Historic England

Weston-super-Mare, North Somerset: Great Weston Heritage Action Zone, Aerial Investigation and Mapping Project

Edward Carpenter

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WESTON-SUPER-MARE
NORTH SOMERSET

Great Weston Heritage Action Zone

Aerial Investigation and Mapping Project

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SUMMARY

The Weston-super-Mare Heritage Action Zone is a partnership project to promote awareness of the historic environment to inform the delivery of heritage-led economic growth. The aerial investigation and mapping described in this report complements other research by Historic England on historic buildings and urban development, and an assessment of historic character by Land Use Consultants.

Aerial photographs document changes to Weston over almost 100 years. They show in some detail the development of the seaside resort between the wars. RAF aerial photographs taken during and just after the Second World War shows some of the ways in which Weston was affected by that conflict. The historic aerial photographs also provide a detailed view of the post-Second World War house building undertaken in the town. The deeper history of the town was revealed in airborne laser scanning (lidar) data of Worlebury Iron Age hillfort. From both these sources, four main themes have emerged and these form the four thematic chapters of this report. Although many of the features discussed in this report were previously mapped in the earlier aerial investigation projects, additional aerial sources have provided new information.

CONTRIBUTORS
This project was undertaken by Edward Carpenter

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Thanks to Steve Crowther and Amanda Dickson, Skylarkeology for initial discussion on the Weston-super-Mare area. The photo loan was managed and delivered by Luke Griffin, Historic England Archive. Thanks to my Historic England colleagues Mark Bowden for discussions on Worlebury Camp, Allan Brodie and Johanna Roethe for their insight on Weston-super-Mare, Joanna Smith and Emily Cole for their information about post-war Cornish Unit housing and Fiona Small. Thanks to Cara MacMahon, North Somerset Council for her enthusiasm and support. Thanks to Cat Lodge, North Somerset Council, for her comments and suggestions on the report and thanks to Daniel Smith, North Somerset Council.

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INTRODUCTION

Historic England instigated Weston-super-Mare's Great Weston Heritage Action Zone (HAZ) programme of work in 2017. Historic England's contribution to the HAZ is a programme of building research (Brodie, Roethe and Hudson-McAulay 2019), funding for a historic characterisation of the town undertaken by Land Use Consultants (LUC), (LUC and Archangel Heritage Ltd 2018), and an aerial investigation and mapping project. This report summarises the results of the aerial investigation and mapping work.

Historic England's Heritage Action Zone initiative will inform the delivery of heritage-led regeneration of the town. It is led by North Somerset Council, working in partnership with Historic England and many other organisations; a complete list of partners and links to further background information is included in Appendix 1 and 2.

Aerial Investigation Project area

Part of Weston-super-Mare was covered by two previous aerial investigation and mapping projects: *Severn Estuary Rapid Coastal Zone Assessment Survey* (Crowther and Dickson 2008) and *Archaeological Aerial Survey in the Northern Mendip Hills* (Dickson and Priest 2009). The current project revisited areas mapped as part of these projects as well as looking for the first time at an area to the east (Fig 1).

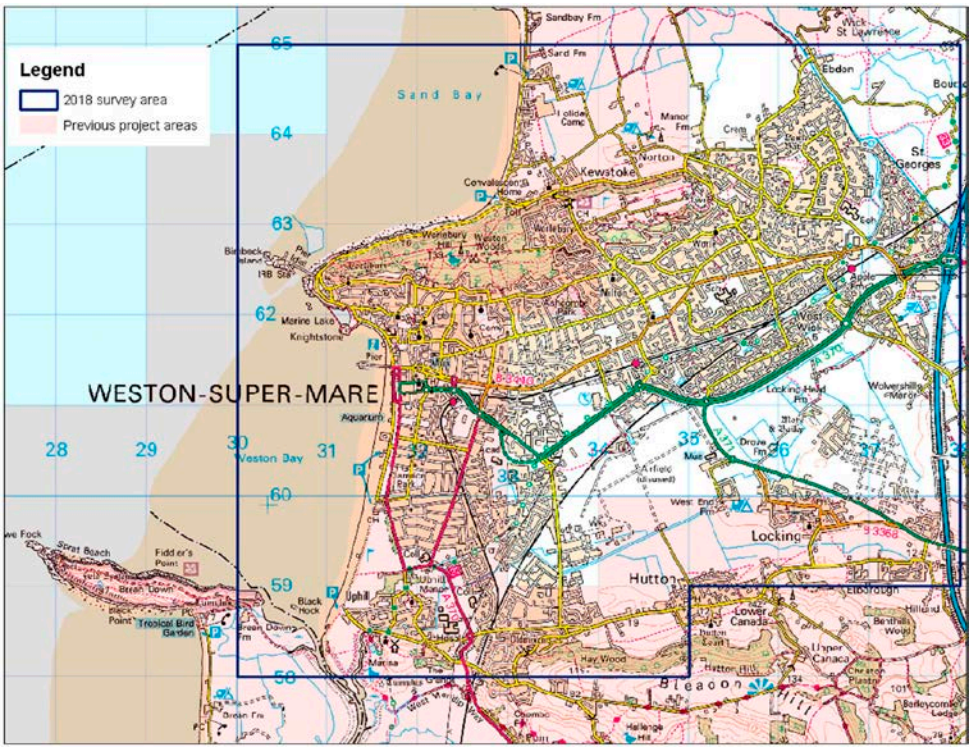

Figure 1 Project area © Historic England; © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100019088.

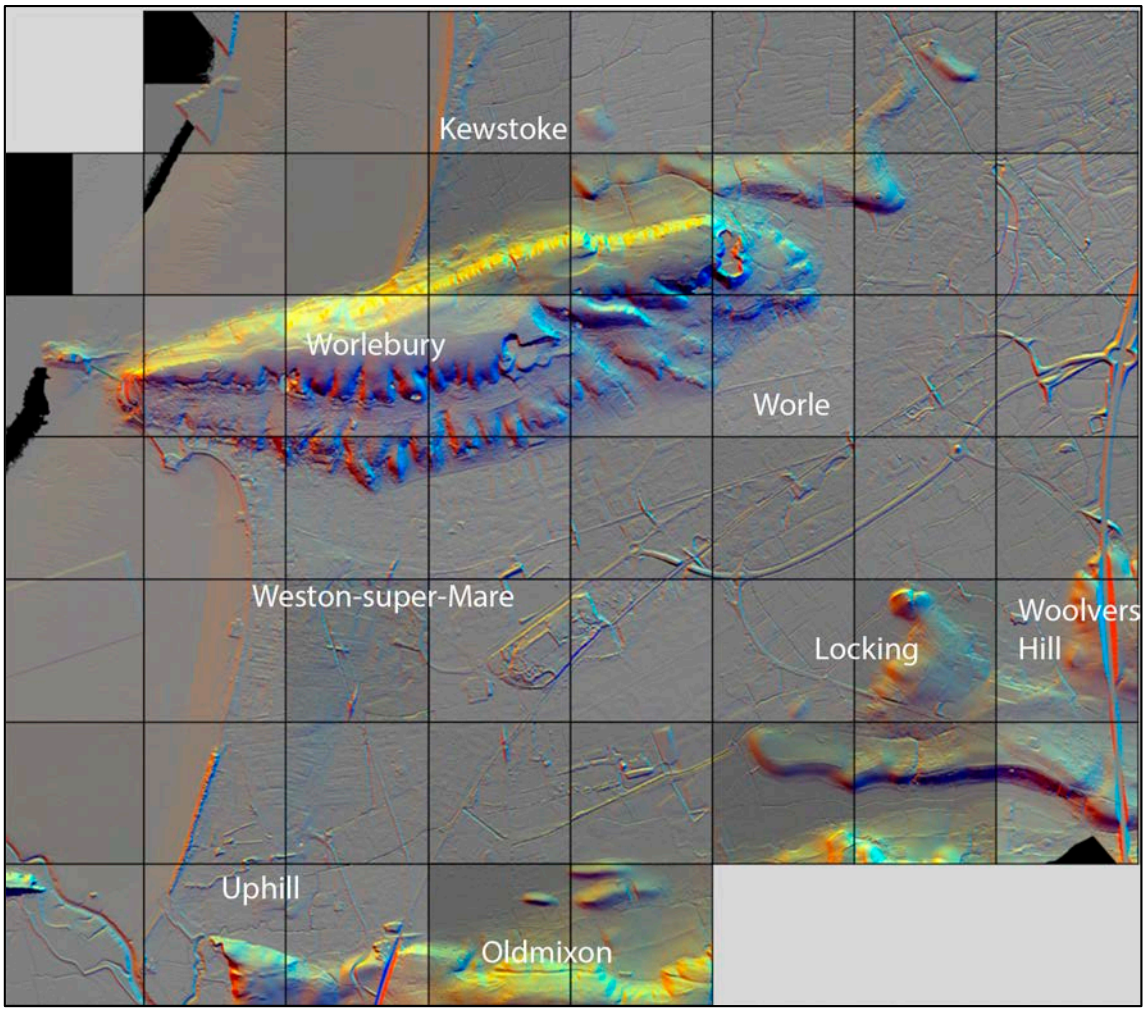

Figure 2 Lidar of the project area with selected place names. Lidar © Environment Agency copyright 2010. All rights reserved

Much of the project area is flat and low-lying, and lidar (airborne laser scanning data) well illustrates this topography (Fig 2). The North Somerset Levels and moors extend north to Clevedon, west to Congresbury and Yatton and south towards the Mendip Hills. The Mendip Hills form a ridge of higher ground along the southern edge of the levels, with Worlebury Hill forming the other area of high ground towards the northern end of the project area. Both the Mendip Hills and Worlebury Hill are primarily Carboniferous limestone ridges.

The coastal levels were once salt marsh, but there is evidence of drainage during the Roman period (Cullen 2005, 117-118). Most of the fields within the project area are defined by series of broad drainage ditches, within which are parallel shallow drainage ditches.

The medieval settlement of Weston-super-Mare was located at the northern end of Weston Bay on the lower slopes of Worlebury Hill near the present parish church (Russett and La Trobe-Bateman 1999, 3). The popularity of Weston as a resort from the late 18th century drove the rapid growth of the town. Building throughout the 19th century extended Weston south along the coast to Uphill, northward up

the slope of Worlebury Hill and eastwards along the hill and the lower lying ground (ibid 1999, 6-7). 20th century expansion of the town has continued the eastward trend. This included the construction of RAF Locking and RAF Weston-super-Mare during the late 1930s and early 1940s. Both sites are now closed and the location of housing developments.

Previous aerial investigation and mapping projects

The *Severn Estuary Rapid Coastal Zone Assessment Survey* project area extended for approximately 195km along the Severn Estuary between Porlock Bay, Somerset to the tidal limit at Maisemore Weir, Gloucestershire (Crowther and Dickson 2008, 10). It was defined by the area of Mean Low Water in the intertidal zone and approximately 1km inland of the coastal margin and as a result a large part of Weston-super-Mare was mapped in that project. The *Northern Mendip Hills* project (Dickson and Priest 2009) incorporated parts of Locking and Oldmixon to the south and east of the town.

The focus of the Rapid Coastal Zone Assessment Survey (RCZAS) was the intertidal zone. A wide range of evidence was identified along the estuary, but for the area of Weston-super-Mare three main groups of remains were identified: medieval and post medieval fishing; post medieval mining and structures associated with the Second World War. The overlap of the Mendip project with this HAZ project is small and the features seen there largely relate to the Second World War.

AERIAL SOURCES AND WESTON

The aerial survey of Weston-super-Mare used both aerial photographs and lidar to build-up a picture of past use of this landscape. Over 1,800 vertical and oblique aerial photographs of Weston are held in the Historic England Archive and they are a mixture of modern and historic images that cover a period of almost 100 years, the earliest taken in 1920, and the most recent in 2018 (Fig 3). The lidar data was acquired by the Environment Agency between 2003 and 2010. Together, they represent a fantastic resource to identify and better understand archaeological sites in and around the town and especially those features seen on historic sources that have since been demolished, buried or built over. These provided the bulk of the sources consulted, but modern digital aerial photographs supplied by Next Perspectives Aerial Photography for Great Britain (APGB) were also viewed. See Appendix 3 for an overview of the sources and the methodology used in this project.

Archaeological mapping was completed for those areas not already covered by previous projects and a review of the sources was undertaken for the areas already mapped. All archaeological features identified on the photographs or lidar were mapped. Across the country, features identified from the air have a potential date range of Neolithic to 20th century, although for this project no Neolithic sites were identified. Previous aerial investigation and mapping work did not have access to the lidar, the Aerofilms photographs or the small-scale aerial photographs. Their availability for this project allowed additional features to be mapped and new insights into the 20th century development of Weston to be gained.

Figure 3 Historic England aerial photograph looking south over Weston-super-Mare in 2016. 33066_003 16-AUG-2016 © Historic England

The aerial investigation and mapping component of the HAZ project undertook a detailed analysis of these sources to identify archaeological sites or buildings of interest. This can be a painstaking process as both sources show a wide range of features, not all of which are archaeological.

The evidence seen on aerial sources of Weston-super-Mare were primarily structures and earthworks. Traditionally, the archaeological use of aerial photographs has focussed on the identification of archaeological earthworks and cropmarks that reveal the presence of buried sites. Since the 1990s, features and structures associated with the Second World War have also been routinely mapped. Most of Weston-super-Mare's wartime structures were mapped in the earlier aerial investigation and mapping projects and the impact of the Second World War on the town forms one of the main themes of this report.

For this project, the historic aerial photographs have also been studied to see what other evidence they can provide about the town. The Aerofilms aerial photographs show in some detail the development of the seaside resort between the wars. RAF aerial photographs taken during and just after the war shows some of the ways in which Weston was affected by that conflict. They also provide a detailed view of the post-Second World War house building undertaken in the town. In most cases, the buildings and structures identified were not mapped, but were recorded. The information derived from these photographs helps tell the story of Weston in the 20th century. These stories have been divided into four different themes. These look at Weston between the wars, the Second World War, post-war housing and

Worlebury Camp Iron Age hillfort. These four sections form the bulk of this report. A final chapter, *Archaeological Investigations of Weston* briefly summarises other aspects of prehistoric, Roman and Medieval Weston as understood from limited field survey and excavation.

Figure 4 A view of Weston taken in 1949. This is one of ten aerial photos taken by the company on 25 July that year. AFL 61877/EAW025151 25-Jul-1949 © Historic England (Aerofilms Collection)

The Aerofilms photography covers the 1920s to the 1940s and it provides some fascinating views of the town. Most are general views of the coastal area (Fig 4), but the quality of the photography is excellent and most images can be enlarged to reveal a wealth of interesting details. For example, both Figs 34 and 69 are taken from Fig 4 above. The remainder of this section reproduces a number of details from Aerofilms photographs. Each image offers an individual view of the town, but together they help to tell the story of Weston in and around the second quarter of the 20th century.

Holidaymakers

Some of the aerial photographs show relatively short-lived features such as the painted sign advertising the public baths on Knightstone Island (Fig 5), the temporary arrangement of huts on the beach (Fig 6 & 7) and the model yacht ponds (Fig 8). While these aerial photographs document change, they also highlight the more constant aspects of this seaside town. In particular, the vast crowds of holidaymakers and the unchanging nature of the exterior of some of the guesthouses (Fig 9).

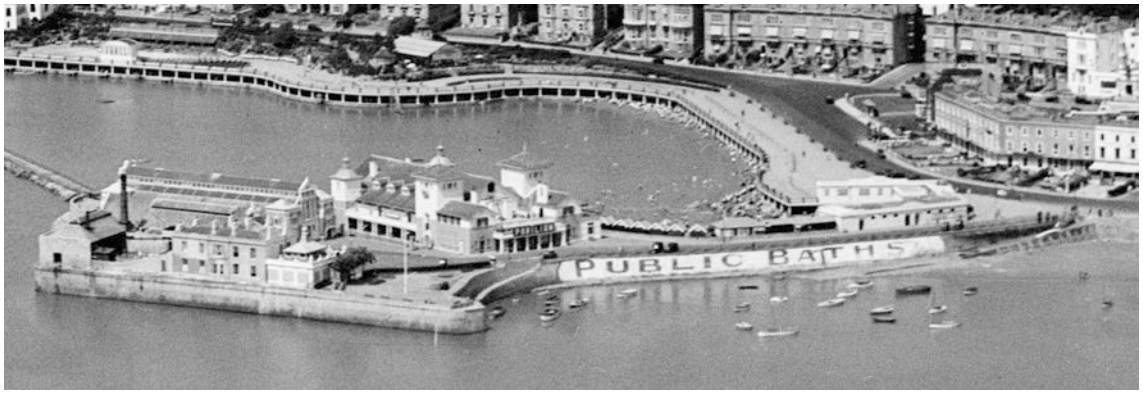

Figure 5 Knightstone Island in 1935. AFL 60874/EPW048450 Jul-1935 © Historic England (Aerofilms Collection)

Figure 6 Holidaymakers crowd around tents and perhaps temporary huts on the beach near the pier in 1936. Based on painted signs on similar tents seen in 1949 (Fig 7) some of these are offering refreshments. AFL 60897/EPW051716 14-Aug-1936 © Historic England (Aerofilms Collection)

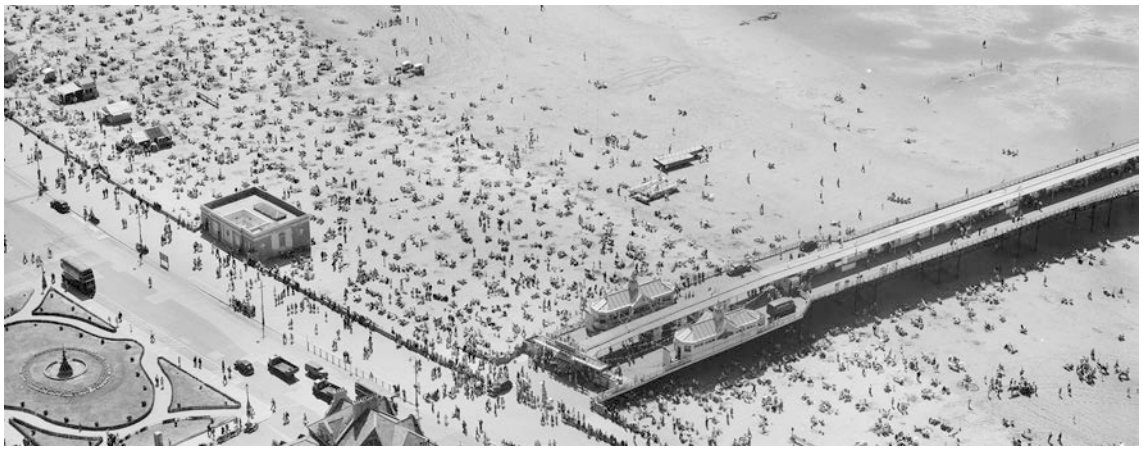

Figure 7 A busy beach in July 1949. To the left of the Grand Pier is the lavatory block, the central section of which is open to the skies – the angle of the photograph means modesty is preserved. To the left of that are tents, some of which are selling teas and ices. Detail of AFL 61877/EAW025155 25-Jul-1949 © Historic England (Aerofilms Collection)

Figure 8 One of two model boat lakes that existed on Weston's beach. This was to the north of the pier and can no longer be seen. The outline of the other pond can still be made-out in the sand to the south of the 1930s open air pool. Detail of AFL 60516/EPW023969 Sep-1928 © Historic England (Aerofilms Collection)

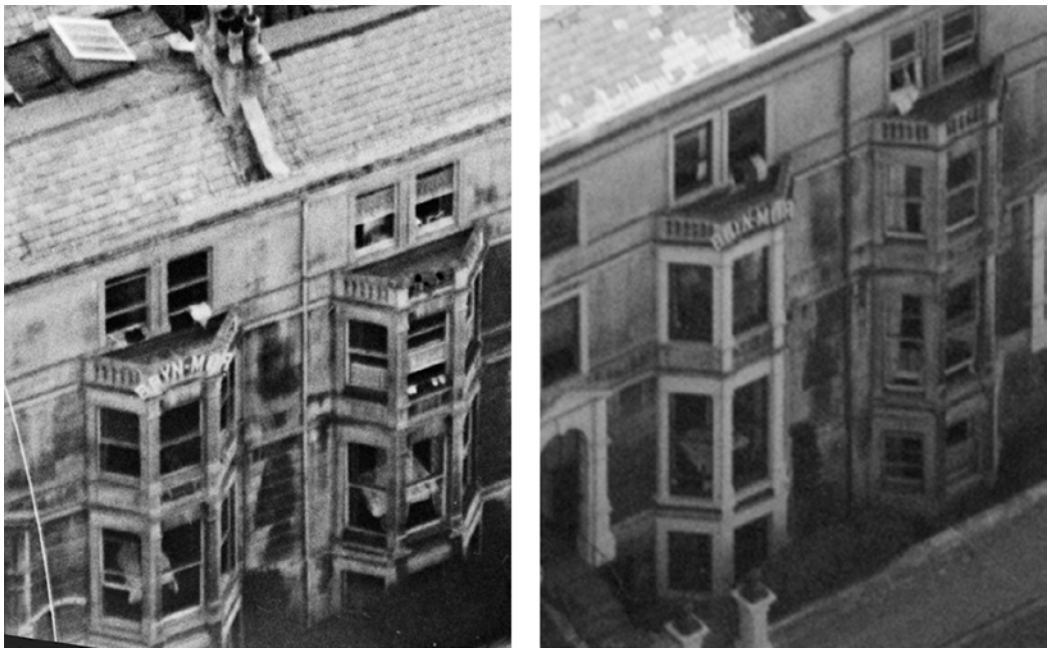

Figure 9 Bryn-Mor guesthouse, Victoria Square 1928 (left) & 1949 (right). Although 21 years apart, little appears to have changed at the Bryn-Mor guesthouse, including the dining table in the middle bay window Details of AFL 60516/EPW023970 Sep-1928; and AFL 61877/EAW025155 25-Jul-1949 © Historic England (Aerofilms Collection)

Winter Gardens

An aerial photograph taken in 1928 (Fig 10) shows the landscaping of the Winter Gardens and its pavilion on the seafront the year after it had opened. Although the pavilion survives today, the area behind which included tennis courts and a putting green, were redeveloped and is now largely occupied by the Town Square and part of the Sovereign Centre. A number of buildings shown in this photograph have since been demolished including Lance's department store and the Royal Arcade.

Figure 10 Winter Gardens 1928. Lances department store is the white building towards the top right. Detail of AFL 60516/EPW023960 Sep-1928 © Historic England (Aerofilms Collection)

Figure 11 is of the same area in1920, before the Winter Gardens and pavilion had been created. Most of this open area is not laid out as lawn but is instead under cultivation in the form of allotments. The most likely explanation for allotments in this town centre location in 1920, is that they originated during the First World War. Allotments were dug in response to food shortages and these are likely to have been created from 1916 onwards after local authorities were given powers to take over land for use as allotments (Way 2008, 17).

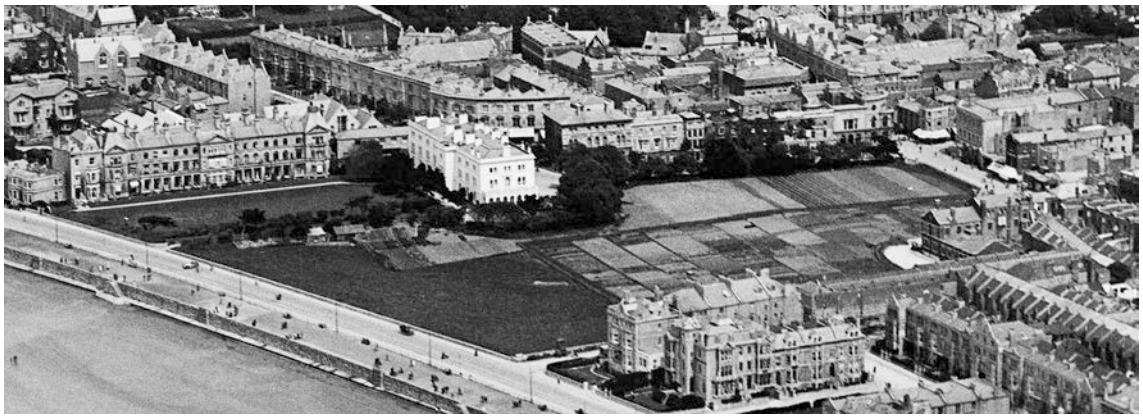

Figure 11 Site of Winter Gardens in May 1920. Detail of AFL 60014/EPW001039 May-1920 © Historic England (Aerofilms Collection)

The Grand Pier

A number of aerial photographs taken illustrate the popularity of Weston as a holiday destination and the facilities created for visitors to the town. Weston's Grand Pier is a popular attraction and the historic aerial photographs document some of the changes made to this structure since it was opened in 1904. In 1906 a landing stage was added (Fig 12), but the currents and muddy bay made it difficult for shipping to use and it was eventually demolished (Wills & Phillips 2014, 254). Seen on Aerofilms photographs taken in 1920, the landing stage had gone by 1928.

Figure 12 The Grand Pier in 1920 showing the landing stage extension. Detail of AFL 60014/EPW001032 May-1920 © Historic England (Aerofilms Collection)

The truncated pier was photographed in September 1928. These images provide a variety of different viewpoints of the pier. Figure 13 shows an audience gathered at the bandstand to listen to the Royal Marine Band, whose presence is advertised at

the pier entrance (Fig 14). This was one of a number of bandstands in the town and the others are discussed below.

Figure 13 The Grand Pier pavilion with bandstand in front seen in 1928. Detail of AFL 60516/EPW024071 Sep-1928 © Historic England (Aerofilms Collection)

Figure 14 Pier entrance on same day as Fig 13. Detail of AFL 60516/EPW023970 Sep-1928 © Historic England (Aerofilms Collection)

The original pavilion seen in Fig 13 was destroyed by fire in January 1930 and an aerial photograph taken in July of that year shows the damaged remains (Fig 15). A new pavilion opened in 1933 (Fig 16) but this too burnt down in 2008.

Figure 15 The fire damaged pier in 1930.

Figure 16 The new pavilion seen in 1935. The Winter Gardens are in the background. On the beach to the left is one of two oval model yacht ponds in the town (see Fig 8). AFL 60874/EPW048451 Jul-1935 © Historic England (Aerofilms Collection)

Swimming pools and Bandstands

The Aerofilms collection illustrates a number of facilities constructed in the 1920s and 1930s that catered for holidaymakers to the town. This included the creation and development of Marine Lake in Glentworth Bay that ensured easy access to the sea, even when the tide was out. The earliest aerial photographs of the town, taken in 1920, show Glentworth Bay prior to the construction of the causeway that created Marine Lake. The causeway was built across the bay in 1927-9 (Beisly 2001, 96) between the seafront and Knightstone Island. A promenade had previously been built along the shoreline of Glentworth Bay in 1883-7 and is first seen on the 1:2,500 1888 Ordnance Survey map. This was incorporated into the new development and by 1920 a bandstand was built on one of the promenade's semi-circular bastions that projected into the sea (Fig 17).

Figure 17 The original stone-fronted Marine parade in 1928. The bandstand is the white domed structure near the centre of the photograph. Detail of AFL 60516/EPW023963 Sep-1928 © Historic England (Aerofilms Collection)

The popularity of this part of town appears to have been greater than the original scheme had planned for and by 1932 the parade had been extended over the lake and supported on a series of posts forming a colonnade (Fig 18). The broad band of deck chairs seen here are arranged well beyond either side of the bandstand. This indicates the large numbers visiting, but also suggests a less than satisfactory audience experience for those sitting at the extreme ends of this seating arrangement.

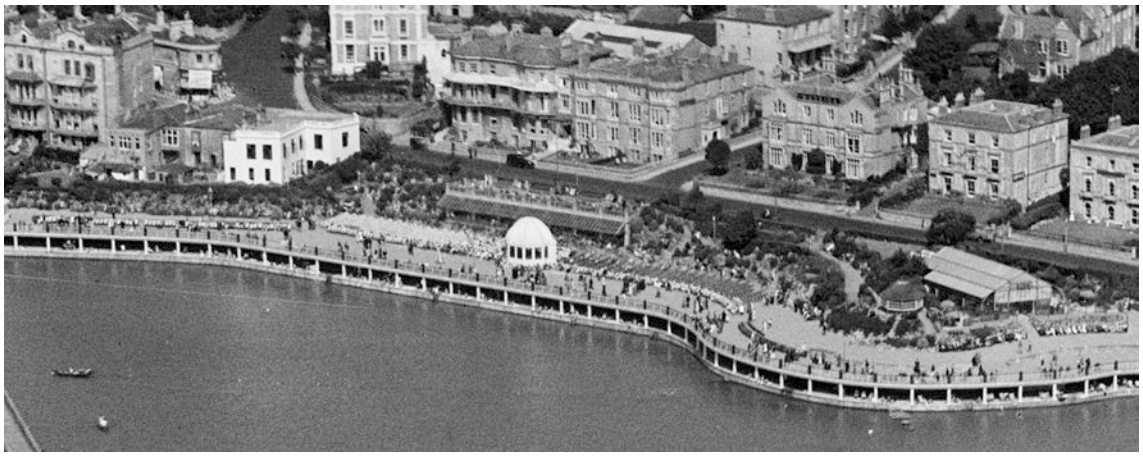

Figure 18 Seen in 1932, the same bandstand as in Fig 17 no longer at the water's edge after the widening of Grand Parade - which based on 1931 OS map evidence had been renamed Madeira Cove. The newly built area was called Marine Drive. Detail of AFL 60818/EPW039937 Aug-1932 © Historic England (Aerofilms Collection)

By 1935 the original bandstand had been demolished and a new bandstand located on the water's edge on the newly widened parade (Fig 19). This mid-1930s bandstand had a short life and had been demolished by 1939. This was replaced with a much larger development that necessitated a further extension of the parade over the water. This larger area allowed the construction of the Rozel bandstand and auditorium that included some covered seating in 1937 (Fig 20), (Brodie, Roethe and Hudson-McAulay 2019).

Figure 19 New bandstand at Marine Lake in 1935. A similar design of bandstand was later built on Beach Lawn (see Fig 23). Detail of AFL 60874/EPW048450 Jul-1935 © Historic England (Aerofilms Collection)

Figure 20 A widened Marine Parade accommodates the large Rozel bandstand and open-air auditorium. Note the water slide at the top right of the photograph. Detail of AFL 61877/EAW025153 24-Jul-1949 © Historic England (Aerofilms Collection)

The Aerofilms photographs also show the development of the bandstand on Beach Lawn, opposite Ellenborough Park. The first bandstand was photographed in 1920 centrally placed on Beach Lawn (Fig 21). This appears to have been hexagonal in plan. It had distinctive uprights (presumably cast iron) that divide into three parts to support the roof. Finials are located around the edge of the roof and a single finial is at its centre. This bandstand was not depicted on any Ordnance Survey maps and map evidence combined with aerial photographs indicates that it was built between 1902 and 1920.

Figure 21 Bandstand on Beach Lawn 1920. Detail of AFL 60014/EPW001033 May-1920 © Historic England (Aerofilms Collection)

By 1928 this bandstand had been dismantled and rebuilt closer to the coast on the edge of Beach Lawn. As part of this redevelopment, the bandstand was centrally placed on a broad raised walkway with railings facing the sea. Flowerbeds faced the lawn. Screens or walls had been built on the three seaward sides of the bandstand to offer some shelter to the musicians (Fig 22).

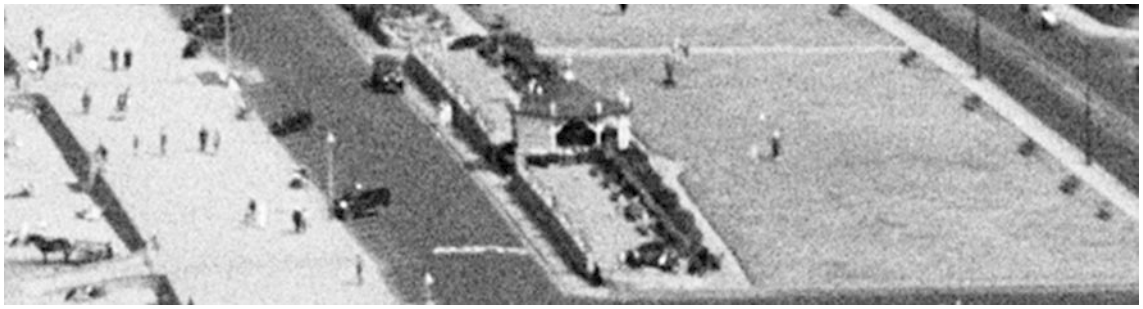

Figure 22 Repositioned bandstand on Beach Lawn seen in 1932. Detail of AFL 60818/EPW039935 Aug-1932 © Historic England (Aerofilms Collection)

By 1936 this bandstand had been demolished and replaced by a new design (Fig 23). Although not identical to the 1930s bandstand on Marine Lake, it is clearly of a similar design (compare with Fig 19).

Figure 23 Replacement bandstand opposite Ellenborough Park 1936. Detail of AFL 60897/ EPW051725 Aug-1936 © Historic England (Aerofilms Collection)

The 1936 bandstand on Beach Lawn is one of two modern facilities provided for Weston's 1930s visitors in the southern part of town. The other was the spectacular open air swimming pool constructed on the beach a few hundred metres to the south of the bandstand. This can be seen under construction in Fig 24 and in use in Fig 25. Like Marine Lake this provided somewhere to swim when the tide was out, although unlike Marine Lake the water in this pool was not sea water and was passed through a filtration system to ensure it was clean and clear (Smith 2005, 137).

Figure 24 Swimming pool under construction in 1936. Note the deep depression on the left of the crane designed to hold sufficient water for diving. The dark lines across the top were drawn on the original print. Detail of AFL 60897/EPW051725 Aug-1936 © Historic England (Aerofilms Collection)

Figure 25 Called the Bathing Pool, it opened in 1937 and seen here in 1949. The entire central area contains water, but is darker where it is deepest. Detail of AFL 61877/EAW025157 24-Jul-1949 © Historic England (Aerofilms Collection)

Both the bandstands at Marine Lake and on Beach Lawn have been demolished. At Marine Lake the colonnade was also removed and the original Victorian seawall, including the semi-circular bastion used by the first bandstand can be seen again (Fig 26). At Beach Lawn, the walkway steps and railings of the 1920s design survive (Fig 27). The swimming pool closed in 1982 and its iconic diving boards were demolished. It was reopened in 1983 as Tropicana Pleasure Beach but closed in 2000 (ibid). It is currently used as the location for a range of different events (Fig 28).

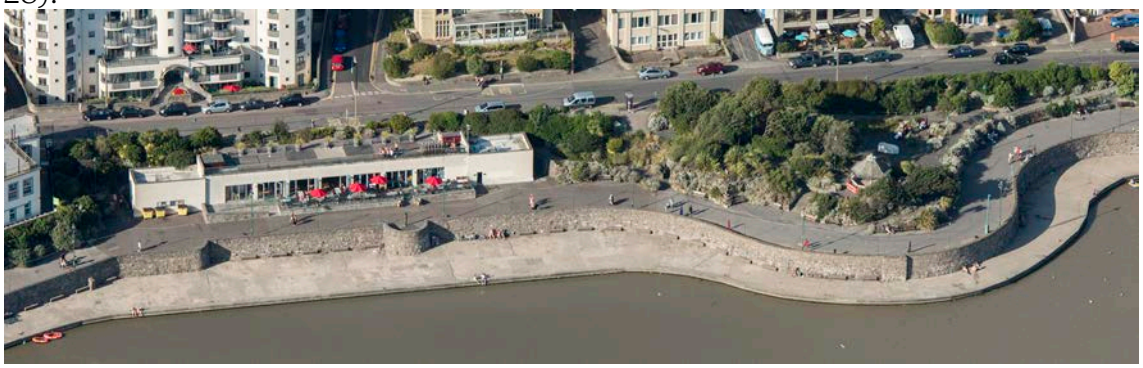

Figure 26 Marine Parade in 2016. Compare with Fig 17. Detail of 33066_015 16-AUG-2016 © Historic England

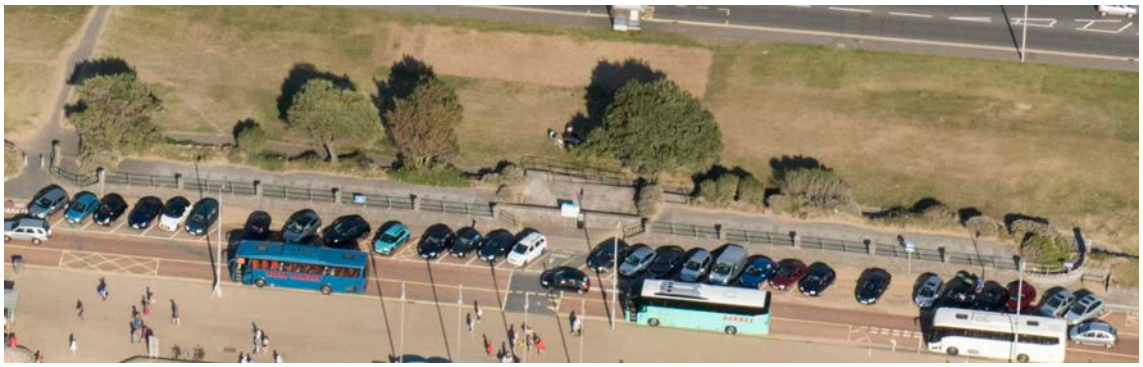

Figure 27 The 1930s raised walkway built for the Beach Lawn bandstand. Compare with Fig 23. Detail of 33066_030 16-AUG-2016 © Historic England

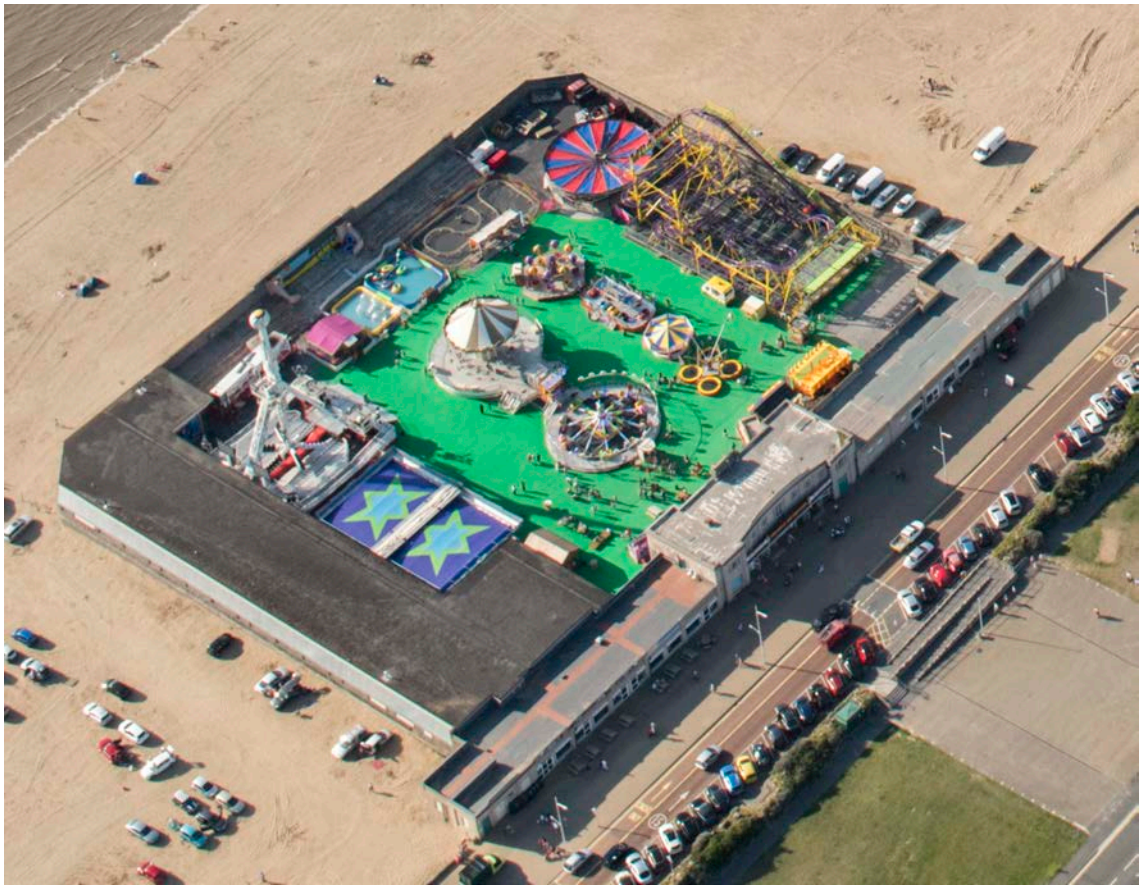

Figure 28 Former swimming pool the site of Funland, a pop-up amusement park 2016. Detail of 33066_059 16-AUG-2016 © Historic England

Transport

Although many visitors to Weston still travelled by train into the post-Second World War period (Russett & La Trobe-Bateman 1999, 7), charabancs, busses, cars and motorbikes with sidecars are evident on some of the earliest aerial photographs of the town (Fig 29 and 30). A future study of the range of transport types and their different costs may offer some clues about those visiting Weston-super-Mare - although residents of the town presumably owned some of these.

Figure 29 Knightstone Island in 1928. Detail of AFL 60516/EPW024073 Sep-1928 © Historic England (Aerofilms Collection)

Figure 30 Charabancs on the seafront in 1928. Detail of AFL 60516/EPW023960 Sep-1928 © Historic England (Aerofilms Collection)

The requirement to manage increased car numbers is evident with road markings in the town that indicated where cars could be parked, but also attempting to control traffic speed on the seafront. The word SLOW was painted on Marine Parade to face traffic heading south. That shown in Figure 31 was just before the junction with Oxford Street. Another aerial photograph taken in 1932 shows that although drivers on Marine Parade were not told to slow down before every junction, SLOW was painted before the junctions with Ellenborough Park South, Clifton Road and Clarence Road North.

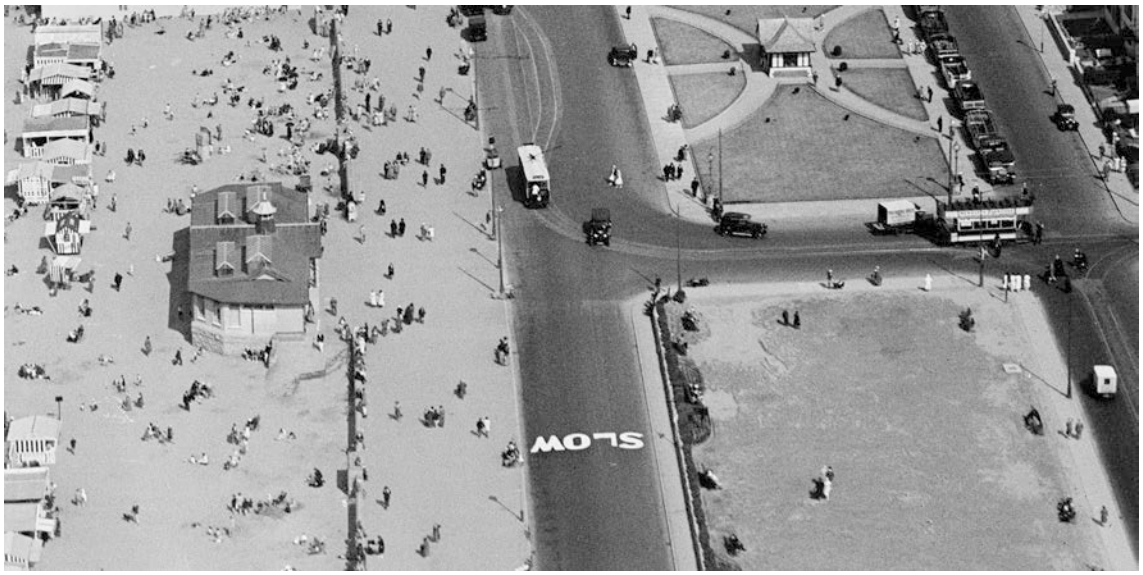

Figure 31 Early example of road markings, seafront 1932. Detail of AFL 60818/EPW039932 Aug-1932 © Historic England (Aerofilms Collection)

Other aerial photographs show how motorists were catered for with the provision of garages and petrol pumps (Fig 32). In addition to street parking, it was (and still is) possible to park on the beach, but in 1928 a combined garage and bus station was opened on the seafront (Fig 33). The *Beach Garage* had parking spaces for almost 200 cars, a filling station and a motor mechanics workshop (*Bath Chronicle & Herald* 1928, 11). This was possibly built on the site of the previous Beach Road Garage which was in place by 1914 (J Roethe pers comm; Somerset Archives D\B\wsm/24/1/2025).

Figure 32 Hotel, garage and petrol pumps, Knightstone Road seafront July 1949. Detail of AFL 61877/EAW025148 24-Jul-1949 © Historic England (Aerofilms Collection)

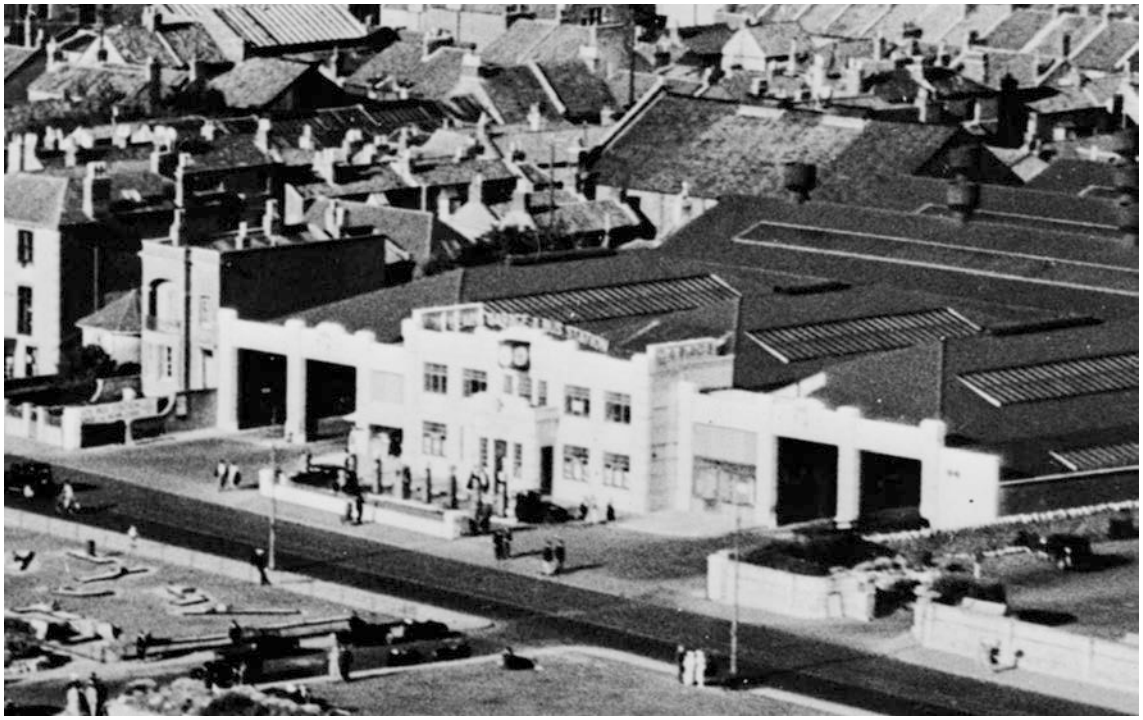

Figure 33 Beach garage and bus station, seafront 1936 (demolished). Comparison with a 1928 photograph (in Bath Chronicle & Herald 1928, 11) indicates that it had been remodelled by 1936. Detail of AFL 60897/EPW051714 Aug-1936 © Historic England (Aerofilms Collection)

After the Second World War, a rise in car use is seen with the widespread utilisation of cleared bombsites as car parks (Fig 34).

Figure 34 The bombsite on the site of Lance's department store on Waterloo Street used as car park in 1949. The nearby bombsite behind St Margaret's Terrace was used for coaches. Detail of AFL 61877/EAW025151 25-Jul-1949 © Historic England (Aerofilms Collection)

Discussion

The seafront at Weston is the focus of the photographs taken by Aerofilms before and immediately after the Second World War. The story they tell is overwhelmingly one of seaside holidays and the majority of this collection documents the interwar years. They illustrate the significant amount of development undertaken in the town during the 1920s that included construction of the Winter Gardens and pavilion, Marine Lake and the Beach Garage and Omnibus Station. The following decade saw further work on Marine Lake, the modernisation of most of the town's bandstands (the earliest in Grove Park remained unchanged), a new pavilion on the pier and the construction of the large open-air swimming pool.

The Ordnance Survey maps do not depict some of the structures seen on Aerofilms photographs, such as the earliest bandstand on Beach Law and the jetty extension to the pier. The 1920 photograph of the pier shows that the pier extension was not demolished during the First World War, as reported in some sources (e.g. Wills & Phillips 2014, 254).

Each of these sites improved what the town could offer holidaymakers and presumably did much to encourage people to spend their holidays in Weston-super-Mare. The Winter Gardens, Marine Lake and the Bathing Pool all feature in paintings commissioned for railway posters advertising the town (viewed online). Many of these posters described Weston as 'The Smile in Smiling Somerset'. The representations of these new buildings usually formed the background to depictions of smiling holidaymakers and most of these were produced after the 1948 nationalisation of the railways. At least one pre-war poster depicts the diving boards at the bathing pool, not as a background but as the main subject of the poster - although plenty of people are included. In one post-war poster holidaymakers take second place in a painting that has the Winter Garden Pavilion as its subject.

HOMES FOR ALL

Introduction

This chapter looks at the some of the post-Second World War house building in Weston-super-Mare. One of the problems facing Britain after 1945 was a housing shortage. This was the result of war damage and a rapidly growing population, but was a situation made worse by a shortage of builders and building materials (Hennessy 1993, 169). Prefabricated buildings were seen as a temporary measure to rapidly increase the number of homes and the United Kingdom Temporary Housing Programme was established in 1944 and ran until 1956 (Stratton & Trinder 2000, 135). A wide range of prefabricated homes were designed and built across Britain during the 1940s and the aerial photographs illustrate the post-Second World War house building carried out in Weston-super-Mare. Houses built in Weston immediately after the war can be divided into three groups: houses built using traditional materials and techniques; permanent dwellings constructed with prefabricated elements; and temporary prefabricated bungalows, commonly referred to as prefabs. The history of the development of the areas where these new houses were built is also briefly considered in the following pages. As well as illustrating the type of buildings constructed, the aerial photographs also show the various estate layouts and highlight areas where the original design was not completed.

The Aluminium Bungalow

All the temporary prefabs built in Weston-super-Mare after the Second World War have since been demolished, but historic aerial photographs provide enough detail to identify the type of prefabs built (Fig 35). The prefabs have pitched roofs and are of four bays with four windows to the rear, a side door and a main elevation of three windows and front door under a porch. Each prefab was provided with a shed - possibly a surplus Anderson shelter repurposed for this role (Stevenson 2003, 69-70). Each shed is located in the back garden close to the prefab (on the left side when viewed from the rear).

This design of prefab was developed by the Aircraft Industries Research Organisation for Housing (AIROH) and is variously referred to as the AIROH, the 'Aluminium Bungalow' or simply the 'B2' (Stevenson 2003, 62). It was entirely manufactured in former aircraft factories on a production line (this included interior fittings and appliances) and it could be assembled on site in less than 24 hours (Stevenson 2003, 62-65). In common with all post-war prefabs, this was designed to have a relatively short lifespan (Blanchet 2014, 17).

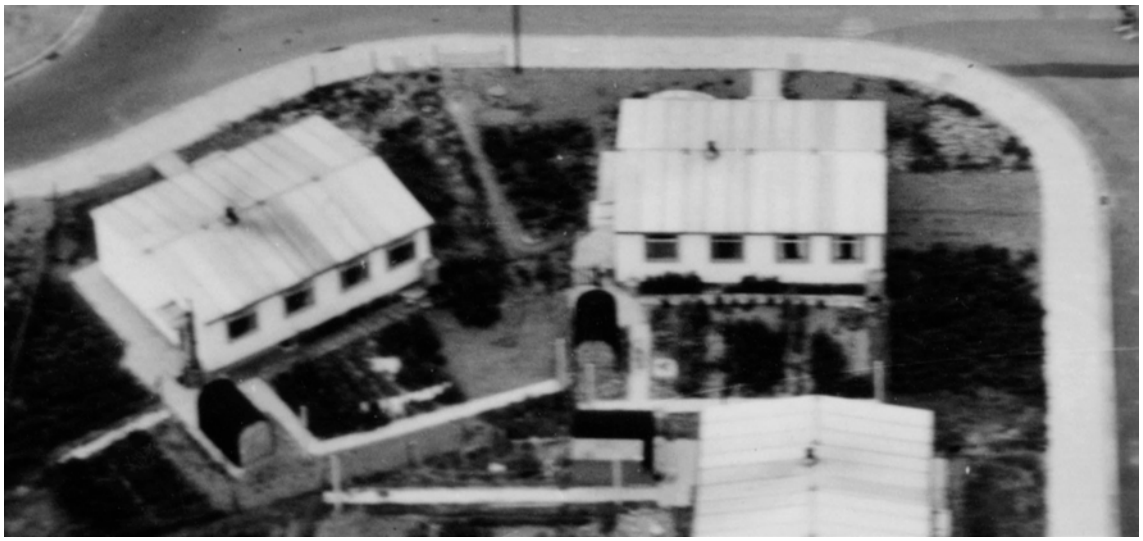

Figure 35 *Prefabs on Selworthy Road, Bournville in 1948. Detail of RAF/541/99/PSFO-0059 16-JUL-1947 Historic England Archive (RAF Photography)*

Five former wartime aircraft factories produced these prefabs including Oldmixon, in Weston-super-Mare and production began mid-1946 (Stratton & Trinder 2000, 136; Finnimore 1989, 69). Of all the prefab designs constructed after the war, these were the most expensive to make. In spite of the high cost, 54,500 were constructed, more than any other prefab design (Stevenson 2003, 100).

The Oldmixon factory also produced other types of prefabricated aluminium buildings. Aerial photographs taken on 7 February 1950 show a train leaving the factory with a shipment of 26 aluminium schools (Fig 36). These were destined for Australia and the same train, photographed from the ground, is included in an Australian newspaper article about this delivery on page one of the *Townsville Daily Bulletin* dated 21 Feb 1950 (https://trove.nla.gov.au/newspaper/article/63473882 Accessed 17 Aug 2017).

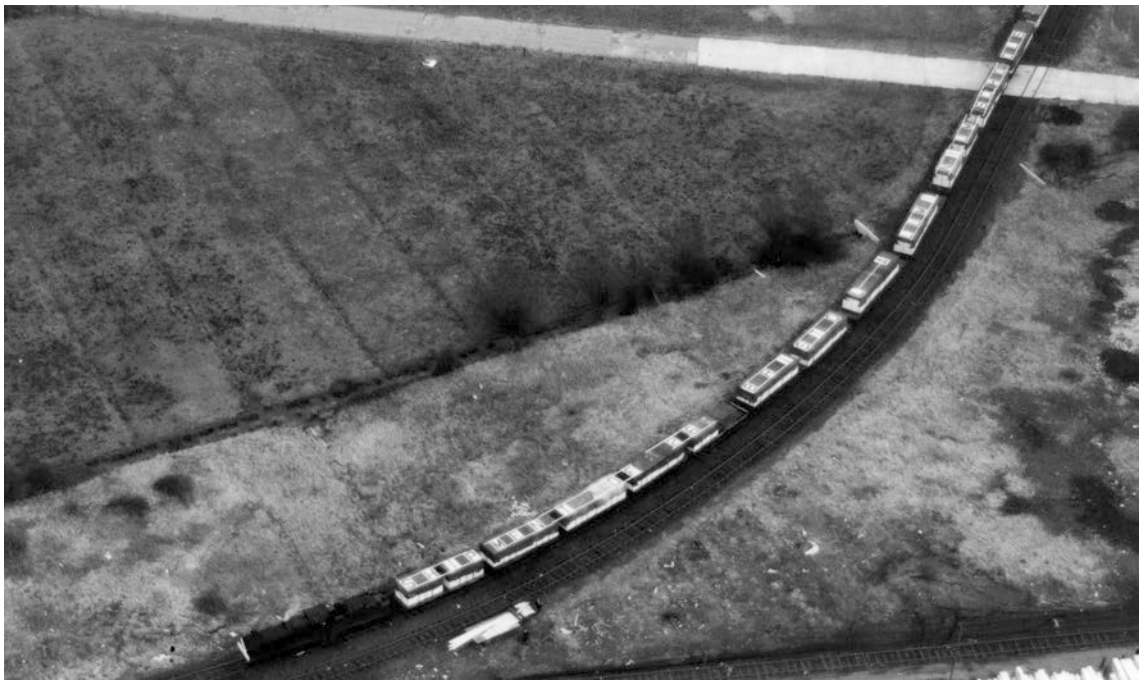

Figure 36. Aerofilms were commissioned to take this publicity photograph of a train leaving Oldmixon factory in 1950. The signage on top of the wagons reads: 'Shipment of 26 Bristol Aluminium Schools'. The sign on the front of the engine reads: 'Exports to Australia'. Detail of AFL 61944/EAW027900 07-Feb-1950 © Historic England (Aerofilms Collection)

The Cornish Unit

The Cornish Unit was a design of permanent, prefabricated buildings developed by the English China Clay Company. The house came in a variety of configurations, but all had a distinctive Mansard roof and concrete panel wall (Fig 37). The designs were finalised in 1946 and over the following 10 years more than 40,000 Cornish Units were built in Britain (Stratton & Trinder 2000, 137). The Cornish Units built in Weston-super-Mare survive, although some ground floor walls have been re-clad or rebuilt.

Figure 37 Cornish Unit in Summerlands Road with original concrete wall panels on the left. © Historic England

Bournville

This section of the report outlines the development of the Bournville estate from its early 20th century beginnings until the 1960s. The initial development was begun around 1904 (Brodie, Roethe and Hudson-McAulay 2019) and was located alongside Drove Road close to the point where it crosses the railway. This was the first of three phases of building up to 1940 (Fig 38). After the First World War Bournville had been extended southwards as far as Uphill Great Rhyne - a wide drainage ditch that then marked the parish boundary between Weston and Uphill. This phase of building consisted of semi-detached houses (as opposed to the earlier long terraces) and had largely been completed by 1931. It ended with two spur roads heading south as far as the edge of the rhyne (OS 1:2500 1931 map).

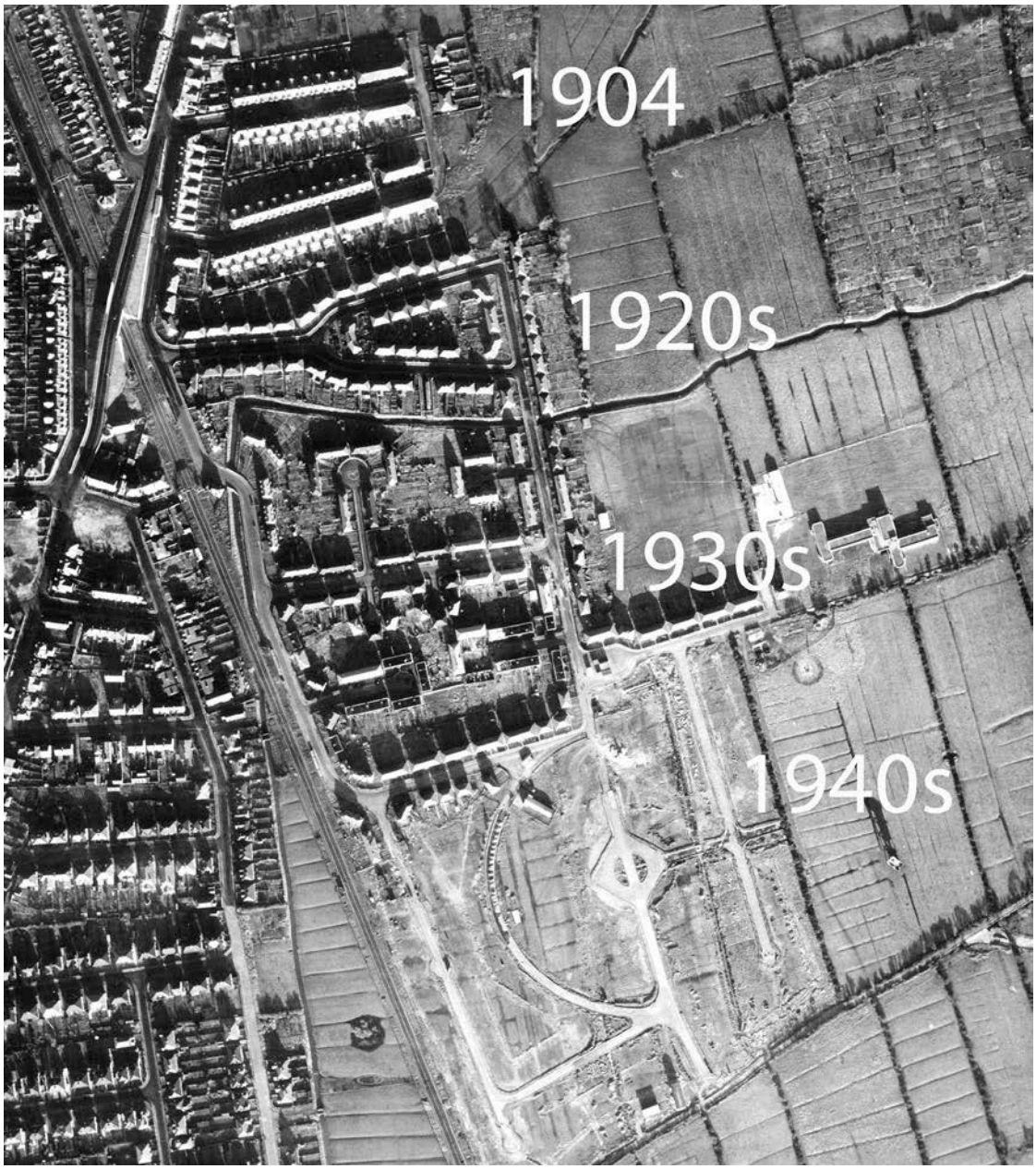

Figure 38 Four phases of development of Bournville estate as seen in 1946. Historic England Archive (RAF Photography)

By 1936 building had been carried south of Uphill Great Rhyne. Road access to this was via the eastern spur road, by then named Lonsdale Avenue. As depicted on the 1936 Ordnance Survey map (25 inch Somerset sheet XVI.4 1936; National Library of Scotland online map), Bournville Road consisted of two unconnected lengths approximately 150m apart. Deciding how best to bridge the Uphill Great Rhyne - which cut across the land between the two roads at an oblique angle - may explain why it was left unfinished in 1936. The two roads were eventually connected by 1940 (Fig 39). From B on figure 39 the road follows the rhyne for approximately 80m before then turning sharply north-west to cross the rhyne at a point where an

existing footbridge was situated. This arrangement left a triangular area of land between the road, the rhyne and the railway upon which a single house was built C.

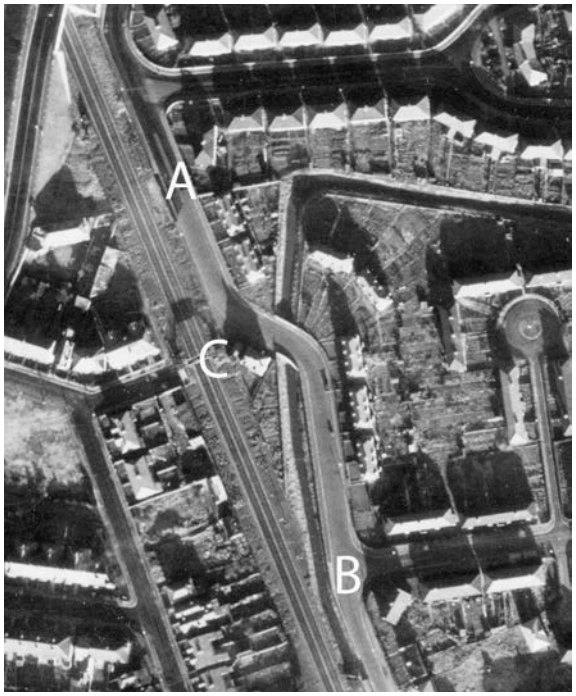

Figure 39 In the 1930s two unconnected parts of Bournville Road existed (A and B). These were later connected, as shown on this 1946 photograph. Historic England (RAF Photography)

The 1930s development was a mixture of semi-detached houses and short terraces of four or six houses largely arranged around cul-de-sacs. Building appears to have continued, perhaps until the outbreak of war in 1939. The final pre-war phase of building included Bournville Infants School opened 1941 (J Roethe pers comm), since demolished, and possibly a temporary building for St. Andrews Church. This church occupied a hut approximately 21.5m by 6m (with a wider front 9m wide). The church was aligned northwest - southeast to face the northern end of Coniston Crescent, one of two short spur roads that formed the southern end of this pre-war development. The other was a continuation of Bournville Road.

Post-Second World War building

Aerial photographs taken in September 1945 show work underway laying out the road for the extension to the Bournville estate. This groundwork can be seen in greater detail on aerial photographs taken in January 1946 (Fig 40). Both spur roads built before the war were incorporated into the post-war southern extension which suggests that the 1940s building work followed a pre-war design. The 1946 photographs also show that the groundwork was underway for another area of housing to the east (also started in 1945). This appears as a separate development on a different alignment. However, these two layouts were connected by 1948. Collectively they are referred to as Bournville on the 1962 Ordnance Survey 1:10,000 map. For this report they are referred to as Bournville West and Bournville East. The difference between these two developments is also reflected in

the initial housing stock built. As seen on photos taken on 11 March 1948, Bournville East consisted of permanent buildings whereas at Bournville West prefabs were initially erected (Fig 41).

Figure 40 Bournville west (left) and east (right) in 1946. Detail of RAF/3G/TUD/UK/21 V5188 13-JAN-1946 Historic England Archive (RAF Photography)

Figure 41 Bournville west (left) prefabs and Bournville east (right) with houses March 1948. Detail of RAF/CPE/UK/2489 V5011 11-MAR-1948 Historic England Archive (RAF Photography)

By March 1948 a total of 184 prefabs had been built in Bournville. Most of these faced newly laid out roads, but those on the southern edge of the estate faced Windwhistle Lane, an unmade track flanked by ditches that in the 19th century linked Uphill village with its fields to the east.

In addition to the prefabs, a hut had been built alongside the temporary St Andrew's Church to act as a church hall (Planning application dated 1940; Somerset Archives, D\B\wsm/24/1/7720). By July 1948, a vicarage was under construction a little to the south of the church and hall. This was not prefabricated and appears to be conventional brick built house. The development was also provided with five Nissen huts with brick frontage occupied by shops and a Post Office on St. Andrew's Parade (Fig 42), (see https://thebournvillenoticeboard.wordpress.com/about/)

Figure 42 Bournville estate 1948. Buildings on the green from left: Vicarage, Church Hall (hut), St Andrew's Church (hut). On right, a parade of huts used as shops and a post office. Historic England (RAF Photography)

Both parts of east and west Bournville saw further house building by 1950. This phase of work involved the construction of Cornish Units. Bournville West was extended with the construction of ten houses on Baildon Crescent. Increased car ownership is reflected in the construction of two rows of garages within Bournville West. One built behind the prefabs on Baildon Road (since demolished) and another behind the prefabs on Windermere Avenue, which is still in use. In Bournville east on Coleridge Road and Byron Road, Cornish Units were built in the gaps in the street frontage left after the initial phase of house building (Fig 43).

Figure 43 Bournville East in 1948 and 1950. Gaps between houses in 1948 filled with Cornish Units by 1950. Details of RAF/CPE/UK/2489 V5011 11-MAR-1948 and RAF/541/527 RP 3245 14-MAY-1950 Historic England Archive (RAF Photography)

By 1954 Bournville east had been extended south-west and joined to Bournville west via Lonsdale Avenue (Fig 44). This phase largely consisted of short terraces of four houses but also included three story Cornish Units and a Cornish Unit pub on Chaucer Road named the Windwhistle Inn (Fig 45). This pub was identified as part of the Historic England project on post war pubs (Cole, forthcoming). The following is a brief overview taken from the appendix of this post-war pubs project. The Windwhistle Inn was opened on 15 February 1954 and was claimed to be the first Cornish Unit public house. It consisted of two bars either side of a central servery. The single storey rear extension housed the beer store and toilets. This pub building was only intended to be temporary. It was replaced by a second Windwhistle Inn in 1963 and this was demolished 1999 (ibid).

Figure 44 Extension of Bournville and laying out of Coronation Estate 1954 on left. Detail of RAF/58/1371 F21 0005 05-MAR-1954 Historic England Archive (RAF Photography)

Figure 45 Windwhstle Inn, Cornish Unit pub in 1961. Detail of MAL/61484 V 93190 19-JUL-1961 Source: Historic England Archive

By the 1960s Bournville was undergoing redevelopment with the demolition and replacement of the post-war buildings (Fig 46). Of the original 184 prefabs, over 80 had been demolished by 1960 including all those along Grasmere Drive. Elsewhere, demolition was piecemeal with empty plots interspersed with surviving prefabs along Bournville Road, Coniston Crescent and Windwhistle Lane. By the following year, only 11 remained. Based on map evidence, these remaining prefabs had been demolished by 1976 (OS 1:10,000 1976). The row of shops had also been replaced by 1960 as part of an expansion of the commercial area. A new church (and presumably church hall within the same complex) located south of the existing vicarage was built in1956-8; it was demolished about 2005 (J Roethe pers comm). The original huts that acted as church and church hall had been demolished by 1960 and two new curved roof buildings had been constructed at the northern and southern end of Coniston Crescent. The northern building was used as a youth centre and the southern as a public hall (J Roethe pers comm).

Figure 46 Redevelopment of Bournville underway November 1960. Detail of RAF/58/3905 F42 0194 02-NOV-1960 Historic England Archive (RAF Photography)

Unrealised plans

Some of the detail derived from the aerial photographs suggests that some plans for the development of Bournville were partly undertaken but then changed. The arrangement of prefabs facing the unmade Windwhistle Lane suggests that there was an intention to convert this lane into a road. The lane could have linked Uphill Road North on the coast with Winterstoke Road to the west (via the road network of Bourneville east). The Bournville Estate and Coronation Estate (laid out from 1954) were also to have joined the lane. Fig 47 shows junctions were formed at A and B. Today Windwhistle Lane extends as far west as A and survives in places to the east (right) of the railway line (C) as a tarmac footpath; the junction at B was eventually abandoned. If originally intended to be a single road, the cost of a level crossing or bridge over the railway may have prevented this scheme.

Figure 47 Windwhistle Lane runs from top left towards the bottom right. A: the junction of Windwhistle Lane and Canberra Road; B: the junction of Windwhistle Lane and Thirlemere Road; C: the point where the lane crosses the railway. Detail of RAF/58/1371 F21 0005 05-MAR-1954 Historic England Archive (RAF Photography) Historic England Archive (RAF Photography)

Baildon Crescent faced east overlooking open land between Bournville East and Bournville West (Fig 48). Although it could be argued that Baildon Crescent is unfinished as there is no house at its northern termination (right) to match that built at the south (left), it appears that it was not originally intended to build houses on the other side of the road. There is an asymmetrical nature to the crescent with no pavement on this side and the crescent ending in a P-shape rather than a circle. The presence of a bowling green in the open land does raise the possibility that Baildon Crescent was originally designed to overlook an open public space. By 1990, some houses had been built opposite the original houses. However, some of the open area was retained as a playground.

Figure 48 Baildon Crescent in 1954, North to the right. The letter A marks the since abandoned junction between Thirlemere Road and Windwhistle Lane. RAF/58/1371 F21 0004 05-MAR-1954 Historic England Archive (RAF Photography)

Worle

By 1950, a small development of 16 prefabs had been built in Worle. A single road named The Maltings forming a cul-de-sac was laid out on a small narrow field extending north of the High Street. The same Aluminium Bungalow prefabs were built here as in Bournville, although at Worle each prefab was built on a much smaller plot of land (Fig 49). Based on Ordnance Survey map evidence these prefabs were demolished between 1962 and 1983. The name *Maltings* comes from a brewery on the opposite site of the High Street that was in use from 1795-1879 (J Roethe pers comm). The name continues in use for the road and the flats built there.

Figure 49 Prefabs in Worle. RAF/58/496 V5087 09-JUN-1950 Historic England Archive (RAF Photography)

Ashcombe

Ashcombe is situated at the northern end of Weston-super-Mare. From the last quarter of the 19th century, house building at Ashcombe has gradually extended across a wide band of land bounded by Milton Road to the north, Locking Road to the south, Ashcombe Road to the west and Milton to the East (Fig 50). This section of the report outlines the housing developments in this area from the 1880s, with particular reference to a phase of house building that started in the 1930s, was interrupted by the Second World War and recommenced in the late 1940s.

Figure 50 Fields at Ashcombe in 1887. Milton Road runs diagonally along the top. Locking Road near the bottom of the image and below that, the darker line of the Great Western Railway. Ordnance Survey 1:2,500 published 1887 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2081) Licence numbers 000394 and TP0024

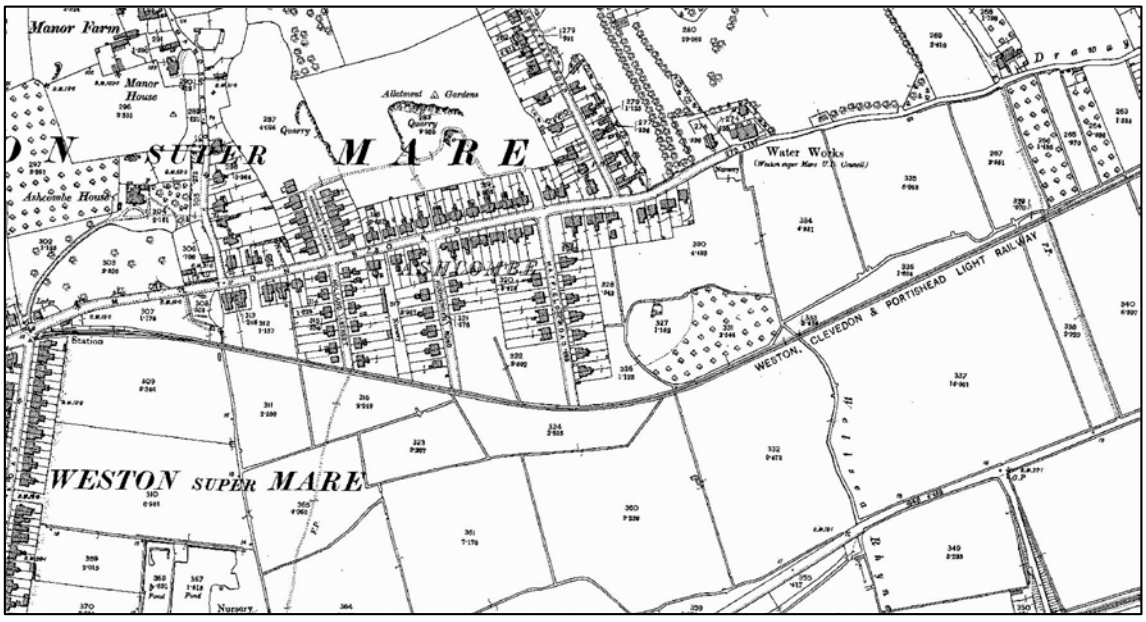

Figure 51 Initial development in this area was south of Milton Road. Ordnance Survey 1:2,500 published 1903 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2081) Licence numbers 000394 and TP0024

In 1897 the Weston, Clevedon & Portishead Light Railway (WC&PLR) was opened and ran though this area. The line terminated at a station built at the junction of

Milton Road and Ashcombe Road. The course of the line was partly determined by exiting features. It passes south of Wellsea Rhyne, a small un-named wood and Holland Street (Fig 51).

Once in place, the railway formed the boundary to all development extending south of Milton Road. The earliest residential building in this area was Holland Street that was first depicted on the 1885 OS map and predated the construction of the WC&PLR. This street originally extended for approximately 80m and consisted of eight semi-detached houses. An 1881 drainage plan for this street layout by Price & Wooler is held at the Somerset Archives (D\B\wsm/24/2/498). By 1902 it had been extended to utilise all of the remaining land to the edge of the new railway. This later development was of two semi-detached houses on its eastern side and one and a half on the west. By this date, other streets had been laid out, such as Hatfield Road and Hughenden Road. Rather than being closed-off as a cul-de-sacs, all these streets end abruptly at the railway line.

By 1902 new streets were also extending north from Locking Road, initially on the site of the Royal Pottery, the Old Pottery and Brown's Nursery. Additional piecemeal development took place in the inter-war period. Some of this - such as Hillview Road and Parkhurst Road - was contained by pre-existing field boundaries.

By the late 1930s a more extensive development was underway across of the remaining open land between the WC&PLR and Locking Road. The earliest stages of this are depicted on late 1930s OS maps, but the development was presumably halted by the Second World War. Aerial photographs taken in 1942 show the full extent of the 1930s development (Fig 52).

Figure 52 The housing estate in 1942. (A) Earlham Grove; (B) Hughenden Road; (C) Chesham Road. Detail of RAF/FNO/37 V 5062 11-JUN-1942 Historic England Archive (RAF Photography)

The intention to create an integrated development with roads linking Milton Road and Locking Road is indicated by the duplication of street names. By 1936 there were two Hughenden Roads and two Chesham Roads (both suffixed north/south). The two Hughenden roads were connected to form the north-south axis of the development. The WC&PLR formed the dividing line between Hughenden Road North and South and Hughenden Road South was later renamed Birchwood Avenue. Chesham Road North and South were never linked, although they come within 20m of each other, the northern part ending at Wellsea Rhyne and southern at the line of the WC&PLR.

The 1942 aerial photograph shows a number of empty plots alongside the 1930s road layout. Based on aerial photographic evidence, houses were gradually built on these empty plots in late 1948/early 1949. The first of these, seen in June 1949, were ten semi-detached Cornish Unit houses erected in a gap between two groups of pre-war houses on the southern side of Earlham Grove (Fig 53). The Cornish Unit houses on Earlham Grove are of two designs of different sizes. The central three blocks are the largest with six bays, the remainder with four bays. These houses were all provided with an outbuilding. The smaller semi-detached houses have one each, the larger semi-detached houses appear to share what is presumably a subdivided outbuilding set on the boundary between the two properties

Figure 53 Cornish Units built in the late 1940s on the south side of Earlham Grove between A-A. All the other houses visible were built before the war. RAF/58/496 V 5131 09-JUN-1950 Historic England Archive (RAF Photography)

With the exception of six houses on Earlham Grove built using traditional techniques and materials, most houses built in Ashcombe in the late1940s and early 1950s were Cornish Units. By 1950 the building work had progressed beyond infilling existing road frontage (although gaps remained) with the laying out of Summerlands Road. This road was laid out approximately 20m south of the line of WC&PLR - although the line had closed and the track removed in 1940 (Thomas 1966), (Fig 54).

Figure 54 Cornish Units on Summerlands Road under construction. RAF/58/496 V 5132 09-JUN-1950 Historic England Archive (RAF Photography)

A mixture of two and three bay semi-detached Cornish Units were built on the southern side of Summerlands Road occupying a plot approximately 20m deep. The similarity between the depth of the house plots and the gap left to the north of Summerlands Road suggest that the original intention was to build a line of houses on this strip of land. Although this scheme was never carried out, some houses have subsequently been built there. However, with the exception of a small group at the eastern end of Summerlands Road, these houses were all built facing north and incorporated into the streets linked to Milton Road.

By 1951, work on Summerlands Road appears largely complete and building was underway along the eastern extension of Earlham Grove and Laburnum Road (Fig 55). All these houses were built using more traditional techniques but one further group of Cornish Units were built after this date. These were late additions and built between 1954 and 1956 filling the last remaining gap on the southern side of Earlham Grove. These are further variations on the Cornish unit design and consist of single and double bay semi-detached houses with side entrances.

Figure 55 The Ashcombe estate under construction April 1951. RAF/540/479 RP 3022 22-APR-1951 Historic England Archive (RAF Photography)

Caravans

A number of caravan sites are present across Weston-super-Mare and the surrounding area to the north at Kewstoke and the south at Uphill (Fig 56). Some sites probably have their origins in the interwar period; others appear to have been established after the Second World War. Aerial photographs taken from the 1940s onwards show the establishment and development of some of these sites. These all appear to have begun for the use of holidaymakers, but some sites have evolved to residential sites.

Newspaper adverts provide evidence that caravans were kept in and around Weston and let for holidays (*The Echo* 1926, 2 Col E). This continued throughout the Second World War (*The Birmingham Mail* 1940, 5 Col E).

The caravans seen during the war (May and June 1941) were located to the north and south of Weston. To the north, caravans can be seen in two fields at the northern end of Kewstoke, to the south caravans were seen positioned around the edge of a field in Uphill. In addition to these sites, aerial photographs taken within a month of the end of the war show other groups of caravans in fields around Kewstoke and south of Weston at Uphill Farm, Manor Farm and Slimeridge Farm. These early post-war caravan sites are located close to the coast, but others are seen further inland at sites including Hill View Farm, Milton and West Wick Farm.

Figure 56 Caravans at Kewstoke in 1958 overlooking Sand Bay. RAF/58/2544/PSFO-P1-0014 25-AUG-1958 Historic England Archive (RAF Photography)

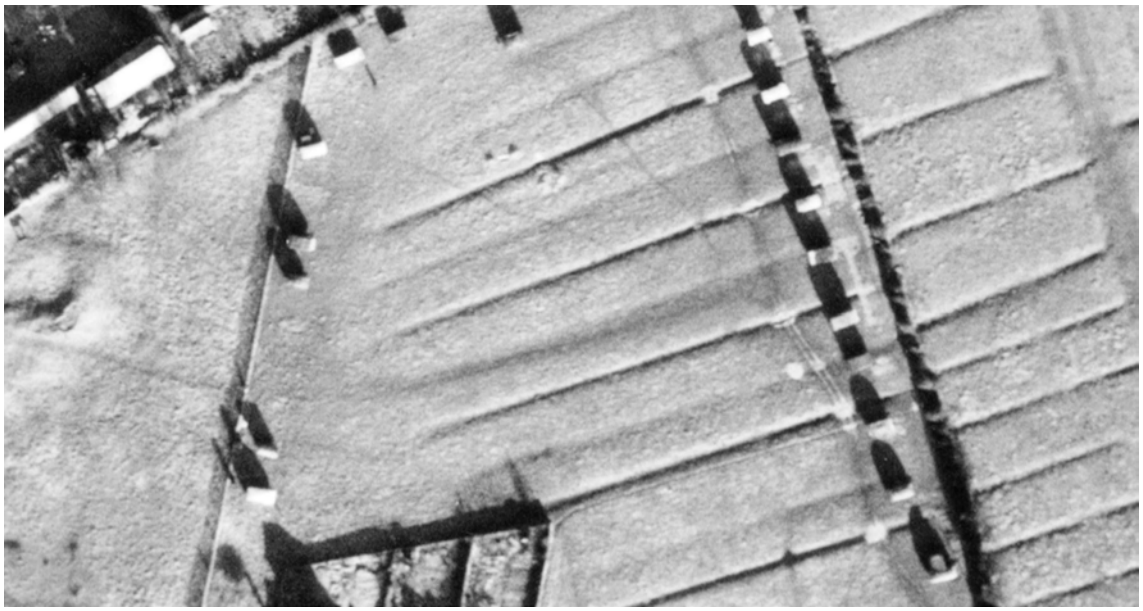

Figure 57 Caravan site off Crooke's Lane, Kewstoke, in 1946. RAF/3G/TUD/UK/21 V 5017 13-JAN-1946 Historic England Archive (RAF Photography)

As the names of many of these sites indicate, the caravans seen on the early post-war photos are often situated within orchards or small fields close to a farmhouse. These sites are repeatedly photographed in the second half of the 20th century and successive years show a changing arrangement of caravans. Some fields were modified for caravans and short sections of drainage ditches filled-in (or perhaps

enclosed in pipes) to allow vehicle access through the site (Fig 57). Some of the caravans at Weston may have been kept there permanently, others towed down for holidays. The general lack of cars seen on the aerial photographs suggests that many caravans were kept on site all year round. The changing arrangement of caravans within each site may partly reflect short stays but perhaps also a changing or rearranged stock of static caravans.

Many of the caravan sites seen in the 1940s and 1950s survive today. Some of these sites are now occupied by static caravans that function as either holiday lets or permanent residences (Fig 58 & 59).

Figure 58 Westwick Farm in 1946. Caravans can be seen around the edge of the field to the left of the farmhouse. RAF/106G/1661 RP 3269 12-JUL-1946 Historic England Archive (RAF Photography)

Figure 59 The same site in 2017, now occupied by static caravans. The farm buildings have been demolished and much of the surrounding areas built upon. The Queensway Centre retail park is to the top. Detail of ST3662 19-JUN-2017 RGB Aerial Photography - © Bluesky International/Getmapping PLC

Discussion

For the mid-twentieth century, both aerial photographs and maps offer a superficially similar view of Weston-super-Mare. Indeed, some of the aerial photographs were taken as a means of updating the Ordnance Survey maps. However, for Weston-super-Mare, the frequency and variety of aerial photography taken during the 1940s onwards has allowed a more detailed picture of the post-war development of the town than is possible from map evidence alone.

The national aerial survey undertaken by the RAF coincided with the post-war house building programme and in particular the Temporary Housing Programme that commenced in 1944. Between 1945 and 1949, 156,623 prefabs were built across the country to 13 different designs (Vale 1995, 1; Stevenson 2003, 100). No national record of where or what type of prefabs were built exists (Blanchet 2014, 28) and they are not always easily identified on OS maps alone. Historic aerial photography provides a convenient means to identify prefabs and on historic black and white aerial photographs, they generally stand-out as bright white structures within the darker greys of older housing stock. In addition to identifying the presence of prefabs, the photographic coverage of Weston provides enough detail to

identify which of the 13 designs of prefabs were built. Oblique photographs offer the best opportunity for this detailed interpretation, but variations in roof design and other structural clues should allow better interpretation even from vertical photographs.

This identification also extends to Cornish Units, the other type of prefabricated building seen in post-war Weston. However, the presence of roofing tiles and the more conventional proportions of most Cornish Units (compared to the prefab bungalows) makes it harder to identify this type of house. Diagnostic elements of a Cornish Unit house from above include roof style and the position of the chimneys - which differs depending on the size of the design built. If the resolution of the photograph is good enough, the irregular outline of the building caused by the projection of the first floor dormer windows can also be seen (Fig 60). This is particularly helpful as the larger Cornish Unit building of approximately 21m width (consisting of two semi-detached houses), came in at least two variations: front entrances and six first floor windows or side entrances and four first floor windows. The presence of a standard outbuilding can also help in the identification of Cornish Units. Again some variation in their exact position in relation to the house has been identified. For some of the smaller Cornish Units in Weston, the outbuilding is positioned behind the house if it has a front entrance, but to the side if there is a side entrance.

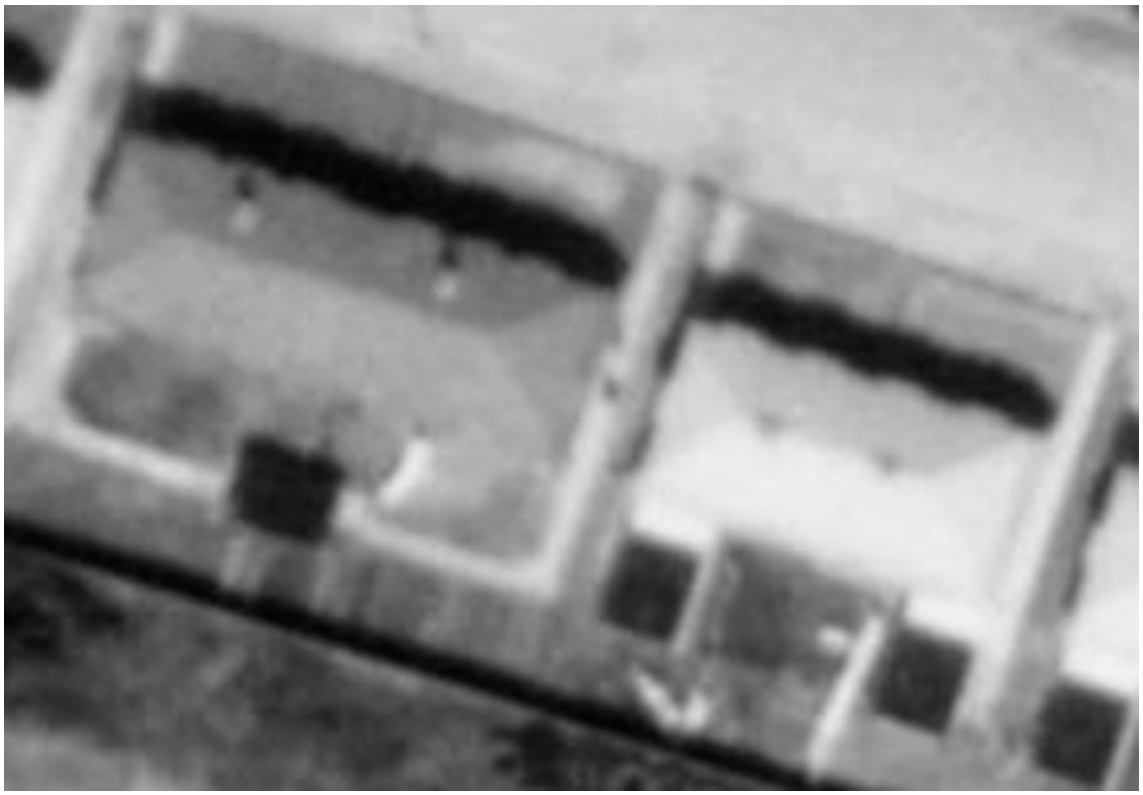

Figure 60 Two different designs of Cornish Units on Earlham Grove. Note differences in chimney and outbuilding position between each design. This pattern of outbuilding provision relative to house size is also seen in Weston's Bournville estate. Detail of RAF/58/496 V 09-JUN-1950 Historic England Archive (RAF Photography)

In addition to identifying prefabs, the historic aerial photographs of Weston-super-Mare have allowed a detailed view of the post-war development of the estate on which they were built. There is a 15 year gap in the Ordnance Survey map coverage of the area of the Bournville estate. The maps jump from depicting fields in 1938 to an established housing estate in 1953. In contrast, the aerial photographs of this area were taken in 1945, 1946, 1948, 1950, 1951 and 1954. These repeated flights allowed a better understanding of the gradual development of the estate, relating to both the general layout, but also the different phases of building within the estate.

The aerial photographic evidence has greatly added to our understanding of post-war Weston. The results have also raised a number of questions about the post-war housing developments in the town. These concern both the design of the estates and the type of houses built there. Further work on Weston's residential and suburban development could answer some of these questions.

WESTON-SUPER-MARE AT WAR

Introduction

A familiar image of seaside towns during the Second World War consists of resorts with few people, the beaches closed-off by barbed wire, lines of anti-tank defences along the promenade and sections removed from piers isolating them from the seafront (Walvin 1978, 127; Hassan 2003, 134). This can be contrasted with an aerial photograph taken of Weston-super-Mare in 1941 that shows a very different view of the seaside in wartime (Fig 61).

Figure 61 Weston-super-Mare beach September 1941. Detail of RAF/1416/S512184/PO-060 19-SEP-1941 Historic England (RAF Photography)

At first glance, the effects of the war are not immediately apparent. The pier is intact and people are on the beach - some enjoying donkey rides. However, this photo tells another story. The people in the foreground appear to be troops undergoing physical training. The beach is dotted with low piles of stones, positioned to act as aircraft obstructions to prevent the enemy using it as an airstrip. Just off the sand on Beach Lawn three air raid shelters can be seen.

Both the piles of stones and the air raid shelters point to the threat of attack from the air and many of the wartime structures seen on the 1940s aerial photographs of Weston are concerned with the war in the air. They include air raid shelters, facilities for the fire brigade, anti-aircraft obstructions, barrage balloons, anti-aircraft batteries, and beyond the town two RAF stations. These photographs also document the effects of the air raids on the town.

Air Raid Precautions

The introduction of air raid precautions in Britain before the Second World War began with the creation of the Air Raid Precautions (ARP) department in 1935. The department considered what arrangements needed to be made for a number of different areas including air raid warnings, providing services for Air Raid Wardens, dealing with gas attack, casualties and other aspects of the aftermath of a raid (Dobinson 2000a, table III). Initially, the department offered guidance and encouragement to local authorities (ibid 14), but legal compulsion to carry out a range of air raid precautions came with the passing of two pre-war acts, the 1937 Air Raid Precautions Act and the Civil Defence Act 1939 (ibid 27; 53).

Included in these acts were greater obligations on local authorities to protect people. Initially the local authorities were required to identify places that, with some modification, could serve as air raid shelters - often spaces within large shops or public buildings. The 1938 Munich Crisis, when war seemed imminent, highlighted how poor Britain's air raid precautions were, and resulted in further government action. From December 1938 a small domestic shelter, called the Anderson shelter, was made freely available to less well-off households. These shelters were small, and usually partially sunk in the ground and covered with earth. This, and the small-scale of many of the wartime aerial photographs makes their identification difficult and none were seen on aerial photographs of Weston. The 1939 act gave the local authorities further powers to adapt rooms in private buildings for use as public air raid shelters. It also made it compulsory for employers to provided shelters for their workforce (ibid 53).

Despite these endeavours across the country, in 1939 public air raid shelter provision was still insufficient (ibid 86). During August 1939, in an attempt to quickly increase the number of public shelters, local authorities were given the power to build shelters on the roads with the agreement of the highway authority (ibid 89). The design and location of the surface shelters seen in Weston-super-Mare, suggests that they were all built after the government had authorised this form of construction in August 1939. It also suggests that Weston's provision of public shelters was considered inadequate at that date, but the emphasis on the

creation of shelters within buildings, means that aerial survey alone cannot offer a comprehensive view of shelter provision for the town.

Under the 1939 Civil Defence Act local authorities in vulnerable areas were required to provide shelters for between 10%-15% of the population (ibid, 86). Weston-super-Mare may not have been classed as a vulnerable area in 1939, but based on its 1931 population of 28,554 (Kelly's Directory, 1939), the town may have been expected to provided public shelter for between 2,855 - 4,283 people. The surface shelters identified in the aerial surveys of the town provided spaces for 1,100 people.

Britain's pre-war air raid precautions had national remit, but at the same time, there was an understanding that some parts of the country were likely to be safer from air attack than others. The 1939 Government Evacuation Scheme listed the places considered most likely to be bombed in time of war and these were designated 'evacuation areas'. In contrast, Somerset was considered a reception area and Weston did receive evacuees at the start of the war. (http://www.nationalarchives.gov.uk/help-with-your-research/research-guides/evacuees/ ACCESSED 05-MAR-2018)

This idea that Weston was safe is apparent in a pre-war advert in the 'Houses for Sale' section of *The Birmingham Mail* (*The Birmingham Mail* 1939, 3 Col C). An advert for a bungalow near Weston-super-Mare leads with the words 'Air Raid Safety'. Even after war was declared, an advert for the Lyndale Hotel, on Madeira Road refers to Weston as a 'safe zone' (*Coventry Standard* 1940, 1 Col E). The following month an advert for the Beach Hotel in Regent Street/Royal Parade in the *Birmingham Gazette* ends with the quote 'It's Safer in Somerset', but also refers to an 'ARP shelter' (*Birmingham Gazette* 1940, 2 Col B). It is not clear exactly what shelter this is. The hotel's location on the seafront opposite the pier and the use of the term 'ARP' suggests that this may be a reference to one of the public air raid shelters on Beach Lawn first seen on aerial photographs in September 1940. From September 1940, Weston did suffer a number of air raids (see below). The Royal Hotel on South Parade had a number of adverts throughout the war in *The Birmingham Post* (e.g. *The Birmingham Post* 16 May 1941, 1 Col C) which listed the hotel's amenities, one of which was an 'Excellent air raid shelter'.

Public surface shelters

A total of 22 air raid shelters were identified on aerial photographs taken during and immediately after the Second World War. All have since been demolished. These were all blast-proof surface shelters and followed a similar design of a narrow rectangular plan with a flat roof, although some had an entrance porch (Fig 62 and 65). They are likely to have had brick walls and a concrete slab roof (Dobinson 2000a, 89). There is a slight variation in the dimensions of Weston's shelters as recorded from aerial photographs, but they were all in the region of 14m by 4m. These shelters can be compared with a typical surface shelter that measured 13m by 4m (plan reproduced in Dobinson 2000a, fig 40). This slight variation in size suggests a number of different designs were built in the town, perhaps by different contractors. This similarity in shape and size reflects the specifications that these

shelters had to meet; in particular, the stipulation that they should hold no more than 50 people (ibid 89).

Figure 62 Public surface shelters on Beach Lawn in 1941. Detail of RAF/1416/S512184/PO-060 19-SEP-1941 Historic England (RAF Photography)

Three shelters were built on Beach Lawn opposite the area where Oxford Street and Carlton Street join Beach Road and a fourth shelter to the north opposite Richmond Street. Further north was a single shelter in the park between the Victoria Buildings and Albert Buildings and a shelter on open ground facing Royal Terrance (on land now occupied by Weston College). Together, these provided shelter to those caught in an air raid on the seafront at the northern end of town. A shelter was also built on the seafront to the south on Beach Lawn opposite Clarence Park.

Three shelters were constructed on the edge of the open area of the Winter Gardens, and four on Alexandra Parade. Another was situated to the south on a bombsite on Oxford Street. Together these served the commercial centre of Weston. A single shelter further east on a bombsite on the Boulevard could also be considered part of this group.

A third set of shelters were provided for those unlucky enough to be caught in the public parks during an air raid. Grove Park had a single shelter built on Grove Lane. Ellenborough Park had two shelters, one built on the road Ellenborough Park North, near the seafront, the other further inland on Ellenborough Park South. Clarence Park was also provided with a shelter on Clarence Road South.
It is clear from the aerial photographs that these surface shelters were built in a number of phases, although the exact dates are not known due to the infrequency of

reconnaissance flights and the different areas of the town photographed each time. There are also problems in identifying some features on very small-scale photographs. On the RAF photographic prints taken in 1940, the shelters are only about one third of a millimetre long. With these limitations in mind, the 1940 RAF photographs appear to show some shelters were in place by that date. RAF photographs taken during the following year show all the known surface shelters in the town bar one, which is first seen on a 1942 photograph. Two of the shelters seen in 1941 were clearly constructed after war was declared as they were built on bombsites.

Figure 63 The distribution of public surface shelters (in red) and Emergency Water Supply (EWS) reservoirs (in blue) across the northern part of town. Ordnance Survey 1:2,500 published 1931 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2081) Licence numbers 000394 and TP0024

Figure 64 The distribution of public surface shelters (in red) and EWS (in blue) across the southern part of town. Ordnance Survey 1:2,500 published 1931 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2081) Licence numbers 000394 and TP0024

The shelters were located across the town (Fig 63-64) and although some were built on open land, most of these appear to have been built on paths rather than grassed areas. The three shelters on the north of Beach Lawn were erected on the broad pathways or pavements that fringe and cut across the lawns (Fig 65). The shelters built for those using the public parks were not built in the parks but instead on the roads alongside them (Fig 66). Only one air raid shelter was built in a park. This was situated in the park (now playground) between Albert Buildings and Victoria Buildings. A third category were shelters built on bombsites, one on Oxford Street, the other on the Boulevard.

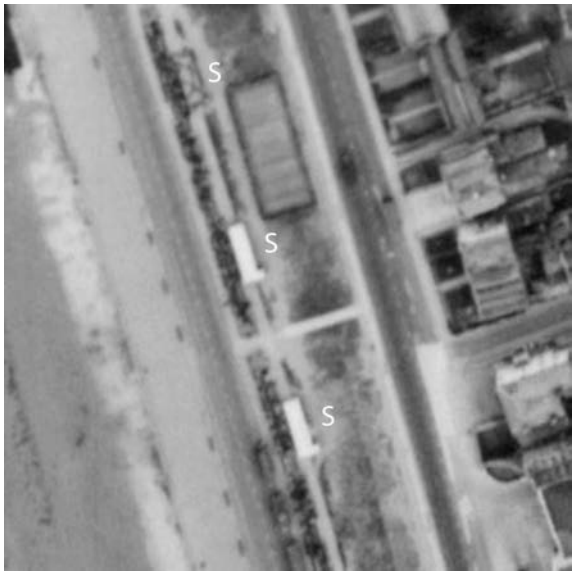

Figure 65 Three shelters (marked S) on paths on Beach Lawn 1941. The top shelter appears to be camouflaged. Detail of RAF/GHQ/105 V 47 14-MAY-1941 Historic England Archive (RAF Photography)

Figure 66 Ellenborough Park 1941. Two white rectangular shelters on the roads by the park, top left and bottom right. Detail of RAF/GHQ/105 V 50 14-MAY-1941 Historic England (RAF Photography)

Three possible shelters were also identified on the Bournville estate off Stradling Avenue. These were smaller than most of the shelters seen in the town, one measuring approximately 9m by 3m, the other two 5m by 3m.

Trenches

Two groups of trenches were seen in July 1942 on Beach Lawn opposite Clarence Park and Ellenborough Park (Fig 67). It is possible that these trenches were intended to be used as shelters and were dug around that date (they are not seen on earlier or later aerial photographs). During the Munich Crisis of September 1938, trenches had been dug in parts of Britain to act as air raid shelters. By the end of that year, the government decided that these trenches should be improved by being lined and provided with a roof (Dobinson 2000a, 78- 80). While this modification

suggests that simple trenches were not considered suitable air raid protection, they may have still been used in an emergency and those in Weston may have been dug in response to the air raids the town had suffered during June 1942.

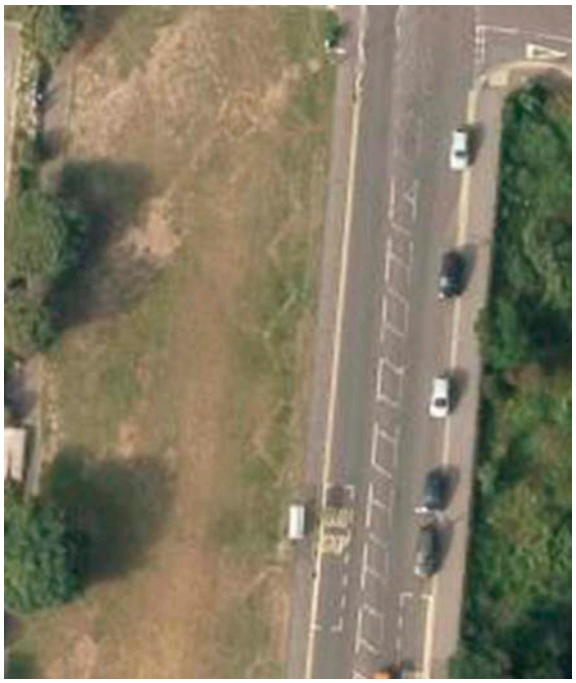

Figure 67 The light coloured zigzag cropmark of trenches dug on Beach Lawn during the Second World War. Detail of ST3160 04-SEP-2013 RGB Aerial Photography - © Bluesky International/Getmapping PLC. Image supplied to Historic England through the APGB agreement by Next Perspectives.

Emergency Water Supply

An aspect of civil defence developed during the war was the provision of Emergency Water Supply reservoirs (EWS). EWS were located in towns and cities in response to the problems in 1940-41 of failed water supplies (due to bomb damage) during air raids (Demarne 1989, 58-65).

The earliest EWS were built in some parts of Britain in early 1941 (ibid, 59) but the national scheme proposed in February of that year was not implemented until after the amalgamation of the country's fire brigades into the National Fire Service (NFS) in August (ibid, 63). The national plan for EWS divided the country into three categories according to perceived risk from air raids and estimated the volume of water that was required to be held in those areas. Category A was high risk, category B was population centres of 100,000 or more (ibid, 61). Category C was the remainder of the country, the category into which it is assumed Weston-super-Mare fell.

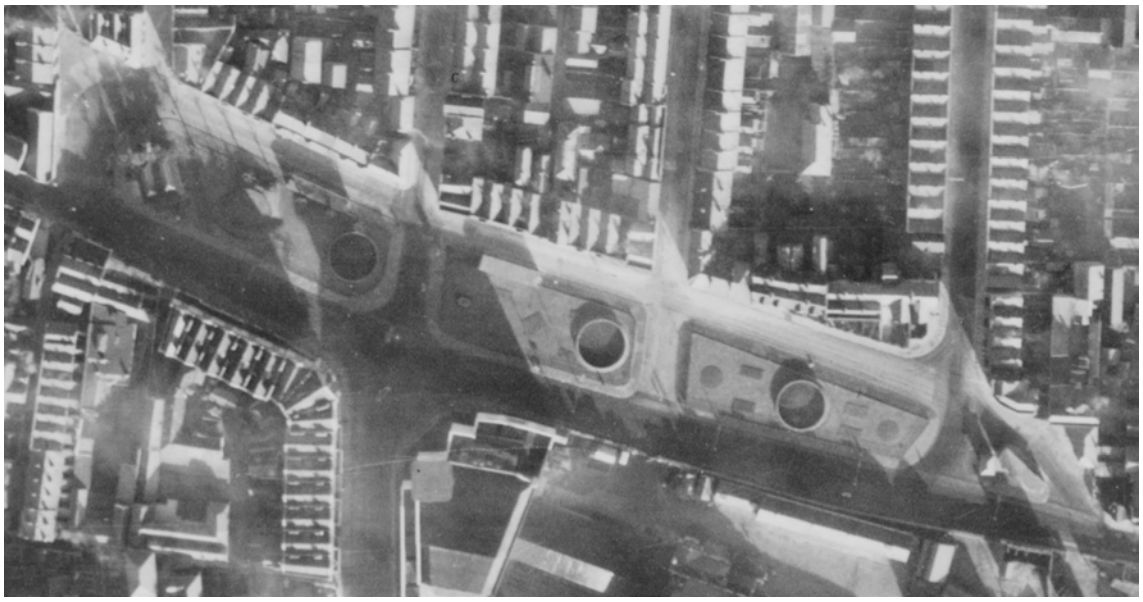

Figure 68 Circular EWS on the Alexandra Parade lawns. Photo taken in 1946, by which date they no longer held water. They had been removed by 1948. Detail of RAF/3G/TUD/UK/21 V5076 13-JAN-1946 Historic England (RAF Photography)

A total of 15 EWS have been identified in Weston and none appear on aerial photographs taken prior to July 1942 (Figs 63-64). These are all circular, above ground structures. The only variation is in the diameter of the reservoirs. Pre-existing open spaces were chosen for the location of EWS, which by the date of their introduction – late 1941 to early 1942 – included bombsites. As with the air raid shelters, Beach Lawn provided a suitable space for the EWS and three were erected there. Another three were positioned on the lawns along Alexandria Parade close to the town's floral clock (Fig 68). The bombsites on Boulevard and in the town centre off Wellington Place each held three EWS. Another three were not grouped together, but each was located within the residential area to the north of the town centre. Another possible EWS was built on the open area in front of the station. In addition to the EWS the fire brigade could have also used pre-existing bodies of water such as Marine Lake.

Air Raids

The first bombs fell on Weston in September 1940 and in total the town suffered ten air raids (*Western Daily Press* 11 Nov 1948, 1 Col G), including the heaviest on the night of 28th/29th June 1942. The RAF photography provides a range of evidence of the air raids on Weston-super-Mare. This includes bomb craters, damaged or demolished buildings and cleared bombsites. Aerial photographs taken in July 1942 show the effects of the air raid of the previous month with evidence of the destruction to a number of buildings including the Congregational Chapel and Sunday School in Waterloo Street and the Tivoli Cinema (the former Victoria Hall) in the Boulevard. Lance and Lance's department store was also destroyed in the raid and the site had been cleared by that date. The effects of the raid were still clearly seen in 1946 (Fig 69) and in more detail in 1949 (Fig 70).

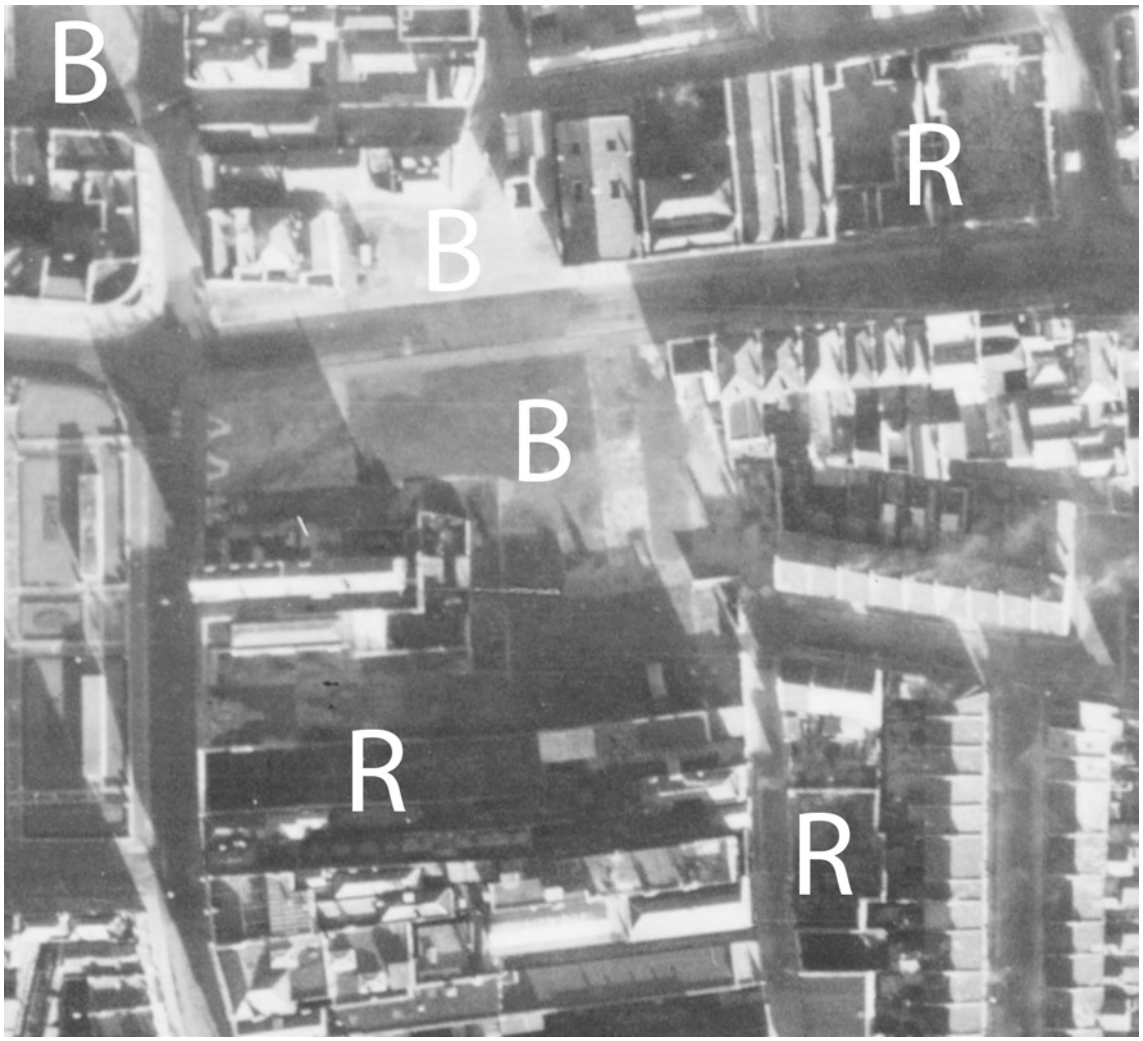

Figure 69 Bomb damage on High Street/Waterloo Street/North Street. Cleared bombsites are marked B, ruined buildings R. As seen in 1946. Detail of RAF/3G/TUD/UK/21 V5076 13-JAN-1946 Historic England Archive (RAF Photography)

Figure 70 Bomb damage on Wadham Street 1949. The shell of the Baptist Chapel is on the right, opposite is a cleared bombsite. AFL 61877/EAW025151 25-Jul-1949 © Historic England (Aerofilms Collection)

Figure 71 Part of Bournville after an air raid in 1942. Detail of RAF/FNO/37 V 5078 11-JUL-1942 Historic England Archive (RAF Photography)

Figure 71 shows the aftereffects of a raid on the Bournville area of the town. Two definite bomb craters are marked C. Bomb damage is not always apparent on aerial photographs, but D is at the centre of the three buildings that were demolished after the raid, their outlines seen in white. B is a barrage balloon, although the image is blurred. A is an area of wartime allotments.

Cleared bombsites and the shells of damaged buildings can be seen on immediate post-war photographs taken in 1946 and 1948. Some damaged buildings were eventually rebuilt, such as St Paul's Church that was gutted by fire during a raid (Fig 72). Other buildings were demolished. Figure 73 show the rubble remains of the former Rossholme School.

Figure 72 The shell of St Paul's Church, Clarence Road North in 1948. Detail of RAF/541/99/PSFO-0055 16-JUL-1948 Historic England Archive (RAF Photography)

Figure 73 The rubble remains of Rossholme School on the seafront at the corner of Beach Road and Ellenborough Park South, demolished after bomb damage. Detail of RAF/CPE/UK/2489 V5049 11-MAR-1948 Historic England Archive (RAF Photography)

The 1950 Ordnance Survey map also depicts the bomb-damaged landscape (Fig 74). War damaged buildings are marked as 'Ruin' and some of the car parks shown on this map are on bombsites. Bomb damage in and around Weston-super-Mare was also recorded on a set of maps held in the Somerset Heritage Centre (ref

DD\VA.b/1). Unfortunately, the coverage of the town is incomplete and some maps are missing, including the map sheet that covered the town centre. Bomb damage is marked by a numbered circle and the maps have been annotated with at least 136 points. This far exceeds the number of sites identified from aerial photographs. The wide range of damage that bombs can cause most likely explains this discrepancy. Blast-shattered windows etc. are the most likely explanation for a building marked on the bomb damage map that appears unaffected on the aerial photographs. Bomb damage seen on aerial photography is generally restricted to badly damaged roofless buildings, destroyed buildings and cleared bombsites.

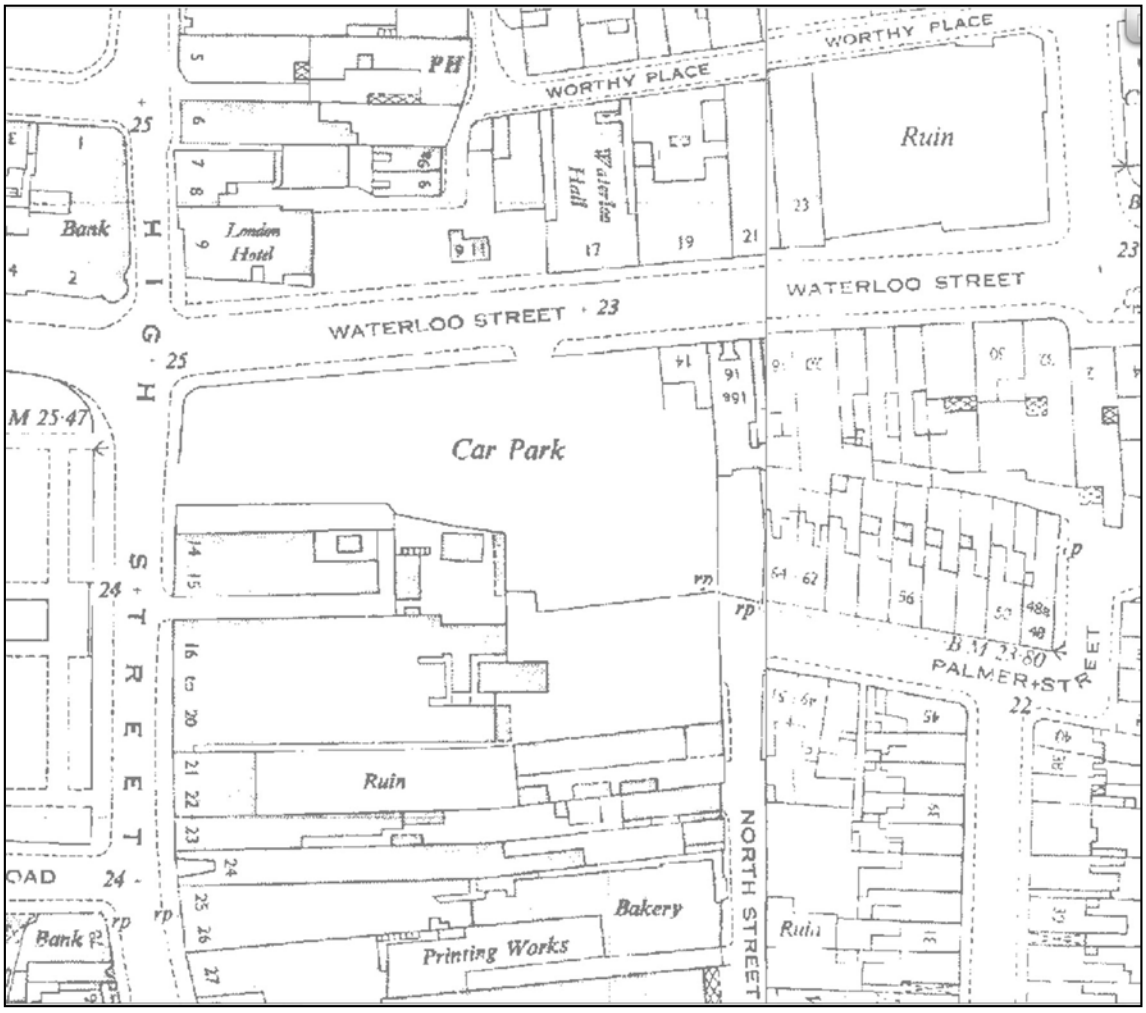

Figure 74 1950 OS map. The Car Park is on a cleared bombsite. Bomb damaged buildings are marked Ruin and include the Congregational Church top right. Fig 69 is an aerial photograph of the same area. Ordnance Survey 1:1,250 published 1952 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2081) Licence numbers 000394 and TP0024

Air defence

In 1934 the Air Ministry began a review of the plans for the air defence of Great Britain, and in 1936 they produced a list of areas that would require Heavy Anti-Aircraft (HAA) defence, with construction of the first emplacement in 1938 (Dobinson 1996). The plan called for 608 HAA batteries, which were focussed on a

series of targets that included London and the Thames and Medway area, and the industrial Midlands and North. With the exception of the Royal Naval dockyard at Plymouth, no pre-war plans were made for the air defence of towns and cities in the south-west (ibid). Britain's air defences went through a number of changes during the Second World War, and the number of guns and the area defended were considerable increased.

Our understanding of the Anti-Aircraft (AA) defence of Weston is derived from documentary sources as outlined in Dobinson 1996 and the aerial photographs held in Historic England's archive. There are limitations to both sources and no exact dates for the creation, development and final abandonment of these batteries can be established. Additionally, some documents quoted by Dobinson are the result of a sample search through the archives and others may remain to be identified (Dobinson 1996, Appendix II). The documentary sources provide a point-in-time picture of the number and type of guns and radar in place as well as identifying the regiment and battery posted there. The aerial photographs also provide a point-in-time view of the layout of these sites. Additionally, the quality of some of the photographs of one of Weston's HAA batteries has enabled a more detailed site development to be outlined than is the case for the other sites (see Uphill Battery below).

Anti-aircraft batteries

During the Second World War, both Heavy Anti-Aircraft (HAA) and Light Anti-Aircraft (LAA) batteries were established in and around Weston-super-Mare. Three HAA batteries were identified on aerial photographs: Woolvers, to the east of the town on Woolvers Hill; Hutton, to the south-east of the town on Bleadon Hill and Uphill, located on the seafront golf links belonging to Weston-super-Mare golf club. The names of these batteries are those recorded in contemporary Anti-Aircraft (AA) Command documentation, as reproduced in Dobinson 1996 (Appendix II, page 486). The documentation records a fourth battery on Worle Hill to the north of the town. However, both references (dated 1942 and 1943) list Worle Hill as unarmed and no evidence of a battery on Worle Hill can be seen on historic aerial photographs.

The first HAA batteries built were at Uphill and Hutton and recorded in 1941 (Dobinson 1996, Appendix II, 486). These two batteries were presumably created as part of a national expansion of HAA defences authorised by the War Office in October 1940 (ibid, 83). By this date, the War Office had identified additional urban targets and additional airfields within 20 miles of the coast that required HAA defence (ibid). Towns or airfields defended by gun AA batteries were referred to as Gun Defended Areas (GDA), but it is not clear if the War Office's 'Weston-super-Mare GDA' referred to the town or the adjacent RAF airfield or perhaps both. Weston-super-Mare GDA, consisting of eight guns, first appears on a list of HAA armament in February 1941 (Dobinson 1996, table XLII). Eight guns equates to two separate batteries of four guns apiece.

Aerial photographs taken in May 1941, three months after this list was compiled, are the earliest to show the Uphill battery. An AA Command list of HAA sites shows

that Weston had four batteries by 22 June 1942. This apparent strengthening of Weston's HAA defences may have been in response to the 'hit-and-run' air raids, known as the 'Fringe Target' campaign that ran from March 1942-June1943 and carried out in parallel to the Baedeker Raids against historic cities. However, with the exception of Uphill, the remaining three gun sites were listed as vacant (Dobinson 1996, table XLVII). In the case of Woolvers, the 'vacant' status was because no gun emplacements existed at that date, as aerial photographs taken on 11 July 1942 show, although what appears to be the accommodation huts are in place.

It was not unusual to have vacant gun emplacements during the war. Nationally there were more anti-aircraft gun emplacements than there were guns. Guns were moved around as required (Dobinson 1996, 100). The situation on 22 June 1942 only reflects the deployment of guns on that day.

Uphill Battery

AA Command documentation first lists the Uphill Battery by name on 20 May 1941 quickly followed by another reference the following month on 1 June 1941. These provide two different locations for this battery. The earliest reference is to a four-gun battery located in a field at a point now to the east of the post-Second World War Coronation Estate. No evidence of a HAA battery has been identified in this vicinity on the historic aerial photographs and it was presumably a mobile battery. Documentation dated 12 days later place Uphill battery a little over 1km to the east of this point, on the golf links south of the town. This site consisted of two guns and a Gun Layer (GL) radar. In both cases, troops from 104 Regiment, 411 Battery were stationed there.

Six days before the first mention of Uphill Battery in official documents, a RAF reconnaissance aircraft photographed the coastline on 14 May 1941. The coverage does not extend far enough inland to include the Coronation Estate area, but does cover the golf course and offers a detailed view of the HAA battery located there. The entire site is illustrated in Fig 75 and detailed views of different parts of the site in Figs 76-79.

Figure 75 Uphill HAA battery in 1941. Detail of RAF/GHQ/105 V 14-MAY-1941 Historic England Archive (RAF Photography)

The battery follows the standard arrangement of four emplacements, each with a gun, arranged in an arc in front of a command post. Uphill battery is clearly in a period of transition at this date. On the landward side of the battery alongside Uphill Road North are a series of huts forming the accommodation for the troops. Two of these are still under construction and at least one hut seen on later photographs remained to be built. The battery also had eight large tents that provided accommodation for the troops while the huts were built. Some of the tents had been removed by 14 May 1941, but they had been in place long enough to leave a mark on the ground and the outlines of six tents can be picked out in the grass (Fig 76).

Figure 76 Uphill HAA in 1941. Tents are marked T, the outline of recently moved tents marked O. Accommodation huts can be seen alongside the road running diagonally across the image. Those at the top are still under construction. Detail of RAF/GHQ/105 V 14-MAY-1941 Historic England Archive (RAF Photography)

Although the removal of some of the tents does suggest that by May 1941 the huts were beginning to be occupied, this is not the whole story. All but one of the tents that had been removed were in the way of a large GL mat that formed part of the GL radar system. At least one tent was repositioned rather than removed to make room for the GL mat.

Radar and the GL mat

The development of radar to provide range and bearing information of enemy aircraft to the gun battery was undertaken from the late 1930s and is outlined in detail in Dobinson 1996, 128. The first set was the GL Mk I. This came into service in September 1939 and consisted of separate trailer mounted transmitter and receiver units. The accuracy of this radar was improved when the receiving unit was situated in the middle of an area of uniform electrical properties at least 119m across. This was achieved by the construction of an octagonal wire lattice within which the receiver was positioned (Fig 77). These wire lattices were known as GL mats and came into service in December 1940. Radar improvements led to the development of the GL Mk II. This was introduced in January 1941 but still required a GL mat.

Figure 77 The outline of Uphill HAA's octagonal GL mat. Detail of RAF/GHQ/105 V 14-MAY-1941 Historic England Archive (RAF Photography)

Gun emplacements

At least three different gun emplacement designs appear to have been used at Uphill. Those seen in 1941 (Fig 78) are slightly different to those in 1942 and both different to the final design that can be clearly seen on large scale aerial photographs taken in 1948 (Fig 79). The first two emplacements do not appear to match with any official designs. Uphill was armed with mobile guns in the early years of the war and these usually had earthen emplacements (Dobinson 1996, 486; 112). The earlier emplacements are straight sided so if they are predominately made of earth, they must have also had some structural element to maintain this shape. The last emplacements seen are made of concrete. The earlier emplacements were demolished - something that also suggests that they were not permanent concrete structures.

Figure 78 Uphill HAA, four emplacements and a command post in 1941. Detail of RAF/GHQ/105 V 14-MAY-1941 Historic England Archive (RAF Photography)

The concrete emplacements (Fig 79) are of a design (DFW 55483) introduced in September 1943 for the 3.7 inch gun. The new emplacement was larger and provided more ammunition storage, something required because of improvements in the rate of fire of this weapon.

In addition to the new emplacement design, Uphill was also provided with two additional gun emplacements bringing the total to six guns. Woolvers also became a six-gun battery by the end of the war. These additions had taken place at Uphill by 1944 as revealed on aerial photographs taken in December of that year. This modification of the battery may have taken place between August 1942 and November 1944. While the end of the Fringe Target campaign fell into this period, it is perhaps more likely that these additions were to improve the defence of installations, troops and equipment stores at Weston in advance of D-Day in June 1944.

Figure 79 Uphill HAA emplacements and command post seen in 1948. RAF/CPE/UK/2489 V5053 11-MAR-1948 Historic England Archive (RAF Photography)

RAF Locking

RAF Locking was the first of two RAF stations that existed at Weston during the Second World War. It was located to the north-east of Locking village and opened in January 1939. Known as No 5 School of Technical Training it provided instruction in a range of trades including flight mechanics, riggers and fitters and continued in this role throughout the Second World War. It continued as a training school after the war, although the type of training changed over time. The site eventually closed in 1998 and all the buildings have since been demolished. (http://www.raflaa.org.uk/historylocking.html ACCESSED 16-APR-2018)

Figure 80 Main entrance to RAF Locking in 1946. Detail of AFL 61390/EAW002969 2-Oct-1946 © Historic England (Aerofilms Collection)

The layout of this station can be seen on RAF aerial photographs taken in the 1940s and Aerofilms photographs taken in 1946. Two entrances to the camp were on the south side off the A371 (Fig 80). The main entrance led to a road laid out in a crescent, but north and east of this a grid pattern was followed (Fig 81). The camp consisted of a range of different building types. They can be loosely organised in to three functions: administration, accommodation and training. However, a more detailed interpretation is possible as certain building designs were used for specific functions.

Figure 81 RAF Locking in 1951 showing entire camp including two new areas of housing under construction top left and bottom right. RAF/540/479 RS 4008 22-APR-1951 Historic England Archive (RAF Photography)

The barrack blocks where the troops slept are arranged in groups of 12. These were linked via corridors to ablution huts and bathhouses. The classrooms may have been based on similar huts to the barracks, but with the exception of a toilet block would not have any other associated buildings. Most administration buildings and classrooms appear to have been situated towards the southern end of the camp. Practical training would have taken place in the five large hangars. Many aircraft were kept on the site (Fig 82).

Figure 82 Aircraft at RAF Locking in 1946. Detail of AFL 61390/EAW002966 2-Oct-1946 © Historic England (Aerofilms Collection)

A 1930s design of dining halls and NAAFI (Navy, Army, Air Force Institute) can be identified at RAF Locking. These are positioned close to the barrack huts and this grouping can be best seen at the northern end of the camp (Fig 83). A total of 48 barrack huts were arranged in groups of twelve. Each group was linked via corridors to ablution huts and a bathhouse. A dining hall was to the west and a NAAFI to the east. A Decontamination building was located to the northwest and a Boiler house and Quartermasters store to the northeast.

Figure 83 detail of north of camp in 1946, compare with top of Fig 80. Detail of AFL 61390/EAW002965 2-Oct-1946 © Historic England (Aerofilms Collection)

A number of elements within the camp highlight the threat of air attack. Dozens of earth-covered air raid shelters were built across the site and during the Second

World War a number of trenches were also dug, presumably to also provide shelter during an air raid. Another distinctive building plan was used for decontamination buildings. These buildings reflected the concern over gas attacks. The decontamination buildings were erected alongside groups of barrack blocks.

RAF Weston-super-Mare

RAF Weston-super-Mare was created in 1940 with the requisition of Weston's civilian airfield (Fig 84). It was primarily used as a training school but was also home to the Air Torpedo Development Unit and used intermittently by a fighter squadron. At the end of the war, the airfield reverted to civilian use (Ashworth 1982, 204-207).

Figure 84 Weston airfield in June 1939, a few months before its requisition by the RAF. Detail of AFL 61273/EPW062079 30-Jun-1939 © Historic England (Aerofilms Collection)

The RAF undertook a range of construction work at Weston. This included the creation of a tarmac runway, hangars and accommodation and administration buildings. Closely associated with the airfield was the Bristol Aeroplane Company's shadow factory at Oldmixon built in 1940 at the south-western edge of the airfield. 'Shadow factory' was a term used to describe additional factories built by companies some distance away from their exiting works.

A number of RAF aerial photographs were taken of RAF Weston throughout the 1940s (Fig 85). The earliest in September 1940 shows the factory and the hangars. The view is obscured by clouds and it is not clear which of these buildings are complete or still under construction. At that date the main access to the south-western end of the site was via a lane from Oldmixon. This lane continued north to Weston and by 1942 had been converted into a metalled road carried over the main railway line by a new bridge. These remain in use today as Winterstoke Road.

Figure 85 A small scale aerial photograph of RAF Weston-super-Mare and the Oldmixon aircraft factory (bottom left) in November 1945. Detail of RAF/3G/TUD/T/94 Vp2 5135 27-NOV-1945 Historic England Archive (RAF Photography)

The creation of the RAF airfield and the Oldmixon factory coincided with the invasion scare of 1940. German tactics in Norway and the Low Countries included the seizing of airfields that were then used as a landing grounds for reinforcements (Dobinson 2000b, 8). To begin with, Britain's anti-invasion defences were largely in response to this threat from air attack. The defence of airfields was initially the responsibility of the station commanders and was concerned with the obstruction of landing grounds within 5 miles of an airfield. Work on airfield defence got underway across the country from May 1940 and the RAF photographs of Weston taken in September of that year show some of these defences in place.

The land that made up RAF Weston-super-Mare had previously been pasture drained by regular shallow drains that fed into larger ditches that defined each field. The 1940 aerial view of RAF Weston is hampered by extensive cloud cover. Numerous parallel lines can be seen as white marks across the airfield. The small scale of these images makes an exact interpretation difficult. They may represent the

re-cutting of these features to act as anti-aircraft obstacles. They may however be evidence of the opposite – the ditches being filled-in to create a level area within the perimeter of the airfield. Beyond the airfield, Weston's beach was obstructed with piles of stones.

Although initially the defence of airfields was the responsibility of each station commander, the situation changed from the end of September 1940 with the publication of the Taylor Report. Written by Maj Gen Taylor, Inspector General of Fortifications, the report considered airfield defence not in terms of the function of each airfield, but its value to the enemy in an invasion (Dobinson 2000b). Better defences were to be provided to airfields that, if captured, could then be used by the enemy to mount attacks on nearby ports with the intention of capturing these and then utilising them to bring in more troops. The highest risk sites - Class I - were those airfields within 20 miles of a port (ibid). Weston-super-Mare was Class I as it was within 20 miles of Avonmouth docks and this proximity determined the defensive features that were allocated to Weston in 1940-41.

The defences built were based on the concept of different phases of attack on an airfield, the first three being: Phase I attack from the air; Phase II: paratroops land on airfield; Phase III: further enemy troops landed in transport aircraft (Dobinson 2000b, 23). The defences identified at RAF Weston can be viewed in these terms. One aspect of the groundwork carried out with the conversion of the airfield to RAF use included the improvement of the drainage of the area. This work entailed the realignment of the Cross Rhyne to the south and was underway in September 1940. At approximately 7.5m wide, the new Cross Rhyne was wider than the ditch it replaced. It also formed the southern boundary of RAF Weston (an area that included the shadow factory) and the evidence for the aerial photographs suggests that it was engineered to also act as defensive line protecting the airfield (Fig 86). This is particularly noticeable at the points where two bridges cross the rhyne into the airfield (Winterstoke Road and Moor Lane). Pillboxes and earthen gun emplacements were positioned at both these locations and the wider area around the entrances enclosed, possibly by barbed wire. These defensive measures at the entrances can be seen in place in July 1942.

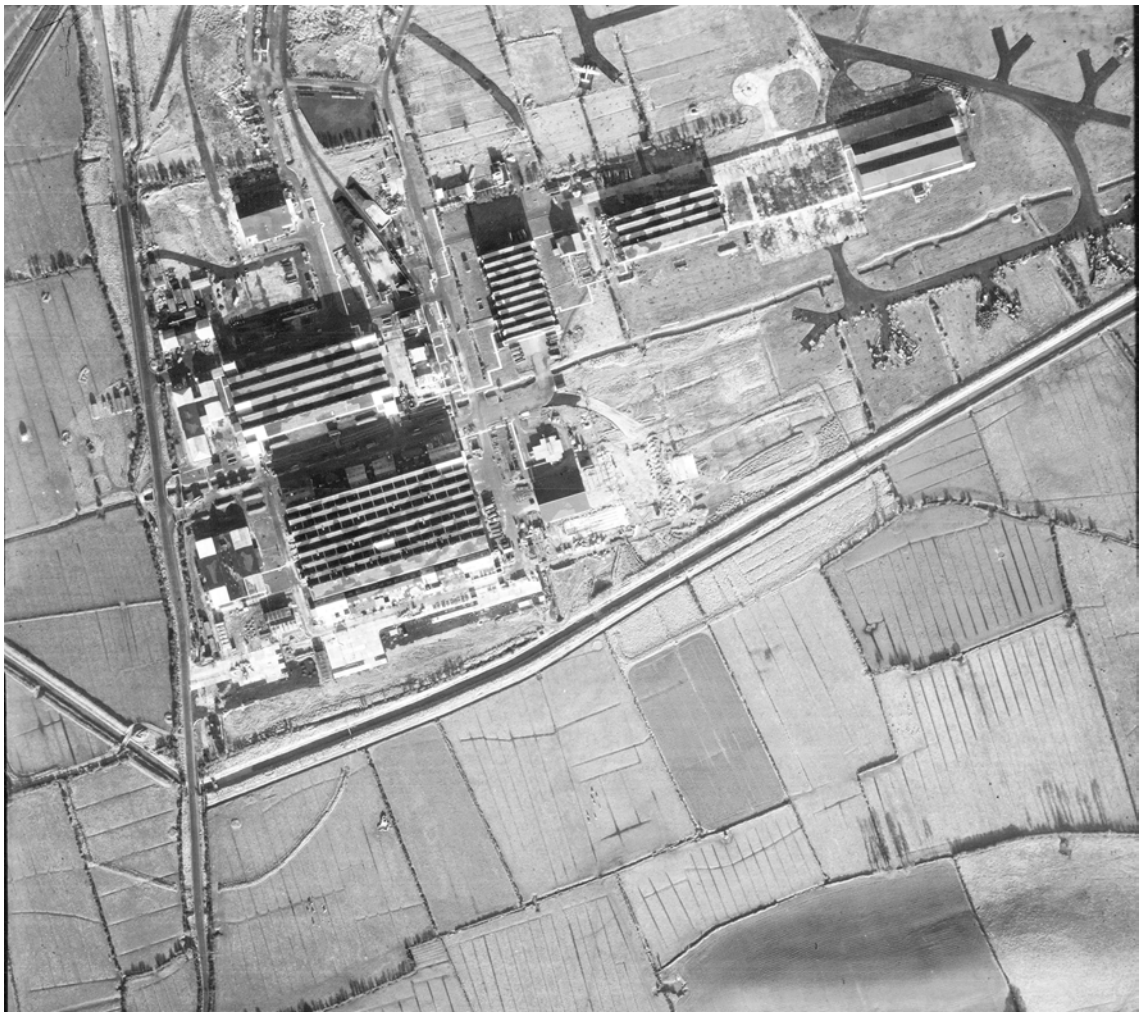

Figure 86 Detail of Great Rhyne forming the southern boundary to RAF Weston. Detail of RAF/3G/TUD/UK/21 V5253 13-JAN-1946 Historic England Archive (RAF Photography)

A number of light anti-aircraft gun emplacements are recorded for RAF Weston and these are concentrated near the buildings at the south-west of the site. The guns provided defence from air attack in conjunction with a large group of barrage balloons. Over 20 barrage balloon sites have been identified on aerial photographs (Fig 87) and these are clearly arranged around the airfield even though some are over 1km from its perimeter. The balloons do not form a single ring but instead are grouped in such a way as to suggest an inner and outer line. For example, two balloons on ridge of Bleadon Hill are over 1.5km from southern edge of airfield. Between these and the airfield was a line of a further five balloons on the northern slopes of Hutton Hill.

The distribution of balloons is densest on the south and east sides of the airfield. The barrage balloons are first seen on aerial photographs taken in 1942 and are either grounded or flying. The sites themselves followed a relatively regular layout and consist of the tethering points that are arranged in concentric circles. Associated with the tethering points are huts, gun emplacements and an approach road laid out in a loop. All of the barrage balloon sites include a variation on this arrangement

and can be identified on post-war photographs after the balloons have been removed.

Figure 87 A barrage balloon on the western edge of RAF Locking photographed in 1942. RAF/FNO/37 V 6028 11-JUL-1942 Historic England Archive (RAF Photography)

Discussion

This chapter presents a picture of Weston during the Second World War based on what the aerial photographs reveal. Some features are too small or hidden away and cannot be seen from the air. Examples include the small Anderson shelters built in back gardens and air raid shelters constructed within buildings. Other aspects of Weston's wartime story were not seen from the air. The build-up of troops and equipment in the town prior to D-Day does not form part of this report as this took place during a period when no aerial photographs were taken of the town; there is almost a two and a half-year gap in photographic coverage between July 1942 and December 1944. Despite these omissions, there are photographs from Second World War RAF reconnaissance sorties flown over the town in 1940, 1941, 1942, 1944 with additional detail derived from post-war reconnaissance flights in 1945 and 1946 after which date much of the wartime installations were removed.

It is not clear what level of documentation exists of the creation, maintenance and demolition of a wide range of wartime features within Weston such as air raid shelters and EWS. However, the emphasis was on local authorities to carry out this work and any surviving documentation may be held locally. At a national level, the government did provide guidance, but the potential absence of local documentation highlights the detailed and perhaps unique view of Weston during the Second World War the aerial photographs provide.

In contrast to civil defence structures, wartime documentation provides a range of information about HAA batteries, not only at a national level, but also at a local level with specific detail about the location and composition of the batteries established in Weston. Even so, aerial photographs still add to our understanding of these sites. They reveal detail that may not be recorded elsewhere, such as the number and exact location of a battery's accommodation huts. They may also fill some of the gaps left by the documentation. This may help tighten the chronology of a site, but can also add more detail. The published summary of Weston's HAA provision based on AA Command documentation ends at 1943. As a result, it provides no account of the additional gun emplacements constructed at Uphill and Woolvers.

Gaps in the revision of Ordnance Survey mapping also allow the wartime and post-war photographs to illustrate features that do not survive long enough to be included in the post-war map editions. In that sense, almost all wartime features are short-lived, but some, such as bombsites are more ephemeral still. While the 1953 Ordnance Survey map does reflect one aspect of the war by indicating ruins within the town, many of the bombsites cannot be identified from the map alone. Some of the official bomb damage maps of Weston are missing and aerial photographs can help to fill-in the picture. Although only major bomb damage can be identified on aerial photographs, they do provide a more nuanced view of the extent of the damage than the official maps that merely number each site.

The value of aerial photographs and documentary records clearly varies depending on what aspect of the wartime landscape is being researched, but a fuller picture can be gained by using both sources. The identification of wartime features highlights areas where further work can be undertaken, whether fieldwork or archival research. The remains also point to other aspects of wartime Britain. The large number of barrage balloon sites and the HAA sites around the town remind us of the significant role women played in the war. Women serving in the Axillary Territorial Service were increasingly responsible for the operation of barrage balloons sites and carried out much of the work in the HAA battery command posts to track enemy aircraft and feed this information to the guns (Dobinson 2001, 312-4).

The wartime aerial photographs also provide arresting images of Weston at war, whether it is a HAA battery on the golf course, a photo of a bomb-damaged building or the lines of aircraft at the RAF stations. The importance of Second World War sites to communities has been outlined by Schofield (2002) and some sites such as D-Day embarkation points have become the focus for acts of remembrance (ibid, 153). For Weston-super-Mare, where little survives, the results of this aerial survey can provide a link to the town's war years that is no longer available through physical remains.

WORLEBURY CAMP

Introduction

Worlebury Camp is situated at the western end of Worle Hill. Worle Hill is an east-west promontory that comprises of a series of Carboniferous limestone beds and a band of basalt lava steeply dipping south-southeast on the axis running the length of this hill. At this location, the ground falls steeply away to the north and west, with a gentler, although still steep slope, to the south and level ground to the east. Situated to the north of Weston-super-Mare, this fort - which is a scheduled ancient monument - overlooks Weston Bay to the south and Sand Bay to the north; to the west, the Bristol Channel with the islands of Steep Holm and Flat Holm and views of the Welsh coast about 13km away.

Figure 88 Worlebury Hillfort in 2016. Part of the eastern ramparts can be seen in the clearing on the left.33066_037 16-AUG-2016 © Historic England Archive

This project is just one of a number of pieces of work carried out on Worlebury hillfort since at least 1791 (Burrow 1981, 216). A plan of the hillfort was published by Revd F Warre in 1851who also undertook excavations on the site (Warre 1851). Archaeological work undertaken in the 1880s by Charles Dymond and Henry Tomkins involved both excavation and survey. The resulting publication: *Worlebury: An Ancient Stronghold in the County of Somerset* is considered a major work and perhaps the first monograph on a British hillfort (Burrow 1981, 216). The hillfort is also discussed by Arthur Hadrian Allcroft in a work that includes a cross section of the rampart at the eastern end, and a plan of the eastern part of the hillfort (Allcroft 1908 179-181; fig 54, E; fig 66). A discussion of the hillfort in the

Archaeological Journal reprints Dymond & Tomkins description of the site and a ground plan by Dymond (*Archaeological Journal* 1930, 473-475).

Much of the promontory, including the hillfort, is wooded, the trees planted by John Hugh Smyth-Piggott in the 1820s (Baker 1911). The Revd Warre, writing in 1851, laments the planting of these trees across the hillfort and notes that in the 20-30 years since they were planted they 'have grown so much, as to render it impossible to perceive the plan of the fortifications at one view' (Warre 1851, 72). The tree cover also hides most of the hillfort from aerial photography. Relatively few of the aerial reconnaissance sorties over Weston cover the area of the hillfort, but the photographs that were taken confirm Warre's comment that Worlebury cannot be seen in a single view. For much of the second half of the 20th century, only glimpses of the ramparts could be seen in small clearings in the trees (Fig 88-90).

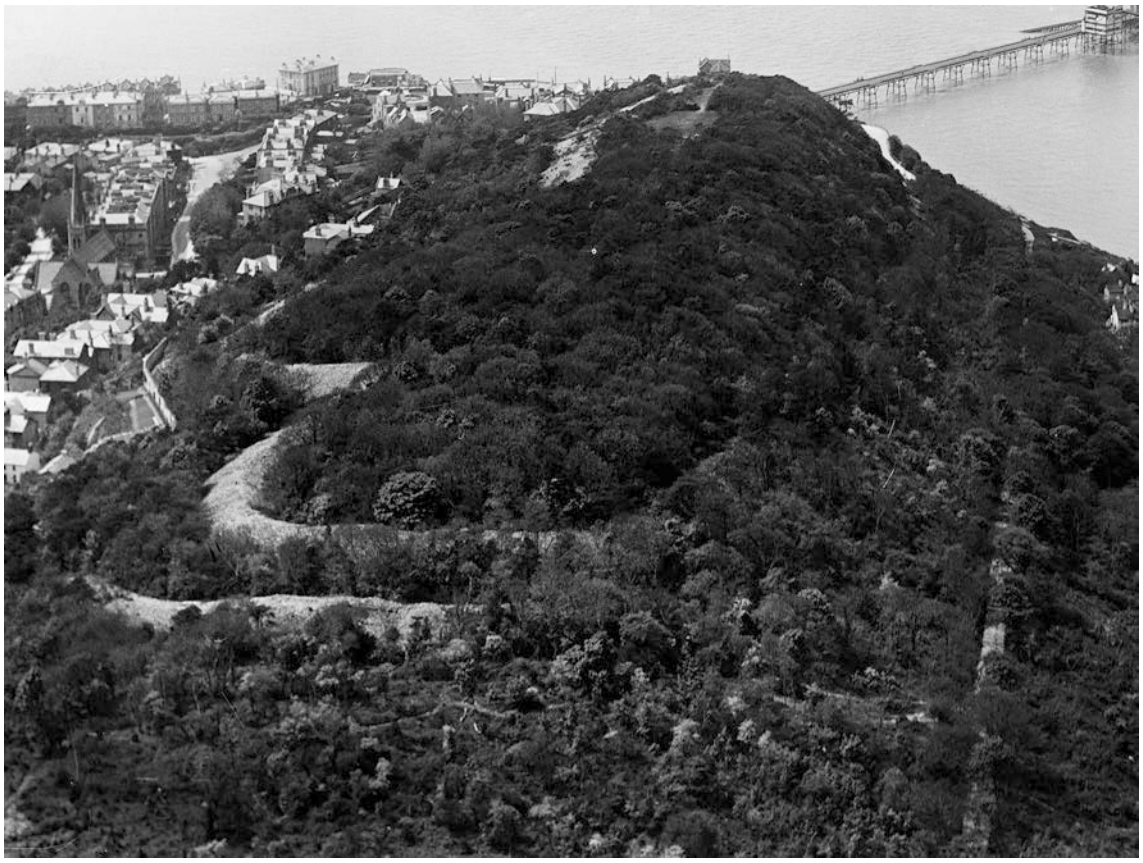

Figure 89 Worlebury Hillfort in May 1920. AFL 60014/EPW001052 May-1920 © Historic England (Aerofilms Collection)

Figure 90 Only one line of the southern rampart and parts of those to the east can be seen in the clearing in the trees on this aerial photograph taken in the 1950s. Detail of RAF/58/2180 F42 63 27-MAY-1957 Historic England Archive (RAF Photography)

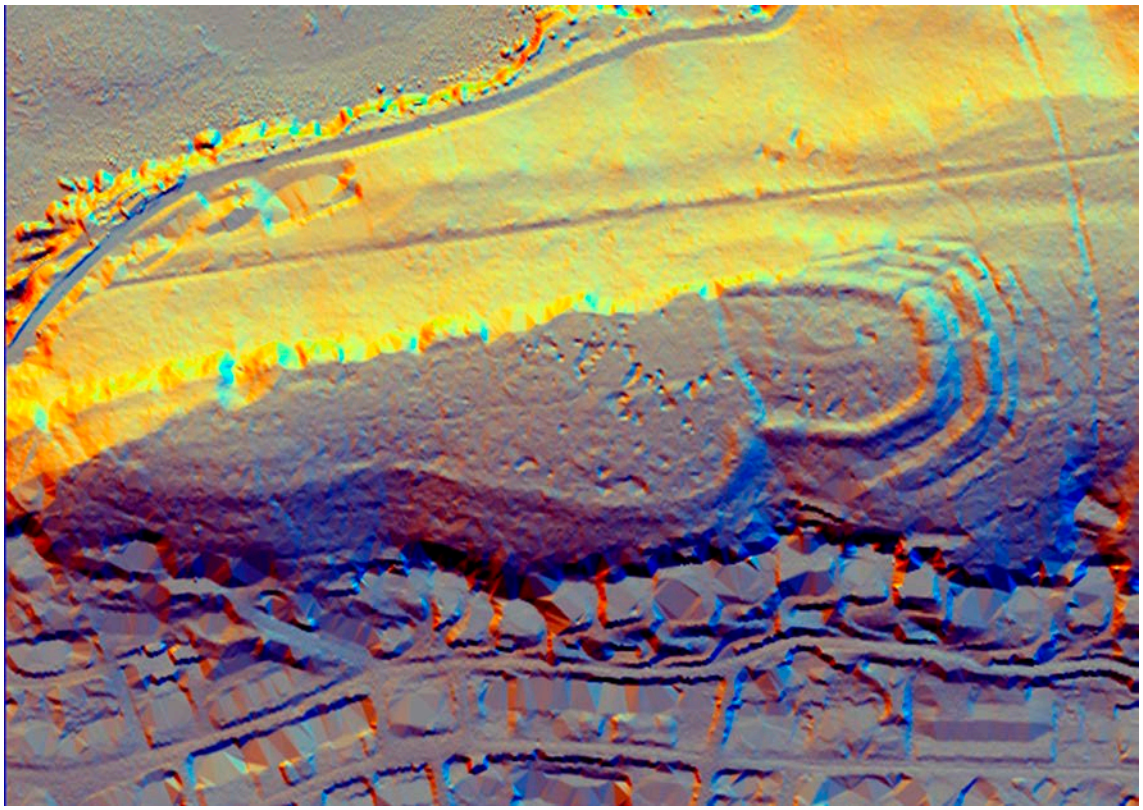

Figure 91 Worlebury hillfort seen on lidar 16 Direction hillshade model 1m resolution. LIDAR ST3162 Environment Agency DTM JAN-FEB 2010 © Environment Agency copyright 2010. All rights reserved

Lidar provided an aerial view of the complete hillfort (Fig 91), after the trees were removed from the image, to reveal the ground surface beneath (For a discussion of the methodology see Appendix 3). The lidar is the basis for the mapping and discussion of this site.

Figure 92 Mapping of hillfort from lidar © Historic England; © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100019088.

The hillfort is largely defined by stone banks and rock cut ditches. Multiple banks and ditches define the eastern end, enclosing an area of approximately 4ha (Fig 92). These banks all appear to have collapsed to varying degrees. The southern side appears particularly low and widely spread. In contrast, the inner eastern banks appear more substantial. Within the interior of the hillfort are numerous pits, many of which were excavated by Revd Warre in the 1850s and left open. There is also a ditch aligned approximately north-south that appears to subdivide the interior. A number of accounts describe three entrances (Allcroft 1908, 179; Evans 1980, 12). However, only one of the breaks in the ramparts that were identified on the lidar appears to be original, but from the ground, this interpretation seems doubtful (M Bowden pers comm). The hillfort appears to be of at least two phases and this chapter will consider which elements may represent the earlier phase and which may have been added later in the Iron Age to create the developed hillfort that survives today.

The hillfort development

The promontory slopes gently westwards from its highest point of 115m OD. The hillfort does not enclose the highest land but instead occupies the western end of the promontory over 1km west of the summit. The eastern end of the hillfort is 95m OD; the western end is approximately 60m OD. A cliff approximately 20m high extends for over 500m on the northern side of the promontory. This cliff is formed from the exposed harder volcanic Basalt layer situated between two beds of limestone. (Fig 93). This imposing sheer-faced cliff may have been the focus for the earliest enclosure on Worlebury Hill and incorporated to form its northern side.

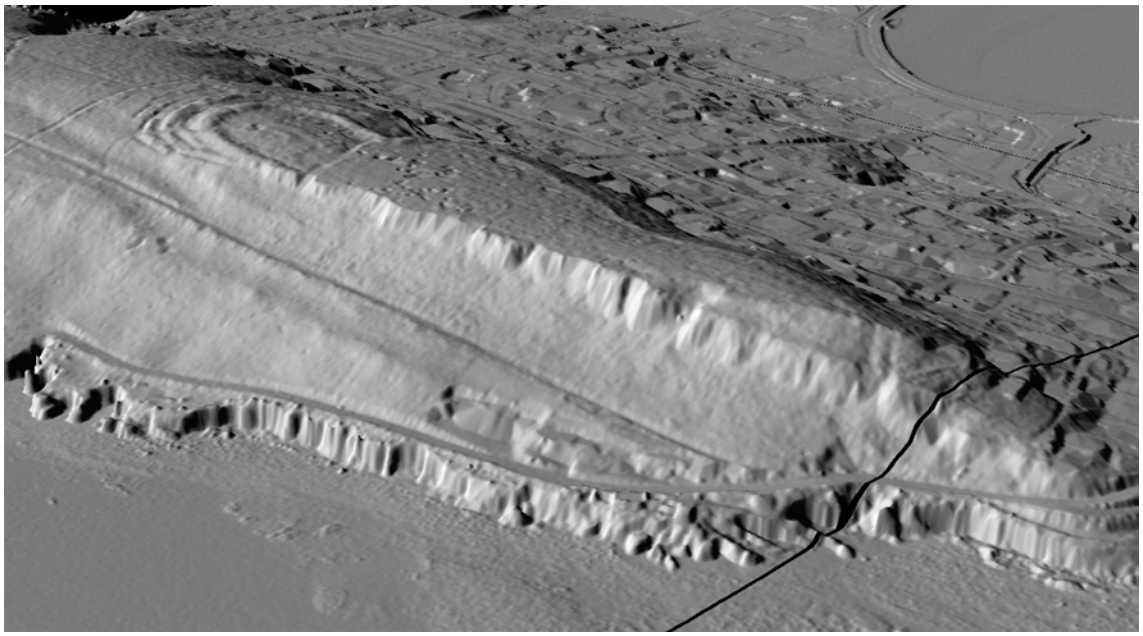

Figure 93 Lidar model looking at Worlebury from the north-west. LIDAR ST3062, ST3161, ST3162 Environment Agency DTM JAN-FEB 2010 © Environment Agency copyright 2010. All rights reserved

If the cliff was the focus for the earlier hillfort, then the ditch that cuts across the interior towards its eastern end may have formed the original eastern end (Fig 94). This ditch is aligned on the coombe on the southern side of the hill and this coombe has the effect of narrowing the ridge of the promontory to approximately 90m at this point. The southern rampart curves north-east along the edge of this coombe toward the possible entrance and the ditch appears to initially continue the line of this curve as far as the centre of the promontory. From that point, it continues on a slightly different alignment to the northern boundary cliff.

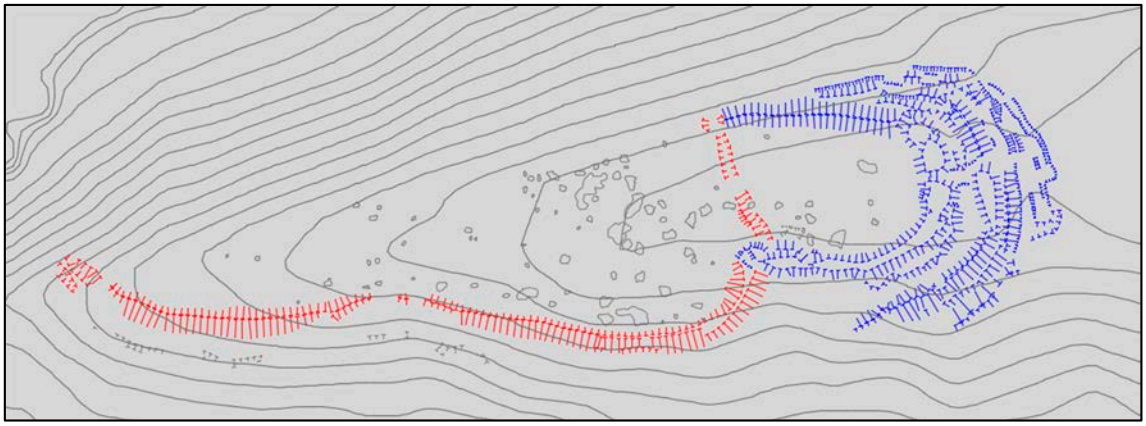

Figure 94 One suggested early phase (red) © Historic England; © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100019088.

An alternative interpretation is that the smaller eastern part of the enclosure formed the original hillfort and later development extended the hillfort along the promontory to the west and added banks and ditches to the east. However, this interpretation means that the original design made no use of the cliff on the northern side of Worlebury Hill.

Assuming the early phase was that shown in Fig 94, the hillfort was extended eastwards with a rampart integrated with the main enclosure. Beyond this, six banks and ditches form a series of reverse-C shapes that echo the eastern end. Each successive bank is smaller than the last – the inner is approximately 10m wide, the most easterly approximately 2m. The smaller banks do not show up well on the lidar, presumably due to vegetation cover and the relatively low resolution of the lidar survey.

A cross-section of these ramparts is published in Forde-Johnston (1976, fig 83). This gives the impression of a neat uniform sequence of ever-smaller banks and ditches extending beyond the main enclosure. However, overall there is a degree of variation in the shape and size of these banks and ditches. These are based on the curve of the eastern end of the fort, but are also influenced by their location on the ridge of Worlebury Hill.

Figure 95 shows the limited space available for additional ramparts on the northern side when compared to the east and south. To construct multiple banks and ditches on the northern side meant reducing their width. Bank 2, which is approximately 16m wide, on the eastern side is reduced to c.7m on the north. The ditch to its west was similarly reduced to fit. This reduction allowed bank 3 to be continued on the northern side. Without the reduction in width, only two banks could have been constructed there.

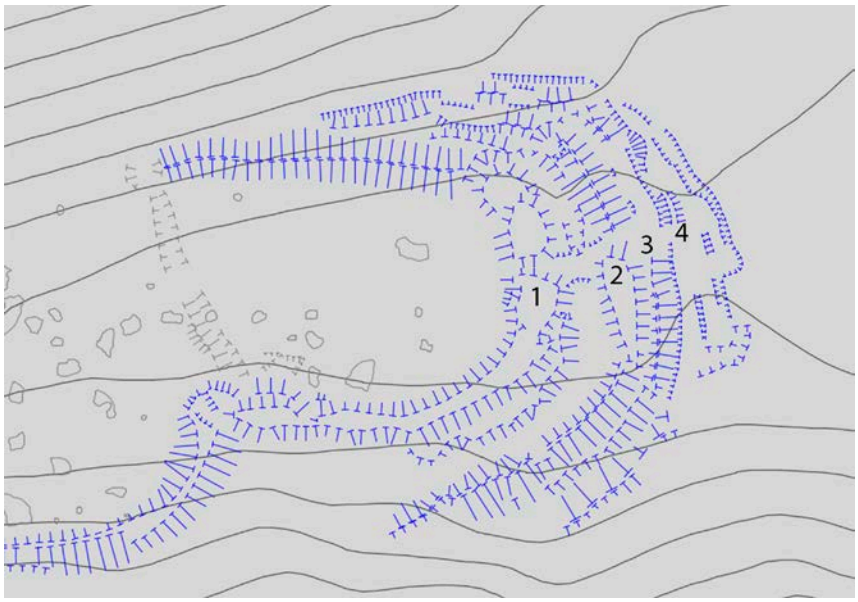

Figure 95 Eastern end of hillfort. © Historic England; © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100019088.

The final layout emphasises the importance of appearance in hillfort development over what could be considered more practical aspects of bank and ditch size. That the eastern end of this hillfort should be seen to be defined by multiple banks and ditches appears to have been of greater importance than the dimensions of these features (Fig 96).

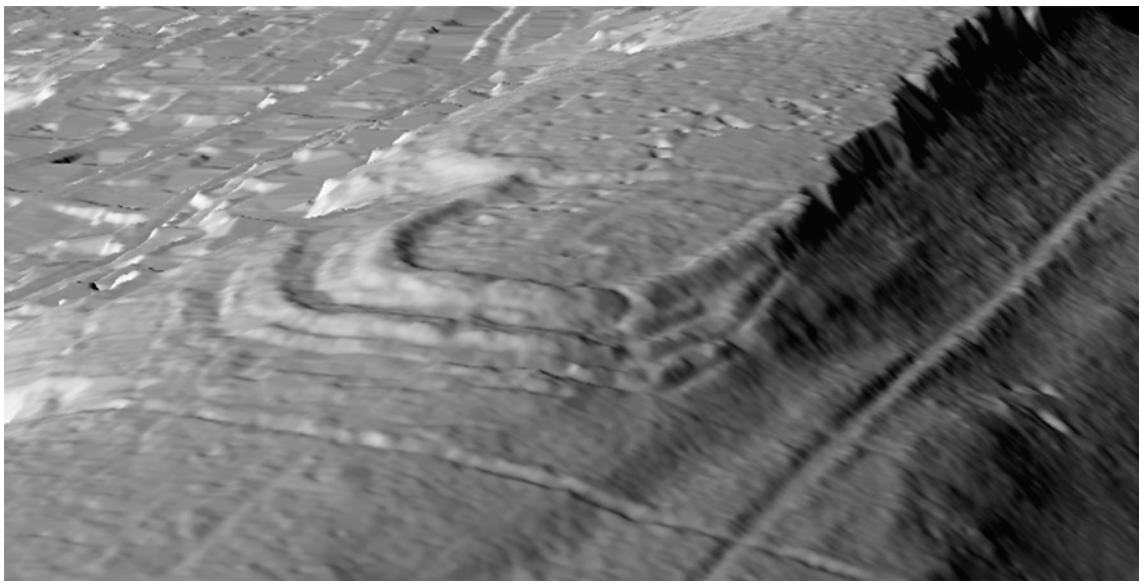

Figure 96 Eastern end of hillfort from north-east. LIDAR ST3162 Environment Agency DTM JAN-FEB 2010 © Environment Agency copyright 2010. All rights reserved

Because the northern side of bank 1 followed the eastward course, rather than continue the north-eastern line of the cliff, a small triangle of land was made available upon which the later ramparts were built. If this was deliberate, then the inner and additional ramparts at the eastern end are likely to be of the same phase.

The lidar also provided a more detailed view of the interior of the hillfort than is possible from the aerial photographs. The earthworks of a number of pits within the interior and some of these correspond to the storage pits excavated in the 19th century. However, the low resolution of the lidar means that these are poorly defined and small groups of closely spaced pits show as single larger depression on the lidar. Some of the depressions identified on the lidar may be the remains of small scale quarrying for limestone or perhaps calamine and further evidence of quarrying can be seen on the lidar all across Worlebury Hill.

Although it has been tentatively suggested that the internal ditch cutting across the interior of the hillfort may be part of the original Iron Age hillfort boundary ditch, it could equally be earlier or later in date. This ditch cuts across the top of the hill and is aligned on a coombe on southern side of the hill. This relationship with the natural topography is also seen to the east of the hillfort. There a large area of the hill is enclosed by a ditch and fragmented bank (Fig 97). This ditch is of uncertain date or function but appears to have a direct relationship with the coombes on the hillside. On the northern side the two ditches are approximately 75m apart and

extend down to the coast. They are located either side of a coombe **A**. These ditches run parallel up the hill but begin to diverge as they near the highest point, each heading for a different coombe (**B** & **C**). Once the edges of the coombes have been reached the ditches turn towards each other and meet on the southern slope. Although apparently forming an enclosure the position of the banks associated with these ditches varies. The bank is on the inner side of the eastern and southern part of the ditch and the outer side of the western ditch. As such they could be interpreted as facing outwards, those across the ridge facing east, on the slope facing south. This feature is undated but may be Bronze Age in date and so pre-date the hillfort. It is possible that the ditch within interior of the hillfort is contemporary with these ditches.

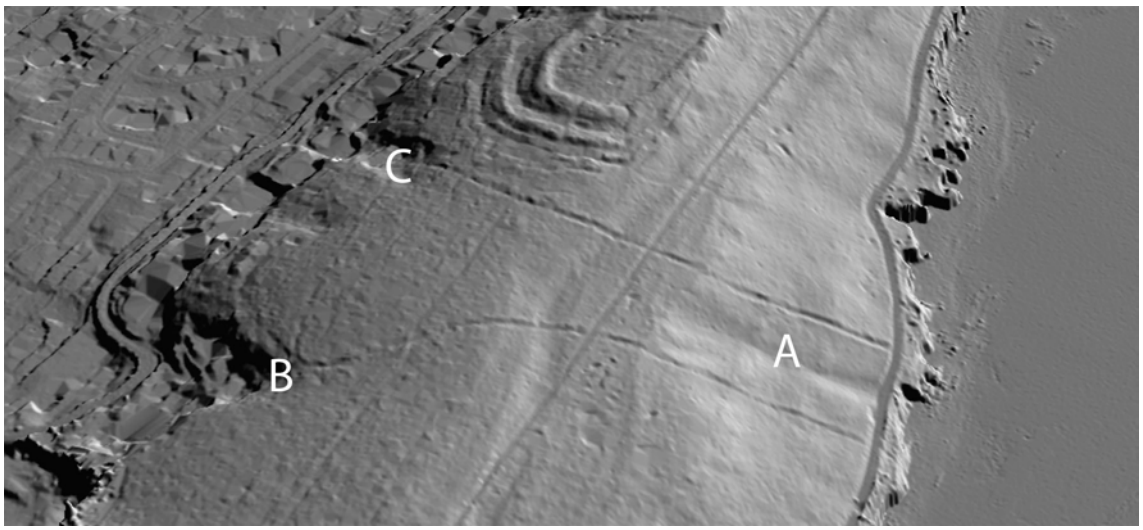

Figure 97 Earthwork enclosure on Worlebury Hill. LIDAR ST3162 Environment Agency DTM JAN-FEB 2010 © Environment Agency copyright 2010. All rights reserved

Discussion

Although an exact sequence of development of this hillfort is not clear from the aerial evidence alone, it is likely that that the hillfort is of at least two phases. Barry Cunliffe's narrative of Wessex hillfort development (Cunliffe 1984; Payne et al 2006) can be cautiously used to provide a basic narrative for Worlebury. Some of the aspects of Worlebury thought to belong to its first phase, such as the single rampart and size of just under 4ha, do fit with the criteria for early hillforts (built during the Early Iron Age *c* 600-350BC). Those hillforts that continued in use into the Middle Iron Age (*c* 350-100BC) were altered in a variety of ways to create what are termed *developed hillforts*. Worlebury has examples of these enhancements in the form of additional ramparts and the enhancement of its entrance.

This above chapter provides observations and tentative interpretation of the remains of Worlebury Hillfort. The degree of detail in a lidar image depends on a number of factors (Historic England 2018). The main factor is the level of capture in the original survey, but the time of year is also important; for example, less detail can be recorded in the summer when the trees are in leaf. Worlebury Hill is largely covered by Weston Woods, lowland mixed deciduous woodland but with a very

small percentage of yew trees. The Environment Agency lidar used for this survey of Worlebury was not taken for archaeological purposes, but fortuitously, it was flown during the winter. The lidar was captured at 1m resolution but to maximise the information derived from a lidar survey, a site such as Worlebury would benefit from an *archaeological* lidar survey of a much higher resolution. A more detailed digital model of the hillfort has subsequently been obtained from a ground-based laser scanning survey undertaken by Cotswold Archaeology (Cotswold Archaeology 2018). Worlebury is to be the subject of an analytical field survey to be undertaken by Historic England.

ARCHAEOLOGICAL INVESTIGATIONS OF WESTON

Worlebury hillfort tells us something of the prehistory of this part of North Somerset, but when all types of archaeological investigation are considered, the archaeology of Weston-super-Mare and surrounding areas appears understudied. Martin Bell commented on the scarcity of evidence for Neolithic and Bronze sites in the area in his monograph on the Brean Down excavations, south-west of Weston (Bell 1990, 255; fig 159). Many of the distribution maps published in *The Archaeology of Somerset* further highlight the relative lack of known archaeological sites and small finds around Weston-super-Mare (Aston & Burrow 1982). Weston does not appear in early documentation such as the Anglo-Saxon land charters (Hill, fig 11.1) and is not mentioned in Domesday Book by name (Russett & La Trobe-Bateman 1999, 3). However, there is evidence of 11th or 12th century castles nearby such as the motte and bailey castle at Locking Head and Castle Batch motte at the eastern end of Weston. Archaeological excavations, extending back into the 19th century, but mainly undertaken in the last ten years (and reported on in the Somerset Archaeological and Natural History Journal), provide evidence of prehistoric, Roman and medieval sites in and around Weston. In addition, a detailed archaeological assessment of Weston-super-Mare was published in 1999 (Russett & La Trobe-Bateman 1999). These demonstrate that the area was probably inhabited from at least the Bronze Age (*c* 2600-700BC), if not earlier; the Neolithic (*c* 4000-2200BC) represented by an axe (Minnitt1982, fig 4.2) and pottery and an arrowhead that were recovered during excavations on Brean Down (Bell 1990). Worlebury Hill was the location of a since destroyed Bronze Age cairn known locally as Peak Winnard or Pickwinna (Rutter 2009 (1829), 54). There are Bronze Age burial mounds on Brean Down to the south-west and on Bleadon Hill to the south (Ellison 1982, fig 6.3). Bronze Age pottery, including cremation vessels, was discovered in Weston's town cemetery in the 19th century. This suggests that there was Bronze Age settlement in the area.

There is evidence of prehistoric fields within the project area broadly comparable to those on Brean Down to the south-west, Sand Point/Middle Hope to the north and Bleadon Hill to the south. An area of fields was reported to have been to the west of the town cemetery on the south side of Worlebury Hill in an area now under houses (Fowler 1978). Another area of fields survives as fragmented low earthworks on the eastern end of Worlebury Hill, in an area now largely occupied by Worlebury Golf Course. These earthworks are visible on aerial photographs, but lidar has added additional detail. Fragmented banks seen on lidar within woodland further west on Worle Hill may also be part of prehistoric or Roman field systems and may be the boundaries identified during a 2013 field survey (Morrisey 2014, 148). Bronze Age metalwork finds of axe heads have also been noted in the area (Bell 1990, 255; Colquhoun 1978).

Both Worle Hill and Brean Down provide elevated areas above the Somerset Levels suitable for settlement, with those living there able to use the levels for grazing livestock. Other elevated areas within the project area include Uphill and it has been speculated that a Bronze Age settlement could have been sited there based on the small finds and two burial mounds located in that area (Bell 1990, 255).

Excavations and radio carbon dating have provided evidence of a range of Iron Age (*c* 800BC-43AD) burials, some of which are relatively close to Worlebury hillfort. Pit burials were discovered at the foot of Worlebury hillfort in the 19th century (Young 2008, 76). A single crouched inhumation and pottery were found in a pit during excavations at St John the Baptist church, on Lower Church Road a few hundred metres south-east of Worlebury hillfort (Broomhead 2007, 212). Further east on Coronation Road, Worle, a number of Iron Age burials were discovered in 1901. These represented at least two phases of burial as one burial was placed over two earlier pit burials. Despite the alignment of the later burial suggesting it may have been from the early Christian period, radiocarbon dating indicated that it was Iron Age (Aston et al 2012, 163).

At St George's, Worle, a range of features were excavated including evidence of peat cutting and ditches that are thought to be late prehistoric or early Roman in date. The ditches may have been associated with salt making and their existence highlights the low-lying floodable nature of much of the land between Worlebury Hill and Bleadon Hill. Other excavated features at St George's suggest a Roman settlement at this location by the 3rd/4th century AD and a settlement in this location supports the view that reclamation of the marsh had taken place there; thought to have been carried out around the 3rd century AD (Cullen 2005, 117-8). Further evidence of Roman salt making at St. Georges was excavated in 2009 (Gilbert 2010, 205-6). Further west, possible Roman postholes and a ditch were recorded during a field evaluation at Lypston Farm, Worle (Holmes 2005, 117). These few results suggest similar land use to that recorded to the south of Brean Down and the Mendip Hills. A survey of the archaeological evidence by Leech & Leach demonstrated that the large area of land south of Mendip was periodically flooded and was the location of a number of salt making sites (Leech & Leach 1982, fig 8.3; fig 8.12).

A single burial found in Ashcombe in 1934 bridges the Roman and early medieval periods. Radiocarbon dating provided a date range of 428-580AD and the remains have been interpreted as 'a 'British' or late Romano-British person dating to before the arrival of Anglo-Saxon influence' (Aston et al 2012, 156).

Limited excavated evidence is dated to the medieval period. Small finds and excavated features indicate that salt making was still important to this area in the medieval period and may have been carried out at West Wick in the 11th and 12th centuries (Powell 2008, 165). The surviving earthwork of Castle Batch (Fig 98) and the motte and bailey at Locking Head show that they were probably strategic or manorial centres in the earlier medieval period.

Figure 98 Castle Batch in 2014. 29085_026 10-JUL-2014 © Historic England Archive

A range of evidence for fisheries along the Severn Estuary was identified through the *Severn Estuary Rapid Coastal Zone Assessment* (Crowther and Dickson 2008, 45-85). These ranged in date from the 10th century to the post medieval period, but in localised areas continue to the present day (ibid, 45). Weston-super-Mare has a long history of fisheries, and a fishery at Birnbeck is first mentioned in 1492 (ibid 78). However, there is a disparity between this sizeable industry and the near complete absence of remains on these aerial photographs. Aerial survey evidence for this industry was limited to the area of Birnbeck Island and no other features were identified in the intertidal zone of Weston Bay. A case study of Birnbeck Island (ibid 78-81) incorporating documentary evidence provides an overview of the importance of fisheries to Weston.

Evidence unique to Weston was the remains of Calamine mining on the south side of Worle Hill (ibid, 179). Here the earthworks of a series of small pits were identified across the eastern parts of the hill. Calamine is a zinc ore used in production of brass (an alloy of copper and zinc) and there is documentary evidence of its mining at Weston from at least 1568; the industry continued into the early 19th century,

The RCZAS project also mapped extensive evidence of Second World War activity along the estuary (ibid 192-216). Within Weston, this included air raid shelters, anti-invasion defences, anti-aircraft batteries, barrage balloons and emergency water supplies (EWS) for fighting fires. The Northern Mendip Hills project area partially overlapped with both RAF Weston-super-Mare and RAF Locking and parts of both these RAF stations (and other associated features) were mapped (Dickson and Priest 2009, 61-70).

This overview of the archaeology of the region has been based on a relatively selective review of the reported archaeological work in this area. A more extensive piece of research in and around Weston-super-Mare will no doubt provide additional examples of archaeological activity from a number of different periods. The most recent records of archaeological work in Weston have highlighted the potential for future discoveries across this area.

CONCLUSION

The aerial photographs are useful in showing different aspects of the development of Weston over the course of the 20th century. Many of the features discussed in this report were mapped in earlier aerial investigation projects. However, additional aerial sources including the smaller scale photographs and the lidar provided new information.

Additionally, a better context for some of the wartime structures was provided by the new mapping undertaken. This new mapping was dominated by the two RAF stations to the east of the town (RAF Weston-super-Mare and the training camp RAF Locking) as well as the wartime aircraft factory at Oldmixon. The Oldmixon factory also provided a link with the story of prefabricated housing and post-war residential development. A consideration of the non-military urban fabric was not a subject included in the earlier aerial investigation projects of Weston. This research has highlighted the value of historic aerial photographs in understanding post-war development.

Historic aerial photographs provide depictions of buildings and areas of Weston-super-Mare, particularly those that have been demolished or significantly changed. For some buildings or structures, the historic photographs may provide the only visual record. This is most likely to be the case for the numerous wartime structures built in and around the town in the early 1940s and demolished by the end of that decade.

The discussion in the chapter *Homes for All* and some of the results from the Aerofilms collection highlighted the information that can be derived from the aerial photographs taken between map revisions. This underscores the advantage of consulting aerial photographs in addition to historic maps. A gap of over a decade between map revisions either side of the Second World War coupled with Aerofilms flights and repeated RAF sorties over parts of the town meant that the aerial photographs provided a unique visual record of the stages of change in those years.

Inevitably, new questions have been raised about Weston-super-Mare as a result of this aerial investigation and mapping project. It is hoped that the mapping, monument records and this report will all contribute to further research into this town.

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APPENDIX 1: PROJECT PARTNERS

Led by North Somerset Council, the other partners are:

- Historic England
- Weston Town Council
- Homes & Communities Agency
- Weston-super-Mare Civic Society
- Weston Museum
- Weston Town Centre Partnership & Bid
- Weston College
- Weston Chamber of Commerce
- Federation of Small Businesses (Weston branch)
- Voluntary Action North Somerset (VANS)
- Great Weston Great Places programme team (if funding awarded)
- Heritage Lottery Fund (via Great Places or through alternative arrangements linked to specific projects)
- Arts Council England (via Great Places or through alternative arrangements linked to specific projects
- Heart of Weston Public Health Team
- Weston Town Centre Team (tbc)
- Avon & Somerset Police (tbc)

APPENDIX 2: HAZ PROJECT LINKS

https://historicengland.org.uk/services-skills/heritage-action-zones/weston-super-mare/

https://historicengland.org.uk/services-skills/heritage-action-zones/breathe-new-life-into-old-places-through-heritage-action-zones/

APPENDIX 3: METHODOLOGY

Aerial photographs

The aerial photographs consulted are held in the Historic England Archive. This important national collection includes historic and modern aerial photographs in either black and white or colour. They consist of negatives, prints and born digital images. Archaeologists took many of these photos, but most were taken by the Royal Air Force (RAF) and the Ordnance Survey for survey and mapping purposes. North Somerset Council's 1946 aerial photographs duplicate that held by Historic England (C. Lodge pers comm). The Cambridge University Collection of Aerial Photographs (CUCAP) is now closed and could not be consulted. However, both previous aerial investigation and mapping projects did access the collection. Most of those seen as part of the RCZAS were general views of the town and the wider landscape (Crowther and Dickson 2008, 14).

Traditionally, the archaeological use of aerial photographs has focussed on looking for cropmarks. These cropmarks form when plants over buried archaeology grow at different rates compared with the rest of the field. Usually this will mean crops growing over a ditch will still be green when the rest of the field has ripened to yellow. Alternatively, crops will parch yellow over buried walls while the rest of the field remains green.

Aerial photographs are also used to identify archaeological earthworks and military features. Earthworks show up particularly well if photographed during the winter months when the sun is low in the sky and long shadows are cast. The RAF aerial photographs taken in the 1940s have proved an invaluable source of information about Britain's Second World War landscape.

Oblique aerial photographs

Oblique aerial photographs are taken looking across the landscape at an oblique angle. They may be taken automatically from cameras mounted in an aircraft or with a handheld camera. All the oblique images captured by the RAF were taken from fixed cameras (these are referred to by the Historic England Archive as military obliques). The private company, Aerofilms Ltd, photographed different parts of Weston-super-Mare from the 1920 onwards and as these photographs were usually taken for commercial purposes, the focus was the seafront. In 2007, Historic England acquired the Aerofilms collection that covered England and these images are now routinely consulted as part of our aerial survey work. In addition, most of these aerial photographs have been scanned and are available to view online via the *Britain from Above* website (https://www.britainfromabove.org.uk/).

Historic England, and its predecessors, carried out a programme of aerial reconnaissance photography, from the 1960s to the present, using handheld cameras in high-winged small aircraft. This forms the core of the Historic England oblique aerial photograph collection and includes archaeological, architectural and landscape subjects. These targeted aerial photographs were taken with a specific purpose in mind, including recording new discoveries, providing a different perspective on known sites or recording condition. These will nearly always contain

archaeological or architectural information in contrast to the surveys carried out for non-archaeological purposes.

Vertical aerial photographs

Vertical aerial photographs are taken from cameras mounted facing straight down. The aircraft follows a set course and takes a run of photographs automatically, each frame overlapping the previous image by approximately 60%. An adjoining run will also overlap the previous one to ensure complete coverage of any given area. This overlap allows these photographs to be viewed stereoscopically, producing a 3D perspective with the aid of a stereoscope. Vertical photographs appear similar to maps but are not uniformly to scale across the entire frame. Before features can be transcribed from these images, vertical photographs are rectified.

The vertical aerial photographs used in this project consist of prints and digital images. The earliest vertical photographs of the Great Weston HAZ project area (in the Historic England collection) were taken by the RAF in September 1940. This is one of a number of sorties that were flown during the Second World War, but not all parts of the project area were flown every time. The RAF flew reconnaissance sorties over Weston every year (bar 1943) from 1940 to 1951 and again in 1954, 1956, 1957, 1959, 1960, 1962, 1963. The coverage varies year by year as does the scale at which the photographs were taken. For example, six photographs were taken in 1940, but at 1:54,000, although the entire project area is included, detail is very difficult to interpret (Fig 99). In contrast, 26 photographs were taken in May 1941. At 1:7,500 they are much easier to interpret, but they only cover the coastal area of the town.

Historic photographs show what could be termed 'lost landscapes'. They provide views of sites or structures that have since been demolished or destroyed. The 1940s aerial photographs also document the short-lived Second World War structures. Repeated aerial surveys over Weston during the second half of the 20th century and into the present century have recorded the changes this landscape has undergone. Vertical photographs in particular have documented the impact of the Second World War across Weston and the post-war development of the town, and as a result have been the main source of information for much of this report.

Figure 99 One of six photographs taken on 11 September 1940. This small-scale photograph shows much of Weston-super-Mare top left. To the bottom the meander of the River Axe.

RAF sorties flown between 1945 and 1949 were undertaken as part of a national aerial survey of Britain called Operation REVUE (Fig 100). The Ordnance Survey used these photographs to create a series of air mosaics at a scale of 6 inches to the mile (1:10,560). These were used to revise the Ordnance Survey maps, but the mosaics were also used by those involved in town and country planning to supplement the existing maps. The Ordnance Survey began talking their own photographs from the 1960s and these are held in the Historic England archive.

Figure 100 This RAF photograph was taken in 1946 at a scale of 1:5,000. Compare detail with Fig 2. Historic England Archive RAF Photography

Next Perspectives Aerial Photography for Great Britain (APGB), supplies Historic England with digital vertical photographs. Since the 1990s, a variety of companies have been commissioned to provide vertical photographic coverage of the country and much of this output is viewable online via providers such as Google Earth.

Lidar

Airborne laser scanning, more commonly known as lidar (light detection and ranging), has proved an invaluable tool for archaeological survey (Crutchley 2010;

Historic England 2018). For this project Environment Agency lidar at 1m resolution was used (where each pixel represents 1m on the ground). This provided a digital elevation model of Weston and the surrounding area and enabled the mapping of earthworks within the woodland on Worlebury Hill.

Lidar usually involves an aircraft-mounted pulsed laser beam, which scans the ground from side to side. The laser pulses bounce off the ground and features on the surface, and the speed and intensity of the return signal is measured. 'First return' is the term used to describe the first beams to bounce back, whether they hit the ground, a rooftop, tree canopy or bushes. Other beams will follow a path between the leaves and branches bouncing back from the ground (or a surface that allows no further progression), known as 'last return'. This data capture creates a 'point cloud', essentially individual points floating in space, which is then processed to create a precise Digital Elevation Model (DEM).

There are two primary forms of DEM. One is the digital surface model (DSM), which is effectively the result of the first return and reflects the highest points of the survey, i.e. tree tops, buildings etc. The digital terrain model (DTM) is what remains once the data has been processed using algorithms that classify the nature of the various returned points into those on the ground and those off ground thereby creating a bare earth model without trees or buildings. The denser the vegetation, the fewer laser pulses reach the ground, which affords less clarity to the DTM results.

The lidar was visualised in a number of ways. Primarily, the data was viewed live in Quick Terrain Reader, which allowed real-time manipulation of the view, false-lit sun angle and height exaggeration (for an example see Fig 93). Additionally, 2D visualisations of the data were produced using Relief Visualization Toolbox 1.3.1

A number of visualisations were created, the most commonly used being 16-direction hill shading (for an example see Fig 91 above), where the data is lit from multiple directions to allow better definition of earthworks on different orientations. This visualisation is the easiest to read and interpret with the human eye, giving a more understandable representation of the landscape as features are visible as light or shade as in a photograph.

A number of other forms of visualisation, including slope, local relief model and openness, calculated the data in a different manner, emphasising the height difference between points in the data and allowing an enhanced view of cut and large sloping features (Fig 101). For more information on lidar visualisations see Crutchley 2010 and Historic England 2018.

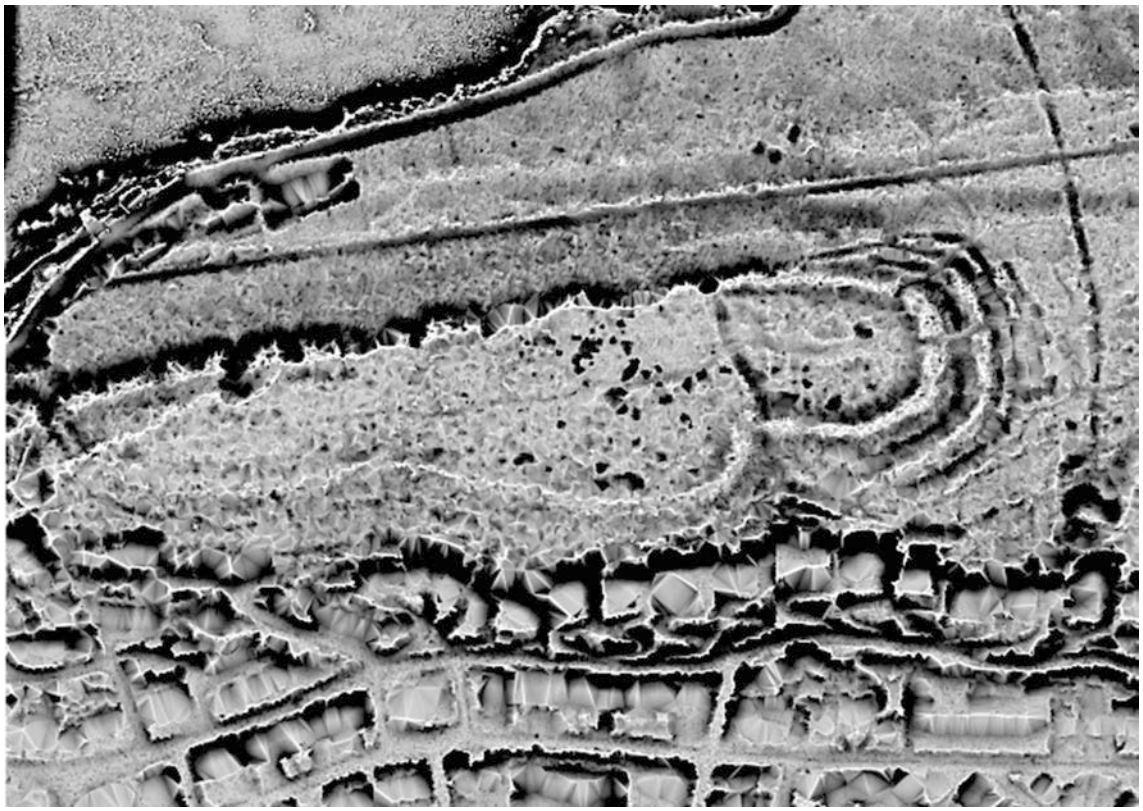

Figure 101 Lidar Openness Positive of Worlebury hillfort. Compare with lidar 16 direction of same view shown in Fig 91. LIDAR ST3162 Environment Agency DTM JAN-FEB 2010 © Environment Agency copyright 2010. All rights reserved

Rectifying images

Photographic prints showing archaeological features are scanned into a computer. As these are not of uniform scale across the frame, they need to be rectified and geo-referenced to match the Ordnance Survey map. This is done using the Aerial 5.36 program. The rectification process involves matching of features on a 1:2,500 Ordnance Survey digital map (the control) with the same features on the scanned aerial photograph. This gives an overall accuracy of plotted features of 2m or less to the true ground position dependent on the accuracy of the Ordnance Survey map. A digital terrain model (DTM) was incorporated into the calculation to compensate for undulating terrain. The lidar and many of the digital vertical photographs were already georeferenced so could be imported directly into our mapping software.

Mapping and recording

Archaeological features were transcribed from rectified photographs and lidar visualisations using AutoCAD Map 3D 2015 software. These were mapped on different layers based on the original form of the feature (bank, ditch, structure etc; Fig 102). This provides a basic understanding of the form of features that is unlikely to change. A monument polygon was drawn around groups of features corresponding to a single archaeological site or 'monument' and the monument number is attached to the mapped features.

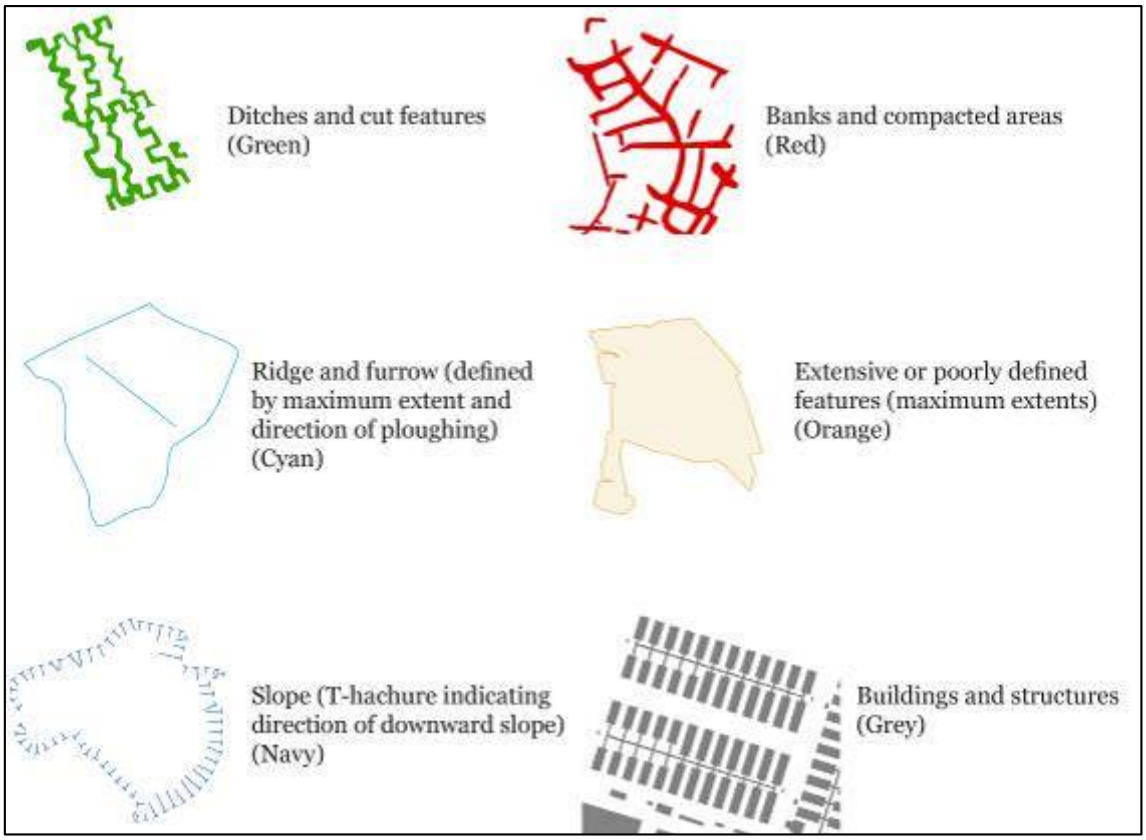

Figure 102 Mapping layers and conventions.

Each archaeological site was described in a monument record in the National Record of the Historic Environment (NRHE). Each record consists of a description of the archaeological site and an index of its type (air raid shelter etc.), its period (Second World War etc.) and the main evidence (demolished structure etc.). The main sources were listed including aerial photograph, lidar, historic map or written source where relevant. Where applicable, the record will also cross-reference with North Somerset Council's Historic Environment Record.

Accessing the data

Aerial photographs and digital or hard copy of the mapping is available from the Historic England Archive. The NRHE database can be accessed online via Pastscape (https://www.pastscape.org.uk/). Copies of the map and monument records are also deposited in the North Somerset Historic Environment Record. The North Somerset Historic Environment Record database can be accessed online via Heritage Gateway (http://www.heritagegateway.org.uk/gateway/).

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