A W Hawksley - Swords to ploughshares - Aircraft to Aluminium Prefabs

The Brockworth factory of global polymers firm Invista was originally erected as a "shadow" factory for the assembly of military aircraft just before the second world war. This article is primarily concerned with the development of the temporary housing programme manufacturing the "AIROH" House - Air Industries Research Organisation for Housing and a smaller "permanent" housing programme, using a modified version. The article also covers the construction and use of the factory during the War.

Figure 1: Photograph of Aluminium House displayed at 35 Piccadilly April 1948[1]

In addition, Hawksley also produced their own "flat pack" prefab, versions of which were produced for use within in the UK and for export as well as larger versions for school, hospitals and office buildings. Under licence from Austrian firm, Schindler Goehener, they also manufactured a pre-cast concrete framed house. In 1951 much of the factory returned to aviation, manufacturing jet engines, before closure was announced in 1958, due to Government defence spending cuts. British Nylon Spinners (BNS), which later became ICI Fibres, bought the factory from the Government in 1959. These aspects, including the large expansion of housing in Brockworth, to accommodate workers for the Hawker Siddeley subsidiaries are intended to be covered in a future article.

From Golf Course to Factory in 12 Months

In October 1938, Sir Kingsley Wood, the air minister announced the construction of a new aircraft factory at Brockworth declaring that "building up our defences must go on without pause or halt". [2] This was only a week after Neville Chamberlain had returned from Berlin declaring "peace in our time".

[1] Gloucestershire Archives from LPW Spry Collection D4675
[2] "Big Plans in RAF Speed Up", News Chronicle 10 October 1938 p 13, accessed on-line (paywall) https://www.britishnewspaperarchive.co.uk/viewer/BL/0003214/19381010/175/0013

Hawker Siddeley had already set in motion the extension of the Main Gloster Airplane works on the Gloucester Aerodrome with a new office block and an large factory extension.[3] The development of "Factory No.2" as a Government owned "shadow factory" was managed by Gloster Aircraft Company with construction costing £1 million and planned to employ 3000 hands.[4] The plans show the main factory having an area of 59,500 m^2 (640,000 sq ft), 390m (1280 ft) long and 152m (500 ft) wide with the main assembly shop being 9m (30ft) high. The architect was John Spink, who had already undertaken work for Gloster Aircraft Company and was based in Kingston Upon Thames, the headquarters of the Hawker Siddeley. The building contractor was Gee, Slater and Walker Limited of Derby, who grew out of a Victorian brick manufacturer and continued as a building contractor until at least the early 1980's.[5]

Figure 2: Aerial Photograph of Works from the north – undated but during prefab housing manufacture.[6]

Originally the Citizen had been excited about the prospects of a new factory but within weeks the Citizen coverage turned sour with concern over the lack of housing and the congested roads in the area. In the run up to the City Council elections (then held during November) it appears to have become a political matter concern. One letter writer claimed that whoever was responsible for the factory location "made the biggest blunder of his career".[7] Another issue that had to addressed was finding the 500 to 600 construction workers, with demand already high, due to the construction of the RAF Quedgeley depot, south of the City.[8]

The creation of the new factory led to the demise of the Gloucester Golf Club which had to give up its land for the development. It had moved to Brockworth before the Great War and an account of the

[3] Gloucestershire Archives Building control file for new offices Brockworth Aerodrome, 1937 DA27/710/3/979 and Building control file for additions to factory aerodrome Brockworth, 1938 DA27/710/3/1084

[4] "New £1,000,000 factory at Brockworth", The Citizen 8 October 1938 p 1, accessed on-line(paywall) https://www.britishnewspaperarchive.co.uk/viewer/BL/0000325/19381008/001/0001

[5] William Drury Lowe, Denby Terra Cotta, W. H. & J. Slater, Denby https://eastmidlandsnamedbricks.blogspot.com/2015/02/; https://discovery.nationalarchives.gov.uk/results/r?_q=gee%20slater%20and%20walker&_hb=tna; "Neath Largest Department Store Re-opens Tuesday" Port Talbot Guardian - Thursday 28 August 1980, p9 https://www.britishnewspaperarchive.co.uk/viewer/bl/0003137/19800828/107/0009

[6] Gloucestershire Archives from LPW Spry Collection D4675

[7] "Other Peoples Views" Citizen 7 December 1938 accessed on line (paywahttps://www.britishnewspaperarchive.co.uk/viewer/BL/0000325/19381207/018/0004

[8] "Work Outlook is bright for Gloucester" Gloucester Citizen - Tuesday 11 October 1938 p5 https://www.britishnewspaperarchive.co.uk/viewer/BL/0000325/19381011/024/0005

club's rise and fall can be found elsewhere.[9] Echoes of its short tenure remain with one of the accesses to the Gloucester Business Park, being named Golf Course Lane. The development of the business park has destroyed most of the industrial archaeology of the main GAC works and aerodrome, although the main GAC gates, without any interpretation or context, have been retained as part of a new housing development.[10] The sad saga of the lost opportunity of an on-site museum, is worthy of note but the Jet Age Museum has a permanent base at Staverton.

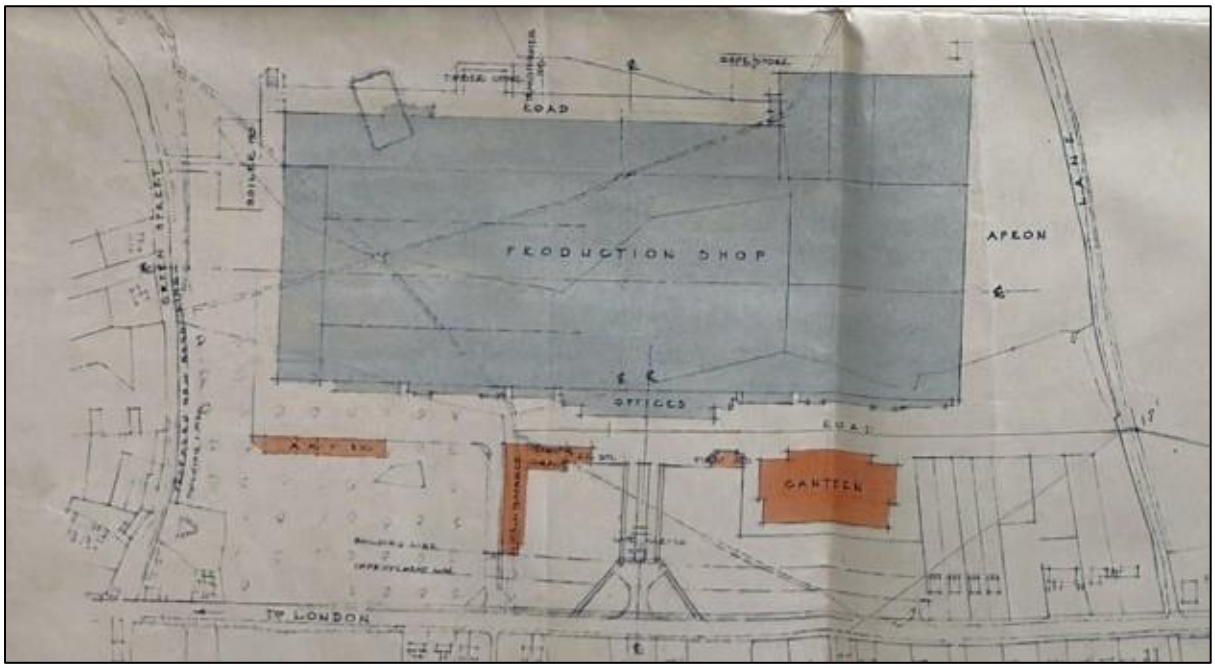

Figure 3: Extract from 1939 Building Bylaws plan showing location of main factory, Canteen ARP and other facilities. Not included in this layout is the main office block which was constructed by October 1940.[11]

Canteen

Included in the original 1939 building bylaw plans and built between the factory and the main road was a 2700m 29,000 sq ft single storey canteen building which provided four separate dining areas, with rooms for senior managers, male staff, female staff and a large room for both male and female works employees. There is no way of being certain of the likely mix between male and female workers, but the design of this accommodation clearly suggests that it was intended to recruit both male and female workers and this was probably reflective of both the aircraft and postwar housing production periods. The female staff room is just over half the size of the male staff room, suggesting that the ratio of female to male staff was planned to be ⅓ to ⅔. The area allocated for female works employees is about ¼ of the space in the main dining room.

The canteen may have been the first building erected on the site as it was in operation during the construction phase of the new factory, as the 1939 National Register includes three canteen assistants and a further 12 building labourers resident at the factory.[12] The rapidity of the change is also shown

[9] "Gloucester Golf Club, Brockworth Park Course (1910-WW2)" Golf's Missing Links accessed on-line https://www.golfsmissinglinks.co.uk/index.php/england/central-west/gloucestershire/723-glos-gloucester-golf-club-brockworth-park
[10] "Air Minister's Speed Up Plans" Western Daily Press - Monday 10 October 1938 P7, https://www.britishnewspaperarchive.co.uk/viewer/bl/0000513/19381010/044/0007
[11] Gloucestershire Archives DA27/710/3/1165 ; Luffwaffe Aerial Photo, Historic England Photo Archive, https://historicengland.org.uk/images-books/photos/item/LFT01/03/04
[12] Gloucester RDC National Register ODGR RG 101/5103C page 23 Via www.ancestry.co.uk

by the fact that the golf professional also remained in occupation at the club house. Later news reports in the local press also show the canteen was used for official events, like the demobilisation meeting of the local home guard unit or British Legion Annual Festivals of Remembrance. Certainly, after the war it was also used for large scale entertainment events.

Accommodation for Workers

There was a significant expansion of new housing construction in Brockworth in the immediate prewar period with the construction of a new housing estate by the Ermin Park Development Company directly opposite Golf Course Lane, along with a few neighbouring roads, including Boverton Avenue and Westfield Avenue, which were developed before the War. There were also two emerging housing developments, stunted by the arrival of the war, at Moorfield Road closer to the Cross Hands and at what is now known as Abbotswood Road but was previously known as Timberlands. Active discussions were underway in March 1939 on widening the main road through Barnwood, Hucclecote and Brockworth or the possible creation of a bypass by Gloucestershire County Council. Part of the reasoning, was an anticipated 2000 new homes to be built to the south-east of the factory,.[13] Part of this included a scheme for 316 flats to be constructed by a private developer.[14]

During the war a Ministry of Aircraft Production Hostel and flats were constructed on the Abbotswood housing site and a separate Ministry of Labour and National Service operation, known as Witcombe Hostel was constructed on the Shurdington Road and had capacity for 950 residents. Both these hostels were used by workers at Hawkesley employed on the prefabs.

Aircraft Production

Derek James refers to the factory being constructed between August 1938 and November 1940, being conceived to "expedite Hawker Hurricane production".[15] This ultimately was not the case and according to Paul Francis the plan was to assemble the Armstrong Whitworth Albemarle a medium range twin engine bomber.[16] However, the factory was first used to repair hurricanes and gladiators for GAC itself and following the bombing of Shorts factory at Rochester, Kent, 27 partly finished Stirling bombers were transferred to the Hawksley factory for completion.

A W Hawksley (which Francis records as being a contraction of **A**rmstrong **W**hitworth **Hawk**er **S**idde**ley**) was set up in April 1940 as a separate subsidiary to be responsible for the Albemarle assembly contract, which had been planned for unit sub-contracting among companies outside the aircraft industry. Hawksley shared senior management with GAC including Hugh Burroughs as Managing Director, who have been with GAC from the 1917 origins of the company. The Albemarle design was required to minimise the use of alloys to guard against shortages of aluminium imports and was designed with a high proportion of timber. The lack of aluminium supplies did not materialise, and a decision was also made to concentrate on four engine bombers, including the Lancaster. Variants were developed, including both paratrooper and HORSA glider towing versions, resulting in 602 of all versions being delivered. A small number of planes were exported to Russia, however, the main Soviet order for 200 planes was cancelled, in preference for an American plane.[17]

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[13] "Barnwood Road Widening" Gloucester Citizen – March 4 1939 p14, https://www.britishnewspaperarchive.co.uk/viewer/bl/0000532/19390304/178/0014

[14] Gloucestershire Archives Gloucester RDC Building control file for 316 flats at Brockworth for MWM Maisonettes at Timberlands, 1938 DA27/710/3/1138

[15] Gloster Aircraft since 1917 Derek James, Putnam Publishing 1970

[16] AW Hawksley Ltd and the factory at Brockworth - guest blog on Prefab Museum, Paul Francis Airfield Research Group https://www.prefabmuseum.uk/content/history/aw-hawksley-ltd-and-the-factory-at-brockworth-guest-blog

[17] AW Hawksley Ltd and the factory at Brockworth - guest blog Paul Francis on Prefab Museum Website https://www.prefabmuseum.uk/content/history/aw-hawksley-ltd-and-the-factory-at-brockworth-guest-blog

There was a Public Accounts Committee style inquiry into delays and rising costs of the Albemarle project, which under wartime security arrangements, was not published but directly addressed to the Prime Minister. Notes from Winston Churchill, including one to Ministers marked "ACTION THIS DAY" and another sent by diplomatic bag from Washington, show the extent to which he was party to the decision to continue production, despite critical voices in Parliament. [18]

The plane entered active service in January 1943 with notable missions include the invasion of Sicily, D-Day, and Operation Market Garden at Arnhem. It also saw service in support of the Special Operations Executive in France. By May 1945 the level of airplane work at the Hawksley factory was being scaled down and only 32 employees remained on the factory floor to work on the last Albemarle to be assembled.[19]

Retirement was rapid, with the last Albemarle planes being taken out of service in February 1946. Whether the reported 81 planes lost in accidents and 17 in operations, as well as 2 disastrous test flight crashes at Brockworth Court and Purton, near Berkeley, contributed to this decision is unclear; Nevertheless, with the war now over, many aircraft were now surplus to peacetime requirements.

The Housing (Temporary Accommodation) Act 1944

The post war aluminium prefab programme is arguably the most successful part of the temporary housing programme, devised to meet the emergency housing needs of the nation. In terms of housing in the post war period, the challenge the country faced was a desperate shortage of housing with about 1 in 3 households homeless or poorly housed. There was also a shortage of construction workers to meet the demands of traditionally constructed homes and the temporary housing programme was conceived to transfer as much of the manufacture as possible into a factory environment.

But, what the aircraft industry called the AIROH house, and the Government called the Aluminium House, was a very late entrant in an already congested field of competing designs for temporary houses. In the end over 54,000 aluminium bungalows were erected across the country out of a total of 150,000 through the Housing (Temporary Accommodation) Act 1944. It was not featured in the Tate Exhibition in April 1944 where the Uniserco, Phoenix (both timber framed & asbestos cladding), the Tarran (concrete faced) and "Portal's Palace" (steel framed) were displayed alongside other designs.

Lord Portal was the Minister for Works during the wartime Coalition Government, which had commissioned the steel framed house and when the Bill was first debated in the upper House, Lord Portal mentioned it five times, simply because the Government believed that wood would be in short supply, other speakers in the House of Lords second reading debate mentioned it on twenty occasions. It never entered production, due to the shortage of steel, as a result, Portal's Palace never entered folk memory alongside the Anderson Shelter. Two years after leaving Ministerial office, Portal was unapologetic about backing the steel house; Had he remained a Minister, the Aluminium House may never have got beyond the drawing board.

An advocate of the Aluminium House within Government was Stafford Cripps, who as well as being Minister for Aircraft Production was the MP for Bristol East, where the AIROH prototype was eventually built. But Bristol may not have entered the temporary housing project, had it not been for Lady Isobel Cripps asking the Managing Director George White, if Bristol would be constructing the Ministry's aluminium houses. Clarke in his biography of Stafford, notes that Lady Isobel had emerged as a "political wife" with an "unusual prominence in her husband's career" citing her regular attendance at

[18] National Archives AVIA 9/17 The Albemarle aircraft Ministers Papers

[19] "Pref-fabs by Aircraft Methods" Citizen 15 September 1948, p 5, accessed on-line (paywall) https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19480915/027/0005

factory visits during his time as Minister for Aircraft Production, and it is therefore possible that she was intimately aware of the internal government discussions.[20] Especially, as her discussion with George White had been some months before Churchill's Coalition Government had formally committed to the project.[21] The terms on which the company "might take an interest" are also instructive: -

> "It was agreed that the company might take an interest in the proposal provided that the work was undertaken under a government contract - possibly on a shadow factory management basis - and no serious financial risks were taken by the Company."

Finnimore highlights that the aircraft and aluminium industries were "seeking large scale diversification from the aircraft industry into the building market."[22] By 1944 the aircraft industry used 99% of aluminium produced and the aluminium semi-fabricating industry which had boomed as a new industry in less than 10 years had "become an adjunct of the aircraft industry" employing 1.5 million people and the Government "relied on the good health of the aluminium industry for its military capability". Discussions leading to the creation of the Aircraft Industries Research Organisation for Housing (AIROH) by the industry started in late 1942. He also draws attention to Stafford Cripps, Minister for Aircraft Production, memo to the Committee on Reconstruction Priorities in 1943, noting:

> "In this document the two elements of future government policy in relation to the aluminium industry were set out: long term economic planning and national security. At this stage no mention was made of a housing programme."

Later in November 1944, when the Portal house was estimated to cost £600, Cripps supported the development of the aluminium housing programme, which was then estimated to cost £766 a dwelling, to provide work for the aluminium and aircraft industries. Sir Stafford Cripps, whose home was at Far Oakridge, near Stroud, toured the Hawksley factory in February 1945 and as was usual on his visits to factories, he met the Joint Production Committee, which consisted of both trade union and management representatives. He discussed the "changeover to peace production" and stressed the need for "early decisions" otherwise the employees would be disbursed before the new work began.[23]

By the time Churchill's War Cabinet green lit the project in the spring, costs had risen to £914 and later in the autumn the Atlee Government were faced by costs rising to £1517 a dwelling, the largest unexpected addition being £101 profit per house to the aircraft companies. Costs had risen for other types, and in addition the opportunity for the "lend lease" American house had been lost following the end of the War in Japan. Both Churchill's caretaker Government (which held the offices of state between May and July) and Attlee's Government both considered transferring part of the cost from housing budgets to the Ministry of Aircraft Production, but the Treasury remained unmoved to help them out.

The first aluminium house was exhibited at an Aluminium Industries exhibition in the Spring of 1945, an exhibition at Gloucester Cathedral followed in July 1945, as part of an International Housing Conference, supported by the Archbishop of York (Cyril Garbett) and the Bishop of Gloucester (Arthur Headlam). There was clearly concern within Government about the extent to which exhibiting the

[20] The Cripps Version, The life of Stafford Cripps Peter Clarke Allen Lane 2002
[21] Bristol Aeroplane Company Board Minutes 9 January 1945
[22] Brian Finnimore "The A.I.R.O.H. house: industrial diversification and state building policy" in Construction History Volume 1 1985 Accessed on-line https://www.arct.cam.ac.uk/Downloads/chs/vol1/article8.pdf
[23] "Sir Stafford Cripps at Hawksleys – Problem of Changeover Discussed" Gloucester Citizen - Tuesday 27 February 1945 https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19450227/030/0004

house might be raising unrealistic expectations and all further requests to display the house was strongly resisted by Government.

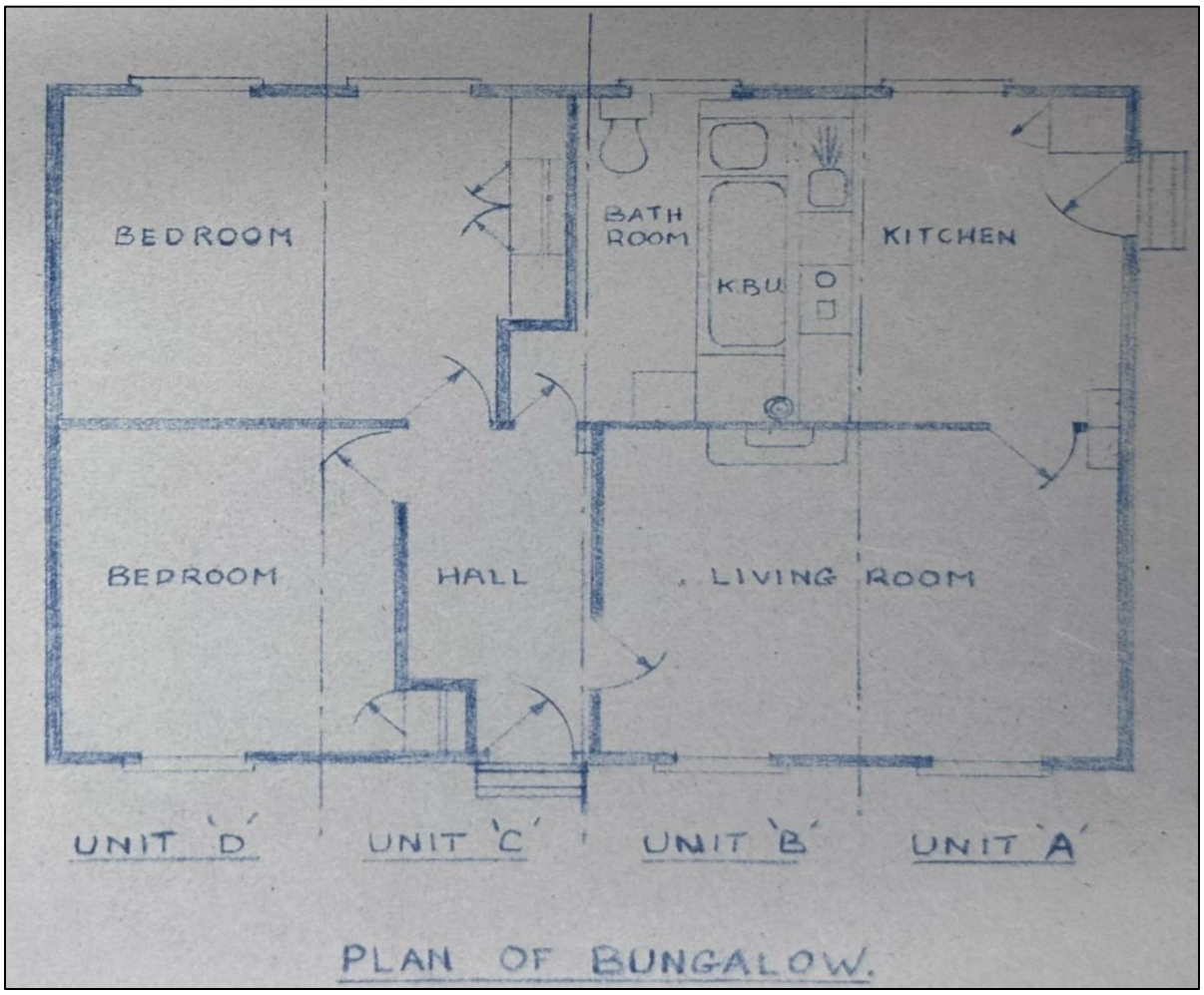

Figure 4: Layout Plan showing the configuration of the 4 Sections. Unit "B" contains both the bathroom and kitchen equipment.[24]

The Manufacturing Process

The wartime plane production process had been radically streamlined so that companies outside the aircraft industry could be contracted to construct sub-assemblies and the process at Hawksley was primarily fitting together the sub-assemblies delivered to the factory as well as manufacturing some of the sections in house. This approach was to enable production to be easily transferred to another factory in the event of damage by enemy action, GAC itself had developed a supply chain across 40 other factories. This approach can be seen in the 1939 plans, which includes an inspection area for sub-contracted components, alongside two sub-assembly areas.

The AIROH house concept was to apply aircraft industry production methods and for the home to leave the factory in four completed sections to be quickly assembled on site on a pre-prepared base and connected to the utility services. Production standardisation also meant that all prefab designs fitted a standard base with utility connections in the same locations, enabling houses to be diverted to available sites.

[24] Gloucestershire Archives from LPW Spry Collection D4675

Considerable detail about the production process can be gleaned from the large amount of newspaper reports which featured the factory and the company, for example one explained the Government's interest in the prefabs using scrap aluminium explains that one of the plane dumps extended to 150 acres. They also described the design of the house with all the fittings and fixtures built in with one reporting "All the occupier need supply is two beds, a dining table, settee and some chairs."[25] Originally plans had envisaged every property being supplied with a fridge, but the era of shortages led to plans being scaled back. The main use of the aluminium was to create the structure of the building, the external walls were made from foamed concrete panels kiln dried in the factory.

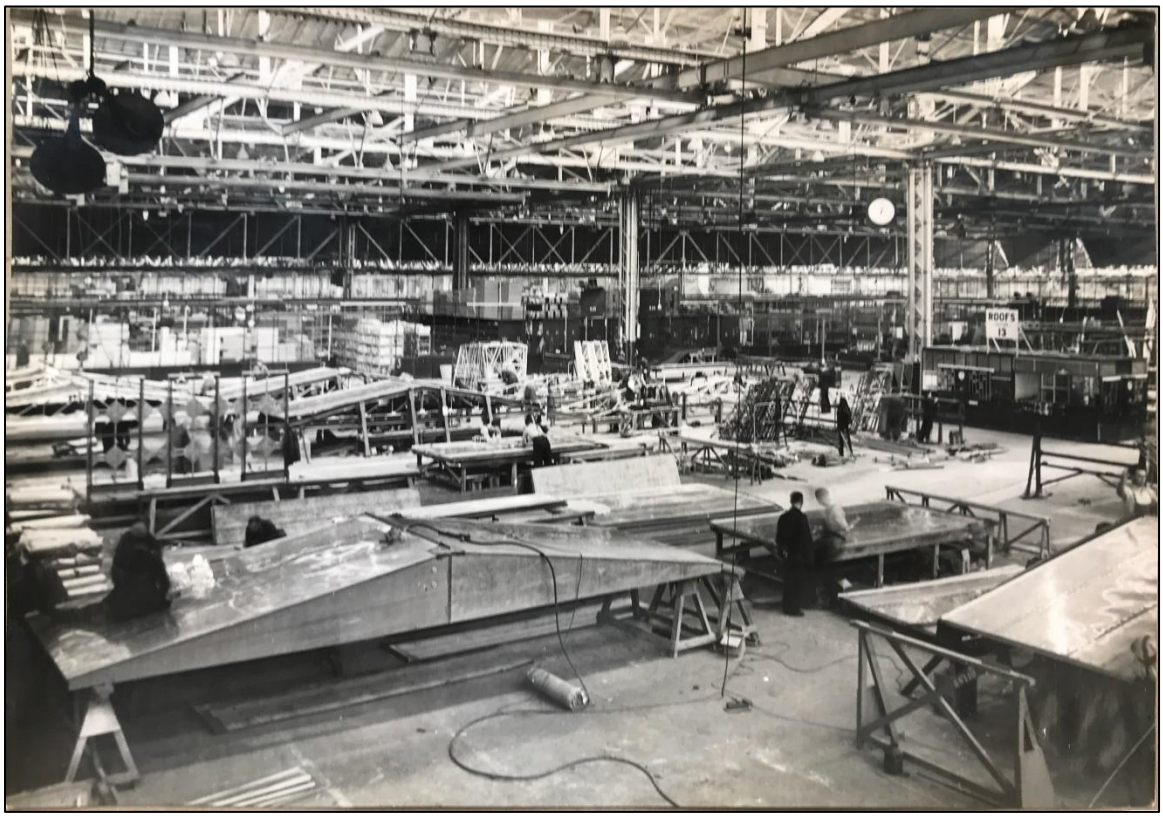

Figure 5: A photograph of the Roof section within the Hawksley Factory[26]

The production of the prefabs required considerable organisation and planning with sub-assemblies being manufactured in the factory and the sections themselves being assembled on a 900-foot conveyor. One visiting journalist described the final part of the factory process: -

> "On a bridge over the conveyor track the operator watches lights on his indicator board… when all the lights go out he knows that every department has completed the job on the section on hand and as he moves the conveyor forward another complete house is ready for painting and delivery".[27]

[25] "Hawksley to make houses from crashed aircraft", Gloucestershire Echo - Tuesday 15 May 1945 p1 https://www.britishnewspaperarchive.co.uk/viewer/BL/0000320/19450515/008/0001; "Prefabs by Aircraft Methods", Gloucester Citizen - Wednesday 15 September 1948 p 5 https://www.britishnewspaperarchive.co.uk/viewer/BL/0000325/19480915/027/0005

[26] Gloucestershire Archives from LPW Spry Collection D4675

[27] "Grand job in Transport of Hawksley Houses", Gloucestershire Echo - Thursday 18 November 1948 p3, https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19481118/027/0003

The continuation of the conveyor belt was dependant on the transport of the sections as there was very limited storage space at the factory. Not only was this "just in time" delivery to site but also "just in time" delivery of components to the factory and production stoppages were inevitable if components were not available – for example during the winter freeze of 1947 Hawksley largely maintained production, but delays were caused by unavailability of plumbing parts manufactured in Birmingham. Shortage of coal was also another threat to production as supplies had been cut to 50% for industrial concerns during January 1947.[28] Later in the year discussions took place within the Gloucester area between employers, unions and electricity companies to stagger working hours to manage electricity demand to available supply – a practice known as "load shedding".[29]

The factory was described as the 6th most modern with a floor area of almost 1,000,000 sq. ft. "Months of intensive planning effort by the administrative and chief executive staff are now bearing fruit." Mr Ingham the General Manager told one local newspaper.

> "Every detail is tooled and jigged so accurately that unskilled labour without any previous experience can be employed to produce all the intricate details that flow from the fabricating shops to the main assembly line. In two days, a new employee, male or female, is taught to do a particular operation, even though he or she may never previously have worked or handled an engineering tool." [30]

Production of the first prefabs at Brockworth took place in November 1945, this was testing out and fine tuning production methods, and training of the core employees but not until the middle of 1946 was mass production "getting under way", as there had been considerable delays in getting equipment from suppliers and it would be some months before full production would be reached with the workforce increased from around 2,000 to 3,500.[31]

Transport

In February 1946 Hawksley itself was not responsible for the transport of the completed bungalow sections but later Hawker Siddeley Transport Limited, which had been set up early in 1948 and by 1949 had 400 employees of which 100 were mechanics maintaining the vehicles at Staverton.[32]. The process of delivery was convoys of four trucks carrying the 4 sections of the house, the first being the living room, followed by the kitchen and bathroom, followed by 2 sections containing the bedrooms. This enabled the sections to be delivered in the order they would be installed.

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[28] Hawksley Serious Coal Position" Gloucester Citizen - Monday 27 January 1947 p1
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19470127/006/0001
[29] County Move on Staggered Hours Plan Gloucester Citizen - Wednesday 23 July 1947 p1
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19470723/006/0001
[30] "Will keep factory busy for years" Gloucestershire Echo - Tuesday 05 November 1946 p5
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19461105/040/0005
[31] First "Airoh" Houses for Cheltenham shortly Gloucestershire Echo - Friday 23 November 1945 p1
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000320/19451123/001/0001
Mass production of homes to start in the spring Gloucestershire Echo - Wednesday 28 November 1945
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19451128/032/0004
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000518/19460223/078/0007 ; Gloucester Citizen - Tuesday 16 July 1946 p5
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19460716/081/0005
[32] "1200 engaged on Prefabs at Hucclecote", Cheltenham Chronicle - Saturday 23 February 1946 p 7
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000518/19460223/078/0007 "Made in Gloucester No.5" Gloucester Journal - Saturday 29 January 1949 page 13 https://www.britishnewspaperarchive.co.uk/viewer/BL/0000532/19490129/022/0013

Figure 6: A photograph of a convoy of sections on their way to site, location unknown. They were normally sheeted but the publicity booklet it appeared in explained they were un-sheeted for publicity purposes. [33]

Site Process

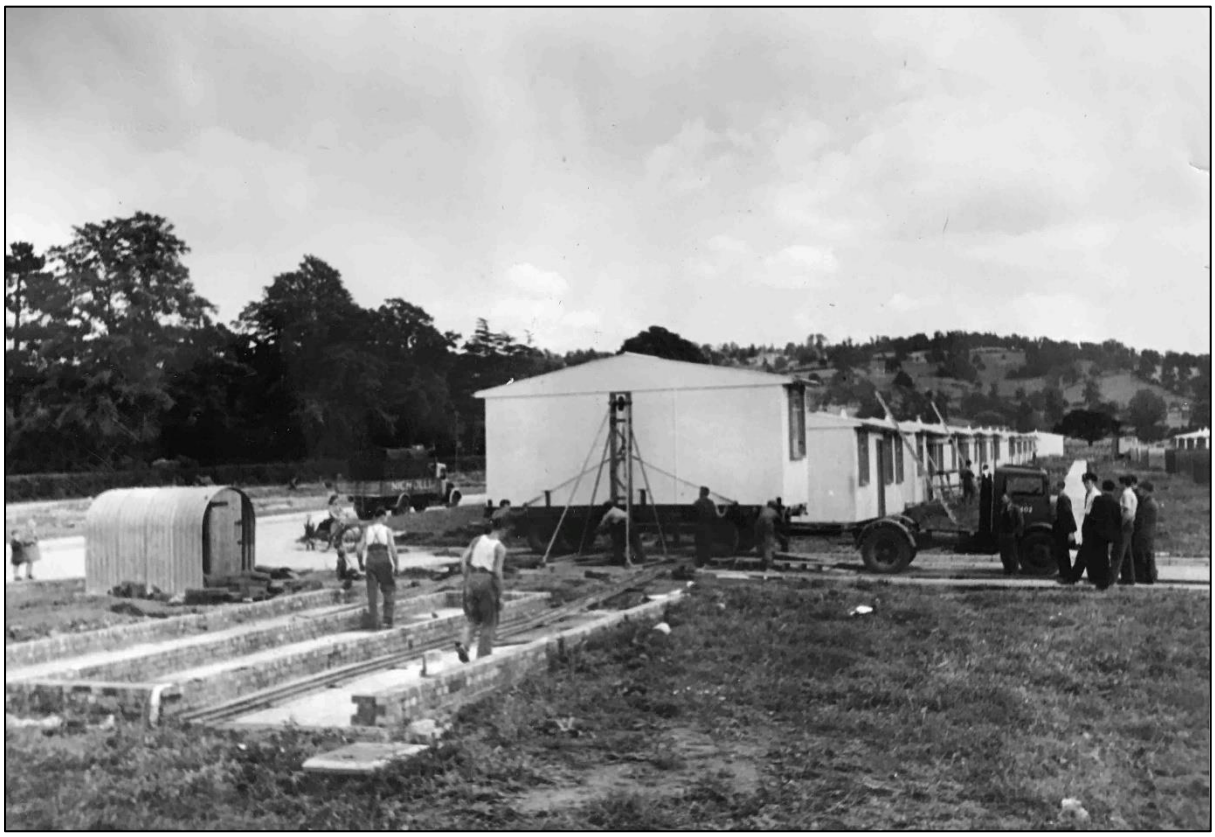
The site process was also subject to standardisation, and whilst a national electricity distribution standard had been agreed, the Ministry of Works reported that with many local suppliers yet to adopt the national standard and gas not being available on all sites "made it necessary to cater for 20 different combinations" of gas and electricity services.[34] There is no mention of difficulties connecting water and sewerage, however, it is apparent that some local authorities took longer to acquire sites for the their allocated prefabs and availability of utilities supplies could have been a factor.

All prefabs, of whatever design, were intended to fit on a standard base with identical connecting points for utilities. It was discovered that the protype AIROH design required a specially designed foundation base rather than the using a standard base on Once each section had been craned off the lorries they were quickly assembled with plug and socket connectors to connect the wiring in each section and all of the plumbing for the bathroom and kitchen being contained within a single unit. Hawksley claimed that they could complete the installation of the house within 29 minutes. What that ignored was the site preparation to make the electricity, gas, water, and sewerage to be available to connect to the house and lay the foundation slab.

The first prefabs installed by Hawksley were at the Priors Road Estate Cheltenham were a total of 173 AIROH prefabs were erected and this photograph below is believed to of the installation of a house at

[33] Photo Gloucestershire Archives from LPW Spry Collection D4675
[34] Ministry of Works, 1947 Summary Report of the Ministry of Works, Cmd 7541 October 1948

this site. The five factories employed 15 companies of contractors to undertake the site installation, but the local authority was responsible for getting the slab bases ready.



Numbers produced

The total number of temporary prefabs ordered by the Government was 54,400 produced in the 5 wartime shadow factories operated by Vickers(2 in the North West), Blackburn (based in Scotland) Bristol and Hawksley.[35] The Gloucester part of this contract in June 1947 was reported as being for 8,750 to be completed by 31 October 1947.[36] No breakdown of the production by other factories has been found, but some of them continued to complete the temporary housing until the early part of 1948.

The minutes at Bristol Aeroplane Company, noted in June 1946, that contracts for the 15,000 permanent homes would be offered to the existing suppliers on a competitive basis and refers to them as "Russells" – no other reference to them by this name has been found.[37] The funding arrangements for the "permanent" prefabs were substantially different in that the temporary prefabs had been funded centrally by the Government and placed at the disposal of local authorities whereas the new houses were required to be funded by way of loans raised by the receiving local authorities. In June 1947, following the tendering process, it was announced that the Ministry of Health had awarded a new contract to produce 10,000 prefabs to Hawksley, the only other firm to get a contract was Blackburn in Dumbarton who were allocated 5,000.[38] As a result of this decision Vickers two factories

[35] 54,000 Prefabs ordered Yorkshire Evening Post - Thursday 03 October 1946 p8
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000273/19461003/087/0008
[36] "Big Glos'ter Contract Gloucester Citizen - Thursday 12 June 1947 p1
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19470612/010/0001
[37] Bristol Aircraft Company Board Minutes 4 June 1946
[38] "Big Glos'ter Contract Gloucester Citizen - Thursday 12 June 1947 p1
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19470612/010/0001

soon ceased prefab production, Bristol's also ceased but continued to produce other aspects including their schools and export housing work.

It was reported that change over to the new contract at Brockworth for 10,000 "permanent" bungalows "introducing many modifications and improvements in their construction was achieved without any break in the labour force employed". This newly designed house continued to follow the basic design of the AIROH aluminium house constructed in 4 sections. By January 1948 "peak production" had now been achieved and was expected to keep the factory in work for the next 18 months.[39]

Union Activity

It has not been possible to identify any trade union records for the factory or local union branches and the information discussed here is information gleaned from local newspapers and as a consequence may only feature newsworthy "flash points" rather than the day-to-day co-operation between management and organised labour or Joint Production Committee arrangements.

As a aircraft factory the company paid rates of pay well in advance of ordinary engineering pay but on transitioning to housing manufacture the company decided to reduce pay to normal engineering rates with threats of strike action by the 500 people then employed.[40] The case very quickly went to national arbitration but the tribunal found for the employer and Hawksley were able to maintain the 20% reduction in wages for skilled grades from 73s 9d to 63s 6d. This was because the company was able to show that all the staff, except maintenance men and toolmakers had been discharged on the ending of the aircraft contracts.[41] Subsequently Amalgamated Engineering Union members undertook to guarantee a full production effort in return for a "fair living wage", which suggested the issue festered on unresolved.[42]

In January 1947 a visiting group of 5 MPs were prevented from seeing the assembly line in motion due to a mass meeting of over 2000 workers discussing a stoppage which arose out of a go slow in one part of the factory.[43] Following a decision by the National Arbitration Panel in February 1948 Hawksley was ordered to compensate the locked out workers for the 2 hours of pay stopped, the unofficial stoppage had been by 40 wall section operators.[44] The firm had not considered it as a lockout but something they were entitled to do when there was dislocation in one section affecting the rest of the factory.

Following a visit to the factory in January 1947 (whether on the same visit discussed above or another one is not clear) George Wallace, the Labour MP for Chislehurst, Kent (who was born in Cheltenham) wrote to the Echo and Citizen :-

> "Every time I saw a house roll off the assembly line I thought of the great happiness that house would mean to those that are waiting for urgently needed accommodation. The workers in that factory, as in others of the same type, are working on a job of vital national importance,

[39] "Bright Exports Prospects for Hawksley" Gloucestershire Echo - Tuesday 27 January 1948 p4, https://www.britishnewspaperarchive.co.uk/viewer/BL/0000320/19480127/031/0004
[40] "Strike Threat at Gloucester", Western Daily Press - Monday 04 February 1946 p1 https://www.britishnewspaperarchive.co.uk/viewer/BL/0000513/19460204/015/0001
[41] "Hawksley Dispute Decision" Gloucestershire Echo - Thursday 14 March 1946 p1 https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19460314/015/0001
[42] "Hawksley Workers Pledge" Gloucestershire Echo - Wednesday 20 March 1946 p4 https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19460320/033/0004
[43] "Labour Dispute at Hawksley's" Cheltenham Chronicle - Saturday 11 January 1947 p3 https://www.britishnewspaperarchive.co.uk/viewer/bl/0000518/19470111/042/0003
[44] Payment for loss of 2 hours Gloucestershire Echo - Tuesday 17 February 1948 p1 https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19480217/026/0001

> and might I add a job of construction and not destruction. The people I represent in a constituency situated in North-West Kent, suffered severely during the Battle of Britain and the consequent raids on London. They are longing for homes of their own and the workers at Messrs. Hawksley's are helping magnificently to produce the answer to my people's problems."

In February 1947 there was strong criticism from local trade unions that employers were giving notice to lay off workers, due to the fuel crisis, including Hawksley who had given 7 days' notice to terminate to all hourly paid employees. Of the three companies discussed, GAC and Rotol being the others Hawksley were worst affected by materials from Birmingham where the factory there was shut down. The maintenance staff of 200 were unaffected by the proposed termination.[45] Subsequent discussions considered that the planned termination of staff breach a recent national agreement which had for a minimum working week of 34 hours and.[46]

Numbers Employed

Announcing the conversion of the factory to make bungalows it was predicted that the factory would employ 3000.[47] By November 1945 only 150 were being employed and the number of houses were the "barest minimum" to train staff and check drawings.[48] At that stage it was anticipated that mass production would begin in March or April with 500 new workers starting each month until the total of 3000 was reached, however, full production did not start until later in the year, due to equipment delays to the factory.

In January 1946 adverts appeared in the press seeking billets for 2500 workers, although it appears that major use of existing hostels was made.[49] In November 1946 the Echo reported complaints about conditions at the Brockworth Hostel where approximately 1000 workers from South Wales were accommodated. Their concerns were being taken up in Parliament by Daniel Lipson the Independent MP for Cheltenham.[50] In a reply from the Minister of Labour, George Issacs MP, he was advised that there were no grounds for complaint and that the hostel could not be repainted without detriment to other more urgent work. The Minister did state that pressure at mealtimes could be eased by the firm staggering the hours of work. [51]

At the same time the company were advertising for 1000 male and female workers offering "trade union rates" and a "cost of living bonus".[52] It was reported that the additional employees were required to step up production to complete a house every 12 minutes.[53]

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[45] Local AEU Fuel Crisis Complaint Gloucester Citizen - Friday 14 February 1947 p1
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19470214/018/0001
[46] Dismissal Notice Talks in Gloucester Gloucester Citizen - Tuesday 18 February 1947 p5
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000325/19470218/044/0005
[47] "Hawksley to make houses from crashed aircraft", Gloucestershire Echo - Tuesday 15 May 1945 p1
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000320/19450515/008/0001
[48] "Mass Production of Homes to start in the spring" Gloucestershire Echo - Wednesday 28 November 1945 p4
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19451128/032/0004
[49] "Urgent" Gloucester Citizen - Tuesday 22 January 1946 p2
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000325/19460122/084/0002
[50] Brockworth Hostel Complaints Gloucestershire Echo - Wednesday 20 November 1946 p1
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19461120/022/0001; Martin Horwood has written an interesting account of Lipson's time both at Cheltenham College from 1912 and as MP from 1937 to 1950 https://blog.martinhorwood.net/wp/past-mps/daniel-lipson/
[51] No Ground for Hostel Complaint Gloucestershire Echo - Wednesday 27 November 1946 p5
https://www.britishnewspaperarchive.co.uk/viewer/bl/0000320/19461127/048/0005
[52] "1000 Jobs Available" Gloucestershire Echo - Tuesday 05 November 1946 p2
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000320/19461105/091/0002
[53] "1000 more workers required for prefabs" Cheltenham Chronicle - Saturday 09 November 1946 p4
https://www.britishnewspaperarchive.co.uk/viewer/BL/0000518/19461109/034/0004

Remaining Prefab Examples

The only known example of a preserved AIROH prefab constructed at Brockworth is the one on display at St Fagan's Open Air Museum operated by the National Museum of Wales, this was a prefab erected in 1948 at Llandinam Crescent, Gabalfa about 2 miles north of Cardiff City Centre. Being erected at that time it is not one of the original "temporary" but one of the 10,000 "permanent" prefabs constructed after November 1947. There are also rare survivals within estates, an example being two now privately owned properties at Sunnyhill, Cashes Green, but increasingly maintenance and energy efficiency requirements have resulted in their replacement with housing fit for the 21st century, although in some cases repair schemes have included replacement of the external walls to provide improved insulation and keep what is seen as a well regarded house intact.

Photos of the Preserved Bungalow at St Fagans

Conclusion

As explained in the introduction it is intended to produce a second article on the later stages of the Hawksley's involvement as a housing manufacturer, but this article has shown how the company, in common with other aircraft manufacturers, adapted the aircraft assembly techniques to help building the peace after the Second World War. Different interests within Government and the aircraft and the alloys industries as well as local authorities had very different motives for advocating the manufacture of aluminium bungalows to create much needed housing. Hawker Siddeley, to an extent, also benefited by being able to maintain Brockworth as a manufacturing centre in the scaled down post war aircraft industry. Ultimately, this was short lived, as the company rapidly closed all of its factories in Brockworth over a 4 year period from 1958 to 1962.

I would like to thank staff at Gloucestershire Archives, Aerospace Bristol and the National Archives for assistance in accessing the various records consulted in this research project and for assistance provided in seeking out the rights holders of the photographs, although any omissions in this respect are mine. A large part of this work would not have been possible without two significant deposits in Gloucestershire Archives, firstly, Leslie Spry, by his son Norman, which includes a large number of photographs of the factory and the houses themselves as well as plans, sale brochures and other ephemera. A similar but smaller deposit has also been made of records held by Norman Collinson, who also worked for A W Hawksley.

Chas Townley April 2024