Bomb Stores close to the south-east boundary. Their construction however did not start until 1938 (under Scheme L) – as war became imminent.

The completed Bomb Stores (c 1938-39) were constructed with a connecting road and were additionally served by a railway line. The Stores were further enlarged in 1942 although this extension has now been completely demolished. The surviving building group was one of three intended Squadron Bomb stores (only two of which were eventually completed). It includes a series of structures based around the High Explosives (HE) Bomb stores (building no. 224). “This consists of two rows of three back-to-back concrete buildings with surrounding banking and a gantry running along both the north and south ‘frontages’ to allow bombs to be lifted onto bomb carts.” All buildings were of flat, concrete roofs to counter the effects of incendiary bombs and to minimise the impact of a bomb blast.

While buildings in this area have been renumbered, structures were historically laid out to connect related functions in a way that helped maximise efficiency of the base. The bombs for instance would be taken to the Ultra Heavy Fusing Point Building (no. 226), a curve roofed corrugated steel and earth structure in which fuses, taken from the Component Stores (building no. 214), were added before the bombs were eventually loaded onto trolleys and conveyed to aircraft waiting in the dispersal areas (Individual buildings have been discussed further below).



Fig 37: Bomb stores sat within a degraded setting.

Small Arms Ammunition Stores: Building no 211 was built c 1940, originally as part of a set of two of large brick and concrete four-compartment stores. The four stores were built in pairs back-to-back and were protected brick traversed walls. Building 215 is now demolished. The remaining Store, building no. 211 (NGR: SP 6020 2424), has been fire damaged.

Component Stores: Building nos. 231 (NGR: SP 6015 2415) & 214 (NGR: SP 6007 3405) were usually sub-divided into two compartments – one for holding detonators and the other for storing fuses, exploders and delay pistols. Those at Bicester were built of permanent brick with a concrete roof surrounded by a heavy traversed earth bank.

Ammunition Store Group XII: Building no. 222 (NGR: SP 6010 2391), was a small brick and concrete structure, originally with steel doors (now missing), and brick protected by earth traversed blast walls.

Incendiary Bomb Stores: Building no.223 (NGR: SP 5997 2392). It was standard practice during the RAF's Expansion period "to provide a single, two compartment building on all operational bomber airfields." The store house at Bicester is of reinforced concrete with reinforced concrete traverse blast walls and earth bank. The area is fenced off as is typical on many airfield sites elsewhere.

Ultra Heavy Fusing Point: Building no. 210 (NGR: SP 6029 2420), 226 (NGR SP: 5999 2401) & 229 (NGR: SP 5989 2379) were 4 60ft long Fusing Point Buildings constructed in this area when the bomb sores group was enlarged in 1942. These structures "consisted of 10-bay, all steel buildings built of curved RSJs clad with ribbed steel sheeting" and were "completely covered with earth." They had corrugated iron doors (no longer present) at either end to "enable a tractor and bomb trolley train to enter (and leave) so that each trolley of bombs could be armed in turn. The bomb trolley train then made its way out to aircraft waiting on dispersal where squadron armourers loaded the bombs into the aircraft."

High Explosive Bomb Store: Building nos. 216 (NGR: SP 6022 2413) & 224 (NGR: SP 6009 2399) were introduced as a result of increased demand for bomb storage facilities on Expansion Period bomber stations. “Typically, two HE Bomb Store groups of six, 12 – ton traversed dumbs (total 144 tons) were provided for an operational bomber station. Brick and concrete store houses were provided, back-to-back, each building holding 12 tons of bombs. Hoisting facilities in the form of overhead cranes were provided but these soon became obsolete with the introduction of heavier bombs.” All four stores with earth traverses survive at Bicester.

Fused & Spare Bomb Store: Building no 218 (NGR: SP 6017 2405), is “a four-bay heavily traversed Fused and Spare Bomb Store consisting of four large bays for the open storage of bombs.”

DEFENSIVE STRUCTURES & PERIPHERAL AREAS

The construction of the bomb stores went hand in hand with that of many of the airfield’s defensive structures. The onset of the war saw the construction of a number of Pillboxes, Seagull Trenches and Air Raid Defended Shelters for the protection of the airfield. These structures were not given building numbers.

Air Raid Shelters: A number of Air Raid Shelters were dispersed around the technical site and peripheral airfield areas. There are two concrete earth covered Air Raid Shelters (behind the Station Armoury and Station Offices NGR: SP 5921 2438 & NGR: SP 5905 2438) ; An additional earth covered brick and concrete shelter (NGR: SP 5908 2438) was provided for personnel at the Station Offices; A further two (NGR SP 5917 2427 & NGR: SP 5919 2424) earth and turf covered Air Raid Shelters were positioned close to the hedge line for camouflage reasons. These were constructed of “pre-cast concrete ‘Stanton’ type arched-shaped sections bolted together to form a large shelter. A brick protected entrance was provided at one end, while an escape hatch was cast into the rear arched section.” Paul Francis (1996:24) has observed that this situation close to the hedge line was an interesting one and noted further that although these shelters were once common on RAF bases, they are

“now becoming increasingly rare.” There was one small brick and concrete Air Raid Shelter positioned close to the north fuel station. (NGR: SP 5919 2475)

Defended Air Raid Shelters: Known as *Vulnerable Point 429*, Bicester also included a “larger than average number of Pillboxes and Defended Air Raid Shelters....Each of the four hangars had two, Defended Air Raid Shelters with 12 loop- holes” – one positioned at either end of the hangar and looking towards the airfield. “Further protection was provided by an earth bank and camouflage was provided with a covering of earth turf.” These were either constructed of brick or concrete These structures were an important part of Bicester’s airfield defences. (NGR: SP 5926 2427; NGR: SP 59292431; NGR SP 5923 2459)

Type 27 Pillboxes: There were two Type 27 Pillboxes sited to protect the north and south hangars and aprons. These were semi-sunk structures constructed of brick walls with concrete roofs in an octagonal-shaped plan form. Only one of these was still surviving in 1998. It was part of an extensive range of facilities built to contain an enemy attack. (NGR: SP 5935 2463). One Pillbox, (shown in the 1944 Airfield Site Plan as an Air-Raid Shelter), was built in a central position in front of the Watch Tower (NGR: SP 5947 2448). The latter overlooked the landing ground and was similar to the Type 27 Pillboxes in shape – lacking only the angled sides to the rear. The entrance was of steel. Inside were two-gun mounts. A pyrotechnic cupboard was also built against the side elevation for use by Watch Office staff.

Mushroom Type Pillboxes: Two Mushroom Type Pillboxes were positioned in a deliberate way to form defensive positions around the site of the former Battle School – a building considered of certain importance in wartime operation. They were part of a wider defensive arrangement designed to contain a potential German invasion within the boundaries and prevent them from dispersing into the surrounding area of the airfield until reinforcements arrived.

These Mushroom Pillboxes (NGR: SP 5975 2396 & NGR: SP 5980 2390) are thought to have been designed by the FC

Construction Company LTD. Each was a circular structure, measuring 5ft high with a 13.5in thick brick wall with an earth bank completely hiding it. The inside circular wall was a load-bearing structure supporting the cantilevered concrete slab roof which was raised slightly above the walls creating an all round firing capability. The slab was slightly domed to take earth and turf which, with the earth bank rendered the structure almost invisible at long range.” Also presented here was a “connecting tunnel to an underground Stanton type concrete arched shelter.

Seagull Trenches: There were two Seagull Trenches, or a single ‘double’ seagull trench, (NGR SP: 5978 2393 : NGR: SP 5978 2393) “built back-to-back and separated by approx. 50 feet of an artificially raised piece of land. Positioned at a distance from them, with one on either side” were two Mushroom Pillboxes with an anti-aircraft Lewis Gun site position at the centre of the site. Bicester had four-gun sites (NGR: SP 596 252, SP 597 249, SP 590 242, and SP 593 249) each having two Lewis guns operated by Anti-Aircraft Command. “The Seagull Trench was a permanent trench system consisting of a narrow brick lined trench in two arms arranged in a zigzag plan-form. An earth bank completely hid the walls, but internal walls and brick piers supported concrete slab work, raised one foot above the trench wall.” Since there was “no firing cover over the rear, they were often built in pairs and positioned back-back. Earth and turf was placed on the slab work to offer camouflage.”

Aircraft Machine Gun Ranges: Aircraft were towed to this location for firing practice and gun harmonisation. It was built of permanent red brick wall on 3 sides with additional strength provided by brick traverses. The front elevation was left open to enable aircraft to shoot at targets fixed to a sand bank at the rear of the structure. The structure was demolished for health and safety reasons in the late 1990s. (NGR: SP 5958 2401)

In addition to this was a 25 Yard Machine Gun Range . This was originally a 2-point small arms Gun Range, extended in 1936 to a 4-point range. It was built of permanent red brick and was comprised of a shelter and target area spanning 25yards. This too was demolished for health and safety reasons in the late 1990s. (NGR: SP 5957 2398)

ROUTES, RUNWAYS & TRACKS

Routes: play a particularly important role in defining the character of the site. These were historically centred on the need to control movement – that of personnel, equipment etc. – in ways that maximised the base’s overall efficiency as well as helped mask the airfield’s ‘true intent’ (see appendix 3 on camouflage)

The layout and planning of technical site remains dominated by its early expansion period axial routes – which saw buildings grouped according to interrelated functions or processes. An Air Ministry road lead to the main entrance where the Guard House and Station Offices were situated on either side. From this main entrance, the road then branched off in three directions. The central road gave access to buildings associated with aeroplanes such as the Main Stores and Station Armory; the left branch connected buildings and structures that were essential to the day-to-day- running of the station such as the Water Tower and Power House; while the right hand road served all non-essential buildings used for the maintenance and running of the base such as the Work Services Building. “All these roads were connected together by another one running alongside both hangars to connect with their aprons.”

Perimeter Track: With war looming, it was realized that aircraft needed to be dispersed so that they were not all concentrated in hangers. Dispersal however also had to be compensated by the need to achieve maximum flying efficiency.

The flying field was thereby considerably expanded to the north and south, with tracks and panhandle standings introduced for aircraft. Land was acquired between (1940-1945) for the construction of a concrete perimeter track to communicate with these ‘peripheral’ areas. From this, an extensive series of tracks and loops led off into the countryside. These features came to define WWII bomber stations. They comprised of a total 41 ‘Frying Pan’ aircraft hardstandings scattered across an vast area. Two tracks crossed the Buckingham Road in the north west and Skimmingdish Lane in the South. The total area encompassed by

this dispersal scheme – including the length of the perimeter and dispersal tracks - covered nearly 6 miles. Both public highways were closed to normal traffic.

Eventually, in a bid to further reduce aircraft concentration at Bicester, a small landing ground was acquired at Weston-on-the-Green and was used as a satellite for the rest of the war.

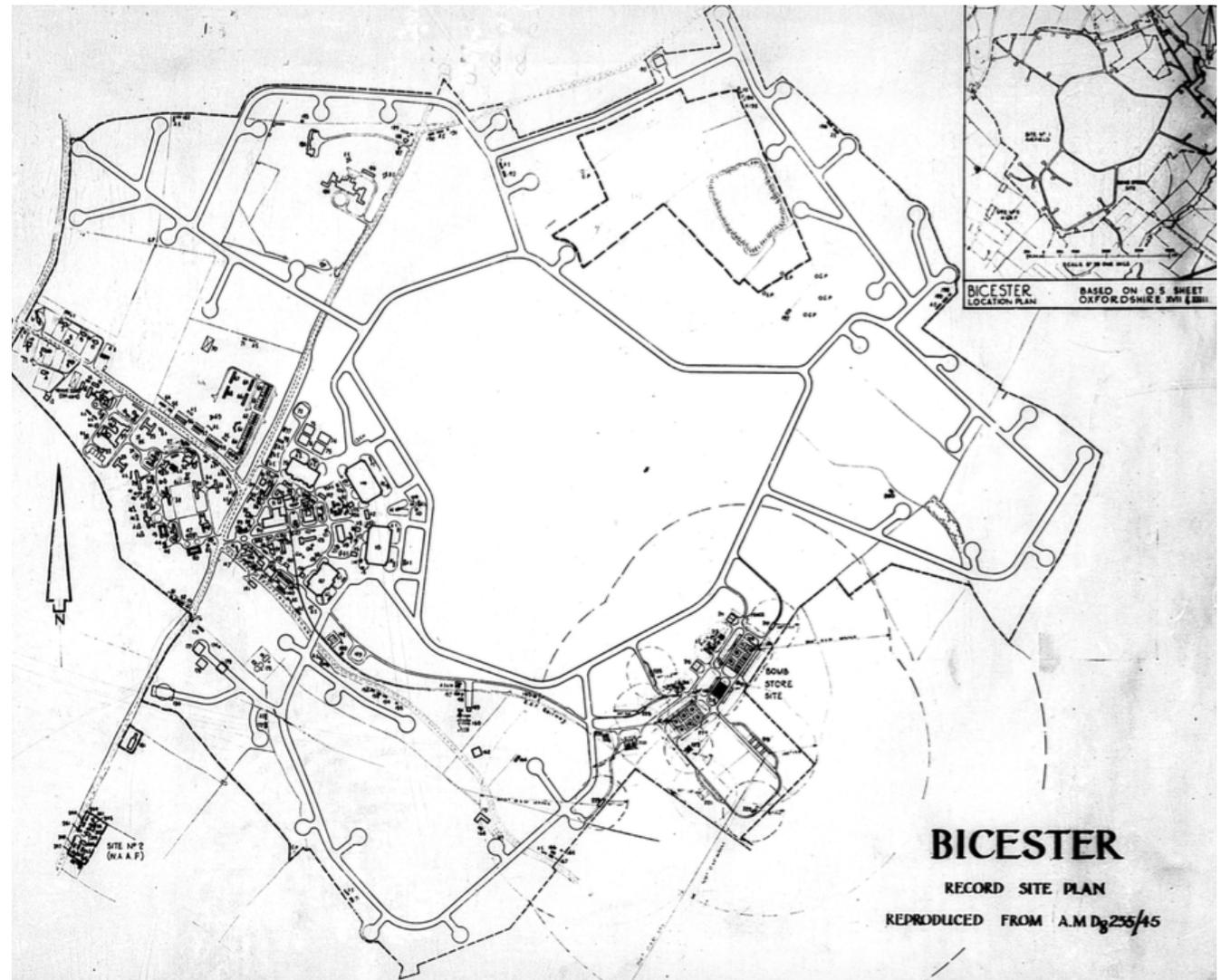


Fig 38: RAF Site Plan. Bicester c1945

HERITAGE SIGNIFICANCE

Heritage significance is defined in the National Planning Policy Framework (NPPF) Annex as comprising:

The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.

SIGNIFICANCE OF MILITARY AIRFIELDS

The significance of military sites – particularly of those dating to the twentieth century – is determined according to a set of non-statutory criteria for determining sites of national importance and heritage interest outlined in Historic England's Listing Selection Guidelines ('Military Structures' 2017).

Prominent among these criteria are: "the site's survival or completeness and the legibility of what remains; group value - which recognises the importance of networks of defences and those with surviving spatial relationships; the rarity or representivity of examples of distinctive site or building types (taking into account unfamiliar as well as commonplace types); and historic importance."

The guidance also draws attention to the design of military buildings (for instance in the preferred use of neo-Georgian style for the barracks, houses, messes and associated buildings and application of the Moderne style for technical and other ancillary buildings) and further observes that significance is particularly enhanced by the survival of the original configuration of these designed elements and their grouping in strategic locations.

For military airfields in particular, the question of significance is often centred on their historic associations. Military structures - from Hadrian's Wall to Cold War bunkers - bear witness to the way in which national and world conflicts that have shaped our landscapes and architecture. For airfields, as Historic England advice especially notes, powered flight not only impacted on the landscape but also profoundly influenced the human experience.



Fig 39: View of the grass flying field and perimeter track circa 1940 (© Paul Nash Trust)

As a material legacy of the First and Second World War, these sites have become part of our cultural heritage, telling the story of the changes in warfare and its impact on social life in the twentieth century. Often associated with specific aspects of the war (such the embarkation of D-Day) airfield sites have come to serve as 'living memorial' to these specific episodes, helping to illustrate key historical events (Dobinson C.S, Lake J & Schofield 2002).

SIGNIFICANCE OF THE RAF BICESTER AIRFIELD

From the foregoing, the heritage significance the Bicester site holds can be broadly defined as follows:

SURVIVAL/COMPLETENESS

Part of what makes RAF Bicester special is the significant number of surviving buildings and structures. Bicester retains a large number of both Expansion Period buildings and of the earlier RAF Expansion phase (between 1925 & 1928). The grass flying field also survives with its 1939 boundaries intact, bounded by a group of bomb stores built in 1938-39 and "airfield defences built in the early stages of the war."

The completeness or otherwise of inter-war bases, and the extent to which they have retained their architectural detail, external fittings and inter-relationships as planned groups, is closely

linked to the nature and intensity of post war use. Upper Heyford for instance – a test bed for the planning of Trenchard’s Home Defence scheme stations – was greatly extended as a key USAF site during the Cold War. The markedly less intensive use of Bicester, another Trenchard Base, for administration and storage purposes has meant that the airfield has endured as “the most complete group representative of development on bomber airfields for the period up to 1939.”

DESIGN/ARCHITECTURAL INTEREST

There are a number of original structures on the site that are examples of the Air ministry’s permanent standard designs for operational RAF Stations. These buildings are of interest both with regard to their material construction and design, revealing a representative picture of the era in which they were conceived.

The buildings to a large extent encapsulate the ideals and principles that preoccupied the ‘architects’ of inter-war RAF and European airfields. These ‘design principles’ were largely underpinned by an insistence on high aesthetic standards as a point of national pride in the advent of future warfare. An expectation of new forms of beauty emerged. In Italy for instance Futurists such as Filippo Tommaso Marinetti insisted on glorifying the spectacles promised by future war, arguing that “war was beautiful” because “it created new architecture” – giving rise to new compositions and geometric formations.

At Bicester, these aesthetic considerations manifested themselves in the early expansion period through the selection and use materials such as brick and in the application of the neo-Georgian style to the design of prominent buildings such as the Guard House and Station Headquarters. While such early RAF buildings would eventually come under criticism for their ‘apparently untutored and unconvincing’ execution - particularly in comparison to the imposing classical military architecture of Italy – stations such as Bicester would nevertheless be further characterised by continued attempts to innovate and refine. (Holder, 2016)

By the 1930s airfield architecture became more adventurous.

Styles began to particularly change with the appointment of P. M Stratton to the Office of Works who encouraged Art Deco characteristics such as the use of horizontal shapes, glazing details in windows and flat roofs in the construction of technical buildings – a development best exemplified at Bicester by the Watch Tower.

Overall, while no particular architect can be attributed to the design of the various buildings at the former RAF Bicester the site, its assemblage of structures stands at the forefront of innovation and design and serves as a significant record of a tumultuous period in British history.

HISTORIC INTEREST:

In addition to the survival, completeness and rarity, Bicester’s buildings are also of historic significance derived from their functions and associations. The base was associated with certain important technological developments and historic events. It saw famous aircraft such as the Blenheims, Halifax’s and Mosquitos stationed here. From 1944 it was also involved in the Forward Equipment Unit for Operation overlord.

Many of the surviving buildings are important to the history of the RAF. The technical buildings such as the stores and workshops in particular, though lacking in architectural quality, are of interest for their group or historical value.’ This ‘group value’ is strongly expressed through the survival of the airfield’s assemblage of structures. Paul Francis 1996:77) identifies 11 building groups on the technical site whose rarity, good preservation and completeness makes them particularly important to the history of the RAF in a national context.

These include;

1. **The Main Entrance Group** (technical buildings such as the Guard House, Fire Party House, Station Offices and Operations Block);
2. **The Power House/Water Supply Group** (including the Power house, Reservoir, HL Water Tower and Bore hole

Pump house built to meet the demands for electricity and water supply);

3. **The Motor Transport Group** (including the Motor Transport Sheds, Special Repairs Bay and representing the best surviving structures dating from 1926-1939);
4. **The Storage and Workshop Group** (including the Main Stores and Workshops and consisting of some examples of the first permanent buildings for operational RAF stations to be dedicated to the function of storage and workshops. The group is said to be unusual for containing buildings dating from 1926-1927);
5. **The Hangar Group** (representing two periods of hangar design both of which were classed as Standard by the RAF. The Type A hangars were first introduced at Bicester and Upper Heyford and are particularly good and complete examples);
6. **Air Traffic Control Group** (Consisting of the watch tower, signals square, airfield Code Letter and Fire Tender Shelter and Night flying Equipment Store. These were important to the safety of the airfield and together with the hangars behind and grass airfield to the are important to the history of the RAF);
7. **Air ministry Works Department (AMWD) Group** (including the Works Services building Yard, Air Raid and Blast Shelters ;
8. **Station Armoury and Lecture Rooms** (representing the first armoury design for RAF operational Bomber Stations);
9. **Blast Shelter**;
10. **Aviation Petrol installation** ; and
11. **The Airfield Defence Group.**

LEGIBILITY/MILITARY PHILOSOPHY

The significance of RAF Bicester is further rooted in the legibility of what has survived. The layout and routes connecting surviving structures, are key to our understanding the military logic that underpinned the base's development. In particular, to understanding Sir Hugh Trenchard's plans for bomber bases and their intended role within the wider strategic development of the RAF as an offensive bomber force.

Trenchard's thoughts lay the foundations for a technology-based service. His ideas would find their material form in the layout and siting of structures at newly re-constructed bases (between 1923-1939) - in particular in the form of the trident layout. RAF Bicester is the best preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's Expansion of the RAF from 1923. It retains an identifiable 1920s character (followed through in the later 1930s expansion) that helps convey the 'uniform' intellectual principles that ultimately underpinned the development of what came to be known as the 'British Military style.'

COMMUNAL VALUE

As part of the 'materiality of war' Bicester holds certain educational and emotive values that add particular resonance to the communal significance of the site. Airfields, as with other military monuments, are 'sites of memory' (Rigby 2009), embodying particular collective representations of the past. Their built form points to a particular relationship between architecture and identity and to the special role played by the latter in the formation of social, cultural and political community.

The design of airfield architecture extends beyond its original and short-lived purpose as part of the war defence strategies, to evoke particular emotive and sentimental meanings related to the collective/ national remembrance of the war period. To this extent, Airfield buildings have come to serve as spatial coordinates of identity, helping people to recall, recognise and localise their memories of war time Britain.

Maurice Halbwachs (1992), has noted the significance of places as a major condition to how we recall historical events. The built environment, with its various features, forms one of the most important social frames of the group's memory - fixing the latter to its spatial and temporal frame. Over time a 'place memory' is formed recording the accumulated activities and events that took place within it.

These collective memories play in a key role community life. In sharing them, communities become more united and close. As a result, cohesion and solidarity occur contributing over time to the formation of what we may refer to as a national identity - which emphasises and strengthens the concept of national belonging and patriotism.

This symbolic 'place memory' has been retained at RAF Bicester through the continued use of the site well beyond the war period. Bicester is associated with certain key historical events and is thus of immense communal value not only to those involved in the events being recalled but also to this and future generations. Its function as a Forward Equipment Unit – charged with the repair and replacement of equipment – was vital for Operation Overlord (the Normandy Landings) in 1944. It was also significantly the Bicester crews who won the first Victoria Cross medals for the RAF.

Certain purpose-built structures within the site may also potentially provide a focus of commemoration and remembrance. "Control towers which often survive as ruins on desolate airfields, stand as powerful iconic structures of the air war, and provide a focus for the memories of veterans who continue to return to airfields on which they served."

SIGNIFICANCE OF THE RAF BICESTER BOMB STORES & PERIPHERAL AREAS

The bomb stores and airfield peripheral areas, including the defensive structures, are a key element in narrating the role of Bicester during the war effort. While many of the buildings on the main technical site relay the history of Bicester's interwar

expansion, those associated with bomb storage and airfield defence are an important aspect of Bicester's Second World War history. Their development is associated to the collapse of the Geneva disarmament talks and their continued expansion would remain a reflexive response to political and military pressures from the domestic and world stage.

Now existing within a much-reduced setting, these areas help highlight how the airfield responded to the demands of war - with its boundaries expanding to accommodate extensive 'pan-handle'/ 'frying pan' areas during the war and shrinking back in the post 1945 era with the end of it.

Their significance, largely tied their group/ operational inter-relationships and to the broader functional intent of the base, and can be summarised as follows;

AIR RAID SHELTERS

Positioned adjacent to the hangars, these defence positions are a rare feature on other airfields. Bicester is unique in having 3. These shelters have an important relationship with the hangars they were intended to defend.

DEFENDED AIR RAID SHELTERS

Situated to the east of the southern hangar, these linear brick and concrete structures were part of a number of defensive structures introduced with view of defending against a potential ground attack. A further 3 structures were also positioned to protect the other three hangars. They were linked defensively by hexagonal Pillboxes (3 of which survive at the front of the front of the tower). The latter Pillboxes are of a standard typical of their period of construction and formed part of a series of fixed defensive points around the inner core and perimeter of the base.

APRONS, RUNWAYS, PERIMETER TRACK & 'PANHANDLE' AREAS

The Aprons, runways and connecting Perimeter Track represent important building and functional relationships. The Aprons link all 6 Petrol Tanker Sheds and 4 Hangars together connected with

aim of improving overall efficiency.

The grass runways – recognised (c.f. Historic England) as features of particularly special significance in their own right due to their rarity – are of further significance in connection to their relationship with the perimeter track. The introduction of the latter set the boundaries of WW2 landing area, fixing the runways to their 1939 extent. The runways had been extended throughout Bicester's flying history – in response to evolving aircraft innovation.

Together, the airfield's various 'routes'/ tracks help illustrate the important considerations paid by the RAF to issues of time management and efficiency. In their considered linking of buildings and areas of related functions and processes, they tell us about both how the RAF managed the movement of personnel and equipment as well as how the bases worked a whole during the war period. As Paul Virilo has observed, one of the primary goals of military planning was the removal of 'obstacles' and reduction of distances.

The Perimeter Track, as a part of Bicester's Second World War history, was key to the overall efficiency of the base. It was introduced to meet the demands of increased traffic and as a response to the introduction of heavier bomber aircraft. It would remain vital in the control and management of movement at the base throughout the Second World War period.

Extending the physical and visual domain of the airfield through a number of connecting tracks leading to panhandle areas set far into the Bicester countryside, the track helped balance the often competing needs to disperse important assets over increasingly vast distances while maintaining their connection to the main technical site and other important peripheral areas such as the Bomb Stores – a factor that was key to the functional integrity of the base.

The connecting tracks and panhandle areas, vital to the safe dispersal of aircraft, however have now been largely erased with the reduction of the airfield boundary and the return to agricultural production or built development of these former dispersal areas.

BOMB STORES

Surviving in a largely dilapidated and diminished state – with their 1942 expansion phase having now been demolished – the Bomb Store buildings are of significance as part of Bicester's Second World War history.

As a group, they are key to defining Bicester as a bomber station. And while they were once ubiquitous structures on many such bases across the country, their demolition in many former RAF bases for health and safety reasons in the ensuing post war years, has made those surviving here of particular illustrative value.

There are a total of 13 surviving structures at Bicester. Taken together, the interrelationship between the High Explosive Bomb Stores (no.224), Ultra Heavy Fusing Point Building (no. 226), and Component Stores (no. 214) illustrate the methods that were taken to store and secure the components of bomber armament. (Bombs would be taken from the High Explosive Bomb Stores to the Ultra heavy Fusing Point building where fuses, taken from the Component Stores, would be added.)

Certain buildings such as the High Explosive (HE) stores (no 216 & 224), display aesthetic considerations beyond the intended utilitarian purpose of the building. These buildings, in their use of geometric shapes and considered use of permanent materials in their construction, illustrate the underlying 'designed intent' of the base as whole - tying this Bomb Stores area to the neo-Georgian elements that were important in defining the character of the main technical area.

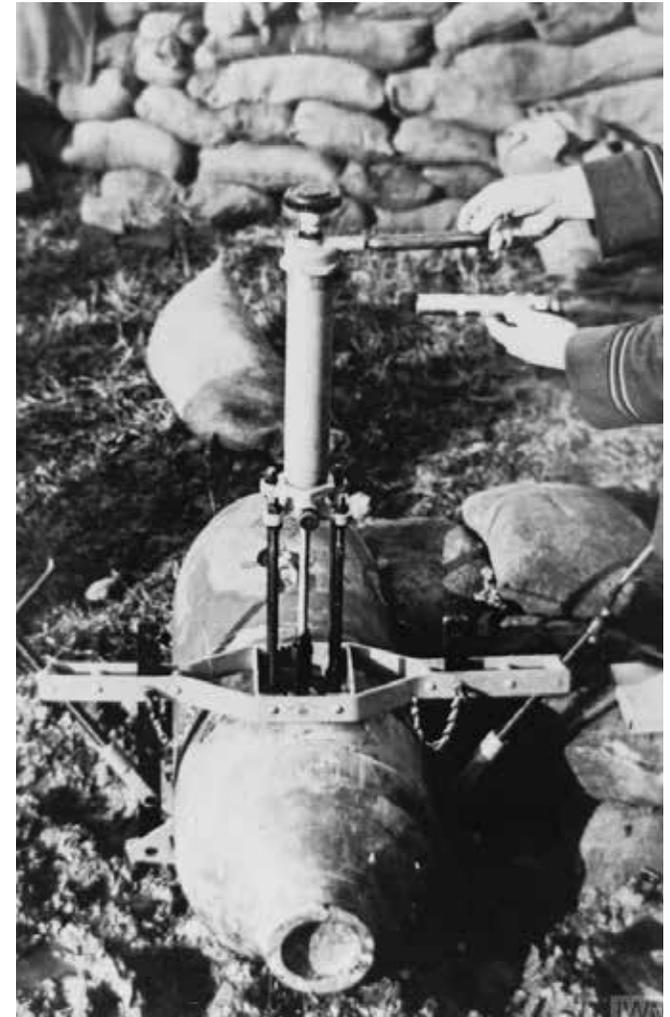


Fig 40: RAF bomb disposal squad at work on a German 250kg SC. © IWM

Other buildings such as Ultra Heavy Fusing Point Buildings (no 210, 226 & 229) represent one of a few remaining examples of pre-fabricated structures at Bicester and help relay the way in which the station responded to the economic constraints and operational imperatives of war.

MUSHROOM PILLBOXES & SEAGULL TRENCHES

The Mushroom Pillboxes situated around 300 meters west of the Bomb stores are of some aesthetic, historic and communal value. Similar Pillboxes across the country were often designed by local groups as a point of pride. Those at Bicester however are thought to have been designed by the FC Construction Co Ltd of Derby, who were one of the main designers and contractors of reinforced military concrete structures during the Second World War. The company is known to have constructed many such defensive structures on airfields across the country such as at Okington and Hunsdon. Though once ubiquitous however only a limited number of such examples survive today. The Pillboxes display certain innovation and sophistication both in the use of concrete and in the overall design – which allowed for unrestricted 360-degree observation.

The fabric is intact, enabling the legibility and understanding of their historic use. Further significance lies in the spatial interrelationships with other surviving defensive structures. The pillboxes are situated near the 50m long Seagull Trenches which combine to form part of what was once a formidable defence group – as part of the wider airfield defence structure.



Fig 41: Lines of bomb trolleys loaded with 500-lb & 1000-lb MC bombs attended by an RAF armorer waiting in the snow at Vitry-en-Artois, France to be loaded onto returning North American Mitchells of No. 137 Wing, No. 2 group. (Source: IMW CL 1847: <https://www.iwm.org.uk/collections/item/object/205211725>)

SETTING

In relation to the setting of a heritage asset the National Planning Policy Framework Glossary: Setting of a Heritage Asset, defines setting as:

The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

Historic England's advice in Historic England's Good Practice Advice Note 3 – *The Setting of Heritage Assets*, December 2017 (GPA3 para 9) is similar stating:

Setting is not a heritage asset, nor a heritage designation, though land within a setting may itself be designated... Its importance lies in what it contributes to the significance of the heritage asset or the ability to appreciate the significance.

It explains (GPA3 para 10) explains that the contribution of setting to the significance of a heritage asset is often expressed by reference to views – a visual impression of an asset.

It comments (page 6) that:

Some views may contribute more to understanding the heritage significance than others. This may be because the relationships between the asset and other historic assets or places or natural features are particularly relevant;



Fig 42: View from the watch tower illustrating the expanse of the flying field

And furthermore, (GPA 3 para 9) states that the setting of heritage assets will change over time and that this can be a positive element in our understanding of places and how we experience the historic environment and heritage assets. It cautions that where unsympathetic change has affected the setting of a heritage asset further cumulative negative changes could sever the last link between an asset and its original setting, but pointing out that sympathetic new development has the potential to enhance setting, successfully illustrating the cycle of change that shape our towns and countryside.

GPA3 Part 1- Settings and Views, discusses the issue of setting stating:

Setting is the surroundings in which an asset is experienced, and may therefore be more extensive than its curtilage. All heritage assets have a setting, irrespective of the form in which they survive and whether they are designated or not. The extent and importance of setting is often expressed by reference to visual considerations. Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places.

Amongst the Government's planning objectives for the historic environment is that conservation decisions are properly informed. GPA3 Part 2: Setting and Views – A Staged Approach to Proportionate Decision Taking, explains the broad approach to be followed:



Fig 43: Zoomed view north east towards the hills in the far distance.



Fig 44: The setting of the mushroom pillbox is defined by the line of sight.

Step 1: identify which heritage assets and their settings are affected;

Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s);

Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance;

Step 4: explore the way to maximise enhancement and avoid or minimise harm;

Step 5: make and document the decision and monitor outcomes.

Historic England explains in that matters such as the asset's physical surroundings, the history and degree of change and how the asset is experienced will define its setting.

In relation to RAF Bicester there is a range of different designated heritage assets (listed buildings, scheduled ancient monuments and conservation area) which will mean that there will be 'overlapping' settings. This report focuses on the peripheral areas to the airfield and includes subsidiary elements including the bomb stores, gun training area, panhandle areas and defensive posts.

To give a context to these subsidiary elements within the peripheral areas beyond the perimeter track it is worth emphasising the primary component of the airbase's layout and setting. There is a fundamentally functional interrelationship between the Technical Site and airfield that results in the large hangars sited on the 'waterfront' of the airfield – an open expanse devoid of any buildings or trees contained by the perimeter track.

Assessing the degree to which the settings of these individual assets and parts of the conservation area contribute to their significance is important. It is a way to acknowledge how people understand and experience the historic environment (and to value the enjoyment they derive from that experience and understanding). The heritage report interrogates the site's heritage significance exploring what it derives from and what it means. In brief the report concludes:

SIGNIFICANCE:

- The architecture and design of buildings and other structures is characterised by continued attempts to innovate and refine, underpinning the new ways of thinking and new technologies about with travel and communication that the site is associated with;
- High historic integrity with a significant number of surviving buildings and structures. In particular the alignment of the perimeter track defines the extent of the 1939 grass runways;
- Inter-relationships as planned groups helps to explain how the site operated and the interdependence between buildings and spaces;
- The layout and routes connecting surviving structures, are key to our understanding the military logic;
- That underpinned the base's development;
- It is a 'site of memory' evoking particular emotive and sentimental meanings and serving as spatial coordinates of

identity, helping people to recall, recognise and localise their memories;

- Certain purpose- built structures within the site also provide a focus of commemoration and remembrance, for example the watch tower;

The District Council has carried out its own appraisal of the conservation area to explain what it considers is important. (RAF Bicester CAA 2008).

This is supplemented by a 'development brief' which seeks to capture as succinctly as possible the sites significance. The designated conservation area encompasses the whole of the airbase that now exists, but doesn't include the panhandle areas that were added during the 1940s. The Council's conservation area appraisal, 2008 identifies the following key characteristics of the conservation area:

- The airbase evidences each period of airfield design from Sir Hugh Trenchard's strategy of the 1920s through to the expansion period of the 1930s. The layout remains clearly legible and has not been eroded by infilling, nor have the structures been altered significantly with some buildings being the only surviving examples of their type; (p5)
- The spatial relationship within and between the core areas (Technical Site, Domestic Site, Married Quarters and Flying Field) with views across the flying field to the open countryside beyond being important aspects; (p5)



Fig 45: View of the bomb stores showing the earth banks and the gantry.

- It is the most complete airbase to have survived from the pre-1934 period without modification or adaptation; (p7)
- The different parts are unified by military purpose – a historically designed interdependence; (p16)
- The art and design of dispersal underpins the layout of buildings;
- There is a strong functional relationship between the siting of buildings and between the flying field and the structures that sit adjacent to it; (p16)
- The watch tower design and siting evidences its important functional role - for personnel to monitor the flying field. (p20) N.B. The Council's appraisal comments that the intervisibility between the bomb stores and watch tower is an important component of the layout of the airbase. The documentary evidence suggests that there is no imperative for the bomb stores to be seen from the watch tower. What was important though was the provision of a bomb blast safety zone and a distance that would ensure that critical infrastructure (and personnel) would not be lost in the event of an explosion in the bomb stores;
- The openness of the flying field (defined by the perimeter track), is a major feature and a fundamental component of the airbase necessary to its function (p33), which it argues has little visual containment and therefore a strong relationship with the open countryside to the north east and eastwards around to the south east. (pp 35-36) It is not entirely clear in this statement where the significance lies as it is clear that one of the design qualities of an airfield was in its ability to be successfully camouflaged, be it adjoining agricultural land or an urban area. In any event it is clear that the airbases wider context has changed – with the urban expansion of Bicester, the loss of the panhandle dispersal areas and changing farming practices.



Fig 46: View from the perimeter track over the flying field towards the Technical Site.

In defining how the designated assets setting contributes to the their significance it can be concluded:

- The setting of the hangars extends across the airfield and allows understanding of how the airfield operated. The lack of any obstacles (built or natural) within the flying field is an important component of this setting. The relationship of the scale of the hangars to the scale and expanse of the flying field is an important component of the viewing experience;
- By contrast the scale of the bomb store structures triggers a very different sensory experience with a sense of intimacy and enclosure associated to their more confined settings. There is no functional intervisibility between the stores and other components;
- The views out across the flying field from the watch tower and views back towards the watch tower were important for functional reasons and thus the setting of the watch tower extends out over the flying field. The sense of isolation of the watch tower, projecting out into the airfield is important to understanding of its function;
- The views over the airfield from the surrounding public road network have no historical or functional significance. As the Council's RAF Bicester Planning Brief comments the site is *'inward looking, self contained and enclosed by a security fence with restricted and controlled points of access'* (p31). They provide public vantage points that allow appreciation of the scale of the flying field. Because of the absence of trees, hedgerows and buildings the flying field appears somewhat at odds with the rural landscape that lies beyond the airbase and the built up edges of Bicester. The opportunity to stop and the viewing experience is affected by traffic noise and movement and also by the proximity of modern development;



Fig 47: View from the top of the bomb stores embankment looking back towards the Technical Site.

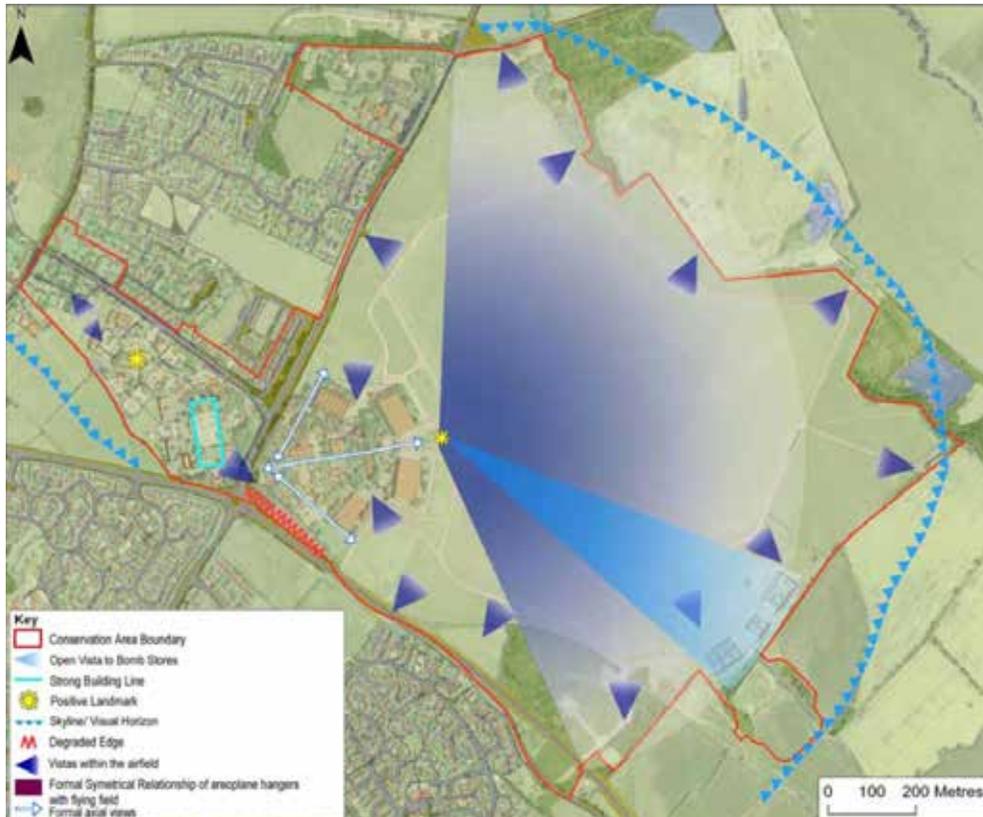


Fig 48: Conservation Area Appraisal spatial analysis map identifying important views.

- The long distance views from the Technical Site (and the Flying Field) north help to evidence the site's historic location as a part of the wider rural landscape and one of the reasons why the Quarry area was retained as a component of the rural landscape; to help camouflage the flying field. In any event this rural setting has changed with the growth of Bicester such that built forms now encompass the airfield to the south, west and parts of the eastern and northern-eastern perimeter;
- The setting of the airfield has also changed with the cessation of its use for military purposes. Historically laid out and functioning in relation to how it is experienced from the air the site's core function means that now it is primarily

experienced from the ground and by a wider range of people and the public. This changed accessibility and different perspective changes our perception of the place and our viewing experience. The opportunity to wander, for example, through the bomb stores area without restriction and then onto the perimeter track and the expanse of the flying field generates contrasting experiences that help understanding of the functional spatial relationships and the sense of scale. This experience of 'overlapping' and sometimes contrasting settings adds to the understanding and enjoyment of the place;

- In a similar way that the Hangars' setting extends across the



Fig 49: View south east with modern industrial development beyond the airfield.

flying field so also do the settings of the defensive positions, which, as described in the Council's appraisal, are designed to look inwards to contain any air landing on the flying field. The ability to also see between defensive posts is a part of their significance – a characteristic that has been lost with the scrub growth and demolition of some installations.

Our understanding of setting and the contribution it makes to significance is improved the more that we understand the heritage significance a place holds. Our interpretation of policy and law is also advanced by case law and there is recent case law that is relevant to this context where the nature of a place has changed and so also has its setting.

SUMMARY OF THE SITE'S KEY CHARACTERISTICS

This heritage impact assessment relies on the evidence (primary and secondary) gathered and set out in the preceding chapters of this report, which provides an understanding of the history of the place and the heritage significance it holds, to allow an informed assessment of the impact of these proposals on that significance.

In summary the key components of the site and their relevance to its heritage significance can be summarised as follows:

LOCATION & LAYOUT OF THE AIRBASE:

The location of the airbase illustrates the government's principles of offensive deterrence as a part of a ring of airfields around London stretching from Cambridgeshire through Oxfordshire and into Wiltshire. The layout of the airbase survives to illustrate, better than anywhere else, Sir Hugh Trenchard's military principles of dispersal. The layout of the airbase as a whole improves our understanding the various phases of the development of the airfield and the operational principles and the strategic concerns with the nation's defence policy.

TECHNICAL SITE:

The Technical Centre survives substantially intact illustrating the impact of military policy and principles of the 1930's on built forms. Buildings have survived largely unaltered, though many in a very poor state of repair, from the 1930s and earlier. Some represent one of only a few survivals of their type, e.g. the Watch Tower. In the early phases of development - decisions on the use of materials and scale of buildings derived from the objective to reflect and 'fit in' with the wider context of the area (in this case a rural landscape) – influencing the use of brick, slate and tile. This materiality was maintained with new buildings introduced during the Expansion Period to preserve the design integrity and aesthetics of the Technical Site.

Also surviving are the gaps between buildings, which were

important for operational reasons, a layout to minimise the damage that would result from a bomb attack. The buildings have a functional interrelationship and they are organised in a way that evidences this. They are organised along the Trident routes in a way that physically connected their functional relationship. Each of the three routes performed a different role within the operation of the Technical Site. The routes were lined with avenues of trees for camouflage reasons and in maturity now contribute to the Arcadian qualities of the Site. For reasons of dispersal the domestic and married quarters were located adjacent, consistent in architectural approach and part of the wider context into which the Technical Site had to fit.

The Trident routes link the Technical Site to the flying field.

FLYING FIELD:

Grass runways

The flying field is significant because it survives unaltered since the 1930s. This makes it a rare survival and illustrates the role of RAF Bicester as part of the wider war effort. It evidences the function of the base – used for training and as a bomber station. This type of use and the type of aircraft used did not demand the installation of concrete runways. The well drained soils meant that the grass runways could be maintained and used throughout the seasons and relates a much longer history of flying from this airbase. Its less significant role during and after the war most probably meant that there was not the necessity as on most other airbases to upgrade the grass runways to concrete.

Open Countryside

The flying field evidences early thinking on the location of airfields and how they might be revealed and hidden in the vertical perspective. Identifying sites that sat within a very nondescript landscape without obvious features allowed flying fields to blend

with their surroundings. Its visual connection and continuity with its context – at the time, reading as a part of the agricultural landscape with the hangars and other structures appearing as ordinary rural buildings reflected early principles on site selection.

The fact that the flying field was grass meant that it could much more easily be camouflaged and blend with what was then its rural surroundings than other airbases that had concrete runways. That relationship with its context was most effective during the Second World War period as its grass runways helped it to blend into its agricultural surroundings. Camouflage techniques in the use of paint on the flying field to resemble field patterns reinforced the landscape deceit. From the air the openness of the flying field was disguised, to appear as smaller agricultural enclosures.

The historic connection is not timeless. The relationship is a dynamic one and has continued to change post war, first with the absorption of the panhandle areas back into the agricultural landscape and then more recently with the expansion of Bicester around the edges of the airbase. Similarly, military thoughts on camouflage and airbase planning were never static. Concepts, initially on retro fitting features of camouflage advanced to ensure that camouflage be considered as integral components of building design.

Openness

The openness of the flying field was necessary for operational purposes. This is the same for every airfield, it's not a unique character of Bicester. A defining character of all flying fields is their openness. Bicester's flying field is delineated by its perimeter track and what adds to its heritage significance is the grass runways and the absence of the visual clutter and visual 'noise' that characterises later airfield development. It possesses historic value in evidencing the early history of flying and aircraft technology.

That openness of the flying field remains important to evidence Bicester as an airfield – confirming its sense of place as an airfield. Views were an operational necessity. These views are not ahistoric. They reflect two ways of seeing:

- The historic way of looking at the views was an aerial one that privileged operational needs;
- Contemporary ways that privileged the landscape experience, in a horizontal perspective.

Military imperatives focussed on the view looking up or looking down with flight control operations from the watch tower. This is where the significance of the views rests. Present considerations examine the visual relationships as grounded observers as part of a landscape experience. The visual qualities that these views may contain were meant to be managed not experienced. Relying on the visual experiences to define the significance of the site as a military airfield does not reflect or even nuance the understanding of what these views were designed to communicate. It was a game of hide and seek. The pilots were trained to see beyond the visual deceit that the camouflage presented, the enemy intended to see nothing but an agricultural landscape.

Contemporary experience of the flying field as an open area evidences the fact that it is no longer an operational base and is derived from a civilian perspective that reflects our contemporary understanding of the landscape and its vulnerability, whereas it is the military perspective that gives it its significance.

PILL BOXES AND SEAGULL TRENCHES:

Ground structures were installed to provide a defensive ring around the flying field and Technical Centre with views across the flying field, views between each other and with some looking outwards over the rural landscape. They are designed to anticipate a ground attack and a parachute landing on the airfield. Their design reflects the importance of remaining invisible from both ground and air observation. They are very specific to 1940-1941 anti air raid policy. Nationally few survive. Mushroom pillbox's have acquired an iconic status partly because of modern appreciation of their aesthetic quality and also in how they capture the spirit of war at that time. The group interrelationship of the defensive structures relies on a visual connection between each (not a physical one), a relationship that is different from other building groups which have a physical connection through the routes between them. Some of the ground structures have been demolished and currently the surviving structures are in poor repair. They offer limited experience of their intended field of vision and their visual interdependence, compromised by undergrowth on the site and new development beyond the present extent of the airfield.

PERIMETER TRACK AND ROUTES AND PANHANDLE AREAS:

The perimeter track was formed between 1941 and 1945 to give access to the panhandle areas, evidencing the later policy of dispersal of the aircraft around the wider extent of the airfield beyond the runways. The shape of the perimeter track helps to define (and limit) the runways and is aligned to maximise efficiencies. Given that the airbase layout was defined by functional necessities to ensure the most efficient movement

of personnel, equipment and planes around the site the introduction of 41 panhandle areas as part of dispersal policy to accommodate increased plane numbers, in a stroke resulted in considerable inefficiencies and spawned clusters of temporary buildings and activity around the panhandle areas to compensate for the long distances between the Technical Site, runways and airplane storage. The routes help illustrate the operational relationships between different parts of the airfield, though with the reduction of the extent of the airfield and the reversion of panhandle areas back to agriculture or lost to development the interrelationship of the perimeter track to those areas (and its historic integrity) has been lost.

THE BOMB STORES:

Originally plans were in place to construct three sets of bomb stores although only two were eventually constructed just before the outbreak of war in 1938-39. An additional group of stores was added in 1942 located to the south of the existing ones, though these have since been demolished. The buildings were grouped back to back with a gantry to the front to assist in loading and offloading (through three doors) protected around the outside by earth banks and with thick flat concrete roofs. Associated with the bomb stores, but in separate blast protected areas were ammunition stores and fuse stores. The distance from the Technical Centre is planned – a safe distance in the event of bomb blast and linked to it by a train track. There was no need for any intervisibility between watch tower (or other building on the airbase) and bomb stores. Their qualities of enclosure are in sharp contrast to the openness of the flying field.

SUMMARY OF HERITAGE SIGNIFICANCE

In brief the significance the site holds can be summarised as follows:

- *The architecture and design of buildings and other structures is characterised by continued attempts to innovate and refine;*
- *High historic integrity with a significant number of surviving buildings and structures. In particular the alignment of the perimeter track survives from its 1939 construction.*
- *Interrelationships as planned groups helps to explain how the site operated and the interdependence between buildings and spaces;*
- *The layout and routes connecting surviving structures, are key to our understanding the military logic that underpinned the base's development;*
- *It is a 'site of memory' evoking particular emotive and sentimental meanings and serving as spatial coordinates of identity, helping people to recall, recognise and localise their memories;*
- *Certain purpose- built structures within the site also provide a focus of commemoration and remembrance, for example the watch tower;*
- *The airbase evidences each period of airfield design;*
- *The spatial relationship within and between the core areas (Technical Site, Domestic Site, Married Quarters and Flying Field) with views across the flying field to the open countryside beyond;*
- *It is the most complete airbase to have survived from the pre-1934 period without modification or adaptation;*
- *The different parts are unified by military purpose – a*

historically designed interdependence;

- *The art and design of dispersal underpins the layout of buildings;*
- *There is a strong functional relationship between the siting of buildings and between the flying field and the structures that*

sit adjacent to it;

- *The watch tower design and siting evidence its important functional role;*
- *The openness of the flying field (defined by the perimeter track).*



Fig 50: View from the Technical Site past a hangar towards the flying field

PART B - THE FAST DEVELOPMENT PARCEL

THE PROPOSALS

INTRODUCTION (BICESTER HERITAGE)

The aim of Bicester Motion is to create a unifying idea responding directly to the site's rich and unique story, inspired by its aviation and motoring history and the existing historic buildings to create a sustainable future for the historic fabric and cultural memories and to create a new history for the site that itself in time will come to be valued.

The site has planning consent for a new hotel, aparthotel and new technical site as part of a first phase in repurposing the former RAF site to provide a long term and sustainable business, tourism and recreational use, with a focus on reinforcing the site's acknowledged reputation, historically and currently as a site for creativity, innovation and excellence in motor engineering.

Bicester Motion will comprise a series of discrete but connected parts of the site that will offer a range of experiences and opportunities to explore, enjoy and connect to the site, its history, its present and to become part of its future. This will build on the current success of the site's already established centre of excellence for heritage cars, including increasing access to the public via large events (The Sunday Scramble and Flywheel Festival) that open the site to the community and public.

PRINCIPLES OF HERITAGE-LED APPROACH

The heritage led approach is informed by a set of key principles:

- Respect the completeness and legibility of what remains;
- Respect the existing evidence of forms, shapes, layout and spatial relationships that narrate and illustrate the history of the place;
- Reinforce the airfield's significance as a place that exemplifies new ways of thinking;
- Reinforce the principle that setting of buildings was

fundamentally guided by their function and relation to the whole;

- New development should respect that the historic layout and understanding of space on the site was tied to control and efficiency of movement of personnel and equipment;
- The airfield offers the opportunity to add further chapters of history – adding new experiences and new ways of thinking, through new development and by re-purposing existing buildings and structures;
- The association of the site with innovators and creative thinkers is expressed in physical form. This provides an opportunity for historical continuity, within which the historic integrity of the layout can be conserved;
- Proposals should respect/reinterpret historic MoD policies and practices on the dispersal of new development;
- New development should reach beyond physical contexts to create new memories and experiences. This reflects how the site's history and its buildings resonate with the human experience of an important part of our national history;
- Use conservation philosophy and practice creatively to facilitate the 're-invention' of the place, not just as an airfield but as a place that exemplifies 21st century engineering, innovation and excellence.

HERITAGE SIGNIFICANCE OF THE FAST SITE

This part of the airfield lies outside the perimeter track and was used for storage purposes with routes out to panhandle areas. The site lies adjacent, but does not incorporate, defensive structures recognised as scheduled monuments to the east - two mushroom pillboxes and a double seagull trench. Skimmingdish Lane marks the south-western boundary of the site with modern

residential development beyond. Immediately to the south-east, there is new industrial development.

The truncation of this part of the airfield with the loss of the panhandle areas to residential development with the realignment of Skimmingdish Lane, has undermined the historical integrity of this part of the airfield and understanding of later phases of its development.

This part of the airfield reflects the changing nature of its context with the growth of Bicester outwards such that it now sits in an urban setting and not a rural one. Views out from the watchtower confirm this changed setting with the built forms of the residential and commercial development clearly visible.

The nature of use in this part of the site has the appearance of being unused, and detracts from the setting of the scheduled monuments and the aesthetic of the airfield as a whole. The scheduled monuments (the seagull trenches and the mushroom pillboxes) are rare survivals and provide understanding of how the airfield was defended against ground and air attacks.

Post-war, without a military purpose, the airfield went into decline and this is probably the reason why the panhandle areas were given over to development. North of Skimmingdish Lane, the FAST site is currently undeveloped. This is a consequence of redundancy rather than any planned or deliberate effort to retain the area open. This is reflected in its poor and unused condition.

DESCRIPTION OF FAST PROPOSALS (INCLUDING SITE & THE PROPOSED DEVELOPMENT)

This application relates to FAST – Future Automotive Speed and Technology. The site is located on the southern edge of the airfield beyond the perimeter track, adjacent Skimmingdish Lane, and next to a large modern industrial building. The FAST buildings will be sited approximately 350m south east of the Technical Site,



Fig 50: View from inside a seagull trench

FAST will incorporate storage facilities for existing historic cars on the site, and will also accommodate a range of users such as FormulaE motorsport, battery technology businesses, automotive technology businesses. The focus is on sponsoring and encouraging innovation in design and technology to be experienced by visitors as well as corporations. The pursuit of innovation and creative solutions reinforces the site's history at the cutting edge of technology.

This is an area of the site that has seen several iterations even while in military use. The area has been part of several transport corridors – the southern dispersal track and the rail track for ammunition relocation. Currently an area with little identity save the defence structures which seem isolated from the flying field.

The introduction of new development here involves a part of the site that has diminished significance. The proposed development offers opportunities to:

- Enhance the setting of the seagull trenches and mushroom pillboxes;
- Re-establish a visual link with the flying field;
- Facilitate public access to the structures and experiences of the view over the flying field;
- Screen views of recent industrial development on an adjoining plot to the south-east, thereby mitigating an existing harmful impact;
- Help integrate the airfield in its present-day surroundings, resonating with the design principles of camouflage.

To understand and assess the impact of this proposed development on the significance of the heritage assets affected, it is important to set out the relevant heritage management policy framework and advice.

NATIONAL & LOCAL POLICY & ADVICE

Conservation principles, policy and practice seek to preserve and enhance the value of heritage assets. With the issuing of the NPPF in 2019 the Government has re-affirmed its aim that the historic environment and its heritage assets should be conserved and enjoyed for the quality of life they bring to this and future generations.

Paragraph 192 of the NPPF sets out the ambition for local authorities when determining applications:

- The desirability of sustaining and enhancing heritage assets, individually and collectively as a group (such as a street, village or town, or in this case a military airbase) for their own sake, seeking to ensure they are put to viable uses that secure their conservation and sustain their significance;
- Recognising the value that conservation led projects, sensitively re-using components of our historic environment, can have in sustaining local communities, supporting regeneration and contributing to the local and (in this case) regional economies;
- The desirability of adding to the history of the place, contributing to local character and an area's distinctiveness, recognising the value this adds to local communities' values and sense of place benefitting our health and well-being.

In relation to development affecting a designated heritage asset (including listed building and conservation area) the NPPF states in paragraphs 193 and 194 that:

When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Any harm to, or loss of, the significance of a designated heritage



Fig 51: View south-west of the adjoining industrial development

asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification.

The NPPF goes on to explain in paragraphs 195 and 196 the differences between 'substantial' harm and 'less than substantial' harm, advising that any harm should be justified by the public benefit of a proposal.

Specifically, paragraph 195 provides a framework for planning permission to be granted notwithstanding that a particular proposal might cause harm to an asset, provided that there are compensatory public benefits.

The historic environment policies of the NPPF are supported by Historic England's Good Practice Advice Notes, which give more

detailed advice about gathering the information on significance, assessing the impact and assessing harm with an emphasis on a proportionate approach and proactive and effective management of heritage assets.

The published Planning Practice Guidance (March 2014) seeks to provide further advice on assessing the impact of proposals explaining that what matters in assessing the level of harm (if any) is the degree of impact on the significance of the asset, rather than, as explained elsewhere, the scale of development. It states (paragraph 017):

In general terms, substantial harm is a high test, so it may not arise in many cases. For example, in determining whether works to a listed building constitute substantial harm, an important consideration would be whether the adverse impact seriously

affects a key element of its special architectural or historic interest. It is the degree of harm to the asset's significance rather than the scale of the development that is to be assessed...works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all.

The Planning Practice Guide goes on to describe what 'substantial harm' could look like. It explains that the impact of total demolition is obvious but suggests that lesser interventions have the potential to result in less than substantial harm or no harm at all. The proposals the subject of this application will not erase or fundamentally compromise the site's significance nor the contribution the setting of the heritage assets makes and thus will not result in substantial harm.

New works need not involve any harmful impact but may be necessary to ensure a building or site has a viable future and thus any harmful impacts can be justified. Historic England in its Conservation Principles (2008) explains its approach to managing the historic environment and how we experience changing places stating in paragraph 88:

Very few significant places can be maintained at either public or private expense unless they are capable of some beneficial use; nor would it be desirable, even if it were practical, for most places that people value to become solely memorials of the past.

It also comments in paragraph 86:

Keeping a significant place in use is likely to require continual adaptation and change; but, provided such interventions respect the values of the place, they will tend to benefit public (heritage) as well as private interests in it. Many places now valued as part of the historic environment exist because of past patronage and private investment, and the work of successive generations often contributes to their significance. Owners and managers of significant places should not be discouraged from adding further layers of potential future interest and value, provided that recognised heritage values are not eroded or compromised in the process.

It also points out in paragraph 92:

Retaining the authenticity of a place is not always achieved by retaining as much of the existing fabric as is technically possible.

In Historic England's Advice Note 2 *Making Changes to Heritage Assets* discusses the potential of large assets, including designed landscapes, to accommodate change. It explains that there is normally scope for change, with only the exceptional site that are too sensitive to any change, stating in paragraph 58:

A small minority of landscapes will be so sensitive that the degree of alteration or addition possible without loss of significance may be very limited, particularly where there is a consistently high level of archaeological interest or architectural consistency.

RAF Bicester is not one of those sites. Indeed, it is a 'landscape' that offers the potential to add new layers of interest continuing the story of innovation and experimentation, characteristics that contribute to the site's significance.

In relation to paragraph 195 of the NPPF, which provides a mechanism for development to proceed provided that there are compensatory public benefits the Planning Practice Guidance seeks to provide a clearer understanding of what constitutes 'public benefit'; as it is the public benefit that flows from a development that can justify harm, always ensuring also that considerable weight and importance is given to the desirability to preserve the setting of listed buildings in weighing the public benefits against the harm. It states (paragraph 020):

Public benefits may follow from many developments and could be anything that delivers economic, social or environmental progress as described in the National Planning Policy Framework (Paragraph 7). Public benefits should flow from the proposed development. They should be of a nature or scale to be of benefit to the public at large and should not just be a private benefit. However, benefits do not always have to be visible or accessible to the public in order to be genuine public benefits.

It explains that public benefits can include heritage benefits including:

- *Sustaining or enhancing the significance of a heritage asset and the contribution of its setting;*
- *Reducing or removing risks to a heritage asset;*
- *Securing the optimum viable use for a heritage asset.*

The proposed development will deliver each of these benefits.

The Cherwell Local Plan 2011-2031 includes an all-embracing policy for the historic environment. Policy ESD 15: The Character of the Built and Historic Environment states:

Successful design is founded upon an understanding and respect for an area's unique built, natural and cultural context. New development will be expected to complement and enhance the character of its context through sensitive siting, layout and high-quality design. All new development will be required to meet high design standards. Where development is in the vicinity of any of the District's distinctive natural or historic assets, delivering high quality design that complements the asset will be essential.

It continues with a long list of expected deliverables for new development. Most pertinent to this report are the following

- *Conserve, sustain and enhance designated and non-designated 'heritage assets' (as defined in the NPPF) including buildings, features, archaeology, conservation areas and their settings, and ensure new development is sensitively sited and integrated in accordance with advice in the NPPF and NPPG....[...]...Regeneration proposals that make sensitive use of heritage assets, particularly where these bring redundant or under used buildings or areas, especially any on English Heritage's At Risk Register, into appropriate use will be encouraged;*

- *Include information on heritage assets sufficient to assess the potential impact of the proposal on their significance...*

The long-term strategy and vision for the site seeks to capitalise on the inherent value and economic potential that is embodied in the site's history and how the public values that history. It would be illogical to seek to destroy the qualities of the site that make it special as that would undermine its economic potential. In this respect the proposed development seeks to conform to the requirements of this policy.

The Cherwell Local Plan 2011-2031 also includes a site specific policy for the former airbase with Policy Bicester 8: Former RAF Bicester. It states that *The Council will encourage conservation-led proposals to secure a long-lasting, economically viable future for the Former RAF Bicester technical site and flying field. It qualifies this support in setting out the range of uses that it would support -listing heritage tourism uses, leisure, recreation, employment and community uses. It continues in offering support for The development of hotel and conference facilities ... as part of a wider package of employment uses. The provisos are that All proposals will be required to accord with the approved Planning Brief for the site and take into account the Bicester Masterplan. They must maintain and enhance the character and appearance of the conservation area, protect listed, scheduled and other important buildings, their setting, and protect the sensitive historic fabric of the buildings and preserve the openness of the airfield.*

The proposals brought forward, as explained earlier are 'heritage led' and seek to ensure that the heritage significance the site holds are properly considered in line with this policy. Clearly, if it is considered that the proposals do depart from the heritage objectives of this policy then the need to weigh any harm against the public benefits that would be delivered is triggered.



Fig 52: Current setting of the seagull trench with industrial buildings visible in the background

HISTORIC ENGLAND ADVICE & GUIDANCE

In response to the closure of airfields during the 1990s Historic England produced advice and guidance on the redevelopment of these brownfield sites. Many airfields embody strong commemorative values as monuments to the aircrew who flew from them never to return. Historic England sought to ensure that the history and inherited character of these places is properly understood before redevelopment.

Historic England recognised that the well-considered features of airfields might provide the inspiration for new and distinctive places and so produced guidance on the management of historic military airfields and their associated buildings so that their special character and interest are preserved and enhanced. It explains how the operational needs and development potential of these sites can be reconciled with the preservation of their special historic, architectural or archaeological significance.

The guidance explains (page 17):

The layout of any new development on the former airfield should respect the setting of any listed buildings or scheduled monuments and the special architectural or historic interest of any conservation area...[...].It may be possible to incorporate features such as runways, perimeter tracks and defensive structures into new development proposals.

In relation to proposals to extend historic airfield buildings the guidance explains that any formality or symmetry of architecture or layout will need careful consideration to ensure new development can sustain or enhance significance. It notes that most aviation buildings are characterised by their simplicity in detailing and consistency in the use of materials, which the design of new extensions should respect.

Similarly, about internal alterations it states (page 22):

It is recognised that these interiors will need to be adapted from time to time in response to new or changed uses (for example

by subdivision of original spaces). However, the demolition of structural elements such as solid partition walls or staircases should be avoided, unless it is essential to allow the ongoing use of the building.

Cherwell District Council Planning Brief for RAF Bicester 2009 establishes some key principles to inform development proposals including:

- Development of individual parts should be considered in the context of the whole; (p7)
- Retention of the open grass flying field cross its existing extent; (bounded by the perimeter track). It explains that any incursion of new development into the flying field would be resisted; (page 26,33)
- Scheduled monuments should be preserved as monuments. (page 30)

In discussing the issue of enabling development (page 34) the brief follows the advice of a separately commissioned report (CGMS) in concluding that development by way of infilling or demolition within the Technical Site or development with the flying field would result in some harm and fragmentation of the asset. It is silent on the use and development of the peripheral areas though the brief does point out the retaining the visual links to the open countryside to the north and around to the east are considered important. Similarly, whilst it encourages the repair and re-use of historic structures it provides limited or no guidance on extension or adaptation to new uses and none in relation to the bomb stores.

It would be reasonable to conclude from the planning brief and conservation appraisal that the council's vision for the future use of the site envisages the re-use of existing buildings, low key uses that minimise the need for any new development, the continuation of the gliding club and the introduction of heritage

trails. This is not ambitious and would fail to embrace the opportunities to create a new exiting chapter in the history of the airfield.

The opportunities that a redundant, but well-preserved military airfield can offer in terms of a platform for creative new development is hinted at by Historic England in its guidance but is more directly addressed in the reports by the Oxfordshire Local Enterprise Partnership on Automotive and Motorsports and a 2016 report 'The Evolution of the High Performance and Technology Motorsport Cluster'. Very pertinent to this site the Clusters report states:

The origins of the High Performance and Technology Motorsport (HPTM) cluster trace back to the period before and immediately after World War II. They reflect a combination of: government support for aircraft research and manufacture in the inter-war period; a changed emphasis in early professional motorsport to focus more on aerodynamics and weight reduction; and a shift to racing on designated circuits which were established on disused airfields (such as that at Silverstone).

HPTM businesses were formed in this context, sometimes by "racing entrepreneurs". However, many early entrepreneurs had a strong background (and training) in aeronautical engineering. Many of these businesses have seen successive ownership changes and, over time, their competitive focus has evolved.

Of the future the Cluster Report comments:

The cluster is "developing" in relation to mainstream high performance technology. This has growth potential in the context of a fast-emerging industrial paradigm, driven by regulatory changes in the ambit of carbon emissions and big data, and focused around cleaner/greener, low carbon and energy efficient products and solutions. In taking this fully into the mainstream – of automotive, aerospace, marine, defence, medical devices, sensors, etc. – the potential is vast.

IMPACT ASSESSMENT OF FAST PROPOSALS

Critical to an accurate assessment of the impacts of the range of proposals promoted within the masterplan is to remember that the airfield's whole existence is predicated on two simple 'drivers' – its functionality and the skills in camouflage (see Appendix 3). These two aspects are considered in some detail in the preceding chapters of this report. How we experience the site now and the values we place on that experience relate more to its aesthetics than to the site's historic functional and camouflage qualities, the opportunities to access the site, observe from the ground the Arcadian qualities of the Technical Site and the expanse of the grass flying field, serve to emphasise the redundancy of the airfield. However, to ensure that the site does not remain solely a time capsule (which is unsustainable) the history of the site has to move forward to create new experiences that register the re-purposing of this redundant military site. There is no attempt to suggest that the proposed developments identified in the masterplan and forming part of this application will not result in change. As Historic England reminds us in its policy and advice, change need not be harmful. The challenge for the site owner and the local planning authority is to ensure that new development is introduced in a way that ensures that the special qualities of the place can endure and that any required balancing of harm versus public benefit results in a resoundingly positive outcome.

In assessing the impact of these proposals on the site's significance (see 'Summary of Heritage Significance') it can be concluded that:

- *The architecture and design of buildings and other structures is characterised by continued attempts to innovate and refine.* The evidence the existing buildings hold to illustrate this will be unaffected. The proposed new buildings, alterations and extensions will, as will the proposed new uses, exhibit innovation and excellence continuing the history of design that characterises the airfield;
- *High historic integrity with a significant number of surviving*

buildings and structures. In particular the alignment of the perimeter track survives from its 1939 construction. The alignment of the perimeter track will be unaffected and it will continue to mark the limits of the flying field. The historic integrity of the surviving buildings will be preserved;

- *Interrelationships as planned groups helps to explain how the site operated and the interdependence between buildings and spaces.* The spatial relationship between existing buildings and the functional interrelationship between buildings and spaces will be preserved;
- *The layout and routes connecting surviving structures, are key to our understanding the military logic that underpinned the base's development.* The layout of the airfield and the routes will be preserved. New buildings will be introduced into peripheral areas, but these are areas which lie outside the perimeter track in spaces which have already undergone change (e.g. road realignment, introduction and then loss of panhandle areas, a quarry);
- *It is a 'site of memory' evoking particular emotive and sentimental meanings and serving as spatial coordinates of identity, helping people to recall, recognise and localise their memories;* These memories will remain with the opportunity for the new development to create new experiences and new memories rooted in the site's history of innovation and experiment;
- *Certain purpose-built structures within the site also provide a focus of commemoration and remembrance, for example the watch tower.* The significance and setting of these structures will be preserved;
- *The airbase evidences each period of airfield design.* This evidence will not be lost. Clearly new development will change how we experience them but there is the potential for the changes to add to our experience and understanding of the

place;

- *The spatial relationship within and between the core areas (Technical Site, Domestic Site, Married Quarters and Flying Field) with views across the flying field to the open countryside beyond.* The spatial relationship between the core areas will remain and understanding of the underlying design principles unaffected. The proposal will not result in the erosion of the trident layout, the openness of the flying field or the campus qualities of the Technical Site, views out to the countryside and hills beyond will be maintained but the views will be affected by the new buildings to the east and north west that will form part of the view. The views out have already changed over time with the growth of Bicester and will continue to do so as adjacent industrial estates are built out. This is part of the changing setting and context of the airfield. The proposed FAST buildings provide the opportunity to create buildings forms that will have a strong functional and visual connection with the present use of the airfield, helping to filter views of the surrounding more ordinary industrial and other buildings beyond the current perimeter of the site;
- *It is the most complete airbase to have survived from the pre-1934 period without modification or adaptation.* This is a state that cannot be sustained if the site is to have a viable future. The key components that give the site its significance will not be eroded – the Technical Site, the flying field and the perimeter track, but the peripheral areas will be modified. That said, as explained earlier, these areas have already undergone modification – as part of the 1940s expansion and then again when the panhandle areas were abandoned and the quarry area closed;
- *The different parts are unified by military purpose – a historically designed interdependence;* these qualities that the site exhibits and the documentary archive that supports our understanding of the military purpose will be preserved;

- *The art and design of dispersal underpins the layout of buildings;* the underlying design principles that have governed the layout of buildings will be preserved and the physical evidence of that layout preserved. Indeed, the area selected for development – the peripheral areas are those that the MoD promoted for the future development of airfields in general and avoids infilling of the spaces within the Technical Site;
- *There is a strong functional relationship between the siting of buildings and between the flying field and the structures that sit adjacent to it;* This relationship will be preserved;
- *The watch tower design and siting evidence its important functional role.* Understanding and experience of this role and the associations it connotes will be preserved, its isolated setting will be preserved;
- *The openness of the flying field (defined by the perimeter track),* this openness will be preserved with no development proposed within the perimeter track. The nature of the enclosure will change and the presence of built forms will change how we experience the site boundaries. It should be remembered that the openness of the flying field is a consequence of its function and not of any designed aesthetic. Whilst this results in an aesthetic experience that may hold some landscape value (see AS landscape report) that the proposed new buildings will have a functional relationship with other activities on the site resonates with the underlying historic design principles that influenced the site's layout. That the airfield is being slowly subsumed by the outward growth of Bicester is a historical inevitability and in doing so having buildings that offer some level of screen and camouflage to that growth will help to preserve the sense of isolation and undeveloped character of the flying field.

In relation to matters of setting it can be concluded:

- The setting of the hangars will be preserved;

- The setting of the bomb stores, in terms of their distance from the Technical Site will be preserved and thus their functional relationship but the more immediate setting will be changed which will result in a changed experience – not necessarily harmful, but certainly a new experience and one that will be an improvement on the existing state;
- The views out across the flying field from the watch tower and

views back towards the watch tower will be preserved;

- The views over the airfield from the surrounding public road network will change but these have no historical or functional significance;
- The setting of the defensive posts will be enhanced.



Fig 53: View out from the mushroom pillbox obscured by modern development beyond the airfield.

ASSESSMENT OF THE LEVEL OF HARM & HERITAGE BENEFITS

This assessment of the impacts of the proposed development concludes that there will be some harm to the heritage significance the site holds by virtue of the development within the conservation area that would change our experience and understanding of the site.

Substantial harm is a high test and would be represented by total or nearly complete loss in significance. This is not the case here and the report conclusion, having carried out an assessment of the significance of the designated heritage assets and the contribution of their settings to that significance, is that the harm is less than substantial. The harm derives from the proposed changes to the setting of the flying field by development within the peripheral areas. There has already been residential development that has eroded the setting of flying field, by virtue of new built forms being introduced into the views from the watch tower and Technical Site and by the loss of the 1940s panhandles areas and separation of the domestic site and married quarters from the flying field and Technical Site. The proposed development would change how some parts of the airfield's setting and relationship to its context would be experienced. The level of harm can be minimised by design and layout (as the parameter plans suggest) and any resultant harm mitigated by landscaping and selection of materials. There is no threat from the proposed development that understanding and experience of the airfield's historically rural context would be lost or that the openness of the flying field and the spatial relationship with and within the Technical Site would be lost. Thus, the harm does not amount to 'substantial harm'.

'Less than substantial harm, covers a wide range of impacts ranging in simple terms from 'limited' to 'significant'. Any harm should be given significant weight and importance, within the terms of the National Planning Policy Framework and because of the statutory significance attached to it, in any balancing act between that harm and public benefits. However, it may be helpful for this site to clarify where on this scale of less than substantial harm these proposals would sit.

Neither the NPPF or its accompanying Guidance offer any advice on determining the level of harm beyond the distinction between substantial and less than substantial. Historic England in its publication Seeing History in the View discusses the options for identifying significance and magnitude of impacts, referring in particular to the methodology developed by the Landscape Institute for Landscape and Visual Impact Assessments. Briefly the steps are to:

- Identify the significance of the asset (high significance to low significance, with Grade II* listed building being categorised as high significance);
- Measure the magnitude of impacts from highly beneficial to highly adverse (it categorises development that erodes to a clearly discernible extent the heritage values of the heritage assets or the ability to appreciate those values as a moderate adverse impact);
- Take into account any cumulative impact – such as how

the development would be seen with other existing or new development;

- Correlate the magnitude of impact with the level of significance to arrive at an overall level of harm. Historic England suggest that this assessment can either be presented in tabular form or as a narrative, explaining that both methods are legitimate, but that ultimately assessment is down to professional judgement.

Following this methodology, albeit a bit simplistic, and based on analysis of the nature and extent of the impacts, which would be discernible from some viewing places, but less so from others, it is possible to conclude that the proposals would have a low level of magnitude of impact to the significance of the designated heritage assets and, allowing for the different mitigation strategies across the site, would result in a negligible effect (i.e. that the development would erode to a negligible extent the heritage values of the site). This would place the level of harm at the lower end of the less than substantial scale.

National policy requires that there should be compensatory public benefits to justify any harm and the revised NPPF makes clear that even a low level of harm should be given considerable importance and weight in terms of delivering the duty to preserve or enhance designated heritage assets. Public benefits include heritage benefits and it is clear from these proposals that there will be significant heritage benefits that would outweigh any identified harm including:



Fig 54: View of the technical site from the southern tip of the perimeter track, adjacent to the FAST development site

- Sustaining the significance of the adjacent scheduled monuments by improving access, and repurposing and maintaining part of the site that is currently neglected and in poor condition;
- Introducing landscaping to enhance the existing setting of the defensive structures;
- Securing a long-term viable future for the site and its constituent elements;
- Ensuring that the heritage assets are not fragmented any further, focusing on the preservation and enhancement of the historical and visual interdependence;
- Improved access to the site (intellectual and physical);
- Opportunities for interpretation and enhancement of the embodied memories associated with the site;
- Creating new experiences that derive from the site's history of innovation and experiment, with the potential to add new chapters to the history of the place, which in turn will be valued by society;
- Making provision and long-term commitment and financial investment to ensure that present and future generations can learn from and enjoy this component of our historic environment.

Further detail of the public benefits (including heritage benefits) is discussed in the Planning Statement (Edgars).

COMMENTARY ON HISTORIC ENGLAND PRE-APPLICATION ADVICE

It has been the intent of the site owners and the project team to ensure that the preparation of the masterplan was a collaborative process involving key stakeholders. Early on in the process Historic England were asked to contribute to the emerging plans. The written response (14th May 2018) provided useful feedback identifying some challenges and concerns.

In summary the key points, with commentary are:

1. It (RAF Bicester) is of significance primarily as it represents the most complete unaltered pre 1945 bomber base in the country (along with RAF Rainham, Norfolk). The base as a whole offers first-hand experience of an interwar airbase and provides a tangible link to an important period in national history. The significance derives from the physical fabric of the site and the sensory experience of the 1930s airbase (time capsule), which needs to be preserved as far as is possible.

Comment: The physical fabric of the site will be preserved. The proposals do not involve the loss of any buildings or other structures. Indeed, in the work to date Historic England recognises much has already been done to restore and re-use buildings on the technical site in a way that represents a 'good fit'. The time capsule qualities of the Technical Site derive not only from the survival of a majority of the buildings but also the preservation of the spatial relationship between them. The nature of the dispersal of buildings around the site derives wholly from a functional prerogative. Because the airbase played a very minor role during the war and after this original layout survives with little or no infilling between buildings. Thus, the Site has now acquired a landscape value deriving from the survival and the landscaping of these spaces between buildings. This

spatial arrangement will be preserved. It is the recognised value of this 'time capsule' that has influenced the location of new development with decisions made early on that it would be entirely inappropriate to seek to intensify development within the Technical Site. The relationship between the Technical Site and the Flying Field survives from the 1939 period (with the Perimeter Track introduced between 1940 -45 limiting any further extension of the existing grass runways).

2. Major developments would entail a high degree of change. Some would entail a degree of harm, which can only be supported if that harm has been minimised and is demonstrably necessary to provide a sustainable use for the airfield as a whole and therefore delivering a wider conservation objective.

Comment: it is worth noting and ratifying Historic England's point that a high degree of change would not necessarily equate with a high degree of harm. The proposals aspire to be heritage led and where initial assessment has raised tensions between development needs and heritage needs then the options for minimising or eliminating any harm have been investigated. Evidence is available to demonstrate that this project is not about maximising development potential, but about optimising that potential ensuring that the 'good fit' that Historic England recognises in the existing businesses is strengthened. The airfield cannot be sustained on a principle of no change. Change needs to happen, reflecting the cessation of military activities, to champion a new identity for the site and new businesses that will benefit the site's special interest, the local economy and the local community.

3. Proposed development outside the perimeter track and away from the Technical Centre has potential subject to the height of buildings not intruding on flyover areas (landing and take-off).

Comment: The vulnerability of the Technical Centre and the contribution its setting makes to its significance is understood which is why the proposals seek to preserve the important visual (functional) relationship between centre and flying field, locating new development in the peripheral areas beyond the perimeter track. By the time of the outbreak of war 'preserving' flyover areas became increasingly less necessary, advancements in airplane design and technology meant that they could more accurately land with less requirement for buffer flyover zones. Pilots could more easily pinpoint their landing and take-off. However, it is recognised that the airfield was originally located within and entirely agricultural landscape and it proposed that views out over this landscape will be preserved in order to retain evidence of the airfield's historic location.

4. Support for the creation of FAST, relocating the existing hangar storage could only be supported with evidence of a secure future and viable use for the existing hangars following decanting of the vehicle storage to new buildings.

Comment: The proposed development will contribute towards an overarching vision for the wider site that seeks to attract and retain business and to secure a long-term future for the site. Therefore, the FAST proposals will help to sustain the significance of the heritage assets and our appreciation of them.

COMMENTARY ON CHERWELL DISTRICT COUNCIL PRE-APPLICATION ADVICE

An important part of the design process has been to collaborate proactively with the local planning authority. The feedback from meetings with officers has helped to inform both the detail of the proposals and inform the scope of the supporting evidence.

A formal written response to the FAST proposals was provided by officers in September 2019. In relation to heritage matters the officers' feedback can be summarised as follow:

- The preservation of the early phase is the priority though later phases hold interest;
- The setting of the defensive structures relies on a sense of openness and field of view;
- An assessment of the balance between harm and benefits is required;
- The impact on the conservation area requires assessment;
- Height of buildings should be kept as low as possible;
- The proposed development will result in a cumulative impacts with other development;
- Care is required in the use of landscaping;
- Functional relationship with the remainder of the airfield.

1. The airfield is protected principally for its 1920's origins, however the WWII additions are important as part of the airfield as a whole.

The published evidence suggests that the interest in the airfield lies in the interwar period up to the outbreak of war. It is notable that the Conservation Area does not identify the WWII extent of the airfield as worthy of protection. The Council's conservation area appraisal explains in paragraph 3.2 that the special

interest of the airfield lies in its representation of each period of development from 1923 to the outbreak of WWII. The Scheduled Ancient Monument list entry, similarly, confirms the interest in the airfield lies in this interwar period. It states:

'Bicester is the most complete representative of developments on bomber airfields for the period up to 1939. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force in the period up to 1939' (RAF Bicester: World War II airfield, List entry Number: 1021455).

The later phases of airfield design deriving from the policy of dispersal required a framework of service routes to access the areas beyond. The perimeter track marks this later phase and, in its installation, so also frames the earlier extent of the airfield with its grass runways.

Evidence of the wider extent of the airfield holds interest as a part of the evolving history of the airfield, illustrating the changing military strategies developed during the war period. Features associated with this phase are more common place nationally and in the case of RAF Bicester the historic integrity of this period has been eroded with the loss of the network dispersal routes and panhandle areas. However, as shown in Historic England analysis and the Council's conservation area appraisal it is the evidence of the earlier period that deserves special consideration. The underlying strategy to the proposed development, as explained and illustrated in the Bicester Motion Masterplan, is to respect the significance of this earlier period ensuring that the evidence, understanding and opportunities to experience the remarkably well-preserved pre-WWII airfield are sustained and enhanced. However, the project goes further in also seeking to respect and reinforce the evidence for the later, WWII interventions.

It should be noted that the defensive structures were installed in the later period of development of the airfield and do not relate to

the 1920s phase.

2. The setting of the pillboxes and seagull trench contributes greatly to their significance. These need to be considered in context, which is one of openness as they were designed to give 360-degree views.

The Council's published analysis of the defensive structures suggests that the defensive structures had a line of sight that focused on views over the flying field and between each defensive point.

The Council's conservation area appraisal explains:

'The outset of the conflict saw the construction of a larger than average number of pillboxes and trenches for the close defence of the airfield' (p. 13).

'There are also extensive vistas across the flying field from the Pill-Boxes located in an arc around the technical site and west of the bomb stores. These were designed and located to enable the station to be defended' (p. 20).

'The purpose of these four structures was to contain, until reinforcements arrived, an invasion by German paratroopers within the boundary of the airfield' (p. 28).

This does not suggest that an open 360-degree line of sight is an essential or even designed component of the setting of the scheduled ancient monuments. The area beyond the perimeter track contained the dispersal areas, designed to contain stationary aeroplanes. The field of view would have been obstructed by the planes and the ancillary equipment and store huts that populated these areas. (There is evidence that such structures existed beyond the perimeter track). Furthermore, as the illustration below shows, panhandle areas were often protected by earth bunding, which clearly would have interfered with the field of view.



Fig 55: Panhandle area protected by bunding

The Council's conservation area appraisal discusses the challenges and opportunities to be addressed in managing change. In relation to views (and setting) the appraisal sets out key objectives, among which are the following:

Preservation: aspects of the site identified as essential and requiring preservation

- The views across the flying field particularly from the control tower, the hangars and the pill boxes.
- The bomb stores, pill boxes and seagull trenches.

- The views of the bomb stores and the defence site in the south from the technical base and vice-versa.
- The intervisibility of the pill boxes and the seagull trenches (p. 39).

It is clear from this that the Council is not proactively seeking to preserve views from the scheduled monuments or from this part of the conservation area south beyond Skimmingdish Lane. It is reasonable to conclude that this is because the Council has concluded that to preserve the significance the site holds (included the contribution of setting) it is important to preserve the openness of views inwards over the flying field and towards

the other built elements of the airfield. This is made clear in the spatial analysis illustration on page 34 of the conservation area appraisal. (see Fig 48, page 42 of this report)

3. An assessment of the proposed scheme will involve weighing the balance between the harm and the public benefit, which is subject to Paragraph 196 of the NPPF. The application submission should include such an assessment.

Critical to this balancing of harm and benefit is to ensure that the assessment of harm is properly informed and based on robust evidence. The heritage report seeks to provide that robust evidence and the council accepts that it provides a good basis on which to be able to properly assess impacts. To this end the conclusion of the heritage report is that the development would result in less than substantial harm. As explained in the Planning statement (Edgars) there are significant benefits that would be delivered, including the provision of new features, new views and improved public access and interpretation that would outweigh any harm. This is consistent with the advice in Historic England's 'Setting of Heritage Assets', paragraph 38, which states:

'Enhancement (see NPPF, paragraph 137) may be achieved by actions including:

- removing or re-modelling an intrusive building or feature;
- replacement of a detrimental feature by a new and more harmonious one;
- restoring or revealing a lost historic feature or view;
- introducing a wholly new feature that adds to the public appreciation of the asset;
- introducing new views (including glimpses or better framed views) that add to the public experience of the asset, or;
- improving public access to, or interpretation of, the asset including its setting.'

4. Although discussions focus very much on the SM as a heritage asset, the impact of the development on the Conservation Area must not be forgotten. The SM is just one element of the Conservation Area, but the defensive structures make a strong positive contribution.

The heritage report clearly identifies the significance of the defensive structures and the significance of the airfield as a whole. It identifies that the different parts of the airfield are unified by military purpose – a historically designed interdependence that derives from very specific functional requirements. Significance therefore, fundamentally, is rooted in functional utility and is key to our understanding of the military logic that underpinned the base's development. To rely on the aesthetic value to the openness of the flying field, in the assessment of impact on heritage assets would be to misunderstand the site's heritage significance and conflate landscape interests with heritage ones.

5. The land to the south would have been part of the WWII stage of development but the land proposed to be developed is adjacent to the edge of the 1920's airfield. As a result, it is desirable to preserve the open nature and therefore it is felt that the buildings proposed should be kept as low as possible.

As identified earlier the objectives set out in the Council's conservation area appraisal are to preserve the openness of the flying field and the intervisibility between the various functional components of the airfield. The location of the proposed development beyond the perimeter track will secure this. The height of the proposed development also would have no bearing on preserving the characteristics that the Council considers important. It is clear that development of this area beyond the perimeter track will change how we experience this part of the site. The site is no longer in use for military purpose. In the re-purposing of the airfield there is already a changed experience. This proposed development is further evidence of a once redundant military airfield with a new viable use. This is an important part in the evolving history of the place.

As Historic England explains many places now valued as part of the historic environment exist because of past patronage and private investment, and the work of successive generations often contributes to their significance. Owners and managers of significant places should not be discouraged from adding further layers of potential future interest and value, provided that recognised heritage values are not eroded or compromised in the process. That is what this proposed development represents. The parameters plan and design code will help to deliver the quality of design and execution that is necessary. The framework the plan and code provide will also ensure that the impact of the new buildings on their immediate settings and in the wider context of the conservation area can be understood and effectively managed. Keeping the buildings 'as low as possible' risks compromising the delivery of quality, aesthetically pleasing buildings and in the longer views across the airfield will make little difference to the nature of the view (they will appear as very small elements within a very wide view).

6. However, the fact that the land to the south of Skimmingdish Lane has already been developed does not alter the fact that the development of the F.A.S.T site will have a further impact due to the reduction in openness.

The Heritage report identifies that the panhandle and dispersal routes areas that represented the WWII period of expansion of the airfield have been redeveloped. With more recent industrial development to the south east of the conservation area boundary the historic rural context has changed to a suburban one. The proposed F.A.S.T buildings provide the opportunity for a new defined edge to the current extent of the airfield that can help to mitigate the visual impact of the earlier development. As explained earlier, the openness of the flying field and the intervisibility between the various parts of the airfield, will be preserved, in accordance with the conservation area appraisal and indeed also with the Council's planning brief for the airfield. The brief states in paragraph 4.10.1:

'In respect of the flying field the study considered that its

retention as an unobstructed area of green space was "essential to ensure its historic integrity" and concluded that "any loss of the extent of the flying field, or incursion into it by built development, would be wholly unacceptable and detrimental to its importance as an integral part of the conservation area".'

The F.A.S.T development ensures that the flying field will be retained as an unobstructed area of green space.

The Council raises issues of the cumulative impact here and that is a relevant consideration where the impact of the proposed development undermines the Council's management objectives for the conservation area. On this matter Historic England's advice in GPA3 (paras 9 and 32) points out cumulative impacts are relevant where they would involve negative change 'severing the last link between an asset and its original setting'. This is not the case here, and the proposed development (and indeed the current masterplan) has been conceived and designed to ensure that an understanding of the airfield's earlier rural setting can be preserved.

Historic England has also grappled with the challenges of repurposing redundant military airfields. In its guidance 'Historic Military Aviation Sites' (2016) it discusses development options stating in paragraph 5.3:

'It may be possible to incorporate features such as runways, perimeter tracks and defensive structures into new development proposals.'

The application is actively seeking to include the defensive structures as a positive component of the development, to use the juxtaposition between the old and the new to tell a powerful story and to enhance the current setting of the monuments. The proposed development also aspires to do more than Historic England encourages, by preserving the integrity of the flying field, its perimeter track and grass runways intact.

7. Care also needs to be taken when thinking about landscaping, boundary treatment and lighting of the site, the former could potentially help reduce the impact of the buildings. The Historic England advice note, The Setting of Heritage Assets: Historic Environment good practice advice in planning note 3, paragraph 40 is concerned with screening of potentially harmful developments.

Paragraph 40 of GPA 3 states:

'Where attributes of a development affecting setting may cause some harm to significance cannot be adjusted, screening may have a part to play in reducing harm. As screening can only mitigate negative impacts, rather than removing impacts or providing enhancement, it ought never to be regarded as a substitute for well-designed developments within the setting of heritage assets. Screening may have as intrusive an effect on the setting as the development it seeks to mitigate, so where it is necessary, it too merits careful design. This should take account of local landscape character and seasonal and diurnal

effects, such as changes to foliage and lighting. The permanence or longevity of screening in relation to the effect on the setting also requires consideration. Ephemeral features, such as hoardings, may be removed or changed during the duration of the development, as may woodland or hedgerows, unless they enjoy statutory protection. Management measures secured by legal agreements may be helpful in securing the long-term effect of screening.'

The site is rooted in the use of landscaping to help filter or conceal buildings. Whilst there is no intention to introduce poor quality buildings and then screen them it would be consistent with the history of the site and the original design principles and entirely appropriate to use landscaping as part of the art of concealment.

8. The Planning Practice Guidance: Conserving and Enhancing the Historic Environment, highlights this 'When assessing any application for development which may affect the setting of a heritage asset, local planning authorities may

need to consider the implications of cumulative change'. The Historic England advice note, The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3, also advises on cumulative change and where significance may have been compromised in the past, additional change that may further detract from the significance of heritage assets needs to be considered.

It is equally pertinent to recognise that the work of successive generations can contribute to significance. Owners and managers of significant places should not be discouraged from adding further layers of potential future interest and value, provided that recognised heritage values are not eroded or compromised in the process (Historic England). As demonstrated above and discussed in the main body of the report the vision here is to create a new chapter in the history of the site, one that is rooted in the site's history and significance and one that will add interest, not detract from it.

CONCLUSION OF THE FAST DEVELOPMENT PARCEL PROPOSALS

It has never been the intention of Government to prevent change or freeze frame local communities and current policy and good practice suggests that change, if managed intelligently would not be harmful.

The National Planning Policy Framework and accompanying Practice Guidance provide the policy and advice requiring that evidence is collected and interrogated to ensure that the significance of heritage assets is understood and to ensure that the nature and extent of any impacts on that significance from new development is understood. Furthermore, it is clear that great weight and importance should be paid towards the preservation and enhancement of those designated heritage assets with a requirement that any residual harm must be outweighed by public benefits.

The proposed development will not have any direct adverse impact on any listed building but has the potential to affect the character and appearance of a conservation area and the setting of listed buildings.

In accordance with the Good Practice Advice Note 2 Managing Significance in Decision-Taking in the Historic Environment this report has undertaken a structured staged approach to understanding heritage significance of the affected designated heritage assets and understanding the impacts on the setting of these heritage assets.

Throughout the design process the importance that the designated heritage assets in their own rights and the contribution they make to the sense of place has informed the evolution of the proposals, which are genuinely heritage led. The masterplan and delivery of the long-term strategy for the site

will etch a new chapter into the history of the site, carving a new identity, but without erasing the site's history and the meanings that it holds for the local and wider community.

The proposals involve change, repurposing a currently unused area of the airfield and introducing new built forms. This part of the airfield has already been compromised by the loss of the

panhandle areas and new development, and that therefore it is considered that the level of harm that would result from the FAST proposals would be less than substantial. There will be public benefits (including heritage benefits) that would be delivered by the proposed development to compensate as discussed in the planning statement (Edgars).



Fig 56: View towards the FAST site with modern industrial development beyond.

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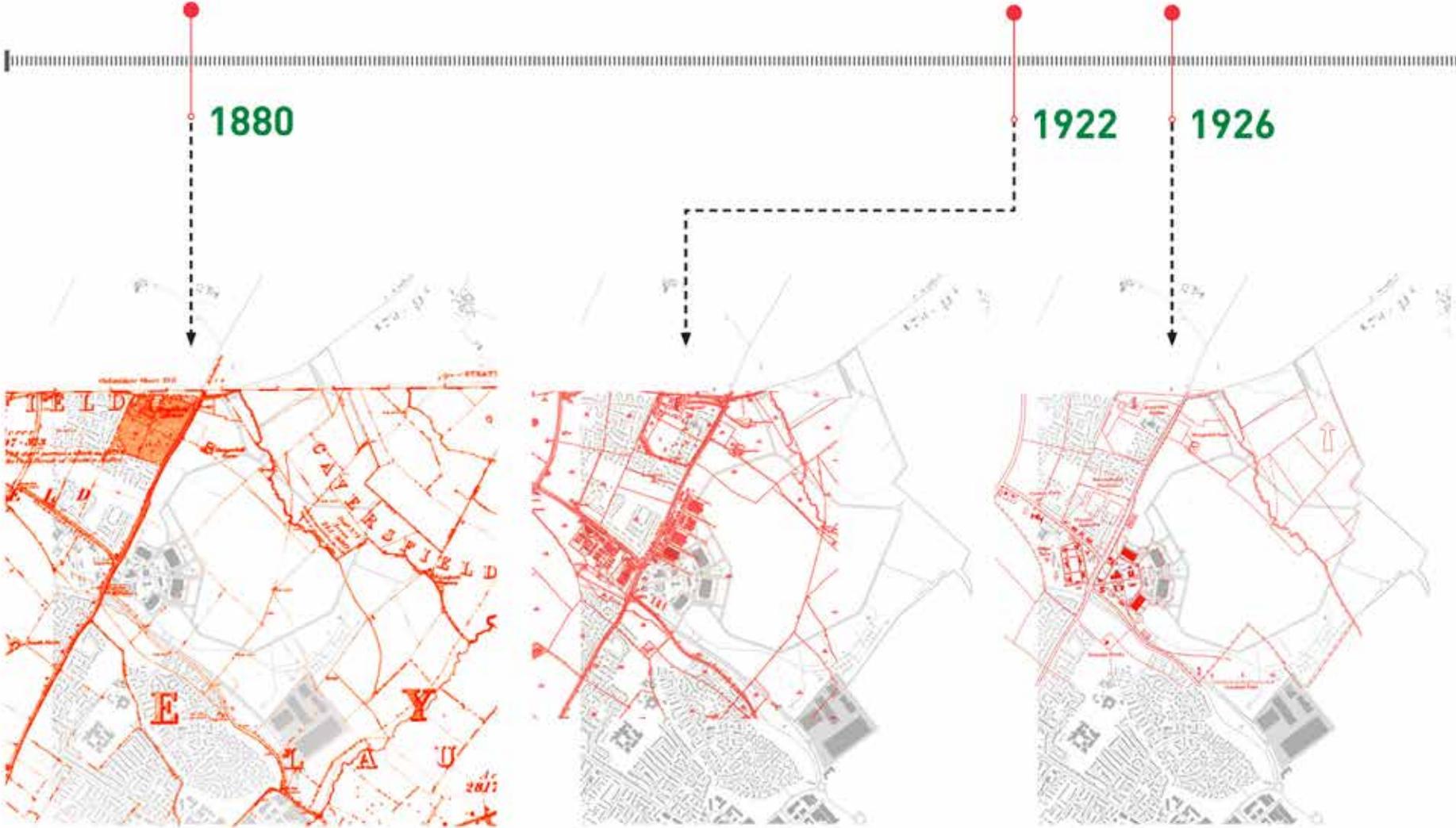
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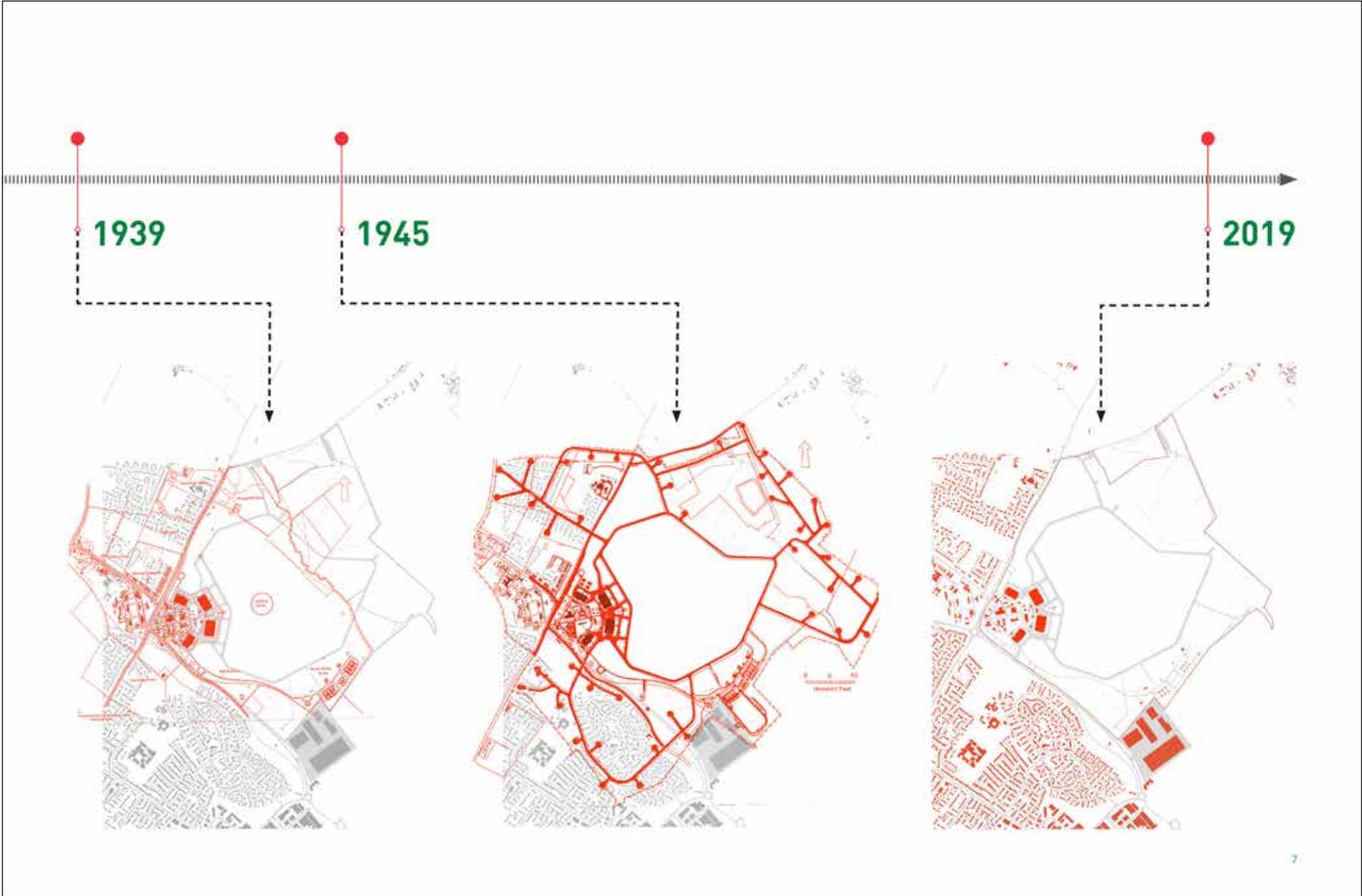
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APPENDIX 1: MAP REGRESSION

1.3 Development Timeline





APPENDIX 2: GAZETTEER

PHOTOGRAPH



DESCRIPTION

Concrete and brick structures. Originally 8 in existence - 2 positioned either side of the 4 hangars. Each had 12 loop-holes, 10 facing the airfield and one on each end wall. Only 3 surviving today (2 of brick and 1 of concrete)

NGR: SP 5926 2427

NGR: SP 5929 2431

NGR: SP 5923 2459

SIGNIFICANCE

Of importance as part of an interrelated group of defences strategically sited to protect the Technical Site and grass airfield. Linked defensively to the Type 27 pillboxes.

Of further historic and evidential value as designed responses to early war time anti-invasion measures. The group formed a first line of resistance against potential enemy landings. Our understanding of this 'defensive line' however is partly diminished by the loss of other Defended Air Raid Shelters.



Semi sunken octagonal structures of brick construction with concrete roofs. Built to prefabricated plans. Originally 2 - situated to protect the north and south hangars and aprons. 1 surviving. Loop holes have metal grilles and the entrance is now bricked up.
NGR: SP 5935 2463

The surviving structure is a scheduled monument. It is a good example of the standard (FW3) designs produced by the Fortification and Works directorate during the early war years. Evidencing the standardisation of airfield building/structure design during the war period.

Further evidencing what was once an important defensive group relationship around the inner core of the base. The pillbox served as one of a number of defensive positions protecting the Technical Site. This 'inner-core defensive group' was ultimately associated with defensive structures in the airfield peripheral areas to form Bicester's wider defensive complex.

Our understanding of this relationship is now diminished by the destruction of affiliated pillboxes.

PHOTOGRAPH



DESCRIPTION

An unusually shaped structure of brick construction with steel door entrance and pyrotechnic cupboard built to the side elevation. Resembling the Type 27 Pillbox (with internal arrangement including gun mounts at loop holes) but without angled sides to the building's rear.

Structure shown on the 1944 airfield site plan as an Air Raid Shelter but identified by Paul Francis (1996: 33) as a pillbox owing to its layout and central position in front of the watch office - overlooking the airfield (landing ground). Two Type 27 pillboxes were located on either side at some distance to provide complete coverage of the airfield.

NGR: SP 5947 2448

SIGNIFICANCE

The structure is a scheduled monument. It is a rare survival of the airfield's defensive matrix in this position. It is of importance as part of the defensive group relationship around the Technical Site - the first line of defence against air invasion. The structure holds particular value because of its design, which has been modified to take account of its siting in front of the Watch Tower and because of its role in protecting that building. It is also significant as the most forward positioned defensive structure protecting the grass airfield from landing attack.

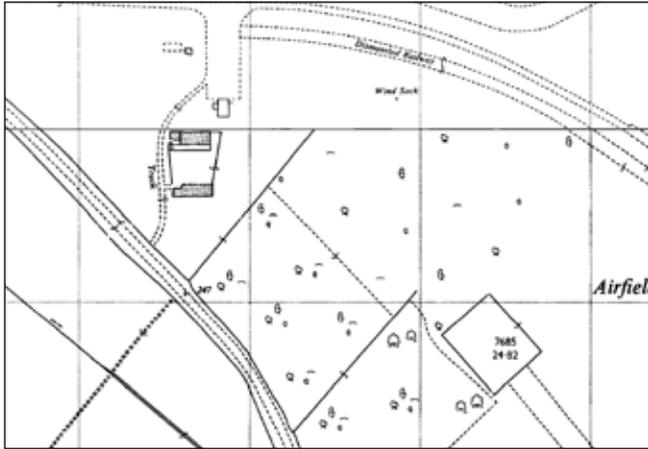


Area where aircraft were towed for firing practice and gun harmonisation. The site of a red brick structure - now demolished - comprised of 3 red brick walls reinforced by brick traverses with a front elevation left open to enable aircraft to fire at targets.

NGR: SP 5958 2401

Of importance as part of RAF Bicester's interwar and wartime training facilities. The structure was demolished after 1996 because of health and safety issues. There is the potential for below ground survival to evidence the location of the structure, but the area otherwise is of limited significance.

PHOTOGRAPH



DESCRIPTION

Location of the 2-point small arms – later 4-point – Machine Gun Range. Originally the site of red brick structure including a shelter and target area separated by 25 yards. Now demolished

NGR: SP 5957 2398

SIGNIFICANCE

Of importance as part of RAF Bicester's interwar and wartime training facilities. The structure, however, is no longer surviving being partly demolished by 1996 and completely demolished sometime after. There is the potential for below ground survival to evidence the location of the structure, but the area otherwise is of limited significance.



2 seagull trenches (or a single 'double' trench) sited on an artificially raised piece of land. Built back to back (separated by approx. 50 feet) to compensate for lack of firing cover from the rear. They were part of permanent trench system consisting of a narrow brick lined trench in two arms arranged in a zig-zag plan form (Francis 1996: 41)

External walls hidden by an earth bank. Internal walls and brick piers supporting concrete slabwork raised 1 foot above the trench wall. Earth and turf placed on top of slabwork for camouflage.

Existing as part of a 'defensive group complex' - comprised of the Seagull Trenches; 2 Mushroom Pillboxes situated a short distance on either side of the trenches; and an anti-aircraft Lewis Gun site in the middle.

NGR: SP 5978 2393

NGR: SP 5978 2393

The structures are scheduled monuments. They are of group value existing in relation to the Mushroom Pillboxes – and are sited in such a way as to form a deliberate defence position.

They are of importance as part of a group of secondary defences designed to protect the airfield boundaries and to contain enemy troops within the airfield until reinforcements arrived.

The structures are reliant on some landscaping and contours for camouflage purposes but designed fields of view, in particular intervisibility between the defensive structures, have been lost due to overgrowth.

PHOTOGRAPH



DESCRIPTION

2 Mushroom Pillboxes thought to have been designed and constructed by FC Construction Ltd. Each of Circular brick and concrete construction. 5ft high with 13.5in thick brick wall – the latter hidden by an earth bank. Internal circular wall supporting cantilevered circular concrete slab roof raised slightly above the wall to enable 360-degree firing capability. Slab roof slightly domed. Roof covered in turf, which together with surrounding earth bank, creates a highly effective camouflage effect rendering structure almost invisible in long range views. Structures also include a connecting tunnel linking to an underground Stanton Type concrete arched shelter. (Francis 1996: 41)

NGR: SP 5975 2396

NGR: SP 5980 2390

SIGNIFICANCE

The structures are scheduled monuments. They are of group value forming a defensive position that included the Seagull Trenches. Group legibility, however, is blurred by the current topography and self seeded trees and scrub. There is currently no intervisibility between the defensive structures due to overgrowth.

The pillboxes intrinsically also hold aesthetic, historic and communal value. Their distinctive mushroom shape has become an iconic representation of Britain's Second World War defence complex. Their survival is an emotive material record of the national experience of war.

They are also of educational value – helping current and future generations understand Britain's war time anti-invasion preparations.



2 SAA stores of brick and concrete construction comprised of four compartments. 4 stores were built in pairs back to back protected by brick traversed walls. Only one (building no 211) surviving.

NGR: SP 59 6020 2424

The structure survives largely intact though in a dilapidated condition with a fire damaged interior. Former steel doors no longer extant. The store is of group value as a constituent part of the bomb stores group.

PHOTOGRAPH



DESCRIPTION

2 Stores (building nos. 213 & 214). Of permanent brick construction with thick concrete roof (now covered in felt) and surrounded by a heavily traversed earth bank. Internal layout in such stores was usually subdivided into two compartments (one for detonators and the other for storing fuses)

(213) NGR: SP 6015 2415

(214) NGR: SP 6007 3405

SIGNIFICANCE

The structures are of group value helping to illustrate the distinctive methods associated with bomb storage and armament.

NO IMAGE

Building no. 222. Small structure of brick and concrete construction protected by earth traversed walls.

NGR: SP 6010 2391

The structure is of group value helping to illustrate the distinctive methods associated with bomb storage and armament

PHOTOGRAPH



DESCRIPTION

Building no. 223. Of reinforced concrete and brick construction further protected by reinforced concrete traversed blast wall and an earth bank. Internal layout subdivided into two compartments. NGR: SP 5997 2392

SIGNIFICANCE

The structure was a standard feature of RAF Expansion Period bomber airfields and helps illustrate RAF Bicester's WWII role. It is of group value as part of the bomb stores group.



Building nos. 210, 226 & 229. 4 originally existed when the bomb stores area was enlarged in 1942. These were 60ft long structures of 10 bays constructed entirely of steel - comprised of curved RSJs clad with steel sheeting completely covered with earth and turf. They were designed to maximise efficiency. Two corrugated iron doors were positioned at either end of the structure to allow tractors or bomb trolleys to enter and leave in such a way as to facilitate the arming of each bomb trolley in turn. The process was part of a wider chain of activity- the trolleys having left the buildings were then transported out to aircraft waiting on the dispersal area where squadron armourers loaded the bombs onto aircraft. (Francis 1996:55)

3 buildings survive;
 (210) NGR: SP 6029 2420
 (226) NGR: SP 5999 2401
 (229) NGR: SP 5989 2379

The structures are of group value. They represent an important building relationship (including the Component Stores & High Explosive stores) that helped illustrate the overall operation of the bomb stores area. The buildings denote one step in a broader set of bomb armament related activities.

PHOTOGRAPH



DESCRIPTION

Building no 216 & 224. Of brick and concrete construction. Expansion Period operational bomber stations were ordinarily supplied with 2 rows of 3 back-to-back, 12 ton capacity bomb dumps (for a total of 144 tons), protected by brick and earth traverses. They comprised of a gantry running along both north and south frontages with overhead cranes to enable bombs to be hoisted in place. The cranes however would ultimately prove obsolete with the introduction of even heavier bombs.

These HE stores survive at Bicester although the traverses show signs of erosion. The cranes are also no longer in place. (Francis 1996: 56)

(216) NGR: SP 6022 2413
(224) NGR: SP 6009 2399

SIGNIFICANCE

Building 224 is a scheduled monument. The buildings were a material and strategic response to wider events on the world stage – in particular the collapse of the Geneva Convention talks. They evidence the increased need for bomb storage during the RAF's Expansion Period.

They are of importance as part of a key group relationship. HE Stores were at the core of the bomb store group – functionally connecting a series of affiliated structures including the Ultra Heavy Fusing Point building and Component Stores. Bombs were transported from the HE stores by bomb cart to the Ultra Heavy Fusing Point buildings where fuses collected from the Component Stores were added. The bombs were then loaded once again on carts and transported to aircraft awaiting in the dispersal areas.

Taken together, the buildings demonstrate the historic workings/ activities of the bomb store areas and the processes involved in bomb storage and armament. These activities as a whole help relate the wider significance of RAF Bicester as a Bomber Station.

NO IMAGE
(STRUCTURE DEMOLISHED POST WAR)

Building no 218. 1 heavily traversed structure comprised of 4 large bays for the open storage of bombs. Part of the 1942 expansion of the bombs stores areas, now demolished

NGR: SP 6017 2405

No longer surviving. Site is of low evidential value

PHOTOGRAPH



DESCRIPTION

Polygonal shaped concrete track running around the perimeter of the flying area. Part of Bicester's Second World history. Introduced during the early war years to meet increased wartime flying demands. The track bounds off the runways, setting them to their 1939 extent. It further connected a series of dispersal tracks communicating with the airfield's peripheral areas.

SIGNIFICANCE

Key to our understanding of Bicester's WWII history. The track represents important functional and building relationships and helps articulate the more ephemeral aspects of Bicester's day to day operations during the Second World War.



Part of Bicester's First World War history.

The grass airfield is a survival of high historical and evidential value.

PHOTOGRAPH



DESCRIPTION

A series of aircraft dispersal areas sited at various, irregularly set, points off the end of tracks leading from the main perimeter track. Each area was of solid construction with asphalt surfacing or similar to afford some kind of camouflage qualities.

SIGNIFICANCE

The panhandle areas represent a subsequent phase of the airbase developed during World War II. Their importance was largely tied to Bicester's war time operations. Their development and frequency reflected increased demands on the base at the time. This importance waned during peacetime. Most areas returned to agricultural use or have been lost to built development.



A remnant of RAF Bicester's 'agricultural history'. The area was part of Hungerhill Farm, acquired when airfield boundaries were extended to the north in the 1920s to accommodate longer runways.

It was a historically undeveloped area comprised largely of panhandle dispersal - now lost. The site also comprised of a number of temporary huts used during Bicester's World War II operations – these too are no longer extant.

Historically, an undeveloped area for a variety of reasons., including the need to control peripheral areas and because of the cost that would have been involved to fill the quarry and level the site to make any use of it. The area provided natural camouflage to the aircraft dispersal areas but otherwise is of low heritage significance.

APPENDIX 3: MILITARY THOUGHTS ON CAMOUFLAGE: TOWARD'S SELF-CONCEALING ARCHITECTURE

The ABC of Camouflage

Camouflage Techniques

- To Disguise
- To Conceal
- To Deceive

Camouflage Directives: A Brief Chronology of Policy

Abbreviations

CDSE - Civil Defence Camouflage Establishment

RAF - Royal Air Force

SCC - Standard Camouflage Colours

THE ABC OF CAMOUGLAGE: A-C

A stands for Aeroplane: his is the eye that camouflage tries to defeat: this is the why: -

B is the Bomber: he's coming so fast, if he can't see you quickly, why damn it, he's past.

C is the Camera. Try to confuse the interpreter's reading of aerial views

(Major D A Pavitt Lectures and Training)

The emergence of the aeroplane in the 20th century "as a modern technology and war machine had profound implications upon the imagining, experiencing and transforming of conflict spaces." The aeroplane opened a new world of 'spatial interrogation.' Its downward-looking aerial perspective allowing for new ways of seeing and engaging with the landscape that revealed features otherwise visually concealed to the grounded observer. It is a perspective that would prove of vital strategic importance for the military for whom it facilitated the easy mapping and locating of enemy battlefields, assets and troop movements.

Almost as soon as these military applications were realised, however, was a defensive response triggered for enemy too had their own prying eyes in the sky. Political concerns throughout the 1930s about the 'bomber always getting through' (echoing a speech made to the House of Commons by Prime Minister Stanley Baldwin), coupled with the knowledge of the destructive effect of aerial bombardment as seen during the First World War, would lead to an increased emphasis on the importance of concealment. New deceptive technologies had to be developed to diminish the aeroplane's impact, counteracting its interrogative capacities with a sort of 'staged visibility.'

It is in this context that camouflage would emerge as a 'new weapon' of modern aerial warfare, aiding in the masking of military intent and ultimately redefining the spaces of conflict by what Paul Virilio (1989: 2) has referred to as the '*aesthetics of disappearance*.' The goal was to deploy various 'visual tricks' to obscure one's assets, if not at the very least to baffle and /or misguide the bomber as they sought their target. These visual deceptions themselves were ever changing - responding to the ongoing demands of war. Camouflage techniques were intricately linked with developments in aeroplane and the camera technologies, reflexively responding to the progressively more reliable and precise advancements in observation with equally inventive forms of deception. By the Second World War, the aerial interpreter had become ever more precise in deciphering the earth's surface; the aerial bomber ever more proficient in targeting and attacking; and Camouflage Officer ever more expert in concealing the military assets. The result was a dangerous game of hide and seek.



A3: Fig 1. German Heinkel III Bomber over London 7th Sept 1940. Landmark features (such as the River Thames) would have helped guide the bomber in its path. The siting important military assets near such features was therefore highly discouraged.

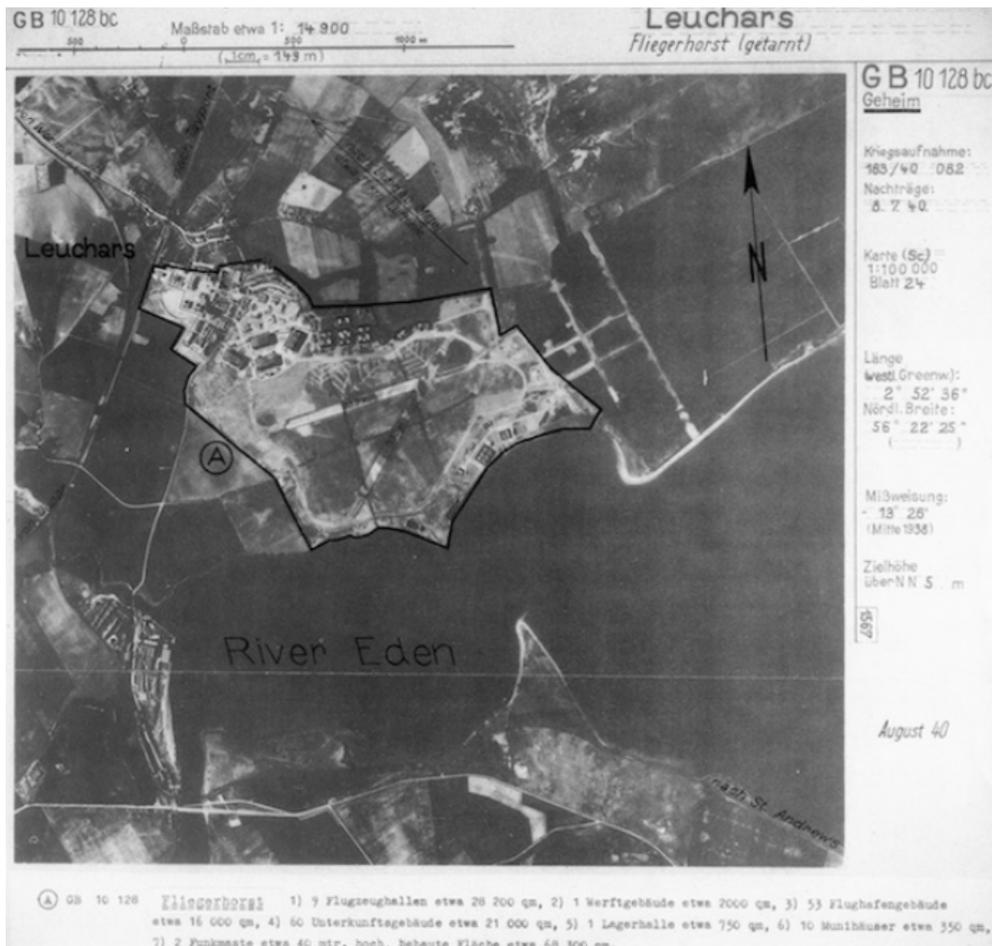
CAMOUFLAGE TECHNIQUES

D is Deception, which plainly implies that you've got to tell Jerry some credible lies

E is the Enemy: keep him in doubt when you must make a mess, what the mess is about

F is False Work, which will serve to distract the enemy's eye from the genuine fact.

(Major D A Pavitt Lectures and Training)



A3: Fig 3. Luftwaffe vertical air photograph of Leuchars c1940- it appears that the camouflage measures - including attempts to use disruptive painting techniques to break up the conspicuous regular shapes of the runways and the painting of false field patterns and hedges in a bid to blend the airfield to surrounding landscape failed to fool German Bombers



A3: Fig 2. Aerial photographs of RAF Leuchars 1942. Six camouflaged hangars are visible. As are camouflaged runways

This 'camouflage game' unfolded in 3 stages aimed: to *disguise*, *conceal* or *deceive*. Schemes involving the disguising an asset were largely enacted through the use of paint – often in disruptive patterns aimed at blending an installation to its surroundings. The concealment approach included the use of nets or vegetation– to blur building shapes. While deception techniques were much more ambitious, often enveloping extensive areas in a bid to draw an enemy's eyes away from an asset - sometimes directing the gaze towards a dummy or decoy installation resembling the real target. (All three are discussed in greater detail below)

The central concern was the appearance of military assets from the air, a task to which numerous specialists practiced in 'visual literacy' were engaged from diverse fields. Their methods combined various scientific and artistic techniques. Research was conducted into "the physical properties of visual phenomena and into the psychology of their perception" in order to further "the understanding of optical illusion." Camoufleurs for instance used various grass killing solutions using sodium chlorate to create fake horizontal tree crowns. They also worked with cubist painters to break up forms and contours and create 'new scenery'.

Airfields presented the greatest challenge, not only due to their size and shape, but also due to the delicate balance they were required to maintain between managed visibility and 'invisibility'. Needing to once be adequately concealed to deceive enemy bomber pilots yet remaining recognisable to their own pilots. The latter in fact were often given training to recognise their new 'cubist country' – to understand the landscape patterns well enough to delineate the fake from the real. For some pilots, easy landscape recognition was underpinned by pre-existing knowledge of cubist art. Edward Steichen for instance noted that it was his knowledge of the impressionists and Cubists that enabled him to carry out his aerial reconnaissance missions. For those without a pre-existing knowledge of the Cubists, manuals



A3: Fig 4. Aerial Photograph of the camouflage scheme at Bicester. Bicester is noted as having been instrumental in the development of aerodrome and camouflage. The aerial photograph illustrates how paint was used to mimic the random shapes field patterns. Camouflage paint was also used on the hangars. The lack of concrete runways and tracks (the latter added c1939) contributed to the success of the scheme.

were produced. The Art Historian and critic John Welchman (1988:19) has highlighted the terms used in a 1918 'photo atlas' created and utilised by the RAF. The atlas distinguished between

'irregularly shaped and dispersed unbounded fields' and the irregular 'abstract seeming field patches broken up by occasional roads.'

CAMOUFLAGE TO DISGUISE

Early airfield camouflage schemes were concerned with the visual impact of existing buildings and structures with efforts focused on often superficial interventions.

PAINT: was the easiest of such interventions although early efforts often proved ineffectual within a matter of months of exposure to weather conditions. These early failures however would later lead to extensive research on paint typology, ultimately culminating in the 1939 publication of the seminal paper on camouflage paints by the Paint Research Station. The latter outlined specific applications of different paints, observing that;

- Bituminous Emulsions - were to be used on surfaces such as tarmac, felted roofs - with black bitumen being further found to be most effective when used for 'hedge' painting;
- Silicate Paints – were to be used on cement and concrete surfaces; while
- Oil-Bound Water Paints (Distempers) – were to be used on buildings and roofs – having been found to be highly resistant to weather conditions and mechanical wear and tear.

The painting technique itself was twofold; firstly, the simple method of toning down was utilised. “In these cases, a paint colour would be selected which would share the same tonal values as that of the surroundings. Once applied to the building, the matching tones of the paint with the locality were seen to enable the ‘fade-out’ of the structure, particularly when viewed from the air.” The second type of painting was that of disruptive or imitative patterning. In this case “a design was often selected which was based upon either artistic or biological knowledge. This was deployed in order to break up the regularity and structural form of the building.” Attempts were made to mimic the surrounding landscape. “in urban areas this involved reproducing or replicating residential areas, where large factory workshops

were adorned with a pattern reminiscent of several rows of terraced housing.”

COLOUR: A corollary of the research on paints was the knowledge of appropriate colours. Early schemes placed great emphasis on earth coloured pigments. Since much of the supply had come from overseas, an urgent study of natural sources within the country undertaken - leading to the publication of Wartime Pamphlet No 21, Ochres, Umbers and Other Natural Earth Pigments of England and Wales by the Geological Survey of Great Britain. Thoughts on the use of colour however evolved over time.

Airfield building colours, often chosen by the Area Works Department Camouflage Officer, were generally selected to reflect the local geographic context throughout the seasons.

Buildings therefore incorporated a range of colours with some being painted in random patterns. Inter-war bases were largely built in plain brick whose tones were considered to offer natural camouflaging qualities – negating the necessity for further ‘artificial’ interventions. Expansion Period airfield buildings were of three key colours; green, black and grey – with the additional brown of the natural untreated brick. By 1942, building colours were restricted to greens browns and black.

Camouflage colours came from the Civil Defence Camouflage Establishment (CDSE). The range contained colours referred to as Standard Camouflage Colours (SCC) often just simply denoted by the numbers in official publications. SCC 1-4 for instance were shades of brown. In 1942 the CDSE range was incorporated into the British Standard system and the BS 987C range of colours (blacks, greens, browns, and reds) was developed.



A3: Fig 5: The Guard House at RAF Bicester. The building, prominently sited at the entrance of the site, is of a neo-Georgian style and in colours typical of the time; constructed of ‘earthy’ red brick with a grey slate roof and green wood finishes.

If these schemes were to prove effective however, considerations needed to be given not only to the colours of Air Ministry buildings, but also to that of the range of equipment and vehicles found within the facility. The latter were often camouflaged using the same colours applied to buildings although the type of paint used (e.g distemper etc), corresponded to the material in question.

SURFACE TREATMENTS: The introduction of hard runways and tracks presented significant problems for airfield camouflage. These areas required a range of camouflage techniques - often applied in tandem. Disruptive paint patterns were utilised to break up their regularity. This involved the use of several artificial surface coatings on hard surfaces and the colouring and chemical treatment of surrounding vegetation. "Dusting powders, consisting of chalk or gypsum pigment and adhesive finely ground together," were used to simulate field patterns. Movable hedges were also sometimes positioned on runways to complement the surrounding field patterns. These techniques went hand in hand with camouflaging measures focused dulling the reflective qualities of the surfaces. Experiments, based on the hard surface materials used on tennis courts, were carried out (for instance at Stradishall and Gasport) to reduce the 'shine' of concrete'. At Stradishall, paved areas were treated with pine-coloured slag chippings while those at Gasport were treated with coarse pre-coloured stone chippings. By 1940 the 'Stradishall System' was the standard method of texturing runways and paved areas on all except Fighter Command stations - where the abrasive surface caused too much tire wear and tear owing to the busy nature of the stations (the latter runways were instead coated with pervious asphalt). Further experiments were carried out on alternative surfacing materials including sawdust, tan bark and granulated rubber. Eventually it was decided that hammer milled wood chips were the most effective material - with the latter proving longer lasting and as resembling the optical properties of grass when viewed from above.

NETTING & STEEL WOOL: was used "to either physically obscure features in the landscape or to mimic the textural appearance of the surrounding natural landscape." Other techniques were proposed but never trialled. In 1937 for instance the architect Oliver Bernard proposed the use of 'distortion' as a camouflaging technique. He argued that structural additions

could be incorporated to the tops of buildings "to break up their regular appearance, sharp lines and smooth surfaces." His proposed additions took the form of overlapping wispy cloud shapes which he suggested gave the appearance of deciduous woodland from the air.



A3: Fig 6: WWII Airbase factory in California covered in camouflage netting.

CAMOUFLAGE TO CONCEAL

These early wartime camouflage schemes were largely attempts aimed at offsetting the initial failure to build airfields with a certain quality of inherent concealment in the first place. Inter-war bases had been built to peacetime standards, often with little thought given in the early stages of site selection to the preservation of existing landscape features as a basis on which artificial camouflage could later be applied. The general advice in the decades before the war had been that the best airfield sites were those completely cleared and devoid of all original character – blank canvases – as it were – on which the RAF could go about implementing its designs unobstructed. However, as the cost of masking such blank canvases grew increasingly prohibitive, it soon became clear that efficiencies could be achieved by considering “the concealment problem as one of the basic factors in the preliminary stages of site selection and development, with every effort being made to preserve the original character of the site.”

Many new war time bases made good use of the surrounding context. New structures were laid out so as to blend them as seamlessly as possible to the surrounding terrain, sitting new buildings with thought to colour and textures so as to make them as inconspicuous as possible in their completed form. Existing roads were also often incorporated into the site and the retention of existing farm groups – where these did not interfere with the airfield – was especially advised. The latter were considered particularly effective as deceptive terrain features – disarming aerial observers as to the true intent of the site. Field patterns were also retained or reintroduced. The idea now was not so much that of “covering up any feature, as the judicious utilization of existing site character, arrangement and selection of color and texture to blend the object most naturally into its normal surrounding” (sic).



A3: Fig 7: RAF Hunsdon . Existing hedgerow was retained. Buildings were set against the backdrop of existing woods and laid out in a manner mimicking farm building relationships

These ideas of *inherent concealment* were also incorporated in existing bases through the clever consideration of landscape elements – in particular the use grass and trees to mask or blur the general shape and disposition of buildings.

GRASS was grown on structures – in particular on defensive features such as Seagull Trenches and shelters – often with a highly effective camouflage effect. Grass was also grown on earth walls around bomb Stores – a protective technique known as Earth Traversed (ET).” The latter too afforded a certain degree of camouflage. Grass was most effective in camouflaging airfields however when used on runways (on airfields whose intensity of use did not require hard surfaces) - with concrete runways being by far the most conspicuous elements on an airfield.

TREES also played an important part in the concealment of airfields. In a radical departure from the early thinking (that airfield sites should be cleared of all obstructions), trees became the first features to be studied in the selection of wartime sites - with every effort being made to arrange the various facilities so as to take full advantage of existing trees groups. Where there were woods for instance, barracks or other administrative buildings were to be built and arranged informally within them. The planting of new trees was to be chosen relative to those most desirable for the site although a mixture of evergreen and deciduous trees was considered preferable since it provides a better year-round screen effect.



A3: Fig 8: Earth Traversed shelters at RAF Bicester



A3: Fig 9: Earth Traversed shelters at RAF Bicester



A3: Fig 10: Trees lining the trident axis' at RAF Bicester.

As the war progressed, these ideas of 'inherent concealment' evolved into those of 'self-concealment' – shifting the focus from the landscape to the buildings themselves. It was not just the case that buildings need to be sited in such a way make the most of their existing landscape context but that they needed to incorporate 'camouflage aesthetics' in early stages of design and construction. Changes in camouflage policy and organisation throughout 1940-41 would serve to make this self-concealing architecture more of a reality. Architects were encouraged to design buildings and structures that themselves possessed self-concealing qualities. Adopting this 'self-concealing ethic' was seen as enabling the easier merging of large structures/ building groups into the landscape – thus diminishing their visual impact and enhancing their survivability in the event of aerial attack.

Huts were a particular bone of contention. Here it was not just a question of individual building design but of the overall group plan. 'Scattering them or arranging them in a grid like pattern both alerted enemy bombers to their existence - since they lacked the orderly lay-out of the kind found in domestic buildings with their garden plots. Here disguise was suggested that would take the form of a suburban village or farm layout. New roads were be laid out to link up with existing ones and the huts sited so that the plan was in character with its environment. To complete the effect, architects were also instructed to pay attention to other natural and artificial ground patterns to complete the illusion. False hedge, crops, cultivation, tracks, roads were all encouraged to distract attention from the hutments themselves. The central idea was one focused on the general plan rather than individual hut concealment; *'to the air view the treatment of the ground around a hutment is of more importance than the disguise of the huts themselves'*. At RAF Bicester, some temporary hutting was sited at the quarry site- an area that provided good 'natural' concealment.

TO DECEIVE

This type of camouflage called for a consideration a much wider context and often took the form of regional planning. It became increasingly necessary with the expansion of airfield facilities.

For camouflage to be successful more than individual targets needed to be considered and disguised. “In addition to introducing a new perspective, the aeroplane had also changed the dimensions of time and space. It took only minutes to fly over large stretches of land. If enemy bombers were to be disoriented and deceived to prevent aerial attack, camouflage projects for entire regions had to be developed.”

Merril E De Longe has highlighted the extent to which Germany had perfected the creation of these deceptive landscapes. Entire mobile landscapes had been created – going as far as having smoke come out of the make-believe houses which were lined along runways with trees growing alongside them to give the appearance of a typical town. The structures were mounted on rollers so that they could be easily pulled away from the runway when planes needed to land or take off. Measures were taken a step further from the early 1940s onwards when the RAF began to build a number of dummy airfields as part of a deception scheme. “It was reckoned that these Q sites drew off about half of the attacks against airfields between January 1940 and May 1944 – 434 night attacks on RAF stations and 443 against the decoys.”



A3: Fig 11: Aerial Photograph 1941 OF northern part of a decoy airfield with dummy runways near Loch Sarclet.

CAMOUFLAGE DIRECTIVES

To bewilder the enemy and mislead him continually as to our real positions and attentions is one of our most hopeful tasks and to do this ingenuity, imagination and daring are required.

(Ronald Penrose, 1941, Home Guard Manual of Camouflage, p.13)

Camouflage directives were outlined in a number of key RAF and other policy documents.

1. NOTES ON MEASURES TO BE TAKEN IN THE CONCEALMENT OF BUILDINGS AGAINST RAIDING AIRCRAFT, WITHOUT INCURRING MATERIAL EXPENDITURE (1919) – Was one of the first documents to consolidate military thinking in the subject of camouflage. The text gave some insight into the elements considered to render a building conspicuous. It identified five key factors that that were seen as contributing in the ‘giving away’ of man-made features when viewed from the air: 1) large and regular plans; 2) smoothness of upper surfaces and adjustment ground; 3) contrast between roofings and surroundings; 4) regular layout of a group of buildings; and 5) their adjustments such as roads. The text also highlighted the need to carefully consider materials - from the air smooth surfaces and light colour of concrete for instance was seen as exceptionally outstanding. Glass was to be avoided as reflection of sunlight was seen as only helping to draw the aerial observer’s attention to the landscape below.

2. AIR RAID PRECAUTIONS – military thoughts on camouflage were also laid out in Air Raid Precaution directives. Political concerns throughout the 1930s about the ‘bomber always getting through’ echoing a speech made to the House of Commons by Prime Minister Stanley Baldwin, coupled with the knowledge of the destructive effect of aerial bombardment as seen during the Spanish Civil War led to an increased emphasis on the role of concealment. As part of wider Air Raid Precautions, it was decided that *“camouflage could be passively deployed as a strategy of aerial protection, aiding in the misguiding and*

baffling of the bomber pilot/ and or the aerial observer as they sought their target.”

3. THE BRITISH CIVIC CAMOUFLAGE PRACTITIONERS – Were concerned with the development of ‘self-concealing architecture.’ They proposed a novel approach to the concealment and planning of buildings that fused military technologies and techniques with civil architectural aesthetics and knowledge. Working with architects, they emphasised a reconsideration of issues of sitting, layout and constructional form. Their ideas, laid out in a number of short policy documents, argued that the aerial view, in opening up ways in which buildings could be seen and considered, provoked or necessitated alternative ways of examining and understanding architecture. These ideas however would not begin to be implemented until much later during the war.

4. A GENERAL CAMOUFLAGE POLICY – was adopted in 1938 with aim being to “treat, in a practical and economic manner, the distinctive features of an RAF station: buildings, landing grounds, boundaries, etc. – so that an enemy pilot would be deceived or confused.” The assumption at the time being that if the recognition of a target could be delayed it would prevent or at the very least cause an attack to be inaccurate. The objective was twofold: 1) to break up the regularity and conspicuousness of buildings; and 2) to break up the airfield into a pattern closely resembling the surrounding countryside. The latter was attempted by painting irregular coloured patches on building roofs and surrounding ground.

5. DEFICIENCIES IN CAMOUFLAGE ORGANISATION – was a memorandum produced by Colonel Francis Wyatt of the Air Ministry Camouflage Branch. In it he argued that “new buildings should be designed and sited if possible, so as to simplify camouflage”. His idea was to minimise the need to apply camouflage (in the form of paint etc.) in the first place – arguing that a great deal could be done in this way and at little cost. Wyatt emphasised that architects should be in touch with his

Department and furthermore that the Royal Institute of British Architects should be invited to think more about the problem from the point of view of materials. Although Civic Camouflage Practitioners had made similar points earlier, Wyatt’s suggestions were the first instance in which the military had considered merging camouflage with architectural design. His ideas however appear to have been ignored. The issue would not be raised again until 1940.

6. MINISTRY OF SUPPLY LETTER – C1940 Sir John Anderson, the then Minister of Home Security wrote a letter to the Ministry of Supply on the issue of camouflage. He wrote “more regular consideration should be given to the possibilities of easing the task of concealment of new vital factories by modification in external design, and possibly their sitting. ” These were questions that had been periodically been discussed by the two departments and Anderson was calling for a more systematic examination. Throughout 1940-1941 there would be various changes in camouflage policy and organisation that would serve to make ‘self-concealing architecture’ more of a reality.

7. THE CAMOUFLAGE DIRECTORATE – was established in January 1941. Headed by Commander TR Cave-Browne-Cave, the organisation aimed to more effectively manage the general camouflage practice. As part of this re-organisation, Herbert Morrison, the new Minister of Home Security, argued that the newly founded Camouflage Directorate “should become actively involved in designing and development of new industrial buildings.” Morrison felt that ‘much expense may be saved and more effective camouflage secured if the requirements of camouflage are taken into account in the design and layout of the building and treatment of the site.’ Effect will be given to this principle in regard to building erected for the Ministry of Home Security which may have to be camouflaged.’ Morrison had even gone to the length of complying ‘with a request by the Minister of Aircraft Production to lend a camouflage officer from the Civil Defence Camouflage Establishment to that Ministry so that the ultimate requirements of camouflage may be taken into account in regard to (their) plans for new buildings (Morrison: 1940).

8. THE ART OF CAMOUFLAGE (1941) – Throughout the early 1940s there was a new mentality on camouflage. Focus had shifted from the concealment of existing structures to the construction of new buildings. A 'self-concealing ethic' was adopted and architects were encouraged to design buildings and structures that themselves possessed self-concealing qualities. Proponents of this view included Colonel C.H.R. Chesney who wrote *The Art of Camouflage* in 1941. In it he argued that *"the best camouflage work in an object is done before the object is sited or has even been designed."*

9. CONCEALMENT OF NEW BUILDINGS (1941) – The most important document on the subject of camouflage was arguably the publication of 'Concealment of New Buildings' in 1941, a text that more thoroughly argued the need to adopt the 'self-concealing ethic.' The booklet was aimed specifically architects – filled with images so as to catch their eye against the context of inundated paperwork. It was set out in 3 key sections - meant to draw attention to the characteristics that tended to make a building conspicuous when viewed from above; **sitting; layout;**

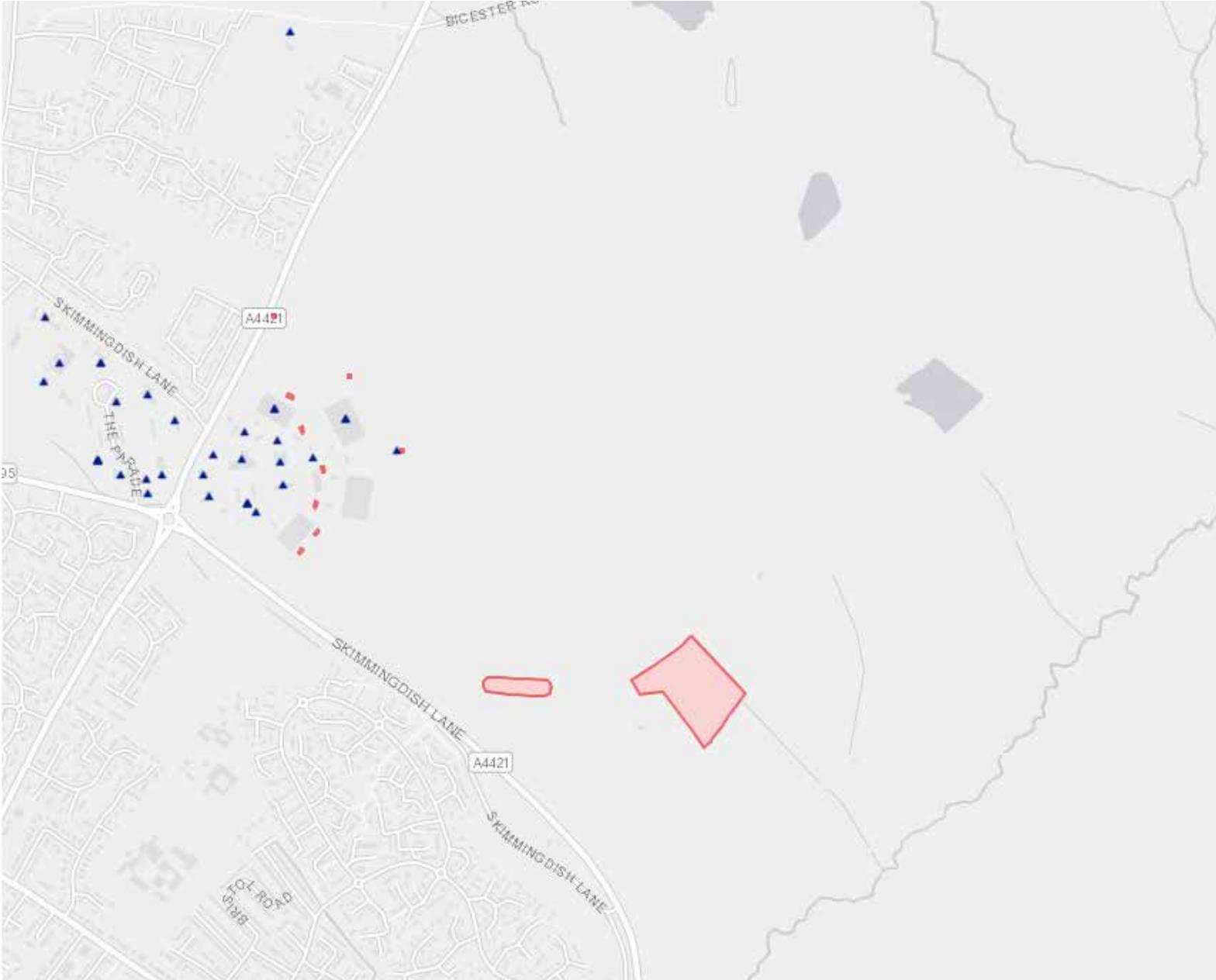
and constructional form.

- SITTING: This was the central theme of the Concealment of New Buildings. The text noted that the attacking bomber was guided in its path by recognisable and defined landmarks. It was therefore key that architects avoided siting new buildings near these since concealment proved futile here. Aerial awareness was key. Architects were encouraged to make their own aerial observations in order to choose the ideal location to place new buildings. The ideal site was at the edge of town free from landmark. Buildings here could be made to appear as an extension to existing housing development.
- LAYOUT: For the camoufleurs, suitability of form was dependent on selecting an **architectural layout that facilitated the easier merging of superstructure into the landscape.** The type of camouflage that was to be employed was dependent on the surrounding context – on consideration of how the man-made features were to be blurred when viewed against the surrounding landscape. There were two

types of camouflage; for concealment and for disguise. In the latter the goal was not to hide but change the appearance so that the building changed from a vital target to one of little importance. The surrounding geography had a direct impact on the approach

- CONSTRUCTIONAL FORM: It is here that the relationship between the camoufleur and architect was key. It was recognised that difficulties and expense with respect to camouflage in the past had arisen from the external shape of buildings themselves. The booklet advocated for a building design which can be physically integrated into the landscape. Here however the booklet failed to provide detailed suggestions. A more thorough consideration had been made earlier by Chesney in his 'Art of Camouflage' where he advocated, among other things for "making buildings as low as possible. "Every inch of height that is not necessary" he argued, "should be cut out." Chesney also encouraged architects to include "trees to disrupt the shadows cast by building"

APPENDIX 5: LIST DESCRIPTION



HERITAGE CATEGORY: Scheduled Monument

LIST ENTRY NUMBER: 1021455

DATE FIRST LISTED: 28-Feb-2006

DATE OF MOST RECENT AMENDMENT: 11-Mar-2011

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59198 24756, SP 59234 24591, SP 59259 24522, SP 59260 24272, SP 59289 24369, SP 59292 24312, SP 59304 24440, SP 59356 24632, SP 59467 24481, SP 59712 24000, SP 60066 24014

When the RAF was formed as the world's first independent air force in April 1918, and during the period of retrenchment which lasted from the Armistice until the early 1920s, its founding father and first Chief of Staff, General Sir Hugh Trenchard, concentrated upon developing its strategic role as an offensive bomber force. His primary considerations were in laying the foundations for a technology-based service, through the training of officers and technicians. Subsequently, more than 100 stations were built in permanent fabric between 1923 and 1939. Trenchard's expansion of the air force, given Parliament's blessing in 1923, was centred upon the building of offensive bomber bases in East Anglia and Oxfordshire, behind an 'aircraft fighting zone' some 15 miles deep and extending around London from Duxford in Cambridgeshire to Salisbury Plain. This principle of offensive deterrence, although subject to fluctuations which reflected events on the world stage and varying degrees of political support, continued to guide the siting and layout of stations after 1933, when Hitler's rise to power and the collapse of the Geneva disarmament talks forced the British government to engage in a massive programme of rearmament. The continuing development of existing bases (some dating from the First World War), and the

building of new ones thus concentrated on the establishment of training and maintenance bases behind an eastern front line, extending from Yorkshire to East Anglia, facing Germany. The completeness or otherwise of inter-war bases, and the extent to which they have retained their architectural detail, external fittings and inter-relationships as planned groups, is closely linked to the nature and intensity of their post-War use. Upper Heyford, for example, which was the test-bed for the planning of Trenchard's Home Defence Scheme stations, was greatly extended and adapted as a key USAF site in the Cold War period. Less intensive use - at present for administration, storage and glider training - has ensured that Bicester is the most complete representative of developments on bomber airfields for the period up to 1939. RAF Bicester is the best preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force in the period up to 1939. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1928-1929 and airfield defences built in the early stages of the war. The remains included in the scheduling are, along with the listed hangars and other listed buildings, the key structures within this military landscape.

DETAILS

The monument includes the southern bomb stores group and a series of airfield defence structures forming part of the former RAF Bicester Airfield site. These fall within 11 separate areas of protection (termed here constraint areas) as detailed below, and as listed above with their national grid references. The first constraint area includes the southern bomb stores group built in 1938-1939 as one of three intended Squadron bomb stores, only two of which were fully completed. The constraint area (the largest) includes a series of structures based around the High Explosive bomb stores (building 224). The bomb stores consist of two rows of three back-to-back concrete buildings with surrounding earth banking or traverses and a gantry running

along both the north and south 'frontages' to allow bombs to be lifted onto bomb carts. The bombs would then be taken to the Ultra Heavy Fusing point building (building 226). This curved roofed corrugated steel and earth building was built with ten bays and could accommodate a bomb cart 'train' of High Explosive (HE) bombs under cover where the fuses were added, having been collected from the Component stores (building 214). Together these buildings show the methods taken to store safely and securely the components of the bomber armament. At constraint area 2, about 300m west of the bomb stores, lies a group of defences consisting of two mushroom pill boxes flanking an approximately 50m long double seagull trench - the former so named for their saucer-domed concrete roofs (set on to a cross-wall which provided ricochet compartments internally) and the latter for its wing-shaped plan, which maximised the arc of fire. These defensive structures combined to form a formidable ground defence group as part of the wider airfield defences. Constraint areas 3 and 4 include a pair of linear Defended Air Raid shelters to the east of the southern hangar. These brick, concrete and earth structures provided cover for defenders in the event of ground attack by enemy paratroopers and provided some protection against bombing and strafing by enemy aircraft. Of the three further pairs of Defended Air Raid shelters which protected the other three hangars that form the core of the Technical site, only a single shelter survives (constraint area 7). The shelters were linked defensively by a series of pillboxes of which two survive within the scheduling (constraint areas 5 and 6). These are based on the octagonal, type 27, pillbox design and formed part of a series of fixed defensive points around the inner core and perimeter of the air base. At the northernmost point of the scheduling lies a small air raid shelter (constraint area 8), intended for those using the adjacent fuel installation. Three further undefended air raid shelters, located close to the hangars to provide protection to ground crew in the event of air attack are also included in the scheduling. These brick, concrete and earth structures are situated within the hangar complex (constraint areas 9-11). Although Bicester was first used as an airfield in 1918, it is the Trenchard Bomber Base and the 1934 expansion period remains which make it nationally important. Blenheims, Halifaxes and Mosquitos all flew from Bicester.

Bomber crews trained at Bicester included both British and many Commonwealth squadrons including Australian, Canadian and New Zealand airmen. From 1944 it was involved as a forward equipment unit for Operation Overlord (the Normandy landings), and after the war it was the home of the principal aircraft salvage unit for southern England. Its later use as a glider school while the domestic site was used for logistical purposes ensured it was not dramatically altered from its wartime layout. Excluded from the scheduling are all modern services and their trench fills, although the land around and beneath them is included.

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393037

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 89 (GUARD AND FIRE PARTY HOUSE), A 421 (SOUTH-EAST SIDE)

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59056 24427

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10052 RAF Bicester: Technical Site 01-DEC-05 Building No 89 (Guard and Fire Party House)

GV II

Guardhouse with exercise yard and accommodation for fire

party. Dated 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 959/25. Dark brick in Flemish bond, but some stretcher bond, slate gambrel roof, some flat concrete extensions, brick stack.

PLAN: A long rectangular building containing guardhouse and office, with cells; roof sweeps down over non-enclosed verandah to the front, and at the rear is a walled exercise yard.

EXTERIOR: Verandah on four square chamfered concrete posts to stone pads and with broad impost blocks set to shallow concrete platform; sloping soffit is boarded. Steel casements set to flush chamfered concrete lintels and stooled sills, one doorway with second blocked, and in flat-roofed bay at each end a further plank door with over-light. Large double casements to rear. Centred over the verandah at the ridge a square bell-turret in timber with clad skirt, small metal cupola. The walled rear enclosure in stretcher bond, rising to parapet at mains eaves level. Metal vents to rear cells.

INTERIOR: Retains original joinery. Wooden cell doors with original fittings.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. As part of the first phase of buildings on this uniquely important site, this comprises one of the first permanent designs for Britain's independent air force. It is a good example of the larger version of guardhouse of its period, thought to be the only extant example (Francis, 1996, 23). It is also prominently sited at the main gate, facing the Station Offices (qv) across the main axial route that bisects the technical site and leads to the hangars and flying field.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military

aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393034

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NOS 146 AND 147 (STATION OFFICES AND OPERATION BLOCK), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59066 24382

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10061 RAF Bicester: Technical Site 01-DEC-05 Building Nos 146 and 147 (Station offices and Operation Block)

GV II

Station administrative offices (147) with attached Operations Block. Dated 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 1443/24 (147) and 1161/24 (146). Dark red brickwork in English bond, hipped asbestos-cement slate roofs.

PLAN: The forward office building, in 2 storeys with part basement, is a long rectangular range with slightly brought forward hipped pavilion ends to a central entrance leading to entrance hall, with transverse internal corridor, and taken through with a link passageway, to the separate operations range in one storey, set parallel with the main building across narrow courtyards. The traversed brick wall around the operations block has been removed.

EXTERIOR: Main front in 2+3+2 bays, with steel casements in 2 lights with transom and mullion, to flush concrete lintels with slight stopped chamfer, and stooped sills. The recessed centre has 2/2-panel doors and over-light flanked by casements, and under a verandah with later corrugated asbestos-cement roof to hipped returns carried on 4 square concrete slightly chamfered posts to bases and wide impost heads. Above this a central bulls-eye light flanked by small casements; this section has a flat roof at eaves level. The right return has 3 and the left 2 casements at each floor, and the plain rear has regular close-set windows. To the right of the door is a small ridge stack. All quoins have brick rustication.

A simple low corridor with pitched roof connects to the long

hipped operations building, in 10 bays with tall casements, and 2 on each return. There is some later infill between the blocks. Both ranges have exposed rafters to open eaves.

INTERIOR: Retains original joinery including panelled doors, circular aperture to camera obscura. Dog-leg stairs with iron balusters and wreathed handrail.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. Sited at the main gate, facing the Guardhouse (qv) across the main avenue, this building fulfilled both a key operational and administrative function - one that lent it a degree of architectural treatment only also afforded to the Guardhouse. It comprises one of the first examples of permanent designs for Britain's independent air force, part of a uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of

enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393036

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 87 (FIRE PARTY HOUSE), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59075 24466

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10051 RAF Bicester: Technical Site 01-DEC-05 Building No 87 (Fire Party House)

GV II Fire-party garage and rest-room. 1938. By the Air Ministry's Directorate of Works and Buildings, to drawing number 3344/37. Dark red brick in Flemish bond, asbestos-cement slate roof.

PLAN: A compact T-plan with short transverse rear wing, all one storey, with hipped roofs. The long front range is the fire-tender garage, and the wing contains office and rest-room.

EXTERIOR: The front to the access road (SE) has a broad recessed garage door, with protective concrete blocks set to external paving, and flanked to the right by one window. Windows are wooden sash set to flush lintels and stooled sills; to the left 3, and to the right 3 set high and flanked by deep doors with over-lights. The cross wing has 3 windows to the rear and 2 to each hipped end. There is a small ridge stack near the front hip.

INTERIOR: Parquet floor. Panelled doors where original.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930s Expansion Period. Added during the 1930s Expansion Period, this building resulted from the need to house the duty fire crew away from their original home in the nearby Guardhouse (qv). The architectural treatment is consistent with the 1920's designs, with brickwork properly bonded, including closers to the window and door openings. It is externally unaltered, and forms part of a uniquely important group of buildings at this airfield.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in

Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393039

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 92 (PARACHUTE STORE), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59139 24514

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10055 RAF Bicester: Technical Site 01-DEC-05 Building No 92 (Parachute Store)

GV II Parachute store and drying room. Dated 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 2355/25. Stretcher bond brickwork, diagonal asbestos-cement slates.

PLAN: A small rectangular gabled structure with lobby and principal space; above the main drying area a long ridge dormer light.

EXTERIOR: The main front has 4 large steel casements in 3 lights each of 8 panes, set to flush concrete lintels and stooled sills. The left gable has a wide pair of plank doors, with date-stone above, and the right gable a circular vent. The rear wall is plain, but with a central external brick buttress. Over the central bays is a continuous dormer light with 8 six-pane casements to a near-flat roof running back to the ridge.

INTERIOR: Retains original spatial layout, open to timber queen-post trusses visible, carried on internal brick piers. Panelled door to small office, with hatch.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many original buildings, mostly of 1926 but with others added during successive phases of the 1930s Expansion Period. This is an important survival, virtually unchanged, that represents an unusually complete example of the earliest design for such a specialist store. An isolating lobby forms part of the layout, as it was important to reduce dust interference to the drying parachutes. For a time after World War II the building was used as the Station Church. This building comprises an unusually unaltered example of one of the first permanent designs for Britain's independent air force, standing on a uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and

continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393038

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 90 (MAIN STORES), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59135 24459

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10060 RAF Bicester: Technical Site 01-DEC-05 Building No 90 (Main Stores)

GV II Main station stores. Dated 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 978/25. Stretcher bond brickwork, asbestos slate roofs.

PLAN: A rambling and complex building, all in one storey, with 2 long gabled sheds, linked at the right-hand end by a slightly higher hipped return and enclosing a narrow courtyard; attached to the rear (N) side a shorter group of 3 gabled units. The building was used for general storage of such items as clothing and furniture, and includes raised unloading bays to former railway to the right.

EXTERIOR: The main front has a series of steel casement windows to flush concrete lintels and stooled sills, 2 with louvres, and the two gables to the left return have similar casements, a blocked doorway, and a central plank door to the narrow courtyard. The right return had 3 wide openings on a raised platform, separated by piers with blue bull-nosed engineering bricks; the two outer bays have been filled with brickwork, and the loading platform cut back to the centre bay only. To each side a low plank door, that to the right with date-stone above. At the rear are 4 windows, and approx 4m run of the roof is felted only, without slates. The gabled ranges have wide doorways at each end, and a plain N front. The long roof slopes to the main range have continuous patent glazing.

INTERIOR: Plain internal spaces, with roof structure in steel trusses on interior brick piers; half-glazed sliding doors to workshops; panelled doors to offices.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. This building is prominently sited on the main axial route that bisects the technical site and leads to the hangars and flying field. It is located opposite the MT sheds (qv), and as one of first phase of buildings on this uniquely

important site comprises an unusually unaltered example of one of the first permanent designs for Britain's independent air force.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393044

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NOS 129, 130 AND 131 (MOTOR TRANSPORT SHEDS), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59126 24389, SP 59148 24367, SP 59160 24394

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10059 RAF Bicester: Technical Site 01-DEC-05 Building Nos 129, 130 and 131 (Motor Transport Sheds)

GV II Three ranges of motor transport sheds. 1927 (Buildings 129 and 131) and 1937 (Building 130). By the Air Ministry's Directorate of Works and Buildings, to drawing number 6225/37 (130), 2033-5/26 (129 and 131). Steel framing with in-situ cast concrete or brick walling, diagonal asbestos-cement slate roofs.

PLAN: The two parallel ranges (129 and 131) face a wide concrete manoeuvring apron, and were complemented by a later shed (130) to provide a 3-sided yard. They are basic garages, with 6 low and 3 higher bays in the left-hand unit (129), in turn linked to a later workshop adjacent to the avenue (not included). To the right (131) are 6 high bays, with 2 lower, left, and workshops to the right, with a broad-span roof to an outer end gable.

EXTERIOR: The inner fronts of 129 and 131 have steel H-stanchions tied back to similar verticals housing full-width roller shutters to each garage, but one unit in 131 has later external sliding doors. Gable and rear walls normally in steel frame set flush to cast concrete walls, but the higher bays to 129 have Flemish bond brickwork gables and rear wall, including two

external piers to the outer gable end. The broad-span section also has cast concrete walling, with various openings. In front of the dividing stanchions between garages is a protective concrete block set to the paving.

Building 130 has four large part-glazed timber doors hung to bold bull-nosed concrete piers, below a continuous lintel band, above which are horizontal clerestory windows. Plain gable ends, brick rear wall with four large vertical steel casements.

INTERIOR: Steel trusses to steel stanchions or brick piers.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. This is an unusually complete example of an important surviving group, motor transport comprising a key function on military air bases. The group is entered from the main avenue, and is sited opposite the Station Stores (qv), all part of a uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in

Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393049

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 135, A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59165 24350

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10062 RAF Bicester: Technical Site 01-DEC-05 Building No 135

GV II Special Repair Bay Shed. 1938. By the Air Ministry's Directorate of Works and Buildings, to drawing number 1368/38. Brick with slate gabled roof. Rectangular plan. Four-bay front, articulated by concrete columns with original half-glazed folding doors.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. This building is sited close to the main MT group, and comprises an unusually complete example of a 1930s technical building, relating to a uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393035

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDINGS NOS 79 AND 137 (TYPE 'A' HANGARS), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59202 24564, SP 59247 24313

DETAILS
LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10053 RAF Bicester: Technical Site 01-DEC-05 Buildings Nos 79 and 137 (Type 'A' Hangars)

GV II Aircraft hangars with annexes housing associated stores, workshops and offices. 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 19a/24. Steel main frame and roof trusses, concrete in-situ wall panels, some brickwork in Flemish bond, corrugated asbestos or asbestos slate roofing.

PLAN: Large sheds with full height steel doors at each end, running to external gantries, with a series of single storey lean-to annexes on either long flank, in part rising to two storeys.

EXTERIOR: At each end two pairs of sliding doors with bolted sheet steel cladding on steel framework, but the upper half with corrugated steel; at each side a braced steel gantry to take doors when open. To each long side a series of 7 gables, in brickwork, but with encased steel external stanchions taken through almost to each ridge, and flush secondary stanchions at the valleys. Below these a continuous strip of patent glazing, in 9 lights to each bay, except the two end half-bays. Carried on cantilevered

steel brackets the full length each side above the glazing a steel-framed catwalk, with steel ladder drop at the ends in open cylindrical protective shafts. The concrete infill below glazing is in horizontal lifts of about 450 mm.

The annexes have a variety of steel sashes set to flush concrete lintels and with stooled sills. One section to each hangar has an 8-bay 2-storey office unit. Large square hopper-heads feed down-pipes from the main roof.

INTERIOR: The standard framework for an 'A' Type hangar, has deep open trussed beams with double bottom chord, all in I-section steel, bearing the ridges, and carrying a series of transverse trusses in steel flat and angle, cantilevered out to a steel valley beam, carried in turn by vertical stanchions set flush to the concrete walling. Horizontal wind-bracing is set at each end immediately adjacent to the doors.

HISTORY: The dimensions of the A-type shed, the standard hangar type for Trenchard's Home Defence Expansion Scheme, designed in 1924 and of which 34 examples were built on 17 sites, were based on the need to accommodate the RAF's largest projected twin-engined bomber - the De Havilland DH9A. Its length of 249 feet (75.9m) and span of 122 feet 5 inches (37.3 m), was the result of discussion in November 1923 between the Aerodrome Board and the Directorate of Works and Buildings in which each hangar was envisaged to accommodate 12 machines. The Type 'A' aircraft shed was the RAF's standard hangar from 1924 until the 1930's. Six were planned for Bicester, but financial restrictions on Trenchard's scheme led to only two being built. In 1936, two Type 'C' hangars were added, and the four are grouped symmetrically at the end of the axial avenue, and sharing broad concrete aprons. Until the onset of perimeter dispersal from the late 1930s all the aircraft of an operational airfield - typically an omni-directional flying field of 1000 yards diameter - would be accommodated in its hangars: their construction took up a considerable part of the construction cost for a new site, the 6 hangars at Upper Heyford taking up 30% of its total budget. As a consequence, military planners shadowed aircraft development through the planning and development of

hangar buildings, a fact which underpins the importance of the Bicester group and their relationship to this uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units.

Military flying at Bicester commenced in 1918, when the new aerodrome was established as a three-squadron Training Depot Station. The site was demolished after closure of the base in 1920, but it was selected as a bomber station by the Aerodrome Board as part of Trenchard's Home Defence Expansion Scheme, sanctioned by Baldwin's government in June 1923. General Sir Hugh Trenchard founded the independent status of the RAF upon the concept of offensive deterrence, a principle which he shared with Italy's Marshall Douhet and America's General Mitchell. This doctrine envisaged fleets of self-defending bomber formations as the instrument of war most likely to ensure swift

victory in any future conflict, and underpinned the justification for the Strategic Bomber Offensive in the Second World War. The RAF's infrastructure was subject to severe political fluctuations in the inter-war period, the result of both events on the world stage and political and financial pressures at home. Only two of the proposed six 'A-type' hangars at Bicester for the 3-squadron station, for which plans were drawn up in August 1926, were built, due to an early deceleration in Trenchard's programme, the next major phase of building forming part of the post-1934 Expansion Period, which had been prompted by the collapse of the Geneva disarmament talks in 1933.

The station was opened in January 1928, the 10th of that month seeing the arrival of Hawker Horsleys from Spittlegate. The fabric and layout, planned on dispersed principles, retains an identifiable 1920s character, and provide examples of the first permanent buildings erected for RAF operational stations. Air Commodore (later Air Chief Marshal Sir) Edgar Ludlow-Hewitt, President of the Aerodrome Board until late 1925 and C-in-C Bomber Command early in the Second World War, was responsible for the selection and outline planning of these stations, often in close collaboration with Trenchard. Designs for the built fabric were developed in detail by the staff of the Director of Works and Buildings (Maj-Gen Sir Andrew M Stuart, and Maj-Gen Sir William A Liddell from April 1924 to July 1929). The most prominent technical buildings, most notably the guardroom (Building 89) and station headquarters (Building 47), and the buildings on the domestic site were designed in a simple, astylar, neo-Georgian style. The domestic buildings were laid out in an open plan manner, more formally than the technical site to the east (see below) and thus enabling the principal buildings around the parade ground area to play a particularly important role in defining the character of the site. The planning of the technical site is dominated by a strong east-west axis, from the west entrance to the flying field. This road is tree-lined and flanked by the 1920s motor transport group (Buildings 129, 130 and 131), armoury (123) and workshops (90 and 99). It provides clear views towards the hangars to the east and, across the A421, the domestic site to the west. From the west entrance, which is flanked by the impressive group of Station Headquarters

and Guardhouse (Buildings 146-7 and 89), two service roads branch out, one to the north-east serving the power house and water supply group (Buildings 81, 82 and 84) and that to the south-east serving the Air Ministry Works Department Group (Building 144) and the now-demolished coal yard. The latter, and the main workshops (Building 99), was served by an Air Ministry railway which entered the site from the east.

The 1930s extensions and new buildings carefully match the style of the 1920s scheme. Whilst the married quarters to the N of Skimmingdish Lane and the W of Buckingham Road drew their inspiration from the Garden City Movement, the neo-Georgian officers' mess (Cherwood House, Buckingham Road) and married quarters off Skimmingdish Lane reflect the distinct change in the aesthetic quality and design of RAF stations, which resulted from the Air Ministry's consultation with the Royal Fine Arts Commission and appointment of an architectural advisor to the Directorate of Works and Buildings in 1934. The buildings constructed in 1939 for Scheme M, notably the decontamination centres, boiler and power houses and flat-roofed barracks buildings, are characterised by developed Art Deco characteristics; Buildings 23, 25 and 20 are distinguished by flat protected concrete roofs - to counter the effects of incendiary bombs and minimise the effects of bomb blast - and the use of glazing detail and string courses to give a much more streamlined horizontal design. The increase in aircraft at Bicester was marked by the completion of new C-type hangars in 1937, and the building of a new control tower in 1938 reflected the increased importance given to the need to control movement with the defined zoning of serviceable landing and take-off areas.

1938 was marked by the arrival of Blenheim bombers, which replaced the obsolete Overstrands with which many airfields had been equipped into the mid 1930s, and in October 1939 the first Halifax prototype made its maiden flight from Bicester. From 1938 to October 1944 Bicester served as an Operational Training Unit, mainly for the training of pilots, observers and gunners for the Blenheim crews of 2 Group. The outset of the conflict saw the completion of the bomb stores group to the south and construction of pillboxes and trenches for the close

defence of the airfield, now surviving on the east side of the hangars and in a group to the south of the flying field. The flying field was considerably enlarged to the north and south, with tracks and 'panhandle' standings for the dispersed parking of aircraft characteristic of World War Two bomber stations. RAF Bicester functioned as an Operational Training Unit until October 1944, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. Crews for the medium bomber units in the Middle East and then the Far East were formed and trained at Bicester and Upwood, Mosquitos replacing the Blenheims from January 1944. From autumn 1943 it was already serving as a Forward Equipment Unit for the logistical support of Operation Overlord. After 1945, 71 Maintenance Unit formed here as one of the principal aircraft salvage units, responsible for southern England. Crashed aircraft were brought here and reconstructed in one of the hangars for crash investigation purposes. This use, together with its role as a gliding school and the administrative use of the domestic site (DCTA Caversfield) has ensured the preservation of the inter-war character of the site and the rare and consistent preservation of exterior detail and fittings. Post-war redevelopment and encroachment by quarrying has removed most of the Second World War extensions to the flying field.

(Dobinson, C: Airfield Themes (Report for English Heritage), 1997; Francis P: British Military Airfield Architecture, 1996; Francis,P: RAF Bicester (Site Report for Cherwell District Council), 1996, 28)

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393040

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 96 (LUBRICANT STORE), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59207 24497

DETAILS LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10056 RAF Bicester: Technical Site 01-DEC-05 Building No 96 (Lubricant Store)

GV II Oil storage and liquids storage. Dated 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 329/26. English bond brickwork, asbestos-cement slate roof.

PLAN: A simple rectangular building in two sections, the higher with raised floor and external loading platform, and the lower floored at normal level. Both units gabled.

EXTERIOR: The front has a plain wall with central pair of sliding steel doors to centre bay of raised platform, above which a near-flat corrugated steel canopy on 4 very thin posts. Lower, to right, pair of doors in recessed jambs formed in bull-nosed engineering bricks. Continuous roof-light to both slopes, 4 + 2 ridge vents. The left gable has an added lean-to over pair of doors, remainder of building plain walls.

INTERIOR: Steel trusses visible on interior brick piers. The main room has raised concrete floor at level of exterior platform.

HISTORY: The Technical Site at Bicester, separated from the

Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930s Expansion Period. This is one of the original buildings, set close to an 'A' type hangar of the same period (Building 70, qv), and as such it comprises an externally complete example of one of the first permanent designs for Britain's independent air force. It also comprises an integral part of a uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393041

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 99 (MAIN WORKSHOPS), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59215 24456

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10054 RAF Bicester: Technical Site 01-DEC-05 Building No 99 (Main Workshops)

GV II Workshop for airframe and engine repairs, welders' bay and fabric-workers shop. 1926. By the Air Ministry's Directorate of Works and Buildings, to drawing number 1788/25. Stretcher bond brickwork, brick stack, asbestos-cement slate roof.

PLAN: A group of 3 linked gable single-storey sheds around a narrow central courtyard with in-filling flat-roofed elements, and enclosed at the outer end, containing various well-lit working areas.

EXTERIOR: All parts are generously fenestrated, with large steel casements set to flush concrete lintels and stooled sills; all three sheds have patent roof glazing to both slopes. The gable ends each have wide doorways, one of these a later roller version, and a pair of plank doors to the narrow courtyard entrance.

INTERIOR: Series of steel trusses on brick piers.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many original buildings, mostly of 1926 but with others added during successive phases of the 1930s Expansion Period. This is a substantial and little altered complex, strategically placed between the two 'A' type hangars (qv), facing the main avenue bisecting the site, leading to the flying field. It also comprises one of the first permanent designs for Britain's independent air force, and through its key function as workshops for airframe and engine repairs comprises an integral part of a uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393043

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 123 (LECTURE ROOMS AND ARMOURY), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59220 24407

DETAILS

LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10058 RAF Bicester: Technical Site 01-DEC-05 Building No 123 (Lecture Rooms and Arm oury)

GV II Station Armoury with Lecture Rooms. 1926 and cross-wing added 1936. By the Air Ministry's Directorate of Works and Buildings, to drawing number 1052/24 and 541-3/35. Dark red Flemish bond brickwork, slate roof.

PLAN: A long T-plan 2-storey range containing laboratory lecture rooms, offices, workshop and a library continues as a one-storey flat-roofed unit with the armoury, ammunition testing bays and machine-gun stores; the armoury section in independent rooms with steel doors.

EXTERIOR: The 2-storey range has tall casement windows, with flush concrete lintels and stooled sills, in 7 + 3 bays under hipped roofs to box eaves, with 4 bays on the returned end. The rear is similar, but with one bay having staircase windows at dropped

levels. To the front is a length of blast wall, also concrete stairs down to a basement. At the left end are doors to a steel escape stair. At the upper sill level a 3-brick projecting plat-band. Small ridge stack near right-hand end.

The flat-roofed block has garage doors to the outer end, 3 windows to the front, and a series of small lights, plus 2 doors with over-lights to the rear.

INTERIOR: Remodelled in 1980s.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930s Expansion Period. The main range was carried out in two stages, the shorter cross wing having been added c1936, but carried out in carefully matched materials and detail. As one of the original buildings it comprises an example of one of the first permanent designs for Britain's independent air force. It is prominently sited, facing the main central avenue that bisects the site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians

and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1392761

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING 103 (LINK TRAINER), A421 (SE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59282 24465

DETAILS
LAUNTON

1714/0/10024 A421 (SE) 01-DEC-05 Technical Site, RAF Bicester Building 103 (Link Trainer)

GV II Link Trainer building. By the Air Ministry's Directorate of Works and Buildings, to drawing number 6414/37. Flemish bond brick with steel casements and flat reinforced concrete roof. PLAN: rectangular plan, with two rooms for the accommodation of Link Trainers (see below). West elevation has two steel-framed

windows flanked by outer doors. INTERIOR: original doors and joinery.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. The Link trainer, first introduced to Britain in 1936, provided a cheap method of training pilots.

The Link trainer provided a cheaper alternative for training pilots in instrument flying than flying actual aircraft. The trainer was invented by in 1929 by Edwin Link, an American organ manufacturer, and it was first introduced into the UK in 1936 when a company called JVW Ltd. was set up at Aylesbury to handle sales, installations and maintenance. The wartime Link trainer comprised a fuselage approximately 10ft long of timber frame construction and covered with plywood or fabric. Powerful bellows enabled the device to simulate basic flying movements similar to pitching, banking and turning of a real aircraft. Early machines had wings, tailplane and fin with their corresponding control surfaces. The cockpit closely resembled a typical single-engined aircraft of the period, with the usual six basic instruments plus compass, radio, rudder pedals and control column. Any changes in flight attitude were shown by the instruments as well as the relevant control surfaces.

Connections led from the trainer to an instructor's desk where a small three-wheeled trolley called a 'tracking crab' (automatic recorder) reacted to time and rate of movement of the fuselage. One wheel functioned as a pen recorder and traced an accurate course onto a map of the countryside over which the 'pilot' was supposed to be flying. The desk also had a duplicate set of aircraft instruments enabling him to assess the pilot's flying ability (see Flight, 28.10.1937: 416-9).

At the beginning of the Second World War, because of the fear of bombing raids on our cities, cinemas and theatres were shut. The companies who had relied on supplying theatre equipment had to seek alternative work. The firm of Fitups Ltd. of Manchester (later to become Watts & Corry Ltd.) was in 1940 operating with

the north of England branch of Strand Electric (later to become Rank Strand Electric). The staff of these two firms included joiners, scenic artists, draughtsmen, engineers and electricians. They were versatile in their approach at finding suitable work. Representatives were sent to the Air Ministry to try and obtain camouflage work. This was not available, but a contract was won for the design and manufacture of painted scenic cycloramas for Link trainers. The target screen at Crail (Scotland) is part of the extensive Scheduled Ancient Monument on that exceptionally well-preserved Second World War airfield.

This building, one of the permanent standard designs produced by the Air Ministry in the late 1930s, has special importance for its relationship to RAF Bicester's wartime function as a training centre for Bomber Command and this uniquely well-preserved group of both phases of the inter-war expansion of the RAF. It faces the main axial route through the technical site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of

enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1392762

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDINGS 108 AND 113 (TYPE C HANGARS), A421 (SE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59348 24543, SP 59375 24386

DETAILS
LAUNTON

1714/0/10019 A421 (SE) 01-DEC-05 Technical Site, RAF Bicester Buildings 108 and 113 (Type C hangars)

GV II Aircraft hangars with annexes housing associated stores, workshops and offices. 1937. By the Air Ministry's Directorate of Works and Buildings, to drawing number 872 and 1581/35. Steel main frame and roof trusses, brickwork in Flemish bond, sheet roofing replacing asbestos slates.

PLAN: Large sheds with full height steel doors at each end, running to external gantries, with a series of single storey lean-to annexes on either long flank, in part rising to two storeys, which housed workshops, rest rooms and squadron offices. The roof a series of transverse ridges with hipped ends, behind a parapet, and with deep apron above doors.

EXTERIOR: At mid height of side walls are 10 large 32-pane fixed steel casements separated by concrete piers, and with continuous sill and lintel bands. Above the windows a high parapet to flush coping. One bay at each end, also in concrete, is slightly brought forward, and with a higher parapet; a tall single light with horizontal bars is centred to the bay. The short ends have full height and width steel doors, with 12-pane lights at the top, under a deep projecting concrete rail carrying the rolling headgear; beyond the opening a light steel lattice beam projects out and is carried by a light steel strutted support, with steel ground-stops for the doors. Above the doors, and contained by the wing walls of the first bays, a deep apron with asbestos-cement slate hanging. The doors originally had sand or gravel fill between inner and outer sheeting at the lower panels, to enhance blast protection. Replacement windows to annexes.

INTERIOR: Plain concrete floor, steel stanchions exposed internally carry deep lattice trusses in steel channel, double to top and bottom chords, set to the ridges of the transverse roofs and shaped to the hipped ends. At right angles to these are cantilevered members, in steel angle, at 15ft (4.6m) centres, meeting at and carrying the internal gutters. The bays adjoining the doors have horizontal wind-bracing members. The roof slopes are underlined in softwood square-edged boarding.

HISTORY: The Technical site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930's Expansion Period. In 1937, two Type 'C' hangars were added to the earlier pair of hangars on the site, and the four are grouped symmetrically at the end of the axial avenue, and sharing broad concrete aprons. The C-type shed was the

standard hangar type for the post-1934 Expansion Scheme, originally designed in 1934 and of which 155 examples were built. Its dimensions (300ft long, 150ft span and clear height of 35ft), were intended to accommodate 100-ft span heavy bombers, enabling new specifications to be issued to aircraft manufacturers by the Air Ministry. It evolved from the earlier Type A, and first versions had exposed gabled ends to the roofs: after 1935 the hipped version behind parapets, as here, was normal. An internal height of 35ft (10.7) was later reduced to 30ft (9.1), as used in this example.

Until the onset of perimeter dispersal from the late 1930s all the aircraft of an operational airfield - typically an omni-directional flying field of 1000 yards diameter - would be accommodated in its hangars: their construction took up a considerable part of the construction cost for a new site, the 6 hangars at Upper Heyford taking up 30% of its total budget. As a consequence, military planners shadowed aircraft development through the planning and development of hangar buildings, a fact which underpins the importance of the Bicester group and their relationship to this uniquely important site. Although subjected to some loss of original detail, these form an historically important and prominent part of the site as viewed from the flying field.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War.

For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units.

For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).

HERITAGE CATEGORY: Listed Building

GRADE: II

LIST ENTRY NUMBER: 1393042

DATE FIRST LISTED: 01-Dec-2005

STATUTORY ADDRESS: BUILDING NO 109 (WATCH TOWER AND OFFICE), A 421 (SOUTH-EAST SIDE)

The building or site itself may lie within the boundary of more than one authority.

COUNTY: Oxfordshire

DISTRICT: Cherwell (District Authority)

PARISH: Launton

NATIONAL GRID REFERENCE: SP 59456 24480

DETAILS
LAUNTON

SP5924 A 421 (SOUTH-EAST SIDE) 1714/0/10057 RAF Bicester: Technical Site 01-DEC-05 Building No 109 (Watch Tower and Office)

GV II Airfield watch tower and office. 1938, to 1934 type design. By A Bulloch of the Air Ministry's Directorate of Works and Buildings, to drawing number 1959/34. Brickwork facing to reinforced concrete frame and flat roofs with asphalt finish.

PLAN: A square structure to flat roof with smaller central tower, also square rising two further storeys. The ground floor has the main watch office and rest room, with latrines, from which a tight spiral stair rises to the observation room in the tower; both levels with flat roof decks, the lower with raised brick parapet, and the upper with parapet and safety railing.

EXTERIOR: Steel casements across full width of lower floor, returned one light at ends, and smaller lights to other fronts, and door with over-light to rear (W) and south sides. The upper level glazed all round, some of the original horizontal glazing bars later removed. Small plinth, continuous frieze bands with projecting toe at roof levels.

INTERIOR: Iron stairs to top floor. Original doors and joinery.

HISTORY: The Technical Site at Bicester, separated from the Domestic Site, still has many of the original buildings, mostly of 1926 but with others added during successive phases of the 1930s Expansion Period. This observation tower - which replaced an earlier 1927 design - is typical of the design made in 1934; a total of 41 were built, this being one of only five remaining in brick as, after 1936, most were reinforced concrete. It represents the first attempt for a design of a military watch office. Located at the end of the main axis through the site from the guardhouse, closing the vista at the edge of the flying field, it is strongly representative of developments on flying fields in the mid 1930s. The now-familiar airfield landscape of runway, perimeter dispersals and flight control was only beginning to gain acceptance within the Air Ministry in the late 1930s, when increasing attention was being given in airfield planning to their ability to disperse and shelter aircraft from attack, ensure serviceable landing and take-off areas, and control movement: hence the increasingly sophisticated designs for control towers. Grouped with the 'C' type hangars which were built under

Scheme F in 1936/7, this is a significant element of an uniquely important site.

Bicester is the best-preserved of the bomber bases constructed as the principal arm of Sir Hugh Trenchard's expansion of the RAF from 1923, which was based on the philosophy of offensive deterrence. It retains, better than any other military airbase in Britain, the layout and fabric relating to both pre-1930s military aviation and the development of Britain's strategic bomber force - and the manner in which its expansion reflected domestic political pressures as well as events on the world stage - in the period up to 1939. It was this policy of offensive deterrence that essentially dominated British air power and the RAF's existence as an independent arm of the military in the inter-war period, and continued to determine its shape and direction in the Second World War and afterwards during the Cold War. The grass flying field still survives with its 1939 boundaries largely intact, bounded by a group of bomb stores built in 1938/9 and airfield defences built in the early stages of the Second World War. For much of the Second World War RAF Bicester functioned as an Operational Training Unit, training Canadians, Australians and New Zealanders as well as British air crews for service in Bomber Command. These OTUs, of which Bicester now forms the premier surviving example, fulfilled the critical requirement of enabling bomber crews - once individual members had trained in flying, bombing, gunnery and navigation - to form and train as units. For further historical details see Buildings Nos 79 and 137 (Type 'A' Hangars).