



Historic England

Sunderland Heritage Action Zone An Assessment of the Historic England Archive Aerial Photographs

Matthew Oakey

Discovery, Innovation and Science in the Historic Environment



SUNDERLAND HERITAGE ACTION ZONE

AN ASSESSMENT OF THE HISTORIC ENGLAND ARCHIVES AERIAL PHOTOGRAPHS

Matthew Oakey

© Historic England

ISSN 2059-4453 (Online)

The Research Report Series incorporates reports by the expert teams within the Investigation & Analysis Department of the Research Group of Historic England, alongside contributions from other parts of the organisation. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, the Architectural Investigation Report Series, and the Research Department Report Series.

Many of the Research Reports are of an interim nature and serve to make available the results of specialist investigations in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation. Where no final project report is available, readers must consult the author before citing these reports in any publication. Opinions expressed in Research Reports are those of the author(s) and are not necessarily those of Historic England.

For more information contact Res.reports@HistoricEngland.org.uk
or in writing to:

Historic England, Fort Cumberland, Fort Cumberland Road, Eastney, Portsmouth PO4 9LD

SUMMARY

This report summarises the results of an assessment of aerial photographs held in the Historic England Archive for the Sunderland's 'Historic High Streets at Risk' Heritage Action Zone. The assessment covered just under 1sq km and encompassed the area of the Historic Area Assessment being carried out by Wardell Armstrong LLP.

The aerial photographs ranged in date from 1924 to 2017 and included oblique and vertical photography. Pre-war images provided an invaluable record of Sunderland before the Second World War air raids and subsequent large-scale redevelopment of the city. Several runs of good quality RAF verticals proved useful for identifying short-lived features relating to the war and for assessing the impact of bomb damage on the city. Post-war photography recorded several phases of demolition and rebuilding and vividly illustrated the changing character of the urban landscape. In particular the aerial photographs revealed significant detail that could not be gleaned from map evidence alone.

CONTRIBUTORS

The project was carried out by Matthew Oakey.

ACKNOWLEDGEMENTS

The photo loan was managed and delivered by Luke Griffin at the Historic England Archive. The author would also like to express his thanks to Elain Harwood and Joanna Smith for their advice on prefab buildings and Lucy Jessop for advice on housing.

ARCHIVE LOCATION

The Historic England Archive, Swindon

DATE OF RESEARCH

Jan-Feb 2018.

CONTACT DETAILS

Historic England
37 Tanner Row
York
YO1 6WP

E: matthew.oakey@HistoricEngland.org.uk

CONTENTS

INTRODUCTION	1
Project background	1
Methods, scope and sources	1
AERIAL PHOTOGRAPHY OF SUNDERLAND	3
The Aerofilms collection: 1924–1936	3
The Second World War: 1941–1942	6
Post-war photography: 1945–1948	6
Post-war photography: 1954–2017	6
INTER-WAR DEVELOPMENT	8
SUNDERLAND AT WAR	12
Barrage Balloon sites	15
Air raid shelters	17
Emergency water supplies	20
Bomb damage	21
POST-WAR REDEVELOPMENT	25
Redevelopment of the East End	25
1945–1948: Prefabs	25
1954–1964	28
1964-1970	31
The town centre and riverside	34
CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER WORK	39
REFERENCES	40

LIST OF FIGURES

Cover: An Aerofilms Ltd photograph of the Blue Star Line's SS Denis being towed past SP Austin & Son's shipyard (left of frame) in 1949. EAW021467 © Historic England Archive

Figure 1. Project area.	2
Figure 2. View of the museum and library in 1924.	3
Figure 3. View of the junction of Fawcett Street and Bridge Street in 1924.	4
Figure 4. View of Robsons Flour Mills and surrounding streets in 1924.	5
Figure 5. View east towards the docks from the East End in 1928.	8
Figure 6. Wear Garth and Burleigh Garth.	9
Figure 7. Burleigh Garth.	10
Figure 8. The Garths between Sans Street and Walton Lane.	10
Figure 9. The docks and Hendon in 1941.	12
Figure 10. Second World War features.	13
Figure 11. Location of barrage balloon sites.	15
Figure 12. Barrage balloon site in the grounds of Sunderland Orphanage.	16
Figure 13. Oblique photograph of inflated barrage balloons in 1944.	16
Figure 14. Communal surface air raid shelters in Charles Street.	17
Figure 15. Domestic surface air raid shelters.	18
Figure 16. Covered trench shelters in St Patrick's Garth.	18
Figure 17. Public shelters on Town Moor.	19
Figure 18. Public shelters in Mowbray Extension Park.	20
Figure 19. Emergency Water Supplies on Outram Street and Church Street.	21
Figure 20. OS map depicting cleared bomb sites and ruined buildings.	22
Figure 21. Map of cleared bomb sites from 1945 RAF photography.	23

Figure 22. Map of prefab houses.	25
Figure 23. Prefab houses on Town Moor.	26
Figure 24. Prefab houses around North Durham Street.	27
Figure 25. Prefab houses and associated gardens in 1948.	28
Figure 26. Map of housing developments in the East End.	29
Figure 27. Post war development under construction in 1958.	30
Figure 28. The East End in 2017.	31
Figure 29. The Coronation Street redevelopment area in 1964.	32
Figure 30. The Hendon Road development in 1970.	33
Figure 31. The Walton Lane redevelopment area in 1970.	33
Figure 32. Cleared bomb sites used as car parks.	34
Figure 33. The remodelled railway station and Union Street bus station.	34
Figure 34. Clearance in advance of the Town Central Area development.	35
Figure 35. The completed Town Central Area development.	36
Figure 36. Bomb damage around the riverside.	36
Figure 37. View east along the Wear in 1958.	37
Figure 38. The riverside in 1970.	38
Figure 39. Bomb damage between High Street East and the river.	38

INTRODUCTION

Project background

Sunderland's 'Historic High Streets at Risk' Heritage Action Zone (HAZ) was initiated in 2017 and is being led by Sunderland City Council in partnership with Historic England, the Tyne and Wear Building Preservation Trust, the Churches Conservation Trust and Sunderland Heritage Forum. It aims to help rejuvenate key parts of historic Sunderland, in particular the high streets and riverside areas, through heritage-focused regeneration. A Historic Area Assessment (HAA) is being carried out by Wardell Armstrong LLP as part of the HAZ which encompasses the HAZ along with a broader contextual area.

As part of Historic England's contribution to the HAZ an analysis of aerial photographs held in the Historic England Archive was undertaken by the Aerial Investigation & Mapping team, part of Historic Places Investigation within Research Group. This report summarises the findings of that work.

The aim of the aerial assessment was to provide specialist advice and information, principally to inform the HAA. Its specific objectives were to:

- Provide a record of Second World War activity visible on 1940s photographs.
- Assess the extent of bomb damage from 1945 RAF photographs.
- Assess what information relating to post-war redevelopment of the city could be gleaned from aerial photographs.
- Provide a summary of the potential of the collection for those undertaking the HAA and future researchers.

Methods, scope and sources

The project (Fig 1) encompassed the area defined for the HAA with an additional buffer for most of its perimeter: a total of just under 1sq km. Where possible the extents of the project area followed streets to maintain complete blocks of housing or other buildings.

Vertical and oblique aerial photographs held in the Historic England Archive, Swindon were assessed. A total of 482 vertical (to a maximum of 1:15,000 scale) and 233 oblique images, ranging in date from 1924 to 2017, were examined. Where possible, all photographs were viewed in stereo and under magnification. Digital images were viewed on screen; these included born digital images and high resolution scans of photographic prints. Selected features relating to the Second World War, including areas of bomb damage, were mapped using a schematic

convention. Phases of redevelopment in the East End were digitised from historic Ordnance Survey (OS) mapping with reference to the aerial photographs.

The assessment aimed only to provide a broad understanding of landscape change but finer-grained analysis of individual buildings or areas would be possible from aerial photographs. Recommendations for future research are included at the end of the report.

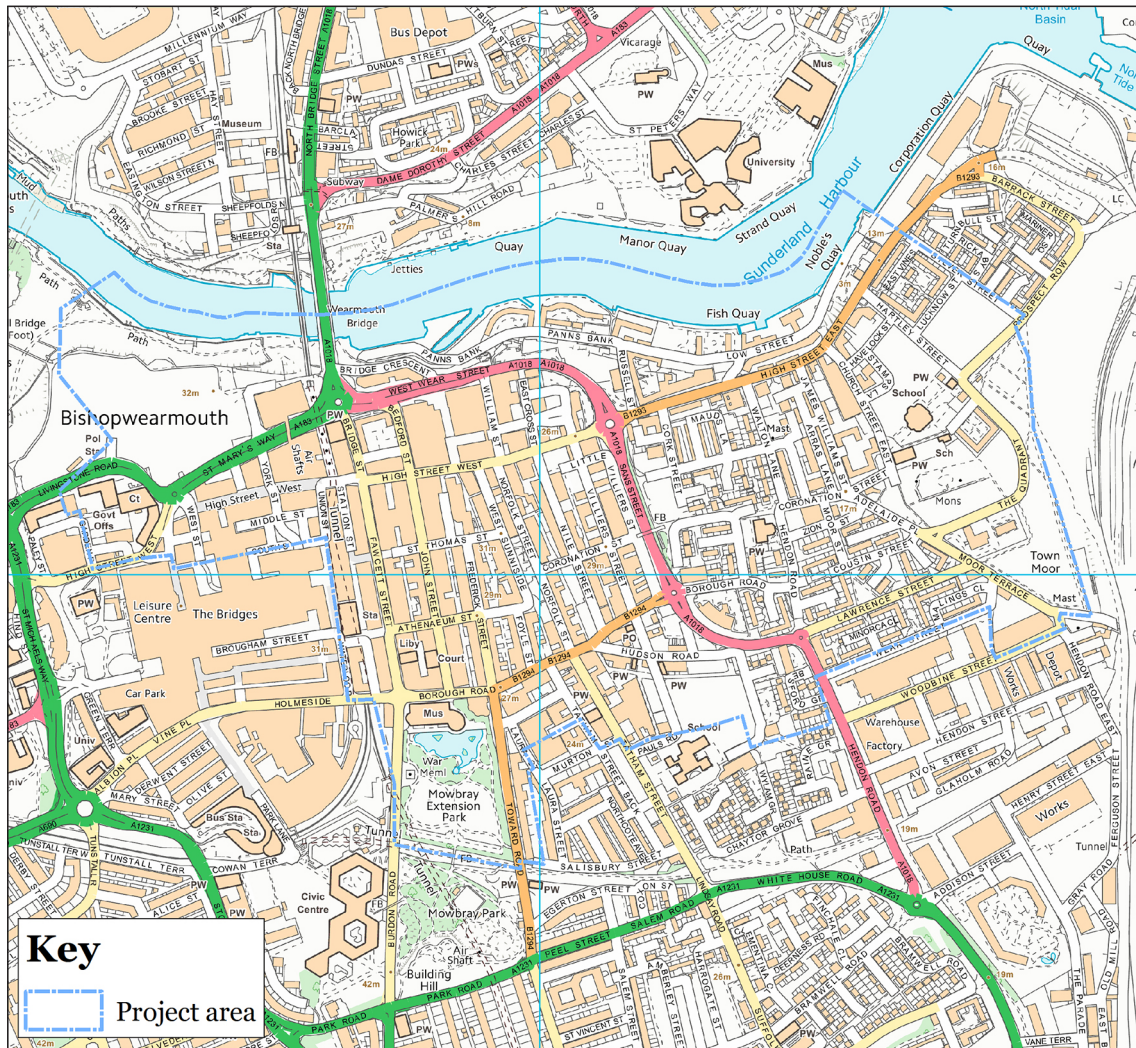


Fig 1: Project area. © Crown Copyright and database right 2018. All rights reserved. Ordnance Survey Licence number 100024900.

AERIAL PHOTOGRAPHY OF SUNDERLAND

The Aerofilms collection: 1924–1936

The earliest aerial images of the Sunderland project area held in the Historic England Archive are three low-level oblique photographs taken by Aerofilms Ltd late on a summer afternoon in April 1924. One shows a view northwards from the museum and library – complete with its now demolished winter garden – towards the railway station and the commercial district of Fawcett Street and John Street (Fig 2). This covers most of the present Sunnyside Conservation Area, with its distinctive terraces of housing. The second shows the junction of Fawcett Street and Bridge Street, lined with commercial premises with their unfurled shop awnings displaying the proprietors' names (Fig 3). A final image focuses on Robsons Flour Mills on Queen Street and the surrounding streets including Dunning Street, Green Street and Matlock Street. It also provides a view of the 18th-century Wearmouth Bridge before the construction of the current structure began in 1927 (Fig 4).



Fig 2: An Aerofilms Ltd photograph from April 1924 of the museum and library looking towards the railway station. © Historic England Archive. Aerofilms Collection EPW010379.



Fig 3: An Aerofilms Ltd photograph from April 1924 looking south-east towards the junction of Fawcett Street and Bridge Street. © Historic England Archive. Aerofilms Collection EPW010378.



Fig 4: An Aerofilms Ltd photograph from April 1924 of Robsons Flour Mills looking north-east towards the Wearmouth Bridge. © Historic England Archive. Aerofilms Collection EPW0103760

Aerofilms revisited Sunderland in 1928, this time taking several photographs of the docks. Although the images are of relatively poor quality, they capture the docks busy with shipping. Other details of interest include elements of the urban landscape that were lost in the 1930s programme of slum clearance and redevelopment such as the terraces between Hartley Street and Silver Street (*see* Fig 5). The docks and city centre were photographed again in July 1936 and these are the last aerial images taken before the outbreak of war in 1939.

These photographs are striking as they are not only early examples of aerial photography but they also provide a unique aerial record of Sunderland before the Second World War and the subsequent wholesale redevelopment of some areas, particularly the East End. Although limited in coverage, the images may prove useful for studying lost buildings and changing street patterns, and they may also have considerable potential as illustrative material for future publications.

The Second World War: 1941–1942

A series of vertical and oblique photographs were taken by the RAF in 1941 and 1942. These images are part of a wartime campaign of sorties covering much of the coastline of Britain and other areas of military significance. These images are commonly known as the ‘M Series’. Evidence for some of the early air raids can be seen but much of the city remained intact at this date. Some features relating to Second World War activity are visible, such as the communal air raid shelters on Town Moor, but the images pre-date the construction of other wartime features which are visible on later photographs (see below).

The focus of the sorties appears to have been the docks but there is more limited coverage of the entire project area. Some of the frames from these runs are obscured by cloud cover but others show the eastern parts of the city with considerable clarity (see Fig 9). The photographs are small-scale but details are visible when scanned at high resolution. Original prints from this collection are not loaned so only digital copies were available to the project.

Post-war photography: 1945–1948

No other images taken during the war are held in the archive but runs from 1945 record the city just a few months after the cessation of hostilities. Post-war photography also includes further images taken by Aerofilms in 1946 and 1949 as well as verticals from the RAF’s National Survey which was undertaken in the mid-to late 1940s (Barber 2011, 204–8).

Large-scale photographs dating from 1945 and 1946 were particularly valuable for assessing bomb damage and identifying short-lived features such as air raid shelters, emergency water supplies and barrage balloon sites. The scale enabled details to be seen, including ephemeral features such as cars, people and drying washing. These runs also capture a vivid record of the remaining shipyards on the south bank of the Wear. This photography is likely to be of particular value to anyone undertaking detailed studies of individual buildings or the wider built environment.

A series of low-level RAF stereo obliques dating from 1948 cover much of the project area. Again the quality of the images allows fine details to be picked out and these provide excellent illustrative material for those areas of the city that underwent significant change from the mid-1950s. They are also likely to be of use to those carrying out studies of buildings; they provide, for example, some of the clearest views of the now demolished Garths (see Fig 6). Aerofilms photography from October 1946 is of particularly good quality and again provides a record of the working docks. Vertical images from 1947 and 1948 are also of good quality although the 1947 runs are very small-scale.

Post-war photography: 1954–2017

Vertical photographs from 1954 and 1956 provided an invaluable record of the early redevelopment of the East End. Although the vertical photography is small-scale it is

still useful for analysing broad landscape change, especially where this fell between OS map revisions. RAF stereo oblique runs from 1958 cover the whole project area and it is again the record of the steadily changing East End that is potentially of greatest value. In particular, these photographs show details of buildings that cannot be gained from map evidence alone (see below) and also show some housing in the process of construction (see Fig 27).

Only two runs of vertical photographs from the 1960s exist, both taken by Meridian Airmaps Ltd in October 1965. The scale (1:11,000) limits their use for detailed analysis but broad changes in landscape character can be observed. As well as additional development of the East End, these images also show the clearance of large areas to the west of the railway station in advance of the Town Central Area development which commenced in 1966 and culminated in the building of the Bridges Shopping Centre. A single run of RAF obliques taken in May 1964 focuses on the docks but details of the East End can be seen in the background.

The last RAF photography was taken in June 1970 and provides complete coverage of the project area. Again this is relatively small-scale but it may be useful for understanding broad landscape change. Two larger-scale runs dating from 1971 focus on the west of the project area but show the Town Central Area development west of the station in detail. A single vertical frame from September 1977 covers almost the whole project area but this is again small-scale. There is no further vertical coverage of the project area until 1992, leaving a 15 year gap.

Oblique photography is similarly limited. Photographs from 1990 and 1994 focus primarily on the dock area but there is better coverage from 2001 which records much of the project area. Sunderland was covered in detail by an English Heritage flight in 2009; these images were digital but prints are held in the archive. In August 2017 the area was targeted by Historic England for detailed recording in advance of work commencing on the HAZ. These images are likely to be of use as illustrative material but may provide useful information on individual buildings, particularly those with access issues.

INTER-WAR DEVELOPMENT

Aerofilms photography from 1928 records the densely-packed streets of the East End which, by this date, had become slum housing (Fig 5). Slum clearance had commenced in the 1930s and by the time that the area was next photographed, in 1941, many of these streets had been replaced by large blocks of low-rise social housing in the Modern style; these were known as the Garths. The Garths were constructed between 1937 and 1940 by the recently-established North Eastern Housing Association (Pevsner 1983, 454). Their development removed the streets between Hartley Street and Silver Street, and Sans Street and Walton Lane.



*Fig 5: A view eastwards towards the docks in March 1928. The terraces in the bottom left of the image were partly levelled in the late 1930s for the construction of the Garths.
© Historic England Archive. Aerofilms Collection EPW020546.*

The roads around the Garths appear to have been remodelled and widened, including broad footpaths. To the north of Covent Garden the new road layout is in place by 1941 but the plot has only been partially cleared of the existing buildings. Development of this area was presumably halted by the outbreak of the Second World War which resulted in the temporary suspension of the slum clearances.

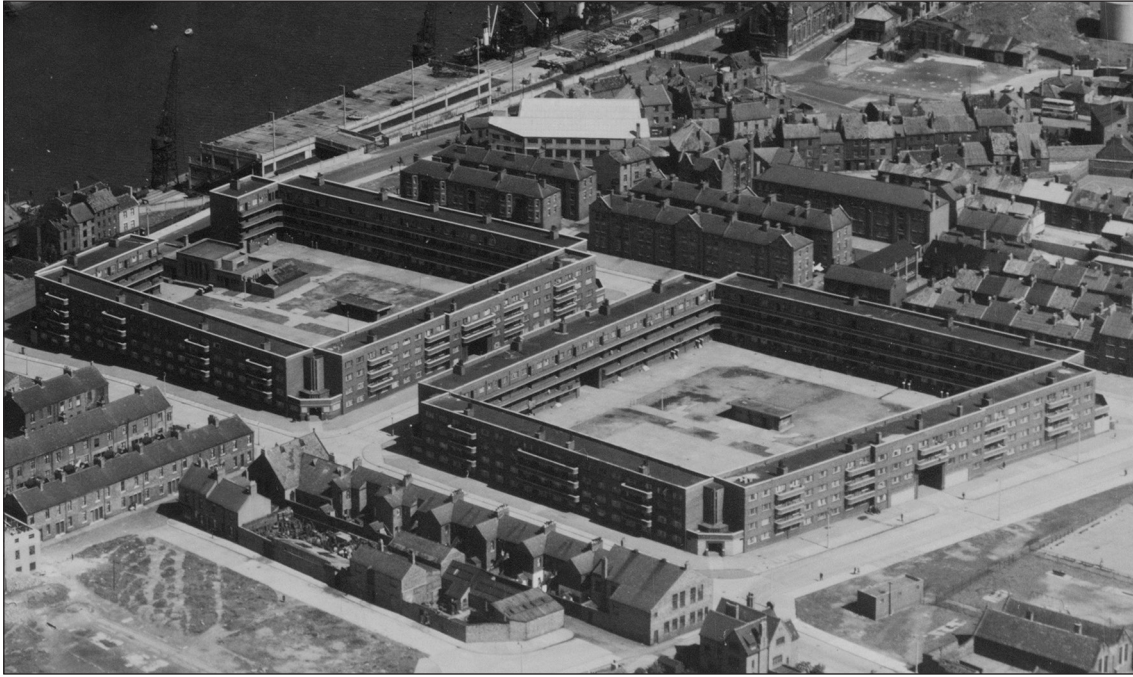


Fig 6: A view looking north towards Wear Garth (left) and Burleigh Garth (right). The High Street East Methodist Mission is the low building sitting within Wear Garth. RAF/540/A/396/SFFO-0291 05-JUL-1948 Historic England Archive RAF Photography (detail).

Wear and Burleigh Garths (Fig 6) were located between Silver Street and Hartley Street and were the largest of the developments, with Burleigh Garth comprising 134 flats of between three and five rooms (Sunderland Echo and Shipping Gazette 1939). Both were quadrangular in plan, four storeys high, and included continuous access balconies on the internal elevations and smaller balconies on the street-facing facade. They were flat-roofed with a parapet wall and had single-storey corner entrances. While Burleigh Garth was completely enclosed – accessed via two-storey entrances on the south-east and north-west sides – Wear Garth was open on the north-western side to incorporate the High Street East Methodist Mission. This is constructed in the same architectural style and appears to have been integral to the development. Within the quadrangles were single-storey rectangular structures which photography from 1946 shows were partially open-sided (Fig 7). These are described in contemporary accounts as 'old people's shelters' (*ibid*).

To the south-west were further four-storey blocks of flats on a smaller scale than Wear and Burleigh Garths but in the same architectural style (Fig 8). St Patrick's Garth comprised three detached blocks in a 'U'-plan arrangement, open to the north surrounding the existing Drury Lane School. Walton Garth and Covent Garden were both smaller in scale, the former an unequal 'U' plan and the latter with a mirrored arrangement of two 'U'-plan blocks.

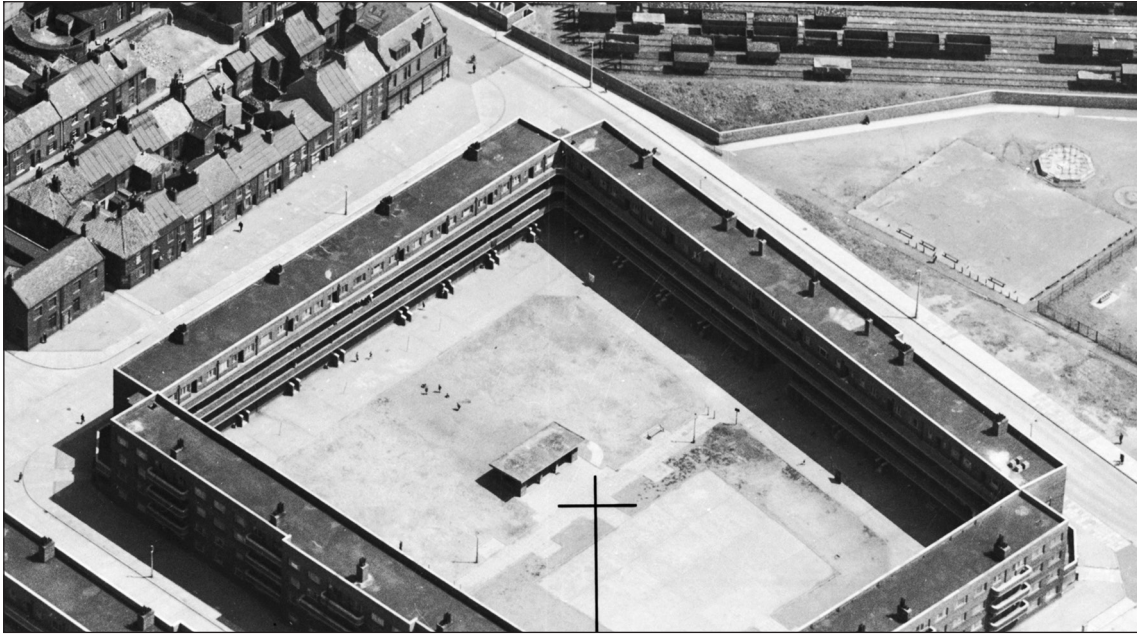


Fig 7: Detail of Burleigh Garth in 1946 with a central flat-roofed shelter. © Historic England Archive. Aerofilms Collection EAW001017 06-JUN-1946 (detail).



Fig 8: The Garths between Sans Street and Walton Lane. The contemporary terraces on George Street, Drury Lane and Mauds Lane can be seen centre left. RAF/540/A/396/PFFO-0382 05-JUL-1948 Historic England Archive RAF Photography (detail).

Fronting onto High Street East were High Garth and River Garth. High Garth was the first of the developments to be completed with tenants moving in in November 1938 (Sunderland Echo and Shipping Gazette 1938b). These remain the only surviving examples of the Garths but both have had their character heavily altered by later refurbishment. They have since been renamed Bodlewell House and Quayside House. The others were demolished from 1995 (VCH 2015, 151) and replaced by a mix of houses and flats, although the area previously occupied by Covent Garden remains undeveloped.

This housing scheme also seems to have included four terraces on George Street, Drury Lane and Mauds Lane. The 22 dwellings were constructed by the Sunderland Corporation and completed in 1938 (Sunderland Echo and Shipping Gazette 1938a). Aerial photographs show that the houses were predominantly of two storeys but those facing onto Drury Lane had three-storey dwellings at either end of the terrace. These terraces are still extant and appear to be less extensively altered than the surviving Garths.

SUNDERLAND AT WAR

On 13 March 1941 an RAF photo reconnaissance plane flew high above the streets of Sunderland and captured a snapshot of the city at war (Fig 9). The first air raids had come on the night of 21 July 1940 (Ripley and Pears 2011) and the scars of these first few months of bombing can be seen in the area of the docks. By 1945 aerial bombing had destroyed some areas of the city and left many more uninhabitable. Alongside this damage, RAF photographs record many short-lived structures relating to wartime activity (Fig 10).



Fig 9: An RAF 'M Series' vertical of the docks and the Hendon area of the city. North is to the right of the image. RAF/4/BR51/VD/0030 13-MAR-1941 Historic England Archive RAF Photography.

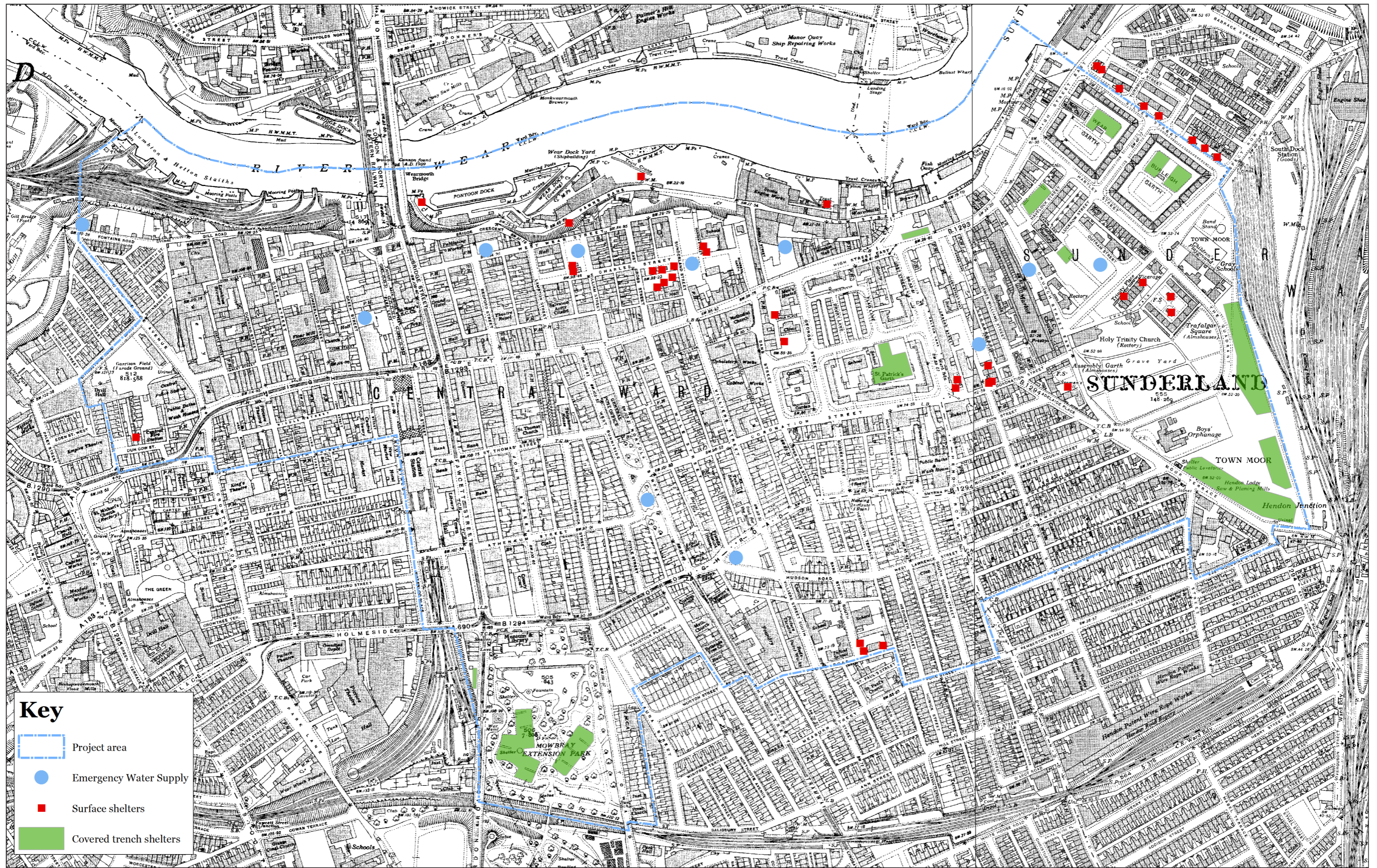


Fig 10: Second World War features in the project area. Ordnance Survey 1:2,500 published 1946 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.

Barrage Balloon sites

The core of Sunderland was ringed by a series of barrage balloon sites, designed to impede enemy aircraft on bombing raids by forcing them to fly at higher altitudes (Fig 11). Each installation comprised a central square hard standing surrounded by concentric rings of tethering blocks. Five barrage balloon sites laid in close proximity to the project area. One, in the grounds of the former Sunderland Orphanage on Moor Terrace, lies within the project area but the site is now occupied by a modern development (Fig 12). Other sites were located on Barrack Street, Union Street and Hopper Street, in West Park and between Cumberland Terrace and Vane Terrace.

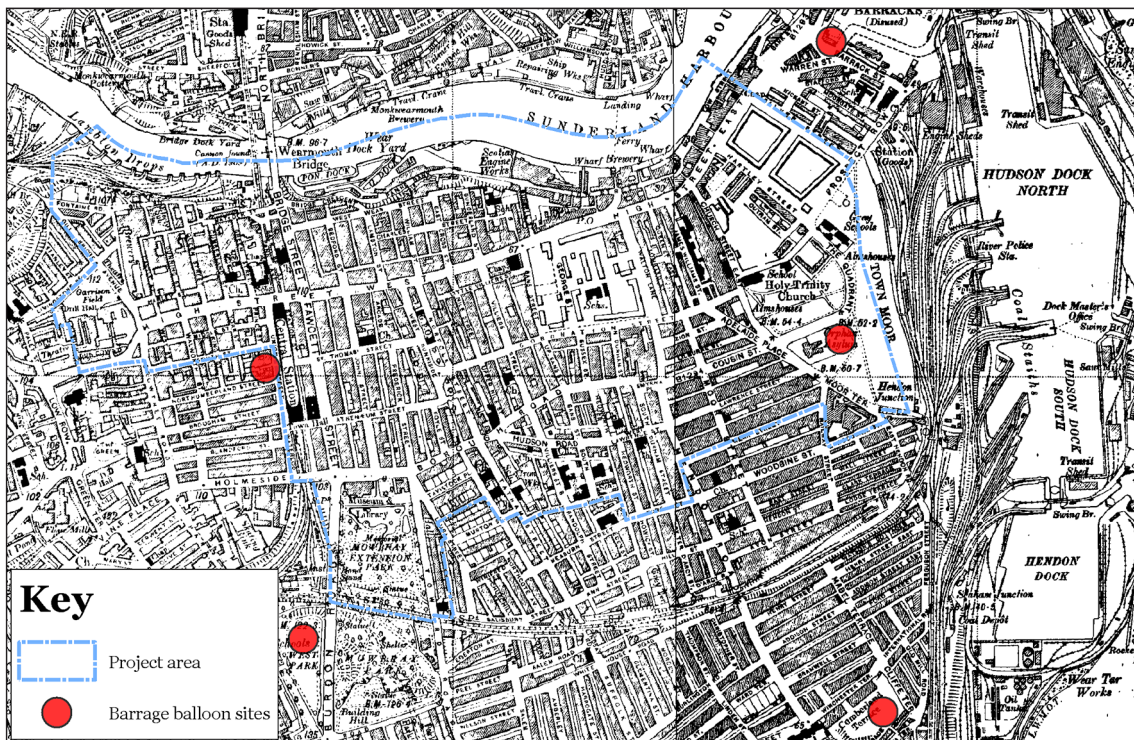


Fig 11: The location of barrage balloon sites in and around the project area. Ordnance Survey 1:10,560 published 1938 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.

Vertical RAF photography from March 1941 shows no trace of the barrage balloon sites, demonstrating that they must have been constructed after this date. Some are also located on areas which have been cleared as a result of later bombing, a further indication that they post-date the earliest air raids on the city. Two particularly fascinating images show the docks in March 1944. A balloon located at the Barrack Street site can be seen airborne while another is visibly inflated but is still on the ground at the Sunderland Orphanage site (Fig 13).



Fig 12: A barrage balloon site located in the grounds of Sunderland Orphanage. RAF/106G/UK/873 RV 6138 01-OCT-1945 Historic England Archive RAF Photography (detail).



Fig 13: Two barrage balloons (circled) photographed in 1944. RAF/1CU/21000/O-21706 Historic England Archive RAF Photography.

Air raid shelters

Local authorities had been responsible for the provision of public air raid shelters since the 1937 Air Raid Precautions Act and these ranged from those designed for a single household to larger communal shelters (Baker 1978, 4). RAF photography from late 1945 shows numerous shelters throughout the project area. Most of these were relatively short lived so this photography provides an important record of their form and distribution (see Fig 10).



Fig 14: Communal surface shelters on Charles Street visible as flat-roofed rectangular structures with a long blast wall. The circular scar in the top right hand of the photograph is the former site of an Emergency Water Supply. RAF/106G/UK/873 RV 6223 01-OCT-1945 Historic England Archive RAF Photography (detail).

A number of communal surface shelters, rectangular in plan with a flat concrete roof and commonly with a protective blast wall along one of the long sides, can be seen (Fig 14). Their dimensions (approximately 11m by 4m) indicate that most are likely to be 'double' 50 person capacity shelters (Lowry 1996, fig 31). Surface shelters are concentrated in those areas of the city in close proximity to the docks; eight are visible along Silver Street alone. This distribution is likely to reflect the level of threat around the docks and shipyards – priority targets for the Luftwaffe – but it may also be a result of the densely-packed housing in this area which did not allow for the construction of individual shelters. Most were rapidly demolished after the war with a significant number already removed by the 1946 photography; there are no extant examples remaining.

Elsewhere in the project area numerous domestic shelters can be seen in backyards (Fig 15). These smaller shelters were designed to accommodate the occupants of a single dwelling and were commonly brick-built with a flat reinforced concrete roof (Dobinson 2000, 61; fig 20). The densely-populated housing blocks of the Garths incorporated air raid shelters into their original designs (VCH 2015, 151) but these

were evidently considered inadequate as large complexes of covered trench shelters later were constructed within their grounds (Fig 16).



Fig 15: Domestic surface shelters in the back yards of houses on Foyle Street and Frederick Street. The shelters are the small, flat-roofed rectangular structures abutting the walls of the back yards. RAF/106G/UK/745 RV 6240 28-AUG-1945 Historic England Archive RAF Photography (detail).



Fig 16: Covered trench shelters in the grounds of St Patrick's Garth. RAF/106G/UK/873 RV 6222 01-OCT-1945 Historic England Archive RAF Photography (detail).

The largest public shelters were located on Town Moor (Fig 17) and in Mowbray Extension Park (Fig 18) which could accommodate close to 3,500 people in total (*Sunderland Echo and Shipping Gazette* 1940). Those on Town Moor are visible on 1941 RAF photography where three large earth-covered complexes can be seen. The light tone on the southernmost indicates that it has been recently completed and faint traces of narrow rectilinear arrangements of trenches are likely to be further shelters under construction. The shelters in Mowbray Extension Park are likely to have been constructed at the same time. They are just visible through cloud cover on a photograph taken in August 1942 and the entrances to the shelters are also depicted on the OS map which was revised around the same time. By late 1945 the Town Moor shelters had already been demolished, the land being used at that point for prefab housing (see below). Those in Mowbray Extension Park were still extant at this point but had disappeared by the summer of 1946.

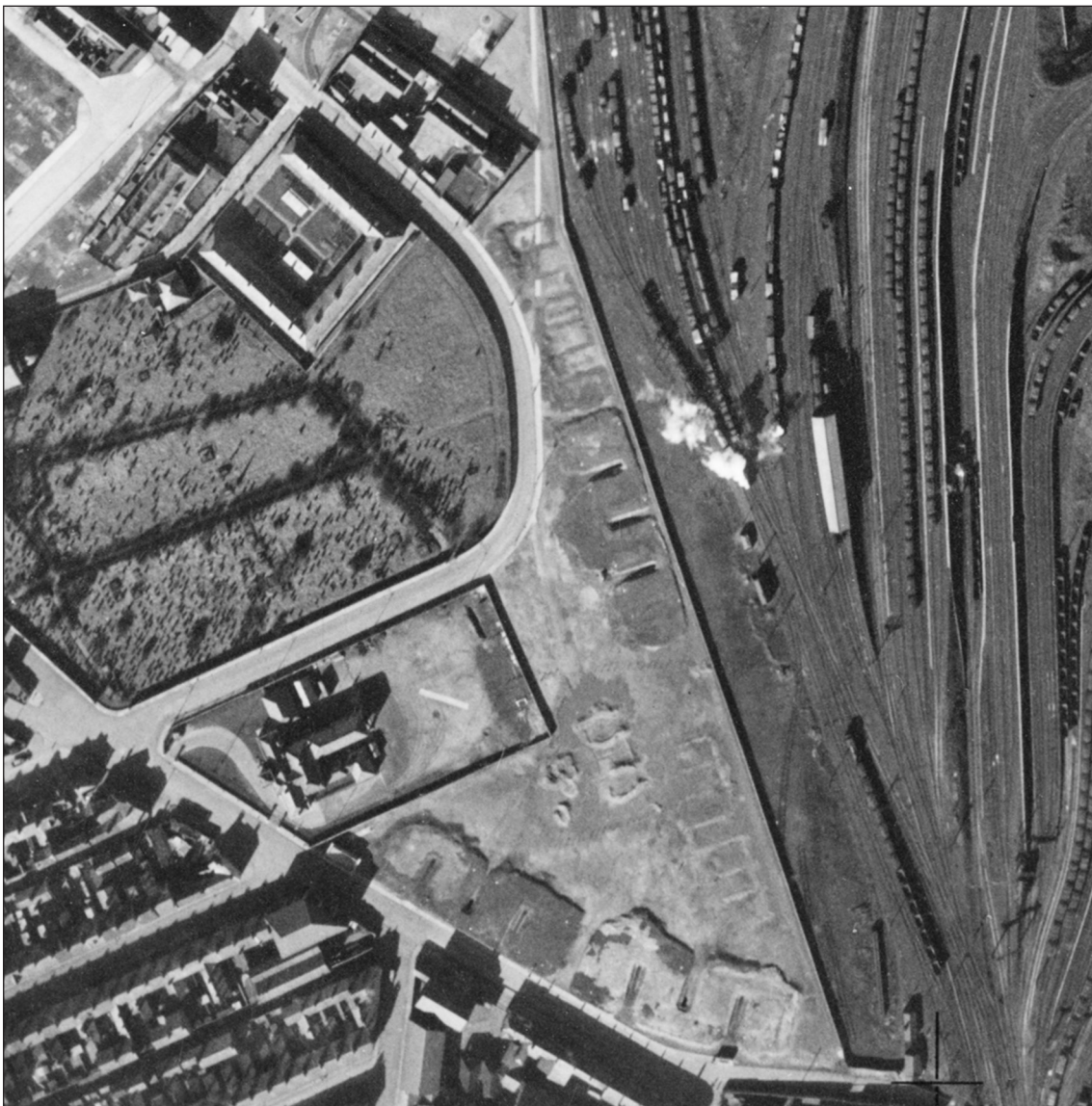


Fig 17: Covered trench shelter complexes on Town Moor. RAF/4/BR51/VD/0030 13-MAR-1941 Historic England Archive RAF Photography (detail).



Fig 18: Public shelters in Mowbray Extension Park. RAF/106G/UK/885 RVp1 6068 03-OCT-1945 Historic England Archive RAF Photography (detail).

Emergency water supplies

Emergency water supplies were reservoirs designed to provide water for fire fighting during air raids. While all of those identified within the project area were purpose built, existing features such as cellars of bombed-out buildings were sometimes adapted (Lowrey 1996, 76). Within the project area, ten were identified on 1945 aerial photographs (see Fig 8).

The earlier emergency water supplies appear to be of a circular design. They were clearly in place by 1941-42 as three are depicted on the OS 25" mapping which was revised in these years. By the time of the 1945 aerial photographs, however, the sites of the water supplies are only visible as faint circular scars in areas of bomb

clearance (see Fig 14). In addition to these, five square or rectangular water supplies are also visible on aerial photographs (Fig 19). These all appear to be extant and are not depicted on the OS mapping, indicating that they were constructed in the later war years.

Although they can be seen in other areas of the city, there is a noticeable concentration of emergency water supplies in those areas in close proximity to the docks such as Charles Street. No supplies were identified on the docks themselves, presumably as water for fire fighting would have been pumped directly from the Wear.



Fig 19: Emergency Water Supplies on Outram Street (right) and Church Street (left), indicated by arrows. Two covered trench shelters are also located just above the centre of the image RAF/106G/UK/873 RV 6181 01-OCT-1945 Historic England Archive RAF Photography (detail).

Bomb damage

By the end of the war, Sunderland had seen numerous German air raids inflict considerable damage on the city. The first raids had been in the summer of 1941 and some of the damage caused is recorded on contemporary photography (see Fig 9). Interestingly, revision of the 25" OS maps for this area in 1941-2 (not published until after the war in 1946) includes detail of this early bomb damage, with cleared plots of land and selected buildings noted as 'ruin' (Fig 20). By 1945 large areas within the city had been destroyed or rendered uninhabitable.



Fig 20: Cleared bomb sites and ruined buildings appear on OS mapping which was revised in 1941-2. Ordnance Survey 1:2,500 published 1946 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.

Vertical RAF photography from 1945 and 1946 provides a source for assessing the degree of bomb damage within the project area and Figure 21 shows the distribution of cleared bomb sites as seen on that photography. While this gives an indication of those areas where damage was severe enough to have resulted in demolition of the ruined buildings, it does not illustrate those properties where bomb damage made them uninhabitable. This is difficult to assess with any great degree of accuracy from the air photographs alone but several images do show evidence of this. It is also possible that some building plots had already been redeveloped by 1945.

Within the project area, over six hectares of housing and commercial premises had been entirely cleared, including significant buildings such as St Thomas' Church and Victoria Hall. Some of the most extensive damage was in those areas close to the docks which had been the primary targets for the Luftwaffe bomber crews. The densely packed terraced housing in Hendon was also badly affected with a large area centred on North Durham Street, South Durham Street, Sussex Street and Hedworth Terrace entirely cleared. This land was later used for prefab housing (see below).

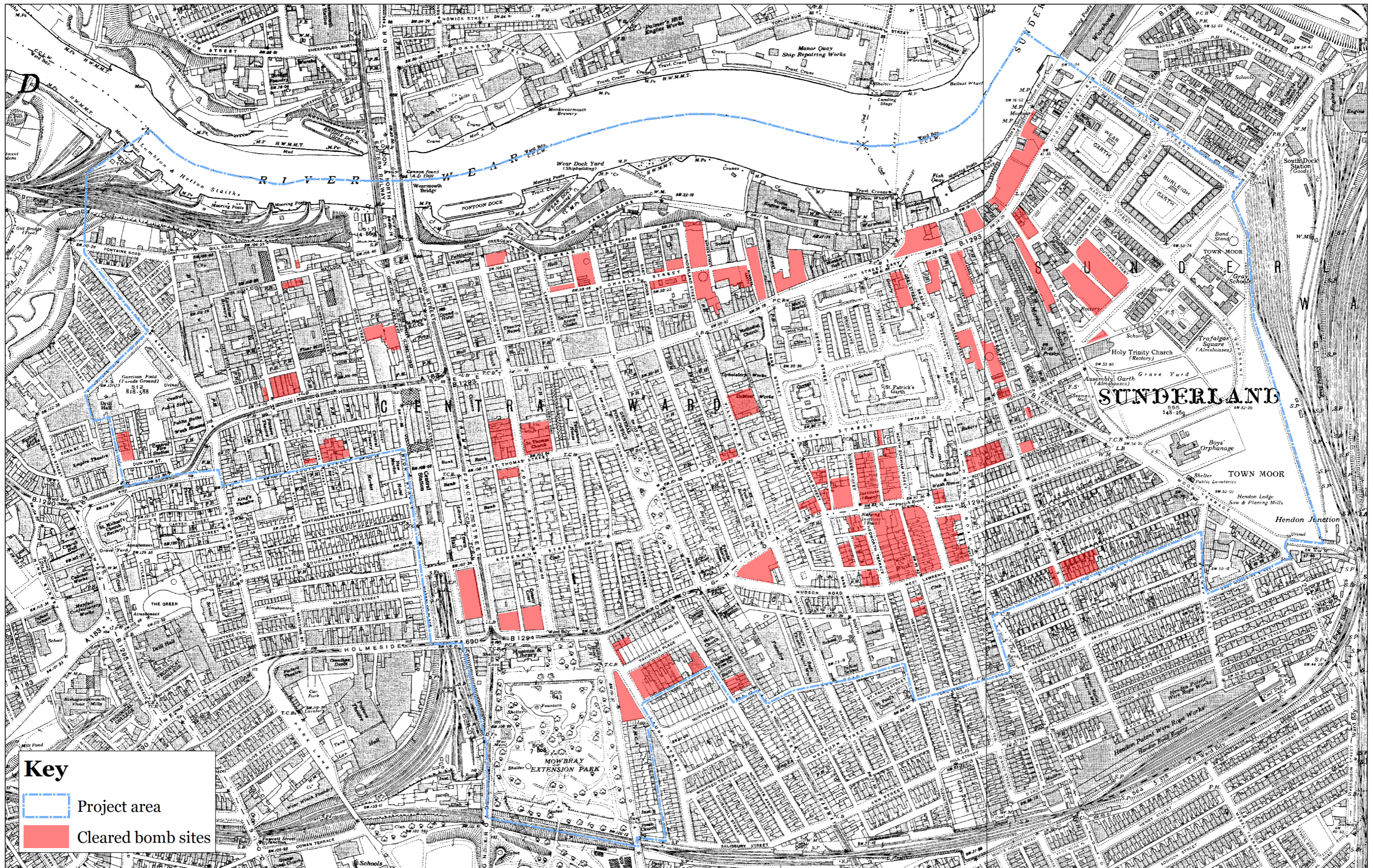


Fig 21: Cleared bomb sites mapped from 1945 RAF photography. Ordnance Survey 1:2,500 published 1946 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.

POST-WAR REDEVELOPMENT

Redevelopment of the East End

Within the project area the East End of Sunderland underwent some of the most significant changes in the post-war period. A series of redevelopments in the late 1950s and 1960s swept away much of the early 20th-century street plan and building fabric; however, these are of interest in their own right as a record of the evolution of town planning over the course of two decades. In turn, nearly all of these estates have since been redeveloped themselves, leaving only a number of high-rise towers surviving. Although map and fabric evidence provides a record of the changing urban landscape, aerial photographs have provided significant supplementary detail.

1945–1948: Prefabs

RAF photography from 1945 shows a street pattern that was largely unchanged since the early 20th century. The only significant alterations at this point were in the East End of the city where the late 18th-century terraces had been cleared for the development of the Garths. Although there is evidence of significant bomb damage within the area of the Garths, it is unclear whether some of these sites were cleared before the war and the subsequent hiatus in redevelopment.

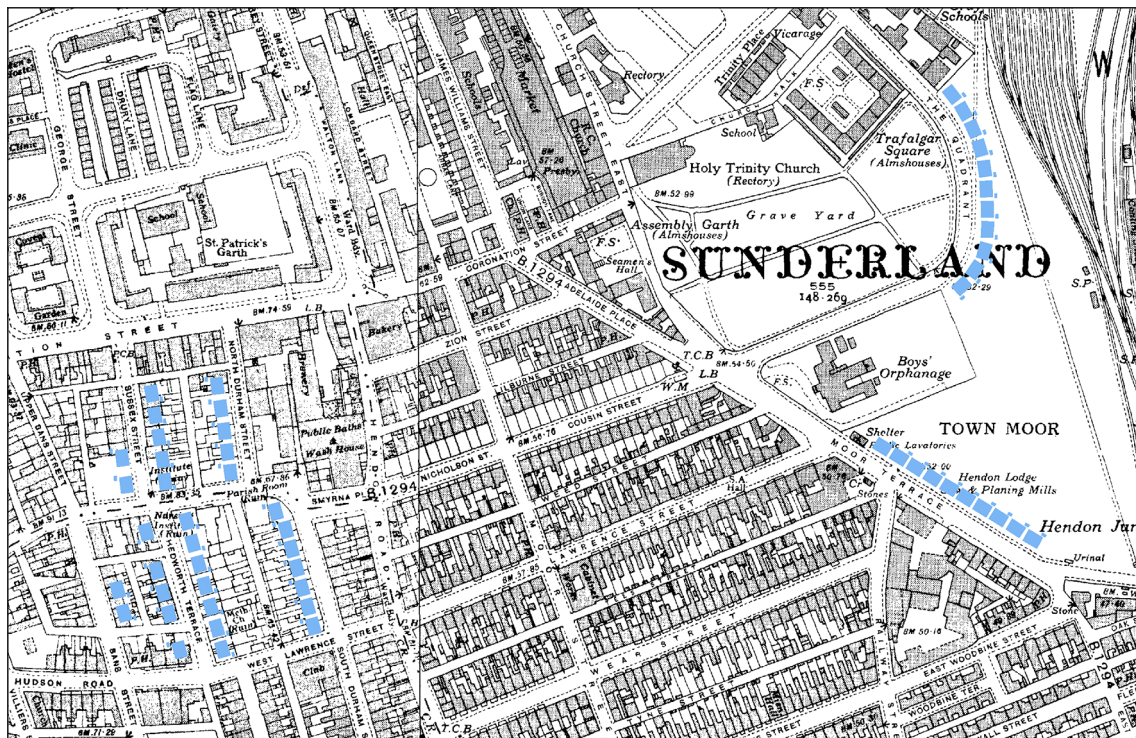


Fig 22: The location of prefabs within the project area. Ordnance Survey 1:2,500 published 1946 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.

The Sunderland Blitz destroyed 1,200 homes and around 35,000 suffered bomb damage (VCH 2015, 164). In order to ease the housing shortage Sunderland, like many towns and cities across the country, turned to prefabs. Often manufactured in factories that had served the war effort up to 1945, prefabs offered a cost-effective, temporary solution for those who had been bombed out during the war. Between 1944 and 1948 around 300,000 were constructed nationally under the Housing (Temporary Accommodation) Act, 1944 (Blanchet 2014, 8). Those in the project area were manufactured by Tarran of Hull and constructed by George Henderson (*Sunderland Echo and Shipping Gazette* 1945). These were similar in design to the Uni-Seco but distinguishable by a pitched asbestos concrete roof (Blanchet 2014, 19), a feature which can be identified on 1948 RAF oblique photographs.

RAF photography from October 1945 shows prefabs under construction within the project area and these had been completed by 1946 (Fig 22). On Town Moor 21 dwellings were built fronting onto Moor Terrace and The Quadrant (Fig 23). While these were sited on open ground, further to the west prefabs were located in bombed-out areas within the densely populated terraces on Sunderland's East End. Thirty three prefabs occupied plots of land on North Durham Street, South Durham Street, Sussex Street and Hedworth Terrace, maintaining the original street plan (Fig 24). Both developments also included newly constructed electricity sub stations to service the electrical goods such as cookers and refrigerators which were part of the prefab's fit out. Each dwelling also had its own curved-profile metal shed.



Fig 23: Prefabs on Town Moor in 1946. This had previously been the location of large public air raid shelters. RAF/106G/UK/1598 V 5143 25-JUN-1946 Historic England Archive RAF Photography (detail).



Fig 24: Prefabs occupying cleared bomb sites on North Durham Street, South Durham Street, Sussex Street and Hedworth Terrace. RAF/106G/UK/1598 V 5146 25-JUN-1946 Historic England Archive RAF Photography (detail).

Oblique photographs from 1948 show that in the intervening two years residents of these temporary dwellings had become settled. Several prefabs had rear vegetable gardens and at least one, by this time appearing as 8 Sussex Street on OS maps, was surrounded by a neat picket fence (Fig 25). By 1949 soil was being transported to the Hedworth Terrace development to encourage further cultivation (*Sunderland Echo and Shipping Gazette* 1949). All are still extant, and presumably occupied, on 1956 RAF photographs but the town moor prefabs had been demolished by mid-1958. The estate to the west remained intact but most had disappeared by the next available coverage in 1965. However, a small number remained along Hedworth Terrace in the shadow of the newly constructed high-rise towers of Sussex Court and Borough Court, albeit in a derelict state.



Fig 25: Prefabs in 1948 showing associated back gardens. The low flat-roofed structure between the two rows of five prefabs in the left of the image is an associated electricity sub station. RAF/540/A/396/PFFO-0382 05-JUL-1948 Historic England Archive RAF Photography (detail).

1954–1964

Until the mid-1960s Sunderland had the highest rates of house building of any borough council in England and Wales (Glendinning and Muthesius 1994, 172). Photographs dating from 1956 to 1965 chart a period of large-scale landscape change, particularly in Sunderland's East End (Fig 26). Programmes of slum clearance which had seen the construction of the Garths in the late 1930s had been suspended during the war and only recommenced in 1953 (VCH 2015, 164). Aerial photographs document several phases of redevelopment which reshaped the East End's plan to varying degrees over the course of around 40 years.

By 1956 small areas of development are identifiable around the city but little in the way of wholesale reorganisation of the street pattern is discernible. One exception to this is the beginning of the comprehensive clearance of terraced housing between Lawrence Street and Wear Street, an area already badly damaged and partially destroyed by bombing during the war. This clearance was taking place in advance of the first phase of post-war redevelopment in the East End.

RAF oblique photography from April 1958 shows the new development under construction (Fig 27). This covered an area broadly defined by Wear Street, Zion Street, Hendon Road and Moor Terrace/Adelaide Place. Although the earlier road plan was largely maintained, the pattern of housing was very different. It comprised a mixed development including four-storey maisonettes and three-storey flats set within communal grounds which would have given residents access to green space. The first designs had been drawn up by the Sunderland Borough Architect's Department in 1954 (*Sunderland Echo and Shipping Gazette* 1954) but the final layout had been altered by commencement of construction. This style of development reflects a general trend in social housing seen in other authorities elsewhere in England around the same period (Glendinning and Muthesius 1994, 31–33).

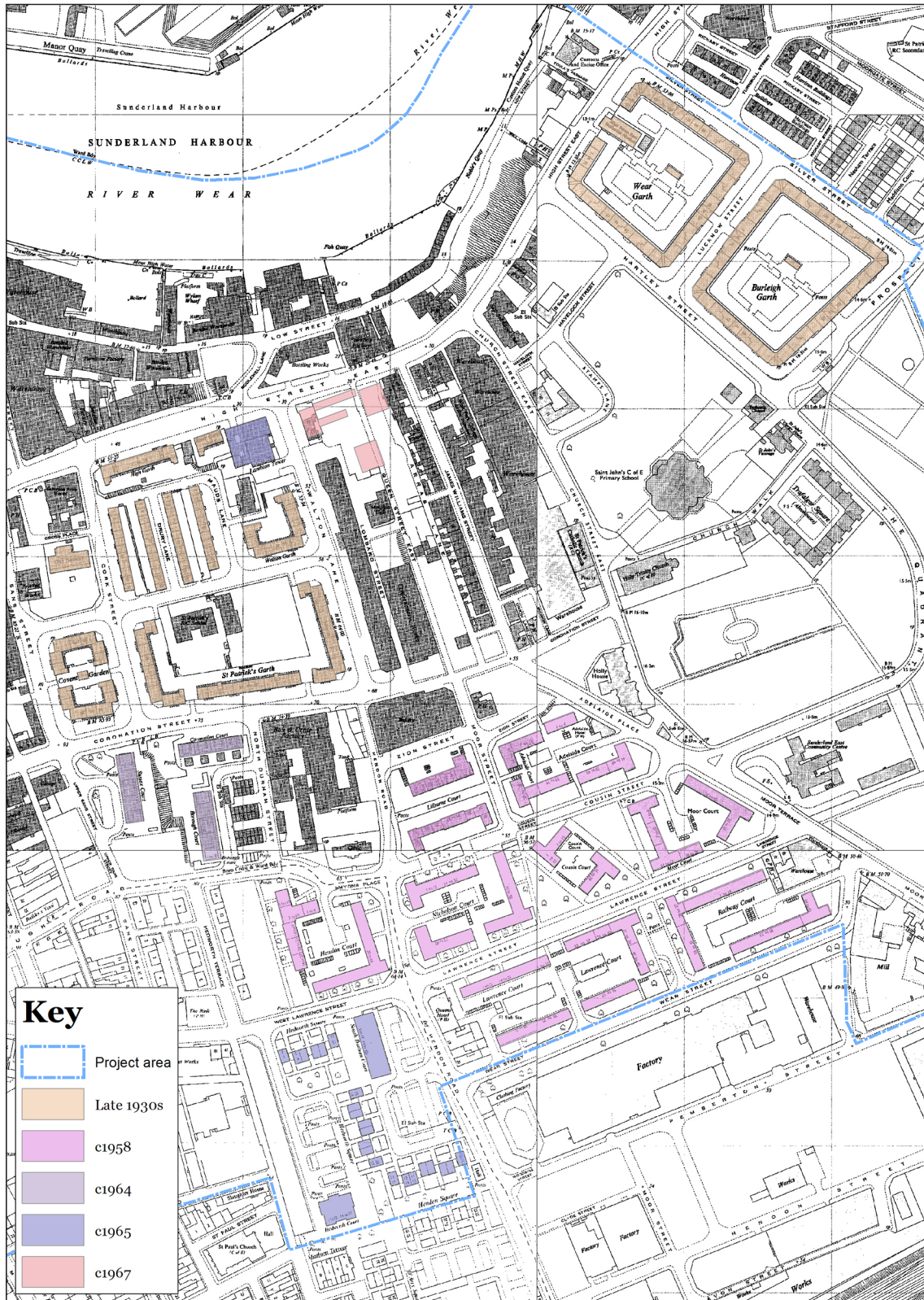


Fig 26: Phases of redevelopment in the East End of Sunderland from 1937 to the late 1960s. Ordnance Survey 1:1,250 published 1963, 1967, 1968 and 1977 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.



Fig 27: The first phase of post-war development in the East End under construction in 1958. RAF /58/2425 PSFO-0107 23-APR-1958 Historic England Archive RAF Photography (detail).

Aerial photographs have proved to be of particular value in understanding the development of this area. OS map editions date from 1955 and 1963 so these images narrow down the dates for this development to around 1958-9. Perhaps more significantly they also provide details of buildings that cannot be established from map evidence alone. The current pattern of housing in this area is identical in plan to that established in the late 1950s. However, aerial photographs show that the original blocks have all been replaced by lower-density two storey terraces, possibly at some point in the 1970s or 1980s (Fig 28).



Fig 28: The area of the 1958-9 development photographed in 2017. Although retaining the same plan, the housing has now been replaced with two-storey terraces. 28946_064 04-AUG-2017 © Historic England Archive.

1964-1970

In 1964 Sunderland appointed Harvey Bishop, an advocate of prefabricated ‘system’ building, as its new Borough Architect (Glendinning and Muthesius 1994, 259). At a similar time annual targets for house building temporarily rose from 1,200 to 2,000 (*ibid*), resulting in a series of high-rise developments – a form of housing that Sunderland had been relatively late in adopting. No aerial photographs taken between 1958 and 1964 are held in the archive but images from 1964 onwards vividly record this shift in urban planning.

A single run of RAF obliques represent the only photographs from 1964 in the archive. Their focus is the dock area but the skyline of Hendon can be seen in the background. By this point the first high-rise development is visible in the Coronation Street redevelopment area (Fig 29). This comprised two 11 storey tower blocks, Sussex Court and Borough Court, constructed by G M Pearson (Glendinning and Muthesius 1994, 358). Coronation Court, a row of two storey dwellings, possibly maisonettes, presumably formed part of the same development. While Sunderland’s other high-rise blocks survive, this development was demolished at some point between 1977 and 1992.



Fig 29: The Coronation Street redevelopment area in 1964. These towers have since been demolished. RAF /58/6283 PO-0302 01-MAY-1964 Historic England Archive RAF Photography (detail).

The speed of the system built approach is vividly illustrated from the aerial perspective as vertical photographs taken only 18 months later, in October 1965, show the completed Hendon Road development, an area that was just cleared of its terraced housing in 1964. Unlike the 1958 redevelopment to the east, this imposed an entirely new layout, removing any trace of the previous street plan. The new estate includes a staggered linear development of four storey blocks of flats linked by covered walkways at first, second and third storey level (Fig 30). It also incorporates two 14 storey towers (South Durham Court and D'Arcy Court) and one 20 storey block (Hedworth Court) constructed by Wimpey (Glendinning and Muthesius 1994, 358).

Aerial photographs again provided valuable additional detail that helped to understand this development. Like the 1950s estate to the east, the current pattern of housing is identical to that which was established in 1965. However, all of the low-rise flats were replaced by semi-detached houses at some point after 1994.

On 1965 photography Lambton Tower, on the corner of Walton Lane and High Street East, is in the early stages of construction. This was the first phase of the Walton Lane redevelopment area and was later followed by the 18 and 19 storey blocks of Lumley Tower and Londonderry Tower, constructed by Sir Lindsay Parkinson & Co (Glendinning and Muthesius 1994, 358). This second phase received

committee approval in 1967 and is complete on 1970 RAF vertical photography (Fig 31). This cluster of three towers is today without doubt the most widely visible landmark in the Sunderland Riverside Conservation Area (see Fig 27).



Fig 30: The Hendon Road development in 1970. The multi-storey towers are the only surviving elements of the scheme. RAF /58/0582 PO-0008 22-JUN-1970 ©Crown Copyright. MoD (detail).



Fig 31: The completed Walton Lane redevelopment area in 1970. Lambton Tower (left) was under construction in 1965. RAF/58/0584 V 0034 23-JUN-1970 ©Crown Copyright. MoD (detail).

The town centre and riverside

Within the town centre some cleared bomb sites remained into the late 1950s but others had been redeveloped by this point. These areas of development largely occupied the same plots of land as their bombed out predecessors and included the department stores of Binns on Fawcett Street and Joplings on John Street. A notable detail of the 1940s photography is the number of cars and other motor vehicles visible within the city. By 1945 two cleared bomb sites on St. Thomas' Street, including the former location of St. Thomas' Church which was destroyed in 1943, were being used as car parks and by the mid-1950s these had been formalised on OS maps (Fig 32).



Fig 32: Cleared bomb sites being used as car parks. RAF/106G/UK/1598 V 5148 25-JUN-1946 Historic England Archive RAF Photography (detail). Ordnance Survey 1:1,250 published 1955 © and database right Crown Copyright and Landmark Information Group Ltd (All rights reserved 2018) Licence numbers 000394 and TP0024.



Fig 33: The remodelled railway station in 1954. Union Street bus station can be seen to the left. RAF/82/1008 F21 0178 15-SEP-1954 Historic England Archive RAF Photography (detail).

The last Sunderland Corporation tram services ran in 1954 and photography from that year shows a new bus station on Union Street, located on a cleared bomb site which had been a barrage balloon site during the war (Fig 33). Early alterations to the train station are also visible, including the removal of the Victorian canopy (Fig 33) which had been damaged by air raids during the Second World War.

By 1965 much of the land between Union Street and Crowtree Road had been cleared in advance of the Town Central Area development (1967–1969) by Sunderland County Borough Council's JE Barlow (Glendinning and Muthesius 1994, 376) and was being used as a large car park (Fig 34). By the 1970 vertical photography construction had been completed. Remodelling of this area included the construction of the A138 which bisected the streets to the north of High Street (Fig 35). At this point a number of historic buildings survived to the north of the A138 including the Vaux Brewery complex and terraced housing on Fontaine Road, Coatsworth Street, Swinbank Street and Gill Bridge Avenue. By 1992 these terraces had been demolished along with several other buildings although the Vaux Brewery remained until 2002.



Fig 34: Land west of the railway station cleared in advance of the Town Central Area development. MAL/65089 V 129 15-OCT-1965. Reproduced by permission of the Historic England Archive (detail).



Fig 35: The completed Town Central Area development in 1971 including the new A138 dual carriageway. MAL/71025 V 042 17-APR-1971. © Sunderland City Council (detail).



Fig 36: Bomb damage around the riverside in 1945. RAF/106G/UK/1598 V 5120 25-JUN-1946 Historic England Archive RAF Photography (detail).



Fig 37: View looking east along the Wear. RAF /58/2425 PSFO-0085 23-APR-1958 Historic England Archive RAF Photography (detail).

The riverside area had suffered some of the severest bomb damage during the war (Fig 36) and much remained largely undeveloped in the late 1950s. In 1958 the waterfront of the Wear's south bank was still an active industrial area (Fig 37) but by 1965 there is little evidence of activity. The slipways to the west of the Scotia Engine Works appear derelict by this point. Most of the remaining historic buildings south of West Wear Street had also been demolished by this date and replaced with modern industrial units and a new road layout (Fig 38). Lubton and Hetton Staiths remained extant on 1971 photography but had been demolished by 1977.

Further down river the present day character of the waterfront also appears to have been heavily shaped by Second World War bombing. North of High Street East few buildings had survived the air raids (Fig 39) and this area remains largely undeveloped today.



Fig 38: The riverside in 1970. RAF/58/0584 V 0036 23-JUN-1970 Historic England Archive RAF Photography (detail).



Fig 39: Bomb damage between High Street East and the river. RAF/106G/UK/873 RV 6181 01-OCT-1945 Historic England Archive RAF Photography (detail).

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER WORK

Aerial photographs provide a unique record of Sunderland from the mid-1920s to the present day. In some instances they are likely to represent the only visual record of landscapes and individual buildings. They are a particularly valuable source of information for researching the impact of the Second World War on the city, recording ephemeral elements of the wartime landscape and how the damage from air raids shaped post-war development.

Although maps can be used to chart landscape change in the post-war period, analysis of the aerial photograph collection has shown that they can provide valuable additional information. Aerial photographs often chart change that occurred between map revisions, enabling the dates of these changes to be more precisely established and often recording the process of change in action. Significant detail can also be gained from studying aerial imagery alongside OS maps. In particular, oblique imagery can show details of lost buildings and alter perceptions of landscape change that might derive from maps alone. Map evidence would appear to suggest that much of the post-war housing schemes survive intact but aerial photographs demonstrate that very little of the original fabric in fact survives. This overview provides a useful framework for more detailed archival research and fabric analysis.

The current project had a limited scope and timeframe but it was clear that there is considerable potential for using the aerial photographic resources in future. The following are the principal recommendations:

- The present study only assessed the aerial photograph collection of the Historic England Archive. Where possible additional archive collections should be consulted, including Luftwaffe photography if available.
- The scope of the study was generally limited to large-scale landscape change but the scale and quality of the collection would enable detailed study of small areas or individual buildings.
- There is considerable potential for incorporating analysis of aerial photographs with other sources of information including ground photography, historical documents and oral history.
- Aerial photographs are well suited to illustrate landscape change and the quality and depth of the collection would make it ideal for this purpose.
- The collection and results of the analysis have great potential to be used as a tool for engagement with local communities. The story of Sunderland's wartime history from the air could feed into the curriculum for schools.

REFERENCES

- Baker, J 1978 *Enterprise versus Bureaucracy. The Development of Structural Air-Raid Precautions during the 2nd World War*. Oxford: Pergamon
- Barber M 2011 *A History of Aerial Photography and Archaeology*. Swindon: English Heritage
- Blanchet, E 2014 *Prefab Homes*. Oxford: Shire
- Dobinson, C 2000 *Twentieth Century Fortifications in England. Vol VIII. Civil Defence in WWII*. York: CBA
- Glendinning, M and Muthesius, S 1994 *Tower Block. Modern Public Housing in England, Scotland, Wales and Northern Ireland*. London: Yale
- Lowry, B (ed) 1996 *20th Century Defences in Britain. An Introductory Guide*. York: CBA
- Pevsner, N 1983 *The Buildings of England. County Durham*, 2 edn. London: Penguin
- Ripley, R and Pears, B 2011 *North-East Diary 1939-1945*. http://ne-diary.genuki.uk/Bck/BSeq_09.html#B44 accessed Jan 2018
- Sunderland Echo and Shipping Gazette* 1938a Tuesday 8 March 1938, 7, Columns C-D.
- Sunderland Echo and Shipping Gazette* 1938b 'Sunderland's New Luxury Flats', Thursday 17 November 1938, 1
- Sunderland Echo and Shipping Gazette* 1939 'Opening of Flats in East End', Tuesday 1 August 1939, 1
- Sunderland Echo and Shipping Gazette* 1940 'Sunderland Raid Shelters - Where They Are', Thursday 25 July 1940, 2
- Sunderland Echo and Shipping Gazette* 1945 'Good Progress In Sunderland Erection', Wednesday 18 July 1945, 4
- Sunderland Echo and Shipping Gazette* 1949 'Soil for Prefab Gardens', Thursday 10 March 1949, 4
- Sunderland Echo and Shipping Gazette* 1954 'Proposed Lawrence St. Lay-out', Thursday 16 December 1954, 13
- VCH 2015 *A History of the County of Durham, Vol V Sunderland*. London: Boydell & Brewer



Historic England Research and the Historic Environment

We are the public body that looks after England's historic environment. We champion historic places, helping people understand, value and care for them.

A good understanding of the historic environment is fundamental to ensuring people appreciate and enjoy their heritage and provides the essential first step towards its effective protection.

Historic England works to improve care, understanding and public enjoyment of the historic environment. We undertake and sponsor authoritative research. We develop new approaches to interpreting and protecting heritage and provide high quality expert advice and training.

We make the results of our work available through the Historic England Research Report Series, and through journal publications and monographs. Our online magazine Historic England Research which appears twice a year, aims to keep our partners within and outside Historic England up-to-date with our projects and activities.

A full list of Research Reports, with abstracts and information on how to obtain copies, may be found on www.HistoricEngland.org.uk/researchreports

Some of these reports are interim reports, making the results of specialist investigations available in advance of full publication. They are not usually subject to external refereeing, and their conclusions may sometimes have to be modified in the light of information not available at the time of the investigation.

Where no final project report is available, you should consult the author before citing these reports in any publication. Opinions expressed in these reports are those of the author(s) and are not necessarily those of Historic England.

The Research Report Series incorporates reports by the expert teams within the Research Group of Historic England, alongside contributions from other parts of the organisation. It replaces the former Centre for Archaeology Reports Series, the Archaeological Investigation Report Series, the Architectural Investigation Report Series, and the Research Department Report Series