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A National Planning Overview for 19th Century Forts and Associated Fortifications

Volume 1
Introduction and Historic Development. National, Regional and Local Summaries

Jane Phimester

Discovery, Innovation and Science in the Historic Environment

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SUMMARY

The fortifications of the 19th and early 20th centuries are some of our coast's most distinctive monuments. Architecturally and topographically, they are striking places with clear historic significance often dominating their settings and localities. They embody the changing nature of 19th century conflict as the technology of the industrial age was applied to warfare, a product of the great rivalry between Europe's imperial powers. The significance of 19th and early 20th Century fortifications is reflected by their high level of heritage protection; today 80.83 per cent are either Scheduled or Listed (or both).

The historic development and architecture of these fortifications has been the topic of extensive previous research, but their current context is less well understood. This report, which has been commissioned by Historic England, is aimed at addressing this gap through providing current data on the individual fortifications identified, and by assimilating this data to provide a national overview. It enhances understanding of the relative significance, condition and threats associated with these fortifications, and sets out heritage recommendations and priorities to secure their long-term preservation.

In total this report identified one hundred and sixty-seven fortifications which were newly constructed in this period, or remained in use through significant additions. The fortifications fall within six phases, the largest proportion of which are within the 1860s period built on the recommendations of the Royal Commission on the Defence of the United Kingdom, often termed 'Palmerston Follies'. The later 19th Century is a pivotal point in fortification design, when there was a move from grander fortifications towards the less visually imposing strongholds, where the design priority was concealment.

The design and location of 19th and early 20th Century fortifications reflect major developments in armament technology, strategic thought and defence policy. International conflicts, such as the Crimean War, the American Civil War, the Franco-Prussian War and the Russo-Japanese War, directly influenced British fortification design. These in turn instigated developments in technology which occurred alongside the Industrial Revolution, when Britain became the most powerful combined economic and military country in the world. The later developments are part of the Second (Technological) Industrial Revolution, in the late 19th and early 20th century, when general industrial advances were often spurred and initiated by military demands.

In 1956, in the era of jet bombers and nuclear weapons the country's fixed coastal defences were recognised as being obsolete and therefore stood down. The fortifications were then passed to a number of different owners, some remained with the War Office, a few were transferred to the Ministry of Works for preservation, while others went to private owners. The revenue from new uses is often insufficient to pay for the up-keep of the fabric and grounds of these monumental fortifications. Nationally, there are forty-two fortifications identified within this study, which are on the Heritage at Risk Register, which is 25.14 per cent of the total number of fortifications identified (calculations correct in May 2017). Many are under threat from development, coastal erosion and lack of management.

To better understand the relative significance, condition and threats associated with the fortifications identified, datasheets have been completed for each of the one-hundred and sixty-seven fortifications. These are included in Volume 2 of this report, and set out key information in accordance with Historic England criteria. These datasheets are organised in twenty strategic groups, which in turn were assimilated into five Historic England regions. Volume 1 of this report summarises this information, by providing national, regional and local summaries.

By providing a clear national overview of surviving examples, their significance and relative state of preservation, this report will inform policies to assist in the conservation of 19th and early 20th century fortifications and promote sustainable futures. This project will ensure that consistent advice is given, and that best practice is shared nationally. In the long-term it will contribute towards ensuring forts have new uses, based on imaginative schemes using best constructive conservation practices.

The subject of 19th and early 20th century fortifications is a large and complex area of study, and whilst this report has assimilated and provided an overview of the topic, there remain considerable areas and opportunities for further research. Sites where armament moved from the casemates to open emplacements on the roof, for example at Fort Gilkicker, require further avenues for study. Fortification design and distribution was influenced by the evolving national context, international conflicts and technology. The correlation between strategic events, technology and architecture as evidence in the material remains of individual fortifications provides a more in-depth area of research.

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ABBREVIATIONS AND GLOSSARY

The Glossary has been adopted in part from Crick (2012)

ABBREVIATIONS

BL – breech loading

EH – English Heritage

HAR – Heritage at Risk

HE – Historic England

HER – Historic Environment Record

ML – Muzzle Loading

NGR – National Grid Reference

OS – Ordnance Survey

RBL – Rifled Breech Loading

RCHME - Royal Commission on the Historical Monuments of England

RML – Rifle Muzzle Loading

QF – Quick Firing

GLOSSARY

Banquette – Firing step behind a Parapet

Barbette – Semi-circular platform on which guns are placed to fire over a Rampart, hence guns en barbette.

Bastionette – A small bastion at the salient of a work to aid in local defence.

Bastion – A projection from the curtain wall of a work designed to allow the garrison to observe the adjacent walls and defend them from fire.

Berm – Pathway along the top of the escarp and at the bottom of the rampart to provide a ledge to prevent debris falling into the ditch.

Caponier – A gun battery projecting into a ditch and designed to fire along it. In an earlier form it was a covered passageway connecting the inner and outer parts of a work across a ditch.

Carnot wall – free-standing wall, pierced for rifle fire, placed in a ditch at the foot of the escarp.

Casemate – enclosed space in a Work from which a gun is fired through an embrasure.

Cavalier – battery raised to fire over other sections of a Work.

Chemin de rondes – similar to a Berm but with a Parapet to five cover to riflemen.

Counterfort – wall or arch buttressing the inner face of a revetted escarp or counterscarp.

Counterguard – outwork placed in front of a bastion or ravelin to protect it. Open at the rear.

Counterscarp – the outer wall of a ditch.

Covered Way – pathway along the counterscrap of a ditch, sunk below ground level to afford protection for members of the garrision patrolling it. Fitted with a Banquette to facilitate fire across the Glacis.

Curtain Wall – the exterior wall of a World between the Bastions.

Demi-bastion – a work projecting from the main body of a Work with one face and one flank, essentially half a Bastion.

Demi-caponier – caponier with only one face fitted with embrasures, protecting a Ditch.

Ditch – deep trench dug around a Work to give protection against Escalade and mining by providing a major obstacle to the attacker. Can be either wet or dry.

Disappearing gun - mounted on a disappearing carriage, which enabled a gun to hide from direct fire and observation. Retraction lowered the gun from view and direct fire by the enemy while it was being reloaded

Embrasure – opening in a Rampart or Casemate of a Work through which a gun is fired.

Glacis – the sloping outer surface of a Work connecting the top of the covered way to the natural ground surface, and kept clear of obstructions so as not to impede the fire of the garrison.

Gorge – the rear portion of a Work usually left lightly protected to render it more vulnerable if captured by an enemy.

Haxo Casemate – a vaulted casemate open to the rear placed on a Terreplein. Invented by General Haxo of the French Army.

Howitzer – a gun geneally designed to elevate to 45 degrees.

Loop – narrow aperture through which a rifle may be fired. Sometimes referred to as a 'loop-hole'.

Lunette – a arrow-shaped outwork in the form of a detached bastion.

ML – Muzzle Loading: a type of early gun loaded through the muzzle.

Moncrieff – an early type of disappearing gun where the recoil forces are used to operate a counter-weight to bring the gun back to the firing position after loading. Invented by Captain Moncrieff.

Mortar – a gun designed up (but not quite) 90 degrees.

Parapet – an earthen bank to give protection to riflemen; the top of a rampart.

Polygonal – (1) describes a Work whose Trace has four or more sides. (2) Describes a system of fortification arranged to provide defence in depth by forts able to give mutual support to one another.

Rampart – a protective earthen bank above the Escarp behind which are sited the main defences of a Work.

Ravelin – a triangular shaped outwork placed inside the Ditch.

Redan – a triangular projection from the exterior face of a Work to allow the garrision to defend the adjacent walls and ground.

Revetment – portion of an Escarp wall, or other vertical surface, reinforced to prevent it collapsing into the Ditch.

Salient – the corner of a Work, projecting outwards.

Terreplein – the surface behind the Rampart, and raised above the Parade, on which guns are mounted.

Trace – the ground plan of a fortified Work.

Traverse – earthen bank giving protection from enfilading fire.

The Twydall Profile - a style of fortification used in British and Imperial polygonal forts at the end of the 19th century. The sloping earthworks employed in the Twydall Profile were intended to be quick and inexpensive to construct and to be effective in the face of the more powerful artillery and high explosive ammunition being introduced at that time.

Work – a term used to describe a 'fortified place' in military engineering.

1 INTRODUCTION AND BACKGROUND

This report provides a national overview of 19th and early 20th century forts and fortifications, has been commissioned by Historic England (HE). This project is designed to help inform the work of HE and other heritage professionals to ensure well-informed and nationally consistent advice is available to those promoting and managing change. Whilst the historic context of this period of fortifications is well understood, there is not a recent national overview of the comparative condition of these sites, development pressures, and threats.

Fortifications are increasingly being put forward for changes of use, which may impact on their historic significance ; other common threats include neglect, coastal erosion and flooding. The project aims to provide an accessible report to offer authoritative advice on the conservation and reuse of fortifications. It provides information on the condition, significance and threats associated with each fortification, and synthesises this information into a national, regional and local perspective. In so doing this document will help in the process of bringing 19th and early 20th century fortifications back to a fair condition, and promote sustainable futures.

2 SCOPE AND AIMS

Scope

This report considers Napoleonic forts, constructed after 1815, and associated fortifications, and those of the early 20th century up to 1919. This includes coastal defences and land forts, the most numerous of which are those derived from the recommendations of the 1860 Royal Commission Defence Scheme. It also includes later batteries, and the London Mobilisation Centres. Earlier fortifications (pre-dating 1800) were also incorporated into the 19th and early 20th century defence schemes, and those which played a significant role, demonstrated through the material adaption and/or reconstruction of a site's defences, are also included within this study.

Aims

The overall aim of this project is to produce a report that enables HE staff, local government officers, and others, to offer authoritative advice on the conservation and reuse of 19th and early 20th century fortifications. This will provide consistent advice, so that sites may be appropriately protected and sustainable futures found for those fortifications.

Aim 1 – Understanding

The project aims to understand the fortifications included within the scope of this study, through the assimilation of information of individual fortifications on to data sheets. This will allow for an overview within England (Welsh, Scottish and Irish evidence were not assessed for this study), to provide a comparative analysis of the importance and condition of individual sites and associated threats .

The project aims to assimilate the information from the datasheet into a summary report, to provide a more holistic understanding and assessment of the relative significance of each fort. By taking an overview the report aims to address objectives such as how construction phases relate to national policy, changing technology and fortification architecture.

Aim 2 – Dissemination

The report will be readily available to ensure that informed and consistent advice is provided on 19th and early 20th century fortifications. It is presented in an accessible format using data sheets, illustrations and charts to enable heritage professionals and others to make informed decisions about forts and promote constructive conservation. The report will ensure consistency of advice.

Aim 3 – Protection

The project is aimed at improving protection of 19th and early 20th century fortifications by providing a clear national overview of surviving examples,

their significance and relevant state of preservation. The report will facilitate constructive conservation of fortifications by providing a platform for the appropriate reuse of structures and associated earthworks.

3 METHODOLOGY

This project was desk-based and entailed no site visits; the buildings archaeology team undertaking the work have, however, worked on a number of 19th century forts in past projects and were able to utilise this information. Site information was also generated through contacting heritage professionals particularly HE staff, as many of the fortifications included in this study are Listed or Scheduled.

Stage 1 – Assimilating a list of 19th century and early 20th century Fortifications

The first stage of the project was to assimilate a list of fortifications in Microsoft Excel that fall within the scope of this study (*see* 2.2.1).

This was gathered through the following sources:

- The 'United Kingdom Fortifications' list on the *Victorian Forts* website (victorianforts.co.uk/data.htm);
- Fortifications included on the *Palmerston Forts* website (palmerstonfortssociety.org.uk);
- A gazetteer of sites included in *Fortress Britain* (Saunders 1989);
- *Heritage Gateway* was searched using the appropriate search terms and date ranges;
- Online sources were checked for each fortification to more accurately determine its survival and whether it fell within the scope of the study. A key source of information was the website *Wikipedia*, in addition to numerous fortification specific websites;
- The HE website provided information on *Listed and Scheduled* fortifications;
- Other secondary sources were assessed to identify any additional sites; principal sources were Dobinson's *Twentieth century fortifications in England* work (Vol VI.1) (2000) and Hogg's work on *Coastal Defences in England and Wales 1856-1956* (1974);
- A list of the London Mobilisation Centres was taken from the *Victorian Forts* website, and cross-referenced with the PastScapes website;

This resulting list was forwarded to Historic England for approval, and agreed at a project start up meeting.

Stage 2 – Creation of Datasheets

A datasheet was created for each fortification, and information completed under each of the headings set out in the report structure (*see* 4.1.3). This information was assimilated from a wide variety of sources, including secondary sources, the internet, primary archive records) as well as heritage groups and professionals.

The Internet

Firstly, basic site information relating to each heritage asset was assimilated using the *Heritage Gateway* website (which includes the HE *PastScapes* website), and the HE Listed Building and Scheduled Monument descriptions. The National Grid References (NGRs) were sometimes found to be inconsistent between sources or incorrect, and these were double checked using mapping websites such as (Gridreferencefinder.com). Mapping websites were also used to determine the setting of forts on each datasheet.

A primary source of information for completing information about the history and construction of the fortifications was online site records on the *Palmerston Forts* and *Victorian Forts* websites. An online search was also completed for each fortification, and in general a significant body of information was identified. Websites were particularly useful for giving up to date information on condition, use and ownership of fortifications. Online information, including photographs, from local and military history groups provided evidence of condition and threats. Information relating to the use, ownership and condition of a site was often difficult to determine with confidence and websites such as *Google Streetview*, *Bing* and *Grid Reference Finder* were investigated to provide current information.

Information about those buildings on the HAR Register was generated from reports provided online by HE, and through the HE HAR Excel spreadsheet which provides key information about individual fortifications. These sources identified the condition and trend of fortifications as well as threats, ownership and occupancy and current actions (information provided is correct at the time of research for this study, which was submitted in May 2017).

The planning portal for each county and area was checked using the name of the fortification. Current planning proposals were recorded on the datasheets, and major past planning issues were also noted. In some examples numerous historic planning applications were noted, and these were not recorded on the datasheets.

Heritage Professionals and Groups

The relevant Historic Environment Records (HER) and County Archaeologists were contacted for each fortification identified to determine the accuracy of information, particularly in relation to Conservation Areas, survival and any relevant planning information. In some examples heritage professionals with direct knowledge of local fortifications were contacted.

A first draft of the datasheets was grouped together by county and sent out to the relevant HE regional offices. As many of the fortifications included in this study are Listed and/or Scheduled and on the Heritage at Risk (HAR) Register, direct knowledge of sites, particularly in relation to threats and condition, was particularly useful.

Appendix 1 is a list of those professionals who provided information and comments of fortifications within their locality of expertise. OA are grateful for their help and assistance in contributing to this report. Please accept our apologises for any individuals who may have been unknowingly omitted from this list.

Secondary Sources

The overall development of 19th and early 20th century fortifications is well understood, and Andrew Saunders has provided the most comprehensive recent account in *Fortress Britain* (1989). Another key text is Ian Hogg's *Coastal Defences of England and Wales 1856-1956* (1974). There are also many accounts of individual fortifications and descriptions of local defence systems, for example the Solent papers published by David Moore. Secondary sources used in this study are listed in the bibliography (Appendix 2).

Primary Sources

The National Archives (TNA), the Historic England (HE) Archive and the British Library were visited for this project, records were accessed on individual fortifications in addition to more general military papers.

Assessment of Significance

The approach adopted to assess significance is that established in *Conservation Principles, Policy and Guidance* (paragraphs 30–60), with significance related to the family of heritage values set out in that document. The significance of the monument is therefore considered in terms of its evidential, historical, aesthetic and communal value.

Evidential value derives from the potential of the site to provide evidence of past human activity. The archaeological resource (both above and below ground) and their potential capacity to respond to investigative analysis make the primary contribution to evidential value.

Historical value derives from the way in which past people, events, and aspects of life can be connected through a place to the present. This includes associative, illustrative and representational value, and encompasses among other things rarity of survival, the extent of associated documentation, the ability to characterise a period, and association with other monuments.

Aesthetic value derives from the way in which people draw sensory and intellectual stimulation from a place. This includes not only formal visual and aesthetic qualities arising from design for a particular purpose but more fortuitous relationships of visual elements arising from the development of the place through time, and aesthetic values associated with the actions of nature

Less tangible, but still vital to the significance of the monument, is its **communal value**, at the heart of which are the multivalent meanings a place may have for contemporary society. Commemorative and symbolic

Stage 3 – Assimilation of Data and Reporting

Following completion of the data sheets, they were organised into strategic groups, to better understand the relationships between fortifications and their defensive mechanisms. Within larger areas such as Portsmouth, Plymouth, Dover and Chatham, fortifications were grouped together to better understand the geographical and functional relationships between them. In each 'Area Summary' the fortifications were discussed in relation to phasing, significance, condition, threats and recommendations. This enabled key information to be prioritised and for exemplars to be identified within phases and strategic groups.

These strategic groups were organised into the HE Regions to ensure the information was easily accessible to heritage professionals. These are:

Region 1: The south-west

Region 2: The south-east

Region 3: The east

Region 4: The north-east

Region 5: The north-west

There twenty strategic groups largely fitted into the HE Regions, with the exception of five sites, which fall within the south-east strategic groups, but geographically are part of the HE east of England regional group. These forts have therefore been duplicated in both sections, but have been given only one OA reference number. These fortifications are:

Area 9: Mobilisation Centres
North Weald Redoubt (OA109)

Area 10: Thames Group
Coalhouse Fort (OA115)
East Tilbury Battery (OA116)
Tilbury Fort (OA119)

Area 12: Coastal Redoubt
Harwich Redoubt (OA135)

Key information was recorded into an Excel spreadsheet, and the results tabulated and given numerical and character values which made the information easier to understand and compare. This Excel spreadsheet was then put into a relational database (Access), which enabled quantification of the data to give national and regional perspectives. Queries were run in order

to produce the results used within this text. This database was then further integrated with an Esri ArcGIS project in order to create the figures.

Through the Access database it was possible to take a broader perspective and show the results through statistics, percentages and charts. The results of the individual datasheets were understood from local, regional and national perspective. It also enabled the plotting of the fortifications into Geographical Information Systems (GIS), to produce the drawings within the report. Two fortifications in Kent came to the attention of the project at a late stage and are omitted from the discussions of fortifications in the South East. They are a late 19th century battery at Harty Ferry (TR 01299 64082) and the now listed First World War Fletcher Battery on the Isle of Sheppey (TR 00167 724849, NHLE 1445810).

4 REPORT FORMAT

There are two volumes to the report -

Volume 1

This summaries the information generated through the datasheets, which are included within Volume 2 of this report. On each datasheet, a fortification is given an 'OA Number' (for example – OA1) which is use to cross-reference information between the two volumes of the report.

Volume 1 sets out the context to the study within the following sections –

- Summary
- Introduction and Background
    - Aims and Objectives
    - Methodology
- Context
    - Overview of Fortification Design 1800-1919
    - The Historic Development of Fortifications 1800-1919
- Class Description
- National Summary
- Regional Summary
- Area Summary

Each of the twenty areas within the five regions is summarised from the information assimilated in the datasheets, described in relation to -

- Strategic Importance
- Phasing
- Significance
- Condition and Threats
- Recommendations and Priorities

Volume 2

The second volume includes the 167 datasheets for each of the fortifications identified. These are divided according to the five regions, and twenty strategic areas. Information is entered under the headings listed below, and if applicable is compatible with the HE Heritage Asset Management (HAM data)

- Key heritage information (for example - heritage reference numbers, level of protection);

- Type (in accordance with the HE thesaurus);
- Associated fortifications/ local group value;
- Brief history;
- Outline description;
- Condition (Good, Fair, Poor and Very Bad);
- Trend (Improving, Stable, Declining and Unknown);
- Setting;
- Threats – flooding/ coastal erosion, uncontrolled plant growth, deterioration/ in need of management, decay of fabric, vandalism, development (direct), development (indirect) or lesser incremental, possible impact from visitor wear and tear;
- Ownership - (charity (heritage), charity (other), commercial owner, commercial owners multiple, crown, education (private), education (state), English Heritage (or HE), Government Agency, Health Authority, Local Authority, Local Authority (multiple owners, other not for profit group, private, private (multiple), religious, unknown and utility;
- Occupancy - occupied/in use, part occupied/in use, vacant and not in use or not applicable;
- Current Use;
- Development Proposals;
- Summary of Significance (Exceptional, Considerable, Some, Little).

5 KEY TO VALUES

Values are given for phases, significance, condition and threats for ease of assimilating and accessing information. These are defined and tabulated below. These values are used in the first and second volume of this report, and the opening section of each strategic group.

Phasing

1	Early fortifications (pre-1850s)
2	1850s
3	1860/70s
4	1880/90s
5	Turn of the Century to the First World War
6	First World War

Significance

A	Exceptional A site which is of key national or international significance, being among the best or only surviving examples of an important type of monument, or being outstanding representatives of important social or cultural phenomena.
B	Considerable A site that constitutes good and representative examples of an important class of monument (or the only example locally), or that have a particular significance through association (although surviving examples may be relatively common on a national scale) or that make major contributions to the overall significance of the monument.
C	Some A site that contributes to the character and understanding of the place, or that provides a historical or cultural context for features of individually greater significance.
D	Little A site of low value in general terms, which has little or no significance in promoting understanding or appreciation of the place, without being actually intrusive.

Condition

1	Good
2	Fair
3	Poor
4	Very Bad

Threats

1	Flooding/ coastal erosion
2	Uncontrolled Plant Growth
3	Deterioration/ in need of management
4	Decay of fabric
5	Vandalism
6	Development (direct)
7	Development (indirect), or lesser incremental
8	Impact from visitor wear and tear

HAR Levels taken from the building and structures and places of worship priority categories	
A1	Immediate risk of further rapid deterioration or loss of fabric; no solution agreed.
C1	Immediate risk of further rapid deterioration or loss of fabric; solution agreed but not yet implemented.
D1	Slow decay; solution agreed but not yet implemented.
E1	Under repair or in fair to good repair, but no user identified; or under threat of vacancy with no obvious new user (applicable to buildings only capable of beneficial use).
HAR Levels taken from the battlefields and wreck sites priority categories	
A2	No action/ strategy identified or agreed (where trend is declining or unknown)
B2	Action/ strategy agreed but not yet implemented (where trend is unknown or declining).
C2	No Action/ strategy identified or agreed (where trend is stable or improving)
D2	Action/ strategy agreed but not yet implemented (where trend is stable or improving).

Table 1 Key to numerical values used in the datasheets and area tables

6 FORT DISTRIBUTION

In total 167 sites were identified, these were divided into a total of twenty geographical areas, which were allocated according to strategic groups. These in turn were organised into five HE regions. The Thames group is covered by two Historic England regions. These twenty strategic groups largely fitted into the HE Regions, with the exception of five sites, which fall within the south-east strategic groups, but geographically are part of the HE east of England regional group. These forts have therefore been duplicated in both sections, but have been given only one OA reference number. These fortifications are:

Area 9: Mobilisation Centres
North Weald Redoubt (OA109)

Area 10: Thames Group
Coalhouse Fort (OA115)
East Tilbury Battery (OA116)
Tilbury Fort (OA119)

Area 12: Coastal Redoubt
Harwich Redoubt (OA135)

The table shows the categorisation and distribution of fortifications, and this is illustrated in Figure 1.

Area No.	Name	Region	Number of Fortifications	Per cent of Total Number of Fortifications (167)
South-West Region				
1	Isles of Scilly	South-West	3	1.8
2	West Country	South-West	4	2.4
3	Falmouth	South-West	3	1.8
4	Plymouth	South-West	37	22.16
5	Portland	South-West	8	4.79
6	Bristol	South-West	2	1.2
Total 57				**34.14**
South-East Region				
7	Portsmouth	South-East	42	25.15
8	Sussex	South-East	3	1.8
9	Mobilisation Centres	South-East	11	6.58
10	Thames	South-East	4	2.39
11	Thames / Sheerness	South-East	3	1.80
12	Chatham and Medway	South-East	8	4.79
13	Coastal Redoubts	South-East	2	1.20
14	Dover	South-East	13	7.78
Total 86				**51.50**

Area No.	Name	Region	Number of Fortifications	Per cent of Total Number of Fortifications (167)
East of England Region				
15	Harwich	East of England	3	1.80
***10**	Thames	East of England	3	1.80
***9**	Mobilisation Centre	East of England	1	0.6
***13**	Coastal Redoubt	East of England	1	0.6
Total 8				**4.79**
North-East Region				
16	Humber	North East	5	2.99
17	Tees & Hartlepool	North East	6	3.59
18	Northumberland	North East	2	1.2
Total 13				**7.78**
North-West Region				
19	Mersey	North West	2	1.2
20	Cumbria	North West	1	1.6
Total 3				**1.79**

Table 2 National geographical categorisation and distribution of fortification

*Groups which contain fortifications which are part of the HE east of England region, but are part of strategic groups which predominantly are part of the south-east region

Fig 1 National distribution of strategic groups and regional areas

7 CLASS DESCRIPTION

Overview

Historically, the long coastline of the British Isles has offered a standing invitation to an invader, indented with inlets and creeks with a multitude of landing places. The geographically distribution of fortifications by phase is illustrated in Figure 2. The vast majority of English permanent post-medieval fortifications are coastal and have direct geographical associations with the places they were designed to defend, such as, river mouths, harbours, naval dockyards, and more rarely towns. Forts are also strategically situated in close proximity to short sea crossings and landing beaches. A recurring feature of fortifications is that a strategically important place remains so, and its fortifications are repeatedly replaced, remodelled and upgraded over a long period of time. From the 16th century until the end of coastal defence in 1956, coastal artillery provided home security as well as protecting communications and trade networks across the British empire. The primary role of the navy was to blockade enemy ports and to break up invasion fleets before they might land.

The early 19th century system of defences built to counter revolutionary and Napoleonic France was particularly sophisticated, embracing existing works, new sea and land forts, batteries, Martello towers, defensive lines and fieldworks. The design and location of 19th and early 20th century fortifications, which included the re-use of existing fortifications and the vast construction of new structures, reflects major developments in armament technology, strategic thought, the defensive threat and policy. These developments occurred alongside the Industrial Revolution, when Britain became the most powerful combined economic and military country in the world.

The 19th century is a pivotal period in the evolution of fortification design and theory, during which a strategy of visual dominance as a form of deterrence gave way to one based on concealment. The earth and timber hillforts of prehistory had developed in the Norman and Medieval eras into ever grander fortifications and this strategy of designing ever larger structures continued into the mid-19th century with the vast construction programme resulting from the 1860 Royal Commission on the Defence of the United Kingdom report. The introduction of gunpowder artillery also had a massive impact and revolutionised the design of fortifications. Towards the end of the century however, there was a strategic shift towards less visually imposing strongholds when the design priority was concealment. The era of the truly great, visually imposing fortification was overturned alongside the recognition of the futility of a grandiose edifice that could be easily targeted and bombarded into defeat.

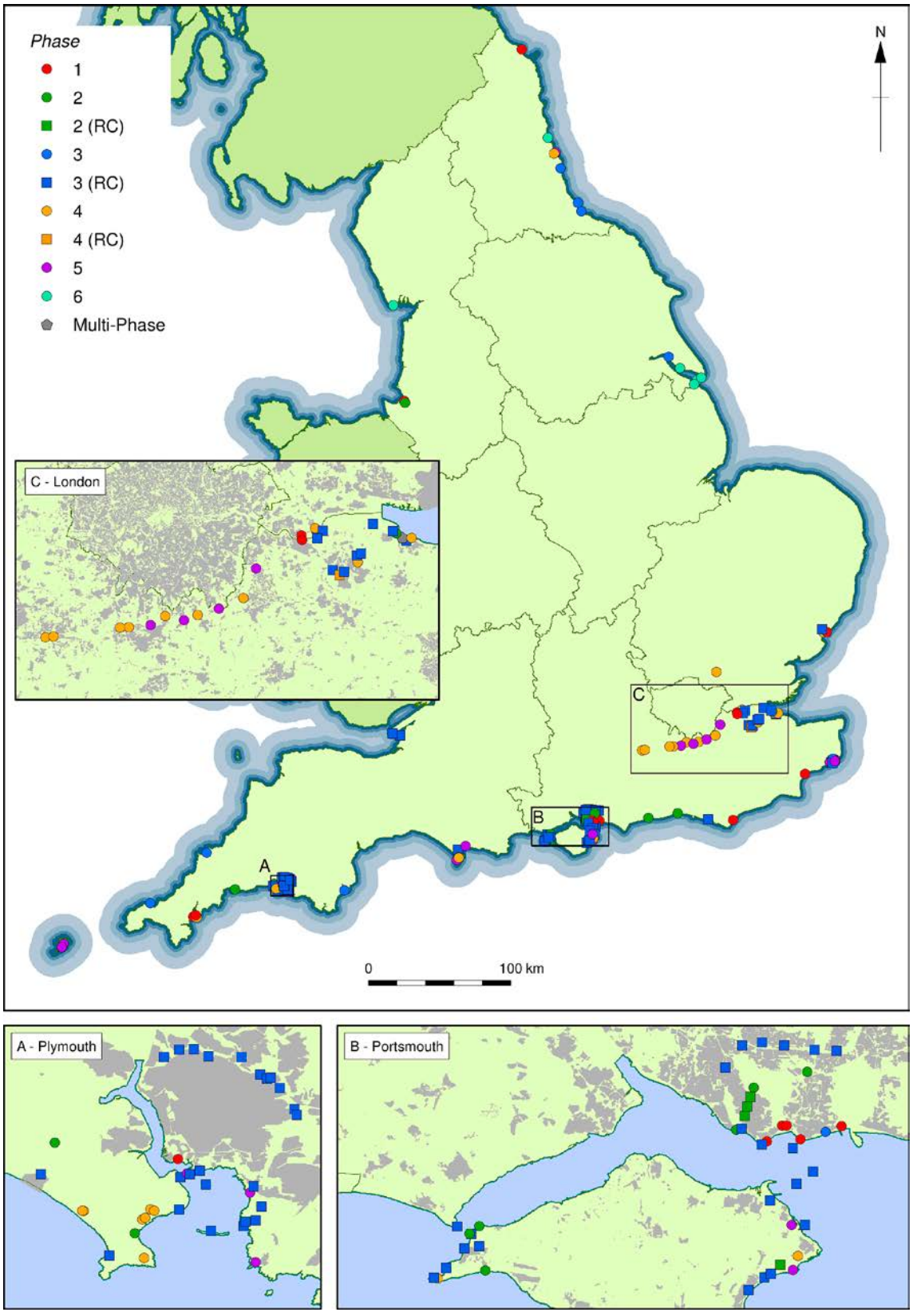

Fig 2 National distribution by phase

Phase 1: Early Fortifications (Figure 3)

As dockyards and naval bases developed in the 17th and particularly in the 18th century, the main elements of coastal defence took place. Early fortifications heavily influenced those of the 18th and first half of the 19th century, when forts and batteries followed a fairly consistent pattern. All were influenced by the bastion system of fortifications which evolved in the early 16th century and reached its apogee in the works of Vauban in France and the Low Countries by the end of the 17th century. After the restoration of Charles II (1660), Bernard de Gomme was the dominant figure in fortification design. Ditches and earth ramparts revetted in brick or stone enclosed permanent forts. The bastion system remained fundamentally unchanged for three hundred and more years due to the slow pace of technological improvements to weaponry at this time

The last true bastion fort was constructed at Fort Pitt in Chatham a in the early 19th Century (HE Research Report 5/2008 by Alexander, M 2007). At the beginning of the 19th century, when England was at war with France, a system of Martello Towers was built around the south and east coast, supported by batteries and a small number of large redoubts. After the final defeat of Napoleon I (1815), the lack of threat of invasion enabled the massive expenditure of the Napoleonic period to be cut back and elaborate early 19th Century defences became run down. . Relatively few improvements were undertaken to the coastal fortifications and the military establishment was allowed to fall into a period of complacency. It was not until the mid-19th Century that fear of invasion was renewed and new theories of fortification were evolved.

Early examples of fortifications which continued to play a significant role in the 19th and early 20th centuries, and were adapted and extended in response to technological developments and the political climate are listed below. Further details, including the basis of each fortifications significance, is given with the area and regional summaries (Vol.1) and individual datasheets (Vol.2).

Exemplars from Phase 1: Early Fortifications group -

- Eastern Kings Redoubt (Plymouth, Area 4, OA45)
- Fort Cumberland (Portsmouth Area 7, OA65)
- Fort Monckton (Portsmouth, Area 7, OA60)
- Fort Blockhouse (Portsmouth, Area 7, OA63)
- Tilbury Fort (Thames, Area 10, OA119) (strategically situated with the Thames group but geographically within the south-east group).
- New Tavern Fort (Thames, Area 10, OA121)
- Sheerness Defences (Sheerness, Area 11, OA123)
- Harwich Redoubt (Coastal Redoubts, Area 13, OA135)

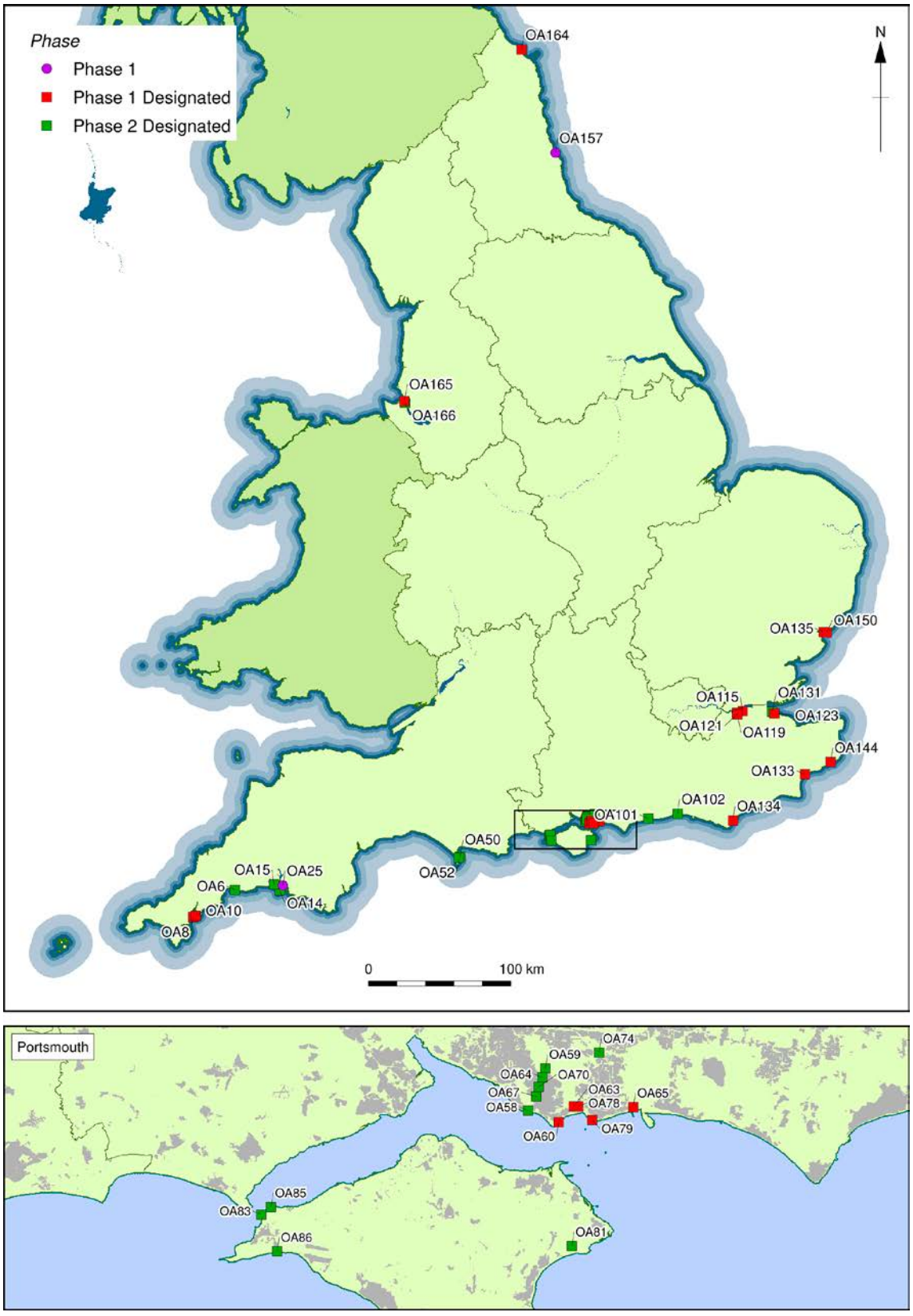

Fig 3 National distribution, Phase 1 and 2

- Western Heights (Dover, Area 14, OA144)
- Dover Castle (Dover, Area 14, OA138, OA139 and OA140)
- Languard Fort (Harwich, Area 15, OA150)

Phase 2: Revolutionary change, 1850s (Figure 3)

Britain's military establishment began to be shaken out of the stagnation and complacency, which had typified it since the defeat of Napoleon in 1815. The first invasion panic was in 1847-8 caused by the 1848 revolution in France and Napoleon III coming to power. The pace of military technological change was also beginning to accelerate in this period with the arrival of steam driven, armoured warships on the one hand, and the appearance of rifled guns, which drastically extended the range and accuracy of artillery. This, alongside the revival of the old threat from France under Napoleon III, saw a new and evolved programme of fortification construction. The French battle fleet grew in size to rival that of the British, and the French built their first iron-clad ship, *La Gloire*. The construction of the Suez Canal which threatened British trade also brought a new sense of urgency.

The 1850s mark a change in direction in fortification construction; Britain had previously drawn on European influence but for the first time it was leading the way. Fort Albert, Isle of Wight, reflects this change in direction, it was one of the last gun towers to be constructed in England, and was rapidly considered obsolete due to advances in gunnery (detailed in the HE Scheduled Monument description). At this time the bastion trace went out of fashion to be replaced by 'polygonal forts', with the longer range of guns these could contain used to cover the intervals between them.

Shornmead Fort (Phase 1) (1850-3) was the first polygonal fort to be built in Britain, and was the start of a dramatic new trend, anticipating the type of land fortifications adopted under the Royal Commission in the 1860s (the polygonal fort is thought to survive as below-ground archaeology beneath the later Phase 2 Royal Commission fortification). To the west of Gosport Fort Gomer (now demolished) and Fort Elson marked the beginning of outer detached defensive positions, Fort Nelson provided a variant with a dry ditch replacing the moat. Fortifications also included lines of defences, such as the Hilsea Lines, which were part of a more powerful and complex system that surrounded the nation's important naval base at Portsmouth.

The fortifications listed below were identified in this study as exemplars of their type and phase, and/or the best surviving examples with their strategic group. Further details, including the basis of each fortifications significance, is given with the area and regional summaries (Vol.1) and individual datasheets (Vol.2).

Exemplars from the Phase 2: 1850s group of fortifications -

- Scraesden Fort (Plymouth, Area 4, OA15)
- Verne Citadel (Portland, Area 5, OA52)

- Fort Elson (Portsmouth, Area 7, OA59)
- Fort Brockhurst (Portsmouth, Area 7, OA64)
- Fort Bembridge (Portsmouth, Area 7, OA 81)
- Hilsea Lines (Portsmouth, Area 7, OA74)
- Littlehampton Fort (Sussex, Area 8, OA101)
- Shoreham Fort (Sussex, Area 8, OA102)

There are also other examples of fortifications that were not constructed in the 1850s phase, but show many aspects of changing fortification design, for example the Western Heights at Dover (OA144).

Phase 3: Royal Commission Fortifications, 1860s/70s (Fig 4)

The perceived threat of an attempted French invasion grew in the 1850s, resulting in the Royal Commission report of 1859. This affirmed the Royal Navy's response for home defence and demonstrated that advances in weapon technology threatened to diminish the Royal Navy's ability to safeguard the coastline. This was a period of rapid acceleration in fire-power, of range, as well as of the different directions of vulnerability from fire. The long and more accurate range of new rifled guns, meant defences were taken further out to landward and sea forts were constructed.

As a result of the Royal Commission's report and at great, almost prohibitive expense, Britain's naval bases received what was considered to be the essential protection required in a rapidly changing world of mass-produced armaments. These fortifications, often termed 'Palmerston's Follies' (the name comes from their association with Lord Palmerston as Prime Minister at the time and who promoted the idea), represented the largest maritime defence programme since the initiative of Henry VIII in 1539-40. They built on the core of existing defence works in Portsmouth and Plymouth, although the scope of the Royal Commission sites is much wider than these two dockyards, and recommended the improvement of existing fortifications as well as the construction of new ones. The fortifications are a well-defined group with common design characteristics, armament and defensive provisions. The main danger was seen to be attacks on dockyards, and the fortifications consisted of coastal batteries against direct attack, sea forts and rings of landward facing forts to protect the naval bases from forces who had landed elsewhere.

Technological developments are reflected in fortification design, as they required thicker masonry, greater use of earthworks, and guns mounted in bombproof casemates protected by iron gun shields. The threat of more powerful ironclads had led to much experimentation, and it was felt, as a result, that forts should be armoured too and the insertion of iron composite gun shields was eventually regarded as essential. Lessons learnt from the American Civil War (1861-5) had a profound effect on the construction of forts in the 1860s, leading to a greater appreciation of the shot-absorbing

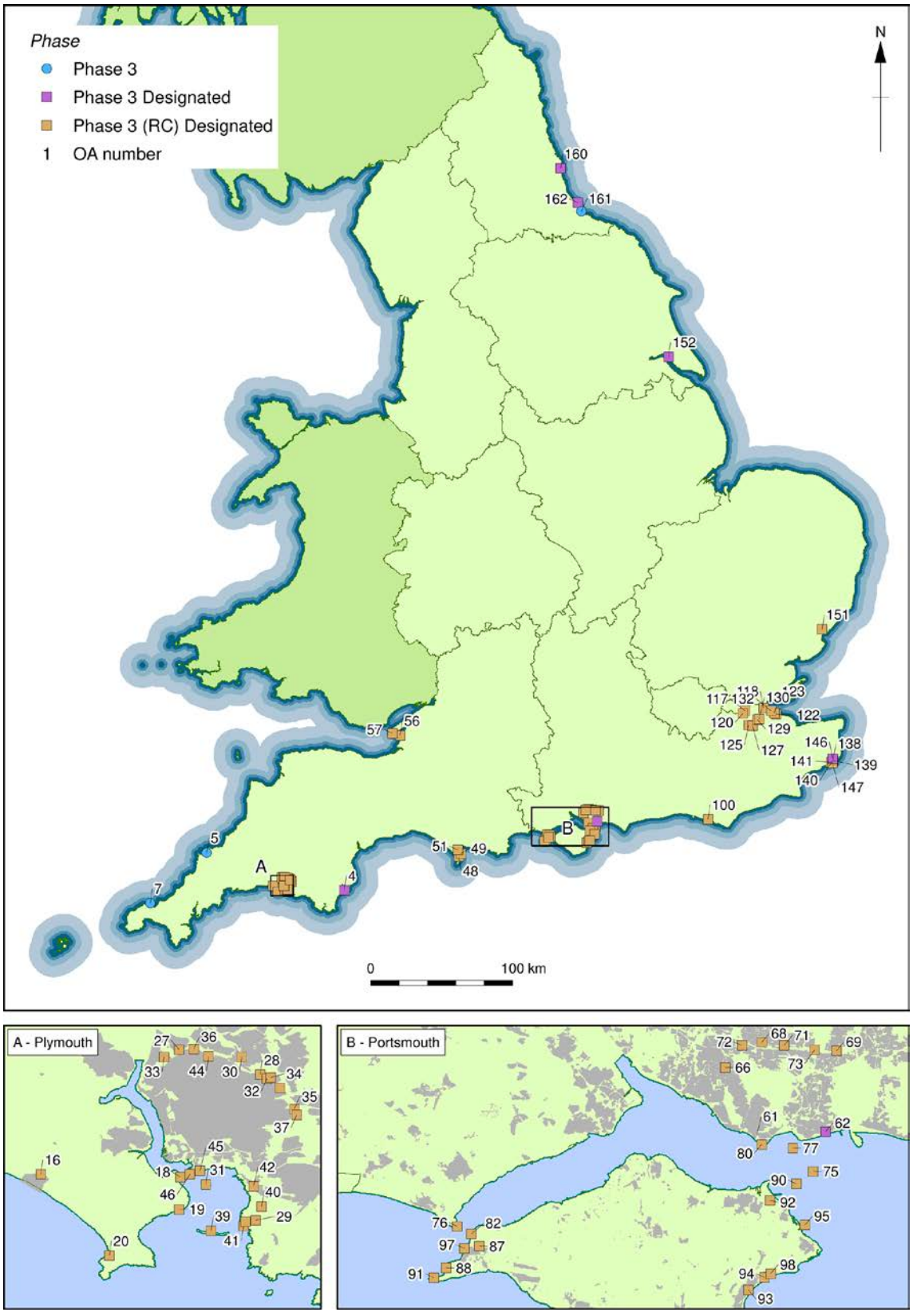

Fig 4 National distribution, Phase 3

qualities of earthworks. Likewise, the Franco-Prussian War (1870-1) influenced the design of fortifications and evolution of artillery. There was a great variety of coastal batteries, that mounted ever larger guns in armoured casemates, in pits on disappearing mountings and finally in 'barbette' mountings, firing over an open parapet. A special type was the round masonry and iron armoured towers in the sea approaches to some ports.

At this time a number of issues were resolved by artillery engineers, leading to the widespread introduction of rifled and breach loading artillery. Methods of controlling recoil were developed, beginning with crude friction brakes and then passing to hydraulic cylinders of simple design which were gradually refined and improved. With the advent of breech loading it was possible to develop systems which controlled the recoil and ran the gun out so that it was ready to fire as soon as possible. New gunpowder resulted in the need for longer guns, which in turn lead to complicated hoists to lift enormous shells and charges from subterranean magazines, and complex emplacements to contain all that was necessary to fire large guns.

The rapid construction programme saw most fortifications completed in the 1860s, but some, particularly those in Chatham, were constructed in the 1870s and not complete until the end of the 1880s. These decades witnessed a shift in fortification policy and design, reflected in their architecture and the use of mass concrete. The forts were built primarily of Portland cement mass concrete, but casemates and tunnels still had brick walls with concrete arches. Newhaven Fort, begun in 1865, was the first fort constructed in mass concrete, elsewhere concrete was used in more conventional ways (for floors and foundations). From the 1870s detached forts and batteries were built not only in the naval ports, but also at estuaries up and down the length of Britain in an effort to protect the vital merchant marine.

These forts are transitional with few fixed gun positions enabling the artillery to operate from concealed field positions. They often combined earth and masonry defences and presaged a nationwide move towards concealed defences, and were a precursor to the London Mobilisation Centres as centres from which to organise defence and store ordnance. Mobility was deemed to be the key and there was no longer a need for expensive permanent strongholds. The key shift was in concealing fortifications, making them harder to detect and destroy by the increasingly accurate and longer range fire of naval artillery brought about by improvements in range finders and ever larger guns making use of new and more powerful chemical explosives.

The fortifications listed below where identified in this study as exemplars of their type and phase, and/or the best surviving examples with their strategic group. Further details, including the basis of each fortifications significance, is given with the area and regional summaries (Vol.1) and individual datasheets (Vol.2).

Exemplars from the Phase 3: 1860/70s group -

- Drakes Island (Plymouth, Area 4, OA31)
- Powlawn Battery (Plymouth, Area 4, OA20)
- Staddon Fort (Plymouth, Area 4, OA40)
- Fort Bovisand (Plymouth, Area 4, OA41)
- Crownhill Fort (Plymouth, Area 4, OA30)
- Egg Buckland Fort (Plymouth, Area 4, OA32)
- Tregantle Fort (Plymouth, Area 4, OA16)
- Nothe Fort (Portland, Area 5, OA51)
- Brean Down Fort (Bristol, Area 6, OA56)
- Horse Sand Fort (Portsmouth, Area 7, OA75)
- Fort Nelson (Portsmouth, Area 7, OA68)
- Yaverland Fort and Battery (Portsmouth, Area 7, OA98)
- Old Needles Battery (Portsmouth, Area 7, OA91)
- Stokes Bay Lines, No.1 Battery (Portsmouth, Area 7, OA61)
- Fort Gilkicker (Portsmouth, Area 7, OA80)
- Newhaven Fort (Area 8, Sussex, OA102)
- Coalhouse Fort (Thames, Area 10, OA115)
- Cliffe Fort (Thames, Area 10, OA117)
- Garrison Point Fort (part of Sheerness Defences) (Sheerness, Area 11, OA123
- Hoo Fort (Chatham and Medway, Area 12, OA129)
- Darnet Fort (Chatham and Medway, Area 12, OA130)
- Admirality Pier Turret (Dover, Area 14, OA127)
- Shotyard Battery (Dover, Area 14, OA128)
- Shornmead Fort (Thames, Area 10, OA120)

Phase 4: Concealment of Fortifications, 1880s/1890s (Fig 5)

In the last quarter of the 19th century there remained a fear of the military threat posed by France but there was also a growing awareness of the military and industrial might of Germany, particularly after their victory in the Franco-Prussian War (1870-1). Coastal batteries were developed in response to rapid technological change in armaments during this period armed with breech loading and high angle guns with an increased emphasis on quick firers to counter torpedo boats. By the start of the First World War, coastal defences had been rationalized according to gun types, calibres and

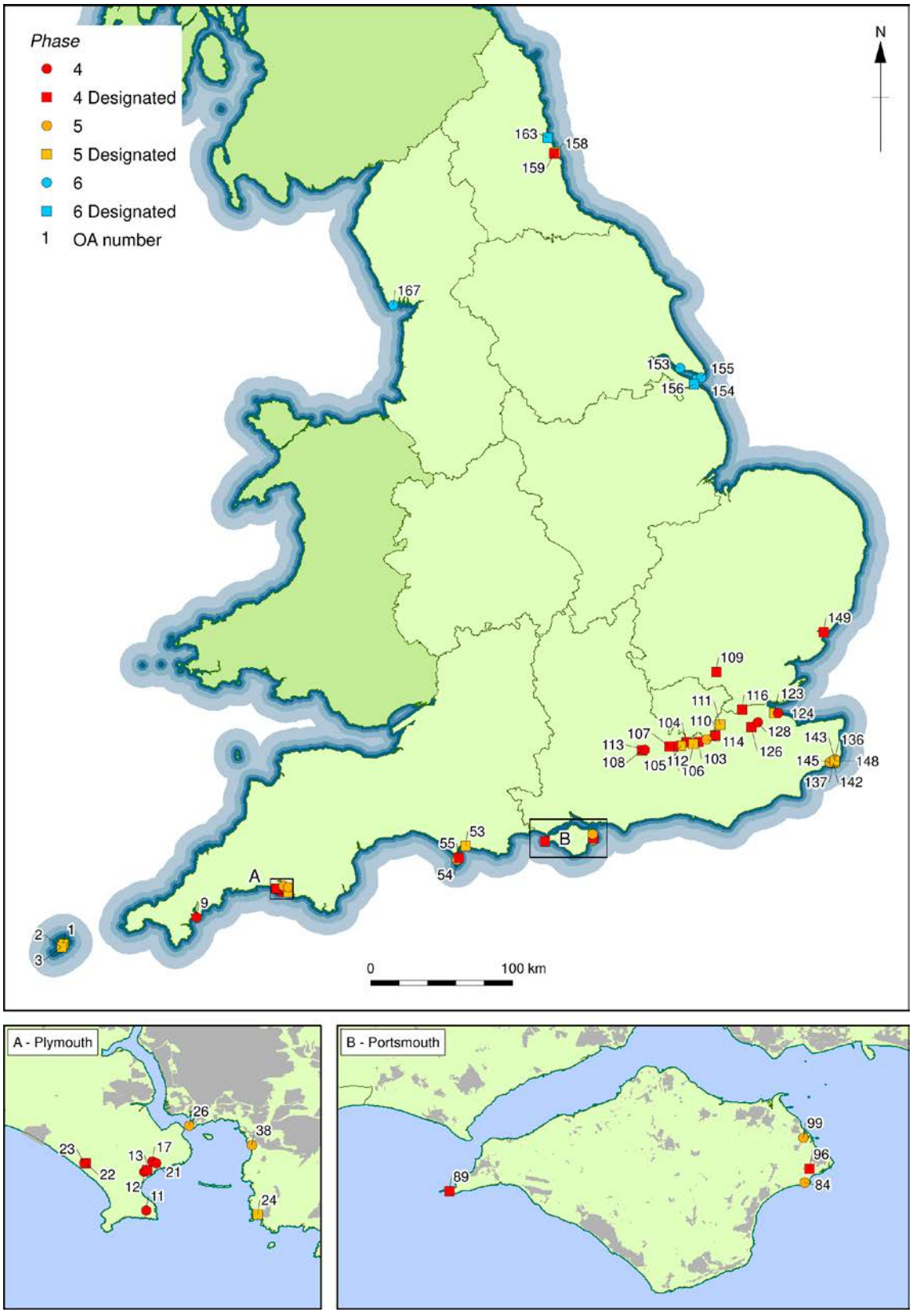

Fig 5 National distribution, Phase 4, 5 and 6

mountings and batteries were armed with guns appropriate to the predicted weight of attack.

The gun batteries developed at the end of the 19th century differed fundamentally from earlier batteries, and pointed the way to the designs of 20th century defences. Key developments were: hydraulic and compressed air systems (allowing for the use of disappearing guns), lighter steel barrels, improved and smokeless propellants, range-firing equipment and electrical communications. A disappearing gun (mounted on a disappearing carriage), enabled a gun to be hidden from direct fire and observation. The retraction lowered the gun from view and targeting by the enemy while it was being reloaded. The invention of smokeless powder was accelerated as new types of weapons were developed, particularly small quick firing (QF) guns and machine guns. In 1889 cordite was patented, and was quickly adopted for military use (Cocroft 2000).

New types of searchlights were developed in association with the QF guns, initially 6 and 12-pdr guns for use against fast torpedo-boats and gunboats. A new armoured 'fighting' light emplacement provided illumination and by means of electric cables, a single mine could be detonated under an enemy ship entering a submarine minefield. New types of lights which developed include 'see-saw searchlights' which were short lived experimental emplacements evident for example at the Chatham Lines, the Isle of Wight and the Humber. These were an early electric powered searchlight first developed in the 1870s used in conjunction with coast artillery. The light was powered by steam engines usually housed in the nearby forts.

Artillery became more effective, fortification grew a harder carapace with massed concrete, and guns protected in armoured, shields . Revolving turrets were adopted in Europe but not by the English, with the 1882 Admiralty Pier turret at Dover the sole example. Gun emplacements were also constructed in concrete. Disappearing guns in pits proved complicated to operate and gave way to guns firing from barbette mountings over the rampart. Priority was given to these open emplacements with fixed gun mountings and low profile earthwork fortifications which were hard to target while allowing the guns maximum manoeuvrability. Early applications of these principles are evident in the 'Twydall Profile' and variations developed in the 1890s.

Two key developments in weapons and fortification design at this time are the Brennan Torpedo and High Angle Batteries. Archaeological evidence relating to these two types of installations is rare, and their physical remains are considered to be of national importance. *The Brennan Torpedo* came into use from 1883, and was the world's first practicable wire guided weapon designed to be launched from shore based forts as a means of defending a waterway from attacking ships. There were five Brennan Stations in the UK, those included within this study are: Garrison Point Fort (Sheerness), Fort Albert (Portsmouth) and Cliffe Fort (Thames).

The installation at Fort Albert was completely destroyed in 2007. Parts of the installation at Garrison Point are thought to survive (described in RCHME 1993), although other sources (undated) state that nothing remains of the Brennan Station (*victorianforts* website). The torpedo station at Cliffe Fort partially exists, and is described in the Historic England report on Cliffe Fort (Newsome 2011). Research shows that Cliffe Fort is the best preserved of the rare Brennan torpedo stations, which includes the remains of a unique rising observation tower.

By the 1880s the hulls of heavily armoured battleships were thought to be virtually impenetrable. *High Angle Batteries* were built to produce fire which could plunge down on the more lightly armoured decks of ships, rather than to try punching through their protective belt or box armour. The Verne High Angle Battery in Portland is considered to be the best surviving example, however in Portsmouth, the experimental Cumberland High Angle Battery and Steynewood High Angle Battery are also thought to be well preserved. In Plymouth, Hawkins High Angle Battery is also believed to have survived well, and is the only battery of this type not scheduled or listed. Further on site investigation is required to more confidently determine the best surviving example of this group. There were two further High Angle Batteries in Plymouth, at Rame Church and Tregantle Down, which have been demolished but where there is the potential for survival of below-ground archaology.

In the last decade of the 19th Century, 15 *London Mobilisation Centres* were constructed which formed part of a comprehensive military scheme known as the London Defence Positions. These forts followed ideas for designs first seen in the Chatham Ring Forts, and were transitional in design with few gun positions enabling the artillery to operate from concealed field positions. The forts acted as pre-positioned stocks of military materiel and entrenching tools which in the event of an invasion scare would be used to link the forts by fieldworks (as happened in the 1914-18 war). Drawn up in 1888 to protect the capital in the event of enemy invasion, the scheme was a response to the rapid progress made in warship production by France and Russia during the early 1880s, which had led to official doubts about the Royal Navy's defence capability. As a short-lived and rare monument type, all mobilisation centres with surviving remains sufficient to give a clear impression of their original form and function are considered to be nationally important. The best surviving examples are considered to be Fort Halstead and North Weald Redoubt.

The fortifications listed below where identified in this study as exemplars of their type and phase, and/or the best surviving examples with their strategic group. Further details, including the basis of each fortifications significance, is given with the area and regional summaries (Vol.1) and individual datasheets (Vol.2).

Phase 5: Turn of the Century to the First World War

- Verne High Angle Battery (Portland, Area 5, OA55)
- Hawkins Battery (Plymouth, Area 4, OA117)
- Steynewood High Angle Battery (Portsmouth, Area 7, OA96)
- New Needles Battery (Portsmouth, Area 7, OA89)
- North Weald Redoubt (Mobilisation Centres, Area 9, OA109)
- East Tilbury Battery (Thames, Area 10, OA116) (strategically situated within the Thames group, but geographically within the East of England regional group).
- Grain Wing Battery (Chatham and Medway, Area 12, OA132)
- Fort Horsted (Chatham and Medway, Area 12, OA126)
- Beacon Hill Fort (Harwich, Area 15, OA149)
- Fort Halstead (Mobilisation Centres, Area 10, OA110)

Phase 5: Turn of the Century to the First World War (Fig 5)

By the early years of the 20th century, many permanent fortifications to defend land frontiers, either for ports or elsewhere, had become largely obsolete in Britain. This is in sharp contrast to Europe where new impetus was given to elaborate fixed land fortifications. With the threat from Germany and following the Owen report of 1905, there was a shift to enhancing the fortifications on the east coast and the closure of some south coast batteries. Between 1903-1907 the land fortifications around the major dockyards were disarmed, and the newly built London Mobilisation Centres, were closed after 1905.

The role of coast artillery was to deter attack on what were called defended ports, so as to hold off an assault until the fleet arrived on the scene, and to be prepared for torpedo-boat operations. The ports themselves were considered less liable to land attack, so the batteries were less designed to resist such attack. In terms of artillery, new sites built after 1900 used the QF guns originating in the 1880s and 1890s. Apart from a few purpose built sites established in the First World War, new batteries built from 1900 until the end of the Second World War were nearly always designed for weapons of these types, and this is reflected in their fabric. The Russo-Japanese War (1904-5) was also influential to early 20th century thinking, and saw the introduction of new technology used through the 20th century, including machine gun emplacements.

The fortifications listed below where identified in this study as exemplars of their type and phase, and/or the best surviving examples with their strategic group. Further details, including the basis of each fortifications significance, is given with the area and regional summaries (Vol.1) and individual datasheets (Vol.2).

Phase 5: Turn of the Century to the First World War

- Bant's Carn Battery (Isles of Scilly, Area 1, OA1)
- Renney Point Battery (Plymouth, Area 4, OA24)
- Upton Battery (Portland, Area 5, OA53)
- Fort Halstead (Mobilisation Centres, Area 9, OA110)

First World War, 1914-1918 (Fig 5)

The front line of defence in 1914 was still the Grand Fleet, with a secondary coast organisation of submarines and destroyer flotillas. Throughout the war, the British coast was guarded by an elaborate system of naval patrols and a local naval defence system. Conventional coastal defences were enhanced and, measures to counter the new danger of air attack developed, sea communications with France were maintained, and strategic ports protected against submarines and gunboats. As well as the long-established batteries and harbour defences of the twenty-six defended ports and naval bases, were miles of barbed wire, trench systems and pillboxes along the south and east coasts.

Efforts were concentrated in providing protection for London and the principal ports and naval bases, such as Portsmouth, Plymouth, Chatham and Sheerness, where some of the land forts were re-equipped, as well as the enhanced naval role and fortifications at Harwich. The Channel ports were considered to be a key target, and were protected by the Dover patrol. There were other estuaries particularly the Orwell, Humber, Tyne and Forth, with those in closer proximity to London considered to be more likely targets. The Humber estuary served three major ports and as an important anchorage was heavily protected. Existing fortifications were re-fortified for the war, and temporary arrangements were made for anti-aircraft guns and lights. The armament was rationalised to 9.2, 6 and 4.7-inch with 6-pdr guns to counter fast torpedo boats. The construction of new sea forts, the first since the 1860s, extended protection into the estuary.

The fortification listed below was identified in this study as exemplar of its type and phase. Further details, including the basis for the fortification's significance, is given with the area and regional summaries (Vol.1) and individual datasheets (Vol.2).

- Bull Sand Fort (Humber, Area 16, OA154)

8 OVERVIEW OF FORTIFICATION DESIGN

For the three centuries leading up to the late 19th century, most major European fortifications were designed on the bastion principle, first developed in Renaissance Italy and widespread by the 16th century (for example Tilbury in Essex, and Pendennis Castle in Falmouth) (Image 1). These forts, defended by cannon and sophisticated earthworks, became increasingly complicated following the designs of Sebastien le Prestre de Vauban (1633-1707) (and others), and became expensive to build and man.

Image 1 Pendennis Castle looking towards St Mawes, Falmouth, from the south-west, 1948 (©Britain From Above website, image no. - EAW020292)

At the beginning of the 19th century England was again at war with France, when a system of Martello towers was constructed, supported by batteries and redoubts. The Napoleonic Wars provided direct experience of siege warfare outside the UK and this resulted in experimentation for new fortification types, such as Martello Towers and other gun towers at Chatham. After the defeat of Napoleon I (1815), there was a period of stagnation in fortification construction. In the 1850s this changed with acceleration in technology and the revival of the French threat under

Napoleon III. The 19th century fortifications that resulted from the 1860 report of the Royal Commission on the Defence of the United Kingdom, led to an unprecedented construction programme. By 1867, seventy-six forts and batteries were in the process of being built or had been completed (Saunders, 1989, 175). Some, however, were not completed before the close of the century, Fort Darland for example was finished in 1899. Lieutenant-Colonel Jervois, Deputy Director of Works for Fortifications and Secretary to the Royal Commission was the presiding influence over the design of the fortifications.

These fortifications were influenced by international events at the time and subsequently, so that lessons learnt from overseas conflicts directly influenced the design of fortifications and advances in technology by the British. These include the Crimean War (1853-6) (including the Baltic in 1854), the American Civil War (1861-5), the Franco-Prussian War (1870-1) and the Russo-Japanese War (1904-5). The typologies of fortifications evolved during this time, it is however possible to identify two types of defence in the late 19th and early 20th centuries - coastal defences and land forts. Of the seventy-six fort and batteries erected, or in the course of erection in 1867, only nineteen were land forts, the remainder were sea batteries of one sort or another.

Coastal defences

Coastal defences involved the immediate protection of the coast, to deter enemy vessels and to prevent landings (and landward attacks). They consisted of either open or closed batteries. The choice depended on location: those situated low down or close to the sea were heavily armoured; those with the advantage of height or at a greater distance could be less well-protected.

Simple open batteries, where the artillery fired from barbette positions were chosen if possible, as these were cheaper to build and operate. The open battery was ideal for high locations, for example Old Needles Battery. In areas where more protection was needed, the typical work was massively constructed and heavily armoured. Guns were in casemates, fitted with iron shields, and granite was often used to face the works. Casemates were formed in a semi-circular plan and the open rear (the gorge) was closed off by defensive barracks which housed the garrison. A dry ditch with *caponiers* or flooded moats provided additional defences.

Some examples and variations of open batteries are: Coalhouse Fort, East Tilbury Fort, Shornemead and Cliffe Fort. Two works are a variation of this type, and are double storeyed, which are Picklecombe Fort (Plymouth group) and Garrison Port Fort (Sheerness group). Darnet Fort and Hoo Fort, located on islands in the Medway, were completely circular (Image 2). There were also a number of circular works which were constructed at sea, with on the seaward face, iron armour. These were the Spithead Sea Forts (Portsmouth group), and Portland Breakwater Fort. There were also a number of hybrid

works, such as Granite Fort at Sandown on the Isle of Wight, which had iron shielded casemates but whose plan was roughly hexagonal, and Grain Fort which was heptagonal in shape but constructed largely of earthwork and with un-revetted ditches, and with armaments mounted on the ramparts.

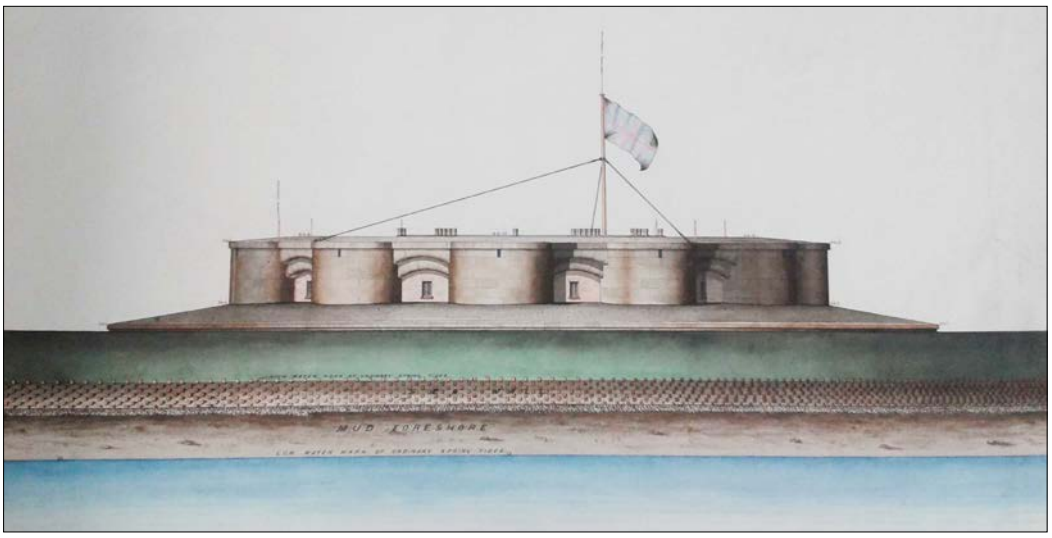

Image 2 View of Hoo Fort, 1877 (TNA – ADM 140/1350)

Land Forts

Land Forts were of a different design and built for a different purpose; this was to dominate land by rings of forts with intersecting fields of fire in order to protect the dockyards and other vulnerable sites from land attack by keeping an enemy and its guns out of range to bombard the place being so protected. In the final years of the 19th century, this included defence of London as the capital. Some land forts were isolated and but most were part of a chain or group, and were therefore part of a ring fortress.

The polygonal system was the new orthodoxy of fortifications. Saunders believes believed that polygonal works were developed from the detached bastion. Littlehampton Fort and Shoreham Fort (1854 and 1857 respectively) are example of lunette fortifications, with the external buildings under the rampart and with a wall across the open gorge. These changes were brought about by the invasion scare with construction of Forts Gomer and Elson. These are the precursors to Palmerston Forts, however the first British example is Shornemead Fort (Phase 1) (1847-52) on the south bank of the Thames (Image 3). This was given local defence by caponiers, which Littlehampton lacks instead having a Carnot wall surrounding its rampart.

Palmerston Forts share a number of features –

- The landward forts face inland because this was the direction from which an attack was expected;
- Trace or plan, is often like a flattened arrow;

Image 3 Aerial view of Shornemead Fort (26885-007 © Historic England)

- A wall protected the gorge, sometimes loopholed on later examples (for example – Fort Borstal) and sometime massive and forming a fortified barrack (for example - Portsmouth Forts, within these Purbrook, Nelson and Wallington had triangular extensions forming 'redans' pointing south towards the town);
- Gun casemates sometimes formed flanking galleries within and under the ramparts (for example – Brockhurst and its sister forts Grange and Rowner);
- Barrack accommodation was generally in the casemates;
- Magazines were as deep as possible underground and reached by tunnels as at the Portsdown works, or sometimes under the ramparts., Fort Horsted is unusual because although it has conventional magazines deeply buried, the large central parade area is not present and instead earthworks are used for enhanced protection;
- The forts had a variety of other features such as laboratories, stores, kitchens, ablution rooms, lavatories, workshops and hospital accommodation;
- Brockhurst and Tregantle had defensible 'keep-like' structures. The redans and defensible barrack blocks of the Portsdown forts continued the spirit of the idea, but it is absent from the Chatham works and from individual forts like Newhaven, Fort Burgoyne (Dover) and Bembridge Down (Isle of Wight);
- The polygonal forts had a different system for placement of armament. To begin with this was split with the heaviest guns mounted on the forward face of the work, with the flanks of the work defended by smaller guns;

- A polygonal fort would be surrounded on its forward and flanking faces by the glacis. To assist these some forts had mortar batteries and/or carnot walls, and caponiers and counterscarp galleries for ditch defence;
- Deep ditches provided close defence, sometimes wet but more often dry;
- The land forts were intended as part of a system, with the exception of a few isolated examples. They were sited to protect each other with flanking fire;

The forts were built over a long period of time and their design thus evolved. The Chatham Land forts illustrate the transition between the typology of the Royal Commission forts and new fort designs. The first examples – Borstal, Horsted and Luton were similar in plan to the Jervois model, but later examples on the eastern arm of the Chatham ring represent a fundamentally different scheme. On the left flank towards the sea, the defences were not artillery forts but redoubts for infantry armed with rifles and machine guns; the artillery had become field based and fully mobile. The Grange and Woodlands redoubts, were known collectively as Fort Twydall after the nearby place of the same name , and used what became the new Twydall Profile

These were low-lying, essentially earthwork fortifications, but with open-backed concrete casemate shelters in which the the garrison could take cover in the event of bombardment. The profile moved towards one of concealment, it dispersed the infantry into earthworks which were difficult to identify, and therefore to hit. The evolving form demonstrates a move towards a decentralised and more fluid type of defence. The new doctrine was striving towards a situation where the defensive artillery was to be based on moveable field guns in fieldworks. Forts were increasingly seen as infantry works rather than fixed artillery positions, with greater use of QF guns. This Twydall profile was adopted worldwide, and formed the basis of the London Mobilisation Centres.

Another progression in battery design at this time is the High-Angle Battery; by the 1880s heavily clad battleships were thought to be virtually impenetrable using the heavy armament. The decision was taken to use high angle fire to bring plunging shot down on the lightly armoured decks of the ships rather than to try punching through their protective belt or box armour. This typology was not common, it is believed only six were built, four of which survive.

Development of Artillery

The design of fortifications was crucially related to the type of artillery that they were designed to house; in general the standard armament of the Palmerston forts became the British rifled muzzle loader (RML). The smooth-bore (SB) gun was superseded by the 1854 invention of the rifled breech-loader (RBL), that began manufacture in 1859 (Image 4). It had technical difficulties so the interim solution of a RML was adopted, which proved an

ideal weapon for coastal fortifications. France developed a similar weapon and the move to protect fortifications with iron shielding was developed which were inserted into the gun embrasures of the artillery casemates (the remainder of the works' faces being granite). Many structures by this time had to be expensively modified. As fortifications awaited the RML guns, old smoothbores were fitted (Dyer 2003)

From 1900 to the outbreak of the First World War, there was significant development in the mounting of coast guns, which affected battery design. The hydro-pneumatic disappearing gun mountings were replaced with something much simpler, which employed axial recoil with hydro-pneumatic control so as to greatly increase manoeuvrability and rate of fire. Mountings were produced for 9.2, 6 and 4.7-inch guns which became the standard weapons of coast defence by the turn of the century.

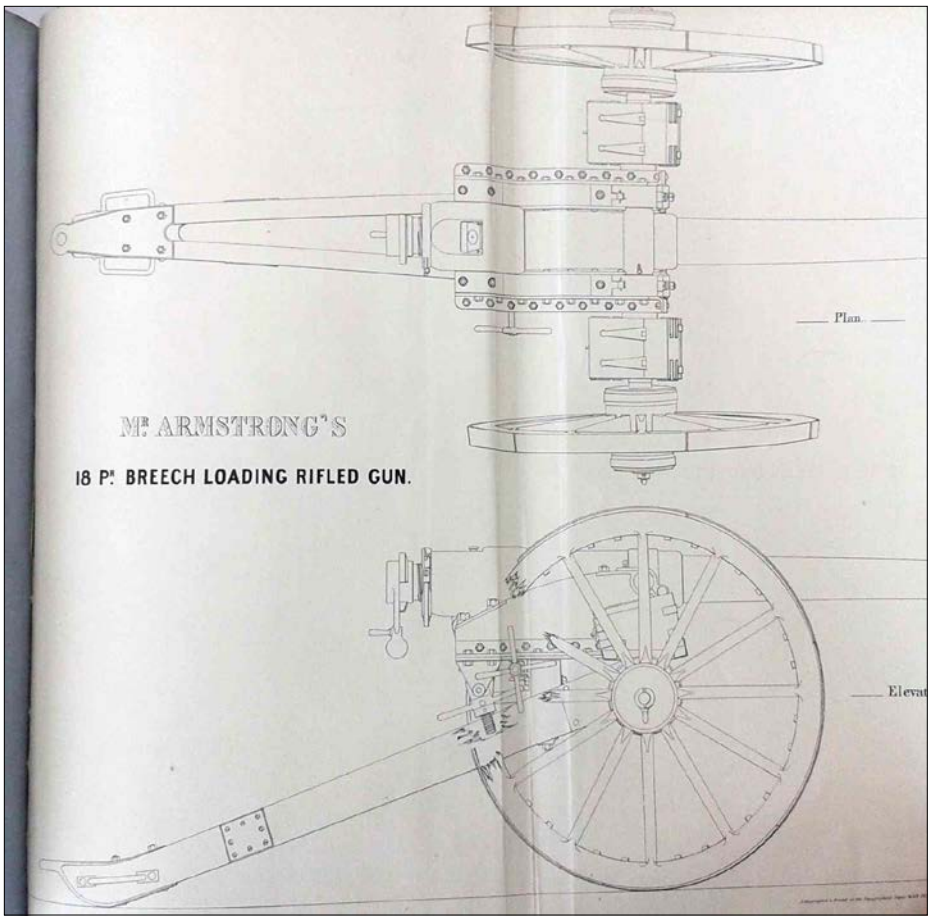

Image 4 Armstrong 18" breech loading rifle gun, 1860 (TNA – WO33/9)

20th Century

Surviving plans of conventional batteries built during the First World War show these sites have similar planning principles to their pre-war equivalents. The two most obvious characteristics of wartime batteries were – their incorporation with field fortifications, and their reliance on temporary

buildings for domestic and, to a lesser extent, technical accommodation. Often above-ground buildings were used to accelerate construction. Fire control centres were used to co-ordinate the fire of several batteries at once place, today most notably at the Dover Admiralty Look Out Station at Dover Castle. There were standard battery designs produced by the Directorate of Fortifications and Works at the War Office, though when applied in practice these were often more akin to a kit-parts. The two types of batteries are: counter-bombardment (CB) batteries, aimed at delivering fire at long distances, and Close Defence (CD) guns used for short-range engagements against armoured and unarmoured ships, minelayers, blockships and – supplementing the QF guns – torpedo craft.

At the simplest level the layouts of the CB and CD sites comprised the gun group and its associated technical structures, the *operational buildings* for fire control and command of the site, and the *domestic buildings* serving the battery's occupants. The emplacements for 9.5-inch and 6-inch guns were similar in design but different in size. Working in much closer engagements than either CB or CD batteries, QF batteries usually occupied low sites. QF guns were largely intended to engage raids by fast moving torpedo craft working at night, and were not effective against fully-fledged warships. Batteries for 4.7-inch, 12-pdr and 6-pdr QF guns were designed under the same principle as their larger cousins, though the components were smaller and the number of guns larger, particularly among the 6-pdr and 12-pdr sites. There are basic similarities between the two types of structures. Defence Electric Lights (DEL) were introduced to work with QF guns against night torpedo-boat attacks, and by the First World War had become standard equipment for all CD batteries.

One of the chief considerations in all periods was protection from incoming fire, hence the broad, shallow-sloping concrete aprons around the gun emplacements (designed to deflect well-aimed shells), which continue into an embankment around the site itself. Protection also provided by placing the main technical structures immediately associated with the gun-group underground, namely the magazines, artillery stores, and shelters for the gun crew.

Forts as Landscapes

As features in the landscape forts range from the prominent and obvious structures of menace to the more discrete and hidden sites affording a surprise element in their positioning. Earlier forts in the Renaissance and Georgian tradition were designed to be seen in the landscape and from afar. They might be massed together, as at Dover, expressing their positions of strength on all sides of the harbour, or more spread out as at Chatham, Portsmouth and Plymouth where they are components in a much wider military landscape surrounding the dockyards, that is clearly recognised as such.

However, in these last instances the landward side (which they were protecting) is rather more discretely hidden in the landscape, and they may be approached quite close without realising what they are (for example the Portsea lines). The later 19th century fortifications and batteries were designed far less for show. This was directly relevant to the field of fire, as the development of long-range artillery allowed forts to be placed at a greater distance from the site they were defending (as also was later to be the case with anti-aircraft artillery – for example that defending the Arctic Convey base in Loch Ewe).

Fortifications on the Thames were more spread out, and others on the east coast rivers and ports had more of an individual rather than a group impact. Their 'landscape' might extend beyond the forts to include their fields of fire, approach roads and communications, and the routes used to bring in supplies and ammunition, or for getting access to external accommodation. This rather less tangible aspect of their landscape is often the most at risk from modern development within what could be regarded as the wide setting of forts, and needs to be carefully considered in the 21st century.

Forts were often by necessity entire self-contained communities with both military and domestic components operating side by side, and their significance may often reside in the grouping and completeness of their features. While the ingenuity of entrances and exits, the powerful impression of portals and bastions may be most striking, it is hard to separate these from the more workaday aspects. The plainest magazines and laboratories may serve to convey the working of the fort in action, while tunnels and covered ways can give a sense of the dynamics and movement of the garrison. Equally the survival of barracks, cookhouses, stables, messes. institutes and latrines help to explain the realities of domestic life. Apart from the consideration of grouping and completeness of components, they can of course be assessed on their own terms.

The totality of a fort, including its wider landscape setting demonstrating its strategic position and fields of fire, are a significant aspect of a fortification's design. Likewise, the internal setting of the different elements of a fortification which changed and evolved during the 19th and early 20th centuries are important in their entirety. Key elements of a fortification (caponiers, ditches and emplacements), are important in understanding the design of a fortification as are the spaces between these, and the everyday domestic aspects of a fortification that enabled its operation. The functional relationship between the different elements of a fortification were carefully designed and evolved over time, and by understanding these as a whole, it is possible to appreciate the military and domestic operation of a fortification.

Most forts worked as parts of systems. The inter visibility between forts is significant to understanding their use, both their visual relationships to aid communications in a time of semaphore signalling or message runners and for interlocking fields of fire.

9 THE HISTORIC DEVELOPMENT OF FORTIFICATIONS 1800-1919

9.1 Limitations of Phasing

The fortifications have been divided into six key phases by the date of construction (*see* Fig 2). It has for some examples been difficult to confidently determine their phasing due to the length of time the fortifications took to complete. For example, construction of a structure may have commenced, but may have taken a decade for work construction to be completed. This is particularly true of Phases 2 and 3, where a number of fortifications began construction at the end of the 1850s but were not completed for a decade or more. Elsewhere, forts identified as Royal Commission (RC) forts which would have commonly fallen within Phase 3 (1860s), were not constructed until after this phase and do not hold the common characteristics of this type of fortification. The ring of forts built at Chatham are the most pertinent example here.

There are also examples of early fortifications where batteries have been added in later phases, most commonly in Phase 3 or 4. In general, if the fortification (commonly a Castle, has continued in use during later phases alongside the battery, this has been phased as an early fortification. Examples are St. Catherine's Castle and Mawes Castle in Falmouth, which continued in use alongside the newly constructed Phase 4 and 5 batteries. However, in examples where the early fortification played no, or a very limited role during later phases, the fortification has been allocated a later phase of construction. An example is Fowey Battery at St. Catherine's Castle in the West Country group.

The phasing of the fortifications has been assimilated through the results of the study and a number of primary and secondary resources. These are listed in the bibliography, the key documents used are: the War Office files in the National Archives (particularly WO32/52448), works by Saunders (1989) and Hogg (1974), as well as Dobinsons's 'Twentieth Century Fortifications in England' work (2000).

9.2 Overview

A national coast defence strategy using artillery first emerged under Henry VIII, when Britain came under threat from the catholic monarchs of Europe. The Henrician 'Device' forts of 1539-43 were the first integrated layout of coastal positions to rely on artillery. From this period onwards, defences were moulded by the successive political and military crises of the early modern era – the Armada of 1588, the 17th century wars with the Dutch and the eighteenth and nineteenth-century conflicts with France and Spain. These brought threats of invasion which instigated a new programme of fortifications, peaking with the Napoleonic Wars, both for ports and (through the Martello towers) on continuous stretches of the south-eastern and eastern

coasts. In the aftermath of the Battle of Waterloo (1815) the threat of invasion was removed.

In 1859 a Royal Commission was set up to review the nation's defences. The fortification of naval bases and anchorages were at the core of Britain's then existing permanent fixed defences, and remained at the core of the Royal Commission's report published in 1860, which resulted in a busy period of construction under the then Prime Minister Viscount Palmerston (1859-65). Construction was largely complete by 1870, but continued into the next decade at Chatham. By this time there was also a new generation of fortifications, which recognised the vulnerability of highly prominent artillery structures and adopted a policy of virtual invisibility from the sea. The Morley Committee was established in 1882 to inquire into the defences of the mercantile ports, as the necessity to defend became more apparent into the next decade.

During the 1900s, the emphasis gradually shifted to increasing the fortification of the east coast, as Germany became viewed as the chief threat. This resulted in the closure of some south coast batteries, confirmed by the Owen Report of 1905 on Armaments of Home Ports. The position at the outbreak of the First World War was that the whole of the defences of the English Channel, and as far north as the mouth of the Thames and Medway were in an efficient condition. The war saw the reuse and adaption of existing sites, and the construction of new sites particularly on the east coast, and on the Humber.

The study has identified six key phases of fortification within the period 1800 to 1919 which are set out below. Figure 2 illustrates the national distribution by phase.

9.3 Phase 1: Early Fortifications (pre-1850)

Strategic Context

The Henrician 'Device' forts of 1539-43 were the first integrated layout of coastal positions to rely on artillery. Prior to this there was no overall national defence policy. The navy was regarded as the first line of the country's defence, and the need for secure bases was fundamental. There were vulnerable to attack from long-range bombardment by warships, or from close-quarters assault from a military force. The Dutch raid on the Medway in 1667 promoted increased fortifications of naval approaches to dockyards, and a start to protecting these from land attack.

As the establishment of dockyards and naval bases developed in the 17th century, and in particular in the 18th century, the main elements of English coastal defence were formed. Improvements in the efficiency of weapons and in the methods of attack inevitably led to new concepts of defence. In continental Europe, by the 16th century a new system of fortification, the trace *italienne* (Italian line) evolved which became the dominant design in

fortifications until the late 18th century. After 1660, and the restoration of Charles II, a dominant figure in the design of English fortifications was the Dutch fortress engineer Bernard de Gomme, amongst his most notable works were the fortifications around Gosport, Portsmouth, Plymouth, Sheerness (Kent), and Tilbury Fort in Essex.

In the early 18th century, despite war with France, there was little new major fortification construction, notable exceptions are Fort Blockhouse and Fort Cumberland (Phase 1) (Image 5). From the end of the 18th century until the defeat of Napoleon at the Battle of Waterloo in 1815, Britain's security was threatened by Revolutionary and later Napoleonic France. Initially, to defend the vulnerable south and east coasts a system of emergency coastal batteries was constructed. This period also saw the construction of the last true bastioned forts at Fort Monckton and Fort Cumberland in Hampshire and Fort Pitt at Chatham, Kent.

Image 5 Fort Cumberland (© W D Cocroft)

From 1805, seventy-four sturdy Martello towers were built around the south east coast some supported by earlier batteries. A handful of large redoubts were also built and the east coast Martello towers were then built to a larger design than the south coast examples. Large schemes to fortify Plymouth, Portsmouth, Chatham, Dover and Sheerness were put in place. As the range and effectiveness of artillery increased in the mid-19th century, so the defensive ring required to keep a hostile force beyond bombardment range was taken further and further outwards. Continuous lines of bastions became untenable on grounds of cost and the numbers of men required to garrison them and this led to consideration of alternatives, chiefly rings of polygon forts. New forts included ones built to a modified bastion system designed to provide concentrated battery fire, in places combined with towers. Between 1815 and 1853 there was a period of peace, although there was latterly in this period fear of invasion and open hostility with France. By the middle of the 19th century, new theories of fortification evolved, such as those proposed by the French engineer Montalembert, who emphasised the importance of overwhelmingly firepower for defence. This was reflected in tiered and

casemated gun positions, exemplified by the construction of the four-tiered Fort Albert to protect the Solent (English Heritage May 2011).

Geographical Distribution (see Figure 3)

In general, those fortifications identified in Phase 1 are situated in the south of England, within the south-east and south-west regions. A total of twenty fortifications which pre-date 1850 were identified in this study, the distribution of these is shown below, and illustrated in Figure 3.

Region	Area No	Area Name	No of Sites	Phase 1
South-West	3	Falmouth	3	2
South-West	4	Plymouth	37	1
South-East	7	Portsmouth	42	5
South-East	10	Thames	4	1
South-East	11	Thames / Sheerness	3	1
South-East	13	Coastal Redoubts	2	2
South-East	14	Dover	13	1
East of England	15	Harwich	3	1
East of England	10	Thames	3	2
East of England	13	Coastal Redoubts	1	1
North East	17	Tees & Hartlepool	6	1
North East	18	Northumberland	2	1
North West	19	Mersey	2	1

Table 3 Geographical Distribution of fortifications in Phase 1

In Portsmouth, Fort Blockhouse is one the harbour's original defences dating from the reign of Edward VI (1547-1553). Several of the early fortifications date from the 18th century, including Fort Monckton and Fort Cumberland. Elsewhere, individual early fortifications are evident along the coastline. On the Thames, Coalhouse Fort, dates from 1799 whilst elements of the Sheerness Defences also date from the 18th century. The defences on Western Heights were initially begun in 1779 during the war with America, Spain, Holland and France. The site underwent numerous phases of construction during the following wars.

Of note are the three coastal redoubts, which were built between 1804 and 1812, at Harwich, Dymchurch and Eastbourne (OA 133-135) to provide garrisons of up to 350 men to supplement the contemporary Martello towers. These were built as a systematic chain of defence along the coast between East Sussex and Suffolk, and were based on the outstanding performance under siege of the Genoese tower on the coast of Corsica (Torra di Mortella). These towers are not included within this study, but are the focus of a separate English Heritage study (Millward, J 2007). Following the construction of the Martello Towers, there was a long peace between 1815 and 1853.

9.4 Phase 2: 1850s

Strategic Context

Prior to 1853, very little was done to maintain the coastal defences, but the Crimean War (1853-56) brought with it a new sense of urgency. With it came the realisation, particularly through the example of Sebastopol, that a well-armoured and constructed fort could hold off a fleet and earthwork defences a besieging force. Some additions were then made to the defences of the south coast. The recent period had seen great improvements in gunnery, with the introduction of RML and RBL designs, and the widespread introduction of steam propulsion in ships. The naval Crimean War campaign was largely fought in the Baltic and the fortifications there influenced British thinking, including for sea-forts.

It is from the late 1850s that the buildings programme was given more urgency, there were serious concerns that France might attempt to invade the United Kingdom. Between 1854-1858, the French battle fleet had grown in size, to rival that of the British. The question of defence was brought into particularly sharp focus when in 1858 the French laid down their first iron-clad warship, *La Gloire*. France also threatened British trade by the building of the Suez Canal. .An assassination attempt on the Emperor's life hatched in England increased hostility.

Geographical Distribution (see Figure 3)

A total of nineteen fortifications identified in this study were constructed in the 1850s phase (illustrated in Fig 3), which were largely constructed in the latter part of the decade. The line between the late-1850s and 1860s (Phases 2 and 3) is blurred, as there were proposals for forts made in the 1850s that were not completed in the 1860s, or were stalled whilst the results of the Royal Commission report were awaited.

Region	Area No	Area Name	No of Sites	Phase 2
South-West	2	West Country	4	1
South-West	4	Plymouth	37	2
South-West	5	Portland	8	2
South-East	7	Portsmouth	42	10
South-East	8	Sussex	3	2
South-East	12	Chatham and Medway	8	1
North West	19	Mersey	2	1

Table 4 Geographical Distribution of fortifications in Phase 2

Littlehampton Fort and Shoreham Forts within the Sussex area are important examples of early 1850s fortifications, constructed in 1854 and 1857 respectively, against the threat of attack from France. These are prototypes for the design of later forts within the Royal Commission phase of works. Opposite to Portsmouth Harbour on the Isle of Wight, Fort Albert, which was constructed as one of a pair with Fort Victoria, are also examples

of fortifications from the middle of the decade. The forts were designed by the Royal Engineer (and later secretary of the Royal Commission), William Drummond Jervois (1821-97), and constructed in 1855.

Construction of 1850s forts which were already underway, were commonly modified by the Royal Commission in the 1860s. For example, the Verne Citadel, which falls within the Portland group of works, was begun in 1857. It was completed around 1869, although associated work carried on until 1881. Captain William Crossman R.E designed the fortress, with modifications by the Royal Commission in 1859.

At Plymouth three new fortifications were proposed by Major Jervois in 1858, which include Cawsand Battery and Scraesdon Fort (shortly before Lord Palmerston's 1859-60 Royal Commission on the Defence of the United Kingdom), and some work was seemingly started that year (Image 6). Tregantle Fort was constructed following Lord Palmerston's 1859-60 Royal Commission on the Defence of the United Kingdom

Image 6 Fort Scraesden (© Oxford Archaeology)

The 1850s group of works also includes batteries which were part of larger fortifications, for example Fowey Battery at St Catherine's Castle. Defence lines also form part of the Phase 2 group including the Hilsea Lines, which were constructed between 1858 and 1871, and included special fortified bridges for road and rail access onto Portsea Island.

The Portsmouth group within the South-East region has a total of nine fortifications which fall within the second (1850s) phase of construction. This number includes the forts of the Gosport Advance Line, which are: Fort Elson, Fort Grange, Fort Rowner and Fort Brockhurst (and Fort Gomer which is now demolished). Fort Brockhurst was designed, together with its sister forts, Grange and Rowner, by William Crossman.

9.5 Phase 3: 1860s/70s

Strategic Context

The threat of invasion from France, grew at the end of the 1850s, and resulted in The Royal Commission report of 1859. This was the most comprehensive statement of land based defence that, up to then, had ever been undertaken. The naval bases remained at the heart of defence strategy thereafter. A document entitled 'Extracts from the Report by the Royal Commission on the Defence Fortifications of the United Kingdom 1859/60' states that 'Having careful weighed the foregoing considerations, we are led to the opinion that neither our fleet, our standing army, nor our volunteer forces, nor even the three combined, can be relied on as sufficient in themselves for the security of the kingdom against foreign invasion' (TNA, WO 105/41).

Their conclusions issued in 1860 affirmed the Royal Navy's primary responsibility for home defence but demonstrated that advances in weapons technology threatened to diminish the Royal Navy's ability to safeguard the coastline. These new technologies include: the widening currency of steam-powered warships, increases in the range and accuracy of ship-board artillery, and the use of horizontally-fired shells (Dobinson 2000, page?). Following the report, under Prime Minister Palmerston, Parliament approved new fortifications on a massive scale. Other emerging civil technologies, such as, concrete construction, electricity, the telegraph and telephone were soon to also to have profound effects for military architecture and the control of coastal defence guns (English Heritage May 2011).

The American Civil War (1861-1865) also influenced fort design; this conflict showed that in all cases where forts were breached in America, the attack was by batteries placed on land where fire could be placed with more precision than a sea attack. The war showed that the days of exposed brick walls were numbered, and thick banks of earth were often better than bricks and masonry in absorbing the energy from exploding shells (Crick 2012). Lessons learnt through the American Civil War also encouraged the development of mines and torpedoes.

The American Civil War and the Franco-Prussian War (1870-1) also showed that siting a fort in clear view of the possible enemy made it unnecessarily vulnerable. The importance of 'invisibility' was increasingly adopted into the design of subsequent British fortifications. The Franco-Prussian War saw the escarp walls of several forts brought down by shells descending from a high trajectory, and a special 'high-angle' carriage was adopted to field guns. One of the criticisms of Jervois's 1859 Commission Forts were their undue vulnerability to high-angle fire. In later phases of fortification design (1880/1890s) high-angle batteries are developed to address this development in artillery and defence.

There was a second Royal Commission in 1869 to see how the programme was progressing, the overall conclusion was that the money was being well

spent, but that the costs had risen and at Chatham the land for forts had not been acquired. The programme began in 1860, and by 1867 some 76 forts and batteries were either built or under construction, and the programme was largely complete by the end of the decade (TNA, WO32/52488). By 1872-3 most of the coastal works were completed, these were the first priority and rapidly provided with the latest weapons available. The land-facing defences were a lower priority, and at no time in their history did they ever receive their full allocation of guns.

The position at the outbreak of the Franco-German war of 1870 was that the fortresses of the English Channel and the Thames and Medway, also Pembroke Dock and the Cork Harbour were adequately fortified though not fully armed but that the rest of the county was quite open to hostile attack as far as fixed defences were concerned (TNA, WO32/52488).

The common weapon before the time of the Royal Commission was the muzzle-loading smooth-bore canon, firing a spherical shot or 'cannon ball'. The forts were armed with the RML guns by the early 1870s. A new form of gun mounting, Moncrieff's 'disappearing carriage' was used from the 1870s, which required a more elaborate "pit like" housing on the fortification.

The introduction of the BL guns in 1879, alongside explosive shells and the need to protect using earth to absorb incoming fire, made casemated batteries increasingly obsolete. Three types were put into use: 12-inch, 10.3-inch and 9.2-inch. At the same time, the Armstrong company introduced the 6-inch variant. The 9.2-inch and 6-inch BL guns, were the two standard weapons which equipped coastal artillery's open batteries through the two World Wars (Dobinson 2000).

Geographical Distribution (see Figure 4)

The Royal Commission recommended the defence of the following key areas: Plymouth, Portsmouth, Portland, Thames, Medway, Chatham, Woolwich, Dover, Pembroke and Cork (the latter two in Wales and Ireland are not included in this study). These were predominantly on the shores of the English Channel, although others were situated on the Medway, Pembroke, Chatham and Woolwich. Tactically, the Royal Commission forts were very much of their time. The programme built upon the defensive works already begun at the key areas of Plymouth and Portsmouth, as well as elsewhere and recommended the improvement of existing fortifications as well as the construction of new ones.

The majority were coast batteries (with a few sea forts), but 19th century land forts were included, at Portsmouth and Plymouth batteries formed encircling positions. The distribution of sites was focused on the south-east and south-west regions, and elsewhere in the country, to the west and north, little attention was given as a result as they were considered a comparatively low strategic target (Fig 4).

Region	Area No.	Area Name	No of Sites	Phase 3
South-West	2	West Country	4	3
South-West	3	Plymouth	37	24
South-West	4	Portland	8	3
South-West	6	Bristol	2	2
South-East	7	Portsmouth	42	23
South-East	8	Sussex	3	1
South-East	10	Thames	4	3
South-East	11	Thames / Sheerness	3	2
South-East	12	Chatham and Medway	8	5
South-East	14	Dover	13	6
North-East	15	Harwich	3	1
North-East	16	Humber	5	1
North-West	17	Tees & Hartlepool	6	3

Table 5 Geographical Distribution of fortifications in Phase 3

By far the largest number of sites are evident in Plymouth and Portsmouth, with Plymouth having the largest percentage concentration of sites (64.8 per cent of the total number of sites, compared to 54.7 per cent). At Plymouth, the Royal Commission recommendations led to an unprecedented programme of improvements to the defences around the dockyard including a new group of detached land forts to the north-east of Plymouth. New coastal batteries were built further from the dockyard than previous defences, and there was substantial remodelling of existing sites.

At Portsmouth, the system of fortifications was extensive and based on strategic groups, which gave additional protection to earlier defences of the town and consisted of several sections. The Gomer-Elson line to defend Gosport, and above Portsmouth the Portsdown Hill forts were hinged by Fort Fareham. The Hilsea Lines cut off the promontory between Portsmouth Harbour and Langstone Harbour. The latter was defended by Fort Cumberland. The seaward defences consisted of a number of batteries, and more protection came from the forts and batteries cutting off the Needles passages to the west of the Isle of Wight, in addition to a number of works on the Sandown Bay. The most expensive works were constructed in the sea, Horse Sand, No Man's Land, St Helens and Spit Bank at Portsmouth and Breakwater Fort at Plymouth (TNA, WO32/52488).

At Plymouth, in 1858 recommendations were made for new fortifications including Tregantle, and Scraesdon Forts in Cornwall, and some work on these were started, but this programme was overtaken by the much larger recommendations of Lord Palmerston's Royal Commission of 1860. This led to an unprecedented programme of improvements to the defences around the dockyard including a new group of detached land forts to the north-east of Plymouth. New coastal batteries were built further from the dockyard than previous defences and substantial remodelling of existing sites took place. The Plymouth fortifications are divided into five strategic groups, of the Inner Defences, Maker and Rame, Staddon Heights, North East Defences and Western Defences (Image 7).

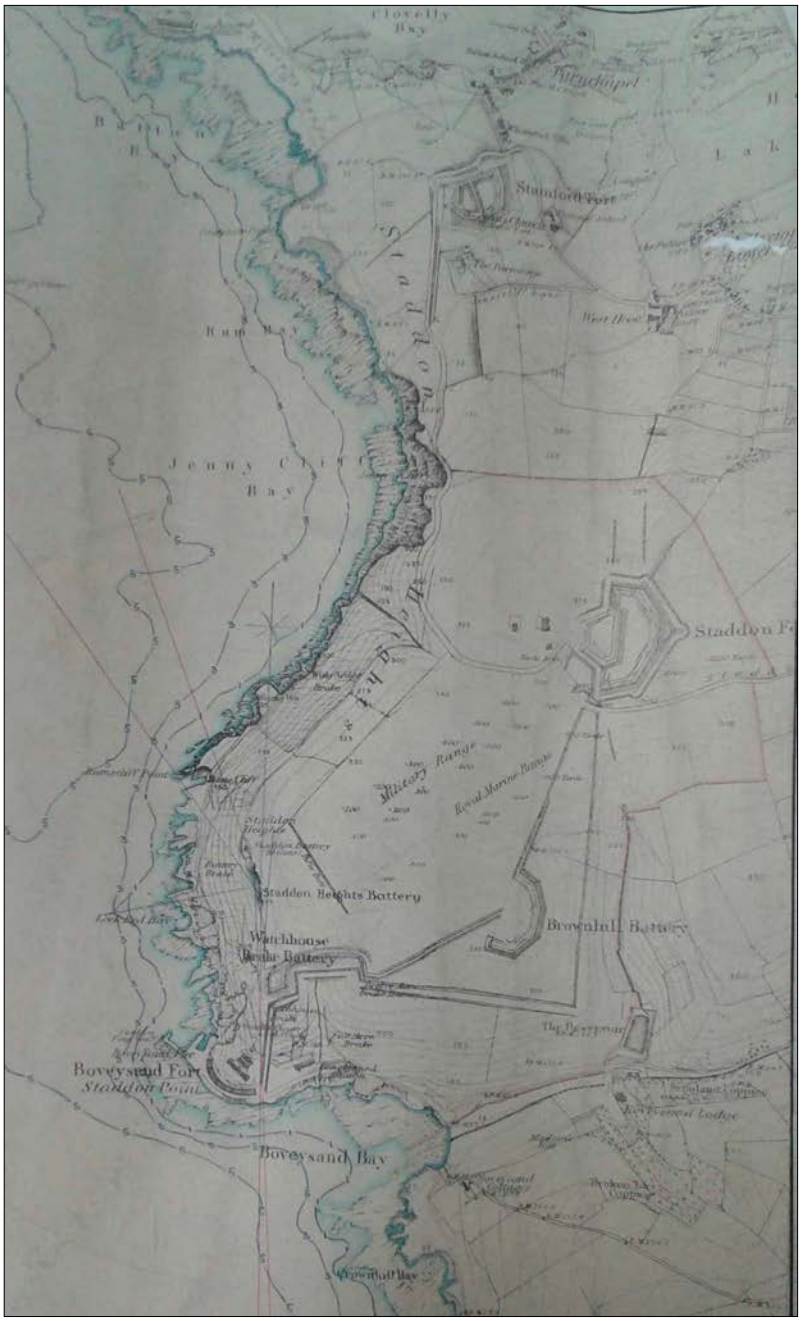

Image 7 War Office plan showing Staddon Heights group, Plymouth, 1896 (TNA – WO/4163)

Dover and Chatham also have a high concentration of sites; at Dover this is 6 of the 13 total number of sites and at Chatham 5 of the 8 total sites in Phase 3. As a result of the Royal Commission, defences were improved around Dover Castle with new batteries added and Fort Burgoyne was also newly constructed. The Admiralty Pier armoured gun turret of 1881 with two massive 16-inch guns was an experiment not reprated elsewhere. Further extensions of the harbour arms and breakwaters and associated defensive structures were built from 1897 and into the early years of the 20th century. At the Western Heights Dover, the 18th century fortifications were continuously improved to keep pace with evolving fortification theory and

coastal artillery. At Chatham 5 of the 8 sites date from the Royal Commission phase of works. Of note are the surviving Chatham Ring Forts (Fort Borstal, Fort Horsted and Fort Luton), which were recommended by the Royal Commission, but took nearly twenty years to be built.

Outside the core areas are three small batteries in the West Country which are not part of the Royal Commission programme of works, but were constructed between 1860 and 1868. Likewise, at Tees and Hartlepool three batteries were built. This demonstrates that these areas were considered worthy of defence at this time, despite the fact they were not included in the Royal Commission phase of works.

9.6 Phase 4: 1880/90s

Strategic Context

The Morley Committee was established in 1882 to inquire into the defences of the mercantile ports. At this time, and for many years afterwards, France continued to be perceived as the main enemy (TNA, WO32/52448), and it was not until after 1900 that this shifted to the militarisation of Germany, particularly after the signing of the *Entente Cordiale* with France in 1904. There was a change in British defence policy away from large land defences around major towns and military centres to counter threats from an invading army, towards coastal defences to counter the threat to naval and commercial ports and anchorages.

The developments in coast artillery between the 1860s to the turn of the century saw a new generation of BL guns and mountings, the ascendancy of the open battery, and methods of meeting the new threat from the torpedo boat, using QF weapons and searchlights. Instead of large arrays of short-range guns, of limited accuracy and directionality of fire, there were powerful, precision weapons, giving better results from fewer guns and use of less ammunition (Dobinson 2000).

There was also a new generation of fortifications, which recognised the vulnerability of highly prominent artillery structures and adopted a policy of virtual invisibility from the sea. This is evident at Beacon Hill Battery at Harwich where the Twydall Profile (the name comes from the village of Twydall in Kent, where the first forts of this type were built), was used on the landward approach. By this time, actual observed warfare had demonstrated the futility of massive artillery forts with casemates and heavy armour, as this had become vulnerable to accurate long-range bombardment. The military engineers of the day realised that protection could be better afforded to a small battery with a low profile, protected by a concrete barbette and a sloping earth and sand *glaçis*.

High Angle Batteries were another new development, designed to bring high angle fire plunging down on the lightly armoured decks of the ships, rather than punching through their protective belt or box armour. This type is not

common, with only six constructed nationally and four surviving, these are: Verne High Angle Battery in Portland, Cumberland and Steynewood High Angle batteries in Portsmouth and in Plymouth, Hawkins High Angle Battery.

Brennan Torpedo Stations were another key development, which was the world's first practicable guided weapon designed to launch from shore based forts as a means of defending a waterway from attacking ships. There were five Brennan Stations built in the UK, those included within this study are at: Garrison Point Fort (Sheerness), Fort Albert (Portsmouth) and Cliffe Fort (Thames).

In 1894 it was recognised that mercantile ports also needed to be defended. Recommendations were made for defence against a single hostile cruiser, with mine-fields at various places. This was to protect the private dockyards, arsenals and commercial rivers. Under the heading of mercantile ports, the following areas were identified on the east coast:, the Humber, the Tees (Hartlepool) the Wear (Sunderland) the Tyne, and in Scotland the Forth Tay and Aberdeen. For the east coast ports various works were recommended, but the northern ports between the Tyne and the Forth were considered to be of insufficient importance.

Geographical Distribution (see Figure 5)

Concurrent with the recommendations for the east and north of England were recommendations for the improvement and elaboration of the defences in the south, west, in Ireland and in foreign stations. The works built in 1860-1870 formed the nucleus, and continued in use and were updated with new artillery. In total twenty-four new fortifications were built in this period (Fig 5).

Region	Area No	Area Name	No of Sites	Phase 4
South-West	3	Falmouth	3	1
South-West	4	Plymouth	37	7
South-West	5	Portland	8	1
South-East	7	Portsmouth	42	2
South-East	9	Mobilisation Centres	11	7
South-East	11	Thames / Sheerness	3	1
South-East	12	Chatham and Medway	8	2
East of England	10	Thames	3	1
East of England	15	Harwich	3	1
East of England	9	Mobilisation Centres	1	1
North East	17	Tees & Hartlepool	6	1

Table 6 Geographical Distribution of fortifications in Phase 4

At Plymouth a group of batteries were constructed in the 1880s including Maker, Grenville, Hawkins, Raleigh and Whistand Bay batteries. These were largely built as a result of the 1887 Coastal Defence Review. Likewise at Falmouth, it was the port's designation as a Defended Port in 1887 and

its position as a strategic harbour from 1890s, that resulted in many new defences for the estuary. New batteries were built at St Mawes Castle and Pendennis Castle, and existing ones updated. St Anthony's Battery was also constructed, with a strong functional relationship with the two castles.

In the south-east area, Steynewood High Angle Battery and Fort Cumberland High Angle Battery in Portsmouth are significant surviving examples of this battery type, with the latter having an experimental role. The other two surviving examples are Verne High Angle Battery and Hawkins High Angle Battery, in the south-west.

Twydall Redoubts also came into use at this time, the first forts of this type built were Grange and Woodlands Redoubts (Chatham). In the East of England group, Beacon Hill Fort (Harwich) represents one of the earliest uses of the Twydall Profile on a landward approach.

Also, within Phase 4 are the London Mobilisation Centres, which also adopted a Twydall profile in their design (Image 8). There are a total of 12 mobilisation centres included in this study, situated in the south-east region. There are 6 sites which fall into Phase 4, and 6 sites which are in Phase 5. The London Mobilisation Centres were built between 1889 and 1903 as part of the London Defence Scheme. Their primary function was as a defensible storehouse (including for the entrenching tools needed to construct the fieldworks that would connect up the centres), but many were fortified and capable of resisting an attack, as well as supporting the fieldworks that were to be the main line of defence of London.

Image 8 Reigate Mobilisation Centre (© Historic England, DP219129)

Within the Chatham group, Fort Horsted, was initiated by the Royal Commission, but was not constructed until 1880-89. Fort Horsted was part of the outer ring of Chatham forts, to the south of the town, that also included Forts Bridgewood (demolished), Borstal and Luton. Again, these forts were much more inconspicuous than previously, with little, if any, visible masonry or concrete structure even in the gorge. Their shapes were designed to blend into the natural contours of the landscape, and their earthworks would more effectively absorb shell fire.

9.7 Phase 5: Turn of the Century to the First World War

Strategic Context

By the early years of the 20th century the principle of using permanent, fully-built forts to defend land frontiers, either for ports or elsewhere, had become largely obsolete in Britain. During the 1900s, the emphasis gradually shifted to increasing the fortifications of the east coast, as Germany became viewed as the chief threat. This resulted in the closure of some south coast batteries, a trend confirmed by the Owen Report of 1905, which substantially downgraded the extent of the perceived threat to many anchorages and therefore the strength of batteries needed to protect them. This marked the pattern of coastal defences at the start of the First World War, and the end of this distinctive phase of policy and design in the nation's overall defences.

Two trends within this period are identified within the work of Dobinson's *Twentieth Century Fortifications in England* project, firstly the small number of batteries that were opened between 1906 to 1914 compared with the period 1900-1905. This slowing of new battery provision was influenced by the Owen report of 1905. The second is the addition of new batteries to the south Channel ports at the expense of the North Sea littoral, his work shows that three times as many batteries were built along the Channel ports as on the North Sea coast. This is reflective of a continued orientation toward potential hostilities from France, rather than Germany. Dobinson's work also shows that the period 1900-1914 saw a large number of new batteries armed with QF guns, to deal with motor torpedo boats.

There was a debate between two schools of thought on the relative roles of the navy and the army in home defence. Enthusiasts for navy power believed that the fleet alone could prevent invasion (*the blue-water school*), leaving the army with little home defence role whilst others thought that the fleet might be outmanoeuvred as part of a surprise naval attack (*the bolt from the blue school*). From 1900-1905 there was a shift towards the *blue-water* viewpoint, and with it a decline in the importance given to land fortifications and the local defence of coast batteries. It was felt that the ports were safe from attack whilst the navy remained in being, and the role of the coastal artillery guns was to hold off the hostile ships until the British fleet appeared.

Between 1903 and 1907 the land fortifications around the major dockyards were disarmed, together with the newly-built London Mobilisation Centres,

which were closed in 1905. At this time the role of coast artillery was to deter attack upon defended ports, to hold off an assault until the fleet arrived on the scene, and to be especially prepared for torpedo-boat operations, but the ports themselves were not considered liable to land attack, nor were the batteries prepared for land defence. This view governed defence policy until shortly before the First World War, and hence the development of coast artillery in the early years of the century.

In terms of artillery, there was a range of weapons at older batteries at the beginning of the century, new sites built after 1900 always used the newer BL and QF guns originating in the 1880s and 1890s. This was confirmed when the Owen Committee of 1905 rationalised the weapons in use, narrowing the range of types. Apart from a few purpose built sites established in the First World War, new batteries built from 1900 until the end of the Second World War were nearly always designed for weapons of these types, and their fabric reflected this. The sharing of functions between guns between 1900 and 1914 became increasingly common and particularly after the Owen recommendations. So, large 9.2-inch guns could be called upon for close defence work while the smaller BL weapons could be used to engage torpedo-craft.

The Russo-Japanese War (1904-5) and the Seige of Fort Albert, which was widely regarded as one of the strongest fortified positions in the world at the time, saw the introduction of much technology used in subsequent wars of the 20th century (particularly the First World War) including massive 28cm howitzers, as well as rapid-firing light howitzers, Maxim machine guns, bolt-action magazine rifles, barbed wire entanglements, electric fences, arc lamp searchlights, tactical radio signalling (and, in response, the first military use of radio jamming), hand grenades, extensive trench warfare, and the use of modified naval mines as land weapons.

Geographical Distribution (see Figure 5)

Research as part of the Twentieth Century Fortifications in England Project (Dobinson 2000) shows that 35 new batteries opened in 1900-1914. In 1902, Britain had twenty-four defended ports, with eighteen in England. Plymouth, Portsmouth and the Thames and Sheerness were the most strongly fortified, while Portland and Dover were also in a sound state of defence. All of these lay in easy reach of hostile torpedo boats operating across the Channel. Elsewhere on the south coast the minor ports required much lower levels of armament (Dobinson 2000).

In total there are twenty-one surviving sites identified within the fifth phase of this study (Fig 5). There are twelve fortifications in the south-west, eight in the south-east and one in the north-east. As discussed above, these were proposed during the Phase 4 period of construction, although four sites were not completed until the turn of the century and then closed by 1905. The distribution of surviving sites aligns with Dobinson's work of distribution in the south, rather than the north and east coast of England.

Region	Area No	Area Name	No of Sites	Phase 5
South-West	1	Isles of Scilly	3	3
South-West	4	Plymouth	37	3
South-West	5	Portland	8	2
South-East	7	Portsmouth	42	2
South-East	9	Mobilisation Centres	11	4
South-East	11	Thames / Sheerness	3	1
South-East	14	Dover	13	5
North East	17	Tees & Hartlepool	6	1

Table 7 Geographical Distribution of fortifications in Phase 5

At Dover five batteries were constructed, Langdon, Pier Extension, South-Breakwater, Citadel and Eastern Arms. These fall within the Western Height group of structures (two sites) or Coastal Battery group (three sites). Within Portland, Upton Fort is a particularly good example of a surviving Phase 5 fortification. There is also a surviving battery within the Tees and Hartlepool group, and at Tynemouth Castle a battery was constructed at the turn of the century, although the QF guns were removed by 1910.

On the Isles of Scilly there are three surviving sites, which are Bant's Carn, Stevel and Woolpack Batteries. The batteries were built at the turn of the century, as part of the defensive system designed to protect a naval signalling and re-fuelling station then being established on the Isles of Scilly. The Scilly Isles were abandoned as a naval station in 1906 with attention turning to the defences to the English east coast.

9.8 Phase 6: First World War

The position at the outbreak of the War was that the whole of the defences of the English Channel and as far north as the mouth of the Thames and Medway were in a very efficient condition. The area from Harwich to the Orkneys was open to attack (with the exception of Cromarty) although defensive plans were under consideration.

When Field Marshal Sir John French became commander-in-chief of all troops in the United Kingdom, greater effort was spent in providing protection for London and the principal ports and naval bases. The Portsmouth and Plymouth land forts were re-quipped. The coastal batteries had largely been modernised in the years immediately before the outbreak of war. The armament was rationalised to 9.2-inch, 6-inch and 4.7-inch guns with 6-pdr QF guns to counter fast torpedo boats. In addition, a considerable number of temporary arrangements were made at all these important places for anti-aircraft guns and searchlights. There was a continuity in design of port-defence sites throughout the period of the two World Wars.

During the war there were very limited demands on the coast batteries, only one major clash took place with warships and that was at Hartlepool in December 1914 (coastal guns installed at North Foreland in Kent also

later engaged an enemy warship). The amount of revenue spent on coastal defences was felt to be in excess to the defensive mechanism put in place. As a War Office paper states - '...the work which has been carried out over the past few years has strengthened the defence of the country to a degree which is altogether out of proportion to the expenditure involved' (TNA - WO 32/52448).

Close defence or counter-bombardment batteries dominated the new wartime building at the expense of QF sites. This reflects the volume of new QF provision accomplished on the south coast during the war, when the modernisation programmes initiated in the 1890s were extended and completed, Dover and Portland were particularly well provided with QF sites between 1905 and 1910. For the rest, the new heavy and medium gunsites of the war years continued to be sited according to the pre-war principles, with the result that the frontal lines of the gun layouts at several ports tended to advance between 1914 and 1918. Defensive trench lines and barbed wire entanglements also protected many gun sites.

Geographical Distribution (see Figure 5)

The distribution of newly constructed sites during the First World War, were very much concentrated on the east coast (Fig 5). The War Office spent practically the whole of the First World War trying to remedy the weakness of the North Sea defences. Dobinson's research shows that England's war was dominated by new coast artillery sites among all the east coast ports: the Tyne, Tees, Humber, Harwich and the Thames Estuary collectively gained seventeen positions, by far the bulk of the twenty-three positions commissioned or begun in England during the War. The survival of sites confirms this distribution.

There were some new additions to Portsmouth and Dover, of these Knuckle Battery survives at Dover. Control of Dover in the First World War was crucial and it became a key naval station, in 1905 the army established a Fire Command Post at Dover Castle (now known as the Admiralty Lookout Station) to control and direct the seaward gun batteries. Sheerness was furt her defended in 1917 by the construction of Fletcher Battery on the northern side of the Isle of Sheppey, armed with 9.2-inch BL guns moved there from Slough Fort. Whitehall battery with two 6-inch guns was added to the Isle of Grain fortifications and continued in use into the 1939-45 conflict but it is now demolished (archaeological remains may exist).

Region	Area No	Area Name	No of Sites	Phase 6
South-East	14	Dover	13	1
North East	16	Humber	5	4
North East	18	Northumberland	2	1
North West	20	Cumbria	1	1

Table 8 Geographical Distribution of fortifications in Phase 6

Near the Tyne the first important new work initiated during the war was a battery for two 6-inch QF guns at Blyth (Image 9). Three other sites were constructed on the Tyne, although none of these remain extant. The development of the east coast took time, several of the North Sea ports gained batteries of unusual or unique design. At the Humber, Bull Sand and Haile Fort were the first new sea forts to be commissioned since the Spithead defences at Portsmouth in the 1860s. The Humber saw a series of new batteries constructed in 1915, which were heavy undertakings of large technical sophistication. The Humber has a high survival of First World War sites, including: Sunk Island Battery, Bull Sand Fort, Spurn Point and Haile Sand Fort.

On the west coast, there was a single new site at Barrow, Hilpsford Battery, which survives.

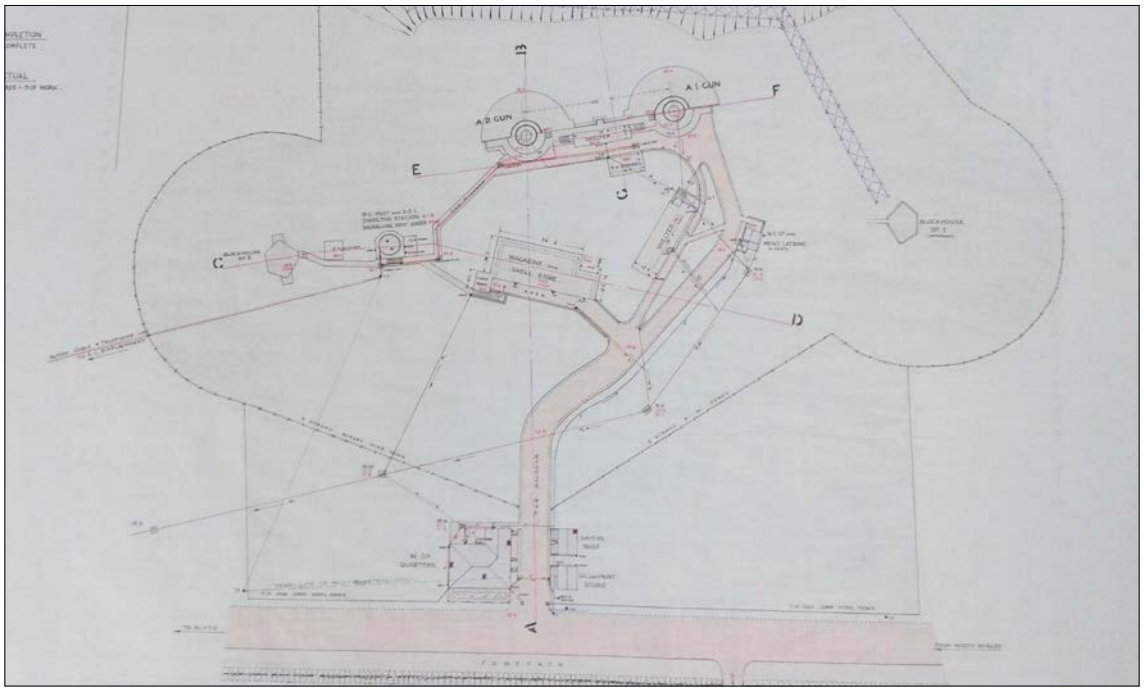

Image 9 Plan of Blyth Battery, 1922 (TNA – WO 78/4969)

10 NATIONAL OVERVIEW

This study identified a total of 167 fortifications in England constructed between 1800-1919, and older fortifications that remained in use during this time with significant additions and alterations. This report discusses each of the twenty strategic groups, as well as providing a regional overview in sections 12 to 24. The following provides a national overview by assimilating the statistical information generated through the datasheets included in Volume 2 of this report.

National Distribution

The distribution of fortifications within the twenty strategic groups and five regions is illustrated in the 'Distribution Table' (Section 6) and illustrated in Figure 1. These strategic groups are predominantly located around the south-east and south-west coast of England, although a small number were also identified around the east and north coast, which commonly date from the late 19th and early 20th centuries. The geographical distribution of sites within the regions is shown below as a percentage of the national total.

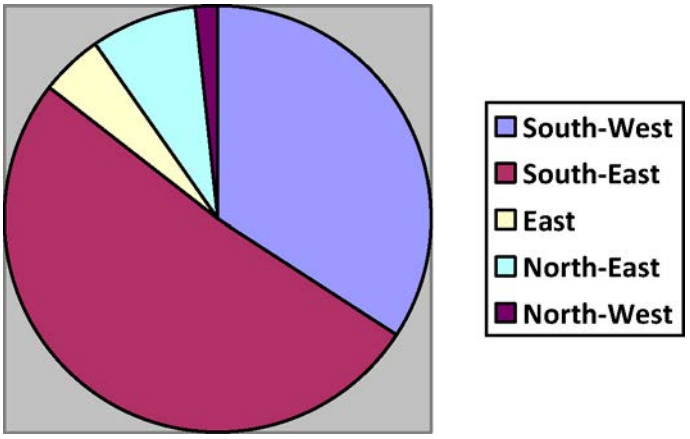

Chart 1 Geographical distribution of fortifications by region, shown as a percentage of the total number.

The largest groups of sites are in Portsmouth and Plymouth, where forty-two and thirty-seven fortifications were identified respectively. Elsewhere in the south-west the number of fortifications were relatively low within the strategic groups, with the exception of Portland which has eight sites. In the south-east region, thirteen fortifications were identified in Dover and twelve London Mobilisation Centres. The defences related to Chatham and around the Thames/ Sheerness account for a total of eighteen fortifications. The numbers within the strategic groups of the east of England, north-east and north-west regions are relatively low, although six fortifications were identified on the Humber predominantly from the First World War.

Significance

Nationally 80.83 per cent of the sites are designated, which demonstrates that this class of monument has a high level of protection. The proportion of fortifications which are Listed/ Scheduled within each region is illustrated in Figure 6. The majority of these are Scheduled, and in some examples these

are both Scheduled and Listed. The number of fortifications at each level of significance is given below.

Significance	Total Fortifications
A - Exceptional A site which is of key national or international significance, being among the best or only surviving examples of an important type of monument, or being outstanding representatives of important social or cultural phenomena.	39
B - Considerable A site that constitutes good and representative examples of an important class of monument (or the only example locally), or that have a particular significance through association (although surviving examples may be relatively common on a national scale) or that make major contributions to the overall significance of the monument.	103
C – Some A site that contributes to the character and understanding of the place, or that provides a historical or cultural context for features of individually greater significance.	17
D - Little A site of low value in general terms, which has little or no significance in promoting understanding or appreciation of the place, without being actually intrusive.	8

Table 9 Total number of fortifications at significance levels A-D

All fortifications deemed to be of 'exceptional' (A) significance are Scheduled or Listed (or both).

Condition

There are forty-two fortifications identified in this study which are on the HAR Register, which is 25.15 per cent of the total number of fortifications identified.

The following are identified as being at priority category 'A' on the HAR Register –

Exceptional (A) Significance

- Fort Elson, OA 59, Portsmouth, Area 7

Considerable (B) Significance

- Ford Efford, OA35, Plymouth, Area 4
- Watch House Battery, OA43, Plymouth, Area 4
- Fort Fareham, OA66, Portsmouth, Area 7
- Hilsea Lines, OA74, Portsmouth, Area 7
- Darnet Fort, OA130, Chatham and Medway, Area 12

Priority A2, Exceptional Significance (please note these have been accessed according to the incorrect priority criteria (battlefields), and need to be reassessed)

- Drakes Island, OA31, Plymouth, Area 4
- Egg Buckland Keep, OA32, Plymouth, Area 4
- Upton Battery, OA53, Portland, Area 5
- North Weald Redoubt, OA109, London Mobilisation Centres, Area 9
- Beacon Hill Fort, OA149, Harwich, Area 15

Priority A2, Considerable Significance (please note these have been accessed according to the incorrect priority criteria (battlefields), and need to be reassessed)

- East Wear Batteries, OA48, Portland, Area 5
- Paull Point Battery, OA152, Humber, Area 15

Those fortifications considered to be of exceptional significance and on the HAR Register at priority level 'A' should be prioritised to remove them from the register. There are several Scheduled and Listed fortifications which are considered to be in 'poor' (3) or 'bad' (4) condition, but not on the HAR Register. These are listed below.

OA No.	Fort Name and Area	Designated	Condition
13	Greville Battery, Plymouth, Area 4	SM, LB (1160076)	3
29	Brownhill Battery, Plymouth, Area 4	SM (1002585)	3
57	Steep Holm, Bristol, Area 6	SM, LB	1, 2, 3
61	Stokes Bay Lines, Portsmouth, Area 7	SM (1405953), SM (1001829), LB (II)	2, 3, 4
67	Fort Grange, Portsmouth, Area 7	SM (1001807), LB (II) (1233816)	3
69	Fort Purbrook, Portsmouth, Area 7	SM, LB (II*) (1001842, 1092134)	3
70	Fort Rowner, Portsmouth, Area 7	LB (II) (1233871)	3
72	Fort Wallington, Portsmouth, Area 7	LB (II) (1094233)	4
73	Fort Widley, Portsmouth, Area 7	SM (1001862), LB (II*) (1387128)	4
78	Point Battery, Portsmouth, Area 7	SM (1001870)	3
122	Queensorough Lines, Sheerneess, Area 11	SM	3
127	Fort Luton, Chatham and Medway, Area 12	SM	3
137	Pier Extension Battery, Dover, Area 14	LB	3
141	Archcliffe Fort, Dover, Area 14	SM	3
148	Eastern Arm Battery, Dover, Area 14	LB	3
151	Shotley Point Battery, Harwich, Area 15	SM	3

Table 10 Fortifications which are Listed or Scheduled but not on the HAR Register and in poor (3) or bad (4) condition

10.1 National distribution in relation to significance and condition

The table below show the percentage of fortifications within each of the five regions which are designated, at each of the four levels of significance and condition, and on the HAR Register.

		Region 1 South-West	Region 2 South-East	Region 3 East	Region 4 North-East	Region 5 North-West
Designated		75.44	84.88	100	69.23	66.67
Significance						
Exceptional	A	28.07	18.60	87.50	--	-
Considerable	B	56.14	64.60	12.50	69.23	66.67
Some	C	12.28	8.14	-	15.38	33.33
Little	D	3.51	4.65	-	15.38	-
Condition						
Good	1	29.82	24.42	37.50	38.46	33.33
Fair	2	45.61	31.40	12.50	23.08	-
Poor	3	24.56	33.72	50	38.46	66.67
Bad	4	5.26	13.95	-	-	-
On HAR Register		31.58	22.09	37.50	7.69	33.33

Table 11 Percentages, given as the total number within each region, in relation to designation, significance, condition and the HAR Register

The table shows the high number of fortifications which are designated in regions 1 to 3, the percentages are particularly high in the south-east and east of England regions (85.71 per cent and 100 per cent respectively). It also demonstrates the high percentage of fortifications of exceptional significance in the east of England, with three of the four fortifications identified considered to be of 'exceptional' (A) significance. In the south-west region 28.07 per cent of fortifications are of exceptional significance, which is a greater proportion than the 18.60 per cent in the south-east region.

The majority of the fortifications identified in the five regions are of 'considerable' (B) significance, with between 56 per cent and 69 per cent falling within this band, with the exception of the east of England region where 12.50 per cent of fortifications are of 'considerable' significance. In all five regions there are fewer fortifications identified as being of 'some' or 'little' significance (C and D), with the exception of the north-west where 33.33 per cent are thought to be of 'some' significance only.

In relation to condition, the results show that in the south-west and south-east regions roughly a quarter of the fortifications are in 'good' condition, with the majority in 'fair' condition (45.61 per cent in the south-west, and 31.40 per cent in the south-east). It is of note however that in the south-east a considerable proportion (33.72 per cent) of the fortifications are in 'poor' condition, which is slightly lower but still sizeable in the south-east (24.56 per cent). Interesting, the south-west has fewer fortifications identified as being in 'poor' or 'bad' condition (29.82 per cent) than the south-east (47.67 per cent).

However, the south-west has a larger number of fortifications on the HAR Register (31.58 per cent in contrast to 22.09 per cent in the south-east).

In the north-east region there is a high number of fortifications in 'good' condition (38.46 per cent), with the remaining sites either in 'fair' (23.08 per cent) or 'poor' condition (38.46 per cent). Only 7.69 per cent of fortifications are on the HAR Register. In the north-west region 66.67 per cent of sites are in 'poor' condition, with 33.33 per cent on the HAR Register. As there are only three sites in region 5 this equates to two sites being in 'poor' condition, with one of these on the HAR Register.

Phasing

The one 167 fortifications were divided into six phases, which are tabulated by area and discussed in Section 9 of this report.

Phasing distribution

In Phase 1, 65 per cent of fortifications are within the south-east with only 15 per cent in the south-west, and the east, north-east and north-west accounting collectively for the remaining 20 per cent. The south-east also has a largest majority of Phase 2 sites which accounts for 68.42 per cent of the total number of fortifications within the phase, with the south-west accounting for 26.32 per cent of the total number. Within Phase 3, which has the greatest number of fortifications, the percentage distribution is heavily weighted in the south-west and south-east, with no fortifications in the north-west group. The chart below shows the regional distribution of Phase 3 fortifications, by percentage of the total number within the phase. This demonstrates the density of fortifications built as result of the Royal Commission within the south-east and south-west regions.

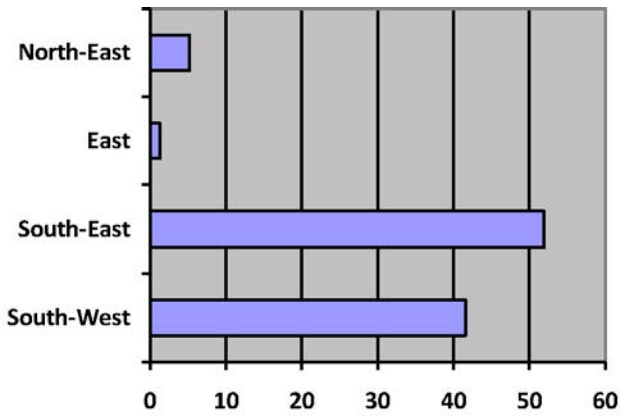

Chart 2 Regional distribution of fortifications as a percentage of total number of fortifications in Phase 3

This pattern of a concentration of fortifications within the south-east and south-west regions is also evident in Phase 5 (57.14 per cent are in the south-east region, and 38.10 per cent in the south-west), and only shifts in Phase 6. The results show that in the First World War phase, 71.43 per cent of fortifications are within the north-east and 14.29 per cent are within the north-west with only 14.29 per cent in the south-east. These percentages

demonstrate that there was a number of newly constructed fortifications on the east coast at this time, however this is also a reflection of the huge construction programme already completed in the previous century by the outbreak of the First World War in the south. These fortifications were adapted and re-used during the conflict in response to the changing military threat.

Phasing in relation to significance and condition

The table below shows the percentage of fortifications within each phase in relation to significance and condition.

		Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Designated		90	100	87	64	61.9	57.14
Significance							
Exceptional	A	45	31.58	18.18	28	23.80	-
Considerable	B	45	68.42	71.42	52	42.85	57.14
Some	C	5	-	3.89	12	33.33	42.85
Little	D	5	-	6.49	8	-	-
Condition							
Good	1	35	36.84	24.67	32	23.80	28.57
Fair	2	25	31.57	35.06	36	42.85	14.28
Poor	3	35	26.31	32.46	28	28.57	57.14
Bad	4	5	5.26	16.88	4	4.76	-
On HAR Register		30	31.58	32.57	16	14.29	-

Table 12 Table 12 – Percentage of fortifications by phase in relation to significance and condition

These results demonstrate that within phases one to three, a high percentage of sites are designated (87-100 per cent), but the percentage declines between phases 4 and 6. This may in part be attributed to the fact that these smaller batteries built in these phases do not have the monumentality and grandeur of the 19th Century fortifications, but equally there is value in their rarity and what they demonstrate about evolving fortification design.

The results also show that in Phase 1 there is a high percentage (45 per cent) of surviving fortifications which are of 'exceptional' (A) significance. This can be seen in contrast to Phases 6 where no sites are considered to be of exceptional significance. Of the fortifications built within the 1860/70s phase, 18.8 per cent are thought to be of exceptional significance. Within the six phases, the highest percentage of surviving fortifications are of 'considerable' significance (B), with 71.42 per cent of sites within Phase 3 deemed to be at this level. Fortifications thought to be of 'Little' or 'Some' significance (C and D) is generally low, with the exception of Phases 5 and 6, where this is 33.33 per cent and 42.85 per cent respectively (these numbers are very weighted however by the small number of sites within the area).

In terms of condition the table shows that the condition of sites within the six phases is fairly consistent. There are few sites in 'very bad' (4) condition, but within conditions levels 1 to 3 (good to poor) the distribution is fairly

even (with the exception of Phase 6 fortifications). Generally, in Phases 1 to 4 the condition levels are roughly split with a third in each of the three conditions levels from 1 to 3. In Phase 5 this is higher with 42.85 per cent of fortifications in 'fair' condition. The Phase 6 results are in contrast to the results of the other phases, with 57.14 per cent of fortifications in 'poor' condition.

The results show that roughly a third of fortifications in Phases 1, 2 and 3 are on the HAR register, with only 16 per cent and 14.29 per cent of the Phase 4 and 5 fortifications and none within Phase 6. This result is also a reflection of the lesser number of fortifications designated within these phases.

10.2 Threats

This project identified eight key threats which are categorised according to the HE Heritage Asset Management (HAM) data. The threats identified are somewhat subjective, as site visits were not completed as part of this project therefore a threat may be present but not mentioned in the desk-based sources used. 'Priorities and Recommendations' relating to key threats are identified on each datasheet, and summarised within the 'Area Summaries' (Sections 12-24), some common trends are discussed below.

Nationally, coastal erosion is a common threat to 19th century and early 20th century fortifications, as many are strategically situated on the coastline. In Portsmouth, coastal erosion is the most significant threat by a considerable margin, it is identified as a threat in twenty-two instances, with decay of fabric the second most common threat which is identified on a total of thirteen occasions in Portsmouth. The remaining threats are roughly evenly distributed, with only one example of vandalism recorded as a threat in Portsmouth.

In Plymouth the most common threat identified is deterioration/ in need of management, with decay of fabric, uncontrolled plant growth and vandalism also common. Significantly indirect development threat or lesser incremental planning threats are regularly identified, with twelve cases identified in Plymouth and nine in Portsmouth. There are only two examples of direct development threat identified in Plymouth, with eight in Portsmouth.

In other areas threats are fairly evenly distributed, with common threats throughout of coastal erosion, decay of fabric and deterioration/ in need of management.

11 REGIONAL SUMMARY: REGION 1, THE SOUTH-WEST

The information below summarises the results of the south-west region, by looking at the statistical results generated through the datasheets in Volume 2. It discusses the south-west region according to the phase, significance and condition of fortifications. The results are discussed in more detail within the area summaries which follow (Section 12-16), which include a section giving 'Priorities and Recommendations' in relation to individual fortifications. References are made below to the national perspective, although this is discussed in more detail in Section 10.

Regional Distribution

There is a total of fifty-seven fortifications within the south-west group, which are divided into six strategic groups. The largest group within the region is the Plymouth group of fortifications which dominates the south-west region, and accounts for 22.16 per cent of the national total and 64.9 per cent of the total number of sites within the south-west region. Portland is the second largest group which accounts for 4.79 per cent of the total national number of fortifications. The remaining areas have between two and four sites only.

Phasing

The table below shows the division of fortifications according to each of the six strategic areas, within each of the six phases. The results of the phasing within the south-west region shows that thirty-two of the fifty-seven sites are Phase 3 sites, predominantly constructed as a result of the Royal Commission's report. Nationally, the south-west has 41.56 per cent of the national total of Phase 3 sites, with the south-east having the larger proportion, totalling 51.95 per cent of the national total.

			Phase					
Area No.	**Area Name**	**No. of Sites**	**1**	**2**	**3**	**4**	**5**	**6**
1	**Isles of Scilly**	3	0	0	0	0	3	0
2	**West Country**	4	0	1	3	0	0	0
3	**Falmouth**	3	2	0	0	1	0	0
4	**Plymouth**	37	1	2	24	7	3	0
5	**Portland**	8	0	2	3	1	2	0
6	**Bristol**	2	0	0	2	0	0	0
	Total	57	3	5	32	9	8	0

Table 13 The south-west regions strategic groups, showing number of fortifications within each phase

Plymouth also has seven sites from the 1880/1890s phase of construction (Phase 4), which again is the largest group by a significant margin. Nationally, this accounts for 36 per cent of the total number of sites. Interestingly, there are no sites newly built as a result of the First World War

(Phase 6), although most of the sites were re-used and adapted in response to the changed threat.

Significance

Statistical analysis shows that 75.44 per cent of the fortifications are designated within the south-west region, over half of these sites are of 'considerable' significance, and just over a quarter are of 'exceptional' significance. The results are shown in a pie chart below.

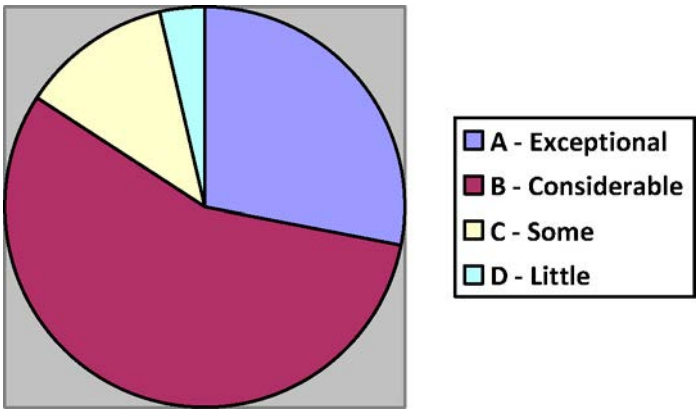

Chart 3 South-west region fortifications showing levels of significance (A-D) as a precentage of regional total

Exemplar fortifications are identified within the South-West, which are those sites considered to be the best surviving examples within their phase or strategic group (if the latter is applicable). In some areas exemplars were not identified, because the type, phase or number of sites meant that comparing the fortifications in this way was not possible. The results are tabulated below according to phase.

Area No.	Area Name	Phase				
		1	2	3	4	5
1	**Isles of Scilly**					Bant's Carn
4	**Plymouth**	Eastern Kings Redoubt		Drakes Island (RC)	Hawkins Battery	Renney Point Battery
				Powlawn Battery		
				Staddon Fort		
				Fort Bovisand (RC)		
				Crownhill Fort (RC)		
				Egg Buckland (RC)		
				Tregantle Fort (RC)		
			Scraesden Fort (RC)			

Area No.	Area Name	Phase				
		1	2	3	4	5
5	Portland		Verne Citadel	Nothe Fort (RC)	Verne High Angle Battery	Upton Battery
6	Bristol Channel			Brean Down Fort		

Table 14 Fortifications identified as 'exemplars' in the south-west region

Condition and Threats

Within the south-west region 31.58 per cent of the sites are on the HAR Register. Most sites are in fair condition, with roughly a third in good condition, and just under a third in poor condition. The results are shown below.

Condition Level	Percentage in South-West Region
1 (good)	29.82
2 (fair)	45.61
3 (poor)	24.56
4 (bad)	5.26

Table 15 Levels of condition in the south-west region shown as a per cent of the total group

In Plymouth, 51.35 per cent of the sites are in fair condition, whilst 18.92 per cent are in good condition. The most common threat identified is deterioration/ in need of management, which is recorded as a threat for twenty fortifications in Plymouth. Decay of fabric is the second most common threat with fifteen fortifications identifying this as an issue. The third most common threat identified in the Plymouth region is a indirect threat from development, with two fortifications in Plymouth identified as being directly threatened by development. There is a similar pattern in Portland, where the most common threat is decay of fabric and deterioration/ in need of management.

Within the south-west region 31.58 per cent of fortifications are on the HAR Register (greater than the 22.09 per cent of sites in the south-east region). Recommendations for resolving issues relating to the condition of sites and threats, are discussed within each 'Area Summary', and are not repeated here.

Key Threats, Recommendations and Priorities

- Isles of Scilly – coastal erosion is a major threat for the three batteries which are of 'exceptional significance'.
- Woolpack Battery is a priority category 'C' on the HAR Register, and is of 'exceptional' significance. It should be prioritised for removal from the register.
- Falmouth – potential indirect development threat, that may impact the setting of Penndennis Castle.

- **Plymouth** – there are a number of fortifications on the HAR Register, with Watch House Battery and Fort Efford at priority category 'A'. Laira Emplacement, Fort Efford and Drakes Island are also on the HAR Register and in a declining condition. Scraesden Fort, Tregantle Fort, Drakes Island Fort, Egg Buckland Fort, Fort Bovisand and Staddon Point Battery are of 'exceptional' significance. These fortifications should be prioritised for removal from the HAR Register.
- **Portland** – East Weare Battery and Upon Battery are on the HAR Register with a declining trend, in particular Upton Battery which is of 'exceptional' significance should be prioritised for works to remove it from the Register.
- Verne Citadel has been approved for conversion to an Immigration Centre which may impact the historic fabric of this fortification, which is of 'exceptional' significance. It is currently on the HAR Register. The rare type of High-Angle Battery at the citadel requires control measures to prevent scrub growth and vandalism.

12 STRATEGIC AREA SUMMARY: AREA 1, THE ISLES OF SCILLY

OA no.	Fort name	Significance	Designated	Phase	Condition	HAR Level	Threat
1	Bants Carn Battery	A/ B	SM	5	x	x	1, 2
2	Woolpack Battery	A	SM	5	3	C1	1, 3
3	Steval Battery	A	SM.LB	5	1	x	1, 4

Table 16 Fortifications within The Isles of Scilly (Area 1) Values given in the table are detailed in Section 5.

12.1 Strategic Importance

By the post-medieval period, the Isles of Scilly occupied a nationally strategic location, resulting in an important concentration of defensive works reflecting the development of fortification methods and technology from the mid-16th to the 20th centuries. An important and unusual range of post- medieval monuments also reflects the islands' position as a formidable hazard for the nation's shipping in the western approaches.

In 1882 the Morley Committee investigated the defences of mercantile ports as the Government realised that the country was wholly dependent on a coal fired navy. This prompted the creation of a series of defended ports, but the idea of creating a protected anchorage for shipping was extended to Scilly. In the 1890s, a joint army and navy review of the nation's coastal defences proposed the Isles of Scilly should become an advanced naval signalling and re-fuelling station, to be classed as a defended port, in view of their strategic position against perceived threats from French Atlantic naval bases.

During construction of these defences, national defence policy underwent a radical shift. German power replaced that of France as the dominant threat, a re-orientation strengthened by the signing of the *Entente Cordiale* in 1904. In the resulting re-alignment of the nation's defences to the east, detailed in the Owen Report of 1905, the Isles of Scilly were abandoned as a naval station and, with little commercial importance, they also lost their defended port status (Bowden and Brodie 2011 and HE website).

12.2 Phasing

The Isles of Scilly fortifications included with this study Isles of Scilly all date to a few years either side of the turn of the 20th century. As a result of the Owen Report of 1905, the Isles of Scilly were abandoned as a naval station, and the batteries were no longer used.

Phase 5: Turn of the Century up to the First World War

For the period represented in this study, there are three sites that were constructed between the turn of the century and the First World War, these are: Bant's Carn Battery, Woolpack Battery and Steval's Battery (Image 10).

Implementation of the late-19th Century proposals (discussed above) between 1898 and 1901 produced two complementary gun batteries, Steval Battery and the Woolpack Battery 125m to the south east, to cover the deep water approach to the islands.

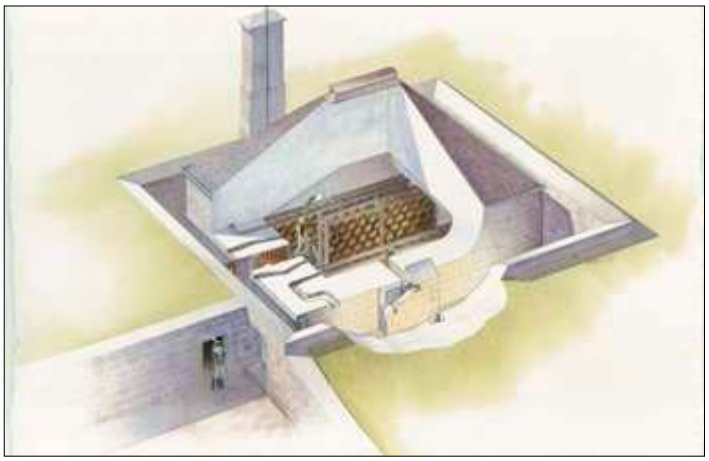

Image 10 Cut-away reconstruction of Woolpack Battery, showing the powder magazine (© Historic England, HE archive ICI171_011)

12.3 Significance

Designations

All the fortifications identified of the fortifications identified in this study are Scheduled Monuments, these are: Bant's Carn Battery, Woolpack Battery and Steval Battery. They are also part of the Conservation Area of the Isles of Scilly. They reflect Scilly's tradition of building impressive fortifications but never firing a shot in anger.

Exemplars

Within this group, Bant's Carn Battery is considered to be an exemplar, because it has not been converted and the original form of the earthworks and built structures are well preserved. It also has the most intact survival of original metal fittings of the batteries in the Scilly defensive system. Stevel Battery also appears to be unconverted and has a high level of survival, its significance is also enhanced by its functional and geographical relationship with Woolpack Battery. It has however been impacted by its use by a pistol and rifle club. Further investigation is required to more accurately determine the level of survival and significance of the three batteries.

Exceptional significance

All three batteries identified are of exceptional significance. They have strong group value, because of their relationship functionally and geographically to each other, and because they were constructed at the turn of the 20th Century which is a period less well represented in this study. They

demonstrate the change in threat of enemy action from the German forces to the French.

Steval and Woolpack Batteries have a strong geographic and functional relationship, Steval Battery has not been converted and therefore is considered to be the best surviving example of the two sites.

12.4 Condition and Threats

The key threat to the three batteries is coastal erosion, partial falls can be seen at St. Mary's, large caverns have been carved into the soft geology of the low cliffs where only the overhanging mass of vegetation is holding the topsoil together. Forecasts of erosion suggest that much of Scilly's coastal heritage is at risk. A programme of recording is recommended so that if the fortifications are lost, a suitable record will survive for posterity.

HAR Register

One of the three identified batteries is on the HAR Register, this is Woolpack Battery which is at category 'C' and in poor condition. The condition of battery is generally good, although it has suffered from water ingress and is currently unoccupied.

Priorities and Recommendations

Woolpack Battery should be prioritised to remove it from the HAR Register.

Steval and Bants Carn batteries are generally believed to be in good, stable condition although some further research is recommended to more confidently determine the condition and threats. A key threat to all three sites is coastal erosion as forecasts suggest that much of Scilly's coastal heritage is at risk.

12.5 Quality Control Grid

Conservation Area data provided by the HER, there was no comment on development proposals related to the three sites (Hannah Henderson, Cornwall and Scilly HER, pers comm).

13 STRATEGIC AREA SUMMARY: AREA 2, THE WEST COUNTRY

OA no.	Fort name	Significance	Designated	Phase	Condition	HAR level	Threat
4	Dartmouth Castle, Dartmouth Point Battery	B	SM.LB	3	1	x	1, 8
5	Padstow Battery	D	x	3	3	x	1, 2
6	Fowey Battery, St Catherine's Castle	B	SM	2	1	x	1, 8
7	St Ives Battery	D	x	3	3	x	1, 8

Table 17 Fortifications within The West Country (Area 2)
Values given in the table are detailed in Section 5.

13.1 Strategic Importance

The position guarding the western approaches to the Channel was of enormous strategic importance, and many phases of coastal defence building were undertaken in response to successive threats from abroad. During the period from 1800-1918 the construction of fortifications was focused on Plymouth and Portsmouth. However, the extensive vulnerability of the coastline outside the main naval ports, led to the demand for batteries to be built at strategically important points.

The four West Country sites included in this report are not functionally or geographically related, and their construction is attributed to the need to defend a strategically important area of coastline, river or harbour. They are therefore sporadically situated along the West country's coastline, and are smaller coastal batteries. The sites continued in use into the First and Second World Wars, but did not play a key strategic role form the period 1800-1918.

13.2 Phasing

Three fortifications were constructed in the 1860s, although not as a result of the Royal Commission, and Fowey Battery was built in the 1850s.

Phase 2: 1850s

Fowey Battery was constructed in 1855 at St. Catherine's Castle, it was built below the castle to defend the harbour entrance and the port, which was important to the china clay trade.

Phase 3: 1860/70s

St. Ives Battery was established in 1860, and continued in use through the First and Second World Wars. As St. Ives Bay is the only anchorage between the Scilly Isles and Lundy Island it was considered important enough to erect a battery. In the 1890s the Royal Navy decided that the anchorage at St.

Ives Bay would not be used by either warships or freighters and was of little commercial importance; in 1895 the battery was disarmed and abandoned.

Dartmouth Castle Battery which was constructed in 1861, was not updated as part of the Royal Commission overhaul of defences in 1865. In the 1890s however, the guns at Dartmouth Castle Battery were replaced, and it continued in use through the two World Wars with updated weaponry (Image 11).

Image 11 A cutaway reconstruction of Dartmouth Point Battery in *c* 1872 (© Historic England illustration by Graham Holme)

Padstow Battery (OA5) was rebuilt in 1868, to protect the River Camel. The battery was soon relegated to being a practice battery and, due to the silting up of the River Camel, its defence was no longer necessary.

13.3 Significance

Two of the four sites within the West Country group are Scheduled Monuments, both of these batteries are related to larger defence sites. These are Dartmouth Point Battery at Dartmouth Castle, and Fowey Battery at St. Catherine's Castle. Dartmouth Point Battery is also a Grade II* Listed Building.

Considerable Significance

Two of the four sites are of considerable significance, these are: Dartmouth Point Battery at Dartmouth Castle, and Fowey Battery at St. Catherine's Castle which are of considerable significance. The significance of these batteries is in part attributed to their relationship with the larger defences structures, rather than the value of the individual batteries.

Little Significance

Two of the four sites are of little significance, these are: Padstow Battery and St. Ives Battery. Both did not play a significance defensive role, and both are of poor evidential value.

13.4 Condition and Threats

The two batteries, which are part of larger designated defence sites, are in good condition, but the two remaining batteries are in poor condition. The West Country group of batteries are located on the Cornish coastline, and there is potential for these sites to be threatened by coastal erosion.

Visitor wear and tear is also a common threat to the four batteries, those which form part of the visitor experience to the larger defence sites of Dartmouth Castle and St. Catherine's Castle may be impacted. Padstow Battery and St. Ives Battery are easily accessible and the limited surviving remains may be affected over time by visitor wear and tear.

13.5 Recommendations and Priorities

Archaeological recording is recommended, if not previously undertaken, to mitigate against potential loss through coastal erosion. Periodical monitoring of the sites is also recommended to enable a more accurate assessment of the potential impact of visitor wear and tear.

Quality Control Grid

Conservation Area data was provided by the Devon HER (Dr. John Salvatore, Devon HER, pers comm). Conservation Area data was also provided by Cornwall HER (Hannah Henderson, Cornwall and Scilly HER, pers comm).

14 STRATEGIC AREA SUMMARY: AREA 3, FALMOUTH

OA no.	Fort name	Significance	Designated	Phase	Condition	HAR level	Threat
8	Pendennis Castle	B	SM	1	1	x	1, 7, 8
9	St Anthony's Battery	C	x	4	1	x	1, 2, 3
10	St Mawes Castle	B	SM.LB	1	1	x	1, 8

Table 18 Fortifications within Falmouth (Area 3)
Values given in the table are detailed in Section 5.

14.1 Strategic Importance

Lying around 30 miles east of Land's End, Falmouth is the westernmost defended port in England, with a long military history. Since the 16th Century the harbour was commanded by St. Mawes and Pendennis castles, and in the 20th century these were further supplemented by batteries. In 1887 Falmouth was designated as a Defended Port, and from the 1890s was positioned as a strategic harbour, which resulted in many new defences for the estuary. From this time, the defences at St Mawes and St Anthony's Head, were administered as a single defended port to protect the anchorage in the Carrick Roads and the port of Falmouth against enemy cruisers and, especially, the new fast motor torpedo boats.

Following the Owen Report in 1905, the defences of Falmouth were considerably scaled down, Falmouth was downgraded to Class 'C' that of a simple commercial fort. Owen recommended that the guns were downgraded to meet the unarmoured cruiser attack only. This was arrangement with which Falmouth entered the First World War. The batteries continued to be updated throughout the war, and in the post-Dunkirk period of invasion threat in the Second World War expanded (Dobinson 2000). The mixture of close defence and QF guns in place at the beginning of the 20th Century, were intended to resist attack by cruisers and torpedo craft acting in force.

14.2 Phasing

Pendennis Castle and St Mawes Castle are Henrician coastal forts, which continued to be significantly enhanced throughout the period of this study. The fortresses received little attention during the Royal Commission programme in the 1860s, as they were considered a comparatively low strategic target, however in the 1880/90s defences were significantly enhanced.

Phase 1 : Early Fortifications (pre-1850s)

Pendennis Castle was erected between 1540 and 1545; after the defeat of Napoleon in 1815 the castle was neglected until the late 1850s. Half Moon Battery was constructed in 1795, with Crab Quay Battery completed the following year.

St. Mawes Castle was built in 1540 as a small stone fort, a sea battery was built in the 18th Century in front of and below the castle.

Phase 4: 1880s/1890s

It was Falmouth's designation as a Defended Port in 1887 and its position as a strategic harbour from 1890s that resulted in many new defences for the estuary. These were commanded from Pendennis Castle, including the B.L and Q.F batteries (OA8) which were built between 1895 and 1895 on the Pendennis Headland (Image 12). Half Moon Battery and Crab Quay Battery were also updated in the 1880s and 1890s.

Image 12 Pendennis Castle and battery, 1948 (©Britain From Above website, Image 13 image no. - EAW020292)

St Anthony's Head Battery was constructed as part of this programme of works, between 1895 and 1897 to augment the seaward defences of the Fal estuary. This was part of a group of batteries covering the deep water of Carrick Roads and the River Fal.

At St Mawes, the coastal battery was extended to become the extant 6-pdr battery in 1898.

14.3 Significance

Designations

Pendennis Castle and St Mawes Castle including their associated defences are Scheduled Monuments. St Mawes Castle is also Grade I Listed, and Pendennis Castle falls within the Falmouth Conservation Area.

Considerable

The batteries of Pendennis Castle and St Mawes Castle included within this study, are of considerable significance.

Some

St Anthony's Battery is of some significance although, it is considered to be at the upper end of this level of significance. It survives relatively well and has a long period of use through both World Wars. The battery is managed by the National Trust and has a high communal value.

14.4 Condition and Threats

There is a planning application on land to the north of Castle Drive, that potentially may have an indirect impact on the setting of Pendennis Castle.

The coastal location of the Falmouth group of defences means that there is potential for them to be impacted by coastal erosion.

14.5 Recommendations and Priorities

It is recommended that this potential impact to Pendennis Castle is further investigated and assessed. A programme of archaeological recording, if not already undertaken, should be completed to mitigate against potential damage through coastal erosion, particularly those installations in more exposed locations. The three defences sites would benefit from incremental inspection to monitor visitor wear and tear, and the impact of coastal erosion.

14.6 Quality Control Grid

Conservation Area data was also provided by Cornwall HER (Hannah Henderson, Cornwall and Scilly HER, pers comm), and assimilated from Cornwall County Council's online conservation mapping (cornwall.gov website)

15 STRATEGIC AREA SUMMARY: AREA 4, PLYMOUTH

OA no.	Fort name	Sig.	Designated	Group	Phase	Condition			Threats
						HAR	Condition	Trend	
11	Penlee Point Battery	C	x	2	4	x	3	Stable	3
12	Maker Battery	B	x	2	4	x	2	Declining	4, 7
13	Grenville Battery	B	SM.LB (1160076 & 1160076)	2	4	x	3	Declining	3
14	Cawsand Battery	B	LB (II) (1329146)	2	2	x	1	Stable	7
15	Fort Scraesdon	A	LB.SM (1140707)	5	2	C1	2	Stable	2, 4
16	Fort Tregantle	A	SM.LB (1159255)	5	3 (RC)	C1	2	Stable	1, 3
17	Hawkins Battery	B	x	2	4	x	2	Stable	3, 4
18	Mount Edgcumbe Garden Battery	B	LB (II) (1329141)	1	3 (RC)	x	1	Stable	1, 4
19	Picklecombe Fort	B	LB (II) 1160211)	1	3 (RC)	x	1	Stable	7
20	Polhawn Battery	A	LB(II*) (1310634)	2	3 (RC)	x	1	Stable	4,7
21	Raleigh Battery	B	x	2	4	x	2	Declining	4
22	Whitesand Bay Battery	B	SM (1004664)	2	4	x	2	Improving	7, 4
23	Whitesand Bay Practice Battery	B	x	2	4	x	2	Stable	3, 4, 5
24	Renney Point Battery	B	LB (II) (1270701)	3	5	x	1	Stable	2, 7
25	Mount Wise Redoubt	C	x	1	1	x	2	Stable	3, 5
26	Devil's Point Battery	C	x	1	5	x	2	Stable	3, 5
27	Agaton Fort	B	SM (1002613)	4	3 (RC)	C1	2	Declining	2, 3, 4
28	Bowden Battery (Fort)	B	SM (1021365)	4	3 (RC)	x	2	Stable	3, 7
29	Brownhill Battery	B	SM (1002585)	3	3 (RC)	x	3	Declining	3, 5
30	Crownhill Fort	A	SM (1020571)	4	3 (RC)	x	2	Declining.	2, 7
31	Drakes Island	A	SM (1067138, 1067140, 1067139. 1067137)	1	3 (RC)	A2	3	Stable	2, 3, 7
32	Egg Buckland Keep	A	SM. LB (II*) (1020543)	4	3 (RC)	A2	2	Stable	7
33	Ernesettle Fort	B	SM (1003193)	4	3 (RC)	x	2	Stable	3, 4
34	Forder Battery	C	x	4	3 (RC)	x	3	Stable	x
35	Fort Efford	B	SM (1021135)	4	3 (RC)	A1	4	Declining	2, 3
36	Knowles Battery	B	SM (1002614)	4	3 (RC)	C2	3	Improving	3, 4, 5
37	Laira Battery and Emplacement	B	SM (1021134, 1020686)	4	3 (RC)	B2	3	Stable	2, 3, 6, 7

OA no.	Fort name	Sig.	Designated	Group	Phase	Condition			Threats
						HAR	Condition	Trend	
38	Lord Howard Battery	C	x	3	5	x	2	Stable	1
39	Plymouth Breakwater Fort	A	SM (1002623)	3	3 (RC)	x	2	Stable	4, 5
40	Staddon Fort	B	SM (1002585)	3	3 (RC)	x	2	Stable	2, 3
41	Fort Bovisand and Staddon Point Battery	A	SM. LB (II*) (1002584. 1379617 1379615)	3	3 (RC)	C1	3	Stable	1, 3, 4, 6
42	Stamford Fort	B	SM (1002544)	3	3 (RC)	B2	2	Declining	1, 7
43	Watch House Battery	B	SM (1002585)	3	3 (RC)	A1	4	Declining	3, 4, 5
44	Woodland Fort	B	SM (1002615).	4	3 (RC)	D2	4	Improving	2, 3, 4, 5
45	Eastern Kings Redoubt	A	SM (1002643)	1	3 (RC)	x	1	Stable	x
46	Western Kings Redoubt	B	x	1	3 (RC)	x	1	Stable	5
47	Fort Austin	B	SM (1021380)	4	3 (RC)	C2	2	Stable	2, 3, 5

Table 19 Fortifications in Plymouth (Area 4)
Values given in the table are detailed in Section 5, the groups are discussed below.

15.1 Strategic Importance and Development

The fortifications and defences around Plymouth form a remarkable collection of structures that span over 500 years from the late medieval period through to the Cold War. Plymouth has among the greatest concentration of 18th and 19th century forts and batteries in the country. The early defences were enlarged following the failed Spanish Armada of 1588 and then in 1690 the strategic importance of the area was elevated considerably with the establishment of a new Royal dockyard in the deep water of the Hamoaze, to the west of Plymouth. This underpinned all the subsequent programmes of fortification building over the subsequent 250 years.

Improvements to the defences around Plymouth were relatively modest during the Napoleonic Wars, ending in 1815, as well as during the three decades of peace that followed. Unease at French rearmament in the mid-1840s and new military threats such as steam-driven men-of-war, led to the construction of three new batteries at Plymouth (Staddon Point), Picklecombe and Eastern King. Existing batteries were also re-armed with new cannon and improvements made to the Dock Lines.

In 1858 recommendations were made for new fortifications including Tregantle (OA16), and Scraesdon Forts in Cornwall, and some work on these were started, but this programme was overtaken by the much larger recommendations of Lord Palmerston's Royal Commission of 1860. This led to an unprecedented programme of improvements to the defences around the dockyard including a new group of detached land forts to the north-east of

Plymouth. New coastal batteries were built further from the dockyard than previous defences and substantial remodelling of existing sites undertaken.

New threats from other continental powers led to a review of coastal defences in 1887, resulting in another major building programme which continued through the 1880s. New coastal batteries were constructed at Maker Heights and in c.1893 three batteries of high-angle RML guns were constructed at Hawkins, Rame Church (which has been destroyed, but may survive as below-ground archaeology) and Tregantle Down. These could launch fire plunging down on the decks of enemy ships. Hawkins survives today but the other two high angle batteries have been largely destroyed.

In the early 1900s new BL guns with slim tapered barrels were introduced rendering the previous generation obsolete. A forerunner was introduced at the 1890s Raleigh Battery and then slightly later guns were installed at other batteries including Watch House, Lord Howard's Drakes Island, Picklecombe and Maker.

Another advance in this period was the development of QF guns. The first QF guns were introduced in the later 1890s at low level batteries such as Breakwater Fort, Picklecombe, Bovisand, Drakes Island and Garden Battery (OA18). These were intended to counter raiders and fast moving torpedo boats within the Sound but within a few years the 6-inch QF guns were being replaced by 12-pdr QF guns. Batteries of these guns were installed at Staddon Point, Drake's Island, Eastern and Western King, Devil's Point, Garden Battery and Picklecombe.

During the First World War Hawkins and Rame Church batteries with re-armed with new High Angle guns in 1914.

15.2 Strategic Groups

In total there are thirty-seven fortifications within the Plymouth, these defences can be divided into five groups, which are discusses below.

Group 1: The Inner Defences

In this study the Inner Defences are considered to include the sites immediately facing onto The Sound as well as those in the dockyard and Stonehouse areas.

Whereas some of the other groups were not fortified until the 19th century this is the group with the longest history of fortification, some sites having been defended since the late medieval period. The sites in this group are: Mount Edgcumbe Garden Battery, Picklecombe Fort, Mount Wise Redoubt and Devil's Point Battery.

Group 2: Maker and Rame

The main set of defences in this group are those on Maker Heights, these include the batteries at Maker, Grenville, Hawkins and Raleigh. In the current study the group has been considered to also include a number of other more outlying positions in the wider area, which include: Cawsand Battery, Polhawn Battery (OA20), Penlee Point, Whitsand Bay Battery and Whitsand Bay Practice Battery.

Maker Heights was originally fortified in the later 18th century due to fears of attack from the continental powers during the American War of Independence, but only the 19th century elements are included in the current study.

Group 3: Staddon Heights

The high ground to the south-east of Plymouth (Staddon Heights) is a considerable distance from the dockyard, but by the 1860s the range of new types of guns was such that it was considered necessary to construct defences here to prevent the heights being taken by a potential enemy.

This is an integrated and well-preserved system of defences which includes Staddon Fort, Stamford Fort, Watch House Battery, Lord Howard Battery, Renney Point Battery, Brownhill Battery and Fort Bovisand.

Group 4: North East Defences

A large set of land defences were constructed to the north-east of Plymouth in the 1860s on the recommendation of the Royal Commission. The line comprises mutually defensive batteries and forts extending from Ernesettle above the Tamar in the west to Efford in the east, with a military road to the rear. The key position is Crownhill Fort but the group also includes Egg Buckland Keep, Ernesettle Fort, Forder Battery, Fort Efford, Knowles Battery, Laira Battery, Woodland Fort, Fort Austin, Agaton Fort and Bowden Battery .

Most of the positions within this group were strategically relevant for a short period only. They were slow to be armed, most of the sites were not provided with fully operational guns before 1885, and were quick to be disarmed with many having their guns removed around 1893. The basic structure of these defences remain largely intact although widespread development in this area compromises the overall layout and many of the glacis have been built upon.

Group 5: Western Defences (Anthony Position)

Two large forts, Scraesdon and Tregantle , were constructed within Cornwall in the 1860s, to form the Anthony Position, intended to command the

western approach to the city. This set of defences was originally proposed in 1858, shortly before the Royal Commission, and it was intended to comprise three forts but only two were ultimately constructed. The two forts which were built were linked by a military railway and they both remain in MoD ownership.

15.3 Significance

Overview

For many years Plymouth's defences were less well studied and less well represented in heritage designations than those at Portmouth, however, since the 1990s considerable advances have been made to address this.

The overall group of 19th and early 20th century defences around Plymouth is of exceptional heritage significance due to their scale, their level of survival, their integrated nature and the way they represent different periods of development of the nation's defence

In total there are thirty seven fortifications with the Plymouth group, of these 25 are Royal Commission forts. Within this group there are a high number of designated sites; 72.9 per cent of the Plymouth group are designated through scheduling or listing, or both, and 24.3 per cent of the Plymouth group are of exceptional significance.

The significance of the fortifications is discussed below, unlike most other sections within this report, this has been organised by phase of construction. This assimilation of information has facilitated a comparison of groups of sites, their period of construction and significance, and facilitate a comparative analysis nationally.

15.4 Phasing and Significance

Phase 1: Early Fortifications (pre-1850s)

Mount Wise Redoubt is the only fortification within the Plymouth group to fall within the first phase.

Undesignated and 'some' significance

Mount Wise Redoubt was constructed in the 1770s and forms part of the Devonport Conservation Area.

15.5 Phase 3: 186070s

Royal Commission

There are a total of 24 Royal Commission sites within the Plymouth group, which is 64.8 per cent of the total.

Designated

Of this group 23 of the 24 fortifications are protected through Scheduling or Listing (or both), with the exception of Forder Battery which is discussed below.

Exceptional significance

Within the Royal Commission group there are nine sites of exceptional significance, which accounts for 18.9 per cent of the total. These are: Scraesdon Fort and Tregantle Fort, which are large forts within the Western Group of Defences and Polhawn Battery, Crownhill Fort, Drakes Island, Plymouth Breakwater Fort, Fort Bovisand and Staddon Point Battery and Eastern Kings Redoubts.

Considerable significance

A total of 14 (56 per cent) of the Plymouth sites are of considerable significance. All of these are protected through designation.

The following sites are protected through Scheduling: Bowden Battery, Brownhill Battery, Crownhill Fort, Ernesettle Battery, Knowles Battery, Stamford Fort, Woodlands Fort and Western Kings Redoubt.

The following sites are protected through Listing (Grade II Listed or Grade II* Listed) - Mount Edgcumbe Garden Battery. Picklecombe Fort1, Polhawn Battery and Agaton Fort.

Undesignated and of some significance

Forder Battery is of 'some' significance only due to its poor evidential value, although the site has potential for buried archaeology.

1860s - not Royal Commission

Considerable Significance and Scheduled

Watch House Battery is not one of the Royal Commission fortifications, but is Scheduled and Listed. It has strong group value with those monuments constructed to defend Staddon Heights.

Phase 4: 1880/1890s

There are 7 sites which date from the fourth phase of construction, which is 18.9 per cent of the total Plymouth group.

Designated and of Considerable Significance

1 Picklecombe Fort was proposed before the Royal Commission, although its plan changed following the Royal Commission report

Of this group 28.5 per cent are designated through Scheduling or Listing (or both), these sites are all of considerable significance. These are: Whitsand Bay Battery, Grenville Battery, Hawkins Battery and Raleigh Battery.

Hawkins High Angle Battery is of group value with the other surviving examples, including Fort Cumberland High Angle Battery, StyneWood High Angle Battery and Verne Citadel High Angle Battery.

Considerable significance but undesignated –

Maker Battery and Whitesand Bay Practice Battery are not protected through scheduling or listing.

Undesignated and of some significance

Penlee Point Battery is of limited evidential value, although there is high potential for the survival of below-ground archaeology.

Phase 5: Turn of the Century to the First World War

This group of fortifications includes three sites which accounts for 8.1 per cent of the total Plymouth group.

Designated and of considerable significance

One battery at Renney Point was constructed in 1905-6, and is Listed at Grade II. 33.3 per cent of Phase 4 structures are therefore designated, whilst 66.6 per cent are undesignated.

Undesignated and of some significance

Devil's Point Battery has been substantially altered, today it is part of the Stonehouse Penninsula Conservation Area. Lord Howard's Battery was assessed in 2014 for designation but it was decided not to designate it.

15.6 Exemplars by Phase

A total of nine sites (24 per cent) in the Plymouth group are identified as being of exceptional significance. These are all considered to be exemplars within their phase of construction.

One of these (Eastern Kings Redoubt) is from Phase 1 (pre-1850) while the other eight are all from Phase 3 (Fort Scraesdon, Fort Tregantle, Polhawn Battery, Crownhill Fort, Egg Buckland, Plymouth Breakwater Fort, Bovisand/ Staddon Point Battery, Drakes Island).

15.7 Exemplars by Key Groups

Group 1 – Inner Defences

The inner defences include the sites closest to the Plymouth which have the longest history of fortification. These include sites where the 19th-century works were added to existing defences which in some cases had been in operation for several centuries.

Drakes Island is of exceptional significance and is a good example of a Royal Commission fortification within this aspect of this group. It is at a key location at the centre of the Sound and formed an important element of the city's defences from the mid-16th century until the end of the Second World War. Minor improvements to the site were undertaken in the early 19th century and then major works were undertaken in the 1860s as well as at the end of the century. Outline development proposals have been gradually drawn up in recent years for the site and they are supported in principle by Historic England but these have not yet gained planning approval.

Eastern King Redoubt, which is in Phase 1, is another site within the inner defences of exceptional significance. Similarly, to Drake's Island it is of interest due to its long period of fortification having been first established in 1779 and then further enhancements being undertaken in the 1840s, 1860s, 1890s and into the early 20th century. There is an added interest to the Eastern King Redoubt in that it remains in use as a saluting battery.

Group 2 – Maker and Rame

Polhawn Battery, which is a Royal Commission fortification, is the only site in the Maker and Rame group which is considered to be of exceptional significance. It is a well preserved, Grade II* listed building and it is a good example of a successful conversion from the first half of the 20th century.

This group is of particular interest in representing the phase of fortification from the 1880s and 1890s. Seven of the sites in this area are from this phase (the batteries at Penlee Point, Maker, Grenville, Hawkins, Raleigh, Whitesand Bay and the practice battery also at Whitesand Bay) (Image 13). These are all considered to be of considerable significance and they also represent the rapidly changing technology at this time as four of the sites had been disarmed by 1912

Image 14 Grenville Battery at Maker Heights (© Oxford Archaeology)

(Maker, Raleigh, Whitesand Bay and Whitesand Bay Practice Battery) and only one (Penlee Point) is believed to have remained genuinely operational during the Second World War. Penlee Point is an unusual site and in the 1890s it had the largest gun in the Plymouth defences although it does not have a strong relationship with the other sites in the Maker group.

Five of these sites (Hawkins, Maker, Penlee Point, Raleigh and Whitesand Bay Practice Battery) have no statutory designation although in the current study they are each considered to be of considerable significance.

Hawkins Battery is a valuable example of a high angle battery while Raleigh and Maker Batteries are good examples of sites that has been terraced into the slope to avoid being seen by enemy ships. Whitsand Bay is a good example of a site that has found some reuse within a holiday park.

Group 3: Staddon Heights

The group of structures at Staddon Heights represent a number of distinct phases of types of fortification. Staddon Fort and Stamford Fort are both good examples of 1860s polygonal land forts. Staddon Fort is particularly of note for its good condition and its very well preserved caponiers, while Stamford Fort is an example of adaptive reuse through a health club being located at the site.

Watch House Battery and Renney Point Battery are both good examples of very early 20th-century defences (although Watch House was an extensive reconstruction of an 1860s site), and each remained in use until after the Second World War. They are good examples of the development of weaponry and fortification in the immediate pre-Dreadnought era.

Fort Bovisand (or Staddon Point Battery) is a dramatic curved structure which wraps around the end of the peninsula and it is the only site in this group which is considered to be of exceptional significance.

Group 4: North-east Defences

The line of land defences entirely date from the major phase of re-fortification which followed the Royal Commission report of 1860. The two best surviving examples in this group are Crownhill Fort and Egg Buckland Keep.

Crownhill Fort is a good example of adaptive reuse, having been successfully converted/restored by the Landmark Trust. This site has a number of significant features including two Montcrief pits, three storey caponiers and a rare counter-mining gallery opposite the double caponier on the north side. Egg Buckland is a good example of a well preserved and relatively well maintained site. It is also of note as it is the land building in England to be officially called a keep. Ernesettle Fort also survives relatively well with deep rock-cut ditches.

A common theme of several of the defences in this group is that they were slow to be armed, sometimes only having their guns finally mounted in the 1880s or early 1890s and they were quick to be disarmed, often having their guns removed before 1900. Examples of this include Agaton Fort, Bowden Battery, Forder Battery, Fort Efford, Knowle Battery, Laira Battery, Ernesettle Fort and Woodland Fort.

Some of these sites retained some military use into the 20th century although not in their originally planned defensive function.

Other than Former Battery each of these sites has been partly altered although some elements retain well. They are each considered to be of Considerable Significance other than Forder Battery which has a lower level of significance (Some Significance) due to it being more substantially destroyed.

Group 5: Western Defences (Anthony Position)

This group comprises just two sites, Tregantle and Scraesdon Forts, but both of these are of exceptional significance and both are considered to be remarkable exemplars of well preserved Palmerston Forts from the 1860s. They both remain with the military and Tregantle is an unusual example of a fort from this period which incorporated a keep. Scraesden Fort is within the Phase 2 (1850s) group as it was commenced at this time, although it was largely swept up with the 1860s phase of construction following the Royal Commission's report.

15.8 Condition and Threats

HAR Register (archaeology and buildings)

Within Plymouth there are ten sites on the HAR Register, which is 27.7 per cent of the Plymouth group. The levels of condition as given in the HAR Register and recorded on the datasheets, are detailed below.

Satisfactory Condition or Level C

The following fortifications are recorded as being of satisfactory condition or at level 'C' condition: Scraesdon Fort (improving trend), Egg Buckland (unknown trend), Fort Austin, (stable trend) Laira Battery (improving trend), Ford Efford (trend declining), Fort Bovisand and Staddon Point Battery (OA41) (stable trend), Tregantle Fort (trend unknown), Drakes Island (declining condition) and Agaton Fort (trend unknown).

Unsatisfactory Condition

Five fortifications are recorded as being in unsatisfactory condition, of these Watch House Battery and Efford Fort are in very bad condition and at immediate risk, classified as priority 'A'.

Woodland Fort and Knowle Battery are both in unsatisfactory condition with improving trends, whilst Stamford Fort and Laira Emplacement have a declining trend and major localised problems.

Brownhill Battery (OA28), which is a Scheduled Monument, is of poor condition, the above-ground remains are in urgent need of consolidation and repairs. The fort is overgrown and the centre has been used as a farming waste site. Consideration needs to be given as to whether this fort should be included on the HAR register.

Threats

A large proportion of the sites are under threat; common threats are deterioration/ in need of management, or suffering from decay of fabric and at threat from incremental change from re-use and development threat. Some forts are also threatened by coastal erosion.

Penlee Point Battery (OA11), which dates from the 1880s/90s phase of fortifications is in poor condition, little now survives of the battery, although it has potential for below ground remains.

Bowden Battery (OA28) is in need of management to ensure its future preservation. It's use as a garden centre has the potential to threaten the Scheduled Monument through incremental changes. It is recommended that any changes to the garden centre should appreciate both the significance of the fort and the open nature of the battery. The setting of Bowden Battery is also threatened from a major development on the north edge of Plymouth.

At Drakes Island Fort there has been several development proposals and planning applications for a hotel development, although this is supported in principle of Historic England, this still constitutes a threat.

Fort Bovisand and Staddon Point Battery (OA41) is due to be developed into housing and a visitor centre, which will entail rebuilding towers of Fort Bovisand and Staddon Point Battery to create 30 flats. The fortifications are currently on the HAR register.

15.9 Recommendations and Priorities

Watch House Battery and Fort Efford are at priority category 'A' on the HAR Register and should be prioritised. Laira Emplacement is in unsatisfactory condition with a declining trend, and requires management.

Fort Efford and Drakes Island are also in declining condition, and should be given priority within the 'Satisfactory Condition' HAR sites.

Equally, Scraesdon Fort, Tregantle Fort, Drakes Island and Egg Buckland, Fort Bovisand and Staddon Point Battery are on the HAR register and of exceptional significance. Their high level of significance means that they should be prioritised for management.

Hawkins Battery (OA17), constructed in 1887, is of considerable significance and should be reviewed as a priority for future protection. A Conservation Statement or Plan is recommended to ensure its significance is understood. It is one of three high-angle batteries within the Plymouth group, the others were constructed at Rame Church and Tregantle Down although this have been demolished. Other surviving examples of this type of battery are: Steynewood High Angle Battery, Fort Cumberland High Angle Battery and Verne Citadel High Angle Battery.

Maker Battery (OA12) is within the curtilage of the Grade II Listed Grenville Battery, but is otherwise unprotected. It is recommended that it is reviewed for protection.

Raleigh Battery (OA21) was constructed following the review of coastal defences in 1887 and should be considered for protection.

15.10 Quality Control Grid

Comments provided by HE, Dr. John P. Salvatore (Plymouth County Council) relating to individual forts and Conservation Areas.

16 STRATEGIC AREA SUMMARY: AREA 5, PORTLAND

OA No.	Fort Name	Significance	Designated	Phase	Condition	HAR Level	Threat
48	East Weare Batteries	B	SM.LB (E only)	3 (RC)	2 & 3	A2	1, 4, 7, 5
49	Portland Breakwater Fort	B	LB	3 (RC)	2	x	1, 3, 4
50	Inner Pier Fort, Portland Breakwater	B	LB	2	1	x	4
51	The Nothe Fort	A	SM.LB.	3 (RC)	1	x	x
52	The Verne Citadel	A	SM. LB.	2	2	D2	3, 8
53	Upton Battery	A	SM.LB.	5	3	A2	3, 4
54	Blacknor Battery	C	x	5	2	x	x
55	Verne High Angle Battery	A	SM.LB.	4	2	D2	2, 3 & 5

Table 20 Fortifications in Portland (Area 5)
Values given in the table are detailed in Section 5.

16.1 Strategic Importance

As a peninsula with naturally sheltered areas ideal for creating harbours, Portland has been considered a strategic point of defence since at least the 1540s when Portland Castle was constructed under Henry VIII to protect against French and Spanish invasion, the largest maritime defence programme prior to the Royal Commission works.

The defences of Portland fall into two distinct groups: those on high ground and those in low-lying positions for the immediate defence of the harbour. The defences which augmented Portland Castle were begun before the Royal Commission report. In 1845, the Royal Navy set up a base at Portland with the foundation stone being laid for the breakwaters in 1849 by Prince Albert. The main fortifications, Inner Pier Fort and Verne Citadel, were begun in in the late 1850s and were supplemented throughout the remainder of the century and into the opening years of the 20th century.

During the First World War, Portland was still a geographically and tactically important area and so several of the existing defences were reused, either being re-armed, or used for other functions such as storage. The Second World War brought about a similar pattern of re-use, although by this time, defences also concentrated on airborne attacks. The majority of the defences were abandoned before 1956, although Nothe Fort was re-used during the Cold War.

16.2 Phasing

In total there are eight sites within the Portland group, these date from the 1850s through to 1903. There are three forts that were constructed as a result of the Royal Commission report, and three sites constructed either side of the turn of the 20th century.

Phase 2: 1850s

Inner Pier Fort was built between 1859 and 1862, to order to protect the harbour.

The Verne Citadel began construction in 1857, and was completed around 1869, although with further works continuing until 1881.

Phase 3: 1860s

East Weare Batteries were constructed between 1862 and 1869, as a result of the Royal Commission, to guard the new Portland harbour and Royal Navy institutions on the island. Portland Breakwater Fort (OA49), and Nothe Fort (OA51) also resulted from the Royal Commission's work.

Phase 4: 1880s and 1890s

Verne High Angle Battery was constructed between 1892 and 1898.

Phase 4: Turn of the Century to the First World War

The battery at Upton Fort was constructed between 1901 and 1903, and Blacknor Battery was built between 1900 and 1902.

16.3 Significance

Designations

There are a total of eight sites within the Portland group of fortifications, all of these with the exception of Blacknor Battery are designated (87.5 per cent), although only battery 'E' is designated within the East Weare group of batteries (however the remainder are being considered for designation). Of the seven designations, five sites are protected through scheduling and listing, and 2 through Listing only.

Exceptional

Portland has a high concentration of sites which are considered to be of exceptional significance, totalling four of the eight sets of fortifications.

Phase 2: 1850s

The Verne Citadel is an exemplar of its period within the Portland group, the complex survives well and the structures have significant group value with East Weare batteries and Verne High Angle Battery

Phase 3: 1960/70s

Nothe Fort is one of three Royal Commission fortifications in the Portland group, but is the only example considered to be of exceptional significance and is therefore an exemplar of its type. It has been restored and is a museum

and community resource, and also has a long and significant period of use through to the Cold War when it was used as a nuclear shelter (Image 14).

Image 15 Nothe Fort, 1920 (©Britain From Above website, image no. – EPW000310)

Phase 4: 1880/90s

Verne High Angle Battery which is one of the best surviving Victorian batteries in the country. Only six high angle batteries were constructed in England, and this is one of only four survivors. It therefore represents a very rare site type nationally, and an exemplar of its type. The four surviving examples are: Steynewood High Angle Battery, Fort Cumberland High Angle Battery and Hawkins High Angle Battery.

Phase 5: Turn of the Century to the First World War

Upton Battery is of exceptional significance an exemplar of its period within the Portland group. This coastal artillery battery has been identified as one of only ten examples of its type which have survived largely intact.

Considerable

East Weare Batteries are of considerable group value; all five survive and they are closely linked both geographically and historically to the Verne Citadel, including Verne High Angle Battery. The evidential value of the batteries has however been impacted by decay of fabric.

Portland Breakwater Fort and Inner Pier Fort both survive well and are a visual reminders of the strategic importance of Portland. They are also of group value with the associated sea forts.

Some

Blacknor Battery has group value with the associated defences, however, the conversion of some elements has affected its significance.

16.4 Condition and Threats

Nothe Fort and Inner Pier Fort at Portland Breakwater are the only sites of the eight defences within the Portland group which are described as being in good condition. The remaining fortifications are allocated a condition level of fair and poor. Common threats to the forts are deterioration/ in need of management, decay of fabric and two sites are under threat from vandalism.

16.5 HAR Register

Fifty percent of sites within the Portland group are on the HAR Register. The Verne Citadel includes the High Angle Battery, which are identified as two sites within this project, but given as one site of the Scheduled Monument description and HAR register.

Generally Unsatisfactory

East Weare Batteries and Upton Battery are both described on the HAR Register as: 'Generally unsatisfactory with major localised problems' and with a declining trend.

Satisfactory

The Verne Citadel, which includes the High Angle Battery, is described as having significant localised problems, but with an improving condition. The Verne Citadel complex is of exceptional significance and should be prioritised for improvement works.

Poor condition, but not on the HAR Register

The East Weare Batteries are in need of management, E battery is on the HAR Register, however, A and B batteries were used as target practice by the Navy and partially destroyed, C is damaged and eroded and D is of unknown condition.

Key Recommendations and Priorities

East Weare Batteries and Upton Battery are both described on the HAR Register as: 'Generally unsatisfactory with major localised problems' and with a declining trend. These sites should be considered as a priority for improvement, particularly Upton Battery which is of exceptional significance.

Verne Citadel is of exceptional significance, and its continued use requires monitoring to ensure the preservation of the buildings and area. It has been approved for conversion to an Immigration Centre which may impact the historic fabric of the fortifications and requires monitoring. It is currently on the HAR Register, considered to be of a satisfactory standard.

The Verne High Angle Battery has been subject to vandalism and decay, it is recommended that control measures are implemented to prevent scrub growth and to re-secure magazine tunnels to prevent vandalism.

16.6 Quality Control Grid

He comments received (7 September 2016).

17 STRATEGIC AREA SUMMARY: AREA 6, BRISTOL CHANNEL

OA no.	Fort Name	Significance	Designated	Phase	Condition	HAR Level	Threat
56	Brean Down Fort	B	SM	3 (RC)	2	x	5, 8
57	Steep Holm	B	SM.LB.	3 (RC)	1, 2 & 3	x	2, 4

Table 21 Fortifications in Bristol Channel (Area 6)
Values given in the table are detailed in Section 5.

17.1 Strategic Importance

Fortifications built on the Bristol Channel were designed to protect this major inlet into Great Britain, which extends from the lower estuary of the River Severn to the North Atlantic Ocean. In the 1860s a line of fortifications were constructed including Brean Down, Flat Holm and Lavernock Point. Together these fortifications provided a defensive line crossing the Bristol Channel protecting the principle ports of Bristol, Cardiff and Newport.

Included in this study are Brean Down and Steep Holm, whilst Flat Holm and Lavernock Point are excluded as they are part of Wales. The vast array of fortifications carried out in the 1860s were not solely a result of the recommendations of the Royal Commission. Lesser ports and harbours without obvious naval significance were also protected.

17.2 Phasing

Phase 3: 1860/70s

Both fortifications within the Bristol group, Brean Down Fort (OA56) and Steep Holm Fort (OA57), were built as a result of the recommendations of the Royal Commission.

17.3 Significance

Designations

Both fortifications are Scheduled Monuments, and elements of Steep Holm are Grade II Listed.

Considerable

Brean Down Fort and Steep Holm Fort are both of considerable significance. Brean Down Fort is the only example of a substantial coastal defence work in new Somerset, it is also set within a significant landscape, which is both a SSSI and a Special Area of Conservation. It is therefore considered to the better example of the two, it is also owned by the National Trust with a high communal value .

17.4 Condition and Threats

Brean Down Fort survives in fair condition, and although it is derelict, it is improving as part of the National Trust site. Both sites can be visited and there is a potential threat of visitor wear and tear. There has, in the past, been reported incidents of graffiti. Both fortifications have Second World War additional defences, the continued use of the defences adds to their historical value.

The fortifications at Steep Holm includes six gun batteries, which generally survive in reasonable condition, although there are issues with deterioration of some batteries. They are manged at a low level by the wardens on the island. The vegetation requires management and control.

17.5 Recommendations

At Steep Holm, the protected monuments are considered to be in poor condition, and may require management. The scheduled description requires updating and the protection measures on the island will benefit from review.

17.6 Quality Control Grid

HE comments received from Nick Hanks and Mel Barge (Ms), and Chris Webster at Somerset HER provided information relating to threats.

18 REGIONAL SUMMARY: REGION 2, THE SOUTH-EAST

The information below summarises the results of the south-east region, by looking at the statistical results generated through the datasheets in Volume 2. It discusses the south-east region according to the phase, significance and condition of fortifications. The results are discussed in more detail within the area summaries which follow (Section 18-25), which include a section giving 'Priorities and Recommendations' in relation to individual fortifications. References are made below to the national perspective, although this is discussed in more detail in Section 10.

Regional Distribution

There is a total of 86 fortifications within the south-east region, which is the largest by a significant proportion; the south-west has the second largest count of fifty-seven fortifications. The region is divided into eight strategic groups. The largest group with a total of forty-two fortifications is the Portsmouth group, which account for the largest proportion of the national total at 25.15 per cent. This is closely followed by Plymouth, which has 22.16 per cent of the total national number of fortifications. The second largest groups are the Dover fortifications, closely followed by the London Mobilisation Centres, both of which are within the south-east group of fortifications.

There are five fortifications that fall within the south-east strategic groups, but geographically are part of the HE East of England regional group. These forts have therefore been duplicated in both sections, but have been given only one OA reference number. These fortifications are discussed within the corresponding strategic groups with the south-east section of this report to follow for ease of understanding and analysis.

Area 9: Mobilisation Centres
North Weald Redoubt (OA109)

Area 10: Thames Group
Coalhouse Fort (OA115)
East Tilbury Battery (OA116)
Tilbury Fort (OA119)

Area 12: Coastal Redoubt
Harwich Redoubt (OA135)

Phasing

Area No.	Area Name	No. of Sites	Phase					
			1	2	3	4	5	6
7	**Portsmouth**	42	5	10	23	2	2	0
8	**Sussex**	3	0	2	1	0	0	0
***9**	**Mobilisation Centres**	11	0	0	0	7	4	0
***10**	**Thames**	4	1	0	3	0	0	0
11	**Thames / Sheerness**	3	1	0	1	1	0	0
12	**Chatham and Medway**	8	0	1	5	2	0	0
***13**	**Coastal Redoubts**	2	2	0	0	0	0	0
14	**Dover**	13	1	0	6	0	5	1
	Total	86	10	13	39	12	11	1

Table 22 The south-east region by phase

* These groups contain fortifications which are within strategic groups which are largely within the south-east region, but where a small number fall geographically within the HE east of England region

The assimilation of data relating to the phasing of fortifications, shows that the largest proportion of sites within the south-east region date from the third phase of construction (1860/70s), which has a total of forty sites. Of these, twenty-three are in the Portsmouth group, and roughly half the sites within Dover and Chatham date from this phase of construction. The remaining phases of construction have roughly the same total number of fortifications within that phase (between twelve and fourteen), with the exception of the First World War phase when only one site was constructed.

Significance

The results show that 84.88 per cent of fortifications within the south-east region are designated. This is the highest regional proportion, followed by the south-west where 75.44 per cent of sites are designated. The greatest proportion of the fortifications in the south-east are of 'considerable' significance (68.60 per cent), with the second largest (18.60 per cent) of 'exceptional' significance. These results are shown in a pie-chart below.

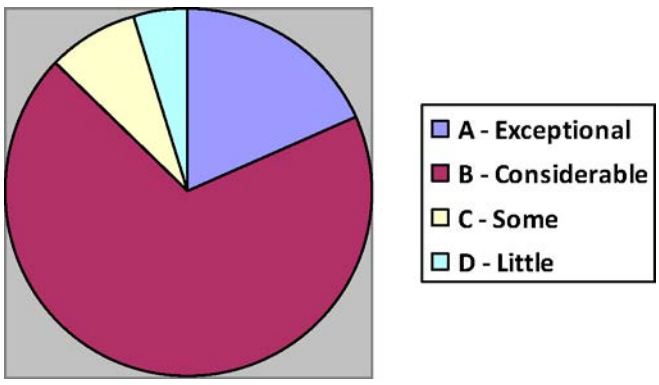

Chart 4 Significance levels in the south-east region, shown as a percentage of the total number in the region.

This study identified a number of exemplars within each area, these are those fortifications which are considered to be the best examples within a phase or strategic group. In some areas exemplars were not identified, because their type, phase or the number of sites meant that comparing fortifications in this way was not possible. The results are tabulated below according to phase.

Area No.	Area Name	Phase				
		1	2	3	4	5
7	Portsmouth	Fort Cumberland	Fort Elson		Stynewood High Angle Battery	
		Fort Blockhouse	Fort Bembridge	Horse Sand Fort (RC)	New Needles Battery	
		Fort Monckton	Hilsea Lines	Fort Nelson (RC)	Stokes Bay Lines	
			Fort Brockhurst	Yaverland Fort and Battery		
				Old Needles Battery		
				Stokes Bay Lines, no.1 battery		
				Fort Gilkicker		
8	Sussex		Littlehampton Shoreham Fort	Newhaven Fort		
9	Mobilisation Centres				North Weald Redoubt	Fort Halstead
10	Thames	Tilbury Fort		Shornmead Fort		
		New Tavern Fort		Coalhouse Fort (RC)		
				Cliffe Fort	East Tilbury Battery	
11	Sheerness	Sheerness Defences		Garrison Point Fort (Sheerness Defences)	Grain Wing Battery	
12	Chatham and Medway	Grain Tower		Hoo Fort (RC)	Fort Horsted	
				Darnet Fort (RC)		
13	Coastal Redoubts	Harwich Redoubt				
14	Dover	Western Heights		Admirality Pier Turret		
				Shotyard Battery		

Table 23 Exemplars within the south-east region

Condition and Threats

Within the south-east region 22.09 per cent of sites are on the HAR Register, which is lower than the south-west region (31.58 per cent), however a greater

numbers of fortifications in the south-east region are identified as being in 'poor' and 'bad' condition.

The division of condition of fortifications between the levels (good – bad) is roughly equally divided by the four. This most common condition recorded is 'poor' (33.72 per cent), with 13.95 per cent of fortifications in 'bad' condition. These results show that there is a large proportion of fortifications in a deteriorating condition in the south-east region, especially when compared to the south-west region (where 24.56 per cent are in 'poor' condition, and 5.26 per cent in 'bad' condition).

Condition Level	Percentage in South-East Region
1 (good)	24.42
2 (fair)	31.40
3 (poor)	33.72
4 (bad)	13.95

Table 24 Levels of significance in the south-east region, shown as percentage of the total number in the region.

The most common threat in Portsmouth is flooding/ coastal erosion, which is roughly twice as common in the Portsmouth area than other types of threats. The other types of threat (with the exception of vandalism) are roughly equally recorded, with uncontrolled plant growth and decay of fabric featuring more heavily. Development (both directly and indirect) is identified as a threat in eight (direct) and nine (indirect) sites, showing this is much more of an issue than in Plymouth. Visitor wear and tear is also identified as a common threat.

In Dover, uncontrolled plant growth and flooding/ coastal erosion are key threats, with decay of fabric also common. Within the London Mobilisation Centres, decay of fabric and uncontrolled plant growth are the most common threats. In the Thames area, deterioration/ in need of management is a common threat, and in Chatham decay of fabric and uncontrolled plant growth are the most featured threat.

Key Recommendations and Priorities

The following highlights key recommendations from the report, further recommendations and priorities are provided in the area summaries.

- Portsmouth – Fort Elson, Fort Fareham, Fort Southwick and the Hilsea Lines are at priority category 'A' on the HAR Register, and should be prioritised for removal from the register. Fort Cumberland, Horse Sand Fort, Warden Point Battery, Yaverland Battery, Fort Southwick and Fort Gilkicker are also on the HAR Register. Fort Grange, Fort Purbrook and Fort Rowner are in 'poor' condition but not on the HAR Register. These forts should be prioritised for improving their condition, and consideration needs to be given to whether the latter forts should be included on the HAR Register. Consideration also needs to be given

to improving the setting of the Hilsea Lines, which are in a declining condition and impacted by development, so that they have lost their legibility within the landscape.

- A number of fortifications in Portsmouth are under development threat (direct and indirect), these are – Browndown Battery, the Stokes Bay Lines, Fort Blockhouse, Fort Cumberland, Horse Sand Forts, Point Battery, Fort Gilkicker, Freshwater Redoubt, Puckpool Battery, Warden Point Battery, Point Battery and the Eastney forts. These development proposals need to be given due consideration against the long-term historic preservation of the fortifications, and their settings.
- Sussex – Newhaven Fort and Littlehampton forts are both on the HAR Register and of 'exceptional' significance. Newhaven Fort is also under development threat, and Littlehampton Fort is within a SSSI. Their preservation and removal from the HAR Register needs to be prioritised, and must be balanced with the ecological restraints and the long-term preservation of the fortifications.
- Mobilisation Centres – a key priority is North Weald mobilisation centre, which is of 'exceptional' significance and on the HAR Register and in a poor and declining condition. Fort Halstead will soon be redeveloped and will include provision for historic interpretation, any direct or indirect impacts to the fort should be archaeologically mitigated against.
- Sheerness – the Sheerness Defences are of 'exceptional' significance and on the HAR Register, a survey of the fortifications is recommended to more accurately determine the condition of the different elements of the defences to prioritise remedial works. Garrison Point Fort has a rare surviving Brennan Torpedo Station, which should be prioritised for preservation and archaeological recording.
- Chatham and Medway – Hoo Fort, Darnet Fort, Cliffe Fort and Grain Tower are on the HAR Register, in particular Darnet Fort is at priority category 'A' and should be prioritised as ongoing damage is still taking place. Fort Borstal is also under a number of threats, and Grange and Woodlands Redoubts are undesignated and in a deteriorating state. Cliffe Fort has a rare surviving Brennan Torpedo Station, which along with the example at Garrison Point Fort (discussed above), is one of two identified in this study. Further investigation and archaeological recording is recommended to determine the best surviving example, and ensure a record is made for posterity (Cliffe has previously been recorded – EH 2011).
- Dover – the Western Heights is a key priority because it is of 'exceptional' significance and on the HAR Register, and is under some threat from a major development. This large scale development does however provide opportunities to address issues at the Heights, and provide opportunity for change. Fort Burgoyne is also on the HAR Register and threatened by development.

19 STRATEGIC AREA SUMMARY: AREA 7, PORTSMOUTH AND THE ISLE OF WIGHT

						Condition			
OA no.	**Fort name**	**Sig.**	**Designated**	**Group**	**Phase**	**BAR / level**	**Condition**	**Trend**	**Threats**
58	Browndown Battery	B	LB (II) (1232657)	1	2	x	2	Stable	1, 6
59	Fort Elson	A	SM (234456)	2a	2	A1	3	Declining	2, 4, 3
60	Fort Monckton	B	SM (1001844)	1	1	x	2	Stable	1
61	Stokes Bay Lines	B (1,2 & 5) and D (3 & 4).	SM batteries 1 & 5. LB (II) - battery 2 (1405953, 1001829 &)	2	3 (RC)	x	2, 3, 4	Stable except No.1 battery - declining.	4, 6, 7
62	Eastney Forts (East and West)	B	SM. LB (II) (1001830, 1387041, 1387042)	4a	3	x	East Fort - 2. West Fort - 1.	East Fort - Improving. West Fort - Stable.	1, 3, 4
63	Fort Blockhouse	A	SM (1001873)	1	1	x	1	Stable	1, 6
64	Fort Brockhurst	A	SM (1013401)	2a	2	x	1	Stable	2, 4
65	Fort Cumberland	A	SM. LB (II) (1015700, 1104273)	4a	1	C1	3	Declining	2, 3, 4, y
66	Fort Fareham	B	SM. LB (II) (1001856, 1094240)	2a	3 (RC)	A1	3	Declining	2, 3, 4, 5, 7
67	Fort Grange	B	SM. LB (II) (1001807, 1233816)	2a	2 (RC)	x	3	Declining	2, 3, 4
68	Fort Nelson	B	SM. LB (I) (1001860, 1350616)	2b	3 (RC)	x	1	Stable	x
69	Fort Purbrook	B	SM. LB (II*) (1001842, 1092134)	2b	3 (RC)	x	3	Stable	8
70	Fort Rowner	B	LB (II) (1233871)	2a	2 (RC)	x	3	Declining	2, 4
71	Fort Southwick	B	SM. LB (I) (1003802, 1001808, 1167213, 1104368))	2b	3 (RC)	D1	2	Declining	7, 8
72	Fort Wallington	B	LB (II) (1094233)	2b	3(RC)	x	4	Stable	7
73	Fort Widley	B	SM. LB (II*) 1001862 & 1387128	2b	3 (RC)	x	4	Stable	2, 7
74	Hilsea Lines	B	SM (1001861)	4a	2	A1	3	Declining	2, 3, 4, 7
75	Horse Sand Fort	B	SM (1018558)	1a	3 (RC)	C1	3	Improving	1, 6

OA no.	Fort name	Sig.	Designated	Group	Phase	Condition			Threats
						BAR / level	Condition	Trend	
76	Hurst Castle , Wing Batteries	B	SM (1015699)	3	3(RC)	x	1	Stable	1, 8
77	Spitbank Fort	B	SM (1018587)	1a	3 (RC)	x	1	Stable	1, 8
78	Point Battery	B	SM (1001870)	4a	1	x	3	Unknown	1, 6
79	Southsea Castle (including east and west batteries)	B	SM (1001869)	4a	1	x	2	Unknown	1
80	Fort Gilkicker	B	SM. LB (II*) 1001789 & 1276716	4	3 (RC)	D1	3	Declining.	3, 4
81	Bembridge Fort	B	SM (1012717)	3	2 (RC)	x	2	Improving	8
82	Cliff End Battery	C	x	3	3 (RC)	x	3	Declining	1, 2, 3, 4
83	Fort Albert (Cliff End Fort)	B	LB (II*) (1291552)	3	2	x	2	Sable	4
84	Culver Down Battery	C	x	3	5	x	2	Stable	1
85	Fort Victoria	B	LB (II) 1209376	3	2	x	2	Stable	1
86	Freshwater Redoubt	B	LB (II) (1292676)	3	2	x	1	Improving	1, 6
87	Golden Hill Fort	B	SM. LB (I) (1013289, 1291516)	3	3 (RC)	x	1	Stable	8
88	Hatherwood Battery	D	x	3	3 (RC)	x	4	Declining	1
89	New Needles Battery	A	SM. LB (II) 1422839 & 1209415	3	4	x	1	Stable	1, 8
90	No Mans Land Fort	B	SM. LB (II) (1018589 & 1234103)	1a	3 (RC)	x	1	Stable	x
91	Old Needles Battery	B	SM. LB (II) 1009392& 1220402	3	3 (RC)	x	1	Stable	1
92	Puckpool Mortar Battery	B	1012721	1	3 (RC)	x	1	Sable	1, 7
93	Sandown Barrack Battery	B	1019195	2c	3 (RC)	x	1	Stable/ potential to improve	1
94	Sandown Fort	D	x	2c	3 (RC)	x	4	Stable	1, 7, 8

OA no.	Fort name	Sig.	Designated	Group	Phase	Condition			Threats
						BAR / level	Condition	Trend	
95	St Helen's Fort	B	SM.LB (II) (1017370, 1034399)	1a	3 (RC)	x	2	Unknown	1
96	Steynewood High Angle Battery	A	SM (1427301)	2c	4	x	1	Stable	x
97	Warden Point Battery	C	x	3	3 (RC)	x	4	Declining	1, 2, 3, 6, 7
98	Yaverland Fort and Battery	B	SM (1021443)	2c	3 (RC)	C1	3	Declining	1, 2, 4 ,6
99	Nodes Point	C	x	1	5	x	3	Stable	8

Table 25 Fortifications within Portsmouth (Area 7)
Values given in the table are detailed in Section 5, and the groups are discussed below.

19.1 Strategic Importance

Portsmouth and the Isle of Wight have military installations which span a broad history beginning with the later Roman fort of Porchester Castle, and represent all major phases of coast fortification in England. The strategic position of Portsmouth, vital for the defence of the Channel coast and supporting a major naval dockyard, has led to the development of extensive and complex systems of fortification. Portsmouth is one of four locations in England where there has been continuity of fortification over at least five centuries. Of these, Portsmouth has the most widespread defensive network and shares, with Plymouth, the greatest concentration of 18th and 19th century forts and batteries.

The landscape and topography of the area is complex and varied, with a coastal defence system extending from the western tip of the Isle of Wight eastwards to Fort Cumberland. A distance of 25 miles across the Needles Passage, the Solent, Southampton Water, Spithead and the natural harbours of Portsmouth and Langstone. Portsmouth has a swathe of 19th Century forts running from Fort Gomer in the south-west to Farlington Redoubt in the east (Dobinson 2000, HE website)

Portsmouth's defences began around the harbour, the large expanse of shallow, sheltered water spreading out behind the coastline and below Portsdown Hill. From here a defensive network which eventually included both land and sea forts, batteries, bastions and defensive lines spread to include the Solent from the Needles Passage to Spithead and, on land, Portsdown Hill. Within this network, are older fortifications which continued in use during the 19th century and to the end of the First World War, including Fort Cumberland, the last self-contained, fully bastioned fortress to be built in England.

The system of fortifications was extensive and based on groups, which gave additional protection to earlier defences of the town and consists of several sections. The Gomer-Elson line, which defends the western landward approaches to Gosport and above Portsmouth the Portsdown Hill forts were hinged by Fort Fareham. The Hilsea Lines cut off the promontory between Portsmouth Harbour and Langstone Harbour. The seaward defences consisted of a number of batteries, some older works like Fort Monckton and Cumberland and some new replacements like Fort Gilkicker. More protection came from the forts and batteries cutting off the Needles passages to the west of the Isle of Wight, and the sea forts and a number of works on the Sandown Bay.

19.2 Strategic Groups

The Portsmouth fortifications are divided into four key groups, which in turn are divided into sub-groups.

Group 1: Spitbank Defences

The Spitbank fortifications include a total of nine defences, which closed the eastern mouth of the Solent. These are four sea forts (Group 1a) within this group: St Helen's Fort, Spitbank Fort, Horse Sand Fort and No Man's Land Fort. These originated with the Royal Commission report of 1860. The largest of the sea forts were Horse Sands and No Man's Land, which were complete in their primary form by 1880. Also part of the Royal Commission programme of works and within the Spitbank defences group is Puckpool Battery.

Fort Monckton and Fort Blockhouse are also included within the wider Spitbank defences group. Fort Blockhouse is one of the earliest defences of the harbour, and Fort Monckton was constructed in the 18th Century. Browndown Battery was first constructed in the 1850s, but was significantly redeveloped in the 1880s.

Node's Point Battery was constructed between 1901 and 1904, although the idea for the battery was contained within the Royal Commission report.

Group 2: Isle of Wight Coast defences

This group includes the Gosport Advance Line (Group 2a), the Portsdown Forts (Group 2b) and the Sandown Bay defences (Group 2c).

The five forts which make up the Gosport Advance Line (Group 2a), with a supporting battery, were built between 1853 and 1863 on the western side of Gosport to protect Portsmouth harbour from an invasion force attacking from the land. They have a low profile and are disguised by earth and grass banks. The line includes Fort Elson and Fort Gomer (now demolished) which were built before the Royal Commission, as well as the newly constructed Fort Grange, Fort Rowner and Fort Brockhurst (Image 15).

Image 16 Fort Brockhurst (© Oxford Archaeology)

These three main polygonal shaped forts, all had circular keeps and eight-three guns, whereas Fort Elson and Fort Gomer at the north and south of the line were smaller with only 30 guns. The forts were all protected by moats, although Fort Grange's moat has been filled in. Also associated with the Gosport Advance Line is Fort Fareham which was built following a decision to build an outer line of three more forts two miles in advance of the Gosport Advanced Line. Of these three projected forts only Fort Fareham was built due to the need to cut costs.

Also included within the Isle of Wight Coast Defences are the Stokes Bay Lines (OA61) which were first proposed in 1857 by Major Jervois as a complex system of moats (ditches), ramparts and batteries to close off the gap between the new fort at Fort Gomer, and the earlier fort at Fort Gilkicker, and Fort Monckton.

The Portsdown Forts (Group 2b) includes five forts, with two supporting batteries. These were built between 1861 and 1874 on the top of Portsdown Hill to protect the harbour from an invasion force attacking from the north or east by land. They have a low profile and are disguised by earth and grass banks. A six sided design was used for Fort Wallington, Fort Nelson, and the remaining forts were larger seven sided forts, these are: - Fort Purbrook, Fort Southwick, Fort Widley. Fort Purbrook had two additional defences to protect its eastern side, Farlington Redoubt (demolished in 1970) and Crookhorn Retreat (destroyed by 1876).

Group 3c are the defences of Sandown Bay, which include Sandown Fort, Sandown Barrack Battery, Steynewood High Angle Battery (OA 96), Yaverland Fort and Battery and Bembridge Fort. The south coast of the Isle of Wight consists almost entirely of steep chalk, clay and sandstone cliffs, with little beach below for an invading force to land on. However, the most

vulnerable part of the Island lies on the south-east coast at Sandown Bay, which is a five-mile firm, sandy beach between the cliffs.

Sandown (Granite) Fort was built following the Royal Commission to be the strongest of the Victorian coastal forts on the Isle of Wight, and could withstand a frontal attack by an ironclad fleet. The other coastal fortifications, including most batteries, had either few or no defensive features, Bembridge Fort, for example, was built to withstand only a lightly armed invading force, not a prolonged siege. Sandown Barrack Battery, Bembridge Fort, Yaverland Fort and Battery are also part of the Royal Commission phase of works. Steynewood High Angle Battery, which is a rare and important example of high angle battery, was built in the 1894.

Group 3: Isle of Wight, Needles Passage Defences

The waters of the Needles passage are treacherous and well defended by nature, both by the Needles rocks and the hidden danger of the shingles. It includes a three-mile-long shoal of pebbles just beneath the waves that periodically shift position and shape. The western entrance to the Solent, known as 'The Bridge', is only 1,500 yards wide. Historically it has been heavily defended, by Hurst Castle form the 1540s, and by the mid-19th century by the construction of Fort Albert and Fort Victoria.

The fortifications included within the Needles Passage group which are part of the Royal Commission phase of works are: Hurst Castle, Wing Batteries, Cliff End Battery, New Needles Battery, Warden Point Battery, Golden Hill Fort, Hatherwood Battery and Lower Old Needles Battery.

Also within the group are Fort Albert, Fort Victoria and Freshwater Redoubt which were constructed in the 1950s. Between the turn of the century and the First World War, Culver Down Battery and New Needles Battery were built.

Group 4: Sea Defences Inner Line

This line of forts includes the 'Portsea Island' forts (Group 4a) which are: Eastney Forts, Fort Blockhouse, Fort Cumberland, Point Battery, Southsea Castle and the Hilsea Lines. Also included within the group is Fort Gilkicker.

19.3 Significance and Phasing

Overview

The Portsmouth defences as a group are of exceptional significance. There is a total of forth-two fortifications within the Portsmouth group, which is the largest group of fortifications nationally within this study; the second largest group is Plymouth which has thirty-seven fortifications. Portsmouth by the 19th Century was one of the most fortified cities in the world. The fortifications have evolved in response to the changes in tactics and technology.

The phasing of sites shows that there is a concentration of sites within the third phase, with the second largest group of fortifications built in the late 1850s. This shows that the greatest concentration of construction relates to the Royal Commission's work. Early fortification within Portsmouth were also updated as part of the Royal Commission, such as Fort Cumberland, and new wing batteries were added at Southsea Castle.

There were few sites new built between the 1880s and the end of the First World War, this is largely because there was already a huge concentration of fortifications as a result of the Royal Commission, which were reused. Roughly half of the Portsmouth sites were updated in the 1880s and 1890s with renewed armament and construction. During the First and Second World War nearly all the sites were reused, mostly for defence but also for uses such as a control centres for the D Day landings (Fort Widley), radar stations (Culver Down Battery) and training and storage (Puckpool Mortar Battery).

Within the Portsmouth group thirty-six sites are protected through Scheduling and Listing (or both), which is 85.71 per cent of the total group. Of those which are unprotected, there are few surviving remains and the sites are deemed to be of little or some significance.

Phase 1: Early Fortifications (Pre-1850s)

There are five forts within this group, all of which are protected through Scheduling or Listing (or both).

Exceptional Significance

There are two sites of Exceptional Significance, which are: Fort Blockhouse and Fort Cumberland. Fort Cumberland also has a High Angle Battery which is one of only four surviving examples, the others are: Steynewood High Angle Battery, Hawkins High Angle Battery and Verne Citadel High Angle Battery.

Considerable Significance

There are two sites are of Considerable Significance, which are Fort Monckton and Point Battery.

Phase 2: 1850s

These are nine sites within this 1950s group, all are protected through Scheduling or Listing or both.

Exceptional Significance

As the earliest surviving polygonal fort, Fort Elson is of exceptional significance, and therefore an exemplar within this group.

Considerable Significance

The remaining eight forts are of considerable significance, these are: Browndown Battery, Fort Elson, Hilsea Lines, Fort Albert, Fort Victoria and Freshwater Redoubt, Fort Grange and Fort Rowner (the latter two were built as a result of the Royal Commission).

Phase 3: 1860/70s

There are twenty-four fortifications within this 1860s group, which is 64.8 per cent of the total, all of these were built as a result of the Royal Commission with the exception of the Eastney Forts (East and West).

Designated

In total twenty-one of the twenty-four fortifications within the Royal Commission group are protected through Scheduling or Listing (or both), which is 87.5 per cent of the total.

Considerable Significance

All of the designated Portsmouth 1860s fortifications are of Considerable significance with the exception of two batteries. The best surviving examples of this phase of construction is given below by group, as this allowed for easy comparison between types of fortifications.

Some Significance

The Cliff End Battery is of some significance only because of its limited surviving remains, and holiday chalets have affected its setting. Warden Point Battery is also of some significance due to its poor evidential value, Warden Point gun emplacement is, however, protected through listing at Grade II.

Little Significance

Hatherwood Battery has largely been lost to coastal erosion, with only four gun emplacements remaining.

Phase 4: 1880s/ 1890s

Exceptional Significance

There are two sites which date from the two last decades of the 19th Century, New Needles Battery and Steyewood High Angle Battery, which are both of Exceptional Significance, and designated as Scheduled Monuments or Listed Buildings (or both). Steynewood High Angle Battery is of group value with the other surviving examples, including Fort Cumberland High Angle Battery, Hawkins High Angle Battery and Verne Citadel High Angle Battery.

Phase 5: Turn of the Century the First World War

Some Significance

Nodes Point Battery Culver Down Batteries are the only two fortifications from the fifth phase of construction, both of which are undesignated and of some significance only.

19.4 Exemplars by Phase

Those sites identified as being of exceptional significance within the Portsmouth group, which account for 16.6 per cent, are considered to be exemplars within their phase of construction. By phase of construction these are:

Phase 1: Fort Cumberland and Fort Blockhouse;

Phase 2: Fort Elson;

Phase 3: Fort Brockhurst;

Phase 4: New Needles Battery and Stynewood High Angle Battery.

The only fortification within Phase 5 is Nodes Point Battery and Culver Down Battery, both are considered to be of 'Some' significance only. The majority of fortifications (71 per cent) within Portsmouth are of Considerable significance. Four sites are of 'Some' significance (9.5 per cent), and two sites are of 'Little' significance (4.7 per cent).

19.5 Exemplars by Key Groups

Group 1 – Spitbank Defences

Fort Blockhouse is part of the Spitbank defences and is of Exceptional Significance. As a defence site originated in the reign of Edward VI (1547-53) and is one of the original defences of the principal entrance to Portsmouth Harbour. This multi-phase site also survives well.

The four sea forts which compromise the Spitbank Forts have a high group value, as exceptional and innovative feats of engineering. Horse Sand Fort is in poor condition and on the HAR Register, although it is the only fort not yet to be converted. Horse Sand Fort has the potential to be the best surviving example of the Spitbank Defences, if current plans come to fruition and it is restored as a museum and heritage centre

Spitbank Fort (the smaller of the four forts) and No Man's Land Fort have been converted to a hotel and altered as a result. St Helen's Fort is understood to survive well with original fixtures and fittings remaining in situ. It has strong communal value for many who walk to the fort at the lowest tide in August, although it is inaccessible to most as a private residence.

Group 2 – Isle of Wight Defences

There are five forts within the Gosport Advance Line group (Group 2a), Fort Elson is the best surviving example before those initiated by the Royal Commission (Phase 2), and Fort Brockhurst is the best surviving example following the Royal Commission's report. Fort Elson is the oldest surviving polygonal fort with a unique plan, it is however in poor condition and at category 'A' on the HAR register. Fort Brockhurst is the same construction as Forts Grange and Rowner, and of these three is considered to be the best surviving example.

The five Portsdown Forts (Group 2b) are all of Considerable Significance. Fort Nelson survives well and is actively conserved, and it is considered to be the best surviving within the group. Fort Wallington is in very bad condition and much of it has been lost. Fort Southwick is on the HAR register, it survives fairly well but in a deteriorating condition, and used as an industrial park and car parking. Fort Widley also survives well and is in good condition (it belongs to Portsmouth City Council). It has additional historical value as it was used as a shadow control centre for the D-Day landing centre, and as a Civil Defence HQ in the Cold War.

The Sandown Bay Defences (Group 2c) are of Considerable significance, and all date from the Royal Commission phase of construction. Yaverland Fort and Battery is the best example within the group of a Royal Commission open battery, the remodelled 1890s gun position and magazines illustrate the changes in tactical defence at this time. Yaverland Fort and Battery is however on the HAR Register at Level 'C'. Sandown Barrack Battery is also of Considerable Significance although it survives less well.

Stokes Bay Lines - Battery no.1 is considered to be the best example of a surviving battery from the lines. It is of particular interest as it has rare cement revetments which is a unique feature for an 1860s open battery, and it survives reasonably well retaining the tunnel which connects it to Battery No.2.

Group 3: Isle of Wight Defences / Needles Passage

New Needles Battery is of Exceptional significance within this group, and has a long period of use from its construction in 1890 through to the Cold War, this latter phase of use is of particular significance.

There is a group of 1850s structures within Group 3 which include Fort Bembridge, Fort Albert, Fort Victoria and Freshwater Redoubt, which are all of Considerable significance. Fort Bembridge is considered to be the best surviving example of its kind, because despite its conversion to light industrial units, much of the fabric of the building has been retained.

The Old Needles Battery dates from the Royal Commission phase of construction, it is of Considerable significance, and it particularly noteworthy

due to the large number of surviving artefacts associated with the battery. It is owned by the National Trust.

Group 4: Sea Defences Inner Line

The Sea Defences Inner Line includes the Portsea Island group of fortifications (Group 4a), and within this Fort Cumberland is of Exceptional value. The battery at Fort Cumberland has recently been cleared of vegetation and survives well, as do some associated upstanding buildings. The Steynewood High Angle Battery, dates from the turn of the century to the First World War and is of Exceptional Significance as a rare surviving example of its type.

Also of note within this group are the Hilsea Lines which are an important landscape feature, the size and length in an impressive feat of engineering. They are of evidential and aesthetic value but also of communal value as a recreation feature. They are of considerable significance.

Fort Gilkicker is the best surviving example from the Royal Commission phase of construction, although it is at level 'D' on the HAR Register and in a poor, declining condition.

19.6 Condition and Threats

Common threats to the Portsmouth fortifications are flooding and coastal erosion, uncontrolled plant growth, decay of fabric and both direct and indirect development threats. Those fortifications in particular poor condition and those at threat from development are discussed below.

HAR Register

The following forts are on the HAR Register:

Priority category A: Fort Elson, Fort Fareham, Fort Southwick, Hilsea Lines.

Priority category C : Fort Cumberland, Horse Sand Fort (declining), Warden Point Battery and Yaverland Battery (declining).

Priority category D: Fort Southwick and Fort Gilkicker (declining)

Poor Condition but not on the HAR Register

Fort Grange and Fort Purbrook are both in a poor declining condition, and Fort Rowner is in a poor although stable condition. All three sites are of considerable significance.

Hatherwood Battery is in a very bad declining condition, but much to the site has already been lost to coastal erosion, and only four gun emplacements survive. However, the battery is not of particular historical, evidential or communal value.

The five batteries which compromise the Stokes Bay Lines are in varying conditions, of note however is No.1 Battery which is in poor condition, and requires management to ensure the survival of this substantial earthwork. No.3 and 4 Batteries have been demolished. Consideration needs to be given to the landscape legibility of the lines, the setting to which has already been impacted by development.

Development

Browndown Battery was sold by the MOD in 2009, and brought by a private contractor in 2012 who are likely to redevelop it soon. It is also in an archaeologically and ecologically sensitive area and is part of the 'Strategic Gap'.

No.5 battery of the Stokes Bay Lines is due to be sold by QinetiQ Alverstoke, and may be redeveloped although no application has yet been submitted.

The Stokes Bay Lines are under threat, both their setting which is being encroached upon by proposed development, and the fabric and management of the batteries. The Lines are discernible in the landscape and would benefit from further understanding and interpretation, particularly as this area is well visited.

Fort Blockhouse is under threat from possible development as the MOD intent to release the site soon, but details are not yet known. The Gosport Local Plan identies it as a 'priority' for development in the Local Plan.

The setting of Fort Cumberland may be impacted by the proposed construction of coastal defences. The setting of the Hilsea Lines has also been compromised by the encroachment of development, most recently an industrial estate.

Plans were approved in 2004 for the conversion of Horse Sand Fort to apartments, but this did not come to fruition and the five year expiry date has expired. The current plans is to restore the fort as a museum, which would greatly enhance the preservation and significance of the fort.

At Point Battery there have been a number of development proposals over the last five years to convert the partial demolished battery into thirteen artist studios and associated buildings.

Fort Gilkicker has been leased by Hampshire Local Authority to Askett Hawk Developments who plan to convert the building into 26 dwellings, residents room and an interpretation room. Consideration must be given to the sympathetic preservation of the fort's historic character in conversion, however ensuring the fortifications are put back into good order will help to ensure a long-term future for the monument.

At Freshwater Redoubt there are plans to convert the caponier into a residence; as the building is derelict this may have a positive impact in

bringing the building back into use, but consideration should be given to the preservation of the structure.

The setting of Puckpool Battery may be impacted by the development of a residential and hotel complex to the south.

Warden Point Battery is also under threat, although little of the battery remains there is potential for below-ground archaeology that should be mitigated against in the development proceeds.

Point Battery is in poor condition and under threat from development, although the secondary use of the fortification may help to secure its future preservation.

The setting of the Eastney forts has been compromised by infilling and demolition, and consideration needs to be given to their future preservation.

19.7 Recommendations

Development

Direct and indirect development threats, as detailed above, need to be given due consideration to ensure the long-term preservation of the forts and their setting. Many of the forts have had their settings fundamentally changed in the last hundred years, and it is important to ensure that secondary uses and changes to the forts both directly and indirectly is given appropriate consideration.

There are some recent examples of good conversion such as at Fort Gilkicker (ongoing), whereas Fort Fareham provides an example of a fort which has been negatively impacted by its secondary use. Some fortifications have been impacted by changes to their setting, for example Stokes Bay lines and Hilsea lines where the defences are in part subsumed in the modern landscape and in part retain their place in the landscape.

HAR Register

Fort Elson is of exceptional significance and at priority category 'A' on the HAR register, it is therefore a priority for management. The current Historic England policy for the site is however one of 'controlled ruination'.

Fort Fareham and the Hilsea Lines are of considerable significance, and at priority category 'A' on the register, with a declining trend. Discussions are ongoing to secure their preservation for the future, but the isolated location of parts of the lines makes management problematic.

Fort Cumberland is of exceptional significance, and is on the HAR Register at priority level 'C'; it should therefore be identified as a priority for protection.

Fort Brockhurst is in a good and stable condition, but is suffering from water ingress, dry rot, localised flooding and difficultly in managing vegetation. The fort is of exceptional significance, and an exemplar of its type within the Gosport Advance Line group and necessary repairs should be completed to ensure its future.

Forts Purbrook, Grange and Rowner are all in poor condition or very bad condition and should be reviewed to determine if they should be placed on the HAR Register.

Fort Wallington is now in very bad condition and much of the fortification has been demolished apart from a section of wall in the south western corner of the fort. Consideration should be given to whether this site should remain as a Grade II Listed Building.

19.8 Quality Control Grid

Comments received from Isle of Wight HER relating to development proposals, and HE.

20 STRATEGIC AREA SUMMARY: AREA 8, SUSSEX

OA No.	Fort Name	Significance	Designated	Phase	Condition	HAR Level	Threat
100	Newhaven Fort	A	SM	3 (RC)	3	C1	1, 3, 7
101	Littlehampton Fort	A	SM	2	3	C1	2, 3
102	Shoreham Fort	A	SM	2	1	x	1

Table 26 Fortifications within Sussex (Area 8)
Values given in the table are detailed in Section 5.

20.1 Strategic Importance

With its long coastline, Sussex has always been vulnerable to attacks from the sea, which is why so many fortifications have been built along the shore and in the inland approaches. In the 1850s Littlehampton Fort was built to protect the River Arun, and Shoreham Fort was built to defend Shoreham harbour. Shoreham is the biggest port between Dover and Portsmouth, but was defenceless at the beginning of the 19th century. At Littlehampton there had previously been a battery on the east bank of the river (built in 1760), but the new fort was on the west bank. The fort was an innovative design, incorporating the new feature of a Carnot wall, and was a precursor to the Palmerston Forts.

Newhaven Fort followed the work of the Royal Commission and was built to defend the harbour at Newhaven; it is the largest defence work ever constructed in Sussex. Newhaven harbour is smaller but has deeper water allowing easier access. During tensions in the Napoleonic period, new batteries were built at Bognor, Selsey, Littlehampton and previously unfortified places. A string of Martello Towers stretching from Essex and Kent into Sussex was also built, but these are not included within this study.

20.2 Phasing

There are three fortifications within the Sussex group, which are within the second and third phases of construction.

Phase 2: 1850s

Littlehampton Fort was built in 1854, and is important as the precursor to Palmerston forts. It was built before Shoreham Fort, and the design flaws learnt from building Littlehampton were corrected at Shoreham. Shoreham was built in 1857, and both became prototypes for later fort construction.

Phase 3: 1860s

Newhaven Fort was built between 1865 and 1871, it was constructed three-four years later than the other Royal Commission forts, and has a quality of craftsmanship and detailing which sets in apart.

20.3 Significance

Designations

The three fortifications within the Sussex group are Scheduled Monuments.

Exceptional Significance

All three forts are of exceptional significance, and Scheduled. The three forts have strong group value, Littlehampton and Shoreham forts are closely related, and provided a model for later forts, such as Newhaven.

All three fortifications are considered to be examplars, Littlehampton Fort and Shoreham Fort for the 1850s phase of construction, as they are important examples of early construction techniques. They laid the foundations for the 1860s development of fortifications, concentrated in Plymouth and Portsmouth. Littlehampton Fort was the first of its kind in the United Kingdom; its carnot wall and three open bastions make it unique. The design flaws from building Littlehampton Fort were corrected at Shoreham Fort before going on to build the more elaborate fortifications in Portsmouth.

Newhaven Fort is important as the only example of a Royal Commission fort in Sussex, it is the largest defence work built in Sussex. The fort has a number of special architectural and engineering features which set it apart from other examples. It used new engineering techniques (such as concrete), and weaponry.

20.4 Condition and Threats

HAR Register

Both Newhaven and Littlehampton Forts are on the HAR Register at level 'C'. There have been some repairs to the Newhaven Fort facilitated through an HE grant, but the Victorian caponier remains in very poor condition.

Littlehampton Fort is improving as a result of the 'Littlehampton Fort Restoration Project' which is run by volunteers who have been active in improving the condition of the fort through measures such as the removal of vegetation.

Development

The setting of Newhaven Fort may be impacted through land reclamation and development on the opposite side of the estuary, primarily to support the construction and implementation of Rampion Windfarm. HE have commented on proposals (detailed in the datasheet).

20.5 Recommendations and Priorities

Newhaven Fort is a Scheduled Monument and of exceptional significance, it is under threat both due to deterioration and lack of management. The building is currently unoccupied and its future preservation may be better secured through use of the building, which will facilitate its maintenance. Newhaven Fort is also under threat from planning proposals which may impact the setting of the fort. In accordance with HE advice, any development must ensure that it does not impact the open setting of this fortification.

Littlehampton Fort is surrounded and partly covered by sand dunes which are a SSSI, consideration needs to be given to the ecology alongside the archaeology in the restoration of the fort. The fort is of exceptional significance and an exemplar of its type, its removal from the HAR Register should therefore be prioritised.

20.6 Quality Control Grid

Comments received from HE and Conservation Area date received from Sophie Unger, East Sussex CC.

21 STRATEGIC AREA SUMMARY: AREA 9, MOBILISATION CENTRES

OA no.	Fort name	Significance	Designated	Phase	Condition	HAR	Threat
103	Woldingham Fort	B	SM	4	2	x	7
104	Alderstead Fort	B	SM	4	3	C1	1, 2, 3
105	Reigate Fort	B	SM	5	2	x	2, 5, 8
106	Betchworth Fort	B	SM	4	2	x	2
107	Boxhill Fort	B	SM	4	1	x	1, 8
108	Henley Grove	B	SM	4	1	x	8
*109	North Weald Redoubt	A	SM	4	3	A2	1, 3, 4, 5
110	Fort Halstead	A	SM	4	1	x	6
111	Farningham Fort	B	SM	5	1	x	6
112	Fosterdown Fort	B	SM	5	2	x	2
113	Pewley Hill Fort	D	x	4	3	x	x
114	Westerham Fort (Beston's Hill)	C	x	5	2	x	x

Table 27 Mobilisation Centres (Area 9)

Values given in the table are detailed in Section 5.

*North Weald Redoubt is strategically within the Mobilisation Centres group, although geographically it is in the HE East of England region.

21.1 Strategic Importance

The London Mobilisation Centres were built between 1889 and 1903 as part of the London Defence Scheme. Their primary function was as storehouses, but many were fortified and were capable of resisting an attack, and supporting the fieldworks that were to be the main line of defence of London. The typology of the mobilisation centres differed broadly, in terms of layout and size. The almost common factor was the adoption of the Twydall profile in their design. The two key functions of the centres was to act as store houses holding an initial supply of ammunition for the units who would man the defences, and to store tools to aid in the construction of defences. Secondly, upon invasion and once the main defence line was constructed, they could be used as strong points to fall back on if the line was breached locally. A few centres, such as North Weald and Fort Halstead, were positioned to take an active part in defence as they were capable of mounting field artillery or machine guns.

The first serious recommendations for the defence of London were proposed as early in 1859, but the final impetus was given with the completion of the recommendation of the Royal Commission. With all major ports protected against attack by land or sea, London became an even more attractive target. They were built at a time when confidence in the Royal Navy's ability to prevent an invasion was low. Its long and drawn out construction period, and problems with funding, suggests that they were not taken seriously. It has been suggested that they were used as a means to test out a variety of new designs to assess their potential for future use, which explains the variety

in layout and design. Their survival provides an interesting insight into fortification design during this period. Today most of the forts are privately owned, with the exception of two owned by the National Trust and one which is under control of the local authority (Beanse A and Gill, R 2000).

21.2 Phasing

Phase 4: 1880s/ 1890s

The following forts were constructed in the late 1880s to early 1890s: Woldingham, Betchworth, Boxhill, Alderstead, Henley Grove, North Weald, Halstead and Pewley Hill (Image 16).

Image 17 Betchwood Fort and environs, 1948 (©Britain From Above website, image no. – EAW019387)

Phase 5: Turn of the Century to the First World War

The following forts were constructed during Phase 5: Reigate, Farningham, Fosterdown and Westerham forts.

21.3 Significance and Exemplars

Designated

There is a total of 12 mobilisation centres included within this study, 10 are Scheduled or Listed (or both) which is 83.3 per cent of the total group.

Exceptional Significance

There are two fortifications which are of exceptional significance, these are: North Weald Redoubt and Fort Halstead.

North Weald and Fort Halstead are considered to be the best surviving example of mobilisation centres. The key elements of North Weald mobilisation centre survive remarkably well, including the rare survival of the caretaker's cottages, and external stores which few modifications. The significance of the site is further enhanced by its later use as a wireless station, and the rare survival of a Second World War gun emplacement and an Alan William's Turret. North Weald (with Farningham) is considered an outstanding example of the use of the Twydall Profile. Provision was made at North Weald for field guns to be placed on the rampart and supplied with ammunition from the magazine below, via shafts, which was the only example of this in a London mobilisation centre.

Fort Halstead is one of four mobilisation centres designed for artillery deployment, it is one of the largest constructed. The mobilisation centre survives well; its significance is enhanced by its later use in the Second World War and Cold War; it was used as a Projectile Development Establishment, and later as the a top secret headquarters for Basic High Explosives Research, with the task of developing the atomic bomb.

Reigate Fort also survives well, and is of exceptional communal value; restoration work is ongoing by the National Trust, and it is open to the public free of charge with interpretation boards (*see* Image 8).

Considerable Significance

The following eight forts are of considerable significance, and are scheduled monuments. These forts are: Woldingham, Alderstead, Reigate, Betchworth, Boxhill, Henley, Farningham and Fosterdown.

Some Significance

Westerham Fort is of some significance only because there are few surviving remains.

Little Significance

Pewley Hill Fort is of 'little' significance because there are few surviving remains.

21.4 Condition and Threats

In general, common threats are uncontrolled vegetation, vandalism and visitor wear and tear. A number of sites are threatened by development either directly or indirectly.

Most of the forts are in good condition (4 sites), or fair condition (5 sites), with 3 sites in poor condition. Pewley Fort is one of only two mobilisation centres not protected through Listing or Scheduling.

HAR Register

There are two mobilisation centres on the HAR Register which are all categorised at level 'C', these are: North Weald Redoubt and Alderstead Fort. Both are in a declining condition and are in need of management, they are suffering from flooding, uncontrolled vegetation and North Weald Redoubt has also been vandalised.

Development

Armstrong LLP were given permission in 2015 to redevelop Fort Horstead for residential, industrial, commercial and service use. The fort area and bunkers will have historic interpretation as part of the scheme.

A major development at Oxsted Quarry will impact the setting of Woldingham Fort, which is a Scheduled Monument. The setting of Farningham Fort is also threatened by development of Pedham Place Farmhouse.

21.5 *Recommendations and Priorities*

A key priority is North Weald mobilisation centre, which is in poor and declining condition and on the on the HAR register with 'extensive significant problems' and a level 'C'. The site is in need of management to prevent vandalism, flooding and decay of fabric.

Fort Halstead will soon be redeveloped which will include provision for historic interpretation. Any redevelopment must ensure that the monument is sympathetically preserved as far as possible, and that any direct or indirect impact to the fort must be archaeologically mitigated against.

21.6 Quality Control Grid

Alison Bennett, commented that none of the surviving Essex forts are in Conservation areas and comments were provided by HE.

22 STRATEGIC AREA SUMMARY: AREA 10, THAMES

OA No.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
*115	Coalhouse Fort	A	SM	1	3	C1	3, 4
*116	East Tilbury Battery	A	SM	4	1.2	x	2, 3
117	Cliffe Fort	A	SM	3 (RC)	4	C1	1, 2, 3, 4, 5
118	Slough Fort	B	SM. LB(II*)	3 (RC)	2	x	x
*119	Tilbury Fort (including mobilisation store)	A	SM. LB(II*)	1	1	x	1, 7
120	Shornmead Fort	B	x	3 (RC)	4	x	3, 4, 5
121	New Tavern Fort	A	SM	1	2	x	8

Table 28 Fortifications within Thames (Area 10)

Values given in the table are detailed in Section 5.

*Please note that Coalhouse Fort, East Tilbury Battery and Tilbury Fort are strategically within the Thames group, although geographically it is in the HE East of England region.

22.1 Strategic Importance

The Thames Estuary and its tributary, the Medway, were unique among English anchorages in embracing both a major commercial harbour and a key naval dockyard. The Port of London, reached through the Thames corridor, was the chief mercantile port in the British empire at this time. Situated close to the continent, the Thames Estuary, had targets of diverse character and vital importance, accessible to powers with bases extending through the English Channel and the North Sea.

The admiralty advised the Owen Committee of 1905 that the formidable defences already in place at Sheerness rendered the Port of London practically immune from attack, which resulted in a drastic reduction in the Thames guns in the decade before the First World War. The Owen report placed the Thames as open to a class 'C' attack from an unarmoured cruiser, the defences were, nonetheless, cut to just four guns at one site, namely the 6inch weapons at Coalhouse Fort, whilst everything else was scrapped, with the exception of the open battery at Cliffe Fort early in the First World War.

22.2 Phasing

Phase 1: pre-1850s

Tilbury Fort was built in the late 17th century, and includes the buried remains of a Henrician blockhouse. New Tavern Fort was built to support Tilbury Fort as a result of the 1778 survey of the defensive requirements of the Thames.

The first phase of Coalhouse Fort, begun in 1799, was replaced in 1847-55 by a more complex structure.

Also, with the Thames group is a heavy quick-firing battery at Shoebury Garrison, dating from 1898, and incorporating part of an earlier battery, which was extended during construction and completed 1900. It is Listed at Grade II (no.1112693).

Phase 3: 1860s

Cliffe Fort, Slough Fort and Shornmead Fort were constructed as a result of the Royal Commission, the latter two are also related to the defence of Chatham.

Phase 4: 1880/1890s

East Tilbury Battery was built in 1889/1890 to support Coalhouse Fort with long range fire.

22.3 Significance

Designations

There are seven forts within the Thames group, of which six of Scheduled or Listed (or both). Shornmead Fort is a ruin and is not protected.

Exceptional Significance

Four of the seven forts are considered to be of exceptional significance. This includes two forts from the first phase of construction which are Tilbury Fort and New Tavern Fort. As these first phase of fortification within the Thames group span a wide range of periods, it is not possible to identify an exemplar. Tilbury Fort was designed by Sir Bernard Gomme, in 1670 and is of particular significance as a surviving example of 17th century coastal fort. It is based on a Dutch design, and is the best example of its type. Likewise, New Tavern Fort is an unusually complete example of an 18th century fortification.

Coalhouse Fort is of exceptional significance from the Royal Commission phase of construction, and is therefore considered to be an exemplar of its type for this period within the Thames group. It is one of the finest examples of an armoured casemate in England and is well document historically.

Also of exceptional significance is Cliffe Fort (Image 17), which is also part of the Royal Commission phase of works and is considered to have the best surviving example of a Brennan Torpedo station (recently report by Newsome, S at Historic England).

East Tilbury Battery is the only fortification from the 1880/1890s period within the Thames group, and it is considered to be of exceptional significance. It is therefore an exemplar within this group for the late 19th Century period of fortification.

Image 18 Cliffe Fort, interior (© W D Cocroft)

Considerable Significance

Slough Fort dates from the Royal Commission phase of works, and is of considerable significance.

Shornmead Fort is not designated but is of considerable significance, due to the long use of the site and the possible surviving below-ground evidence of possibly the earliest example of a polygonal fort. The communal and historical value of the fort is also high.

22.4 Condition and Threats

Comments threats to the Thames forts are deterioration/ in need of management and decay of fabric.

HAR Register

Coalhouse Fort is on the HAR Register at level 'C', and although it is in a declining condition, there have been recent improvements to meet the threats of water ingress and decay of fabric.

Cliffe Fort is on the HAR register at level 'C' and subject to a number of threats. It is in very bad condition, and currently derelict and open to the trespassers. The fort requires management to secure its future preservation and setting. In particular, it is recommended that issues relating to flooding should be investigated, to resolve this threat.

Development

The setting of Tilbury Fort may be impacted by the development of Tilbury B Station Fort Road.

22.5 *Recommendations and Priorities*

Coalhouse Fort is on the HAR Register and is of exceptional significance, it is an exemplar of its type for the Royal Commission phase of works. Priority should therefore be given to the preservation of this monument, and its removal from the HAR list.

Cliffe Fort is also on the HAR register in a very bad and declining condition, it is suffering from a number of threats including coastal erosion, decay of fabric, flooding, vandalism and uncontrolled vegetation.

The development of Tilbury B Power Station may impact the setting of Tilbury Fort any proposals should be reviewed to ensure potential threats are minimised.

Shornmead Fort should be considered for listing, as it is of considerable significance but currently unprotected through heritage mechanisms. Archaeological investigation would enhance understanding of the fort, for example the cutting through of the casemates reveals the construction techniques. There is buried evidence for an earlier polygonal fort at Shornmead, which should also be investigated.

22.6 Quality Control Grid

HE comments received (September and October 2016).

23 STRATEGIC AREA SUMMARY: AREA 11, SHEERNESS

OA no.	Fort name	Significance	Designated	Phase	Condition	HAR	Threat
122	Queenborough Lines	B	SM	3 (RC)	3	x	1,2,5,6,7
123	Sheerness Defences	A	SM	1, 3(RC), 5	4	C1	1,2,3,4,6,7, 8
124	Bartons Point Battery	C	x	4	3	x	8

Table 29 Fortifications within Sheerness group (Area 11)
Values given in the table are detailed in Section 5.

23.1 Strategic Importance

The Thames was seen as particularly vulnerable; as well as being one of the country's most important trade routes, it possessed several naval installations of great importance, including the victualling yards at Deptford, the armaments works of the Royal Arsenal, Woolwich , the shipbuilding yards at North Woolwich, and the Purfleet magazines.

The Thames has been fortified to some degree since the earliest days. The rise of Napoleon caused a flurry of activity in the late 18th and early 19th centuries, and in 1859 when the Commissioners reviewed these defences they found the existing defences were obsolete. They included the open batteries of Sheerness dating from the 18th century, which consisted of a line of bastioned earthworks with wet ditches totally enclosing the town and dockyard, with the earlier Charles II battery at Garrison Point. Garrison Point Battery and Grain Tower covered the navigable portion of the Medway entrance but had insufficient fire power and resulting in the construction of the powerful casemated work of Garrison Point Fort to replace the earlier battery.

The first years of the 20th century marked the end of coast defence for many works, and the beginning of a lengthy hiatus for many. This was not true of the Medway and Sheerness defences, whose origins were generally rather later than the Thames defences and where development continued through coast artillery's remaining years.

23.2 Phasing

Phase 1: Early fortifications (pre- 1850)

The Sheerness Lines are fortifications constructed between c.1780 and 1870; the full lines comprise the four bastions linked by ramparts and an external moat, which were completed by 1816. Different elements of the lines were constructed and upgraded throughout the 19th century including Centre Bastion by 1823. The Indented Lines were linked to the Sheerness Lines from 1827, and Curtain Battery was built between *c* 1780 – 1870. No.1 Bastion to No.5 Bastion were constructed between 1780 – 1804, while the Ravelin was completed by 1816.

Phase 3: 1860/70s

The plans put forward following the Royal Commission for Sheerness were formidable, however much was struck out before the recommendations reached Parliament. The plan called for advanced redoubts on the land side of Sheerness, which was replaced with a simple line of rampart and wet ditch, the 'Queenborough Lines' (OA122). This were built between 1863-1868, 1km south-east of the earlier bastion-trace defences of the Sheerness Lines, to protect the Royal Sheerness dockyard from land attack.

Garrison Point Fort, which is part of the Sheerness Lines, was built following the report of the Royal Commission in 1860.

Phase 4: 1880/1890s

Albemarle Battery, which is part of the Sheerness Lines was completed in 1899.

Barton's Point Battery was built as part of the River Medway's coastal defences between 1889 to 1891.

23.3 Significance

Exceptional

The Sheerness Defences are of exceptional significance; they include a complexity of surviving remains dating from the 1780s Sheerness Lines in the 1780s through to the Second World War (Image 18). Garrison Point Fort is of particular value as one of only two forts built which took the form of a semi-circular structure, one of only two built in the 1860s fortification programme. The other example is Picklecombe Fort in Cornwall, but this has been compromised by its conversion to residential flats. Garrison Point Fort is an exemplar of its type.

Image 19 Sheerness Centre Bastion (© W D Cocroft)

Considerable

The Queenbourough Lines which were constructed as a result of the recommendations of the Royal Commission, are of considerable significance. They are atypical of the Royal Commission fortifications since continuous earthwork defences were generally considered obsolete by this date. The Queenborough Lines fortification represents the last example of this type of fortification in the country, and is a considerable engineering feat.

Some

Barton Point Battery is of some significance only due to its poor evidential value.

23.4 Condition and Threats

The Sheerness defences are located in a densely developed area, and suffer from a number of threats including flooding and coastal erosion, development, uncontrolled vegetation, and a lack development/ in need of management.

HAR Register

The Sheerness Lines survive in very bad condition and are on the HAR Register. They are threatened by erosion, decay of fabric, uncontrolled vegetation and are also at threat from development.

Development

The Sheerness Defences are threatened by development through dockyard masterplans for various schemes, that affect the Garrison Point Fort and also site allocations in the local plan for regeneration. A major application for the redevelopment of Sheerness Steelworks (16/501726) affects Fort Townsend and the Sheerness lines.

There are threats of development that have the potential to impact the Queenborough Lines, both directly and indirectly. The setting of the lines has been effected by the expansion of Queenborough and there has been direct impact to the surviving archaeology of the lines, including the loss of the batteries. There has been light industrial development on the south bank near the causeway and at the far western end. There is concern about the effect of such development on the setting of the Lines, particularly that the enclosing the ditch might make it seem more canal-like, thereby losing that sense of open defensible sightline southwards.

23.5 *Recommendations and Priorities*

The Sheerness Defences are of exceptional significance, and currently on the HAR Register at category 'C'. There are a number of elements to the lines, some of which survive in complete condition, whilst others have been lost.

There are some elements that survive well, although lack of access makes this difficult to accurately determine. It is recommended that a comprehensive study of the Lines is undertaken to more accurately determine the survival and condition of its different elements. This will make it possible to prioritise elements to meet the overall aim to remove it from the HAR register. The Sheerness Lines are also threatened by development, particularly Garrison Point Fort. Garrison Point Fort has a rare surviving Brennan Torpedo station, which is alongside the example at Cliffe Fort, the only other surviving example identified in this study. Further investigation would be beneficial to determine which is the best surviving example.

A cohesive approach to the Queenborough Lines needs to be taken to ensure the surviving archaeology of the lines is not further impacted by development, vandalism and decay of fabric.

23.6 Quality Control Grid

Comments from HE (October 2016).

24 STRATEGIC AREA SUMMARY: AREA 12, CHATHAM AND MEDWAY

OA No.	Fort Name	Significance	Designation	Group	Phase	Condition	HAR	Threat
125	Fort Borstal	B	SM	2	3 (RC)	2	x	2, 4, 5, 7
126	Fort Horsted	B	SM	2	4 (RC)	2	x	x
127	Fort Luton	B	SM	2	3 (RC)	3	x	2, 7
128	Grange and Woodlands Redoubt	D	x	3	4	4	x	2, 4
129	Hoo Fort	B	SM	1	3 (RC)	3	C	4
130	Darnet Fort	B	SM	1	3 (RC)	4	A1	1, 4
131	Grain Tower	B	SM. LB(II)	4	2	4	C1	3
132	Grain Fort and Wing Battery	B	SM	4	3 (RC)	2	x	2

Table 30 Fortifications within Chatham and Medway (Area 12)

Values given in the table are detailed in Section 5, and the groups are discussed below.

Please note that North Weald Redoubt is strategically within the Mobilisation Centres group, although geographically it is in the HE East of England region.

24.1 Strategic Importance

The entrance to the River Medway and, ultimately, the docks at Chatham, has been protected since the mid-17th century, after the Elizabethan Upnor Castle proved to be inadequate to protect Chatham Docks against the Dutch in 1667. The Medway has been heavily defended over the centuries, mainly due to the importance of Chatham Docks.

The Royal Commission report greatly strengthened The Medway's defences, although the Medway was already defended by this time, a large proportion of these structures survive and are detailed in this study. The ongoing strategic importance of The Medway is reflected by the re-use of many of the structures, whether for artillery or other purposes.

The defences are located around the mouth of the river, however, the focus on Chatham is indicated by the 'lines' of forts and earthworks built around the dockyard throughout the 18th century and the 'ring' first constructed around Chatham in the latter part of the 19th century.

A ring to detached forts was first proposed by the Royal Commission, but was omitted on the grounds of cost, however the land for some of the forts had already been purchased. A document in the National Archives entitled 'Chatham Eastern Defences Tenants' (WO332/53), details those lands proposed for requisition according to the Defence Act of 1860. The eventual construction of the crescent of forts, south and east of Chatham, was to take more than 20 years.

Strategic Groups

The Chatham and Medway defences are divided into the following strategic groups:

Group 1: Royal Commission Forts – Hoo Fort (*see* Image 2) and Darnet forts are sister forts built either side of the main channel of the Medway to defend the river and the docks. Hoo Fort was built first between 1861 and 1871, with completion of Darnet Fort following in 1875.

Group 2: Southern Chatham Forts - the first of the Chatham line of forts to be constructed which were proposed by the Royal Commission were Borstal, Bridgewoods (no longer extant), Horsted and Luton to the south of the town (OA 125–127). These had a superficially similar plan to the Royal Commission forts of the Jervois model (Saunders, A 1989). By 1880 these were far from complete.

Group 3: Eastern Chatham Forts - in 1886 work began of the eastern part of the Chatham ring and here a fundamentally different concept was used from the southern forts. These include Grange, which was built first, which with Woodland, were collectively known as Fort Twydall. Fort Darland (now demolished), which was started in 1893, was built to fill the gap between Grange and Woodland Redoubt, and the southern group of forts. It was a compromise between a return to conventional forts with some elements of an infantry redoubt.

Group 4: Grain fortifications – Grain Tower and Grain Fort and Wing Battery, were built to defend the confluence of the Thames and Medway rivers (Image 19). Grain Fort, built in 1860, supported Grain Tower and Garrison Point Fort at Sheerness. Grain Tower was built in 1855 to protect the important dockyards at Sheerness and Chatham from a perceived French naval threat during a period of tension in the 1850s.

24.2 Phasing

Phase 1: Pre-1850s

The initial earthworks of the redoubt in the Fort Amherst complex were constructed in 1756, with strengthening works starting around 1778. The fort, however, had very little work after 1815 and so is essentially an earlier period fort, and is not included within this study.

Phase 2: 1850s

The foundations of the Grain Tower were begun in 1847 and the tower completed in November 1855.

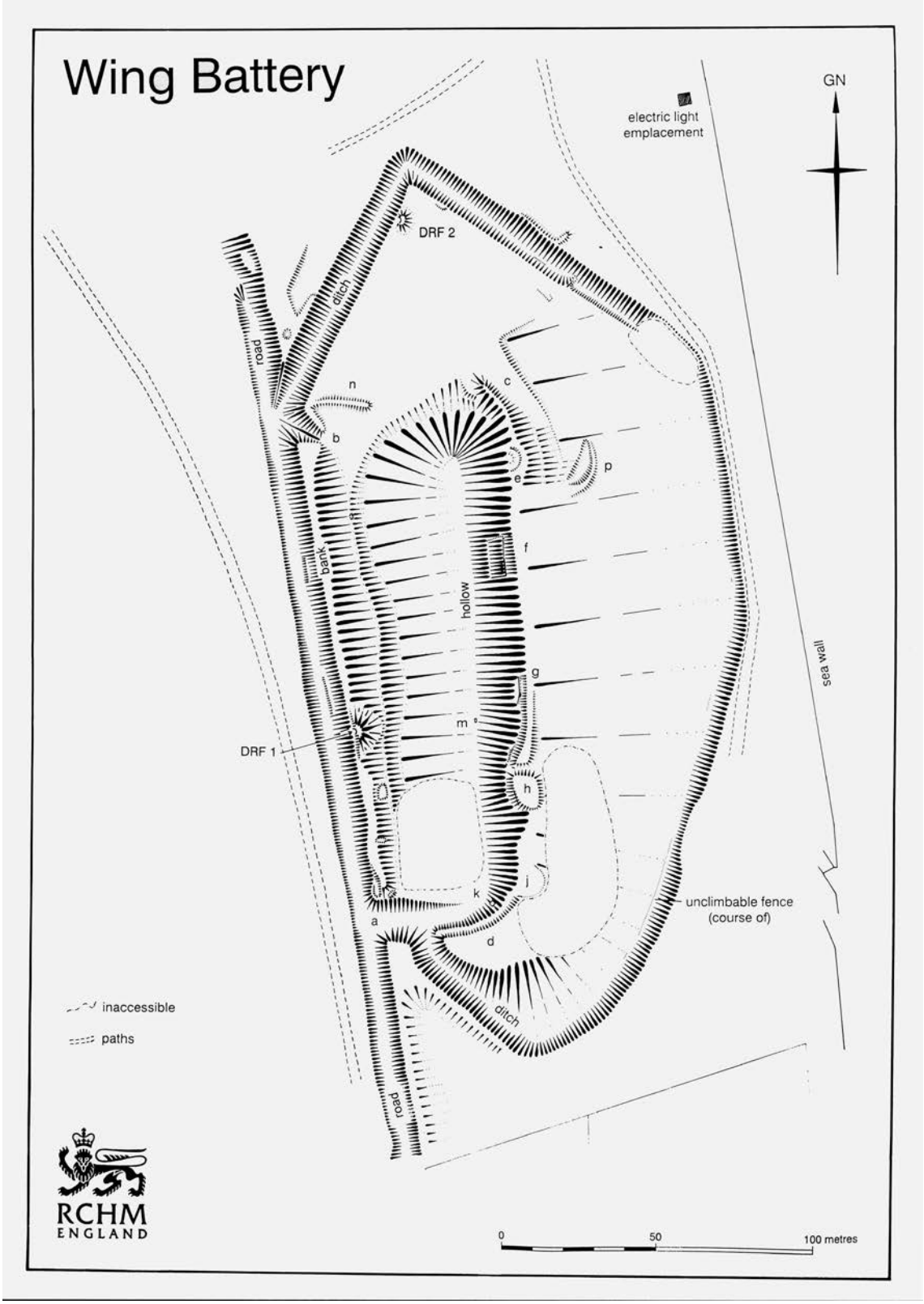

Image 20 Grain Wing Battery plan, RCHM England report (© Historic England)

Phase 3: 1860/ 1870s

Royal Commission

The three forts constructed in the 1860s were all a result of the Royal Commission report. Construction for Hoo Fort and Darnet Fort both began in 1861, and both Grain Fort and Wing Battery were constructed between 1860 and 1867.

The Chatham ring forts (Fort Borstal, Fort Horsted and Fort Luton) were recommended by the Royal Commission, but took nearly twenty years to be built. Construction of Fort Borstal began in 1875, and was completed by 1883. Luton Fort was begun in 1876, but was not complete until 1892. By the time the fort was complete, it was obsolete and was never armed.

Phase 4: 1880s/ 1890s

Fort Horsted was finally constructed between 1880 and 1889, and therefore falls within the fourth phase of construction, although it was initiated by the Royal Commission's report of 1860.

Grange and Woodlands Redoubts were constructed in the late 1880s.

Grain Wing Battery was built *c* 1890, situated to the south of Grain Fort

24.3 Significance and Exemplars

Overview

As a group the Chatham forts are significant, because they evolved over a long period of time, and reflect a move towards a decentralised and fluid type of defence, whereby artillery defence was based on moveable armaments. Forts were increasingly seen as infantry works rather than artillery positions with greater use of QF guns.

Designated

There are nine sites within the Chatham and Medway group, of this group eight sites are Scheduled or Listed (or both), which is 88.8 per cent of the total group.

Considerable

Royal Commission Forts (1860s) - The two 1860s Royal Commission Forts, Hoo Fort and Darnet Fort, are sister forts with strong group value. They are structurally alike, and retain a similar level of survival. It is not possible to distinguish one fort as an exemplar, as they are similar construction and condition. The survival of both forts greatly enhances their significance, providing context to the individual fortifications.

Grain Fortifications - Grain Fort and Grain Wing Battery were commenced in 1860 and 1890 respectively. Grain Fort has been damaged by the demolition of its keep and partial infilling of its surrounding ditch. The gun emplacements and magazines of Grain Wing Battery have been filled in, and the site is considerably overgrown. Neither example presents an exemplar of the period, although as Grain Wing Battery as the only surviving fortification from the 1880/1890s phase of construction within Chatham it is of enhanced historic value.

Grain Tower is the only example of a fortification within Chatham which survives from the 1850s period of construction, it is therefore provides the only exemplar of this phase of construction. It was built along the same lines as the Martello towers constructed along the British and Irish coastlines in the early 19th century, and is the last-built example of a gun tower of this type.

The Southern Chatham Forts (initiated by the Royal Commission) include Fort Borstal, Fort Horsted and Fort Luton, these are the three surviving of the original five 'Chatham Ring Forts'. These are significant as the final major works of traditional fortification in the country, and have strong group value.

Fort Horsted is considered to be the exemplar of the three forts, because it is of a unique design in being the largest of the three land forts and is unusual in being divided into two halves by a massive earthwork traverse. The fort survives well, but it has been compromised by its alteration into six business units and its developed setting. This secondary use has however enabled the restoration of the entrance tunnel and some of the casemates.

Luton Fort also survives well, and has the potential to increase in significance through a current volunteer restoration project, which aims to restore the fort and increase accessibility.

Some/Little

The Eastern Chatham Forts - Grange and Woodlands Redoubts have little significance due to their poor survival and were rejected for scheduling in 2013.

24.4 Condition and Threats

In general, the main threat to the structures is a general decay of the fabric through neglect or inappropriate reuse, with uncontrolled overgrowth being a general trend. Three sets of fortifications on the HAR Register, which are discussed below, an additional number of sites are in poor and very bad condition. Fort Luton is classified at being of poor to fair condition, however the site is being actively repaired and maintained by a volunteer group following decades of neglect and dumping.

Grain Fort and Grain Wing Battery is also in poor condition, primary due to loss of fabric and uncontrolled vegetation.

Grange and Woodlands Redoubts have been used for agricultural purposes and suffered much neglect and considerable loss of fabric. Although of 'little' significance largely due to their diminished evidential value, they are of importance in understanding the Chatham defences and have group value with the other surviving structures.

The structures located close to water-level are at an obvious risk of flooding or water damage; Fort Darnet, a Category A on the HAR Register, has been deliberately flooded to prevent vandalism, which is conversely causing further damage.

HAR Register

Three of the eight sites within the Chatham and Medway group are on the HAR Register. Darnet Fort is at a category 'A' on the HAR Register, and is at immediate risk of further rapid deterioration or loss of fabric. Hoo Fort and Grain Tower are at category 'C 'on the HAR Register. All three forts are in a declining condition.

Development

Fort Luton is under threat from low level development, and Grain Tower was sold in 2015, and the situation with the tower is currently unknown. There is some potential however for future change if the fort comes under new ownership.

24.5 Recommendations and Priorities

The three forts on the HAR Register are Hoo and Darnet Forts, as well as Grain Tower. Darnet Fort is at category 'A' and should be prioritised. It is recommended that Darnet Fort is archaeologically recorded, because despite being the highest priority on the HAR Register, ongoing damage is occurring.

Several of the forts have secondary uses and it is important to ensure that this have minimal impact on the historic fabric of the forts. Any works to the fortification must be undertaken within Scheduled Monument consent.

Fort Borstal although not on the HAR Register is subject to a number of threats, including threats from secondary use, vandalism, uncontrolled vegetation and decay of fabric. Monitoring of the fort needs to be prioritised to ensure its preservation.

Grange and Woodland Redoubts are undesignated and in a poor condition and so the most urgent recommendation is to survey and record the remains of the structures before further deterioration.

Grain Tower is on the HAR Register and under additional risk from development should it be sold. Fort Luton is also subject to some development proposals, although these are probably low key. This situation should be monitored.

Cliffe Fort has a rare surviving Brennan Torpedo station, which is alongside the example at Garrison Point Fort in Sheerness, is the only other surviving example included within this study. Further investigation would be beneficial to determine which is the best surviving example.

24.6 Quality Control Grid

EH comments received (September 2016).

25 STRATEGIC AREA SUMMARY: AREA 13, COASTAL REDOUBTS

OA no.	Fort name	Significance	Designated	Phase	Condition	HAR	Threat
133	Dymchurch Redoubt	B	SM.LB (II*)	1	2 & 3	E1	1, 3,4
134	Eastborne Redoubt	B	SM.LB (II)	1	1	x	1, 8
*135	Harwich Redoubt	A	SM.LB (II*)	1	1	x	1, 8

Table 31 Fortifications within Coastal Redoubts group (Area 13)

Values given in the table are detailed in Section 5.

*Please note that Harwich Redoubt is strategically within the Coastal Redoubt group, although geographically it is in the HE East of England region (see strategic area 15).

25.1 Strategic Importance

Between 1804 and 1812 the British authorities built a chain of towers, based on the original Corsican Mortella towers, to defend the south and east coast of England to guard against possible invasion from France. Martello Towers, although built in the 19th century are not included within the scope of this study, and those along the east coast are discussed in a separate report by Historic England (Millward, J 2007).

Image 21 Eastbourne Redoubt, 1920 (©Britain From Above website, image no. – EPW000101)

Included in the scheme were three much larger circular forts or redoubts that were constructed at Harwich, Dymchurch and Eastbourne; they acted as supply depots for the smaller towers as well as being powerful fortifications in their own right. The defensive strength of the Martello tower system, and its associated redoubts, was never tested before the end of the Napoleonic War. Soon after which the concept of the Martello tower was rendered obsolete by developments in heavy artillery. Some of these fortifications continued in use into the 20th century, including the three redoubts, as observation posts or gun emplacements during the two World Wars.

25.2 Phasing

Phase 1: Early Fortifications (pre-1850s)

Three redoubts, or large coastal artillery forts, were built between 1804 and 1812, at Harwich, Dymchurch and Eastbourne, to provide garrisons of up to 350 men to supplement the contemporary Martello towers, built as a systematic chain of defence along the coast between East Sussex and Suffolk (Image 20). All three towers had various uses during the First and Second World Wars .

25.3 Significance

Designations

The three redoubts at Harwich, Dymchurch and Eastbourne are protected through Scheduling, and two are both Listed and Scheduled (Harwich and Eastbourne).

Exceptional

Harwich Redoubt is considered to be an exemplar and the best surviving example of the three coastal redoubts. It is of high evidential, communal value and is of enhanced historical value due to its role during the Cold War as a civil defence centre for co-ordinating emergency services. It is open as a public museum.

Considerable

Both Dymchurch and Harwich Redoubts are of considerable significance.

25.4 Condition and Threats

HAR Register

Dymchurch Redoubt is in poor and fair condition on the HAR Register at category E – 'under repair or in fair to good repair, but no user identified; or under threat of vacancy with no obvious new user (applicable only to buildings capable of beneficial use)'. The redoubt is considered to be improving, a management plan is in place, and repairs are ongoing.

25.5 Recommendations and Priorities

Dymchurch Redoubt is one of only three redoubts built as part of the Martello chain of towers on the east coast. It is currently on the HAR Register at category E, and should be prioritised for removal from the Register. There has however been a management plan completed for the site and repairs are currently underway.

Two RML guns have been identified at Harwich Redoubt through geophysical survey, there removal and restoration would further enhance the value of the redoubt, which is considered to be an exemplar of its type.

A key threat to all three redoubts is coastal erosion, and those open to the public (Harwich and Eastbourne) should also be monitored to access the impacts of visitor wear and tear.

25.6 Quality Control Grid

HE comments received (October 2016).

26 STRATEGIC AREA SUMMARY: AREA 14, DOVER

OA no	Fort Name	Significance	Designation	Group	Phase	Condition	HAR	Threat
136	Langdon Battery	C	x	4	5	2	x	1, 2, 8
137	Pier Extension Battery	B	LB	2	5	2.3	x	1, 4
138	Shotyard Battery, Dover Castle	A	SM	1	3 (RC)	2	x	2, 8
139	East Demi Battery, Dover Castle	B	SM	1	3 (RC)	1	x	2
140	Shoulder of Mutton Battery, Dover Castle	B	SM	1	3 (RC)	2	x	2
141	Archcliffe Fort	B	SM	4	3 (RC)	3	x	6
142	South Breakwater Battery	B	LB	2	5	2	x	1
143	Knuckle Battery	B	LB	2	6	3	x	1
144	Western Heights including Citadel, Drop Redoubt, North Centre Bastion, North Centre Detached Bastion, North Entrance, Western Outwork, Grand Shaft, St.Martin's Battery	A	SM. LB	3	1	3	C1	2, 5, 6, 7, 8
145	Citadel Battery	B	x	4	5	3	x	2, 4, 5, 7
146	Fort Burgoyne	B	SM	4	3	2, 3	C1	2, 4, 6, 7
147	Admiralty Pier Turret Battery	A	SM. LB	2	3 (RC)	2	x	1, 4
148	Eastern Arm Battery	B	LB	2	5	3	x	1,4

Table 32 Fortifications within Dover (Area 14)
Values given in the table are detailed in Section 5, and the groups are discussed below.

26.1 Strategic Importance

The town of Dover is situated on the south-east coast of Kent at the mouth of the River Dour, occupying a site which is visually spectacular and of great strategic importance. High cliffs extend to the north-east and south-west of the town, creating a formidable natural barrier some 21km long in which Dover occupies the only gap. The position of the town also coincides with the narrowest part of the English Channel – the 34km-wide Strait of Dover – the shortest crossing point to the continent, which has had a major impact on the history of the town and its fortifications.

The defences of Dover fall into two distinct groups: those commanding the heights and those in low-lying positions for the immediate defence of the

town and harbour. The feats of engineering, particularly those employed in the construction of the harbour defences, are as significant in the heritage value of these structures as the defensive purpose.

Strategic groups

The defences of Dover can be organised into distinct groups, which are described below.

Group 1: The Dover Castle group - includes Shotyard Battery, Eastern Demi Battery and Shoulder of Mutton Battery.

Group 2: Coastal batteries defending the harbour - includes Pier Extension Battery, South Breakwater Battery, Knuckle Battery, Admiralty Pier Turret Battery and Eastern Arm Battery.

Group 3: The Western Heights - includes Citadel, Drop Redoubt, North Centre Bastion, North Centre Detached Bastion, North Entrance, Western Outwork, Grand Shaft and St. Martin's Battery.

Group 4: The Hilltop Defences - including Langdon Battery, Fort Burgoyne and Citadel Battery.

Image 22 Dover, Western Heights (© W D Cocroft)

26.2 Phasing

Phase 1: Early Fortifications

Dover has a long history of fortification beginning at Dover Castle which is thought to have been built on the site of an Iron Age Hillfort and was garrisoned until 1958. It therefore represents the full known-history of the defence of Dover. Archcliffe Fort incorporates the remains of the fort constructed in 1539-40 as part of Henry VIII's maritime defence programme. The fortifications which are related to these sites and are reported on in this study, all relate to the third phase of works (1860/ 70s).

The Western Heights, which is of exceptional significance, was planned in the late-18th century after war broke out with France, with substantial elements being completed from the early-19th century (Image 21). The construction of Drop Redoubt was in two periods: the first being from 1804-1808 during the Napoleonic Wars, and the second followed the recommendations of the Royal Commission. The Western Heights defences were largely complete by 1815, but were remodelled as a result of the Royal Commission phase of works.

Phase 3: 1860/70s

Royal Commission

The Western Height Defences which date from *c* 1780 were left incomplete when Napoleon was defeated at Waterloo in 1815. The work was adopted by the 1859 Royal Commission and completed by 1867. It consists of three major portions, from east to west, Drop Redoubt (second stage completed in 1859-1864), North Centre Bastion with Detached Bastion (remodelled and strengthened in the 1850s and they were completed by 1867) and Western Outworks (completed in 1862). The North Entrance was built between 1860 and 1864. St Martins Battery, also part of the Western Heights, was constructed on a terrace cut into the southern slope of the Heights in the 1870s.

As a result of the Royal Commission report defences were improved around Dover Castle and new batteries added including East Demi, Shotyard and Shoulder of Mutton Batteries. They were constructed between 1871 and 1874, as part of the last major re-armament of Dover Castle, although Shoulder of Mutton Battery replaced an earlier battery in existence by 1851.

Fort Burgoyne, which is one of the hilltop defences around Dover Castle, was also constructed following the Royal Commission report. Further extensions of the harbour arms and breakwaters and associated defensive structures built in the early years of the 20th century.

Within the Coastal Defences group, Admiralty Pier Turret and Archcliffe Fort were part of the Royal Commission phase of works.

Phase 5: Turn of the Century to the First World War

Within the hilltop defences group Langdon Battery and Citadel Battery were constructed as a pair and were complete between 1900 and 1904.

Within the coastal defences group, Pier Extension Battery, South Breakwater Battery and Eastern Arm Battery were constructed between 1905 and 1910.

Eastern Arm Battery was constructed by 1908.

Phase 6: First World War

Within the coastal defence group Knuckle Battery was built between 1915 and 1917, on the southern breakwater of Dover Harbour to defend the harbour.

26.3 Significance

Summary

The Dover defences as a group are of exceptional significance. Dover Castle represents a complex multi-period site; the extensive 18th- and 19th-century defensive works surrounding the castle and the remodelling of earlier features provide a rare opportunity to understand how military theory and engineering practice was forced to adapt in the face of new technology.

The Western Heights are of exceptional significance, and together with other contemporary defensive works at Archcliffe Fort, Fort Burgoyne and Dover Castle, provides an insight into the continuing military importance of Dover during the 19th and 20th centuries. In addition, the Roman lighthouse, the medieval chapel and the field terracing will retain archaeological remains relating to the earlier occupation of the headland.

Exceptional

The Western Heights defences are an exemplar, the defences are considered to be the largest, most elaborate and impressive surviving example of early 19th century fortifications in England, which were enhanced as a result of Royal Commission period and later significant additions .

Within the Coastal Defence group, Admirality Pier Turret is considered to be an exemplar. The turret survives well and is a unique structure, inside which remain the only guns of that type ever to be mounted on land. The turret and guns were rotated and elevated using steam power and they are the only example of their type in the United Kingdom.

Shotyard Battery is considered to an exemplar with the Dover Castle group of batteries which were all constructed as a result of the Royal Commission. The battery has exceptional evidential value as the battery is relatively intact and is the least altered of the four 1870s batteries here. The battery has exceptional historical value as it represents a new phase in the arming of the castle in the 1870s with heavy artillery, which as it turned out was a very short-lived episode (Image 22).

Considerable

Within the Hilltop Defences group, Fort Burgoyne is of considerable significance, although of similar form to other Royal Commission fortifications, it includes some unique features such as the wing batteries connected by earthwork lines to the main fort, which were necessary to

fill the defensive gap with Dover Castle. Of the two surviving partner batteries within the Hilltop Defences group, which are both of Considerable significance, Citadel Battery is the best surviving example.

Image 23 Shotyard Battery, Dover Castle (© Oxford Archaeology)

Within the Coastal Defences group, Pier Extension Battery, South Breakwater Battery, Knuckle Battery, Eastern Arm Battery and Archcliffe Fort are all of engineering interest in addition to their roles in the two world wars.

East Demi and Shoulder of Mutton Batteries have considerable historical value as part of a major phase of 19th-century re-fortification at Dover Castle.

Some

Langdon Battery is not Listed or Scheduled; it saw action in both World Wars, however, it has been partially demolished.

26.4 Condition and Threats

On the whole, the condition of the fortifications in Dover is fair, although the issue of uncontrolled vegetation is common. Understandably, the exposed structures on the piers and breakwaters are at risk from salt water damage and coastal erosion.

HAR Register

Western Heights is at category C on the HAR Register, the site is at risk because of a lack of joined up management leading to lapsed maintenance and issues with funding.

Fort Burgoyne is also at Category C on the HAR Register. The structures have been at risk from lack of maintenance and invasive ivy growth.

Poor condition (not on the HAR Register)

Archcliffe Fort, Eastern Arm Battery and Knuckle Battery are all considered to survive in poor condition, as much of the sites have been lost to development.

Citadel Battery survives in near complete condition, but is subject to a number of threats including vandalism, decay of fabric and uncontrolled plant growth.

Development

Although post-war damage has already been done by development in some places, for instance, the A20 widening destroying parts of Archcliffe Fort, the threat of development affecting the setting of the defences is currently a risk in the case of Western Heights. Dover District Council wish to allow a large development close to the Scheduled Monument. At the time of writing, this had been successfully appealed against, although DDC had been quoted as considering a counter-appeal.

At Fort Burgoyne, the demolition of the adjoining Connaught Barracks and the subsequent construction of a housing estate stemming from application 15/00260 has been approved.

26.5 Priorities and Recommendations

The Western Heights is a key priority because it is of exceptional significance, and at risk through the impact of a major development and because it is on the HAR Register at level 'C'. The large scale development does give the opportunity to address issues at the site, and provide opportunity for change at this deteriorating site.

Fort Burgoyne is on the HAR Register at level 'C', and is threatened by development. Again, this may provide opportunities to address some of the issues and threats associated with the site, and facilitated the long-term preservation of the fortification.

Admiralty Pier Turret and Battery are of exceptional significance, in part due to its unique type of steam powered rotating iron turret with 16-inch guns still in position. A survey of the guns should be completed, and a programme of conservation should be undertaken to ensure they do not deteriorate further.

A survey of Pier Extension Battery, East Demi Battery and Eastern Arm Battery is recommended to determine the survival of its remains.

The Conservation Framework for Dover Western Heights (Gibbs, L 2012) makes a number of recommendations, which should be adhered to.

26.6 Quality Control Grid

HE comments (November 2016).

27 REGIONAL SUMMARY: REGION 3, EAST OF ENGLAND

The East of England region has the smallest number of fortifications, with only three identified in the area of Harwich. The three sites are Beacon Hill Fort, Languard Fort and Shotley Point Battery. Due to this small number of sites, it is not relevant to determine percentages in relation to phasing, significance, condition and threats, but common trends are discussed below.

There are five fortifications that fall within the south-east strategic groups, but geographically are part of the HE East of England regional group. These forts have therefore been duplicated in both sections, but have been given only one OA reference number. These fortifications are:

Area 9: Mobilisation Centres
North Weald Redoubt (OA109)

Area 10: Thames Group
Coalhouse Fort (OA115)
East Tilbury Battery (OA116)
Tilbury Fort (OA119)

Area 12: Coastal Redoubt
Harwich Redoubt (OA135)

The Harwich area contains three sites of 'exceptional' significance (including Harwich Redoubt), with only one fortification, Shotley Point Battery, of 'considerable' significance. The area there has a high proportion of significant sites from a variety of Phases (1, 3 and 4). All of the fortifications are either Scheduled or Listed (or both). Beacon Hill Fort, Languard Fort and Harwich Redoubt are all identified as exemplars.

One site is on the HAR Register, Beacon Hill Fort, and is under threat from decay of fabric and vandalism. The sites vary in condition, from good to poor, with a common threat of coastal erosion/ flooding. Indirect development and uncontrolled plant growth are also common threats.

Key Priorities and Recommendations

Recommendations are discussed on the individual datasheets, and the area summaries for the Harwich group. A key priority is Beacon Hill Fort because it is of 'exceptional' significance on the HAR Register with 'extensive significant' problems.

28 STRATEGIC AREA SUMMARY: AREA 15, HARWICH

OA No.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
149	Beacon Hill Fort	A	SM	4	3	A2	4, 5
150	Landguard Fort, including Wing (Right) Battery and Languard Wing (Left) Battery, and Darrell's Battery	A	SM.LB	1	2	x	1,2,7
151	Shotley Point Battery	B	SM	3 (RC)	2, 3	x	1,2,7

Also included within the Harwich area is Harwich Redoubt which is within the Coastal Redoubt section of this report, but repeated here for ease of reference.

135	Harwich Redoubt	A	SM.LB (II*)	1	1	x	1, 8

Table 33 Fortifications within Harwich (Area 15)
Values given in the table are detailed in Section 5.

28.1 Strategic Importance

Harwich is a natural harbour and the gateway to the coastal regions of south Suffolk and north Essex. The only deep water harbour between the Thames and the Humber lies at Harwich, where the rivers Stour and Orwell flow into the sea. The town also had strategic importance because of its close proximity to London

Harwich Redoubt is included within the Coastal Redoubts section as entry number OA 135, however it also lies within the Harwich area, and is therefore discussed within this section.

28.2 Phasing

Phase 1: Early fortifications (pre-1850)

The Harwich Redoubt was built between 1807 and 1809 to protect the important deep water harbour in the event of invasion or attack by Napoleon's forces.

The current Landguard Fort was the third one on the site to be constructed; it guarded the harbour entrance and when in the 1850s brought renewed interest in coastal defence, Landguard was re-armed, and again extensively in the 1870s.

Phase 3: 1860/70s

Harwich was not included within the Royal Commission report of 1859, however lesser ports and harbours without obvious naval significance were also protected. Open batteries improved the defences of Harwich. At Shotley Point a number of works had existed since the Napoleonic Wars, including

two Martello Towers, but these were supplemented in the 1860s by Shotley Battery, this became redundant shortly after 1904 for defence and were later incorporated into a naval shore establishment.

Phase 4: 1880/90s

Harwich's armament at the beginning of this period was largely shaped by the Stanhope Report of 1887, when the defences were set for modernisation with breech-loading guns. In the 1900s five batteries were armed in the years around 1900 dropping to four by the end of 1902. These are: Beacon Hill, Languard, Darrell's and Brackenbury batteries.

By the late 1880s improvements in naval artillery had outstripped the existing defences at Harwich; effectively the town could now be bombarded by ships lying beyond the reach of the coastal guns. In 1889, following the recommendations of a secret defence committee, work began on Beacon Hill Fort, one of the first of a generation of inconspicuous emplacements entirely served by breech loading guns. The newly devised `Twydall Profile' secured the rear of the fort.

At Langley Fort, Right Wing Battery was constructed between 1898 and 1900.

Phase 5: Turn of the Century to the First World War

At Langley Fort, Darrell's Battery was built in 1900-01 and a practice battery was installed in 1903.

28.3 Significance

Exceptional

Beacon Hill Fort is of exceptional significance because it survives well and is of historical value. The original design of the fort was innovative being one of the first of a new generation of fortifications to recognise the vulnerability of highly prominent artillery structures and to adopt a policy of virtual invisibility from the sea. The fort also represents one of the earliest uses of the Twydall Profile on the landward approach, and the bombproof shelter is believed to be the earliest of its kind in England.

Harwich Redoubt is also of exceptional significance, as it is of clear evidential value, and remains the most complete example of the three ten-gun fortifications (redoubts). It is therefore an exemplar of its type.

Languard Fort is of exceptional significance as the visible remains of the fort present an unusually complete physical record of developments in military engineering from the early 18th to the mid-20th century, and in particular during the period between 1890 and 1914. It also has unique architectural features, such as the caponier.

Considerable

Shotley Point Battery is of considerable significance (Image 23).

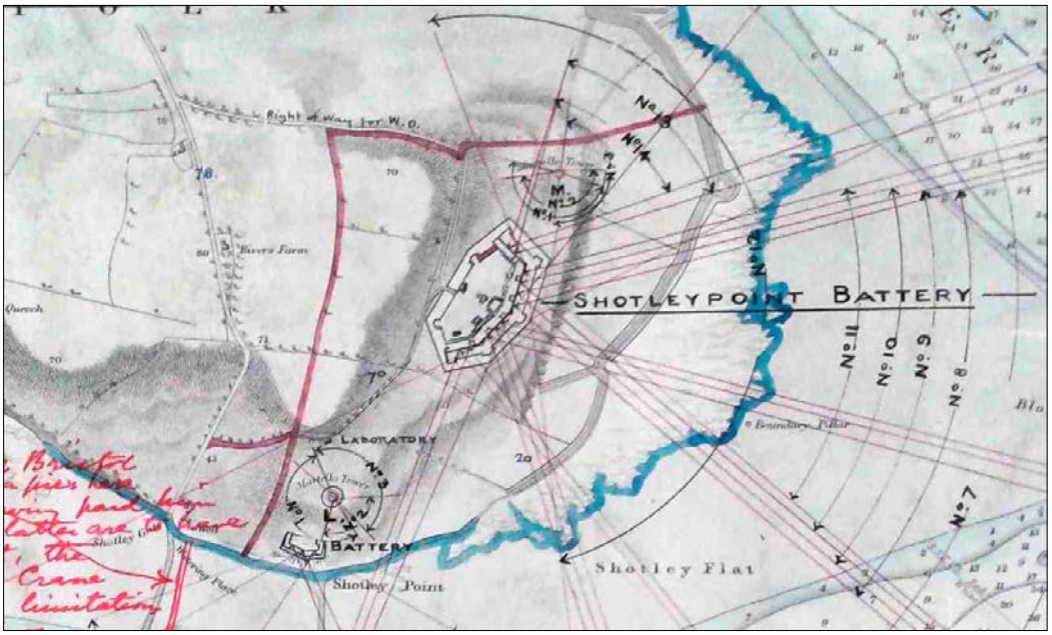

Image 24 Plan of Shotley Point Battery, 1883 (TNA – WO78/4174)

28.4 Condition and Threats

HAR Register

Beacon Hill Fort is on the HAR Register detailed as having 'extensive significant problems'.

Development

The setting of Shotley Point Battery, may be impacted by development. The Port of Felixtowe is due to be developed which may affect the setting of Languard Fort.

28.5 Priorities and Recommendations

Beacon Hill Fort is of 'exceptional' significance, and is on the HAR Register with 'extensive significant problems', it should be considered as a priority to remove it from the register.

The redevelopment of the Port of Felixstowe has the potential to affect both Shotley Point Battery and the setting of Languard Fort and requires consideration.

28.6 Quality Control Grid

HE comments (October 2016).

29 REGIONAL SUMMARY: REGION 4: THE NORTH-EAST

The north-east is a small region, including only three strategic groups which are the Humber, Tees and Hartepool. In total there are only thirteen sites in the region. Due to this small number of sites, it is not relevant to determine percentages in relation to phasing, significance, condition and threats, but common trends are discussed below.

The east coast of England has a high number of First World War fortifications, with 71.43 per cent of the national total. These are mainly identified in the Humber where four of the five sites date from the First World War. Of these, two are Listed Buildings. The Tees and Hartlepool area has no First World War sites, but one remains extant in Northumberland, which is the Scheduled Monument of Blyth Battery. In Tees and Hartlepool three fortifications date from the third phase of construction (1860/70s) and one site was identified in the Humber, however these batteries were not recommended by the Royal Commission. Two QF batteries were built towards the end and at the turn of the century, at Clifford's Fort and Tynemouth Castle.

There are no fortifications identified in the north-east region as being of 'exceptional' significance, although nine sites are of 'considerable' significance. Paull Point Battery and Bull Sand Fort, from the third and sixth phases of construction respectively, are considered to be exemplars.

The surviving fortifications survive in a variety of conditions, with only two of the nine designated sites on the HAR Register. Six of the sites are thought to be in good or good/ fair condition. Five sites are in poor condition. Common threats are coastal erosion and visitor wear and tear. Three sites are under direct threat from development.

Recommendation are discussed in the individual datasheets and in the 'Area Summaries' in relation to the condition and threats to individual fortifications. Bull Sand Fort is identified as an exemplar in the Humber group and within the First World War phase and it is under threat from conversion and development. In the Tees and Hartlepool group, Wave Basin Battery is threatened by the development of the Port of Sunderland as an enterprise zone.

30 STRATEGIC AREA SUMMARY: AREA 16, THE HUMBER

OA no.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
152	Paull Point Battery	B	SM. LB	3	3	A2	1, 6
153	Sunk Island Battery	C	x	6	3	x	1, 4
154	Bull Sand Fort	B	LB	6	2	x	6
155	Spurn Point	C	x	6	3	x	1,2,5
156	Haile Sand Fort	B	LB	6	1	x	4,5

Table 34 Fortifications within The Humber (Area 16)
Values given in the table are detailed in Section 5.

30.1 Strategic Importance

The Humber Estuary and the River Humber open out onto the North Sea, providing access to numerous ports. Aided by the natural, and changing, Spurn, the river has been defended along its length at strategic points for over 500 years. Hull's fortifications began in 1542 as part of Henry VIII defensive works across England. The fortification of the area was then maintained and added to throughout the following centuries.

It was during the First World War that the strategic importance of the Humber area increased. British coastal defence as a whole was in a strong position as a result of an appreciation of the German naval threat in the previous ten years. Despite this, some areas needed substantial additional works principally on the east coast, and particularly the Humber. Here, the opening of Immingham Docks, and the existence of a large admiralty oil depot nearby necessitated enhanced defences. A war anchorage of considerable importance was established on the north side of the river opposite Grimsby.

30.2 Phasing

Phase 3: 1860/70s

Hull Citadel was neglected and then decommissioned and finally demolished, being superseded by Paull Point Battery, built in 1861 to 1864. The battery was to repel raiding parties along the Humber, although it was only manned during times of war. In 1886 a Submarine Mining Establishment was set up just to the north of the battery to operate a minefield in the Humber. As part of this, a small concrete observation post was built into the battery's north western rampart from where the mines could be detonated electronically. In 1915, the defensive structures were relocated further down the Humber.

Phase 6: First World War

A group of batteries and forts were built around the Humber between 1914 and 1919, these are: Sunk Island Battery, Bull Sand and Haile Sand Forts,

Spurn Point with Green, Light Permanent and Light Temporary Batteries (OA153-156) (Image 24).

Image 25 Bull Sand Fort, 1998 (© Copyright Historic England Archive ref: nmr 17085/17)

30.3 Significance

Designations and Exemplars

Paul Point Battery is a Scheduled Monument and Listed Building, and is the only fortification from the third phase of construction (1860s) and therefore is an exemplar of this period within Humber. It's construction was not however initiated by the report of the Royal Commission.

Haile Sand Fort and Bull Sand Fort are both Grade II Listed, and were built as a pair during the First World War, with an anti-submarine steel mesh net stretched between them. Of the two Bull Sand Fort is thought to be the best surviving examples, because it survives in better condition and contains a number of extant fixtures and fittings, paintwork, cupboards, doors and signs.

Considerable

Paull Point in particular is a very well preserved example of an enclosed Victorian battery and, coupled with its historical value, adds greatly to the significance of the Humber's defences. It is a very well-preserved enclosed Victorian battery that is effectively complete with the exception of its guns. The survival of outlying associated features such as the Defence Electric Light emplacement, the practice batteries and the remains of the Submarine

Mining Establishment adds to its importance. In addition, it has almost 500 years of history as a military location.

Bull Sand Fort is a striking military installation within the seascape, and a prominent reminder of the defences of the First World War and the remarkable engineering feats that were engineered to protect the coastline.

Haile Sand Fort has particular value due to the engineering challenges faced during construction.

Some Significance

Sunk Island Battery has some significance, it is almost inaccessible and the condition is poor.

Spurn Point with Green, Light Permanent and Light Temporary Batteries have some significance, however, the natural erosion of the spit of land on which they are sited compromises this. The batteries have group value, and demonstrate changes in defence through the two World Wars, but they are limited evidential value due to the impacts of coastal erosion, vandalism and uncontrolled vegetation.

30.4 Condition and Threats

In general, the condition of the fortifications in the Humber area is poor to fair. The more exposed structures are at risk from salt water damage and erosion, notably, the Spurn Point structures which will disappear over time as the Spurn has been allowed to naturally erode.

HAR Register

Paull Point Battery is a described on the HAR Register as being in 'Generally unsatisfactory with major localised problems'.

Poor condition, but not on the HAR Register

Sunk Island Battery has partially collapsed and suffers from structural problems. Spurn Point with Green, Light Permanent and Light Temporary Batteries have been subject to alteration, erosion, vandalism and are overgrown.

Development

Bull Sand Fort has been under threat from conversion and development, but its current future is unknown since its owners were taken off the charity list. Likewise, Haile Sand Fort has recently been taken off the property market and its future is unknown.

30.5 Recommendations and Priorities

Paull Point Battery is exemplar within the 1860s fortification phase of construction within the Humber group, and is of considerable significance, protected both as a Listed Building and Scheduled Monument. It is on the HAR Register with 'major localised problems', which need to be addressed.

It is recommended that the unlisted structures are surveyed and recorded, including the remains of the First World War battery at Sunk Island, but particularly those on Spurn Point which is naturally eroding.

The repeated attempts to sell Haille Sand Fort and reports of 'development' in the press are of concern and consideration should be given to its current condition and future use. Likewise, the future of Bull Sand Fort remains uncertain. Both forts should be monitored to ensure appropriate secondary uses ensure their long-term preservation.

30.6 Quality Control Grid

HE comments (September 2016).

Comments received from Lincoln City Council HER in relation to Haile Sand Fort.

31 STRATEGIC AREA SUMMARY: AREA 17: TEES AND HARTLEPOOL

OA No.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
157	Spanish Battery	D	x	1	3	x	1, 8
158	Tynemouth Castle, QF Batteries	B	SM	5	1	x	1, 8
159	Cliffords Fort, QF Batteries	B	SM. LB.	4	1	x	1, 8
160	Wave Basin Battery	B	LB.	3	2	x	6,7
161	South Gare Battery	D	x	3	3	x	1
162	Heugh Battery	B	SM	3	1/2	x	1

Table 35 Fortifications within Tess and Hartlepool (Area 17)
Values given in the table are detailed in Section 5.

31.1 Strategic Importance

In the 19th century Tynemouth was the principal defence of Tyneside, and the north of England's main outlet for iron and coal and the centre of shipbuilding and the manufacture of armaments. Many of the warships on which Britain's command of the seas depended were launched from Tyne shipyards, whilst Armstrong's works at Elswick, on the river's northern bank, had by 1900 become one of the foremost weapons factories in the world.

Between 1900 and the abolition of coast artillery in 1956, the Tyne was the northernmost permanently defended port in England. In 1900 the Tyne, despite its remoteness from France, had a relatively high level of armament, which continued to be modernised. Towards the end of the century Tynemouth's defence depended on the 16th Century Tynemouth Castle, Spanish Battery and Clifford's Fort. The Owen Report categorised Tynemouth defences to class 'C', and the defence cuts brought the defences of the north-east to their nadir in the decade prior to the First World War.

31.2 Phasing

Phase 1: Early Fortifications (pre-1850s)

Tynemouth Castle is a medieval castle with post-medieval artillery and 19th-20th century coastal battery emplacements (*see* below). The Castle has a long period of use, and came into prominence again in the 19th century. It was supported by Spanish Battery which is also an earlier fortification, that came back in to defence use in the later two decades of the 19th century.

Clifford's Fort dates form the 18th century, but by the time of the Napoleonic Wars it was obsolete. By 1841 it was stated to be dismantled, however as tensions increased a QF battery was constructed between 1894 and 1895 (*see* below) (Image 25).

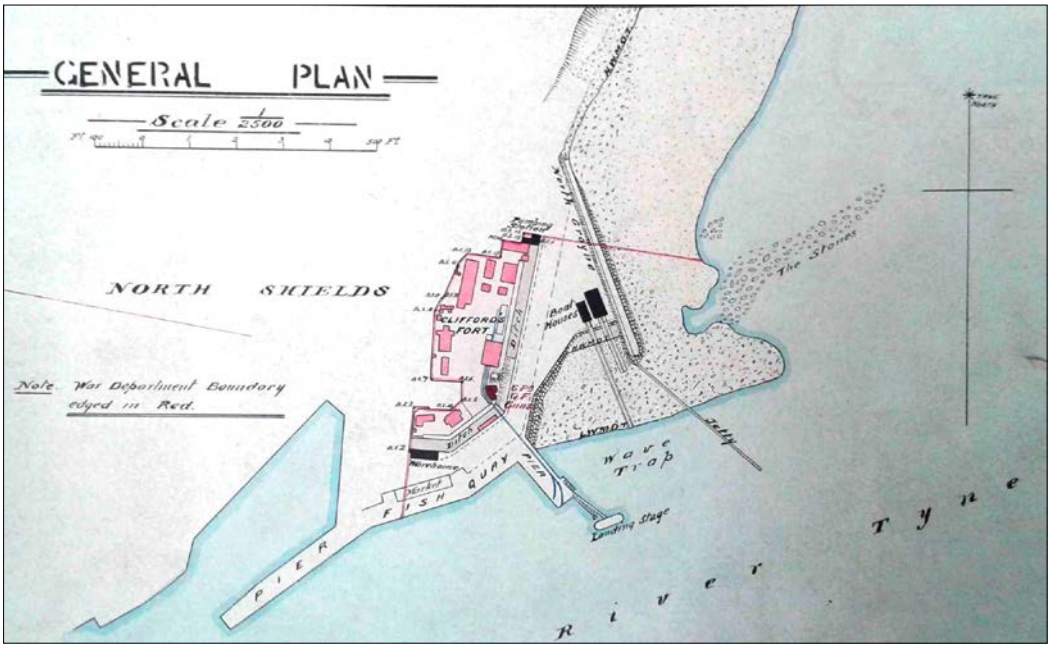

Image 26 Plan of Clifford's Fort, 1904 (TNA – WO 78/4970)

Phase 3: 1860/70s

Wave Basin Battery's date of construction is unclear, sources state it was constructed in the 1860s, and the Listed Building description give its construction date as *c* 1873.

South Gare Battery was constructed between 1863 and 1887 to provide coastal defence for the Tees region. Heugh Battery was constructed slightly earlier, between 1859 and 1860, and like South Gare Battery, it remained in use through the First and Second World Wars.

Phase 4: 1880/1890s

At Clifford's Fort between 1894 and 1895, a 6-pdr QF battery was built in the salient between the two front faces on the enceinte.

Phase 5: Turn of the Century to the First World War

At Tynemouth Castle, starting in 1899 the defences were rebuilt for the last time, for a 9.2-inch Mk X, two 6-inch Mk VII, two 12-pdr QF and a practice battery for two 6-pdr QF guns.

31.3 Significance

Designations

Both Tynemouth Castle and Clifford's Fort are Scheduled Monuments. The QF batteries at Clifford's Fort form part of this Scheduling.

Heugh Battery is also Scheduled, and retains a range of well-preserved features and artefacts including rare shell hoists.

Wave Basin Battery is Grade II Listed, and remains the only surviving example of a RML battery between the Humber and the Tweed.

Considerable

The batteries at Tynemouth Castle are of historical value as part of the long history of defence of this area, they are not individually of unique construction or representative of a technological advance, but have collective value as part of the history of a significant fortified area in England.

Likewise, the battery at Clifford Fort is not of outstanding merit in terms of its aesthetic or evidential value, but enhance the value of the 17th century Clifford's Fort and the medieval castle at Tynemouth, through a long period of use up to the Second World War.

Wave Basin battery is of value as the only surviving example of an RML battery between the Humber and the Tweed. Heugh Battery also survives well, and is historical significant for its involvement in one of only two engagements between British coastal artillery and enemy ships during the First World War.

Little

Spanish Battery is of little significance because although it had a long and interesting period of use, associated with Tynemouth Castle, it has a poor level of survival. Likewise, South Gare Battery has a poor level of survival with only the aprons of the emplacements surviving.

31.4 Condition and Threats

Overall, coastal erosion is a key threat to the Tees and Hartlepool group. Visitor wear and tear may threatened the heritage attractions of Tynemouth Castle and Clifford Fort, as well as Spanish Battery which is easily accessible to the general public.

Development

The port of Sunderland is a designated enterprise zone and its long-term improvement may impact Wave Basin Battery.

31.5 Priorities and Recommendations

Consideration should be given to Wave Basin Battery in the development of the Port of Sunderland as an enterprise zone. A programme of research and recording would be of benefit in providing a more in-depth understanding of its date of construction and use.

South Gare Battery and Spanish Battery although of little significance are of local interest and add to the collective defence use of the area. Both survive in

poor condition and would benefit from some recording prior to further loss, particularly through coastal erosion.

31.6 Quality Control Grid

HER comment received relating to Heugh Battery,

32 STRATEGIC AREA SUMMARY: AREA 18, NORTHUMBERLAND

Fort No.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
163	Blyth Battery	B	SM	6	1	x	5
164	Lindisfarne Castle	B	SM	1	1	x	4, 8

Table 36 Fortifications within Northumberland (Area 18)
Values given in the table are detailed in Section 5.

32.1 Strategic Importance

The Tyne was the northernmost permanently defended port in England and the artillery of the area was organised around Blyth, Tynemouth and Sunderland. Most defences were concentrated in the Tees and Hartlepool area, but there were strategically important points further north which were necessary to defend.

Lindisfarne Castle, which dates from the 16th century, continued to be defended in the 19th century, and illustrates that long strategic priority of the area. The First World War battery at Blyth was strategically position to defend the port of Blyth and its submarine base HMS Elfin.

32.2 Phasing

Phase 1: Early Fortifications (pre-1850s)

Lindisfarne Castle has a long period of use from the mid-16th century, in the 1860s its defence use was increased in the 1860s and 1870s until it was disarmed in 1893 (Image 26).

Phase 6: First World War

Blyth Battery was constructed in the First World War to protect the harbours at Blyth and prevent enemy landings. It continued in use during the Second World War, until its restoration development as a heritage museum in 2008.

32.3 Significance

Designations

Blyth Battery is a Scheduled Monument, and three elements are also Listed at Grade II.

Lindisfarne Castle is Grade I Listed, which a long period of use from the mid-16th Century,

Considerable

Both Blyth Battery and Lindisfarne Castle are of considerable significance. The significance of Lindisfarne Castle is predominantly attributed to the significance of the Tudor Castle, but its later defence use between the 1860s and 1890s enhance its value.

Blyth Battery is of considerable significance as only one of twenty-eight such batteries to survive in a complete state. It has a long period of use from its construction in the First World War and use during the Second World War. The buildings have been used by the community for over a century, and now open as a heritage centre.

32.4 Condition and Threats

Coastal erosion and visitor wear and tear (including vandalism at Blyth Battery) are key threats.

32.5 Quality Control Grid

HE comments (August 2016).

Image 27 Lindisfarne Castle, 1947 (©Britain From Above website, image no. – EAW008050)

33 REGIONAL SUMMARY: REGION 5, THE NORTH-WEST

The north-west region includes the strategic groups of Mersey and Cumbria, with a total of three fortifications. Due to this small number of sites, it is not relevant to provide percentages in relation to phasing, significance, condition and threats, but common trends are discussed below.

The three sites identified are from Phases 1, 2 and 3. Both sites in the Mersey are Listed and of 'considerable' significance. Fort Perch Rock is on the HAR Register, and in poor condition, an overall strategy is required to halt its worsening condition. Overall, a common threat is coastal erosion.

34 STRATEGIC AREA SUMMARY: AREA 19, THE MERSEY

OA no.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
OA168	Fort Perch Rock Mersey	B	LB	1	3	C1	1,3,4
OA169	Liscard Battery	B	LB	2	1	x	x

Table 37 Fortifications within The Mersey (Area 19)
Values given in the table are detailed in Section 5.

34.1 Strategic Importance

Since the early-18th century, Liverpool has had a large system of docks located on both sides of the Mersey. The defences included within this study were built to defend the entrance to the River Mersey and therefore the approach to Liverpool, and its docks. The port of Liverpool's topography lessened its vulnerability as a naval target; it was much narrower at its entrance than the Humber or Thames, and the Mersey could easily be covered by fire from batteries placed either side of its mouth.

34.2 Phasing

Phase 1: Early fortifications (up to 1850s)

Fort Perch Rock was built between 1826 and 1829 to defend the approach to Liverpool, designed by Captain J. Sykes Kitson of the Royal Engineers (Image 27).

Phase 2: 1850s

Liscard Battery was built in 1858, but was obsolete by 1912. Following this many of the associated buildings were demolished and houses built within the battery walls.

34.3 Significance

Designations

Fort Perch Rock is Listed at Grade II* and Liscard Battery is Grade II Listed.

Considerable

Fort Perch Rock is of considerable evidential and historic significance as it provides a complete physical record of a coastal defence battery throughout the late-19th to mid-20th centuries. It is also a rare example of a fort constructed in the 1820s.

Liscard Battery is of considerable significance, however there is little surviving original setting of the battery, which places the value of the site at the lesser end of this scale. The purpose of these structures is probably lost to the casual observer, as the monument is now completely devoid of context and much-reduced.

34.4 Condition and Threats

HAR Register

Fort Perch Rock is at category 'C' on the HAR Register. Basic maintenance is undertaken, however, an overall strategy to address condition is required for the long term.

34.5 Recommendations and Priorities

Fort Perch Rock requires repair and a long-term maintenance plan in order to halt its worsening condition, and enable its removal from the HAR Register.

34.6 Quality Control Grid

HE comments received (September 2016), and from Merseyside HER.

Image 28 Plan of Perch Rock Battery, 1891 (TNA – WO 78/3998)

35 STRATEGIC AREA SUMMARY: AREA 20, CUMBRIA

OA no.	Fort Name	Significance	Designation	Phase	Condition	HAR	Threat
OA170	Hilspford Battery	C	x	6	3	x	1

Table 38 Fortifications within Cumbria (Area 20)
Values given in the table are detailed in Section 5.

35.1 Strategic Importance

Barrow-in-Furness had a large steelworks and ship building industries and by the First World War submarines were also built there. Its strategic importance throughout the period in this study, therefore, was related mainly to the manufacturing industry and, although not facing mainland Europe, its defence was vital.

35.2 Phasing

Phase 6: First World War

Hilpsford Battery was an examination battery which opened in 1915, which ascertained the identity of those vessels entering Morecombe Bay and Piel Channel leading to the docks at Barrow-in-Furness.

35.3 Significance

Some significance

Hilpsford Battery is undesignated and with seemingly little survival of the fixtures, the evidential value is low. The main significance lies in its historical value as it represents the rapid response to threats to the coast and dock in both the First World War and in Second World War. Although of only 'some' significance, this is the only site within this study that falls within this area which enhances its significance.

35.4 Condition and Threats

Hilpsford Battery is in poor condition, mainly due to coastal erosion and collapse.

35.5 Priorities and Recommendations

It is recommended that the battery is surveyed to assess what remains to inform any further intervention.

35.6 Quality Control Grid

Comments received from Cumbria HER.

36 APPENDIX 1 - ACKNOWLEDGEMENTS

The following is a list of heritage professionals who provided information and advice of fortifications within their locality. OA are grateful for their help and assistance in contributing to this report. Please accept our apologises for any individuals who may have been unknowingly omitted from this list.

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Daniel Basford, Heritage at Risk Project Officer;
David Brock, Principal Inspector of Historic Buildings and Areas;
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Clare Charlesworth, Principal Adviser Heritage at Risk;
Wayne Cocroft, Historic Places Investigation Team East Manager;
Annie Evans, Heritage at Risk Architect;
Will Fletcher, Inspector of Ancient Monuments;
Lucy Foster, Assistant Listing Adviser;
Nicholas Hanks, Assistant Curator Roman Archaeology;
Peter Kendall, Principal Inspector of Ancient Monuments;
Rebecca Lambert, Assistant Inspector of Ancient Monuments;
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Paul Roberts, Inspector of Ancient Monuments;
Debbie Priddy, Inspector of Ancient Monuments;
Chris Welch, Inspector of Ancient Monuments;
David Wilkinson, Assistant Inspector of Ancient Monuments.

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Leonora Goldsmith, HER officer, North Yorkshire;
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Rachael Grahame, Archaeology, HER, Tees Archaeology;
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Sophie Unger, HER officer, East Sussex County Council;
Dr. John Salvatore, HER Officer, Plymouth City Council;
Chris Webster, Somerset Historic Environment Record;
Claire Pinder, Senior Archaeologist, Dorset County Council;
Bill Horner. County Archaeologist, Devon County Council;
Mark Brennand, Lead Officer Historic Environment and Commons;
Liz Williams, Heritage and HER Officer, Northumberland County Council;
Dr Ben Croxford, HER Officer, Merseyside;

Alison Bennett, HER Officer, Essex County Council;
Jennifer Morrison, Tyne and Wear Archaeology Officer;
Ian McCaffery, Senior Planning Officer (Conservation), North Tyneside;
David Hopkins, County Archaeologist, Hants County Council;
Hannah Henderson, Cornwall and Scilly Historic Environment Record.

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General Websites

The following websites were used to assess individual fortifications, the web link is not given for each fortification because of the resulting length of the bibliography. Information about individual fortifications can be gained by following the link below and entering the fortifications name.

British Listed Buildings
http://www.britishlistedbuildings.co.uk/

Britain From Above
http://www.britainfromabove.org.uk/

Google Street View and Google Earth
www.google.co.uk/maps

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Padstow Battery
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Pendennis Castle
Cornwall Planning Portal

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Portland History
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The Urban Explorer
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Blacknor Battery
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Brean Down Fort
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Stoke Holm
Stoke Holm Island
https://www.steepholm.org.uk/

Wikipedia
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Area 7: Portsmouth

Browndown Battery
Fort Gilkicker
http://www.fortgilkicker.co.uk/browndownrange.htm

Fort Monckton
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Newhaven Fort
Wikipedia
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Littlehampton Fort
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http://www.littlehamptonfort.co.uk/

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Shoreham Fort
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https://www.shorehamfort.co.uk/

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Area 9: Mobilisation Centres

Reigate Fort
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Box Hill
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Subterranean History
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Queenborough Lines
Fortified Places
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Fort Borstal

Fort Borstal
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Medway Planning
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Fort Horsted
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Fort Luton
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Kent Government
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Langdon Battery
Subterranean Britannica
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Pier Extension Battery
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Citadel Battery
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The Land Trust

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Region 3: East of England
Region 15: Harwich

Beacon Hill Fort
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Shotley Point Battery
BBC
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Region 4: North-East Region
Area 16: The Humber

Sunk Island Battery
Hull & East Riding at War
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Haile Fort
Tepilo
https://www.tepilo.com/blog/2016/2/a-unique-listing

Area 17: Tees and Hartlepool

Clifford's Fort
Wikipedia
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Heugh Battery Museum
http://www.heughbattery.co.uk/

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Area 18: Northumberland

Blyth Battery
Keys to the past
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Northumberland Government
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Blyth Battery
www.blythbattery.org.uk

Lindisfarne
National Trust
www.nationaltrust.org.uk

Region 5: North-West
Area 19: The Mersey

Fort Perch Rock
http://www.fortperchrock.org/Fort_Perch_Rock/Home.html

Liscard Battery
Archaeology data service
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Area 20: Cumbria

Hilpsford Battery
Cumbria Wildlife Trust
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