

Airfields in WWII by David Gray

Although Britain escaped the ravages of a ground war, the countryside still bears witness to its massive contribution to the air war. To this day, the sites of approximately 1,250 aerodromes and landing grounds still litter the landscape, leading many veterans to claim that, "Britain was just one big airfield." **In most cases, the best ground for aerodromes coincided with the most productive farmland.** Comparing maps of airfield locations with agricultural land classification maps confirms that wartime airfields were disproportionately sited on grades 1 and 2 (the most versatile and scarce soils). And large, arable fields without banks or walls were ideal for rapid runway construction under emergency conditions.

There were three main constraints for the siting of airfields: landforms, surface mantle, and pre-existing infrastructure. At the outbreak of WWII, only six percent of the United Kingdom was forested, and only ten percent of Britain was urbanised. The ideal military airfield stood on a low and mildly convex plateau between villages, with a surface gradient flatter than one in eighty with well-drained subsoil, light woodland cover, rural settlements gathered round a central area, road and rail connections, and proximity to the continental mainland. Care was given to select sites that would result in minimal demolition of property or disruption to local traffic, while enjoying reasonable access to nearby main roads, branch railways, utilities and community services.

Military airfields also needed two levels of traffic-ability: first, an inner area with runways and taxi zones with near perfect conditions to minimize wear and tear on the planes, and to allow swift movement of ambulances and fire tenders. Second, an outer area with a free-draining network of access roads of moderate gradient, plus a generous cover of woodland and hedgerows to shelter camp sites from inclement weather, explosions, and air raids. The most easily engineered ground was found in East Anglia, the East Midlands, and Wessex, which was fortunate as it placed the fields within a shorter striking distance of the enemy.

During World War II, the UK underwent a massive transformation to become what was later described as "one vast aircraft carrier". Between 1939 and 1945, hundreds of new airfields were constructed to support the Royal Air Force (RAF) and the United States Army Air Forces (USAAF).

The "Class A" Standard

By July 1941, the British Air Ministry settled on the "**Class A**" standard design for heavy bombers. Key features included:

- **Runway Layout:** Three intersecting concrete runways in a triangular "A" shape to allow for various wind directions.
- **Dimensions:** A main runway of 2,000 yards (approx. 1.8 km) and two secondary runways of 1,400 yards each.
- **Perimeter Track:** A circular "peri-track" linking the runways, often featuring 36 to 50 "pan" or "loop" hard standings for aircraft dispersal.

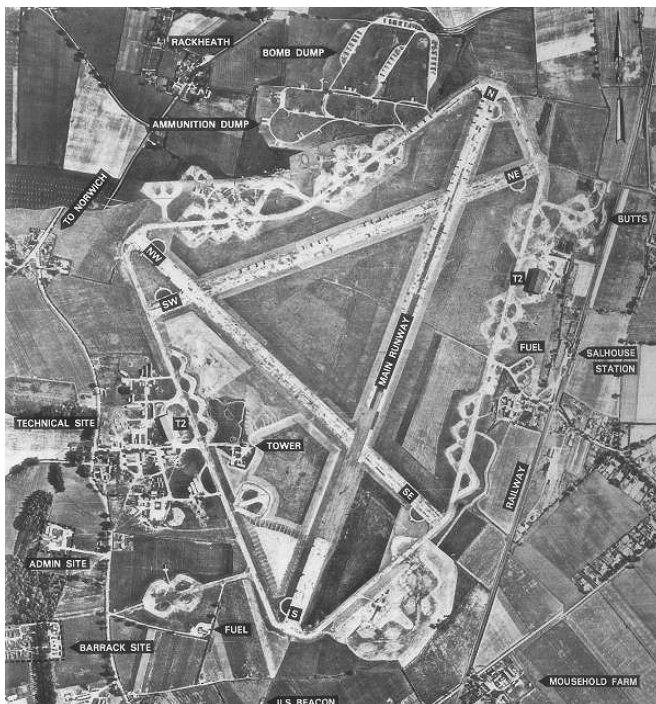
- **Dispersal Strategy:** Unlike compact pre-war bases, wartime buildings (living quarters, technical sites, bomb stores) were scattered across several square miles to minimize damage from air raids.

RAF Rackheath, is a good example of a class 'A' airfield. A former Royal Air Force station located near the village of Rackheath, approximately 6 miles (9.7 kilometres) north-east of Norwich, in the county of Norfolk in England. Laid out on agricultural land between the two settlements of Rackheath Parva and Rackheath Magna, construction on the airfield began in 1943, for the United States Army Air Forces (USAAF) Eighth Air Force (8th AF).



Constructed to the Air Ministry requirements for a class A airfield, it followed the typical layout of other heavy bomber bases, with a main runway of 2,000 yards (1,800 metres) and two auxiliary runways of 1,400 yards (1,300 metres) each. The perimeter track was 2.7 miles (4.3 kilometres) in length, and this and the runways had a concrete screed finish. Mark II airfield lighting was installed, two T2 hangars were erected for major aircraft

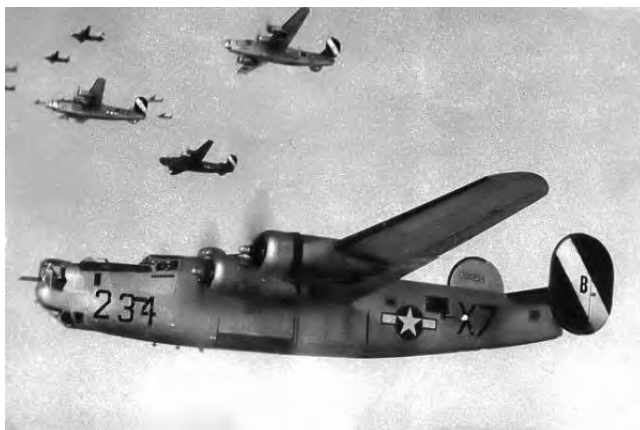
maintenance, and dispersed temporary building accommodation provided for some 2400 personnel in the wooded countryside of the estate to the south-west of the airfield. A dispersed weapon storage area was constructed to the north of the airfield. During construction, 556,000 cubic yards (425,000 cubic metres) of soil were excavated, 14,000 yards (13,000 metres) of soak-away drains installed, and 504,000 yards (461,000 metres) of concrete laid. A major overhead power line had to be put underground to clear the aircraft flying approaches.



The airfield (*left*), was opened on 11 March 1943, and was used by the 467th Bombardment Group (Heavy), 'The Rackheath Aggies', of the United States Army Air Forces (USAAF), arriving from Wendover AAF at Utah. The 467th was assigned to the 96th Combat Bombardment Wing, and the group tail code was a 'Circle-P'. Flying Consolidated B-24 Liberators, its operational squadrons were:

- 788th Bombardment Squadron (X7)
- 789th Bombardment Squadron (6A)
- 790th Bombardment Squadron (Q2)
- 791st Bombardment Squadron (4Z)

The group flew the Consolidated B-24 Liberator as part of the Eighth Air Force's strategic bombing campaign. The 467th began operations on 10 April 1944, with an attack by thirty aircraft on an airfield at Bourges in central France.



(Left), A Ford manufactured B-24H-25-FO Liberator, serial 42-95234 'Weiser Witch', of the 788th Bomb Squadron. This aircraft crash landed at RAF Bungay on 5 May 1945 after fire in the nose

The group flew its last combat mission on 25 April 1945, and then returned to the US to Sioux Falls AAF in South Dakota during June and July 1945. Subsequently, the 467th was re-designated as the 467th Bombardment

Group (Very Heavy), with Boeing B-29 Superfortresses in preparation for the planned invasion of Japan. The 467th was inactivated on 4 August 1946.



With the end of the war, the airfield was closed permanently in late 1945, and the airfield site was returned to farming use. Only a very small section of the main runway, small sections of perimeter track, and a solitary pair of former dispersed aircraft hard standings on the south-west of the airfield still exist; the remainder of the former airfield concrete infrastructure has been removed and broken up for re-use as construction aggregate.

The control tower still exists (*above*), though after many years of neglect, was renovated during 2006 and 2007; it has been converted to use as an administrative building, currently occupied by a software company.

Construction Effort

At the peak of construction in 1942, a new airfield was completed every three days on average. The workforce included over 60,000 men, as well as specialized units like the **RAF Airfield Construction Service** and US Army Aviation Engineer Battalions. Due to labour shortages, women were also trained in bricklaying and carpentry. Massive quantities of materials were used; a single airfield could require roughly 860,000 square yards of concrete and nearly two million bricks. For temporary bases, pre-fabricated structures like Nissen huts and Laing huts were preferred for speed of assembly.

Technical Innovations

- **FIDO (Fog Investigation & Dispersal Operation):** A system of fuel pipes alongside runways that were ignited to burn off fog, allowing bombers to land in poor visibility.
- **Advanced Landing Grounds (ALGs):** Temporary strips built in Southern England for the D-Day invasion, often using metal matting (like Sommerfeld Track or Pierced Steel Planking) rather than concrete.

- **Control Towers:** Standardized "Watch Offices" were built, ranging from simple huts to reinforced two-storey concrete towers with observation rooms.

Post-War Legacy

Following the war in 1945, most temporary airfields were closed and returned to agricultural use. Today, many former runways are used as farm tracks, industrial estates, or small civil airports, while surviving structures like control towers often serve as museums or memorials.

Airfield locations in the UK during WW2 were chosen based on a combination of strategic operational needs and specific geographical and logistical criteria.

Operational Requirements

- **Proximity to the Front Line:** Airfields for fighter aircraft (like those in No. 11 Group during the Battle of Britain) were located in South East England to intercept enemy aircraft over the English Channel and London. Bomber airfields were primarily in East Anglia and the East Midlands to provide the shortest possible striking distance to mainland Europe for raids.
- **Operational Type:** Different airfields were needed for various roles, including fighter, bomber, coastal command, training, and transport airfields. Training sites, for example, were often located in less vulnerable areas like Northern Ireland.
- **Dispersal and Security:** To minimise the effects of enemy bombing raids, sites were chosen in rural areas and their buildings (hangars, accommodation, etc.) were scattered over a wide area, often several square miles.

Geographical and Logistical Criteria

- **Terrain and Ground Conditions:** The ideal site was a low, mildly convex plateau with a surface gradient flatter than one in eighty. The ground needed well-drained subsoil, such as chalk or limestone, to support heavy concrete runways and allow for all-weather operations. Areas with wet soils, like the Fens, were generally avoided.
- **Prevailing Winds:** The main runway of the standardized "Class A" airfields was aligned southwest to northeast wherever possible to allow aircraft to take off and land into the prevailing winds, a primary consideration for operational safety.
- **Infrastructure Access:** Locations were chosen for their reasonable access to nearby main roads and branch railways for easy supply of massive quantities of construction materials and personnel. Some were also located close to the Government Pipeline and Storage System (GPSS) for fuel supply.
- **Minimal Disruption:** Efforts were made to select sites that would result in minimal demolition of existing property or disruption to local communities and agriculture, although vast tracts of farmland were still requisitioned under the Emergency Powers Act of 1939.

Control Towers

In World War II, British airfield control buildings—officially termed "**Watch Offices**"—evolved from simple huts into standardized multi-storey concrete structures as air traffic became more complex.

1. Pre-War and Early Designs



"Fort" Type (1959/34 & 207/36): The first widely standardised designs for the RAF Expansion period. These were often brick or concrete two-storey buildings, sometimes featuring a prominent observation tower.

The example (*left*), is at RAF Binbrook.



Watch Office with Met Section (2328/39): An Art Deco "Moderne" style design featuring rounded corners, porthole windows, and a distinctive "liner" styling with a wrap-around balcony.

2. Wartime Standard Designs (The Most Common)

As the war progressed, the Air Ministry Directorate General of Works (AMDGW) created standardized plans to be used across most operational and training airfields.



Watch Office for All Commands (12779/41): Originally designed for training units this became the most common type across the UK. It was a roughly square, two-storey building (approx. 35ft x 33ft) built of rendered brick with a reinforced concrete roof and balcony.



Updated Standard (343/43): A 1943 modification of the previous design, often used for new builds or conversions. It featured smaller ground-floor windows to reduce light leakage during night operations.

3. Specialized and Branch-Specific Towers



Fighter Satellite Watch Office: The most common wartime tower for fighter sector and satellite stations, often starting as small single-storey structures that were later extended.



Naval Type (Admiralty) Towers: Used at Fleet Air Arm stations, these were typically taller—often four storeys—and more robust than their RAF counterparts.



Bomber Satellite Watch Office: A temporary brick hut design (18ft x 60ft) divided into a watch office, operations room, and briefing room.

Night Fighter Watch Office: Specialized two-storey buildings with no rear windows (except for a small ground-floor one) to maintain blackout integrity.

4. Late-War and Transition Designs



Very Heavy Bomber (VHB) Tower (294/45): Introduced at the end of the war for the largest bomber bases. This was the first RAF design to feature a **Visual Control Room (VCR)**—a dedicated glass-walled room on the roof for a 360-degree view of the airfield.

Many of these towers still stand today and have been converted into museums, such as those at RAF Duxford, Rougham and Elvington.

These days the US Air Force uses several key RAF bases in the UK, primarily in East Anglia, with **RAF Lakenheath** and **RAF Mildenhall** being major hubs, alongside support facilities at places like **RAF Croughton**, **RAF Fairford**, and intelligence sites like **RAF Menwith Hill**, though the total number of *operational airfields* for combat forces is fewer than the total facilities, with figures suggesting around **7 main operating bases** and various support sites for roughly 10,000+ personnel.

US MILITARY SITES IN BRITAIN WITH DEPLOYMENT LEVELS

