

The Defence of Kent Project

DISCOVERING
AND RECORDING
KENT'S
20TH CENTURY
MILITARY AND CIVIL
DEFENCES

MEDWAY DISTRICT

The findings

MEDWAY MILITARY RESEARCH GROUP

February 2008



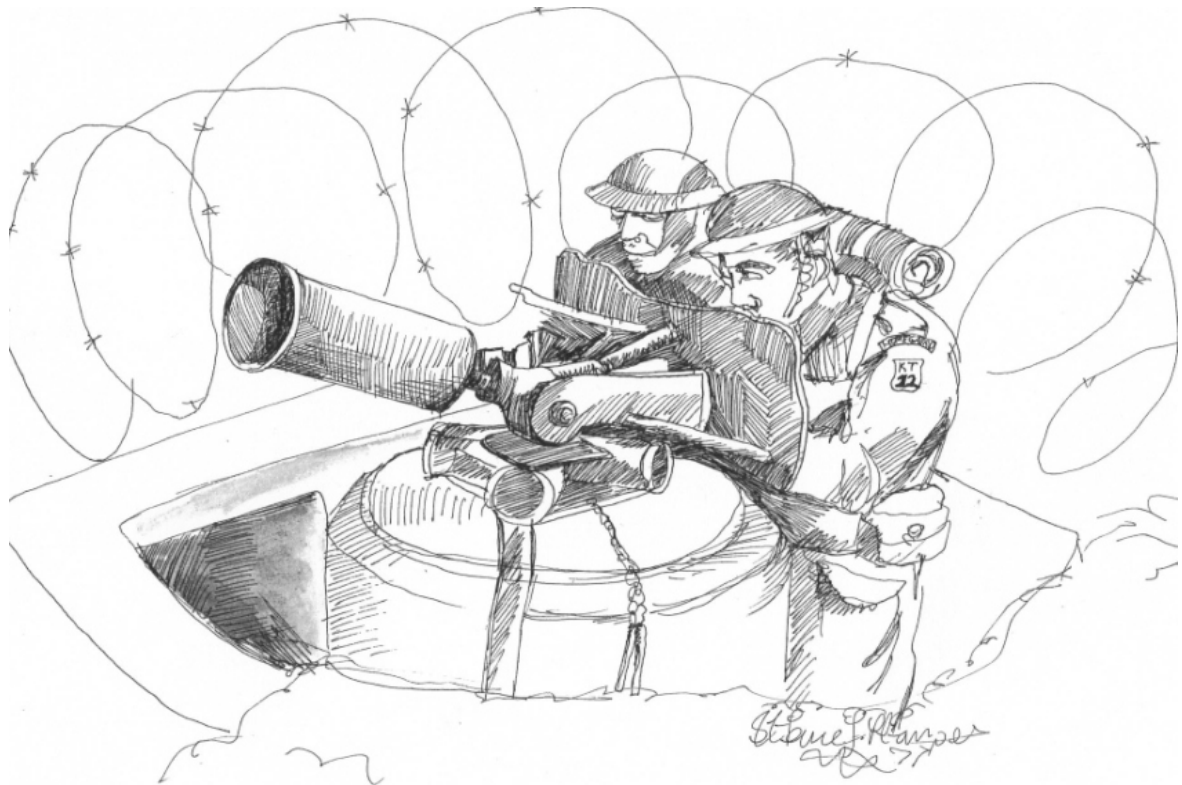
Medway Military Research Group (2006)

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HOME GUARD SPIGOT MORTAR 1940

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INTRODUCTION

The Defence of Kent Project has its origins in a strategic study of Kent's defences carried out by Victor Smith and Andrew Saunders (*Kent's Defence Heritage*, KCC, 2001). This examined a range of defence sites in Kent from the Roman period to the Cold War and established the broad chronological, technological and geographical trends that had influenced the development of military architecture and of defensive methods in the county. It also provided a broad methodology for assessing and classifying defence sites. The study was not comprehensive, however, and could not cover the full range of 20th century sites. Moreover, there was awareness that this diminishing resource needed to be more comprehensively recorded.

This survey is part of a process to create an inventory of all categories of 20th century sites, whether military or civil defence, extant or disappeared, to be embraced within portfolios for each local authority district and the Medway Unitary Authority. This is crucial for the local authority planning process, for informing conservation and management of the resource and, at an academic and educational level, for a full and adequate understanding of the chronology, pattern, typological variety and evolution of 20th century defence structures as well as the systems of which they were a part. Such a study and inventory would also suggest priorities for further research and recording needs, the presentation and interpretation of sites to the public, whether by physical access, viewing from historical trails, publications and leaflets and other audio-visual media, collectively serving to enhance heritage tourism and its economic value.

The Medway district contains a unique range of defensive and civil defence sites, with many good surviving examples from the early part of the twentieth century up to and including the Cold War. When the results of the investigation of all the districts are placed together, we will have a significantly greater understanding of the role, evolution, distribution and heritage value of the county's varied military and civil defence structures built, or used during the 20th century.

The Medway Military Research Group that was reformed for the purpose, having been dormant for a number of years, carried out the Medway survey. The group is made up of four researchers each bringing their own skills and knowledge to the project.

Kent County Council manages the project. It is part of an initiative called the Historic Fortifications Network, and is funded by the European Union. The network is an alliance of towns with fortifications in Kent, Nord-Pas de Calais (France) and West Flanders (Belgium). Linked by history, these partners are working to develop heritage tourism across borders. The Network therefore wishes to:

- Improve physical access to fortified sites
- Improve intellectual access to fortified sites by educational projects and new interpretation
- Develop the Network by cross-border working, education of tourism officers and the identification of new sites with a tourism potential
- Cooperate and share information with other projects and networks
- Promote and market the resource

- Carry out specific actions, usually physical conservation, access improvements and new interpretation facilities.

This project should be seen as being carried out within the frame of these objectives.

BOUNDARIES AND PHYSICAL CHARACTERISTICS OF THE DISTRICT

The Medway District, with an area of 26,886 hectares, is coterminous with the Unitary Authority known as Medway Council. The area is bounded to the north by the edge of the River Thames, to the west by Gravesham Borough Council, to the south by Tonbridge and Malling and Maidstone Borough Councils and to the east by the river Medway and Swale Borough Council. It embraces the following parishes:

Allhallows
Cliffe Woods
Cooling
Cuxton
Frindsbury Extra
Halling
High Halstow
Hoo St. Werburgh
Isle of Grain
St. Mary Hoo
Stoke

Medway Council was formed in 1998 from a combination of Rochester upon Medway City Council and Gillingham Borough Council.

There were earlier council configurations (mentioned in detail elsewhere). During the Second World War the area now comprising Medway Council was administered by Strood Rural District Council, and by Rochester, Chatham and Gillingham Metropolitan Borough Councils.

Compatible with the name of its Council, this district centres on the winding course of the River Medway, cutting through the chalk uplands of the North Downs, with marshes either side of its lower reaches. The northern extremity of the district is that expanse of marshes along the south bank of the Thames. The urban commercial, partly industrial and residential centre is the conurbation between Strood and Gillingham, with numerous conjoining areas of post-Second World War housing and outlying settlements and villages, often adjacent to areas of country. The north and south parts of the district are divided by the A2/M2 motor routes, and by two railway lines, connecting London with the Kent coast and, collectively, crossing the Medway on six bridges. There is a third railway line along the left bank of the river connecting Strood with Maidstone and beyond, and a goods line running across the district from Shorne in Gravesham to Grain.

HISTORICAL PERSPECTIVE

Political

It has taken many years for the remains of our 20th century defences to be appreciated and offered any form of recognition and protection. Indeed for many years after World War Two there were sustained periods of “eyesore removal” undertaken, to the point that much of what was constructed has now been lost. Most of what remains cannot be regarded generally as beautiful. But they are historically important as symbols of a determination to safeguard our freedom. Yet, their significance is more than that. They were, in part, also emblems of the legacy of a centuries-old imperial agenda, which required a state with international aspirations to be strong at home. This was especially the case in the opening decade of the century. As well as being provided during periods of emergency against a specific and imminent threat, defences also resulted from peacetime planning aimed at establishing and maintaining a military balance against a perceived future rival or aggressor.

The defences with which the 20th century began mainly originated as part of earlier measures against Britain’s rival, France. The possibility of a war with that country had been a long-term concern of government. In the later 19th century this had been exacerbated in the public mind by the publication in Britain of a vociferous and populist fictional invasion scare literature. Rivalries and suspicions between states are not instantly assuaged by the signing of a piece of paper but tensions with France were eased by the Entente with her of 1904. In her place Germany had evolved as the more likely threat. This situation had, in turn, already generated its own fearful prophesying of a German onslaught through the pages of newspapers and novels. When war came in 1914, British defences were a reaction to fears of invasion arising from an unsought conflict with Germany and her allies, which had been triggered by the defensive provisions of interlocking international treaties between the Great European Powers.

Interwar developments, centring on air defence, expressed an imperative to secure a strategic balance with the next greatest European power, initially France and then with a revived Germany.

The Second World War defences were a consequence of a reaction against taking a stand against German aggrandizement.

After the Second World War, a new situation of international relations evolved, dominated for 40 or more years by the tensions between east and west, labelled the Cold War. This saw Britain adopting defensive measures within, and as part of the NATO multi-national treaty framework. By the end of the 20th century and the opening of the 21st century, the organisation of defence was forced to react to the threat of international terrorism. Each of these phases has in varying degrees been reflected within the built heritage of Medway District, whether against raid, invasion or air attack, or even more recently, to a small extent against terrorism.

Technological

The 20th century was more than a calendar definition of years. Although it received and utilized a range of earlier military technological advances from the maturing Industrial Revolution, it also marked a separation from the past, during which a raft of

new technologies and threats in warfare was introduced, including attack from the air, whether by airships, aeroplanes or ballistic missiles. This required a spatial rethink of defensive methods and considerable innovation. And, as the general population became enmeshed in the war effort during the two World Wars, this also required protection.

Advances in science of the test tube led to the development of a large and frightening suite of deadly chemical and biological agents that could be used against armies and populations. This was tellingly heralded by the use of poison gas on the Western Front during the First World War. This too necessitated the creation of new forms of defence.

The internal combustion engine gradually revolutionised military transport and, through the introduction of caterpillar tracks, led to the emergence of the battle tank. In reciprocation, this brought about the need to plan for defence against the possibility of armoured thrusts through the landscape in the event of invasion.

The threat of parachute and glider attack in the Second World War also demanded innovation in defensive tactics.

Telephony, radio and radar introduced electronic communications as well as the means of long-range detection by radio waves and even the fire direction of guns.

Nuclear fission and the prospect of attack by atomic and hydrogen weapons with the ability to produce devastation on an apocalyptic scale, forced a complete re-think of the defensive strategy and infrastructure.

All of these technological advances and trends were to a greater or lesser extent reflected in built structures across the Medway District.

However, before the end of the 20th century, the organisation of defensive measures in the Medway District had practically reached vanishing point, leaving a residue of a variety of sites across the landscape and in our townscape and villages, which deserve to be better- known, understood and, where appropriate, preserved.

This is the story that the defence heritage of Medway District has to tell us, outlined in detail within the historical findings section of this report.

SURVEY SCOPE AND OBJECTIVES

Scope

The changing role within the defensive infrastructure for Kent has produced a great diversity of military and civil defence sites and structures. Across the county, the survey is intended to identify all categories and their distribution, whether extant or disappeared. Broadly these are:

- Defences against maritime threats along the coasts and rivers – these include: gun batteries and emplacements (whether new or added to existing sites), defence electric light emplacements and fire control positions, boom defences, minefields, torpedo batteries, radar stations, pillboxes and redoubts, flame defences and beach obstacles.
- Naval and port defences.
- Anti-invasion defences, including facilities for railway guns, defensive stop lines, nodal points and anti-tank islands, defended villages and anti-glider obstacles.
- Anti-aircraft and aviation defences. This is a varied class of monument that reflects the tremendous rate of aircraft development. Sites include fighter interceptor airfields and their infrastructure, together with Emergency and Advanced Landing Grounds and other airfields, radar sites and sound mirrors, anti-aircraft gun and rocket sites, searchlight, balloon and ROC posts and decoy sites.
- Ancillary and other sites. These include rifle ranges, training areas, ammunition and fuel facilities, barracks and camps, hospitals, communication sites, a range of observation posts and transport facilities. Included are civilian buildings requisitioned for military use. Camps for prisoners of war are also embraced.
- Civil and passive air defence structures; the need to protect the civilian population and the nation's essential infrastructure against the effects of air raids has also produced a diverse range of sites and structures, including control centres and headquarters, air raid wardens posts, shelters against conventional and nuclear attack, decontamination centres, food equipment and vehicle stores and training centres. These sites, though often less dramatic than their military counterparts are no less integral a part of Kent's history and are equally worthy of appreciation, and where appropriate, protection.

Objectives

The detailed objectives of the survey were to:

1. Identify all military and civil defences sites which fall within the above categories
2. Compile a database of such sites into which will be inserted information on location, form, condition and access

3. Visit all sites in order to complete the database, take appropriate photographs and record additional information as appropriate. Exceptions to this are Anderson shelters of which only an agreed sample were to be visited
4. Identify opportunities for using the sites in education and tourism
5. Incorporate the database into the Kent County Council Sites and Monuments Record in order that the information is available for development control, research and for educational projects.
6. Produce a report that describes the method and results of the survey and places the sites in their historical, technological and functional context.

METHODOLOGY

The first step was to obtain baseline historical information and evidence from which to learn the nature and extent of sites and to decide upon a programme of field visits. The starting point was the preserved archives of the Medway Military Research Group and Fort Amherst Heritage Trust, which held information on a large number of potential sites and suggested areas for further archival research.

The methodology used took as its starting point that used by Victor Smith for the pilot study in the Gravesham District Council Area. A copy of which was supplied to assist with this study.

Contacting local historical societies and Parish Councils

A series of letters were sent to local media, amenity groups and parish councils. This approach did not significantly add to the list of previously un-known sites and the response was disappointingly low.

Documentary searches

The National Archive at Kew was visited on several occasions by the Medway team of researchers, allowing the equivalent of 16 days of research to be carried out. This revealed a huge amount of data around potential sites, often offering actual map references (most of these were in the former military grid which had to be converted into modern Ordnance Survey references using a conversion formula). The principal sources consulted at Kew were the War Office and Admiralty records, however there were also significant finds with the Air Ministry, Cabinet Office and Home Office records. Much of the information was of a general rather than of a site-specific nature. A notable exception was the War diary of the 11th Glosters, which contains a complete listing with references of the Hoo Stop Line, which confirmed information from previous visits as well as site visits.

The Medway Archives and Local Studies Centre at Strood contains the local authority archives of Medway Council and its former authorities that were amalgamated as a result of local government reorganisations; the first being the amalgamation of Hoo and Strood Rural District Councils in 1935, followed by a second reorganisation in 1973. This resulted in the Strood Rural District council being divided between Gravesham and the new Medway District council, which also incorporated Rochester City and Chatham Borough. In 1998 the Medway unitary authority was established with the merging of what had become the City of Rochester Upon Medway with Gillingham Borough Council. This finally established what was to become the area of the Medway study. The municipal history plays an important part in understanding the documentary search of the Medway archives. The holdings of documents for each former authority is not uniform, with each having preserved different types of records for the same period, making direct comparisons very difficult. The most complete records are those of Strood Rural District, which fully cover both the Second World War, in terms of Civil Defence planning and organisation, post war clearance of sites and post war with the reformation of Civil Defence. These post war records were of particular importance as Strood co-operated with the other Medway authorities in respect of post war civil defence and contained a wealth of detail pertaining to the other areas. In contrast Gillingham has little on the Second World War period but much detail for the cold war period. Both Chatham and Rochester have a range of information on World War II civil defence, but with Rochester preserving what is in

effect the most important single document, the Chatham “Garrison Plan to Defeat Invasion”, dating from 1942 it gives locations of over 1000 sites in the district. A total of 12 man-days were spent on research at the Medway archives.

The Royal Engineers Library at Brompton Barracks contains a unique photographic collection that helped to locate sites and features. In addition, the collection of maps and plans provided important information concerning the Isle of Grain and the former naval magazine complexes at Lodge Hill, Chattenden and Upnor.

The aerial photographic archive held at the KCC Heritage Conservation Group at Maidstone was consulted giving some important pointers and helped to locate a number of sites as well as cross-referencing with other sources.

The on-line database of the Defence of Britain Project was examined, but did not reveal any previously unknown sites to the research team.

A late discovery was the English Heritage archive at Swindon, in total two visits were made by two of the research team (4 man days) this contained a large collection of aerial photos of different scales and dates along with unpublished works on a large number of Kent defence sites obtained through desk top study. This material was found to be of great value.

The single most useful tool in both locating sites and confirming their current existence was “Google Earth” which is particularly clear in the Medway area. This revealed a number of unknown sites and confirmed the existence or otherwise of a large number of the sites located through archive searches. This allowed the team to make a very targeted approach to planning site visits.

A large number of secondary sources were examined and consulted in addition to the primary sources.

Information Handling

All evidence discovered was initially stored in note books and later collated into lists of type and in the case of visited sites, arranged as points on a distribution map. Information on sites was indexed to a very brief accession list, with copies of baseline sources, transcripts etc held in folders and ring binders for reference.

Site Visiting

Due to the very large number of sites identified, it quickly became apparent that the resources allocated to undertake the site visits were insufficient to complete the project as originally envisaged. Therefore a decision was made to prioritise areas that were under threat of redevelopment, coastal erosion or other potential danger. Additionally, other sites, regarded as of paramount interest or importance, were also included within the visits programme. The areas given priority for site visits were:

- The Isle of Grain
- Allhallows foreshore
- Lodge Hill and Chattenden
- Parts of the former Chatham Naval Base

- Rochester Airfield
- Lower Lines Gillingham
- Hoo stop line

Entering of sites into the database

From the notes taken from archive and site visits, information on each of the visited sites was entered into the data base provided by Kent County Council. Due to the time taken to input both the data and cross referencing site digital photographs, resources were not adequate to attempt to enter any of the un-visited sites. All members of the research team found the data base difficult to use, with data often corrupting or disappearing. As a result there is a large amount of data from un-visited sites which needs to be recorded at some later stage of the project.

SUMMARY OF SOURCES

A listing of sources for the study is given in an annex to this report. To summarise:

Information from Parish Council Records: Limited information was gained from consulting Parish Council records. These mainly related to the removal of former anti-invasion works immediately after the end of World War II. There is some information concerning the siting of air raid shelters and other Civil Defence installations before and during WWII. For the Post War Civil Defence revival / Cold War, a series of correspondence concerning the use of Parish facilities as Rest Centres and Emergency Feeding Centres was identified.

District Council Records: The records of the former local authorities, which comprise the Medway Unitary Authority, are housed in a single records office at Strood. However, the existing scope and range of these records in relation to Civil Defence differ widely. The most comprehensive being those of the former Strood Rural District Council that include very detailed site specific records complete with deeds of purchase, maps and plans of proposed building works. A comprehensive range of Civil Defence structures was identified across the villages of the Hoo Peninsula. Detailed local knowledge was required to identify the precise locations of many of the structures. The range of documentation available was sufficient to follow the pre-war planning and building phase of Civil Defence preparedness through the operational phase as well as wind-down and disposal at the end of the war to an unprecedented degree.

The same detailed series of records also applied to the Cold War Civil Defence revival period, outlining a large range of earmarked Civil Defence buildings but indicating little new build but the adaptation of existing premises. It was interesting to note that many of the structures built during WWII would have been useful subsequently but these were quickly removed at the end of WWII indicating a desire to clear away the debris and memories of this period. As a result of the Medway Towns forming a single Civil Defence Committee, a large amount of material relating to other areas of the Medway Towns, such as that contained within the Strood District Rural Council records, has not survived within the records of the other authorities.

In turning to the records of the other former Medway authorities:

Rochester City Council: Some detailed records relating to Second World War Civil Defence planning, including some detailed plans of depots and other structures and, uniquely, maps detailing Warden Posts and the areas they covered have survived. Another unique document surviving from the threat of German invasion period was the Rochester Mayors copy of the 'Garrison Plan to Defeat Invasion 1941'. This is the only surviving copy of some 30 originally issued (one copy of a different date survives in the National Archives – see separate entry). This document offers complete lists of every anti-invasion structure, including roadblocks, rail blocks, anti-tank artillery positions, spigot mortars and fougasses. In addition, it identifies the Home Guard and other troops who would man each section of the defences and the command and control arrangements.

Rochester City Council also has reasonable records covering the Cold War period, but these are of a more general nature and less site specific than those of Strood Rural District.

Chatham Borough Council: The records covering both the Second World War and Cold War periods are incomplete, but do offer some particular areas of detail. These include a scheme to provide large numbers of public shelter places through the conversion of known caves and tunnels as well as new build (not approved by the Home Office) and some information relating to Warden Posts, First Aid Posts and other Civil Defence infrastructure. In terms of post war information, there are detailed files concerning the run-down and disposal of military and naval establishments in the late 1950's and early 1960's. Of particular note among these are detailed files on the Chatham Gun Wharf (subsequently purchased by Chatham Council) and a detailed map of the naval buildings earmarked for disposal in and around Chatham Dockyard.

Gillingham Borough Council: The Gillingham records were the most incomplete, containing little information from the Second World War period. There are some detailed documents and lists pertaining to the Cold War Civil Defence period, offering details of air raid siren sites and buildings earmarked for use as Rest Centres, Muster Points and Emergency Ambulance Stations. It is understood that many archival records were stored within the Civil Defence Control Centre under the car park of the municipal building in Gillingham and suffered serious water damage due to a leak and were beyond saving.

Royal Engineers Library: Within the library are two major resources of local interest. The photographic collection is very extensive dating from the mid 19th century, but also containing pictures from the early 20th century of field work training at Chatham, barracks and camps, and a large amount of material relating to the former naval magazines at Lodge Hill that were taken over by the Royal Engineers in the early 1960's as an engineering training ground. The second important source at the library is the maps and plans collection. This provided detailed information of fortifications and associated buildings on the Isle of Grain, plans of fortifications converted for other uses during the Second World War and a large number of plans and drawings relating to the Upnor, Chattenden and Lodge Hill naval magazine complexes including the extensive railway network built to support them.

National Archives:

- **War Office Files:** These contained a wealth of information relating to defence schemes, including site specific. Prior to WWI, two major defence schemes for the Thames and Medway area were drawn up to counter the threat of invasion. During WWI, extensive preparations were put in place on the Isle of Grain and around the naval establishments to provide anti-invasion and anti-sabotage defence. Documents also detail the rapid expansion of the military establishments during the First World War to service the field army in France. The increasing threat of aerial attack post WWI is reflected in the development of fixed anti-aircraft emplacements and mobile searchlight facilities to protect the naval facilities at Chatham and on the isle of Grain. Of major significance is information relating to anti-invasion defences in 1940, which led to the identification of the fixed defences of the 'Hoo Stop Line'. Of particular note is the war diary of the 11th Glosters, which includes maps and precise locations of defence structures. Important documents relating to light anti-

- *Admiralty Files:* The development of fixed anti-aircraft defences and indeed the world's first such emplacement can be identified as being built to defend the naval magazine complex at Lodge Hill from an important single file relating to this subject. In the early part of WWI, Admiralty files also indicate the rapid expansion of anti-aircraft defence, including the establishment of a naval air station on the Isle of Grain. A large number of plans and drawings covering the full range of the naval establishments in the Medway area during both WWI and WWII exist. Of particular interest is information relating to the construction of a Naval Command Centre (Nore Command) under the Lower Lines at Chatham and a series of deep shelters beneath the Naval and Marine Barracks prior to WWII.
- *Air Ministry Files:* These contain information relating to the airship station at Kings North (including flight diaries) and the Grain Air Station that were taken over by the RAF from the Navy. Interesting documents relating to the establishment of an elementary flying school at Rochester Airfield and the creation of joint Naval and RAF Coastal Command Centre at Gillingham in the build-up to WWII were also discovered.
- *Home Office Files:* The principal useful information from these files concerns the development of Civil Defence schemes prior to WWII and in particular public shelter schemes submitted for funding approval by the Medway local authorities. There are some detailed records relating to heavy bombing raids, particularly concerning Gillingham that identified some Civil Defence structures. There is a wealth of material relating to the Cold War period, much of this is policy or strategic in nature and of little benefit to this particular study, however an exception to this is the information relating to the re-use of WWII shelters and the development of Fort Bridgewood into a sub-Regional Control Centre for South-East London.

KCC Aerial Photographic Collection: The comprehensive collection of RAF aerial photographs, mainly dating from 1946/7, was useful in identifying a number of sites within the rural Hoo Peninsula area including the Hoo Stop Line, Isle of Grain and Allhallows beach defences. However, due to the scale of the photographs, they were of limited use within the urban areas.

Centre for Kentish Studies: This resource contained limited material due to the transfer of documents to the Medway Study Centre. However, of particular note was information relating to the Curtiss & Harvey explosives works at Cliffe and the complete war diary of the Medway Group Control Centre at Fort Amherst – detailing Civil Defence activity throughout WWII within the Medway area giving information on damage, casualties and crashed aircraft.

A number of closed files relating to the Cold War period are held at the centre; however these were not accessed in the course of this study.

English Heritage Archives Swindon: This source was identified late into the study period and requires further investigation. However, there are two significant resources contained within it.

- *National Aerial Photographic Records:* These contain complete series of aerial photographs, ranging in date from before the Second World War, during and post and at a variety of scales. The immediate post-war pictures are of a large scale enabling the clear identification of buildings and structures within the urban environment and led to the identification of previously unidentified buildings and the reassessment of the construction date of others.
- *Library:* Within the English Heritage library are a number of unpublished desk top studies relating to the sites of heavy anti-aircraft gun sites, light anti-aircraft gun sites, including details of “Operation Diver” against the V1 rockets, bombing decoy sites and coastal artillery installations. These are based on aerial photographs, surviving records, maps and plans. Due to the extensive range, only the heavy anti-aircraft sites and decoy sites have been followed up at this stage.

Secondary Sources: A large number of secondary sources were consulted on World War II anti invasion defences. Of particular note are the Kent County Council publication “The County Administration in War”, a detailed account relating to Civil Defence activity, and “Attack Warning Red” a history of the Royal Observer Corps, detailing the location of Royal Observer Corps posts.

SUMMARY OF HISTORICAL FINDINGS

Strategic Significance

The Medway area has strategic significance under a number of different headings; first its location on the southern part of the Thames estuary makes it significant in the historical defence of the approaches to London, preventing naval attack or invasion. To this end there have been major fortifications and coastal artillery installations built over a period of centuries, often reusing existing sites due to their strategic position such as the Isle of Grain.

The essence and origins of the strategic significance of the Medway lay in the establishment in earlier centuries of the naval anchorages and dockyards at Chatham and Sheerness. These were the only naval bases facing the North Sea until others were built elsewhere in the 20th century. These have left a residue of structural evidence, greater in extent at Chatham. Then there was the vulnerability of Rochester Bridge – the lowest crossing in the Medway – carrying a road from the Kent coast to London. This was a tempting route for an invader advancing on the capital and the heart of England. Later the road bridge was joined at its side by a railway bridge, further adding to the strategic importance of the crossing.

Both banks of the River Thames have historically supported a range of coastal defences to protect the Thames Estuary and sea borne approaches to London. These have been updated in line with technical advances up until the abandonment of coastal defence in 1956; in common with other coastal defence sites there has been sustained reuse in updating of existing structures of which Grain Fort is a good example. A network of anti-aircraft defences fulfilling a similar role later supplemented the coastal defences.

The need to secure and protect these assets led to a succession of schemes of defence that extended outwards to match the increasing range and effectiveness of artillery. This led to defences along the river, at its mouth at Grain and Sheerness, as well as encircling the dockyard at Chatham. The presence of these fortifications and the garrison in the various, and partly surviving barracks, also created the potential for their use as a base of operations for troops to act against an invader advancing west through Kent. All of this combined to make the Medway a key national asset.

Related to the defence of London is the river crossing at Rochester over the River Medway, which provides a major obstacle to an invading force advancing towards the Capital. The Rochester bridge area has been consistently fortified since Roman times and was subject to a major defence scheme during the Second World War.

The development of aircraft and airships in the early part of the 20th century continued to emphasise the importance of the Medway area in relation to the defence of London.

The most significant strategic importance of Medway is the establishment of the Royal Dockyard and naval installations, including those at Sheerness. By the early 20th century Chatham Dockyard was a major naval warship construction and refitting centre, and had located nearby extensive magazine complexes at Lodge Hill and Chattenden, as well as a major Naval fuel oil depot and early naval air service station on the Isle of Grain. The building of HMS Pembroke naval barracks in the early 1900's established Chatham as one the three great naval 'Port Divisions' supplying

men to the fleet. As a direct consequence of the naval presence the Royal Marine Division was established at Chatham and a vast military complex, including barracks and fortifications, to protect the naval arsenals, which became of significant importance within their own right. Indeed Chatham remains as an important military training centre and garrison to this day although vastly reduced in size.

The Naval and Military establishments witnessed major expansion and later contraction during and after both world wars.

Pre First World War

Coastal Artillery Defence: The turn of the 20th century witnessed important developments in coastal artillery with the introduction of rifled breech loading guns, both of heavy long-range and small calibre short-range varieties. This resulted in the re-modelling of mainly existing sites such as the Royal Commission Forts (1860's) of Grain Fort, Slough Fort (two extensive wing batteries were constructed), Cliffe Fort and Grain Tower. However, some muzzle-loading guns continued to be used into the early years of the twentieth century. Mention should also be made of the Brennan Torpedo station at Cliffe Fort, although dating from the 1880's it continued in use into the early years of the 20th century. There were two significant new builds, Grain Battery, containing 4 x 6" Breech Loading Guns, and Lower Hope Point Battery, with two 4.7" Quick-Firing guns. Coastal artillery was supplemented by Defence Electric Lights (searchlights) to illuminate ships at night and a boom across the River Medway from the Isle of Grain to Burntwick Island with a 4.7" quick-firing gun at either end.

These installations worked in co-operation with batteries on the Isle of Sheppey and on the north bank of the River Thames, and integrated into common defence schemes and shared command and control arrangements, covering the entire Thames Estuary area.

Anti-Aircraft Defence: Immediately prior to the First World War the threat posed by hostile aircraft to military and naval establishments in southern England became increasingly recognised. As a result the world's first fixed anti-aircraft emplacements were built in 1913 at Lodge Hill Farm on the Hoo Peninsula to protect the naval magazine establishments. Initially two emplacements were built for high-angle guns with further emplacements constructed nearby at Beacon Hill.

Naval Establishments: Prior to WWI Chatham Dockyard was well established but was still under development in terms of the major rebuild undertaken in the second half of the 19th century to cope with rapidly increasing naval technology such as the development of the 'Dreadnought' class of battleships and submarines in which Chatham came to specialise in their construction. The full range of buildings is too vast to comment upon within the scope of this survey. Other significant developments were the building of the naval barracks at Chatham and the naval hospital at Gillingham. The naval magazines at Lodge Hill were well established by this time but undergoing modernisation. A major development was the use of oil to fuel warships rather than coal; this directly led to the establishment of naval fuel oil bunkers on the Isle of Grain.

A sailor's home was established adjacent to Chatham Town Hall for use as hostel accommodation for sailors on leave. This became a government office in 1960 and demolished in 2003.

A large residence was constructed for the Commander-in-Chief of the Nore in 1905 on Lower Lines. This was demolished around 1960 after the abolition of the command; however, extensive remains of the formal garden can be seen.

Military Establishments: By the early years of the 20th century most of the major barrack complexes, such as Brompton, St Mary's, Chatham, Chattenden and Southhill, were well established. With Chatham recognised as an important garrison town and training establishment, particularly in relation to the Royal Engineers. The military section of the Chatham Gun Wharf had evolved from a weapons store into a uniform and equipment supply depot. This period also saw the completion of Fort Darland as the last of the Chatham land defence fortifications commenced in the 1870's and considered obsolete before completion due to the mobile type of warfare and increasing range of artillery. The Royal Engineers used these later fortifications for a series of extensive siege operations in 1907 to practice capturing 'modern' fixed defences.

A new programme to provide modernised drill halls for the Territorial Army is reflected in the large example built in Boundary Road, Chatham (now demolished).

First World War

Coastal Artillery Defence: The major addition in respect of coastal artillery was the construction of Whitewall Farm Battery, on the Isle of Grain, in the war period and armed with two 9.2" breechloader guns (that were moved from Slough Fort which had become surplus to requirement). This battery is particularly interesting as it was built at very low level to blend into the local environment and as such was for many years believed to have been eroded and lost to the sea. However, study of local photographs and fieldwork have identified that significant remains still exist. A new battery of 9.2" guns was established at Fletcher Battery on the Isle of Sheppey to improve the defence of the Thames and Medway Estuary. These guns were taken from Slough Fort.

A series of works and upgrades were made to the other Grain emplacements at this time. A boom was put in place between Grain Tower and Garrison Point at Sheerness. Together with a second boom placed across the Thames near St Mary's Bay on the Hoo Peninsula, protected by Quick-firing guns.

Anti-Aircraft Defence: Additional light and heavy guns were installed to protect naval installations, direct evidence of this can be found in respect of a temporary emplacement on the Lower Lines at Gillingham. The batteries at Lodge Hill and Beacon Hill were upgraded during this period; there are substantial remains at the Lodge Hill site.

Naval Establishments: There was considerable expansion within Chatham Dockyard and its environs during this time, however, very little, in structural terms, remains of this period due to demolitions and redevelopment.

Military Establishments: The rapid expansion of the field army in the early part of the First World War required extensive temporary facilities for the Royal Engineers to be created. This required them to expand beyond their traditional field engineer training area on the Lower Lines to include trench warfare and subterranean tunnel warfare training facilities at Chattenden and also at Darland Banks at Gillingham. There are visible remains of trench systems at Chattenden which are noticeable via Google Earth. There is local evidence of a large crater remaining at the Darland site from subterranean mining practise. The Royal Engineers used a significant area of the Great Lines as a tented camp to house additional troops and much of the Inner Lines contained hutted camps.

Another aspect to the military preparations within the Medway area was the perceived threat of German invasion from 1915. This resulted in the construction of a large number of field works and concrete emplacements and pillboxes. A whole series were constructed know as the 'Chatham Land Front', which were mainly well to the east of the Medway area with some significant sections lying within the scope of this study. These include some visible trench systems near the Medway Crematorium, concrete pillboxes and block houses at Lodge Hill and Chattenden and a series of field works and blockhouses on the Isle of Grain for which there is now only the evidence of some of the field works. The Lodge Hill and Chattenden pillboxes and blockhouse are worthy of statutory protection.

A series of large underground shelter tunnels were constructed beneath the glaxis on the Chatham Lines, adjacent to Wood Street, Brompton. A similar structure was recently discovered during construction work on the Lower Lines at Gillingham.

A significant event in 1917 was the bombing of Pembroke Barrack by a single 'Gotha' bomber that resulted in over 160 deaths. This single greatest loss of life from a single bomb was to have a major influence on subsequent preparations prior to WWII.

In order to counter a possible German invasion a series of in-depth fieldworks, pillboxes and fixed gun emplacements were established on high ground to the south-east of the Medway Towns which were known as the 'Chatham Land Front'. This in turn can trace its origins to a similar fortified line, far to the west, established to defend London in the late nineteenth century.

Interwar

Coastal Artillery Defence: No additions during this period, however a number of installations were downgraded or decommissioned. In the latter are Grain Tower, Grain Dummy Battery, North and South Boom Batteries and Slough Fort.

Anti-Aircraft Defence: From the mid-1920s, and through the 1930s, a period of considerable investment was made in anti-aircraft defences, this included the raising the specialist Territorial Army (TA) units to man anti-aircraft guns and searchlights. The TA training centre at Fort Clarence in Rochester converted to anti-aircraft defence (166 City of Rochester Battery) and practised on fixed emplacements at Fort Borstal, Rochester. These emplacements are still in existence. A light anti-aircraft unit was formed on the Isle of Grain from the employees of the Medway Oil Storage Company to defend the company's installations. A searchlight depot was established at Hoath lane, Gillingham that was part of the Royal Engineer establishment. Fixed

anti-aircraft four gun batteries were constructed at Allhallows, Isle of Grain, Gibraltar Farm, Twydall, Fenn Street, Rainham and Dilly Wood Lane, Higham.

Naval Establishments: The most significant developments in terms of the Naval Establishments were passive defence arrangements, including: the provision of air raid shelters for civilian workers on a massive scale and decontamination centres in the event of Mustard Gas attack. Surviving examples of both shelters and decontamination centres can be found at lodge Hill, Upnor and the Chatham Historic Dockyard. Extensive deep shelters were provided for both HMS Pembroke and the Royal Marine barracks, sufficient to house several thousand men. These were built as a direct consequence of the 1917 bombing raid. A new deep constructed command centre was built beneath the Lower Lines for the Commander-in-Chief the Nore, directly behind his official residence. This was to remain in use until the withdrawal of the navy from Chatham in 1982. It remains sealed and partly fire damaged beneath the car park of the new Mid-Kent College.

The Chatham Port Division War Memorial was constructed on the Great Lines, Gillingham in the early 1920's. A naval retirement home, known as Pembroke House built adjacent to Gillingham Park, and a naval family's hospital was opened in Barnsole Road, Gillingham and remains in use today having been transferred to the NHS in 1960.

Military Establishments: In terms of military developments there was a partial rebuilding of the Chatham Barracks to bring them up to 'modern' standards and they were renamed Kitchener Barracks. The army technical school for training Royal Engineer apprentices was established at Darland on the First World War field training area. A new TA drill hall for the Royal West Kent Regiment was built on Watling Street, Gillingham.

Air Establishments: Short Brothers developed extensive factories at the Esplanade Rochester for seaplane construction (Shorts Sunderland) and at Rochester Airfield a complex was established in partnership with Pobjoy's (engine manufacturers) to build the Short Sterling Bomber (the first British four-engined bomber). In 1939, Short Brothers established an elementary flying school to train reserve pilots for the Fleet Air Arm and Royal Air Force. The flying school stayed for less than a year; however, the majority of buildings uniquely still survive.

Civil Defence: The 1930's saw the development of air raid precautions, later to become 'Civil Defence'. These plans were based on two assumptions: firstly 'that the bomber will always get through' and secondly that Britain's civilian population will be attacked with gas. Local authorities were given the responsibility for developing a civil defence organisation that was initially based around community wardens looking after a geographical area and reporting through a series of sector HQ's to a local headquarters. Traditionally the latter were located within the basements of Town Halls as was the case at Rochester and Chatham. However, both Gillingham and Strood Rural District constructed purpose built surface buildings. A series of warden post were constructed or existing buildings converted for this function. This survey has not been able to locate any existing examples.

An extensive public shelter campaign was commenced, including shelters for all Medway schools and there are some surviving examples in the Gillingham area.

Other services were developed as part of the civil defence preparations, including the establishment of the Auxiliary Fire Service; a known surviving example is the Retained Fire Service Station at Hoo that also contained an Emergency Mortuary. In support of the Auxiliary Fire Service there was a series of emergency reservoirs. None of these remain complete; however, there is buried site at Jackson's Field at Rochester and the partial remains at Nelson Road, Gillingham. Surviving in large numbers are the painted signs indicating the direction and location of the Emergency Water Source (EWS). Notable surviving signs are located at The Lines, Rochester, Pier Chambers, Chatham and the bridge adjacent to Gillingham Railway Station.

Other Civil Defence related activities include First Aid and Emergency Medical Facilities, Emergency Ambulance Stations, Rescue Depots (usually incorporated into municipal works yards), and the earmarking of premises as Emergency Rest Centres and Feeding Centres (usually community halls and schools). A series of powered air raid sirens was established throughout the Medway area, supplemented by hand-cranked sirens in more remote locations. The fixed sirens were retained into the Cold War period and were not removed until the early 1990's – none are known to survive.

Kent County Council established a major Civil Defence Control Centre in the tunnels at Fort Amherst to co-ordinate all civil defence activity in the North Kent coastal area between Gravesend and the Isle of Sheppey. This was known as the 'Medway Group Control', which functioned throughout WWII.

Due to the restrictions of resources placed upon this project it has not proved possible to establish the remains of the civil defence infrastructure except in a few notable cases on the Hoo Peninsula where they were combined with other site visits.

Second World War

Coastal Artillery: Booms were established on the River Thames at St Mary's Bay and on the River Medway at Grain using the previous WWI locations; some buildings survive at the St Mary's Bay site. The Isle of Grain site was protected by the installation of a twin 6-pdr coastal artillery gun on Grain Tower which has significant remains still visible. The Observation and Command Tower on the foreshore on Grain was demolished some twenty years ago leaving just the plinth and the former generating building now used by the Environment Agency as a store.

Cliffe Fort was rearmed with quick firing guns and a number of machine guns in a dual anti-invasion/anti-aircraft role.

Anti-aircraft defence: The early part of the war saw an expansion to fixed anti-aircraft gun sites, both heavy and light. Examples of heavy sites are Tower Hill, Upnor, Cooling, and Grain. The Cooling site later became a training establishment. Light anti-aircraft batteries were established on and around Rochester Airfield, location including Fort Bridgewoods and Fort Horsted (which also became the main anti-aircraft magazine). Light positions were constructed on Fort Amherst, Hoo Fort and at Hoo Common amongst numerous other locations.

To protect Chatham Dockyard a Cruiser 'HMS Arethusa' was used as an anti-aircraft platform whilst undergoing a long refit in No.9 Dock.

The anti-aircraft defences were controlled from Fort Luton, which was known as 'Thames and Medway South HQ Anti-Aircraft'. Initially contained within the original casemates the establishment grew to include a large encampment behind the fort, of which nothing now remains.

Large numbers of searchlight positions were established but these were of a very temporary and mobile nature with no known surviving sites. In support of the conventional anti-aircraft defences two rocket or 'Z-Batteries' were established on Gillingham Golf Course and at Lodge Hill where some possible support buildings survived until early 2007. Specially formed home guard units manned both of these batteries. During the mid-war period other anti-aircraft defences were added which included a Bofors flak tower on St Mary's Island (demolished in 1982) and the use of smokescreens to deter bombers operated by Canadian Engineers. The last period of anti-aircraft activity came in 1944 with Operation Diver to counter V1 Flying Bombs, when anti-aircraft 'boxes' of massed mobile guns were established along the coastline, one of which included the Hoo Peninsula. However, due to their mobile nature no remains exist.

A series of 'Dummy Sites' were established to decoy German bombers away from their intended targets. There were two main types, daytime duplicate sites and nighttime sites using lights and explosions. A complete dummy site for Rochester Airfield was constructed at Capstone; however only the entrance roadway now remains. A rare example of a nighttime site for the Isle of Grain fuel depot survives at Binney Farm, Allhallows. At Cliffe a control bunker remains and another survives at Luddesdown. Other sites without trace were established at St Mary Hoo and Cooling.

Naval Establishments: A major expansion of Chatham Dockyard took place in terms of both building and workforce. However, the majority of these buildings were demolished as part of subsequent redevelopment of the dockyard site, with some limited examples remaining in what is now the commercial port. The Dockyard expanded to the east incorporating Gillingham Pier, part of which remained in naval hands until the dockyard closure, and the 'Fairmile' boat building yard (Motor Torpedo Boat builders). The slipways of which are still visible at the Gillingham Strand.

In the latter part of 1940 the Royal Engineer training establishment moved to Ripon in Yorkshire, which resulted in the Royal Navy taking over most of the barrack accommodation, including Brompton Barracks, St Mary's Barracks and the married quarters at Fort Amherst as the married accommodation for wrens. The naval magazine complex at Lodge Hill was also expanded with the addition of ancillary buildings some of which still survive.

Mine Observation Posts were established along the Medway manned by the 'Naval Mine Watching Service', with examples surviving in the Historic Dockyard, Gillingham Strand and on Darnet Fort in the River Medway. A new deep location was constructed for the dockyard telephone exchange behind the Dock Yard Terrace, and remained in use until the 1950's.

Fort Bridgewoods became a major naval intelligence-gathering establishment known as a 'Y-station', feeding information to Bletchley Park. It expanded as a hutted camp in the area now occupied by the Prison Service; however there are some surviving concrete bases in a wooded area. A naval signal station was established at Beacon Hill, which remained in use until the closure of the Chatham Naval base in 1982 and was subsequently demolished. The Nore Command Bunker was extended by covering over part of the adjacent fortification ditch with re-enforced concrete. A large hutted camp known as 'East Camp' was also established nearby later supplemented by 'Medway Road Camp', now built over by the Medway College Campus.

Military Establishments: The major period for the construction of defences during the Second World War, was the "Invasion" period from May 1940 to June 1941. However, in the early period of the war there was an expansion of temporary anti-aircraft and searchlight positions and a rapid expansion within the barracks and training infrastructure of a similar pattern to World War One. A rare surviving example of a light anti-aircraft emplacement can be seen on the roof of Prince Williams Barracks at Fort Amherst that is corroborated by a rare contemporary photograph.

During the Dunkirk evacuation period the realisation that invasion was now likely became apparent and rapid preparations were made. The philosophy at that time was for 'fixed' defences manned by static forces. In the later period of 1941 this changed to 'mobile' and 'flexible' response not dependent on fixed positions.

The planned German invasion was expected to concentrate on the Kent and Sussex coast, supported by parachute troops. Therefore most defences were concentrated on this coastal 'crust'. Behind the beach defences were a series of fixed lines of defence, the largest of which was known as the 'GHQ Line' terminating on the Hoo Peninsula. In support of these defences were a number of fortified towns and villages known as 'Nodal Points', the most important in the South-East being Chatham Nodal Point, which included all of the Medway Towns.

The Hoo Peninsula, despite being well provided with coastal artillery on the Isle of Grain and at Cliffe Fort, was regarded as vulnerable to a diversionary invasion in the area of Allhallows including possibly the use of glider or paratroops. To protect against this possibility a series of beach defences consisting of infantry pillboxes were constructed in the Allhallows area defending the only possible beach landing zone with the exception of a stretch of the Isle of Grain that was provided with an extensive and largely still surviving series of anti-tank obstacles. In addition, Slough Fort was re-armed using light naval guns mounted on lorries and later using fixed emplacements, these guns were to directly sweep the potential landing ground in a similar role which had led to the original construction of the fort. Many of the buildings within the village of Allhallows were requisitioned by the navy and army for a variety of defence uses. There is also evidence of intention to flood the surrounding marshland to hamper movement of enemy troops; there is a surviving sluiceway that appears to date from the 1940's, indicating such preparations. Further inland, possible landing grounds for gliders were protected by poles and wires, none of which are known to survive.

Further back on the Hoo Peninsula a major defence line consisting of infantry and anti-tank pillboxes fronted by an anti-tank ditch ran right across the peninsula from Hoo to Higham, known as the 'Hoo Stop Line'. This was an element in the larger 'GHQ Stop Line'. These defences included fortified roadblocks and at the Hoo end factory premises. The defences were to be manned by a combination of Home Guard (14th Battalion Kent Home Guard), the 11th Glosters and a Royal Artillery detachment. Significant numbers of these pillboxes as well as a roadblock survive, making it perhaps the most complete example of a 1940's Stop Line in existence.

The Chatham Defences were controlled from an anti-invasion headquarters established within the tunnels at Fort Amherst. The Napoleonic fortifications were supplemented with pillboxes and spigot mortars to form an inner and final line of defence for the dockyard and barrack areas. Large numbers of 'weapons pits' were dug. As a result of the land remaining in military ownership to the present time many of these features still remain. Throughout the Medway Towns large numbers of roadblocks were constructed protected by fixed anti-tank guns, spigot mortars, Fougasse and fortified buildings. Complete locations for these sites are contained within the 'Garrison Plan to Defeat Invasion'. Rochester Bridge was particularly well defended; however subsequent redevelopment has removed all traces of these defences apart from bricked-up loophole defences on a railway bridge (Station Road) in Strood. A Fougasse firing point has been located in Chatham and submitted for statutory listing. The vast majority of the anti-invasion defences have not been located on the ground due to the restraints imposed on the resources of this survey.

Further out from the towns outlying villages, such as Walderslade and Bluebell Hill, formed minor nodal points defended by local Home Guard, with no traces of defensive structures remaining.

The post invasion period saw the continued expansion of barracks and camps with new additions such as King's Hill Camp at Hoo and the conversion of the former army technical college at Fort Darland into an army prison of 'glasshouse'. A large Prisoner-of-War Camp was established at Walderslade on what is now known as Hook Meadow; a number of nearby buildings were requisitioned such as the Vicarage (Officers Mess) and the Walderslade Working Men's Club (Motor Transport Depot). Some of the barrack accommodation was used as part of the build-up for the D-Day invasion but the Medway area was very much on the periphery of these preparations. However, there is evidence of 'Dummy Sites' being established as part of the deception to indicate an invasion of the Pas de Calais. Such sites were located near Cliffe and Cooling and strings of concrete barges were anchored in the River Medway, some of which still survive off Gillingham Strand. A military signals station was established at Cooling, which was subsequently taken over by a commercial concern, substantial remains are still visible.

Air Establishments: Rochester Airfield was designated as an emergency landing ground and provided with limited facilities for refuelling and rearming. There are some important significant remains, including a machine gun 'butts' for test firing and a number of wooden huts. The joint headquarters of RAF Coastal Command and Naval Nore Command expanded to a number of surface structures that included Medway Road Camp and some brick structures on the Black Lion fields' area. An RAF radio station was established on the Great Lines.

Production of the Shorts Sterling at Rochester was transferred for a period to Belfast due to severe bombing but later continued at Rochester. Substantial remains of the Shorts factory survive in recognisable form now used by BAE Systems. The seaplane works at Rochester Esplanade were provided with a series of extensive shelter tunnels and areas where limited underground production could take place. These tunnels still remain in a sealed state, but no trace of the factory complex, apart from a subsidiary building in Strood, survive.

Royal Observer Corps Posts were established at Slough Fort, Hoo and Mierscourt, Rainham to plot the movement of enemy aircraft. There are no visible remains of these posts.

Civil Defence: The early years of the war saw an expansion and consolidation of Civil Defence structures with new build and rebuilding of existing structures. A major Civil Defence Depot was established by Rochester Council at the top of Strood Hill, many of these buildings survived into the 1970's. Warden Posts and First Aid Posts assumed more permanent appearance; however none of these structures are known to have survived. This is an area that requires further investigation. Various schemes were put forward during this period for enhanced public shelters but few of the later schemes appear to have been pursued due to cost constraints and the diminishing number of bombing raids.

Countless 'Anderson Shelters' were built in the early part of the war with numerous examples remaining throughout Medway. An earlier survey of Montford Road, Strood indicated six surviving in one road. A good example of a factory communal shelter survives at the rear of the former Sunlight Laundry, Richmond Road in Gillingham. Military air raid shelters are known to survive in the vicinity of Kitchener Barracks and Maxwell Road, Brompton. A "Passive Defence" headquarters was established within a tunnel built by Marc Brunel in Chatham Dock Yard to co-ordinate civil defence activity within the naval area.

Research undertaken for this project has revealed a large number of sites that are yet to be investigated on the ground.

Post War

The immediate years after WW II saw a rapid run down of both military and civil defence establishments and the removal of many temporary defence and civil defence structures that impeded civilian activity. However, the onset of the 'Cold War' in the late 1940's saw a rapid reversal, with the reformation of the Civil Defence Corps to cope with the effects of possible Nuclear War.

Coastal Artillery: This period saw the decline and abolition of coastal artillery (1956), with the only developments being the enhanced use of radar to target recognition; however, there are no identifiable remains from this period of activity.

Anti-Aircraft: Post war anti-aircraft defence returned to the pre-war situation of becoming the responsibility of the Territorial Army. The number of sites containing fixed guns was drastically reduced within the Medway area, only Fenn Street, Gibraltar Farm and possibly Dillywood Lane assuming a post war role. However, a

new anti-aircraft operations room was established as new build at Fort Bridgewoods in 1953, consisting of a two level large concrete bunker with a central operations room surrounded by ancillary and support services. This remained in use until the abolition of fixed anti-aircraft defences in 1957. The building was finally demolished in 1988, having subsequently been used as Sub-Regional Control Centre (see Civil Defence).

Naval Establishments: Post war there was a steady decline in the naval presence at Chatham leading to final closure and withdrawal in 1982. In particular, there was a significant reduction in the naval presence as a result of the 1957 Defence White Paper. This led directly to the closure of the naval armament establishments, Chatham Gun Wharf, Isle of Grain fuel depot and the Nore Command. The Chatham Royal Marine Division closed in 1951; however the barracks remained until the late 1950's. There is circumstantial and some documentary evidence of Chatham's involvement in the Bikini Islands 'H-Bomb' test with local rumour that buildings adjacent to the Lower Lines were used as a possible decontamination centre for those returning from the tests. A building within the Chatham Gun Wharf was converted to an atomic laboratory. The early 1960's saw the construction of a major nuclear submarine-refitting complex built around docks 6 and 7 within the dockyard of which almost all traces have now been removed. This was Britain's first facility for the refitting of nuclear submarines. However, a low level nuclear waste dump remains adjacent to Pier Road in Gillingham, still under the control of the Ministry of Defence. There was some other limited redevelopment of facilities within the dockyard during the 1970's, including new barrack blocks within HMS Pembroke. Large naval married quarters were built post war at Dargettswood, Walderslade and on the former St Mary's barracks site at Chatham.

In the 1950's the naval Mine Watching Service was reformed into Royal Navy Auxiliary Service with the role of forming up and protecting inshore convoys around the coast of Britain. The service operated small former naval craft from a series of semi-protected headquarters around the coast of Britain. The Chatham unit operated from the Collingwood Block (former naval training establishment) until its disbandment in the early 1990's.

Post war there remained a Royal Naval Reserve unit at Chatham that maintained and operated the Nore Command bunker and continued to use it after the abolition of the Nore Command as a reserve headquarters until 1982. After a period of no Royal Naval Reserve presence at Chatham a detachment of the London RNR was re-established with the Collingwood building. Also located here are a detachment of the Royal Marine Reserve, Sea Cadets and Royal Marine Cadets. These represent the sole surviving presence of the Royal Navy at Chatham.

Military Establishments: The only additional military establishment during the post war period was that of the Defence Explosives Ordnance Disposal School (DEODS) at Lodge Hill, Rochester. This was built on part of the former naval magazine complex and contains a unique and impressive collection of historical explosives ordnance. The school is due to close by 2010 as a result of relocation.

The only military expansion in the Medway area was the development of training facilities for the Royal Engineers who re-developed Chattenden Barracks (demolished

2006) and the former naval magazine complexes at Lodge Hill as Royal Engineer training establishments.

The Fort Darland Military Prison reverted to the Royal Engineers post-war and after the abolition of National Service became an infantry barracks until subsequent demolition of the site around 1980.

Air Establishments: The only significant post war air force establishment was 'RAF Gillingham'. Part of the joint command with the Royal Navy at the Lower Lines which survived until the 1950's and closing at the same time as the Nore Command. The only surviving relic from this establishment is the unit flag that now hangs in the Council Chamber, Municipal Buildings in Gillingham.

In the late 1950's the Royal Observer Corps (ROC) was re-rolled as an organisation to plot nuclear detonations and record levels of nuclear fallout. The organisation was transferred to the Home Office as part of Civil Defence infrastructure but retained strong links to the RAF including to continue to wear RAF style uniform.

For a limited period the ROC continued to plot aircraft from new purpose built posts, 'Orilt Posts', none of which are known to survive in the Medway area. Underground ROC nuclear posts were constructed at Cliffe, Allhallows, Hoo and Miersborough in Rainham. A radical restructuring of civil defences in 1967 saw the closure of 50% of ROC posts nationally, but in Medway the only remaining post was to be the one at Hoo, which remained in use until disbandment in the early 1990's. All of these posts remain in differing states of repair to the present time.

There are no RAF Reserve establishments in Medway; however, there are Air Training Corps units located in Boundary Road, Chatham and Marlborough Road, Gillingham occupying buildings of WWII vintage.

Civil Defence: With the revival of Civil Defence as a result of the fear of attack from Soviet atomic bombs and the political fallout from the Berlin Blockade a major reappraisal was undertaken in respect of civil defence structures. There was a significant move towards reusing buildings constructed for WWII and looking to adapt other existing buildings to avoid the cost of new build. There were however some significant departures from just adapting previously used facilities. The major area for new build was in Command & Control, these headquarters needed a high degree of protection from both blast and radio active fallout. As a result an elaborate network of Control Centres were built, initially known as Regional War Rooms, and later more sophisticated Regional Seat's of Government were established. These were initially based upon a series of above ground concrete bunkers in each of the twelve Civil Defence Regions (Medway was covered by '12 Region' at Tunbridge Wells). The development of the Soviet hydrogen bomb programme made many of these protected War Rooms, as the bunkers were known, extremely vulnerable. As a result the regional structure was reorganised and deeper accommodation was provided, mainly using redundant WWII installations (the South-East region No.6 was located in WWII tunnels below Dover Castle). London was divided into sub-regions, with South-East London designated as 5/2. The sub-regional control for 5/2 utilised the anti-aircraft operations room at Fort Bridgewoods from its closure as an anti-aircraft operations centre in 1957 and remained in use until the next major

reorganisation of civil defence in 1968. The bunker was finally demolished in 1988; the site is now a parcel depot for the Post Office.

It was intended that local council controls would still be in town hall basements, but given some degree of extra protection. In 1953 a scheme was developed by Kent County Council (responsible for civil defence) to have a 'cluster arrangement' of area controls that would coordinate the civil defence activities of a number of local councils. Due to financial restraints it is understood that only two of these were built, at Gravesend and at Gillingham (under the car park of Municipal Buildings). The Gillingham Control centre was later refurbished in the 1980's as part of the Thatcher government civil defence revival. In 1968 the Civil Defence Corps had been disbanded, with local authorities only obliged to maintain the civil defence planning function. However, in the 1980's funding was once again made available to provide protective controls. Under this programme the Gillingham bunker was refurbished and a completely new surface bunker was constructed for the City of Rochester upon Medway Council within their works depot at Strood. Part of this building is still retained as a Civil Emergency Centre. However, its future is under threat from the planned relocation of the present Medway Council to a new civic headquarters in 2008, which is to be funded by the sale of redundant sites for development including the Strood site. Rochester upon Medway City Council had also inherited the old Strood Rural District Council civil defence headquarters and depot at the top of Strood Hill, Strood. This was demolished and redeveloped in the late 1970's.

An interesting and unusual new build was the Chatham Borough Council Civil Defence Corps training centre built on part of the former Gun Wharf site in 1965. After disbandment of the Corps this was converted into the Chatham Public Library children's section and bookstore. The building was demolished in 2006. The local store for civil defence vehicles were chalk tunnels (now bricked up) near the bottom of Chatham Hill.

The public warning system relied upon the same network of powered sirens in the urban areas and hand cranked sirens in rural locations. However, there was a significant upgrade of the warning communications system that became known as UKWMO (United Kingdom Warning and Monitoring Organisation). This was based on the premise that from detection a missile attack could offer around 4 minutes of warning to the public. Warnings were passed from the ballistic early warning radar station at Fylingdale in Yorkshire to a network of warning control points, the local one being located within the specially constructed basement of the former Rochester Police Station. From this central control, powered sirens were sounded in the area at locations such as Chatham Town Hall, the electricity sub-station at Frindsbury Hill and the top of Walderslade Hill. A series of Carrier Points, known as WB40's (Warning Broadcasts) were located at sites where hand cranked sirens were to be sounded and at a whole range of headquarters buildings, including Civil Defence, Emergency Services and utilities. Typical rural Carrier Points were Public Houses, whose cellars also acted as Warden Posts, examples of which are The Red Dog at High Halstow and The Cat and Cracker at Grain.

The Auxiliary Fire Service was also reformed as part of the civil defence arrangements, with Auxiliary Bays being added to new fire stations so that the two services were mutually supportive. A surviving example of this can be found at

Medway Fire Station on Watling Street, Chatham. These bays contained high-powered pumping engines known as 'Green Goddesses', and retained by the Home Office until recently as a strategic national reserve. The Auxiliary Fire Service was disbanded in 1968.

The Civil Defence Corps was reformed in 1948 and fulfilled the same basic functions as their predecessors with one major addition that of scientific intelligence to monitor and interpret nuclear fallout. There is little evidence within the limited scope of this survey to suggest much in the way of new build in terms of civil defence infrastructure. Evidence does suggest the reuse of WWII facilities where they survived and where they did not the earmarking of public buildings and community centres to fulfil a range of civil defence functions. Examples are schools earmarked as Rest Centres and Emergency Feeding Centres and council depots earmarked as Rescue Centres. Buildings were also earmarked to serve as Casualty Clearing Centres and Temporary Mortuaries.

The utilities were all expected to develop plans and infrastructure to ensure the survival of key installations and personnel, this included water, electricity and telecommunications. During the 1980's revival period Southern Water converted a redundant surface reservoir into an Emergency Control Centre at Mattshill, just beyond the Medway boundary. It is believed an emergency telephone exchange was developed within the Chatham telecom exchange to route emergency calls under what was known as the Telephone Preference Scheme.

Key industrial installations, such as the BP Oil Refinery on the Isle of Grain, had their own industrial civil defence service drawn from their workforce to protect and maintain essential installations. This too was disbanded with the rest of the Civil Defence Corps in 1968.

The brief 1980's revival of civil defence saw the re-earmarking of premises as Radiological Reporting Centres, for which modern radiation meters were stockpiled and attempts to recruit and train 'community volunteers' to support civil and war emergencies. Although partially successful elsewhere in Kent, no volunteers were recruited in the Medway area.

The final abandonment of civil defence preparations in the early 1990's resulted in the shut down of the Carrier Warning System and the removal of the fixed air raid sirens. All other stockpiles of equipment were disposed of.

SUMMARY OF IDENTIFIED SITES

Military	
Airfields	3
Anti Glider Defences	23
Anti-Aircraft, Heavy	27
Anti-Aircraft, Light	39
Anti-Tank Ditch	4
Anti-Tank Gun Sites	24
Armed Merchant Ships	10
Barrack Complexes	8
Booms	5
Camps	4
Coastal Artillery	9
Coastguard Stations	3
Defence Electric Light	7
Domestic (eg Married Quarters)	19
Dummy Sites	6
Explosive Works	1
Fortified Houses	45
Fougasse	47
Fuel Depot	1
Headquarters, Cold War	2
Headquarters, Other	8
Headquarters, WWII	5
Hospitals	4
Lewis Gun Positions	16
Magazines	26
Military Prisons	4
Minefields	37
Moorings	4
Northover Projector Positions	5
Observation Post	1
Pillbox (Anti-Tank)	18
Pillbox (Infantry)	67
Pillbox (Naval)	5
POW camps	1
Rail Blocks	4
Roadblocks (Cubed)	5
Roadblocks (Cylinder)	369
Roadblocks (Girders)	48
Roadblocks (Pimples)	28
Royal Observer Corps Posts (Cold War)	3
Royal Observer Corps Posts (WWII)	3
Searchlight Sites	26
Signal Sites	29
Spigot mortars	102
TA Drill Halls	5
Temporary defence structures	32
Z-Batteries	2
Military Total	1144

Civil Defence	
Air Raid Sirens	23
Ambulance Stations	8
Casualty Holding Centres	2
Civil Defence Depots	4
Control Centres	10
Emergency Feeding Stations	31
Fire Stations (Auxiliary)	12
Fire Stations (National)	7
First Aid Posts	8
Gas Chambers	2
Gas Decontamination Centres	15
Gas Proof Shelters	1
Muster Centres	14
Recruiting Centres	14
Rescue Depots	3
Rest Centres	31
Shelters	140
Temporary Mortuaries	15
Training Centres	9
Warden Posts	107
Welfare Section Headquarters	1
Civil Defence Total	457

Summary of Sites Recorded on Database (included in the above totals)

Air Raid Shelters	18
Airfields	5
Anti-Aircraft, Heavy	8
Anti-Aircraft, Light	3
Anti-Tank Blocks	7
Anti-Tank Ditch	1
Barrack Complexes	3
Bridges	1
Civil Defence	4
Coastal Artillery	14
Domestic	11
Dummy Sites	5
Fougasse	1
Gas Decontamination	6
Headquarters	3
Magazines	20
Moorings	4
Naval Establishments	24
Observation Post	1
Pillbox (Anti-Tank)	12
Pillbox (Infantry)	47
Pillbox (Naval)	5
Railways	4
Roadblocks	2

Royal Observer Corps Post	3
Spigot Mortars	5
Sites Recorded on Database Total	217

HISTORICAL FINDINGS & ASSESSMENT OF SURVIVING KEY SITES

This section examines the value of 'key' surviving sites identified during the course of this survey from an historical, conservation, interpretational and educational perspective, along with recommendations where appropriate.

The Medway district contained, and to an extent still has, military and naval assets of both regional and national significance.

Coastal Artillery

Cliffe Fort, Rochester: Royal Commission Fort, in continuous use up until the abolition of coastal artillery in 1956. Scheduled Monument. Contains examples of emplacements of each phase of coastal artillery within the time frame of this study, including a uniquely surviving Brennan Torpedo Installation.

Recommendation: Urgent requirement for repair and consolidation, sustainable re-use and interpretation.

Lower Hope Battery, Cliffe, Rochester: Turn of the 19th century coastal artillery batteries on raised concrete plinths, only concrete plinth remaining at risk from coastal erosion.

Recommendation: None due coastal erosion.

Slough Fort, Allhallows, Rochester: Royal Commission Fort of unusual design, provided with concrete wing batteries in the late 19th century. Closed and disarmed post WWI, re-occupied as an anti-invasion emergency battery. The Fort was listed prior to this survey by MMRG.

Recommendation: Survey and interpretation of site.

White Hall Farm Battery, Isle of Grain: Possibly last permanent coastal artillery battery to be built in Thames/Medway area, constructed 1918 with very low profile. Considerable remains believed to exist below ground level.

Recommendation: Detailed site study, consideration for listing and site interpretation.

Grain Fort, Isle of Grain: Royal Commission Fort, in continuous use up until the abolition of coastal artillery in 1956. Contains examples of emplacements of each phase of coastal artillery with the time frame of this study, main body of fort demolished, however, considerable remains below ground level including gun emplacements. Spigot mortar positions prominent.

Recommendation: Review listing status and consider scheme for interpretation.

Grain Battery, Isle of Grain: Early 20th century 6" Breech-loader battery with four emplacements. Believed to have been constructed as a training battery, earthworks and buried emplacements remain, believed magazine complex buried below.

Recommendation: Review listed status and consider scheme for interpretation.

Wing Battery, Isle of Grain: Late 19th century quick-firing battery in use up to the end of WWI. Most surface structures removed, however substantial remains below ground level including emplacements.

Recommendation: Review listed status and consider interpretation.

Grain Tower, Isle of Grain: Mid 19th century gun tower to provide close defence for Medway Estuary, re-armed late 19th century with quick-firing guns, evidence of WWI boom defence remaining, WWII substantial additions to accommodate twin-6pdr gun. Important remaining features include ammunition hoist. This Scheduled Monument is currently up for sale.

Recommendation: Press for renovation, sustainable re-use and interpretation.

Dummy Battery, Isle of Grain: Early 20th century quick-firing gun battery in use until the end of the First World War, substantial concrete remains, however, most earth works removed for use as sea defence material. Listing status unsure.

Recommendation: Review listed status and consider interpretation.

Anti-Aircraft

Lodge Hill Battery: This was the world's first fixed anti-aircraft installation which is listed, however, the survey has shown it to be neglected and in a poor state of repair with the danger of some permanent loss.

Recommendation: Repair and interpretation of this internationally important site.

St Mary's Battery, Lower Lines, Gillingham: An early First World War emplacement. Included within Chatham Lines Scheduled Area.

Recommendation: Refurbishment and interpretation as part of Lower Lines Park development.

Bofors Gun Position, Hoo Ness Fort: Good surviving example of fixed position Bofors gun site that enjoys Scheduled monument status due to location.

Recommendation: Further investigation.

Fenn Street Heavy Battery: The key surviving buildings here are the Guardroom and the Sewage Treatment Farm. The guardroom is now used as an office and a particularly good state of repair; however, its significance is that it is a rare surviving example of brick structure with the bricks laid on their side to reduce use of materials.

Recommendation: Consideration of statutory listing of Guardhouse

Gibraltar Farm Heavy Battery, Capstone Road, Chatham: A large number of ancillary buildings surviving.

Recommendation: Further detailed survey and recording.

Cliffe Fort, Cliffe, Rochester: Good surviving example of concrete Bren Gun position within Scheduled Monument.

Recommendation: None at present.

Light Anti-Aircraft Position, Rochester Airfield: Good condition concrete construction of an unusual type, possibly at risk from redevelopment.

Recommendation: Detailed survey and consideration for listing.

Dummy Site, Binney Farm, Allhallows, Rochester: Good surviving example of concrete control bunker and other fixtures.

Recommendation: Further survey and consideration for listing.

Dummy Site, Cliffe Marshes, Cliffe, Rochester: Concrete control bunker remains in good condition. Possible other remains nearby.

Recommendation: Further survey and consideration for listing.

Fort Borstal, Rochester: Largely intact heavy anti-aircraft battery (4.5”), however, not conforming to usual layout for a battery of this type due to its location in a Victorian Fort and as such enjoys statutory protection. Due to the secure nature of the site it is potentially a unique survival in terms of condition.

Recommendation: Further survey and consideration for interpretation.

Naval Establishments

Former Naval Dockyard, Chatham: Due to resource restrictions this survey was only able to cover two of the four distinct areas of the former dockyard, HMS Pembroke and the area now known as Chatham Maritime. The Historic Dockyard and the area operated as a commercial port are both known to contain a large number of structures relevant to this report that require further investigation.

Within the Chatham Maritime area little from the period of this study remains with the exception of former covered slips, now listed, dry docks, cranes and mooring bollards. There are no distinct recommendations regarding this area.

A consortium of universities who have adapted and restored the vast majority of the surviving naval barracks buildings now occupies HMS Pembroke. Notable amongst these is the former drill hall that has been converted into a campus library and the Pilkington building into lecture halls and refectory. The main barrack blocks and ward room enjoy statutory protection, there are two other buildings connected to this complex, though not part of it, the Captains House and former naval church. Both of which are understood to have statutory protection.

Air raid tunnel system beneath HMS Pembroke: Dating from 1937, now sealed.

Recommendation: Further investigation, survey and consideration for listing.

Upnor Magazine Complex: This area was under the control of the Board of Ordnance until the 1850’s, when it was transferred to the Admiralty as a naval magazine. The complex, including Upnor Castle, remained in naval hands until 1960 when Upnor Castle became a public monument and the magazine area transferred to the Royal Engineers. The surviving Napoleonic magazines are listed. There are other structures dating primarily from the Second World War period that are under threat of demolition due to redevelopment for planned housing.

Recommendation: Further investigation and recording needs to be carried out.

Chattenden Magazines: A series of five large underground magazines, taken over by the navy from the army in the 1870’s and subsequently transferred back in 1960. There are a number of ancillary buildings including Gas Decontamination Centres, Fire Points, Guardhouse and boundary wall/fencing. This area is scheduled for redevelopment within two years.

Recommendation: Measured survey and possibly one of the magazines should be selected for listing and investigated for sustainable community use.

Lodge Hill Magazines: A large complex of naval magazines and ancillary buildings in constant use until transfer to the Royal Engineers in 1960. Area subsequently

adapted for training, which involved demolition of a large number of magazine structures and the construction of specialist training facilities such as bridges, railroad and a number domestic buildings (not digitally recorded at the army's request) constructed to train military personnel for service in Northern Ireland.

Recommendation: Measured survey. That selected buildings that represent 'best of type' including the urban warfare buildings be considered for listing and sustainable reuse.

Naval Pillboxes: There are a number of concrete pillboxes constructed during the First World War, which survive at various points around the Lodge Hill and Chattenden magazine complexes. These are believed to be unique to the Chatham area. The entire area is at risk of redevelopment within the next two years.

Recommendation: All surviving examples are recommended for listing.

Naval Ammunition Railway: This standard gauge light railway system connected all three magazine sites (Lodge Hill, Chattenden and Upnor) and the former airship station at Kingsnorth. The line connected to the Hoo branch line of the national rail network at Sharnal Street. The restraints placed on this survey have resulted in only isolated sections of the former railway being investigated. These limited investigations have revealed substantial surviving features.

Recommendation: Further in-depth study of the whole system should be undertaken and selected structures considered for listing.

Beacon Hill Radio Station: This was the main transmitting and receiving station for the Chatham naval base from the Second World War until closure in 1982. All surface structures, with the exception of one mast and an ancillary building have been removed. However, there remains an interesting complex of shelter tunnels that appear to date from the cold war revival period in the late 1970's.

Recommendation: Consideration for listing.

HMS Wildfire: This former protected naval headquarters for the Nore Command in use until 1982 was subsequently abandoned, fire damaged and sealed.

Recommendation: A survey was carried out in February 2008 by Kent Underground Research Group prior to the permanent sealing of the site.

Gillingham Pier: In use until 1982 as a base for small auxiliary craft, utilising the eastern arm, by the navy. Not surveyed due to resource and time restraints. Substantial remains believed to exist, however, area planned for redevelopment.

Recommendation: Further investigation and recording.

Gillingham Strand: During the Second World War the eastern area of the Strand was occupied by the boat building company 'Fairmiles' constructed Motor Torpedo Boats (MTB). This was requisitioned by the navy as a repair base and fell into disuse after the war, remains of slipways remaining.

Recommendation: Survey and recording.

Military Establishments

Beacon Hill Blockhouse: A rare and good condition example of a First World War anti-invasion Blockhouse of concrete construction. Sole known survivor of a network of WWI defences.

Recommendation: Statutory listing and interpretation, possibly part of Heritage Trail.

Hoo Stop Line: 1940's anti-invasion defence line consisting of pillboxes, anti-tank barriers and anti-tank ditches running across the Hoo Peninsula. This is a rare and in fact unique example with approximately 90% of the pillboxes remaining, traces of the anti-tank-ditch and a complete anti-tank roadblock in situ.

Recommendation: Complete statutory listing of line and interpretation throughout, possibility of developing a 1940's Military Heritage Trail.

Isle of Grain anti-tank obstacles (Dragons teeth): A unique continuous belt of anti-tank obstacles forming beach defences as part of WWII anti-invasion measures.

Recommendation: Listing application awaited, suggested interpretation of site possibly as part of Isle of Grain military interpretation trail.

Anti-tank blocks, Cuxton Road, Strood: Pair of dragon's teeth in situ.

Recommendation: Consider for listing.

Anti-Tank Blocks, Lower Lines, Gillingham: Extension of inner Chatham defence line to protect naval headquarters, currently under threat from development.

Recommendation: Await outcome of listing application, potential for interpretation within Mid-Kent College development of Lower Lines.

Inner Chatham Defence Line: Unique surviving series of pillboxes, spigot mortar positions and slit trenches built on earlier Georgian defences with statutory protection.

Recommendation: Interpretation as part of World Heritage Site development.

Fougasse, Maidstone Road, Chatham: Unique example of protected firing point for a Fougasse, forming part of the WWII anti-invasion defences.

Recommendation: Await outcome of listing, potential for interpretation.

Fort Clarence Drill Hall, Rochester: A good surviving example of a pre-WWII Territorial Army drill hall that is still in use (Royal Engineers Bomb Disposal).

Recommendation: None.

Brompton Barracks: Military training establishment in continuous use since early 19th Century with some WWII additions. Site not surveyed within current study due to time restraints, some buildings enjoy statutory protection.

Recommendation: Further study required.

Kitchener Barracks: Early military barracks in continuous occupation since mid-18th century, much evidence of rebuilding and demolition. Possibility of WWII structures, definite example of 1930's rebuilding programme. Site not surveyed within current study due to time restraints, some buildings enjoy statutory protection.

Recommendation: Further study required.

Royal Engineers Bomb Disposal School, Lodge Hill, Rochester: Developed in the 1960's, currently still in use as joint services training establishment and contains unique collection of historical ordnance. Due to be closed and moved within two years.

Recommendation: Consideration should be given to preservation of collection, locally if possible.

Type 24 Pillbox, Temple Marsh, Strood: Poor condition surviving example of infantry pillbox forming part of GHQ Line.

Recommendation: Statutory listing and interpretation due to its location either in or very near park area and possibly the only example of a GHQ pillbox located in Medway.

Air Establishments

Airship Shed, St Mary Hoo, Rochester: This structure, moved from its original location at Kingsnorth Airship Station is currently being used as a barn.

Recommendation: Priority Statutory Listing, for this possibly unique wooden structure, as well as interpretation.

Shorts Tunnel Complex, The Esplanade, Rochester: Nothing now remains of the Shorts aircraft factory; however the extensive tunnel system remains sealed and intact.

Recommendation: Measured survey, statutory listing and external interpretation.

Rochester Airfield: There are significant survivals of both the Shorts bomber factory, the Elementary Flying School and ancillary buildings.

Recommendation: A full and comprehensive survey of the entire site prior to redevelopment. Consideration for statutory listing of main factory building and some ancillary buildings such as the 'Machinegun Butts' NB Flying School Officers Mess turned down by DCMS in 2007.

Civil Defence – WWII

A large number and range of structures were built prior to and during the Second World War there are very few known surviving examples, with the exception of the proliferation of Anderson Shelters.

Civil Defence Group Control, Fort Amherst: Notable survivor of the period. It was refurbished to the point of being an almost fully operational working example open to the public, but has deteriorated in recent years as a result of neglect.

Recommendation: That owner restores and interprets.

Shelter Tunnel, Cuxton / Halling: This communal shelter survives largely intact due to its location in a tunnel under the road.

Recommendation: More detailed recording.

Communal Shelter, Maxwell Road, Brompton: Survives largely intact.

Recommendation: Possible statutory listing and interpretation as part of the proposed World Heritage Site.

Civil Defence – Cold War

Although the longest period in terms of time within the study there was relatively little constructed during this period. However, amongst those structures built there are some significant survivals and, in some cases, worthy of preservation.

Royal Observer Corps, Hoo and Allhallows: Underground Posts survive in various states of repair; however the Hoo Post is an extremely good example worthy of preservation of a post surviving until the disbandment of the Corps. The Allhallows Post abandoned in 1967 may also warrant listing as it is still largely in tact and can be viewed within its original context.

Recommendation: Statutory listing and interpretation.

Area Control Bunker, Municipal Buildings, Gillingham: This survives in a good state of repair.

Recommendation: Statutory listing.

Emergency Control Centre, Medway Council: Very good surviving example of final stage civil defence control centre.

Recommendation: Recording prior to demolition.

CONCLUSIONS

This survey of the 20th century defences and civil defence structures within the Medway District has significantly added to the known body of information and understanding. Significant new findings such as the 'Hoo Stop Line' have been identified and other important sites reassessed and better understood such as the naval magazine complex at 'Chatham'.

For possibly the first time a wide range of archival sources have been identified and examined allowing a unique cross-reference across a wide range of sources. This has led to examination of sites and structures to determine what may still survive and, more importantly, which of those surviving structures should be recommended for interpretation and statutory protection.

It would have been pleasing to have attempted to offer this report as a definitive work in relation to the identification and understanding of 20th century military and civil defence structures within the Medway District. However, this is far from the case, in terms of archival research the survey, while not comprehensive, must come some way to achieving that goal, but in terms of follow-up site visits something like only 20% of the identified known total has been investigated and recorded. There is much still to be done, it is hoped that further resources may become available in the future to complete this task. Some significant, but threatened sites were identified during the survey and were successfully listed directly as a result of this project with other applications still pending. Furthermore, interim discussions have taken place with possible European partners to develop a potential Interreg project to complete survey work and more importantly provide part funding to preserve and interpret a number of key sites identified within this survey.

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The following institutions assisted in making available their archives for search and were helpful throughout:

Centre for Kentish Studies, Maidstone

Chatham Public Library

English Heritage Archives and National Photographic Archive, Swindon

Heritage Conservation Group of Kent County Council, Maidstone

Medway Archives & Local Study Centre, Strood

Medway Military Research Group, Chatham

National Archives, Kew

Royal Engineers Library, Brompton

Royal Engineers Museum, Brompton

Royal Marines Museum, Eastney

The authors would like to express their thanks to all the landowners who were most helpful in providing access to sites and in particular to Fort Amherst Heritage Trust and the Corps of Royal Engineers.

The Medway Military Research Group would like to make a special acknowledgement in respect of material and information that aided this research from the late Reginald Cox and the late Reginald Curtis.

Annexe 1 - Detailed Sources

The following is a list of key archival documents that provide significant information in respect of identifying military and civil defence sites.

Centre for Kentish Studies

- UD/SM/S/4/1993 – Air Raid Shelters in Schools, 1940
- S/NK/A/C/1/81 – Admiralty Jetty, Port Victoria, 1908
- S/NK/A/C/1/113 – Royal Naval Air Station, Isle of Grain, 1917

English Heritage Archives and National Photographic Archive

- BF100722 – Fort Pitt Hospital
- BF101410 – Melville Hospital
- AF00164 – Curtis & Harvey Explosives Factory
- AA001922 – Gun Wharf, Chatham
- AA001923 – Gun Wharf, Chatham

- RCHME Report – Unpublished – 20th Century Recording Project ‘Heavy Anti-Aircraft Batteries’.
- RCHME Report – Unpublished – 20th Century Recording Project ‘Light Anti-Aircraft Batteries’
- RCHME Report – Unpublished – 20th Century Recording Project ‘Decoy Sites’

Heritage Conservation Group of Kent County Council

- Aerial Photo 1947 Run 5 P4074 – Fort Horsted
- Aerial Photo 1947 Run 78 3111 – Curtis & Harvey Works, Cliffe
- Aerial Photo 1947 Run 78 4108 – Lower Hope Battery
- Aerial Photo 1947 Run 78 4110 – Cliffe Fort
- Aerial Photo 1947 Run 78 4115 – ROC Post, Cliffe
- Aerial Photo 1947 Run 75 3010 – St Mary’s Boom Battery
- Aerial Photo 1947 Run 75 3150 – Gibraltar Farm Anti-Aircraft Battery

Medway Archives & Local Study Centre

- SRDC539 (PA4) – Plans for Temporary Mortuaries
- CE/AD/16 PA1 – Air Raid Sirens 1951
- CE/AD/16 PA6 – Air Raid Shelters, Strood Rural District
- KCC PSD1/9 – Former Civil Defence HQ, Chatham
- PB-470/A – Plan of Rochester Airfield (1940?)
- 18706 912.4223 – St Mary’s Boom Battery, aerial photo 1947
- VF MED 912 – Map of Medway Towns 1961, various military establishments
- PSA-DOE Plan 715 – Medway Road Camp
- MR70 CE/LE/18 – Fire Stations and Mortuaries in Hoo and Halling, 1939

- SRDC/491 – Disposal of War Department Land at Grain, 1956
- MR70 CE/LE/18 – Civil Defence Headquarters, Cliffe Road, Strood
- MP/WW/3/8 – Gas Decontamination Centres, 1939
- CBA – BOX050 – Civil Defence in Chatham
- GBC MTC/MR/41 – Civil Defence Minutes 1939
- MP/WW/6 – Garrison Plan to Defeat Invasion - 1941
- CBA3476 – Rest Centres, Chatham, 1951
- CBA3479 – Temporary Mortuaries, 1951
- CBA3478 – Warden Posts, 1952
- CBA33888 – Civil Defence Ambulance Stations, 1951
- SRDC562 – Wardens Posts, 1955
- MAP389 – Layout of Fort Horsted, 1946
- MAP538 – Gordon Barracks, 1961
- SRDC572 – Wardens Post, Hoo
- SRDC563 – Civil Defence Training Material
- SRDC575 – Wardens Post, Grain
- SRDC573 – Wardens Post, Cliffe
- SRDC914 – Temporary Mortuary Sites
- SRDC918 – Rest Centres
- SRDC938 – ARP Anti-Gas Cleaning Stations
- SRDC935 – Emergency Feeding Stations
- SRDC957 – Fire Service Buildings
- CBA/41 – Civil Defence Headquarters Chatham
- CBA/60 – Warden Control Posts
- GBCMTC/NV/23 – ARP Posts
- SRDC/944 – Fire Stations Hoo Peninsula, 1936
- SRDC/957 – Hoo Fire Station, 1943
- SRDC/112 – Air Raid Shelter, Fort Road, Grain
- MR70CE/LE/18 – Public Shelters
- MP/WW/3/1 – First Aid Posts and Casualty Hospitals
- DE308 – Article Concerning Demolition of Fort Pitt. 1936
- SRDC946 – Auxiliary Fire Stations
- SRDC913 – First Aid Post Wainscott, 1939
- SRDC939 – First Aid Posts and Communal Shelters
- SRDC940 – ARP Room Grain, 1939
- SRDC1939 – First Aid Posts and Ambulance Posts
- SRDC905 – Spigot Mortar Position, Council Offices Frindsbury Hill and Other Temporary Defence Works

Kellys Directory of Rochester, Strood, Chatham & Gillingham 1939
 - TA Establishments.

Medway Civil Defence Committee Minutes, July 1950 – 1968
 - Various Civil Defence

National Archives

Admiralty

ADM166/546 – Chatham Naval Barracks, 1889
 ADM116/620 – Extension to Upnor Magazines, 1900
 ADM1/146/15/67 – Kingsnorth and Grain Air Stations, 1915
 ADM1/8410/31 – Precautions against Aerial Attack, 1915
 ADM116/4277 – Invasion Countermeasures
 ADM1/13136 – Reduction of Anti Invasion Defences, Nore Command, 1943
 ADM1/8369/55 – AA Defence Lodge Hill, 1913
 ADM1/8410/31 – Defence of Rochester Bridge, 1915
 ADM1/13136 – Nore Command Defences, 1943
 ADM1/8524/128 – Kingsnorth Airship Construction Station, 1918
 ADM199/1454 – Nore Command War Diary

Air

AIR2/3802 – Auxiliary Flying School, Rochester
 AIR1/645/17/121/329 – Kingsnorth Air Station, 1915
 AIR75/104 – Defence against Invasion
 AIR15/183 – Thames and Medway Defences, 1940
 AIR1/653/17/122/483 – Anti-Aircraft Defence Lodge Hill, 1913
 AIR15/183 – Review of Possible Landing Grounds, 1940
 AIR1/645/17/122/329 – Kingsnorth Air Station
 AIR1/146/15/62 – Defence of Kingsnorth and Grain, 1915
 AIR1/645/17/122/317 – Grain Air Station and Port Victoria, 1916
 AIR2/3536 – Operational Report Coastal Command

Cabinet Office

CAB79/7/4 – Home Defence and East Kent
 CAB121/209 – Protection of Oil Installations, November 1941
 CAB121/210 – Defence of UK against Invasion

Home Office

HO322/318 – Regional Seats of Government, 1963

War Office

WO166/15066 – Kent Coast Artillery, 1944
 WO166/1268 – Chatham HQ, June 1941
 WO166/2056 – Thames and Medway Fixed Defences
 WO166/2248 – 28th AA Brigade, 1939/40
 WO166/2345 – 55 AA Regiment, 1939/41
 WO78/5115 – Dummy Battery, Grain, 1906
 WO166/1074 – War Diary, 221st Infantry Brigade, Nov 1940 – Jun 1941.
 WO166/2793 – 4561 Light AA Battery, Hoo Lodge, 1940
 WO166/3190 – Searchlight Batteries, Strood, 1940
 WO7785119 – Medway Boom Defences, 1900/05
 WO785115 – Grain Dummy Battery
 WO785124 – Grain Fort
 WO33/471 – Slough Fort
 WO366/32 – Vulnerable Points for Invasion
 WO199/2478 – Thames and Medway Defences 1940
 WO199/2479 – Thames and Medway Defences 1941
 WO32/15615 – Organisation of AA Command, 1954/5

- WO199/2770 – Home Guard Passive Defence Decoy Sites, 1941/44
- WO199/1717 – Home Defence Batteries, 1940
- WO199/2548 – Home Defence Camouflage, 1940
- WO199/1868 – Auxiliary Bomb Disposal Units, 1944
- WO199/1446 – Construction of Pillboxes, 1941/43
- WO166/7279 – Fixed Defences Thames and Medway, 1942
- WO132/1066 – Emergency Home Defence Measures
- WO166/14954 – Thames and Medway Coastal Artillery
- WO166/4262 – War Diary, 8th East Surry Regiment
- WO166/2023 – War Diary, 913th Home Defence Battery, Royal Artillery, 1940/41

- WO166/4297 – War Diary, 11th Glosters
- WO166/4645 – War Diary, 10th Royal West Kent Regiment
- WO166/11405 – Coastal Artillery, Thames and Medway, 1943
- WO199/2479 – Thames and Medway Defences, 1941
- WO78/5130 – Grain Defences, 1932
- WO166/1272 – War Diary, Chatham Sub-Area, 1940
- WO78/4834 – Hope Battery
- WO78/5112 – Defence Electric Light, Grain
- WO78/4370 – Yantlet Artillery Ranges
- WO78/4427 – Anti-Invasion Defences 1916, Isle of Grain
- WO199/2552 – Wing Battery Anti-Torpedo Boat Defence
- WO199/1696 – Anti-Glider Scaffold Poles
- WO199/34 – Defence of Rochester Airfield
- WO199/627 – Defence of Chatham Area, 1941
- WO166/6860 – Spigot Mortar Locations
- WO32/4624 – Light Anti-Aircraft Locations
- WO78/2269 – Gun Wharf, Chatham
- WO78/4197 – Chatham Defences 1905
- WO33/477 – Eastern Coast Defence Scheme, 1909
- WO166/1338 – Chatham HQ War Diary, 1940
- WO277/37 – Defences on Hoo Peninsula
- WO78/4415 – Brennan Torpedo Factory, Gillingham, 1908
- WO166/347 – Searchlight Battery, Kingshill Camp
- WO166/2794 – 46/16 Light AA Battery (Grain)
- WO166/2793 – 45/16 Light AA Battery (Chattenden)
- WO192/53 – Grain Battery, Fort Record Book, 1936
- WO192/52 – Whitehall Farm Battery, Fort Record Book, 1936
- WO192/55 – Emergency Batteries, 1940

Works

- WORKS41/130 – Chattenden and Upnor Railway, 1926

Miscellaneous

- MFQ1/544 – Grain Air Station
- MF1/3/3 – Isle of Grain Searchlights, 1943
- MPI619(1) – Air Raid Map, Thames Area, 1917

Royal Engineers Library

- 420/SE/2/0506 – Plan of Yantlet Training Area
- 420/SE/2/0505 – Plan of Royal Naval Signal Station, Beacon Lane
- 636/39 – Bomb Proof Shelters, RN Barracks, Chatham
- 420/SE/2/06/05 – WWII plan of Chatham Dockyard
- 420/SE/2/2100 – Plan of Grain Fort, 1950
- 420/SE/2/2101 – Plan of Grain Fort and environs
- 420/SE/2/1830 – Plan of Fort Pitt Hospital, 1918
- 420/SE/2/1713 – Plan of Fort Luton, 1938
- 420/SE/2/1714 – Plan of Fort Luton, 1944
- 420/SE/2/1600 – Plan of Fort Clarence, 1943
- 420/SE/2/0650 – Plan of Wouldham Camp, 1955
- 420/SE/2/0626 – Plan of Chattenden Magazine Complex, 1904
- 420/SE/2/0509 – Plan of Lodge Hill Naval Magazines, 1909

- E59 Photo Album (D522) – Aerial view of Upnor
- E58 Photo Album (23B) – Shelter at Wainscot
- E58 Photo Album (C864) – Bridging on the Lower Lines
- D58 Photo Album (22/23) – Mining Depot, Chatham, 1904

Ordnance Survey Map 00101 – Isle of Grain, 1950

Annex 2 - Listing Applications, Successful

- Type 24 Pillbox – located on former stable site at Bells Lane, Hoo St Werburgh
- Type 28A Pillbox – located on former stable site at Bells Lane, Hoo St Werburgh
- Type 24 Pillbox – located Chimes Green, Hoo St Werburgh
- Type 28A Pillbox – located Chimes Green, Hoo St Werburgh

Annex 3 - Listing Applications, Unsuccessful

Former reserve flying school 'Officers Mess' – located at Rochester Airfield

Annex 4 - Listing Applications, Pending

Anti-tank 'Dragons Teeth'	– Located on the foreshore on the Isle of Grain
Anti-tank 'Dragons Teeth'	– Located on the Lower Lines just off Medway Road, Gillingham
Fougasse Firing Point	– Maidstone Road, Chatham
Airship Shed	– St Mary Hoo
Fortified Building	– Hoo Marina
Type 24 Pillbox	– Sea Wall, Hoo
Type 28A Pillbox	– Sea Wall, Hoo
Anti-Tank Blocks	– Foreshore, Hoo
Type 24 Pillbox	– Abbots Court Road, Hoo