

The impact of the Second World War on the rural landscape of Norfolk

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Abstract

Conventionally, historians of the Second World War have focussed on political strategies, military operations, social and individual oral histories. Despite a vast secondary literature, investigations relating to landscapes of the era, other than in terms of theatres of war, are few. This thesis brings a landscape history perspective to studying the impact that the war, and particularly the military, had on the landscape and working lives of people in one English county. Landscape history is the study of the effect of human activity upon the natural environment; how communities, agriculture, industry and commerce have changed the places in which people live and work. The landscape provides opportunity and constraint; it may facilitate or complicate human endeavour. The approach benefits from its inter-disciplinary nature, being most closely associated with archaeology but crossing into social and cultural history, ecology, geology and environmental studies. It combines the study of extant and lost standing structures with documentary sources in examining the relationships between their intended function and the physical evidence in their environment. Dispositions and networks of monuments in the landscape represent powerful evidence in their own right that aid understanding of historical processes and narratives. This thesis will examine six integrated themes – anti-invasion defences, airfields, training areas, logistics and infrastructure, country houses and agriculture – each of which impacted upon the landscape in different ways in the six years of the Second World War. It will also discuss pre-history and post-war legacy in each category, to demonstrate that there is a longer chronology that informs events and outcomes. A landscape history of the war has yet to be written and this thesis aims to explore ways in which it might realistically be approached at a regional level, as an effective way of studying the range of inter-related material and physical evidence.

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Lastly, I would like to thank my wife Ros for her forbearance, patience and tolerance for which I am grateful and which I hope I haven't taken for granted too frequently.

Chapter 1 - Introduction

‘Modern arms are insatiable in the matter of land; new weapons and new defences need land and more land, and generally of the best quality.’¹

The Second World War is possibly the most exhaustively addressed episode of modern history visited by military, political and social historians. Eventually global in scope, the complexities of changing international geopolitics between 1939 and 1945 impacted upon national, regional and local communities in every nation state drawn into the conflict, whether by decision or default. This thesis seeks to examine the extent and impact of landscape change in one English county during the war, and does so from the perspective of landscape history. There is a holistic contribution to knowledge to be gained from this approach, which reinforces the relevance of regional identity in the wider geographic and historical context.

Historiography

Conventionally, historians of the Second World War have focussed on political strategies, military operations, social and individual oral histories.² The study of the conflict from a landscape perspective offers insight into a somewhat disjointedly researched area. Despite a vast secondary literature, investigations relating specifically to landscapes of the Second World War have long been absent.

Although landscape history as a discipline emerged from the 1950s, only relatively recently has attention been accorded it in relation to landscapes of warfare.³ For early writers such as

¹ Ministry of Information (Laurie Lee) *Land at War* (1945) p.1

² Noted examples include Liddell Hart, B.H. *A History of the Second World War* (London, 1970); Gilbert, M. *The Second World War* (London, 1989); Keegan, J. *The Second World War* (London, 1989). For social commentary see Calder, A. *The People's War* (London, 1969); Longmate, N. and *How We Lived Then: a History of Everyday Life during the Second World War* (London, 1971, 2002); Gardiner, J. *Wartime Britain, 1939-1945* (London, 2004);

³ Doyle, P. and Bennett, R. *Fields of Battle - Terrain in Military History* (Dordrecht, 2002); Pearson, C., Coates, P, and Cole, T *Militarized Landscapes – From Gettysburg to Salisbury Plain* (London, 2010)

Hoskins and Rackham the war was, respectively, a calamity and an irrelevance.⁴ The rapid growth of interest in material remains of conflict has however initiated interest from an archaeological and conservation perspective. English Heritage has published a number of discussion reports recommending actions to be taken, from a combined archaeology and heritage stance, although they take a national approach.⁵ Colin Dobinson's very thorough and detailed series of studies for the Council for British Archaeology focus on the higher echelons of command at national and regional level, viewed through divisional and corps documentation, whilst William Foot's series of localised case studies demonstrate how the military archaeology of anti-invasion defences differed across England in 1940. Both agreed however that there was a need for regional studies to show how national defence strategy manifested in local practice and how local sites sit in the wider historical context.⁶ Monuments and structures are still, however, discussed in isolation with little reference to context. A valid archaeological horizon exists here, where artefacts that identify a culture and are found widely, though restricted to a particular area for a particular time period, are appropriate to regional studies. Further, study of the conflict landscape is somewhat unconnected in the secondary literature; agriculture is not discussed alongside country houses, nor anti-invasion defences with training areas, yet they are all holistically connected in time and place at a regional level.

Nonetheless, studies have emerged in recent years, investigating contemporary landscapes in Europe and from the perspective of human conflict. Notable examples include Christopher Pearson's monograph on the relationship between war and nature in Vichy France during the Second World War, in which he explores the regime's approach to land use from a productivity and cultural perspective and, for the Resistance, a platform for activity and refuge; Stephen Badsey's overview of the opportunities and threats posed by the Normandy

⁴ Hoskins, W.G. *The Making of the English Landscape* (London, 1955). Rackham, O. *The History of the Countryside* (London, 1986) p.26. Rackham observes that the seventy years between 1870 and 1940 and even the Second World War itself were less destructive to the countryside than any five years since.

⁵ Schofield, J., *Modern Military Matters: Studying and Managing the Twentieth-Century Defence Heritage in Britain: a Discussion Document* (York, 2004).

⁶ Dobinson, C. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* (Council for British Archaeology, York, 1996); *Vol. VI.1–2 Coast Artillery: England's Fixed Defences Against the Warship* (York, 2000); *Vol IX 1 Airfield Themes - Studies in the evolution of Britain's military airfields, 1918-45* (English Heritage report, 2000); *Vol X Airfield Defences - Policy and fabric for the ground defence of airfields 1940-45* (English Heritage, 2000); Foot, W., *Beaches, fields, streets, and hills - the anti-invasion landscapes of England, 1940* (English Heritage and Council for British Archaeology, York, 2005)

terrain in 1944, positing that terrain had a significant and hitherto overlooked impact upon the conduct of both sides in the campaign; and Passmore, Tunwell and Harrison's study of the forgotten landscape of German 7th Army supply depots in the forests of north-west Normandy. This last study makes the point that conflict landscapes are often obscured or obliterated by post-war reconstruction, urbanisation or agriculture but that those located in historic forests have remained relatively unchanged; their obscurity also explaining the lack of inclusion in battlefield tours and tourist guides, a characteristic shared by U.K.'s and Norfolk's anti-invasion landscapes.⁷ Conversely, these three examples are examples of conflict landscapes, that is, where direct confrontation between military protagonists took place, whereas this thesis investigates a landscape of military preparation. The distinction is not pedantic; the point is that the Norfolk landscape could have, in 1940, become the focus of active conflict, but transitioned subsequently to one of military preparation.

Given the significant impact of wartime exigency on the agricultural landscape, examples of the co-existence between agriculture and the military are rare. William Foot's investigation of the impact of the military on British agriculture is comprehensive and thorough but presents a national, rather than regional perspective.⁸ Martin and Langthaler's comparison between wartime and post-war agricultural practice in Britain and Austria appears unique in contrasting wartime and post-war agricultural practice across two quite distinct countries.⁹ By contrast, Woodward's concept of militarised geographies as the legitimisation of control of civilian spaces by advanced capitalist economies focuses on the later twentieth and early

⁷ Pearson, C. *Scarred landscapes : War and Nature in Vichy France* (Basingstoke, 2008); Badsey, S. 'Terrain as a Factor in the Battle of Normandy, 1944' in Doyle and Bennett (eds.) *Fields of Battle-Terrain in Military History* (Dordrecht, 2002) pp.345-363; Passmore, D., Tunwell, D., Harrison, S. 'Landscapes of Logistics: The Archaeology and Geography of WWII German Military Supply Depots in Central Normandy, North-West France' in *Journal of Conflict Archaeology* **8**, 2013, Issue 3 pp.165-192

⁸ Foot, W. *The Impact of the military on the agricultural landscape of Britain in the Second World War* (MPhil thesis, University of Sussex, 1998) and Foot, W. 'The Impact of the military on the agricultural landscape of England and Wales in the Second World War' in Short, B., Watkins, C. and Martin, J. (eds.) *The front line of freedom – British Farming in the Second World War* Agricultural History Review Supplementary Series 4 (British Agricultural History Society, Exeter, 2006) pp. 132-142

⁹ Martin, J. and Langthaler, E. 'Paths to Productivism: Agricultural Regulation in the Second World War and its Post War Legacy in Great Britain and German-Annexed Austria' (2009) https://www.kuleuven.be/icag/files/John_Martin_Ernst_Langthaler.pdf (accessed 13 August 2018)

twenty-first centuries; it does however offer relevant discourse on the theme of military environmentalism, especially pertinent to the long term use of training areas.¹⁰

Launched in 2005, the Journal of Conflict Archaeology in its first editorial suggested that battlefield archaeology had gained popularity and academic credibility in very recent years, evidenced by major conferences in Britain, Europe and the U.S.A. Concern was however expressed for a lack of respect for more modern sites.¹¹ A recent study makes the point that archaeology can indeed add to local and regional interpretation of strategies of the Second World War, and demonstrated that buildings and structures were often products of local interpretation of top-down planning strategy.¹²

Landscape history - an inter-disciplinary approach

Landscape history is the study of the impact of human activity upon the natural environment; how communities, agriculture, industry and commerce have changed the landscape and been directed by it. The landscape provides both opportunity and constraint; it may facilitate or complicate human endeavour. Its study is inter-disciplinary, being most closely associated with archaeology but crossing into social and cultural history, ecology, geology and environmental studies. It combines the study of standing structures – extant and lost – with documentary sources in examining the relationships between their intended function and the physical evidence in their environment. Dispositions and networks of monuments can represent powerful evidence in their own right that aid understanding of historical processes and narratives.¹³ Human activity in the present is invariably influenced by what has been inherited from the past. Patterns of settlement, urban and rural, agricultural and industrial processes all inform perceptions of landscape and local and regional identity. Studies have however often focused on regional and local themes in isolation, separated from the national and international perspective. Few studies have integrated the micro and macro issues, that is, the local with the regional, directed by the national, to give historical context. The close association between landscape history and other disciplines offers the opportunity to utilise

¹⁰ Woodward, R.I. *Military Geographies* (London, 2004)

¹¹ Pollard, T. and Banks, I. 'Why a Journal of Conflict Archaeology and Why Now?' in *Journal of Conflict Archaeology*, 1:1, iii-vii

¹² Liddiard, R. and Sims, D. 'A Piece of Coastal Crust' in *History* (Journal of the Historical Association) Vol.97, 327 pp.402-430

¹³ Liddiard, R. and Sims, D. *A Very Dangerous Locality – The landscape of the Suffolk Sandlings in the Second World War* (Woodbridge, 2018) p.1

documentary sources, archaeological evidence, cartography and geographic information datasets to give cross-referenced interpretation and corroboration. Landscape studies have tended to explore pre-historical and medieval periods rather than the modern era. Perhaps the perceived lack of archaeology has been a deterrent; the reality is, however, that there is no shortage of structures that inform and instruct. The absence and importance of modern military studies has been recognised in recent years and English Heritage is of the opinion that ‘twentieth-century defence studies is a multi-disciplinary field.’¹⁴

Rationale

A landscape history of the Second World War has yet to be written and would be a vast undertaking in covering all theatres of the war. This thesis aims to explore ways in which it might realistically be approached at a regional level, an effective way of studying the range of inter-related material and physical evidence. County-based studies have a pedigree in landscape research and Norfolk has characteristics which make it eminently interesting for study.¹⁵ As a landscape it is diverse, encompassing heaths, marshlands, claylands, coastline, expansive waterways and variable topography, contained within two thousand square miles of the fifth largest English county. Each variation is characterised by different historic structure and evolution of land use. Wartime changes in these sub-regional variations impacted differently according to top-down directive and the constraints of the land itself.

Norfolk was historically an area of the English coastline vulnerable to invasion from across the North Sea. The twentieth century in particular saw the county utilised by the military for training purposes, airfields and, during both world wars, for the construction and deployment of anti-invasion measures.¹⁶ Strategically the location on the east coast presented a threat followed by an opportunity; the first, an exposed coastline which made it highly vulnerable to invasion between 1939 and 1941 and, the second, proximity to the continent for the

¹⁴ Schofield, J., *Modern Military Matters: Studying and Managing the Twentieth-Century Defence Heritage in Britain: a Discussion Document* (York, 2004) p.5

¹⁵ Wade Martin, S. *A History Of Norfolk* (Chichester, 1984, 1997); Dymond, D. *The Norfolk Landscape* (Bury St Edmunds, 1990); Williamson, T. *England's Landscapes: East Anglia* (London, 2006); Wade Martin, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes 1870-1950* (Woodbridge, 2008) pay particular attention to the variations in landscape and their associated characteristics of human activity.

¹⁶ Kent, P. *Fortifications of East Anglia* (Lavenham, 1988); Osborne, M. *Defending Norfolk- the Military Landscape from Pre-history to the Present* (Croydon, 2015) offer a sound pre-cursor to, as well as a chronology throughout, the twentieth-century.

Combined Bomber Offensive from 1942 to 1945. The county is not unique in being heavily militarised during the Second World War but the landscape history approach can present aspects of Norfolk that, firstly, differentiate the area from other English regions and, secondly, help explain how military structures relate to the wider national wartime context. The physical remains are numerous but vulnerable, perhaps more so than archaeological artefacts from earlier periods of history and, whilst this thesis will primarily assess the wartime and post-war impact of the military presence, there are strong elements of cultural and regional identity, sense of place, heritage and commemoration that populate the narrative. Norfolk, already an important agricultural region, was heavily subject to the wartime food production campaign at the same time as the military was requiring land for airfields, training and defence sites. This thesis explores the conflict in this county by investigating six different themes of wartime activity, not usually discussed together but all of which agglomerated to bring about many irreversible changes in the landscape and accelerate others which had already begun.

These six themes are concurrent, contemporaneous and closely interlinked operationally. Each has distinctive characterisation however and their historiographies, though not mutually exclusive, are best addressed individually. Each chapter following therefore carries its own individual historiography in preference to a generic historiography in this introductory chapter.

The geo-political chronology of the war impacted Norfolk with different emphases throughout the duration. Broadly the years 1939 to 1941 were characterised by defensive operations. However, 1942 to 1945 saw a radical swing to offensive operations. Chapter Two assesses the anti-invasion defence landscape along the Norfolk coast and across the interior in the early years and the gradual withdrawal from and abandonment of those defences. Chapter Three reviews the extent of the airfield building programme, which expanded exponentially through to 1944, with particular emphasis on the quantity of agricultural land subsumed by new airfield sites. Of all standing structures in the landscape, airfields are the most prominent and have left a heavy footprint across the county's landscape. They are also those which have most frequently been put to alternative post-war use, principally agriculture, commerce and light industry. Chapter Four looks at military training areas; Norfolk had been used for army training exercises from before the First World War but specific sites proved ideal for training in modern mechanised warfare from 1941 onwards; issues of population displacement arose

which are still controversial in the twenty-first century. Logistics are explored in Chapter Five; nationally, the railway network was put under enormous strain for the duration. In Norfolk the need for the delivery of vast quantities of construction materials and storage of ordnance placed very particular pressure on the rail and road network, requiring enhancement of existing infrastructure. Chapter Six explores to what extent country houses were subjected to requisitioning for military purposes throughout the war across Britain. They are here accorded a chapter of their own because of their profusion across Norfolk, being a significant feature of the history of land ownership in the county more so than most other English counties. It is generally held that the war contributed greatly to their demise but other factors were already at play throughout the twentieth century. The final theme, in Chapter Seven, is agriculture. It is analogous for, in Norfolk, an already highly agricultural county, farmers were to experience the demand from government to bring in more land to increase food production for the war effort, and also faced potential requisitioning of land from the Air Ministry and War Office for land for airfields and training areas. The conclusion of the thesis will revisit the outcomes of the preceding chapters, and the longer-term legacies in terms of how much the Second World War did, or did not, create the modern landscape of Norfolk. Given that landscape history is inter-disciplinary, the conclusion will also briefly visit important themes that emerged post-war and continue to evolve – commemoration, environmentalism, popular culture and collective memory. Finally, it is worth noting that other typologies of standing structures such as decoy airfields, Q, K and Starfish sites, Diver anti-aircraft sites, airfield defence, radar installations and searchlight deployment have not been overlooked – they are beyond the scope of this thesis in investigating the six main themes.

Methodology and sources

Cartography is an essential element of landscape study. Pre-war land-use survey maps, historic Ordnance Survey and military maps and official site plans provide helpful comparisons for placing archaeology and events within measurable timescales. The pre-war Land Utilisation Survey of Great Britain comprises a detailed study of land use in the 1930s, based originally on six-inch (1:10560) field maps and subsequently published using one-inch (1:63360) Ordnance Survey base maps; these are valuable for comparison against the

R.A.F.'s 1946 aerial photographic survey.¹⁷ Vertical and oblique aerial photographs held at Norfolk County Council's Historic Environment Service are also helpful for feature identification and date comparison. Secondary literature proves a useful source of detailed typologies and location references when compiled as databases to inform the creation of Geographic Information System maps.¹⁸ These are utilised in Chapters 2, 3, 4 and 5 to illustrate, respectively, anti-invasion defences, airfield distribution, military training areas, key logistical locations and, where appropriate, road and rail networks. Air Ministry, War Office and Ministry of Agriculture documents at the National Archives demonstrate the nature of liaison between the government departments and other agencies. They also show on occasion that simply because a directive is set out in a document does not necessarily mean it appears exactly so on the ground. Norfolk Record Office holds fewer records, primarily agricultural. Army unit war diaries and R.A.F. operations books record primarily the chronology of military activity along with insight into local interpretation of higher strategy such as defence plans, unit locations, dispositions and changes in strategic thinking. It was often middle-ranking officers who implemented strategic decisions, equipped with some local knowledge and an awareness of the resources immediately available to them. Divisional and battalion war diaries are informative, cascading to local level; company diaries are especially good in offering anecdotal local evidence.

Militarised landscapes

The relationship between terrain and the military is symbiotic. Landscapes contain the entirety of features that pre-exist, regardless of their relevance to military purpose. It is the terrain within the landscape which is important to the military and battlegrounds have historically been chosen for their topography favourable to attacker or defender. At an anthropological level, the soldier and airman have been taught to understand the ground, to become familiar with its attributes. Doyle and Bennett assert that terrain is closely connected to human interaction and is therefore multidisciplinary in nature.¹⁹ This succinctly validates the landscape history approach to militarised landscapes. Two levels of engagement are

¹⁷ Mosby, E.G. (Dudley Stamp, L. (ed.)) *The land of Britain: the report of the Land Utilisation Survey of Britain, Vol. 70 Norfolk* (London, 1938); also Dudley Stamp, L. *The Land of Britain Its Use and Misuse* (London, 1948)

¹⁸ For example Bird, C. *Silent Sentinels – The story of Norfolk's fixed defences during the twentieth century* (Guist, 1999), Norfolk Heritage Explorer database, and the numerous airfield gazetteer publications.

¹⁹ Doyle, P. and Bennett, R. *Fields of Battle - Terrain in Military History* (Dordrecht, 2002) p.1

described; strategic and tactical, each of which may be interpreted in the context of this thesis as national policy and local implementation. This is pertinent to the aims of this thesis, for Norfolk's militarised landscape in the Second World War was initially that of defence and, later, of offensive operations. Technically it was a landscape of military *preparation*, but militarised nevertheless. Additionally, a more appropriate term, in the sense of competition for priorities in land use in a period of national and local crisis might be *contested landscape*. The military, with authority and even force, could over-ride the interests of local populations but oft-times worked by consensus, and at other were thwarted or directed by the landscape itself. The concept includes all aspects of militarisation and military influence, from physical sites to their impact on the natural, agricultural and commercial environments, to the influence of military personnel on the personality or character of places and landscape. It is about how the military used the landscape to prepare for and wage war.²⁰

Culture and memory are powerful impactors on the way the recent past is viewed and remembered by civilians, service veterans and later generations. Locations occupied by military units often acquire characteristics that reflect their presence and the heritage industry has given impetus to the representation and commemoration of the Second World War.²¹ Memory and culture are closely connected to senses of community and identity in the landscape. Nowhere, in the context of this thesis is this more keenly felt than in relation to the human cost associated with airfields, and recent research by Edwards and others has given more precise understanding to this popular and very human aspect of the wartime experience.²² These subjects are explored briefly in the thesis as a further aspect of landscape history, albeit one excluded in detail from the remit of this thesis by the primary themes herein.²³

²⁰ For further explorations of definition see: Pearson, C., Coates, P, and Cole, T *Militarized Landscapes – From Gettysburg to Salisbury Plain* (London, 2010) pp.1-18; Schofield, P. *Modern military matters* p.5

²¹ Schofield, P. *Modern military matters* pp.33-34

²² Edwards, S., 'Ruins, Relics and Restoration: The Afterlife of World War Two American Airfields in England, 1945-2005' in Pearson, C., Coates, P and Cole, T. (eds.) *Militarized Landscapes – From Gettysburg to Salisbury Plain* (London, 2010); Edwards, S. *Allies in Memory: World War II and the Politics of Transatlantic Commemoration, c.1941–2001: Studies in the Social and Cultural History of Modern Warfare* (Cambridge, 2015); Ashplant, T., Dawson, G. and Roper, M. *Commemorating War – The Politics of Memory* (London, 2004)

²³ Examples of works that approach these themes include Matless, D. *Landscapes and Englishness* (London, 1998); Hayes, N. and Hill, J. (eds.) *Millions Like Us? British Culture in the Second World War* (London, 1999); Connelly, M. *We Can Take It! Britain and the Memory of the Second World War* (London, 2004)

In September 1939, the area of land occupied by the army was 235,000 acres.²⁴ By June 1944, 3.5 million military personnel were sharing the land with the civilian population, and 11.5 million acres were directly or indirectly under military control – twenty per-cent of the total British land surface.²⁵ Ironically the extended military occupation of some locations has by default protected archaeology, flora and fauna that might otherwise have been destroyed by modern development and intensive agriculture.

Requisitioning and the legislative framework

The war years saw an unprecedented level of state intervention in everyday activity and the requisitioning of land and property is a major theme throughout this thesis. A range of far-reaching legislation governed military and civilian life. Land and buildings were requisitioned for airfields, battle training areas, accommodation, oil pipelines, anti-invasion defence areas and variety of support infrastructure services. As will be seen, the need for land for military use often conflicted with that required for increased food production.

The legislative measure that brought about the most dramatic change in land use was the Emergency Powers (Defence) Act 1939, previous powers having been reliant upon legislation dating back to 1842. The associated Compensation (Defence) Act 1939 provided for loss of rent or income or damage caused whilst under occupation. Other powers were enacted subsequently to acquire land for government use and support the war effort, notably the Requisitioned Land and War Works Act 1944. The durational Defence Regulations, all prefixed ‘DR’, established measures such as the establishment of protected zones to which civilian access could be denied, the removal of persons or property, the prevention of trespass on agricultural land and the ability for any authorised person to enter any land or property for the purposes of inspection.²⁶

²⁴ Schofield, P. *Modern military matters; studying and managing the twentieth-century defence heritage in Britain* (York, 2004) p.7

²⁵ Rowley, T. *The English Landscape in the Twentieth Century* (London, 2006) p.315 In 2004 the military’s holdings still amount to 595,500 acres, nearly twice that in 1939. Woodward, R. *Military Geographies* (London, 2004) p.13 asserts this amounts to about 1 per-cent of the UK land mass and appears to be a norm across modern Western nations.

²⁶ All DR-prefixed regulations are contained within the Emergency Powers (Defence) Act 1939.

The regulations most relevant to this thesis are DR50, allowing entry onto land to facilitate the prosecution of the war without formal requisition; DR51, enabling the requisitioning of land, primarily for military purposes, by force if necessary and, with provision under the Requisitioned Land and War Works Act 1945, to be permanently acquired; and DR52, allowing land to be used for military purposes but from which civilians were not necessarily excluded.²⁷ These three were the most frequently enacted upon by the War Office and the Air Ministry on behalf of the Army and R.A.F respectively. DR51 was the most draconian and is that which applied to airfield sites and led to the long-term controversy over the civilian evacuation of the Stanford Battle Training Area.²⁸ In addition, DR16 related to the stopping-up of highways and public rights of way and DR50 allowed entry onto land to facilitate the prosecution of the war without formal requisition. The course of the war also informed post-war legislation such as the Requisitioned Land and War Works Acts 1945 and 1948. Towards the end of the war and post-war the Ministry of Works dealt with the derequisitioning of property and compensation claims, disposal of surplus buildings and stores, and the removal of temporary defence works, and some land was retained permanently for military use in a new international geo-political environment.

Formal requisitioning documentation exists at the National Archives for just six English counties, not including the eastern counties; the remainder are lost. The Ministry of Works' central register of accommodation of 1938 formed the basis of the requisitioning of land and buildings for the army, navy, R.A.F. and civil service departments. County War Agricultural Executive Committees were empowered to direct agricultural production and, where necessary, take possession of land to improve its productivity. In total, some 14.5 million acres of land, 25 million square feet of industrial and 113,350 non-industrial premises were requisitioned in Britain during the Second World War. The War Office alone requisitioned 580,847 acres between 1939 and 1946.²⁹

²⁷ Foot, W. 'The Impact of the military on the agricultural landscape of Britain in the Second World War' (unpublished MPhil thesis, University of Sussex, 1998) pp.23-28.

²⁸ Detailed in Chapter 3

²⁹ TNA WO 32/16666 Acreage of requisitioned land held by War Office Lands Branch, paper 41A

Conclusion

This introduction does not seek to offer a rigid template for similar research in other English counties. Rather it explains the methodology and rationale behind the perspectives adopted in the following chapters, employing archival, documentary, cartographic, photographic and interpretative evidence to understand how the landscape of Norfolk was impacted upon by wartime exigencies. The assessment of human activity and standing monuments offers the opportunity to observe how contemporaneous functions of war interacted in a shared geographic environment. It is helpful to consider throughout the thesis the context of the militarised landscape not as a single short event in one location but as an ongoing, organic, longer term phenomenon. This will become apparent as the following chapters examine, in turn, anti-invasion defences, airfields, training areas, logistics and infrastructure, country houses and agriculture and their inter-relationships in the rural landscape.

Chapter 2 – Anti-Invasion Defences

Introduction

Britain's Second World War anti-invasion defences are most closely associated with the highly vulnerable period of the summer of 1940, though vigilance against invasion ensured their operational history lasted a further three years, before eventual decline through obsolescence. Continued threat of invasion prompted continued investment in, and consolidation of, local anti-invasion defences through to 1943, followed by abandonment, 'care and maintenance' and in some cases, dismantling, in the light of changing priorities. The varied pattern of construction and removal leads ultimately, post-war, to a highly dispersed and visually unconnected relict landscape, apparently randomly scattered across the interior, but with more obvious presence along isolated parts of the coastline.

This chapter will address the impact of the wide variety of anti-invasion defence works on Norfolk's coastal and rural landscape, the topography of which rendered it strategically vulnerable as an invasion route to the rest of the British mainland. A focus on the strategies that determined their distribution, and their chronology, will serve to place their deployment and use in the national military context. Their short service life, subsequent abandonment and, in many cases, swift demolition, resulted in physical isolation in the landscape, and a lack of understanding about their true function and connectivity. An overview of the rationale behind the rapid response to the invasion threat and then the longer term strategy will assess the significance of defence structures upon the wartime and post-war landscape. G.I.S. mapping of the disposition of stop-lines, nodal defence points, pill-boxes and coastal artillery batteries across the Norfolk landscape, together with reference to supporting documentation, will illustrate where strategic points were prioritised and natural defensive features utilised, and where vulnerable terrain required protection. Whilst many secondary sources cover defensive typologies in detail, an overview of their use and function is needed to understand their inter-relationships. This chapter discusses home defence, then regional and local strategy, incorporating a case study which will show the character of a particular locality as part of the wider strategic context.

Historiography

The official war history is clear about national strategy and the chronology of defence measures but carries little local detail; the regional and local stop lines, for example, are hardly mentioned, nor are they mapped, despite their crucial importance to the anti-invasion strategy.¹ This oversight in the official history may go some way to explaining decades of misunderstanding about the locations of these early-war linear defences. The War Diaries of corps, divisional hierarchies, brigade, battalion and company units and fort record books, held at the National Archives, contain detailed operational orders which give helpful insight into the local implementation of grand strategy. They also include sporadic listings of locations of unit headquarters, offering a useful indicator that more country estates and houses were occupied, albeit for very brief periods, than might generally have been thought or recorded.² Some nominally populist publications are thorough and well-researched. Henry Wills' book from the 1980s initiated interest in the subject matter though much corrective detail has been added since.³ Bird's detailed categorisation a decade later offers a concise but thorough overview of Norfolk's defences, supported by a comprehensive listing of sites.⁴ Kent's history of East Anglian fortifications written in the 1980s features detailed information on the longer history of the county's defences.⁵ Academic interest begins some forty years post-war, notably with the nationwide Defence of Britain project between 1995 and 2001.⁶ Dobinson's examinations of anti-invasion measures and coastal artillery present detailed accounts of national and regional strategies, including Eastern Command within which Norfolk was situated.⁷ Dobinson's work is very much drawn from high level War Diaries and Cabinet

¹ Collier, B., *The Defence of the United Kingdom* History of the Second World War, UK Military series (HMSO, London, 1957).

² Primarily TNA WO/166 and WO/199 series

³ Wills, H., *Pillboxes: A Study of UK Defences 1940* (1985)

⁴ Bird, C., 'The Fixed Defences of Norfolk and East Norfolk in the two World Wars: a modern survey, Part 1' *Journal of the Norfolk Industrial Archaeological Society* **5** (1), 1991 pp.5-33 and Bird, C., 'Norfolk's fixed defences in the two World Wars' *Journal of the Norfolk Industrial Archaeological Society* **5** (5), pp.295-343; Bird, C. *Silent Sentinels – The story of Norfolk's fixed defences during the twentieth century* (Guist, 1999)

⁵ Kent, P., *Fortifications of East Anglia* (Lavenham, 1988)

⁶ <https://archaeologydataservice.ac.uk/archives/view/dob/> The data is now dispersed amongst the National Monuments Record and local authority archives. Also Lowry, B. *20th century defences in Britain: an introductory guide* CBA Practical handbook 12 (CBA York, 1995)

⁷ Dobinson, C.S. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* (Council for British Archaeology, York, 1996); Dobinson, C. *Twentieth Century Fortifications*

Papers which had not thereto been investigated in such a connective methodology. Added detail and perspective is provided by William Foot's extensive study, based very much on fieldwork, of sixty-seven localised sites across England in 1940; this work does broadly categorise the sites into coastal, stop line and area defence but, due to its broad national coverage, itemises just four sites in Norfolk in isolation rather than as part of a regional strategy, though the detail is impressive as is the overall introductory explanation of national strategy.⁸

There is generally a tendency to focus either on national strategy, accompanied by gazetteers or, conversely, close study of localised survivals in isolation that do not necessarily elaborate on the significance of the structures in the wider, connected, militarised landscape. Osborne's study of Norfolk from pre-history to the present stands apart as a useful guide to strategy and its implementation, as well as the structural typologies.⁹ There is however a dearth of analytical narrative about how the landscape itself informed, supported or hindered localised implementation of strategic decision-making process. The exceptions, which integrate archaeological, historic and societal aspects of a militarised landscape into a single study, are two recent studies by Liddiard and Sims, focused on the Suffolk coast.¹⁰ The Norfolk Record Office contains a number of large scale maps that record post-war surveys of defences along the coast, and correspondence relating to categorisation and potential removal of war works.¹¹

Background and context

The East Anglian coast has historically been a popular potential site for invasion from mainland Europe and anti-invasion defences had been built along Britain's coastline since the sixteenth century. The twentieth century saw a steady chronology of militarisation but the scale and speed of coastal and inland defence construction was, in 1940, given a sense of

in England Volume VI.1 Coast Artillery - England's fixed defences against the warship 1900-56 (CBA, York, 2000)

⁸ Foot, W., *Beaches, fields, streets, and hills: the anti-invasion landscapes of England, 1940* (2005) and Foot, W., *Defence of Britain Database - Report on Weybourne (Defence Area 41)*. The four Norfolk sites are Acle and Ludham Bridge, as examples of area defence; and Weybourne and Winterton-on-Sea, as examples of coastal defence.

⁹ Osborne, M., *Defending Norfolk – The Military Landscape from Prehistory to the Present* (Stroud, 2015)

¹⁰ Liddiard, R. and Sims, D. *A Guide to Second World War Archaeology in Suffolk - Guide 1: Lowestoft to Southwold; Guide 2 : Walberswick to Aldeburgh; Guide 3 :Orford to Felixstowe; Guide 4: Stop Lines* (Aylsham, 2014); Liddiard, R. and Sims, D. *A Very Dangerous Locality- The Landscape of the Suffolk Sandlings in the Second World War* (Hatfield, 2018)

¹¹NRO C/P 8/1-301; C/SR/7; C/SR/7; DC1/1/41

urgency presented by the modern threat of mid-twentieth-century technology, offering new strategic options to the German invader in the form of combined seaborne and air assault. A curving salient of quiet coastline, from The Wash west of King's Lynn to mid-way between Great Yarmouth and Lowestoft on the east made Norfolk a suitable focus for enemy invasion from the continent. There are numerous hazardous landfalls; the Wash is shallow, and the north coast characterised by expansive areas of mudflats, saltmarsh and narrow, winding creeks, making swift inland progress difficult. Further east, extensive cliffs obstructed an easy landing, though offered secretive defiles at key points. Historically, Weybourne Hoop (Hope) was considered the most favourable landfall, with its deep water anchorage just offshore, wide flat beaches, along with direct access inland. Overall, much of the coast and immediate inland areas offered prime landfall access points, many made more vulnerable by the new combined technologies of air, sea and land attack.

The first military presence heralding concerns about the coming war manifested itself in the establishment in 1937 of two anti-aircraft practice camps at Stiffkey and Weybourne. Local residents objected – and Sir Thomas Cook, MP for North Norfolk enquired about compensation for alleged loss of trade.¹² Early radar stations appeared at the same time, a 'Chain Home' site at West Beckham and another at Stoke Holy Cross.¹³ In September 1939 the strategic threat was initially from Germany itself but from mid-1940 the occupation of the Low Countries and France shifted the primary threat to the south-eastern coast of Kent and Sussex, the most direct route across the English Channel. East Anglia was nevertheless still highly vulnerable, for the gently undulating terrain of Norfolk offered fast access inland and thence south to London.¹⁴ Following eight months of the so-called Phoney War, during which time there were no sustained military actions in mainland western Europe, the geo-political and military map changed. Events moved rapidly after April 1940 with the German invasion of Denmark and Norway followed on May 10th by the invasion of France and the Netherlands. The British Expeditionary Force was evacuated from Dunkirk in late May and, with the capitulation of France, the government and military now anticipated, imminently, an invasion of the British mainland. By mid-1940 the Wehrmacht – or at least the Heer (Army) and Luftwaffe in combination - had demonstrated the remarkable speed and efficiency of its

¹² Hansard 9th May 1939 vol 347 c283

<http://hansard.millbanksystems.com/commons/1939/may/09/anti-aircraft-camps-veybourne-and> (accessed 28 Sept 2017)

¹³ 'Chain Home' was the world's first early warning radar system, for detecting aircraft at long range.

¹⁴ In 1914-1918 the threat of invasion never presented itself from across The Channel. East Anglia was considered directly threatened from across the North Sea.

Blitzkrieg strategy; there seemed little the Germans could not achieve, given they were prepared to accept high initial manpower losses.

Home defence strategy - linear versus all-round defence

Construction of anti-invasion defences had begun in earnest in early 1940 under General Sir Walter Kirke who understood the importance of mobile defence and, understandably prior to the fall of France and the Low Countries, feared an invasion via East Anglia.¹⁵ However, the most intense period of construction began under the direction of his replacement, General Sir Edmund Ironside – with whom the defences are most closely, though not in terms of his length of tenure, associated. Even before the formal announcement of his appointment on 27th May Ironside had formulated a plan of ‘defence in depth’, consolidating an existing series of defence lines across the country intended to successively delay an invader. The following month saw the creditably fast construction of static defences, transforming extensive areas of coastline – the ‘coastal crust’ - and inland areas of stop lines and demolition lines into a prepared battlefield.¹⁶ The plan was based on the increasingly outdated premise of linear, static defence which, to be fair, Ironside himself recognised but, with a crucial lack of resources, he had little choice but to implement.¹⁷

‘The general plan of defence is a combination of mobile columns and static defence by means of strong points and 'stops'. As static defence only provides limited protection of the most vulnerable points, it must be supplemented by the action of mobile columns. However mobile such columns may be, they cannot be expected to operate immediately over the whole area in which it is possible for the enemy to attempt invasion by sea or air. It is, therefore, necessary to adopt measures for confounding his action until such time as mobile columns can arrive to deal with him. This will be done by means of 'stops' and. strong points prepared

¹⁵ Newbold, D., ‘British planning and preparations to resist invasion on land, September 1939 - September 1940’ p.36, unpublished thesis Ling’s College, University of London pp.115,132

¹⁶ TNA WO 166/464 18th Division, General Staff, War Diary, May 1940. 18th Division had begun work on Ironside’s scheme in earnest at the earliest opportunity.

¹⁷ Ironside, E, *The Ironside Diaries, 1937–1940* (1962) pp.354,374; French, D., *Raising Churchill’s Army – The British Army and the War against Germany 1919-1945* (New York, 2000) p. p.156 Prior to and at Dunkirk in June 1940 the British Expeditionary Force incurred 68,111 casualties and left behind 88% of its artillery and 93% of its motor vehicles.

for all-round defence at aerodromes, which are necessary to prevent the enemy obtaining air superiority, at the main centres of communication, and distributed in depth over a wide area covering London and the centres of production and supply. This system of 'stops' and strong points will prevent the enemy from running riot and tearing the guts out of the country as has happened in France and Belgium.¹⁸

The rather bellicose and superior final sentence detracts from the fact that resources available to Ironside were extremely limited, partly because the units were not front-line battle-ready troops but, more importantly, the British Expeditionary Force had abandoned huge numbers of tanks, vehicles and heavy weapons in France.¹⁹ Essentially Ironside had neither the number of troops nor were they sufficiently mobile. He realistically had little choice but to devise a system of static, linear defence, backed up by the few mobile reserves that were available. Detractors of 'old-school' strategy criticised the immobility of fixed defences. Static fortifications could be over-run, or simply circumvented, by a mobile enemy. Ironside was replaced on 19th July by General Sir Alan Brooke, who advocated a more offensive strategy. Much has been made of apparently differing strategies between Ironside and Brooke, the latter benefiting from rapidly increasing material resources but the two strategies, though different, were not mutually exclusive. Ironside had envisaged a four-point plan for large-scale anti-invasion defences. First, airborne and amphibious assault would be defended by obstructions across potential landing grounds up to five miles inland; secondly, beach exits would be defended by pillboxes and mines; thirdly, linear pillbox defences would protect the beaches themselves; and finally, minefields would be sited across vulnerable beach areas.²⁰ Contemporary wisdom envisaged the Germans moving inland at speed with

¹⁸ TNA WO 166/1 War Diary, GHQ Home Forces, June 1940, Appendix F: Operational Instruction No. 3, 15th June 1940

¹⁹ Deighton, L., *Blood, Tears and Folly – an objective look at World War 2* (London, 1993) p.211 states 2,472 guns 63,879 vehicles and more than 500,000 tons of supplies. Boyd, D., 'British Equipment losses at Dunkirk and the situation post Dunkirk' in particular gives a figure of 607 anti-tank weapons, mostly of the much-needed 2-pdr.gun. http://www.wwiiequipment.com/index.php?option=com_content&view=article&id=125:british-equipment-losses-at-dunkirk-and-the-situation-post-dunkirk&catid=50:other-articles&Itemid=61 (accessed 20th June 2014)

²⁰ Dobinson, C. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* (1996) pp.26, 27. Ironside's schemes were implemented swiftly; Dobinson states that within a week, work on obstructing landing grounds had started on 90 per-cent of sites within five miles of ports between Great Yarmouth and Newhaven (East) Sussex.

armoured vehicles. Recent continental experience had demonstrated that they kept to main roads. Therefore, locations where roads intersected were chosen as nodal defence points.

The Coastal Crust and inland defences

With the emphasis on air and naval defence between the wars, land-based coastal defence against invasion was paid little attention. With the rapidly deteriorating situation on the continent, a fast deployment of coastal gun batteries was instigated and on 19th May 1940 the Navy formally advised GHQ Home Forces that it could supply suitable weapons.²¹ Comprising naval guns drawn from First World War ships they were, though of older design, capable of delivering large-calibre shells up to ten miles seaward. Given that one hundred and twenty-five Emergency Coastal Defence Batteries were constructed around the English coast between the summer of 1940 and early 1942, and that they were the largest and most imposing typology within the genre of coastal defence structures, it is not surprising that they are accorded an entire volume in the Council for British Archaeology's series on twentieth-century-fortifications.²²

Supplementing these was the variety of obstacles and beach obstruction hurriedly emplaced around the coast in the summer of 1940. Minefields at sea, iron stakes at the water line, land mines laid on vulnerable beaches, together with tall 'admiralty' scaffolding hung with dannert (concertina-coiled) barbed wire, formed initial defensive barriers. Lines of concrete anti-tank obstacles were fixed in lines at vulnerable beach exits and further inland section of steel rail were positioned to obstruct vehicles. Flame barrages were installed, with fuel fed by pipe to the beaches, along with the traditional contrivance of flame fougasses at suitable defiles.

A strategy characteristic of linear defence was the series of stop lines that were set out across England to delay, though not repel, the invader. Some of the early stop lines close to the Norfolk coast were, for example, clearly intended more as 'demolition belts' than defended

²¹ TNA WO 166/11 War Dairy GHQ Home Forces (Coast Artillery), 19 May 1940

²² Dobinson, C. *Twentieth Century Fortifications in England Vol. VI.1–2 Coast Artillery*: (York, 2000) p.58

lines.²³ The Corps Lines inland were more strategic, with the General Headquarters (GHQ) Line being most heavily defended. An important distinction between Ironside's linear defence strategy and that of Brooke's emphasis on all-round defence and mobility was, firstly, greater emphasis on nodal points – key towns, village and strategic crossing points on road, rivers and railways and secondly, on reinforcement of coastal areas whilst reducing isolated fixed-point defences inland. The word 'ubiquitous' can perhaps be over-used, but aptly describes the number and variety of pill-boxes that still stand along the cliffs of the English coast with many more strategically distributed across the interior. They have a precise purpose and were not intended to operate as isolated features but their operational life was short.²⁴ The prevention of troop-carrying aircraft landing and, or, taking off again was a variable measure. Open fields and long, straight stretches of road within five miles of airfields were obstructed initially, later to include areas within five miles of the coastline. Based on the minimum landing distances required for German transport aircraft, fields and straight roads of more than five hundred yards were obstructed. Any reasonable resource was employed – post and stakes, scaffolding, trenching and old motor vehicles; farmers were even encouraged to build haystacks in the centres of fields.²⁵

Throughout this chapter the defence features have been mapped using Geographic Information System methodology to demonstrate not just their general distribution but also the importance of key strategic points. Mapping helps distinguish between the sometimes nebulous physical nature of the stop lines and the longer duration of the built structures. It also identifies areas where pillboxes existed in greater or lesser profusion, indicating where a modified strategy was implemented. For example, one of the earliest stop lines in north-east Norfolk is well-served by pillboxes installed in a linear manner; a stop line in the south-east of the county markedly lacks them. Whilst it is not necessary to explore the well-documented variety of pillbox typology, some variants occur more frequently in particular locations. and G.I.S. mapping assists meaningful interpretation of feature distribution. Fig.1 is the base layer map which will be used throughout this and following chapters.

²³ Demolition belts were key sites prepared with explosives for tactical denial to an invader, rather than being defended.

²⁴ See Weybourne case study, below, for detail of how pillboxes became anachronistic by 1942.

²⁵ Dobinson, C. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* (1996) pp.129, 131-133

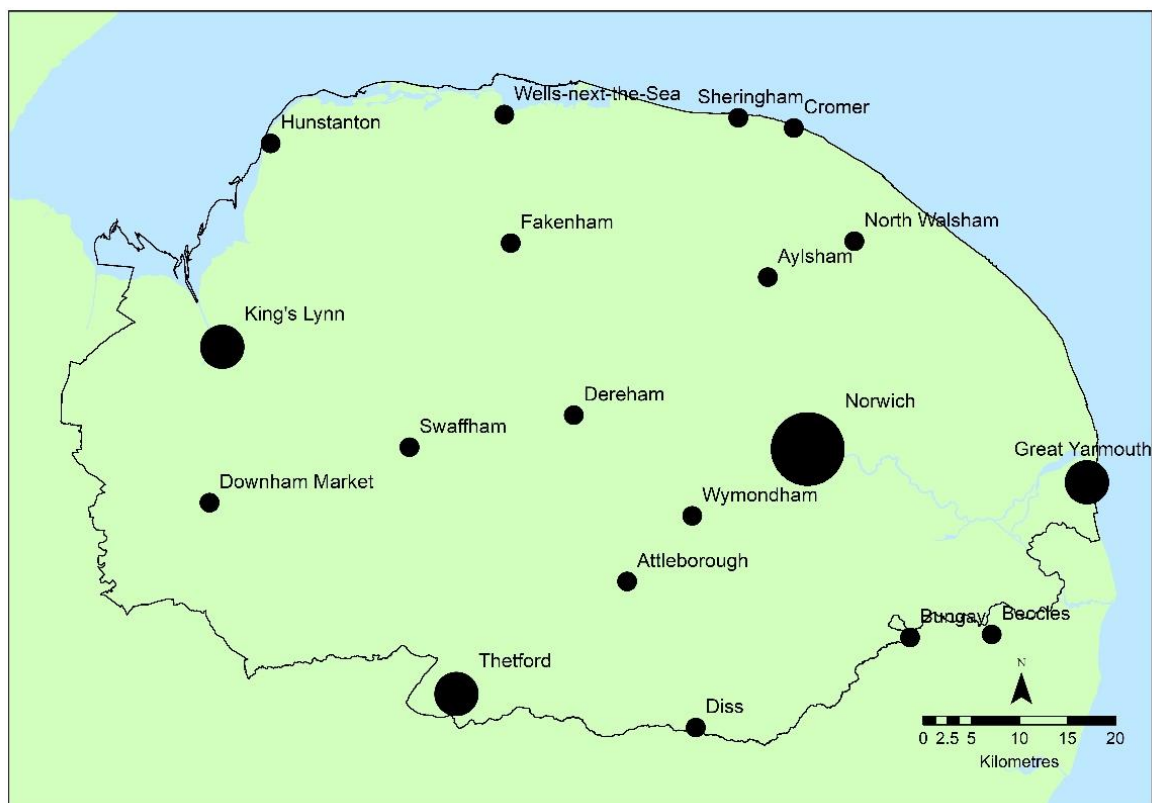


Fig.1 Base map. The county boundary appears to encompass offshore waters at several northern and north-eastern locations. This is accurate, denoting areas of very shallow water and mudflats which technically are part of the local authority land base.

Linear defence based on static fixtures was soon, then, to be rejected. From August 1940 building work on the GHQ line was greatly reduced, and a new strategy of all-round defence at key nodal points such as road and river crossings was instigated.²⁶ Frontline locations were to be manned by highly mobile units with armour and artillery support and anti-tank obstacles were now rejected as preventing the fast raid movement of defenders. Constraints on the supply of concrete and steel were a pragmatic factor although pillboxes had already been constructed in great numbers across Eastern Command which had been accorded less than half the cement needed to build the pillboxes and anti-tank obstacles called for in Ironside's plans.²⁷ Mobility was the key to successful defence.

This overview of the form and function of national defence structures has set the scene for a detailed explanation of the implementation of anti-invasion defences across Norfolk. The key

²⁶ See below for explanation of stop lines.

²⁷ Dobinson, C. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* (1996) p.41

features of Ironside's strategy as it applied to East Anglia were the series of coastal defences, thence via stop lines and nodal points, the aim being to slow down the enemy's advance at each stage to allow mobile reserves time to move forward to engage.

The Norfolk military district

Militarily, England was divided into eight regional commands. Norfolk was included in Eastern Command which in 1940 encompassed an area much greater than East Anglia; it reached as far as the south coast at Newhaven in Sussex, with its northernmost boundary covering The Wash on the west side of Norfolk. East Anglia was, in early June 1940, under the command of 12 (XII) Corps, replaced by 2 (II) Corps on 28th June 1940, comprising Norfolk, Cambridgeshire, Huntingdonshire and Bedfordshire, headquartered at Madingley Hall near Cambridge.²⁸ Under 2 Corps was 18th Division in forward areas of Norfolk, with 52nd Division in reserve. Eastern Command was too big, and too differentiated. Ironside observed that it comprised 11,200 square miles.²⁹ Kent and Sussex faced short-distance invasion from across the English Channel, whilst Norfolk faced the German-occupied continent, was less densely populated and more suitable for airborne assault and re-supply. The two sectors were restructured only after most of the defence systems had been built, but it helped formulate strategy through into 1941.³⁰ The differing topographies, road networks and population densities must have been a governing factor, as would re-supply issues for the invader. Vigilance did not decrease into the winter of 1940, there being 'no closed season of the year for invasion.'³¹ Construction work was carried out by private local builders as well as military engineering companies, overseen by larger civil contractors and Royal Engineer officers respectively. Progress was reported up the command chain to GHQ Home Forces for monitoring of expenditure and materials consumption.³² The work programme in Eastern Command far outpaced that of other regions by the end of July 1940, with nearly two-thirds

²⁸ TNA WO 166/186 War Diary II Corps; Dobinson (1996) p.67

²⁹ Newbold, D., *British planning and preparations to resist invasion on land, September 1939 September 1940* (unpublished PhD thesis, King's College, University of London) p.154

³⁰ Dobinson, C. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* p.56

³¹ TNA WO 199/569 GHQ Home Forces, Military Defence of the United Kingdom HF 3697/Ops 27 Nov 1940

³² Dobinson, C. *Twentieth Century Fortifications in England* p.34. Anti-invasion construction was given priority over all other defence budgets at first, though contractors' bills were not so quickly settled.

of pillboxes *in situ* by that time.³³ Norfolk in fact saw the highest density of pillboxes of any sector, with Eastern Command building an average of eleven pillboxes per mile of beach, compared with 1.8 per mile in Scottish Command.³⁴

Local strategy and implementation

Each army formation at division level was required to formulate a detailed defence plan. The function of 18th Division, to which the work of defending Norfolk fell, was confirmed unequivocally in G.O.C. Major-General Bernard Paget's note to commanders on 26th May 1940.

‘The role of the 18th Division and attached troops is clear: we do all in our power to hold up a hostile invasion by air and by sea and impose as much loss and delay as possible on the enemy. THERE WILL BE NO WITHDRAWAL ANYWHERE. Thereby we shall achieve our object and give time for arrival of reinforcements.’³⁵

Tactically, an infantry division, in this case 18th Division, might be expected to defend a linear front of five or six miles, perhaps ten at most. A conservative estimate of the coastal frontage covered in mid-1940 by 18th Division from Guy's Head, west of King's Lynn, to Lowestoft, Suffolk is approximately ninety miles.³⁶ This, even aside for the woeful lack of armour and weaponry illustrates the near impossibility of defending the entire coastline in a linear manner, a more pragmatic strategy being mobile defence, as favoured by Brooke.

³³ Dobinson, C. *Twentieth Century Fortifications in England* pp.37, 38. Dobinson cites Eastern Command 61.4 per-cent completion by late July, quoting TNA WO 199/48, f 16a, GHQ Home Forces letter HF 1/2514/Ops, 7 Aug 1940, Appendix A. The rate of construction of anti-tank ditches and concrete obstacles was also ahead of other sectors.

³⁴ Dobinson, C. p.44

³⁵ TNA WO 166/464 Mag-Gen B. Paget, GOC 18th Division - Introduction 419(G) to Defence Plan 26th May 1940

³⁶ The ‘coastline paradox’ favoured by geographers states that if every small bay and inlet is taken into account, the distance can be far greater than a point-to-point estimate. It is those that are often the points vulnerable to attack, the creeks and inlets of north Norfolk being especially complex in this respect. <http://mathworld.wolfram.com/CoastlineParadox.html> (accessed 10th June 2014)

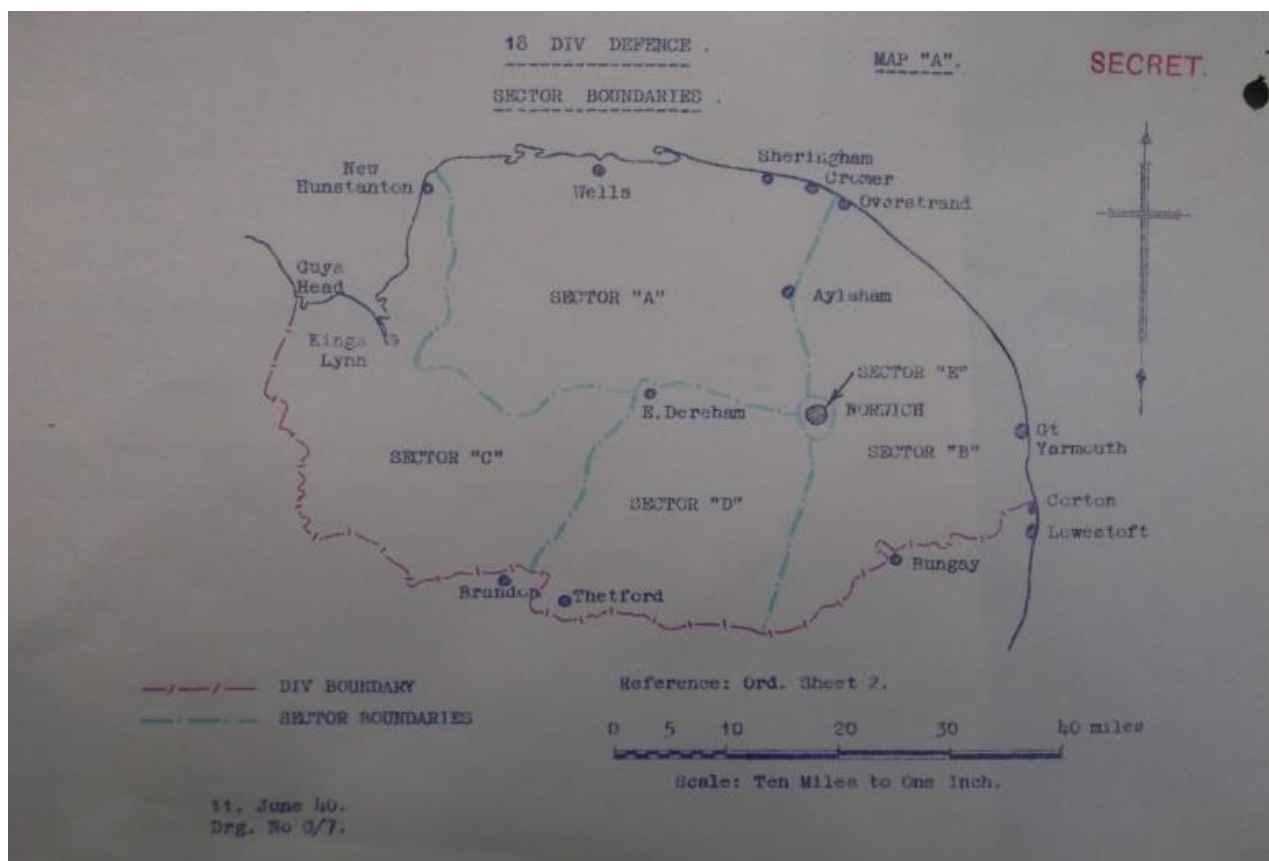


Fig.2: 18th Division from Guy's Head to Thetford and Lowestoft, indicating Sector boundaries at 24th June 1940.³⁷

Beach Reconnaissance 1940

The importance in the early summer of 1940 of understanding the vulnerability of the Norfolk coast to enemy invasion was not underestimated. On 18th June GHQ's Reconnaissance Unit undertook a thorough survey and its report is instructive in contemporary appreciation not just of areas requiring defensive measures but also topography that could be exploited, for example, narrow defiles that could facilitate heavy defensive fire upon congested enemy traffic.³⁸

In summary the eastern coastline featured beaches suitable for landing craft but not aircraft and vehicle exits that were easily blocked, although the hinterland to the south offered potential aircraft landing grounds. Great Yarmouth was vulnerable and main road exits were

³⁷ TNA WO 166/464 18th Division, War Diary, Oct 1939 – Dec 1940

³⁸ Ibid. See also Appendix 1 for detail of 1940 Beach Reconnaissance

available to north, south and west but the river and marshy countryside restricted vehicles to roads. Breydon Water offered good landing for seaplanes but would be blocked. Further north were high sand dunes and cliffs. Free exit from the dunes to the flat, featureless countryside was a clear hazard however, made worse by gaps in cliffs. Tanks could make good speed across country until hitting the Rivers Bure and Thurne several miles inland.

‘Taking into consideration the long stretches of coast with no or few exits for vehicles, the general nature of the hinterland, and the restricted sphere for tank operations due to marshy country and large areas of inland water, the section would appear to be an unlikely objective for this form of attack... Light vehicles also could be disembarked at almost any point except where a few local offshore obstructions exist. It is also vulnerable to infantry landing by seaplane or floatplane on inland lakes.’³⁹

Deep water channels along the northern coast presented landing opportunities and were therefore the most vulnerable of all. Inland was assessed as first class tactical country. Generally, the flat terrain inland could be negotiated by AFVs and the Broads provided opportunities for sea- or floatplanes. The cuttings and embankments of the Norfolk and Suffolk Joint Railway provided excellent obstacles inland however. North Norfolk’s characteristic creeks, shifting channels and salt marsh would be difficult to negotiate. Finally, the shoreline south to King’s Lynn was reported to be very vulnerable, with its deep water approach.⁴⁰

Admiral Dreyer had made recommendations in early June, in particular, the removal of a section of Cromer Pier to make it useless to the enemy.⁴¹ Later that month he expressed concern that the pier was still intact, recommending demolition charges being set. He added that ‘The Wash is in my opinion a dangerous area which we must be prepared to deny to the enemy.’⁴² Ships of 12 to 15 feet draught were deemed able to navigate anywhere over the

³⁹ TNA WO 199/85 Eastern Command Beach Reconnaissance 1942, T.O.O.1625/31/5/40

⁴⁰ Ibid. Secret Admiralty report to GOC CIC Home Forces 2nd June 1940 ‘Reconnaissance of beaches – Weybourne Hope to King’s Lynn’ and report from Naval Officer in charge Great Yarmouth 31st May 1940 ‘To determine whether beaches are suitable for the disembarkation and operation of AFVs or for landing aircraft.’

⁴¹ Ibid. Letter 3rd June 1940 ‘East Coast of England’ to Captain J R Storey. Dreyer had retired in 1939 but returned as a volunteer in the Royal Naval Reserve; in 1940 he served as advisor on anti-invasion measures under GOC C-in-C Home Forces.

⁴² TNA WO 199/85 Eastern Command Beach Reconnaissance

shore of The Wash at or near high water. Even aside from direct assault, the enemy could land near Skegness and rush The Wash area with shallow draft motor boats laden with troops, and open sluices at Boston to flood the countryside to the south to block defenders moving to engage. The Dock Master at Lynn wrote of shallow draught Dutch vessels whose masters knew well the channels all along the coast; others reported similar skills of German captains with fast boats that could carry tanks and troops. Snettisham Beach was thought an even better choice, for a fast run to RAF Bircham and Sandringham. Inland topography was not ignored in the reconnaissance report – it was suggested that the enemy securing the high ground in West Norfolk could facilitate disembarkation of airborne troops. Conversely, larger craft would have to lie six to eight miles offshore from high water mark, with light craft then being needed to off-load vehicles into shallow water. The small creeks and tidal scourings would present obstacles, though would not stop infantry.; and enemy military objectives might actually be limited if the bridges over the Ouse and Welland were blown by defenders.⁴³ Figure 2 shows the most vulnerable areas – though none were entirely safe.

⁴³ TNA WO 199/85 Eastern Command Beach Reconnaissance; Letter HF/Int/31/1 15th June 1940

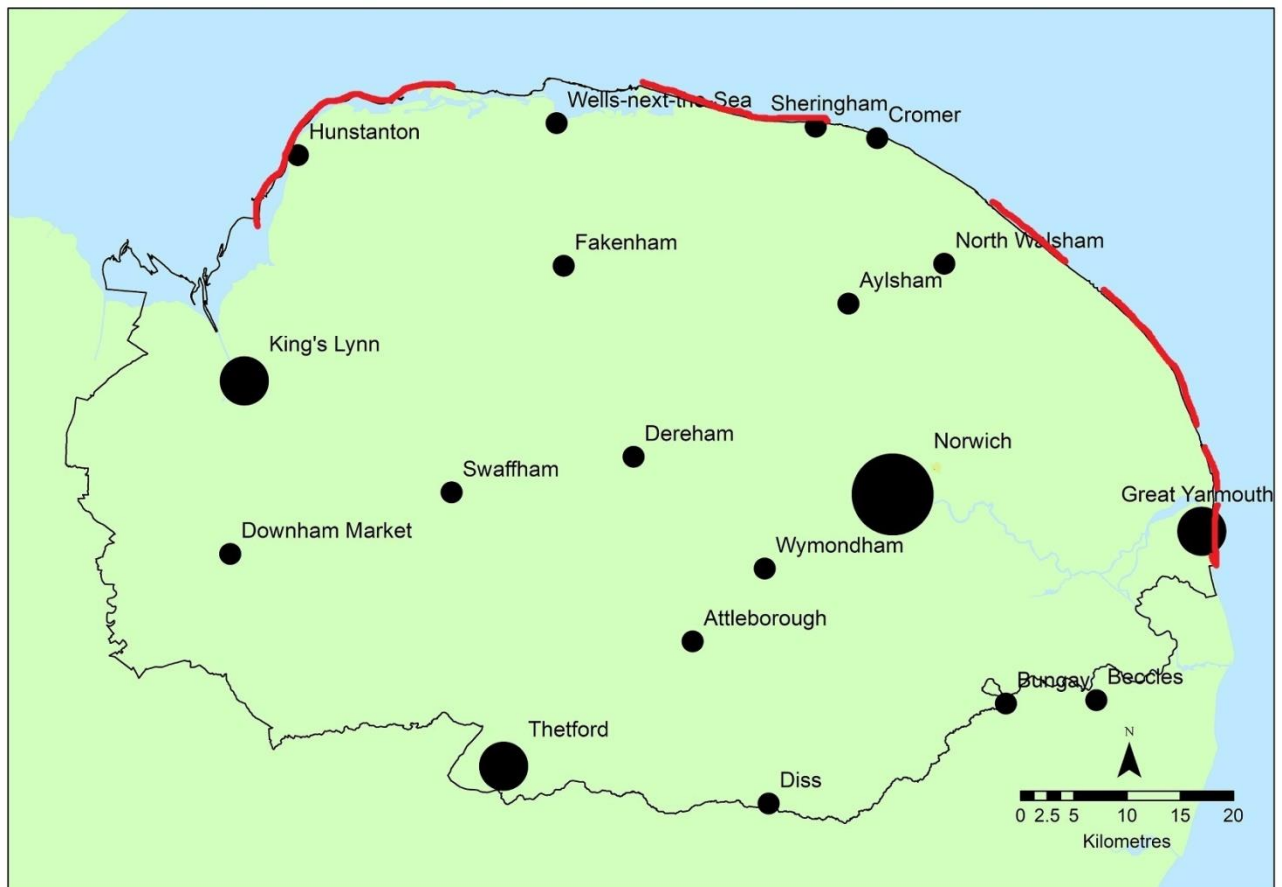


Fig.3 Red markers indicate coastline deemed highly vulnerable to seaborne landing in 1940

Ongoing preparation against the invasion threat

2 Corps' War Diary for December 1940 assessed the invasion threat as follows:

‘...he is most likely to aim at obtaining a high degree of air superiority in the first instance. He is likely to land parachutists to capture landing grounds for the airborne troops ... The possibility of landings from gliders... aircraft landing on inland stretches of water including reservoirs must be considered.’⁴⁴

Landing of tanks was, logically, said to require a port or suitable beach, and light tanks might even be landed by air. There were reported to be large numbers of flat-bottomed barges at moorings in Dutch ports, capable of transporting two to three hundred men below deck. The

⁴⁴ TNO WO 166/329 War Diary (XI) 2 Corps Dec 1940

possible scale of invasion was thought to be between ten and fifteen thousand troops in one day. The ominous point is made that ‘The enemy will doubtless be prepared to accept very heavy losses.’⁴⁵

If anything, the anticipation of invasion had not receded after the Battle of Britain, but intensified.

Forward units such as 18th Division were responsible for defending, in order of priority, fighter aerodromes, beaches, bomber airfields, vulnerable points and nodal points *en route* to London.⁴⁶ Aerodromes covered by 18th Division were Watton, Swanton Morley, Coltishall, Horsham St Faiths, Bodney, Matlaske, Oulton and East Wretham. All troops were required to be prepared for all round defence, whatever locality they might be defending. 2 Corps H.Q. noted that:

‘Lack of opportunity for training in mobile warfare and paucity in both numbers and equipment make a somewhat static defence necessary on the part of troops of forward divisions. There can be no question of withdrawal on the part of any troops detailed to hold specific defences. Such troops will hold on to the end.’⁴⁷

The combination of winter flooding and dykes being breached called for anti-flood precautions, with pioneer companies being charged with the responsibility of maintaining or repairing flood defences. There was always danger of winter flooding in the Fens, now added to by the possibility of dykes being breached by bombing, the most vulnerable area being the River Ouse northwards from Denver Sluice north to Wiggshall St Germans.⁴⁸ In the event the flooding crisis never arose. The flooding of inland areas would of course have presented difficulties for both invader and defender. Main roads with straight runs of 600 yards and 90 feet clear width to the sides were deemed vulnerable as potential landing grounds. Roads could be obstructed by wires 20 feet above ground at 150 yard intervals. The vulnerability of open water, especially to seaplanes, was emphasised in the precise instruction that:

‘The Broads Flotilla will engage any enemy who land on or approach

⁴⁵ TNA WO 199/55, GHQ Op Instruction 3, 15th June 1940

⁴⁶ Ibid.

⁴⁷ TNA WO 166/1193 War Diary HQ 2 Corps Cambridge Area 1940-1941 General Defence Scheme

⁴⁸ TNA WO 199/544 HF 3779/Ops 1st—31st August 1941, 2 Corps Troops RE Operation Instruction No.4 of 1941 SECRET 9 June 1941

the rivers Bure, Yare, Waveney, Thurne and broads leading off except Breydon Water. This is a striking force and does not carry out patrols.’⁴⁹

Little, if any, documentation of the Broads Flotilla exists, despite it being an enterprising local initiative in direct response to the risks posed by local landforms. Photographs show mixed army and naval crews and the craft moving at speed, armed with Lewis Guns. They were also active in mining and staking areas of open water.



Fig.4 Broads Flotilla at speed with anti-aircraft Lewis guns.⁵⁰

⁴⁹ TNA WO 166/1193 18 Div Op order instruction no 27 19th July 1940

⁵⁰ Imperial War Museum IWM A1548

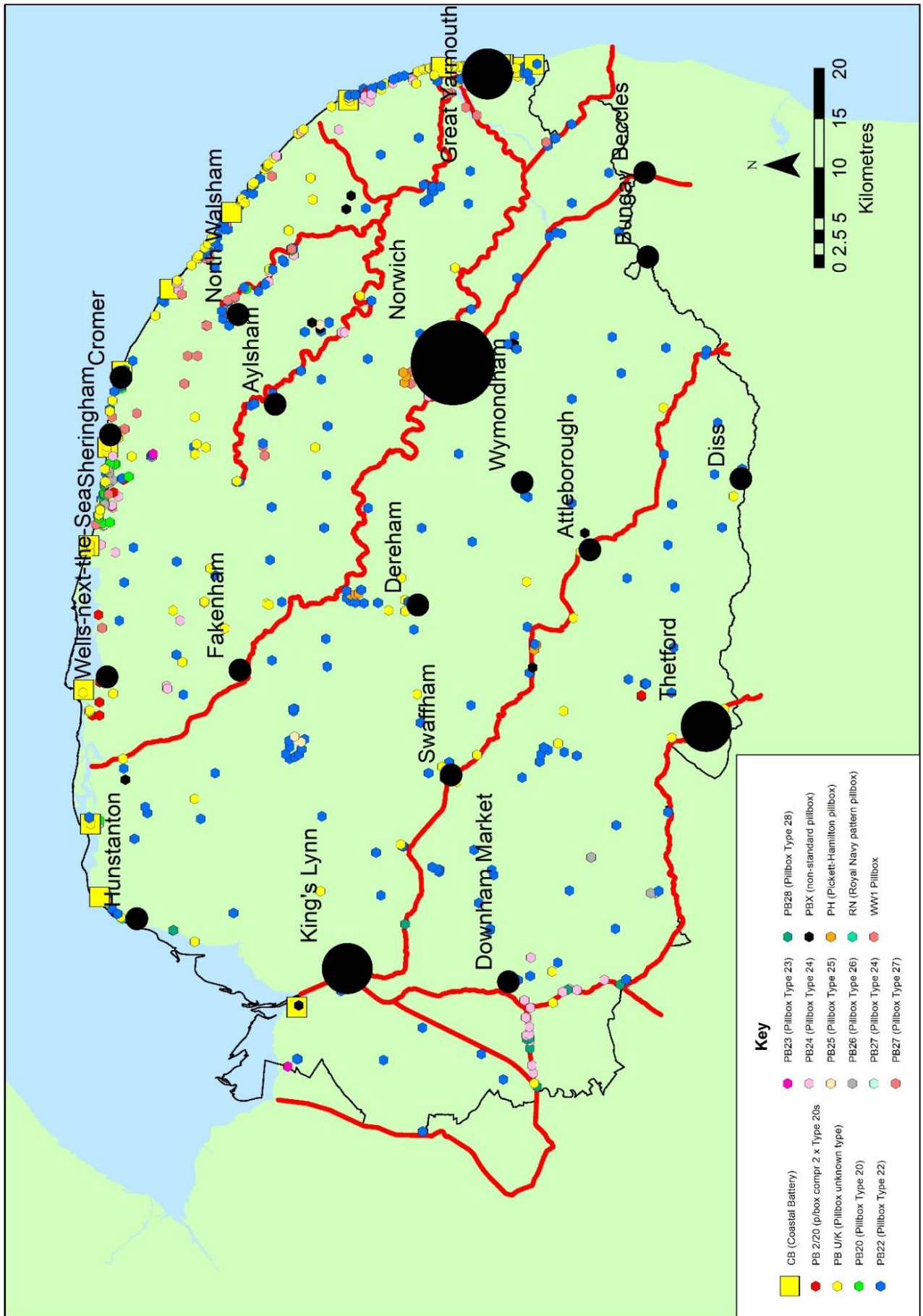


Fig.5 Stop Lines in Norfolk, with pillboxes (all types) and coastal batteries

Emergency Coastal Defence Batteries

The most prominent features of static defence along the Norfolk coastal crust were thirteen heavy gun emplacements, sited at strategic intervals between The Wash to the west and Gorleston to the east, to provide cover for vulnerable landing areas and harbours. Whilst Dobinson discusses the role of ECDBs nationally, some explanation of their regional disposition explains the placement strategy around Norfolk's coastline. Hunstanton's battery was operational by 6th June, with King's Lynn (Ongar Hill), Cromer, Sheringham, Winterton, Great Yarmouth, Brancaster, High Cape (Wells-next-the-Sea), Cley Eye, Mundesley and Happisburgh being emplaced by the end of the year. Their important role is emphasised by the fact that a thousand yards of 'dead water' lay below their muzzles – they were intended to engage the enemy's larger craft even before a landing could be attempted. Most were sited to provide flexible or intersecting arcs of fire, as distinct from being sited directly within port locations. This relates to Dobinson's assertion that the ECDBs were characteristic of linear defence rationale.⁵¹ The guns protecting Holkham Bay and Wells-next-the-Sea harbour, for example, were located on a small projection of land called High Cape; the site is well-concealed even on RAF vertical aerial photographs of 1946. The battery at Ongar Hill was four linear kilometres from King's Lynn's central dock area but covered the long approach from The Wash. Unfortunately it was found that the guns could not be depressed far enough to engage a close target even at high tide; the guns were removed to Druridge Bay in Northumberland a year after installation.⁵² The majority were of 6-inch calibre, except those at Happisburgh (4.7 inch) and Winterton (4-inch). Hunstanton was operational by early June 1940 and the physical size of the ECDBs is testament to the speed of their construction. Their morphology is well documented. Though not all were fully embrasured, brick and concrete gun-houses were eventually accorded to all of them. All were accompanied by a pair of powerful searchlights. Bolted onto heavy duty baseplates in concrete plinths, each gun was connected to magazines and shelters by subterranean corridors.⁵³ Outlying buildings included generator houses, observer's post and accommodation, the latter either built especially or requisitioned. In the context of continuing defensive works through to 1942, most of the

⁵¹ Dobinson, C., *Twentieth Century Fortifications in England Volume VI.1 Coast Artillery - England's fixed defences against the warship 1900-56* p.96

⁵² TNA WO/199/1110; also Kent, P. *Fortifications of East Anglia* (Lavenham, 1988) p.235; Osborne, M. (2015) p.127

⁵³ Kent, P. 'First and Second World War Coastal Defences' in Ashwin, T. and Davison, A. (eds.) *An Historical Atlas of Norfolk* (Chichester, 2005) pp.87-88

batteries did not initially have reinforced concrete roofs built over them. Dobinson asserts that no two battery constructions were alike.⁵⁴ The design of the gun sites in Norfolk bears this out, some being of a nucleated type, with surface gun casements linked to underground ammunition magazines and crew compartments.⁵⁵ The remaining surface archaeology at Mundesley illustrates this well. Others featured dispersed service buildings, the Ongar Hill battery notably being characterised by a tall observation tower that still stands, isolated but accessible, in the landscape. This particular archaeological feature is a prominent example of a building, now alone in the landscape, whose purpose is not generally understood. Though little remains of most of the gun houses along the coast, their localised impact should not be underestimated, each battery requiring a complement of perhaps one hundred and fifty troops, all requiring billeting nearby, and workshops and services areas close to.⁵⁶ Camouflage was especially important for such big structures, granular textured paint and canvas strips proving especially effective. Dummy sites were built but unsurprisingly no remains survive, being largely constructed of timber.⁵⁷ The batteries did not operate independently in the event of a major attack but were co-ordinated from a central communications HQ. Mobile howitzers and field guns of differing calibres also provided off-shore capability. Mobile units by their nature tend not to leave a permanent footprint on the landscape but notable extant remains are the shell-proof gun houses for 6-inch guns at Nova Scotia Farm, Caister, covering the seaward approaches to Great Yarmouth. In December 1940 the anti-aircraft training site at Weybourne, though not technically part of the coastal crust defence scheme, had two 3.7-inch guns that could be directed onto enemy shipping as needed.⁵⁸ The three distinctive 5.25-inch A.A. gun open platforms were not installed until after the invasion threat had receded.⁵⁹ Though all the batteries except Ongar Hill remained technically operational until the end of the war, most were staffed at care and maintenance standard only, considered unnecessary by 1943 when the serious threat of invasion had receded.

⁵⁴ Dobinson, C. *Twentieth Century Fortifications in England Volume VI.1 Coast Artillery* p.96

⁵⁵ Osborne, M. *Defending Norfolk* (2015) p.126

⁵⁶ *Ibid.* p.127.

⁵⁷ Dobinson *Twentieth Century Fortifications in England* pp.99-102

⁵⁸ TNA WO/199/1113; Kent, P. *Fortifications of East Anglia* (Lavenham, 1988) p.190

⁵⁹ Osborne, M. *Defending Norfolk* p.127



Fig.6 6-inch ECDB on the east coast of England, 19th July 1940⁶⁰

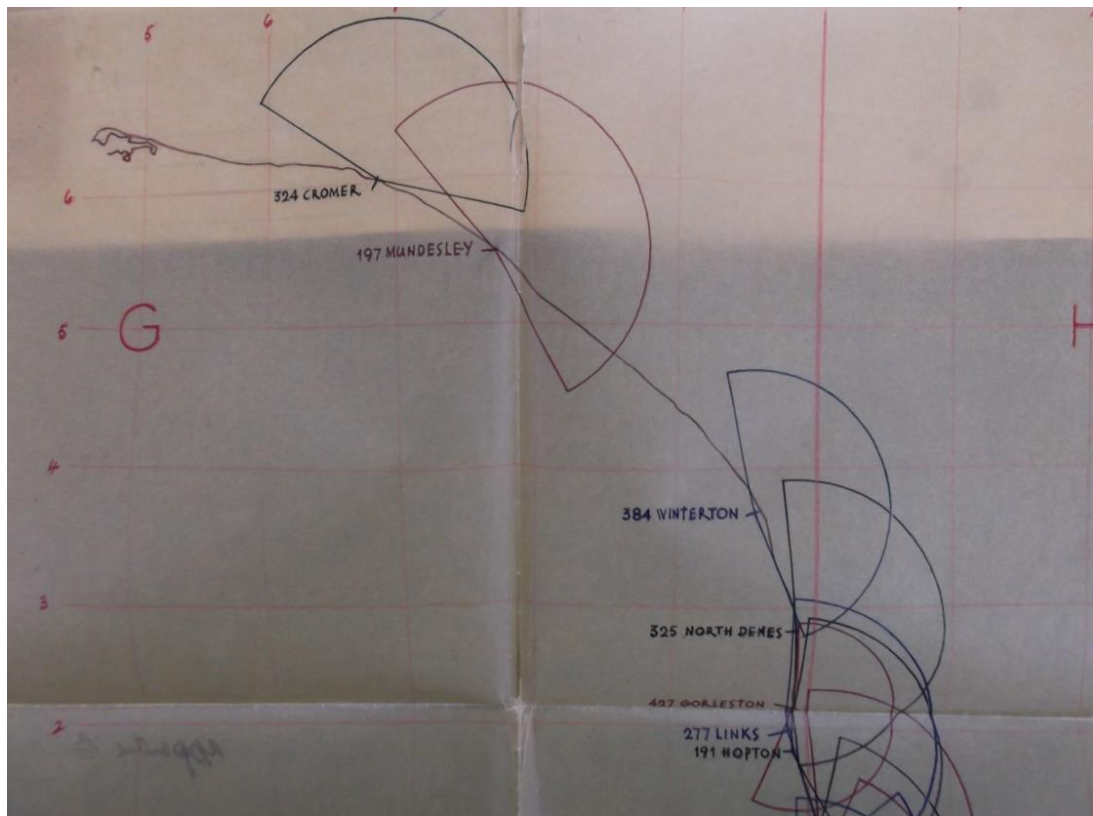


Fig.7 Gun arcs, described in appended note as 12,000 yards, except for Winterton at 11,000 yds and the Gorleston batteries at 8,000 yards.⁶¹

⁶⁰ IWM H2350. Personnel are Royal Scots Fusiliers, therefore the location is probably Norfolk

⁶¹ TNA WO 192/62 384 Coast Battery R.A., Winterton, Fort Record Book 1940-45

Coastal Battery examples – Winterton and Mundesley

The battery was sited at sixty feet above mean sea level, 500 yards from the sea, with the guns themselves sited at the top of a 20 foot bank. The searchlights were located in sand dunes nearby, with a minefield between.⁶² A note on topography states:

‘The surrounding country is extremely flat and with the exception of church towers there are few prominent points.’ and later ‘the water is comparatively shallow and numerous sandbanks abound. Only one entrance is suitable for shallow draft boats and this only at suitable tides....The tide through the Cockle Channel runs fairly fast.’⁶³

This describes so much of the terrain inland of the east Norfolk coast. The battery’s arc of fire served its role as the close defence of the north approach of the Great Yarmouth inner channel. The site also accommodated a 75 mm field gun and a 40 mm Bofors anti-aircraft weapon. The guns themselves at 4 inch calibre were smaller than most, hence the shorter range.

⁶² TNA WO 192/62 384 Coast Battery

⁶³ Ibid. Unit location topographical report



Fig.9 Oblique aerial perspective of Mundesley Emergency Coastal Defence Battery.⁶⁶

The octagonal gun platforms for the 6-inch guns can clearly be seen, with the semi-subterranean connected tunnels to the rear. The concrete roofs are long gone and, although the site appears prominent, it would have been well-camouflaged to conceal from air and sea observation. The role of the Mundesley battery is described in common with others as primarily ‘to destroy the craft of an invasion force and to prevent them reaching landing beaches.’⁶⁷

⁶⁶ Norfolk Historic Environment Service collection, Gressenhall Museum

⁶⁷ TNA WO 192/81 197 Coast Battery, Mundesley 1942-1944. Section E. Operations.



Fig.10 Mundesley: 20-bolt holdfast for one of the 6-inch guns (author's photo)



Fig.11 Mundesley: both gun platforms faced directly seaward (author's photo)

Beach defences

A combination of defensive measures – such as minefields, stakes, and barbed wire described on page 5 above – was installed at key sections of coastline, starting at the waterline on the beach itself and layering back to beach exits and roads leading inland. Individual devices included an eight-kilometre net and canvas boom offshore in The Wash, preventing landfall at vulnerable points on the western coastline. Further inland, minor roads and access points were set for obstruction or demolition. Major roads were a different matter, for they would be needed by mobile defenders moving forward; the compromise was partial temporary blocking if and when needed.⁶⁸

Stop lines

The stop lines that traversed East Anglia were characterised by a clear north-west to south-east orientation, the aim being to slow down the invader at each line until mobile reserves could engage. 2 Corps had operational experience on the continent prior to the Dunkirk evacuation and had seen how hard defences were constructed and used in practice.⁶⁹ The easternmost stop lines were in fact technically demolition belts, where bridges and roads were prepared for destruction, intended as a second line of delay after the beach defences. The first, known as FI (F1), was closest to the coast, starting at Winterton, leading via Hundred Stream to the River Thurne, then to Barton Broad and to the road bridge at Swafield on the North Walsham and Dilham Canal. Fourteen pillboxes were built early on along its route – suggesting a line to be defended. North Walsham is a sizeable market town and was prepared for all-round defence. FII (F2) followed the River Bure upstream from Great Yarmouth to Ingworth, north of Aylsham, with fifteen bridges prepared for demolition. No new pillboxes were built but Acle, Coltishall and Aylsham were nodal points. FIII (F3) began at Oulton Broad and followed the Rivers Waveney and Yare, via the New Cut to a junction with the River Yare at Reedham to Norwich, with five bridges prepared for demolition but with far fewer defending pillboxes.⁷⁰ These natural landscape features were all formidable anti-tank obstacles in their own right but they also provided key communication routes, so demolition

⁶⁸ See Weybourne case study, below

⁶⁹ TNA 166/3709 War Diary 240th Field Company, Royal Engineers

⁷⁰ The New Cut or Haddiscoe Cut, completed in 1833, was built as a direct river trade route from Lowestoft to Norwich. Its width and being in open country made it the ideal anti-tank obstacle.

was a last resort as mobile reserves would have needed to move forward to engage the enemy. The main linear stop lines ran along river routes - but what is not made clear in earlier histories is that their purpose was two-fold; firstly, to act as further obstacles to enemy progress across country and, secondly, to protect key roads between towns and strategic points with the aim of stopping enemy traffic moving west on highways. 2 Corps Line 'A' started at Beccles and ran through Norwich, through to Fakenham and up to Burnham Market, stopping almost at the coast.⁷¹ The aim was to delay the enemy's advance, allowing mobile reserves to move forward to engage. 2 Corps Line 'B' followed a broad parallel line from Felixstowe, entering Norfolk at Harleston, thence via Attleborough, Watton and Swaffham to King's Lynn, protecting main roads. Eastern Command Line, heavily defended in advance of the General Headquarters Line further to the west, ran from two start points in south-east Essex, running north-east to terminate at King's Lynn, forming the frontage of the main mobile reserve, the hierarchy of defence lines increasing in importance and strength from east to west. An additional stop line covered the nodal point defences at Thetford and Brandon, linked by demolition points on the River Ouse westwards from Thetford to the Great Ouse between Littleport and Downham Market.⁷² Osborne describes the wider context succinctly when he writes that invaders landing in Norfolk would have had to negotiate twelve stop lines before reaching Trafalgar Square.⁷³

Stop lines were poorly understood post-war, even in Collier's official history and were only accurately represented diagrammatically as recently as the mid-1990s.⁷⁴ This is understandable in four respects. Firstly, they are primarily a feature of the natural landscape and not formal built structures, even if sometimes militarily enhanced, with some deepening and widening of narrow channels. Secondly, they were not garrisoned by serried ranks of soldiery along their entire length which may go some way to explaining why they were thought for some time not even to be formally documented.⁷⁵ Thirdly, they were of short operational duration. Fourthly, the forward lines were really demolition belts, with charges placed at key crossing points. For example, whilst the northern-most section of Defence Line

⁷¹ Both Dobinson and Osborne suggest that the River Wensum was not formally employed as an anti-tank obstacle. It seems likely that the roughly parallel main road was perceived as an assembly route for upcoming mobile reserves.

⁷² TNA WO 166/468 18th Division: Commander Royal Engineers (CRE) ; Dobinson, C. *Twentieth Century Fortifications in England Volume II: Anti-invasion defences of WWII* p.66

⁷³ Osborne *Defending Norfolk* p.136

⁷⁴ Dobinson, C. *Twentieth Century Fortifications* p.68

⁷⁵ Wills, H. *Pillboxes: A study of UK defences 1940*. (London, 1985) Early researcher Henry Wills had misunderstood the layout of the stop lines.

F1 has pillboxes at regular intervals, much of the remainder of lines F1, F2 have very few built pillboxes on their routes; aside from an early surge of pillbox building, this suggests that F1-F3 were very much intended as demolition belts, with bridges prepared for demolition, rather than as defensive lines to be garrisoned or patrolled. The demolition belts accounted for approximately 75 miles of waterways in length, and the stop lines for approximately 110 miles – a percentage differential of 68 per-cent, or a ratio of roughly two-to-one.⁷⁶

It is significant that even recent experts appear to differ in their interpretation. Dobinson refers to the Corps lines as ‘blocked roads’. He asserts that neither Lines ‘A’ nor ‘B’ were ‘conventional’ stop lines, both being ‘based around main roads offering no definite obstacle to AFVs’ and that the River Wensum is not identified in sources as an anti-tank obstacle.⁷⁷ He does acknowledge that Bird favours the rivers option.⁷⁸ Bird clearly states that Norfolk’s lines were based on river courses, functioning as natural anti-tank ditches as were, for example, railway cuttings elsewhere in other regions.⁷⁹ This is entirely logical, especially as they could still afford protection to adjacent highways – the Norwich to Fakenham road running broadly parallel to the River Wensum being a good example. The stop lines were then somewhat nebulous, and perhaps better understood as adapted natural features than built structures. The GHQ lines have been better understood as a feature of national rather than local defence, and were better defended being seen as the main rearguard.

⁷⁶ Demolition belts FI, FII and FIII followed watercourses for approximately 15, 40 and 20 miles respectively. Corps Lines ‘A’ and ‘B’ followed roads for, respectively, 60 and 50 miles within Norfolk.

⁷⁷ Dobinson *Twentieth Century Fortifications in England Volume II* pp.68,69

⁷⁸ Bird, C. ‘The Fixed Defences of Norfolk and East Norfolk in the two World Wars: a modern survey, Part 1’ in *Journal of the Norfolk Industrial Archaeological Society* **5 (5)**, 1995 pp.295-343 Bird (1995) p.298

⁷⁹ Bird *Silent Sentinels – The story of Norfolk’s fixed defences during the twentieth century* (Guist, 1999) p.22



Fig.12 'Hairpin' anti-tank obstacles at Narford on 2 Corp Line B (author's photo)

A series of thirty-six anti-tank hairpins survive at Narford, between Swaffham and King's Lynn. Like so many remnants they appear to exist in isolation until mapped in conjunction with other archaeology and documentation, which show they are sited along on Corps Line B. Such structures give credibility to the stop lines as physical evidence – and the pillboxes, spigot mortar mounts and anti-tank obstacles that can still be found along their routes. The archaeology provides the evidence.

Pillboxes

The most iconic structure symbolising the defence against the invader is the pillbox. The first new pillboxes were being built in Norfolk in early June 1940, and perimeter defences were established around Great Yarmouth, Norwich, Thetford and Brandon. About 5,054 pillboxes had been built in Eastern Command by October 1940, 1,339 of them on the coast.⁸⁰ A variety of designs was prescribed by the Directorate of Fortifications and Works in May 1940, all well-typologised by researchers. Norfolk Heritage Explorer gives a figure of 672 recorded

⁸⁰ Dobinson, C. *Twentieth Century Fortifications in England* p.55 citing TNA WO 166/344, XII Corps Plan to defeat invasion, 16 May 1941.

pillboxes; Bird lists 633 of all types. The statistics include lost examples, amounting to around thirty per-cent.⁸¹ Of these, about one hundred and eighty are listed as ‘unknown design’, twenty ‘non-standard’ and in excess of two hundred and fifty as Type 22s. This design – officially FW3/22 - is the most obviously recognisable in the Norfolk landscape, hexagonal in shape, about ten feet wide, with walls between one and two feet thick, with rifle loops in five sides and a door in the sixth.⁸² Late 1940 saw more emphasis being put upon the strengthening of coastal pillboxes, and thinner-walled versions inland, though entirely new ones were being built at more than twenty locations across north Norfolk in mid-1941, along with new beach minefields.⁸³ February 1942 saw the official abandonment of pillbox construction in favour of fieldwork defences.⁸⁴

Their present-day landscape presence is popularly perceived as representing wartime defence but, almost eighty years since their installation began, little is understood of pillboxes in the Norfolk landscape. They appear as isolated structures without precise meaning; little trace remains, for example, of the trench systems that connected front line pillboxes. A perpetual myth is that some face the wrong way. One clear statement refutes this;

‘The primary objective of defence in 53 Infantry Brigade sector will be to repel invasion from the sea. To enable this to be done without molestation by parachute troops from the rear, certain of the defences will be sited to prevent attack from the land.’⁸⁵

Moreover, since they are not conserved as historic monuments, little has been done to represent them in an educational or heritage context.

⁸¹ Bird, C., *Silent Sentinels – The story of Norfolk’s fixed defences during the twentieth century* (Guist, 1999). Based on tabulation of Bird’s gazetteer.

⁸² Brown, D., Burridge, D., Clarke, D., Guy, J., Hellis, J., Lowry, B., Ruckely, N., Thomas, R. *20th Century Defences in Britain – An Introductory Guide* (Practical Handbooks in Archaeology No.12, Council for British Archaeology, York, 1995) pp.79-84. In June 1940 the War Office’s Directorate of Fortifications and Works branch FW3 formalised a series of designs.

⁸³ TNA 166/3709 War Diary 240th Field Company, Royal Engineers

⁸⁴ Dobinson, C. *Twentieth Century Fortifications in England* p.180

⁸⁵ TNA WO 166/960 53rd Infantry Brigade War Diary Operation Order No.1 5th June 1940



Fig.13 The trench systems connecting pillboxes in the front line of defence. ‘A soldier of the 4th Battalion, The Royal Norfolk Regiment, mans a trench near a pillbox at Great Yarmouth 31 July–2 August 1940’⁸⁶

Norwich, as a major defensible urban area, was encircled by sixteen pillboxes.⁸⁷ Airfields already each had their own complement of pillboxes and anti-aircraft defences; 18th Division was early on charged with defending airfields at Barton Bendish, Bodney, Feltwell, Marham, Methwold and Watton. Nodal points were deemed to be any location, at smaller urban and rural locations on river crossing, rail lines and road intersections.

⁸⁶ IWM H2702

⁸⁷ TNA WO 166/468 18th Division, Commander Royal Engineers, Sept 1939-Sept 1941

Nodal points

Through the Autumn of 1940 to summer 1941, 18th Division's emphasis came to be placed on nodal points defended with thinner-walled pillboxes – fifteen inch walls instead of forty-two inches – at Norwich, Fakenham, Attleborough, Watton, Harleston, Loddon, Acle, Coltishall, North Walsham, Aylsham, Saxthorpe, Holt Dereham, Wymondham and Diss. The shortage of construction materials, particularly cement, almost certainly contributed to the decision to place greater emphasis on more fieldwork obstructions.⁸⁸ Beach defences were considered the top priority; then nodal points, graduating from five miles from the coast back to the General Headquarters Line. By spring 1941 Eastern Command's defences had reached their limit of heavy structural installations, though more minefields and wire were installed.⁸⁹

‘You cannot prevent the enemy...from penetrating a very wide perimeter; therefore have the smallest possible perimeter. Cling like a leech to the inner keep and your localities.’⁹⁰

Forty-one nodal points are identified across Norfolk.⁹¹ All comprise towns and larger villages. The road network across Norfolk is characterised by relatively evenly distanced links between market towns, and with King's Lynn to the far west, Yarmouth to extreme east and Norwich in the centre. The nature of their locations puts them on road, rail or river routes. Some excellent archaeological examples remain, notably the well-known loophole in a house at Acle, east of Norwich.

⁸⁸ Dobinson, C.S. *Twentieth Century Fortifications in England* p.77

⁸⁹ *Ibid.* p.78

⁹⁰ WO 199/544 Keeps and fortified villages, nodal points and anti-tank islands Sept 1940- Oct 1942

⁹¹ WO 166/1193 War Diary HQ 2 Corps Cambridge Area 1940-1941. See Appendix 3 for list of locations.



Fig.14 Acle, mid-way between Norwich and Gt Yarmouth, was a Category 'A' Nodal point. Concealed pillbox incorporated into flank wall of The Manor House, covering central road junction (author's photo).

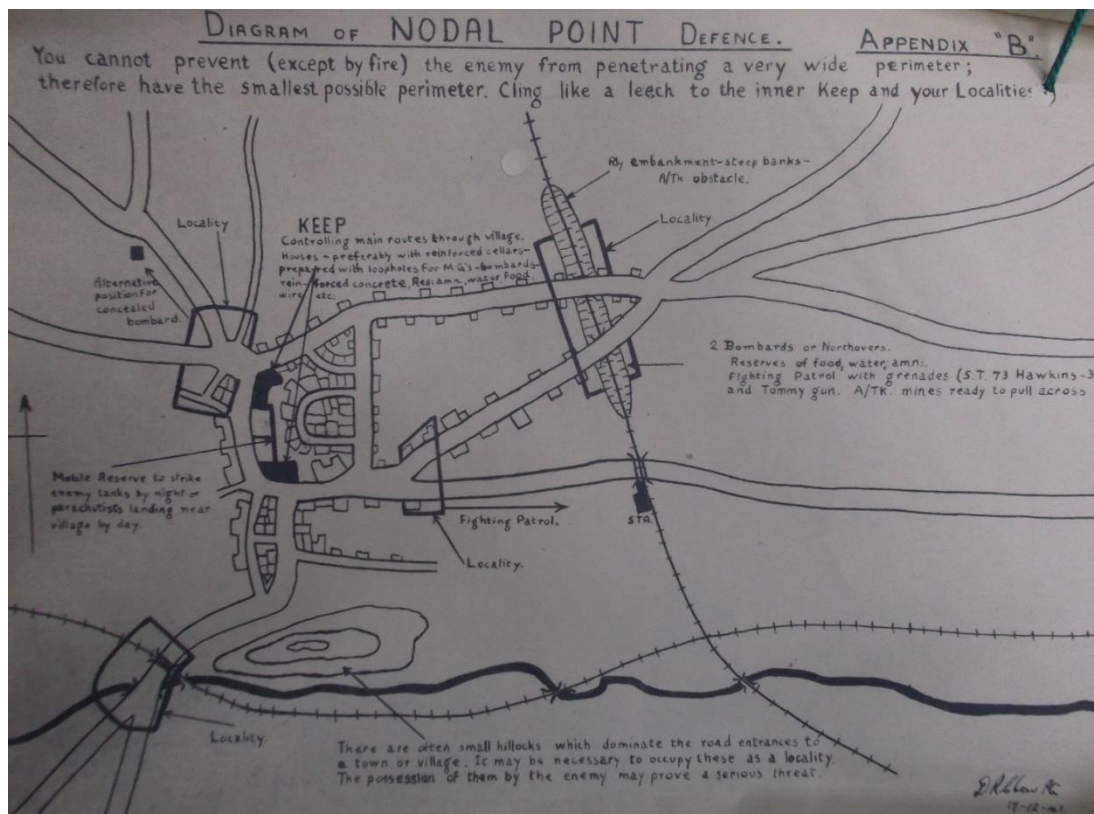


Fig.15 An explanatory nodal point defence plan, describing key features of all-round defence, 17th December 1941.⁹²

⁹² TNA WO 199/544 Keeps and fortified villages, nodal points and anti-tank islands Sept 1940-Oct 1942: Corps Revised Defence Plan 1941 Part 1, Operations.

Category A nodal points were expected to be able to hold out for at least seven days and Category B – at lesser locations - for two days.⁹³ This bears testament to the level of organised all-round defence at nodal points compared with, for example, the expectation that linear defences should hold for just a few hours. Allusion is made to the successful use of nodal points by the Russians at Vyasha, Bryansk and Smolensk with the caveat that:

‘The problem in East Anglia is slightly different – towns can be easily by-passed. Therefore nodal points are centres of communications and (the) object is to deny use of the routes through these centres to the enemy; minor nodal points will prevent the enemy by-passing the major nodal points.’⁹⁴

⁹³ TNA WO 166/1193 War Diary HQ 2 Corps Operation Instruction 13th Dec 1941

⁹⁴ TNA WO 199/544 Keeps and fortified villages, nodal points and anti-tank islands Sept 1940-Oct 1942

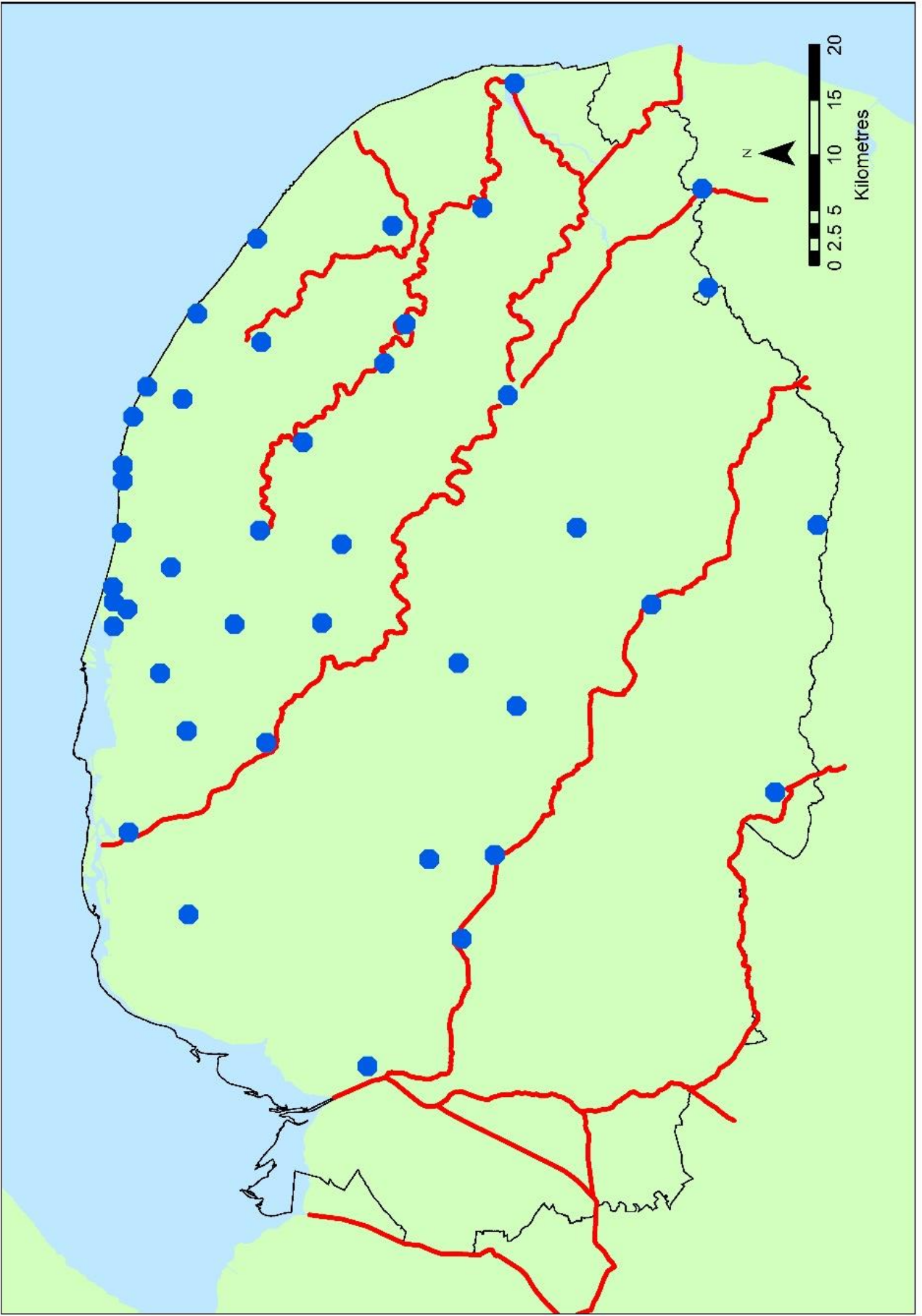


Fig. 16 Nodal points across Norfolk by 1942, shown against stop lines

An interesting retrospective summary of strategy, unascribed and undated but indicated as written after 3rd June 1941, states that there was no reason to suppose the enemy would employ tactics greatly different from those employed successfully in France, namely, rapid penetration by armoured vehicles. One difference was, however, felt to pertain. In the open country of Northern France, German armour did not readily leave the roads, and returned to them as soon as possible.

‘In southern and eastern England however, the country is much closer, and the roads narrower and less direct. Moreover they nearly all converge on towns, small and large. The deduction made was that defence was best extended in depth inland by holding these towns, as they not only provided anti-tank opportunities but also commanded the nexus of roads.

Later still, as defences became more organized, it was decided that each nodal point should have its keep made tank proof, by means of road blocks between houses, and that an outpost ring of defences, usually on the outskirts, should be constructed. The expression ‘fortress’ came to be used to designate an inland town or village which was selected for fortification on these lines.’⁹⁵

1942 onwards: maintenance, Abandonment and Clearance

The presence of so much anti-invasion archaeology across Norfolk can obscure the fact that the lifespan of these defences was very short – for all practical purposes no more than three years for most of the coastal batteries; as little as one year for the additional pillboxes built in mid-1941. By December 1942 it was acknowledged that the threat of invasion had receded considerably and the Army advised the Cabinet accordingly.⁹⁶ It was thought highly unlikely that a major invasion was logistically feasible by this time. By early 1943 a regime of maintenance, some abandonment and also clearance had begun. Beach defences were only to be kept in readiness in areas susceptible to opportunistic raids. Nevertheless concerns were still being expressed in April that year about the possibility of seaborne raids. It was

⁹⁵ TNA WO 166/1193 Areas: Cambridge: General (G)

⁹⁶ Dobinson, C.S. *Twentieth Century Fortifications in England* p.194.

calculated that between four and seven hours would be required for fast sea passage in one direction, but airborne raids could happen day or night.⁹⁷

Even with invasion being a remote possibility by this stage of the war it might seem surprising that efforts were being made to actually dismantle anti-invasion defences. The entirely practical reason was that the materials were needed elsewhere; preparations for the invasion of mainland Europe required vast amounts of iron, steel and reusable ordnance and explosives. Inland, defences were still being reviewed and sometimes improved upon, at airfields, with the threat of solitary raiders. Even so, as late as May 1943 the Commander-in-Chief Home Forces acknowledged that the possibility of ‘a sudden and unexpected change in the war may alter conditions for the worse.’⁹⁸ It appeared however that the events of June 1944 finally negated the need for any extended network of anti-invasion defences. Clearance was rather diplomatically termed ‘restoration’, meaning occupied land could be restored to its former use or ownership, or compensation extended. Typically, agriculture and transport were prioritised and, if defence works were in the way, they had to go. Though minefields, anti-tank obstacles, beach scaffolding, dannert wire, began to be cleared by both civilian contractors and military engineers, much would remain post-war. Landowners were paid compensation for the use of land on which pillboxes, gun batteries, searchlights and so on were built; the intention was that these were ‘temporary defence works’ but often there was no particular need to remove or incur the cost of removal. In such cases a final sum was agreed.⁹⁹

Temporary Defences Works were in 1946 categorised as ‘removal urgently required’ (A), removal eventually required’ (B) and ‘removal not in the public interest’ (C). Many sites were later downgraded for want of the effort to remove them. Clearly priority was accorded where public safety or roads were involved, or agriculture obstructed. Understandably, the removal of unsightly or dangerous wartime defence structures from coastal areas was important to the revival of tourism. In May 1947, a survey of the beach and cliff footings in the Trimmingham area by 14th Field Survey Company, Royal Engineers, apparently prior to

⁹⁷ TNA WO 166/1193 213 Inf Bde Operation Instruction (New series) No.3 dated 20th April 1943

⁹⁸ TNA WO 32/10066 Home Defence: General (Code 90 (A)): Emergency Works 1941-45. GHQ Home Forces letter HF 11600/Ops, 29 May 1943

⁹⁹ William Foot recounts a popular anecdote that farmers were paid a standard £5 to remove each pillbox on their land, but kept the money instead – probably a misunderstanding about the nature of the lump sum or where farmers were paid by the local War Agricultural Committee to undertake clearance work. Foot, W., *Beaches, fields, streets, and hills - the anti-invasion landscapes of England, 1940* (English heritage and Council for British Archaeology (York, 2005) p.3

mine clearance, suggests that the minefields were extended into the footings of the cliffs themselves.¹⁰⁰ The county archive holds a number of documents detailing the categorisation and, in most cases, retention of structures defined as Categories ‘B’ or ‘C’.¹⁰¹ A collection of 25-inch O.S. 2nd. Edition maps records a survey of the eastern and northern-most Norfolk coastal defences between 1947 and 1950, from Ongar Hill, King’s Lynn across to Holkham. Extant defence works, from major structures such as gun houses to abandoned piles of dannert wire, are annotated. The word ‘accretion’ features in some of the notes, indicating where military structures are deemed to be assisting retention of natural sea defences. One sheet, covering Titchwell, itemises the oft-mentioned tank hulks that can occasionally be seen on the foreshore.¹⁰² Much of Norfolk’s coastline was altered by the 1953 floods and at Titchwell little attention was paid to repairing the damage, after which time the present dunes and shingle spit began to form; it is suggested that the original sea wall was weakened by the large number of armour-piercing shells that had struck it, thereby allowing the sea to break through.¹⁰³ The Royal Society for the Protection of Birds states that part of the coastal defence strategy would have included a reversal of drainage and encouraging flooding, though there is no documentary evidence to support this notion at this location. The main banks were constructed for firing practice, with targets set at one-thousand yard intervals. Both these actions resulted in a subsequent by-product, of helping re-establish wetland biodiversity, with freshwater wildlife being protected from saltwater inundation.¹⁰⁴ Minimal surface structures remain but the relationship between wartime military activity and its default contribution to the present-day natural landscape, flora and fauna is significant.¹⁰⁵

¹⁰⁰ NRO MC 2445/1 973x3 ‘Norfolk Minefields Nos 20 and Part 18’. The survey shows trace-lines of the ‘toe’ and top of the cliffs, along with lines added in 1955 and 1966 which show the extent of cliff erosion a cross the decades.

¹⁰¹ NRO C/P 8 series

¹⁰² NRO C/P 11 series

¹⁰³ Ibid.

¹⁰⁴ RSPB Titchwell information leaflet <https://www.rspb.org.uk/reserves-and-events/find-a-reserve/reserves-a-z/reserves-by-name/t/titchwellmarsh/archaeology.aspx> Titchwell Marsh RSPB information leaflet (accessed 12th April 2016)

¹⁰⁵ Titchwell is not the largest example of the default benefit of military activity, the most extensive being the Stanford Battle Training Area (see Chapter 4) which differs in still being militarily active.

Case study : Weybourne and Muckleburgh

Introduction

A good deal of defence archaeology survives in the Weybourne area on the north Norfolk coast, meriting closer study in understanding the phased implementation of defences. The location was included in Foot's national study of sixty-seven anti-invasion sites as they existed in 1940 but a further consideration of the archaeological remains helps place them in the wider context of Norfolk's defence in the longer chronology of the war and their presence in the twenty-first century landscape.¹⁰⁶ The archaeology and documentation at Weybourne demonstrate distinct phases of defence strategy through to the later war years.

From fears of Spanish invasion in 1588, through to anti-invasion preparations in 1914, Weybourne has long been a vulnerable landing place. A survey of 1839 recommended gun batteries being installed at Weybourne but nothing came of it.¹⁰⁷ Trenches and barbed wire were laid to the beach in the First World War, augmented by mobile 60-pounder howitzers at both Weybourne and Mundesley. The anti-aircraft (AA) gunnery school established in 1936 to the west, at Muckleburgh, was well-placed to defend the locality though there it was not constructed *in situ* for that specific reason.¹⁰⁸

Topography

Weybourne Hope is a linear expanse of shingled beach, with deep water anchorage offshore suitable for large ships to off-load smaller craft. These favourable beach landing conditions lead directly half-a-mile inland along Beach Road to Weybourne Village, with strategic routes thence to east and west. Defendable high ground further inland includes several hills, notably Muckleburgh and Telegraph Hills to the south-west, Kelling Heath beyond and Weybourne Heath and Sheringham Park to the south-east. The foreshore topography is striking in its vulnerability. Without defences, an attacking force could press towards arterial

¹⁰⁶ Foot, W. *Beaches, fields, streets and hills – the anti-invasion landscapes of England, 1940* (English Heritage, Council for British Archaeology Research Report 144, Oxford, 2006) pp.138-148. Preceded by 'Defence Area 41: Weybourne report for Archaeology Data Service https://archaeologydataservice.ac.uk/catalogue//adsdata/arch-455-1/dissemination/pdf/Text_Reports/DA41_TEXT_-_WEYBOURNE.pdf (accessed 13th Dec 2014)

¹⁰⁷ Osborne, M. *Defending Norfolk – The Military Landscape from prehistory to the Present* (Croydon, 2015) p.84

¹⁰⁸ The A.A. Gunnery School did not install its three distinctive 5.25-inch guns and emplacements until after the invasion threat had receded.

roads unhindered. With defences, the topography presents a killing ground before and around the village, itself a 'defended place'. Even today, an informed visitor will be aware of concrete structures from almost any view perspective, although cliff erosion has seen some structures topple or shift position post-war.

There are four distinct areas of defence; the coastline itself, centred on Weybourne Hope; the AA school at Muckleburgh; Weybourne village; and the close-lying environs of Sheringham Park to the south-east, where further defences were sited. Defence features are visible on aerial photographs from December 1940, especially a curving, linear stretch of wide ditch around seven metres wide, running east to west below the training camp and terminating at the beach at Weybourne Hope.

Chronology and disposition of troops

In November 1939, 53rd Infantry Brigade was responsible for holding the coastline between Sheringham and Salthouse, with 6th Norfolks in the centre and 5th Norfolks to the west.¹⁰⁹ The following year the brigade sector was further divided into three sub-sectors. The right flank, from East Runton Gap to Beeston Regis Hill and exits southwards from Sheringham, was guarded by 6th Battalion Royal Norfolk Regiment, the centre by 5th Norfolks, and the left by 6th Battalion Cambridgeshire Regiment.¹¹⁰ Weybourne fell within Defence Sector 'A' staffed by infantry and supporting units including, most importantly, artillery.

In September 1939 engineers from 287th Field Company, Royal Engineers reconnoitred coastal defence positions in the wider brigade area and the brigade commander inspected proposed battle positions and fieldworks. In early December all twenty existing First World War concrete blockhouses were inspected, most being reported as being in fair to good condition structurally, with just two rated as poor. Ballistic tests were conducted, however, and the results proved disappointing.¹¹¹ Sustained fire, causing cementing to fail, led the Officer Commanding to propose sending a block to the engineering laboratory at Cambridge for further testing. The clear conclusion was that the extant pillboxes were not sufficiently

¹⁰⁹ TNA WO 166/4561 6th Royal Norfolk Regiment Aug 1939 – Oct 1941 Operation Order no.1 of 14th Nov 1939 and no.11 of 22nd November 1939

¹¹⁰ TNA WO 166/960 War Diary 53rd Infantry Brigade. Operations Order no.3, 18th January 1940 and confirmed in memo. 53 IB/621/HD/42 dated 1st February 1940. Boundaries were amended slightly by Operation order no.6 of 14th May 1940; also TNA WO 166/3756 War Diary 287th Field Company, Royal Engineers, Operations Order no.2 1st Feb 1940

¹¹¹ TNA WO 166/3756 Royal Engineers, 287 Field Company 1st Sept 1939 to 31st Oct 1941

robust to withstand contemporary modern weapons fire, and also that the lack of interior baffle walls meant that any soldiers inside the structure would be highly vulnerable to ricochet injury.¹¹² There arose an urgent need for a construction programme rather than relying on older fixtures. By Christmas the area was being surveyed for new-build pillboxes.¹¹³

Pillbox engineering and placement is known to have been influenced by experience on the continent before the fall of France. A report of experiences in France engaged in the construction of concrete blockhouses describes a ‘standard design...with minor variations to meet local conditions and designed to give protection from a direct hit by a 6-inch shell’ and with 3ft 6ins thick walls. The officer clearly intended to offer advice, recommending a properly organised approach, including the use of well graded aggregate, and of pre-cast concrete for reinforcement points.¹¹⁴ The temptation for civilian contractors, in both wars, to use low grade shoreline sand and beach material for aggregate must have been appealing.¹¹⁵ Given the short timescale in which Norfolk’s pillboxes would be intended for use, no-one contemporarily would have need to consider the effects of coastal erosion and loss to the sea.

At the beginning of 1940 the specific objective of 53rd Infantry Brigade was

‘to oppose any sea-landing between East Runton Gap and Salthouse...and to protect aerodromes at West Raynham and Bircham Newton and the R.D.F. station at West Beckham.’¹¹⁶

News of the surrender of the Belgian army and the B.E.F starting its evacuation from Dunkirk understandably heightened the tension – the new Brigadier ordered the Battalion to stand-to at dusk and dawn therefrom onwards. Substantial preparations of battalion battle H.Q.s were also being made at this time and on 14th June Royal Marines officers arrived to make arrangements for emplacement of the two 6-inch guns in the coastal battery at Skelding Hill, Sheringham.

¹¹² TNA WO 166/3756 Royal Engineers

¹¹³ Ibid.

¹¹⁴ Ibid. Royal Engineers: December 1939, attachments

¹¹⁵ See Fig.17 for archaeological evidence at Weybourne beach

¹¹⁶ Radio and Direction Finding, that is, radar.



Fig.17 Close view of exposed wall section of pillbox on Weybourne beach, showing quantity of local beach stone used as aggregate. (Author's photo)

‘The whole of the past month (June) has been spent on improving defensive positions. Section posts, dug-out and communication trenches have been dug and revetted. Practically every fire trench has now overhead cover, many miles of wire have been put up and road blocks consisting of concrete blocks and wired knife rests have been erected at all entrances to Sheringham.’¹¹⁷

A brigade operation instruction of 7th June draws attention to the importance of mobile platoons, giving some indication of not relying exclusively upon fixed defences and remote mobile reserves.¹¹⁸ Camouflage of pill-boxes was a priority, those on the beaches being piled around with shingle and painted grey on the upper half, others painted grey and green to harmonise with the background ‘and others...made to look like bathing huts or hen

¹¹⁷ TNA WO 166/4561 6th Royal Norfolk Regiment War Diary Aug 1939 – Oct 1941 :

¹¹⁸ Ibid. : Brigade Operation Instruction No.2 7th June 1940

houses.’¹¹⁹ Four hundred anti-personnel mines were to be laid in cliff gaps and beach exits passable to infantry; beach mines could be laid either in front of or behind the wire but, in the latter case, more wires would be needed to prevent animals straying on to the minefield. An accurate record of every mine laid was to be kept, with a numbered post marking every one hundred yards of line.¹²⁰ All this indicates that preparations for defence against imminent invasion had reached their maximum within existing capacity by the end of June. July was characterised by training exercises with particular attention being given to the mobile column whose main task was to oppose parachutists and airborne troops and reconnaissance.

Prior to the fall of France a large-scale invasion was considered less likely than raids by landing parties or naval raids against coastal towns – though supported by intensive bombing of military and communication objectives.¹²¹ By late May however, heavy bombing, parachutists, air- and seaborne landings were anticipated.¹²² 5th Norfolks’ War Diary entry for 22nd May reflects on the success of the rapid and unorthodox methods of the German army witnessed on the continent, commenting that a parachute landing was not out of the question.¹²³ By the end of June the tension had heightened.

‘France has capitulated and the country is waiting and preparing for a German invasion. This unit naturally considers itself to be situated in the most vulnerable point on the coast and has dug itself into the ground with great determination.’¹²⁴

With the fall of France and the Dunkirk evacuation the intention was clear.

‘The primary object of defences in 53 Inf.Bde.Sector will be to repel invasion from the sea. To enable this to be done without molestation by parachute troops from the rear, certain of the defence will be sited to prevent attack from the land. Protection against parachute troops however must be regarded as a secondary object in the defensive layout.’¹²⁵

¹¹⁹ TNA WO 166/4561 6th Royal Norfolk Regiment War Diary Aug 1939 – Oct 1941 : Brigade Operation Instruction No.2 7th June 1940

¹²⁰ Ibid.

¹²¹ TNA WO 166/464 Operation order Seagull 22nd April 1940.

¹²² TNA WO 166/960 53rd Infantry Brigade War Diary, Operation order no.7, 22nd May 1940

¹²³ TNA WO 166/4560 5th Battalion Royal Norfolk Regiment, War Diary May 1940.

¹²⁴ Ibid. 30th June 1940

¹²⁵ TNA WO 166/960 Operation Instruction no.1, 5th June 1940

This key statement regarding local strategy validates the decision to heavily fortify the coast at Weybourne and its vicinity. Though pillboxes were sited on the cliffs, they were also placed on the shore itself to facilitate close enfilading fire at the points of enemy landing. The local strategy appears to have been to stop the enemy as much as delay.



Fig.18 Heavy machine gun pillbox extant on cliff at Weybourne in 2018. It commands an unrestricted view along the shoreline to the west. (Author's photo)

Emphasis was placed upon the use of Bren guns to provide enfilade fire along the beach from those beach-sited pillboxes. An Operation Instruction of July 1940 advises that the enemy could land anywhere along 53rd Infantry Brigade's coast, even at technically unsuitable sites, but clearly states that Weybourne Hope is the most dangerous. By comparison, the sea fronts at Cromer and Sheringham presented difficult exits from the beach, with implications for street fighting.¹²⁶ Slit trenches were dug all across the greater Weybourne area and across to the AA camp to the west. The high ground offered numerous observation and fire points; machine gun positions were sited at Muckleburgh Hill, Granborough Hill and Telegraph Hill.¹²⁷ Weybourne village itself was a Category 'C' defended place, with all-round defence

¹²⁶ TNA WO 166/960 53rd Infantry Brigade War Diary, Operation Instruction No.7, 14th July 1940.

¹²⁷ TNA WO 166/4560 5th Battalion Royal Norfolk Regt. War Diary, Sept 1940 to December 1941, Operation Order no.1 24th December 1939. Specific reference is made to these areas as being previously reconnoitred and suitable for piquets and MG positions.

provided by 4th Battalion Norfolk Local Defence Volunteers.¹²⁸ The effect of General Brooke's preference for more mobile defence is reflected in an amendment to an operation order which refers to 'defended localities' being constructed for all-round defence - an early allusion to a departure from static defence.¹²⁹

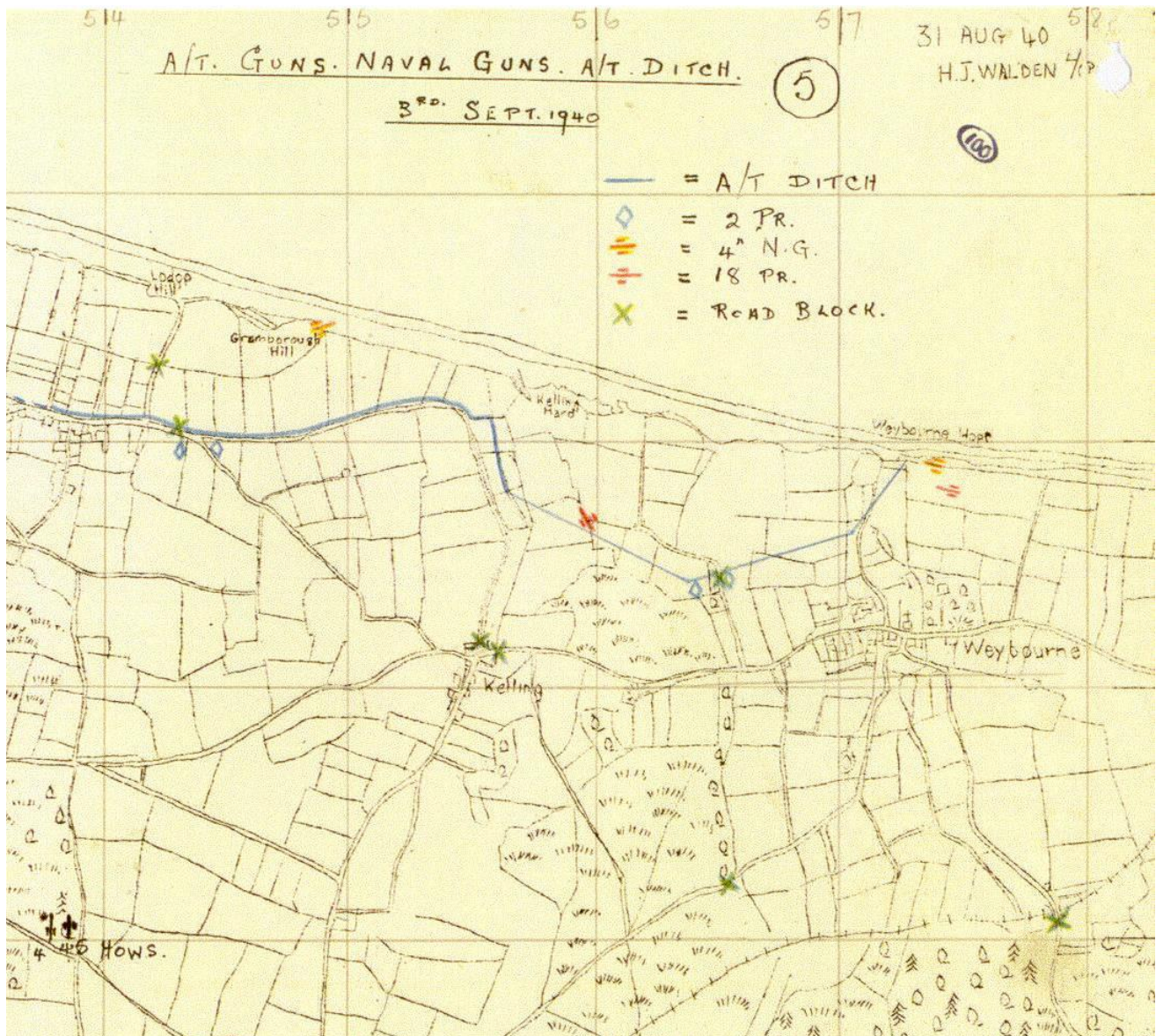


Fig. 19 Dispositions of artillery at Weybourne, 31st August 1940. The anti-tank ditch is the thin blue at centre.¹³⁰

¹²⁸ Foot, W. *Beaches, fields, streets and hills – the anti-invasion landscapes of England, 1940* (English Heritage, Council for British Archaeology Research Report 144, Oxford, 2006) p.140

¹²⁹ TNA WO 166/4176 2nd Battalion Cambridgeshire Regiment War Diary no.20 2nd Sept 1940

¹³⁰ TNA WO 166/4560 5th Royal Norfolk Regiment War Diary, Sept 1939-Dec 1941

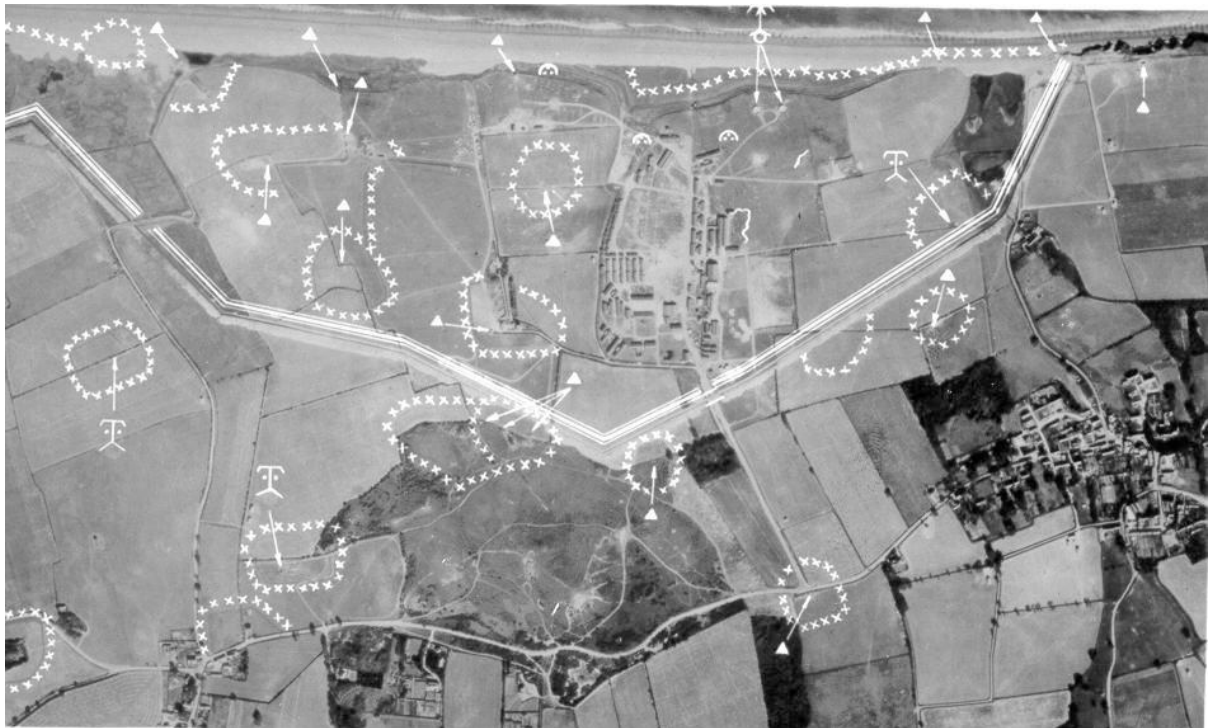


Fig.20 Luftwaffe photograph dated August 1940, indicating defensive positions. The clearest feature is the anti-tank ditch below Muckleburgh AA camp extending to Weybourne Hope. Village is to the lower right.¹³¹

A detailed Defence Scheme replaced all previous battle order documentation in late August 1940. It was thought the enemy would aim to obtain air superiority first, followed by preliminary bombing and parachutists targeting objectives; troop carrying aircraft would fly inland and landing craft would deposit troops and tanks at the coast. The most important landing place was stated as Weybourne. The high ground of Kelling Heath might be a good position for defenders but similarly a potential objective for enemy parachutists.¹³² The Scheme makes specific reference to the importance of machine guns in the forward defended localities being sited so as to cover the beach at all probable landing places. Lyon Lights were positioned in front of the defences at nine key points, including Weybourne Hope, Kelling Hard and Gramborough Hill, the idea being to switch them on as assault craft landed on the beach, as much to dazzle and disorientate as illuminate.¹³³ The disposition of forward companies and siting of platoon weapons is indicated on contemporary maps, and alternative

¹³¹ 'Taktisches Luftbildbuch' (Tactical area photo), IWM uncatalogued

¹³² TNA WO 166/960 53rd Infantry Brigade War Diary Defence Scheme 27th August 1940 p.1

¹³³ 'Lyon Lights' are an early form of carbon-arc searchlight, similar to the later-war Canal Defence Light.

positions comprising narrow slit trenches are advised as alternatives.¹³⁴ This may explain the apparent random archaeological evidence of trenches across the area. The reserve company and mobile group's task was to counter a beach landing in the event of forward defences being over-run, to protect the rear against parachutists, and re-inforce the R.D.F station at West Beckham and airfields at Matlaske and Oulton. Whilst beach mines were to be laid to five rows above the highest tide level, mines were not to be laid on the exit routes until the roads were actually closed. It is worth noting that public access to the beaches was restricted but not prohibited entirely; the Officer Commanding was responsible for deciding which parts of the beach could be accessed and during what hours. The area was well-served by artillery and use of the landscape is indicated in the setting-up of observation points at Weybourne Windmill and Muckleburgh, Telegraph and Bard Hills. In addition to the 6-inch battery at Sheringham, Weybourne was equipped with two 4-inch naval guns, two 6-pounder and four 2-pounder anti-tank guns, a battery of two 9.2-inch howitzers, eight 4.5-inch howitzers, eight 75 mm guns and two 18-pounder guns.¹³⁵ At the lesser extreme, Home Guard personnel were expected to use 'Molotov *[sic]* Bottles' to destroy tanks and 'crowbars can also be used to spike tank tracks.'¹³⁶

Following an infantry and artillery disposition summary, the seriousness of the situation in September is stated as follows:

'The enemy will be met and attacked by every available man, weapon and gun of the Bn whether he attempts to land by sea or air. He is at his weakest Immediately after landing and that is the moment to strike him. All ranks must be imbued with the spirit of the offensive form of defence and reserves are placed so as to give effect to this spirit. THERE WILL BE NO WITHDRAWAL.'¹³⁷

The sobering tone of these words is unequivocal in stressing the severity of the situation. This, or similar wording, appears in many contemporary war diaries. Mention is made of forward companies being supported by reserve platoons and defended localities being

¹³⁴ TNA WO 166/960 53rd Infantry Brigade War Diary Defence Scheme 27th August 1940 Section III General Organisation of the Defensive System.

¹³⁵ Ibid. Defence Scheme 27th August 1940 Appendix 'C'

¹³⁶ Ibid. Defence Scheme 27th August 1940 Appendix 'K'

¹³⁷ Ibid. Appendix 'K'

prepared for all-round defence.¹³⁸ There is an element of mobility and flexibility indicated here which demonstrates a move away from the static defence approach of just a few months earlier.

222nd Infantry Brigade succeeded 53rd Infantry Brigade in November 1940, with 11th Battalion Royal Sherwood Foresters allocated the Blakeney-Weybourne area.¹³⁹ Particular stress was placed upon defended localities being constructed for all-round defence but with capacity to move out for offensive action if necessary.¹⁴⁰ This was new thinking, quite different to the older approach of completely static defence.

Vigilance did not slacken in 1941. Engineers were busy draining flooded pillboxes in January and officers reconnoitred demolition lines F1 and F2 for new schemes. Minefields were cleared and new ones laid in February extending eastward to Dead Man's Gap. Work continued though perhaps with not such a sense of urgency as in the previous summer, as work schedules indicate. A significant 'Defensive Fire Test' – a live firing exercise – took place on 25th February, to test deployment times and assess the effectiveness of concentrated artillery fire on the Weybourne beach area. A new defence scheme was implemented in April. Langham aerodrome was identified as being at risk and the open ground to the brigade's left flank vulnerable to troop-carrying planes – and it was noted that those areas were being covered with anti-landing obstructions. Work was started on new Type 27 pillboxes at Weybourne and two Type 350/40s at Dead Man's Hill, and more still at Sheringham, this work still in progress in May. A demonstration of artillery firepower from Muckleburgh Hill was undertaken in July 'for the edification of members of the press assembled...' ¹⁴¹ The coastal defence battery at Cley was not installed until May 1941, a late measure. Significantly, in November 1941, 53rd Field Regiment's sixteen 75-mm and eight 4.5-inch

¹³⁸ TNA WO 166/960 53rd Infantry Brigade War Diary Defence Scheme 27th August 1940 Section III General Organisation of the Defensive System.

¹³⁹ TNA WO 166/1075 222nd Infantry Brigade War Diary November 1940 – December 1941 Brigade Movement Order no.1 8th December 1940; TNA WO 166/960 53rd Infantry Brigade War Diary, October 1940

¹⁴⁰ TNA WO 166/4422 8th Battalion Leicestershire Regiment War Diary October 1940 – December 1941 Operation order no.4 2nd November 1940.

¹⁴¹ TNA WO 166/1559 147th Field Regiment, Royal Artillery, War Diary, May 1940 - Dec 1941.

howitzers were replaced by more modern twenty-four 25-pounder guns.¹⁴² All this underlines the importance still placed on coastal defence measures in late 1941.

Clearly, the continuing installation of defensive structures emphasised front-line defence intended not just to delay the enemy proceeding inland but also to prevent or disrupt a successful landing. It also marks a contradiction with strategy being enacted along the Suffolk coast to the south during the same period, where no new pillboxes were being built. There, the new strategy saw the abandonment of linear defence entirely, with examples of pillbox loopholes being blocked to render them useless.¹⁴³ In the absence of documented explanation, the Norfolk ‘continuation’ would seem to suggest autonomy at brigade and battalion level in the interpretation of strategy.

William Foot rightly cites Weybourne as an important example of the defence measures of 1940 and 1941.¹⁴⁴ Weybourne’s story does not end there however. In January 1942 a review of topography and dispositions prefaced yet another detailed Defence Scheme identifying Weybourne and Holkham as the most likely landing places. Methodology emphasised defence in depth, that is, against seaward and inland attack, and all round defence. The importance of beach scaffolding, erected by naval staff, and road and rail blocks were also underlined.¹⁴⁵ Pillboxes not required for use were to be made unusable to the enemy by filling with wire. An important addition to the AA site was the emplacement of three 5.25-inch dual purpose guns, able to engage shipping at sea.¹⁴⁶

¹⁴² TNA WO 166/1485 53rd Field Regiment, Royal Artillery, War Diary 1939-41: Nov-Dec1941. The 25-pounder was a sophisticated, quick-firing, dual-purpose, and highly manoeuvrable weapon.

¹⁴³ Liddiard, R. and Sims, D., *A Very Dangerous Locality – the landscape of the Suffolk Sandlings in the Second World War* (Hatfield, 2018) pp.89,91

¹⁴⁴ Foot, William *Beaches, fields, streets and hills – the anti-invasion landscapes of England, 1940* (English Heritage, Council for British Archaeology Research Report 144, Oxford, 2006) p.142

¹⁴⁵ TNA WO 166/6651 H.Q. 222nd Infantry Brigade War Diary 1942.

¹⁴⁶ The guns emplaced at present for historic representation are 3.7-inch un-turreted guns.

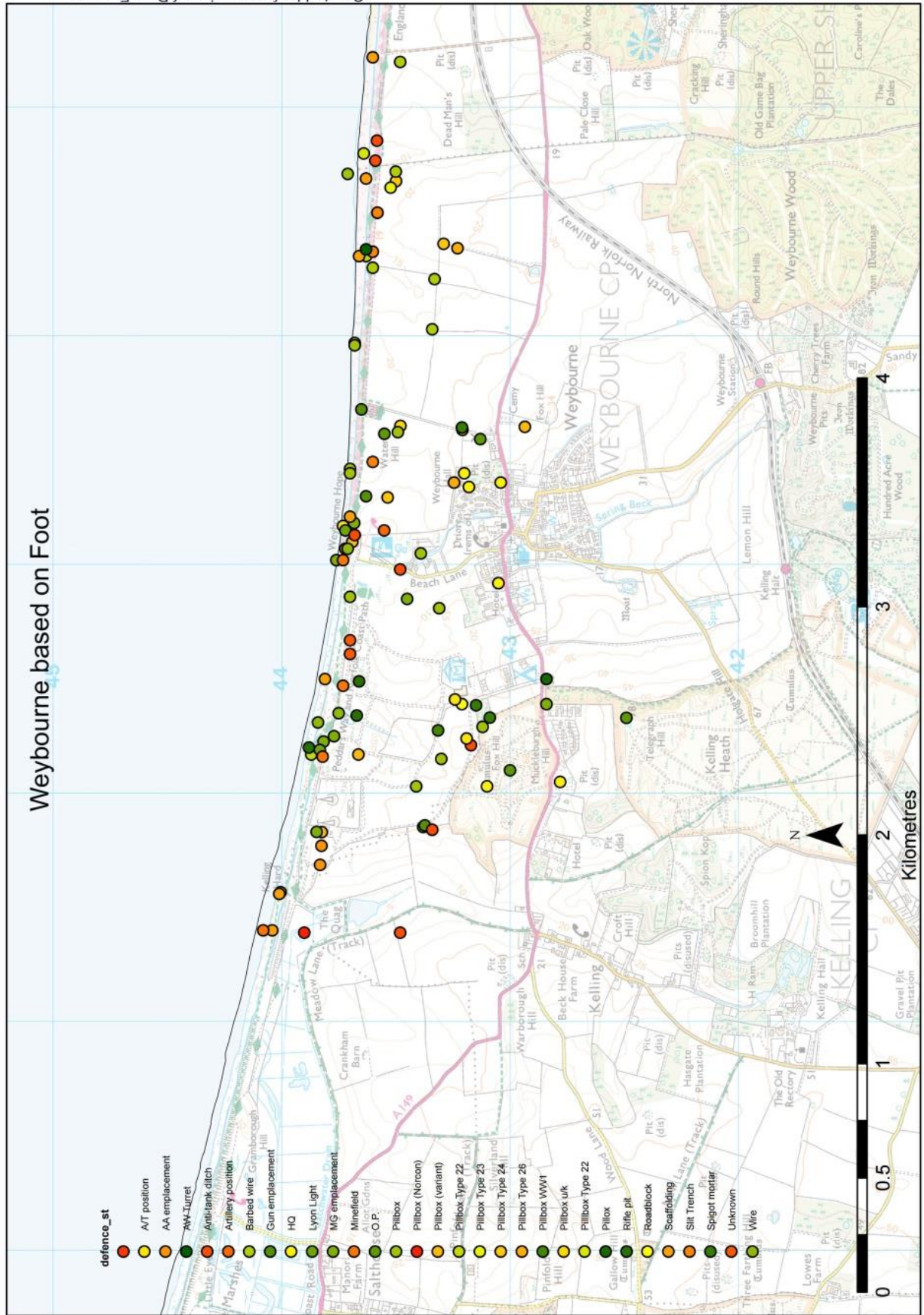


Fig. 21 Defences Weybourne – Sheringham area 1940, based on Foot (2005). Later defences were added further south.



Fig.22 Troops of 8th Battalion, Royal Lincolnshire Regiment, abandon their bicycles and advance along a country lane during anti-invasion exercises, 23rd July 1941.¹⁴⁷



Fig.23 anti-aircraft battery at Primrose Hill in London, 27 August 1943 similar to those installed at the AA Camp in 1942.¹⁴⁸

¹⁴⁷ IWM H11931

1943 saw quieter times with discussion of the possibility of German airborne or seaborne raids for propaganda purposes, obtaining technical information or interfering with coastal convoys.¹⁴⁹ A continuing focus on the role of the Home Guard in forward positions confirms a lesser state of full-scale alert. Regular units were in training mode by this stage and only likely to mobilise to a war footing if the threat of invasion re-presented itself.

‘If the threat of enemy invasion becomes greater it is probable that the units of 220 Inf Bde would cease their present trg [sic] role and mobilise at or near a war footing. 220 Inf Bde is cannot therefore be considered as available for static defence as it might be called upon to take offensive action against enemy landings in another part of the country.’¹⁵⁰

The positions of machine gun posts and spigot mortars were simply to be ‘marked’ by Home Guard piquets and all ranks were warned to avoid disclosing the position of any undefended areas. Essentially, regular troops were no longer to fulfil a static defence role. Nevertheless, Weybourne was still seen to be the most vulnerable area and an instruction in late 1943 distinguished between measures required to deal with an enemy air raid as against a full-scale invasion.¹⁵¹ Invasion of the U.K. mainland was no longer considered a serious threat and clearance of the minefields began even before the war’s end.¹⁵²

Abandonment and removal

Surviving archaeology and archives provide complementary evidence of all-round, in-depth defences within an area of just a few square miles. The chronology demonstrates distinct, changing strategy and construction phases in 1940, 1941 and 1942, through to reduced vigilance in 1943, by which time national resources were geared towards preparations for the future invasion of mainland Europe. As with almost all Norfolk’s anti-invasion defences, abandonment soon followed operational obsolescence. The impact and legacy lingered however. The Ministry of Works’ Temporary Defence Works Programme saw pillboxes and weapon mountings being reviewed from 1948 through to 1951. The anti-tank ditch was

¹⁴⁸ IWM H32322

¹⁴⁹ TNA WO 166/10814 H.Q. 220th Infantry Brigade War Diary Jan-Dec 1943 ‘Anti-Raid measures’ 16th Aril 1943.

¹⁵⁰ Ibid. Operation Instruction No.7 6th September 1943

¹⁵¹ TNA WO 166/10881 H.Q. Norfolk and Cambridge District War Diary December 1943

¹⁵² NHER gives a date of January 1945 for clearance.

recorded as non-injurious and partly filled in. Most features were deemed to be Category 'C' by the County Planning Officer.¹⁵³



Fig.24 Pillboxes identified at Weybourne Coastguard Station in August 1951¹⁵⁴

Gunnery practice continued at the anti-aircraft camp throughout the 1950s until final closure in 1958.¹⁵⁵ Finally, the by-law which allowed the firing of anti-aircraft weapons at the pre-war AA practice camp was formally rescinded as late as 2016.¹⁵⁶ Still prominently visible on the clifftop and shore are machine gun posts, with commanding views of the shore approach and pillboxes at the shoreline are backed up by further pillboxes inland. The Muckleburgh Collection has done much to preserve and reinstate some memory and imagery of the wartime military presence, though a heritage agency-led approach to bringing in an understanding and appreciation of the conjoined militarised landscape might offer a unique educational opportunity for future generations. Foot's study of Weybourne in 1940 specifies

¹⁵³ NRO C/P8/1/104 Correspondence between Ministry of Town and Country Planning regional office and Norfolk County Planning Officer, 1948 and 1951.

¹⁵⁴ Ibid. Ref NORF/56/5799 Temporary Defence Works removal

¹⁵⁵ Kent, P. *Fortifications of East Anglia* (Lavenham, 1988) p.194

¹⁵⁶ Eastern Daily Press, 19th September 2016 <https://www.express.co.uk/news/uk/712052/Anti-aircraft-gun-WW2-laws-finally-revoked-after-seventy-one-years> (accessed 24 Jan 2018)

the locations of around ninety defence locations, many removed or fates unknown, but many still extant in 2002 at the time of his survey.¹⁵⁷ Coastal erosion and storm have since shifted more of those and later war standing structures.



Fig.25 RAF vertical photograph 1946 showing detail of Muckleburgh AA Camp with anti-tank ditch very visible on three sides.¹⁵⁸

Conclusion

It is difficult to measure the extent of land subsumed by anti-invasion defences between 1940 and 1942 in terms of acreage. The coastline was not an important part of the agricultural economy, although the disruption to tourism and local commerce was significant. The upheaval was perhaps more at a social level in the sense of prohibited areas and prevention of free movement; and yet flexibility with the civilian populace was demonstrated, as seen in Fig.25. The dispersed nature of the archaeology, combined with the fact that the anti-invasion defences

¹⁵⁷ Foot, W. *Beaches, fields, streets, and hills - the anti-invasion landscapes of England, 1940* (Council for British Archaeology, York, 2005)

¹⁵⁸ 1946 RAF aerial survey, extracted from Norfolk Heritage Map Explorer



Fig.26 Barbed wire defences at Sheringham on 12th July 1941, with members of the public and soldiers of 2/5th Battalion, West Yorkshire Regiment.¹⁵⁹

were never tested in anger, has led to a niche curiosity about their significance in the landscape. Few lives were lost in the course of construction or military exercises, but it is lives lost that are the central tenet of commemoration. Lives were lost late- and post-war however. By August 1946 one hundred and forty men working on mine clearance, nationally, had been killed. Later that year the minefield at Trimingham was one of only three such locations nationwide that was recommended for indefinite closure; the following year a holidaymaker was killed by a mine lodged in the cliff. Constant erosion resulted in the degradation of tracing wires and detonators – the mines were more dangerous than during wartime. Trimingham and Sidestrand beaches were not reopened to the public until 1966.¹⁶⁰

¹⁵⁹ IWM H11689

¹⁶⁰ Bird, C. *Silent Sentinels – The story of Norfolk's fixed defences during the twentieth century* (Guist, 1999) p.56



Fig.27 German Prisoners of PoWs removing beach scaffolding on the North Denes, Great Yarmouth, 1946. ¹⁶¹

Across the county as a whole it was estimated that one thousand miles of derelict barbed wire remained.¹⁶² Commemoration has emerged much later, again perhaps reflecting a delayed resurgence in interest in isolated archaeology. Few monuments exist to recall those who died clearing beach mines but one example was erected in 2004 at Mundesley, adjacent to the local maritime museum. It commemorates twenty-seven Royal Engineer bomb disposal personnel who lost their lives in the locality whilst clearing beach mines; the irony is that these, being British weapons, qualify the deaths incurred as friendly fire.¹⁶³

As wartime architecture, the diverse range of pillboxes, gun emplacements, anti-tank obstacles and associated buildings fulfil the maxim of ‘form follows function’. They have minimal aesthetic value and the smaller structures are often of basic, hurried construction. Many were removed, demolished or abandoned long before the war’s end, their purpose served. Some remain but their isolated position in the landscape has little meaning unless viewed in the wider strategic context. Lack of historic interest is perhaps understandable

¹⁶¹ Archant / Mercury archive

¹⁶² Bird, C. *Silent Sentinels* p.56

¹⁶³ www.warmemorialsonline.org.uk/memorial/151646 (accessed 11th November 2019)

given that their importance in the wider military landscape was little appreciated for many years post-war. Their isolated positioning in the landscape may, paradoxically, have helped engender a growing curiosity over subsequent decades and an appreciation of them as archaeologically and historically significant. An understanding of the connectivity of complex linear defence lines and, later, nodal points that combined natural landscape features with artificial structures encourages an appreciation of their context and meaning in Norfolk's historic militarised landscape, as this chapter has demonstrated. This also reinforces their value as archaeology, and a concern for their preservation and conservation. Throughout the chapter a recurring theme has been that the strategy which directed the typology and distribution of defence structures, along with local expediencies in placement and construction, serves to heighten the impact that landscape conversely has in accommodating and directing human activity. Additionally it underscores in context the uniqueness of the Norfolk landscape, comparative to other regions. This theme will also be very evident with regard to airfields, in Chapter 3, following.

The structures have disappeared in quantity over the decades and are still doing so. There is a case for preservation and conservation, particularly where the archaeology is gathered, or clustered, in an accessible area such as Weybourne. Curiously, Lord Fisher was permitted in 1946 to retain a pillbox on his land at Croxton as a 'war memento'. Perhaps his motives were sentimental but the pillbox is still there.¹⁶⁴

The next chapter will investigate how aviation operations impacted upon the Norfolk landscape, over a longer timescale and intensifying as the war progressed.

¹⁶⁴ Bird, C. *Silent Sentinels – The story of Norfolk's fixed defences during the twentieth century* p.60

Chapter 3 - Airfields

Introduction

Airfields are an integral physical characteristic of the Norfolk rural landscape. A cursory study of the six modern Ordnance Survey 1:50000 scale Landranger maps that cover the county shows clearly the unmistakable outlines of remnant military airfields at regular distribution intervals. The landscape context of airfields has not properly been approached in detail and this chapter aims to assess the extent and impact of their wartime presence and legacy in Norfolk's rural landscape. The rationale behind their distribution, site selection criteria, competition for other contemporary land use and their post-war re-utilisation are quantifiable factors, and will be supported by case studies.

Military airfields are a prime example of relict structures in the landscape whose distribution and form follow function – they were, for the most part and, with the exception of pre-war permanent stations, militarily functional and devoid of aesthetic merit. Yet since the conflict they have found a place in the cultural identity of the local landscape. In common with all other man-made impositions on the land, they are part of the continuing history of the landscape, not anachronistic aberrations. For strategic reasons explained below, Norfolk was to bear a greater allocation of airfields than almost all other English counties, and the competition with agriculture for land use would prove to be intense.

Historiography

Strategic air power, technical and operational histories, anecdotal volumes and airfield 'biographies' enjoy perennially popular readership at both general and academic level but have increasingly found their popularity rivalled by architectural conservation and cultural connection themes. There exists a considerable canon of 'gazetteer'-style secondary literature documenting airfields, their fabric and, most popularly, their operational histories.¹ The

¹ For example: Bowyer, M.J.F. *Action Stations: I. Wartime Military Airfields of East Anglia 1939-1945* (Yeovil, 1979, 1992); Delve, K. *The Military Airfields of Britain, East Anglia: Norfolk and Suffolk* (Marlborough, 2008); McKenzie, R. *Ghosts Fields of Norfolk* (Dereham, 2004); Falconer, J. *RAF Airfields of World War 2* (Horsham, 2012); Smith, G. *Norfolk Airfields in the Second World War* (Newbury, 1994);

interest in conservation and commemoration has increased exponentially from the 1970s onwards, fuelled by many, often locally-focussed histories centred on the social and cultural impact of airfields and their personnel. Particular secondary sources stand out in terms of thoroughness, integrity and detail. Roger Freeman's extensive volumes on the USAAF and RAF units and operational histories have become standard reference sources in their own right, followed closely by the 'Action Stations' series from the 1980s onwards.² Possibly the most comprehensive publications available are Smith's *Britain's Military Airfields*, Higham's *Bases of Air Strategy: Building Airfields for the RAF, 1914-1945*, and the government's own *The Royal Air Force Builds For War*, all three providing thorough analysis and chronology of the ethos, politics, planning and technology behind airfield construction, along with clear analysis of airfield evolution over four decades.³ The most exhaustive and detailed however are, as with anti-invasion defences, Dobinson's research reports for the Council for British Archaeology, which cover the philosophy of air strategy and the RAF's implementation of it, combined with considerable attention to fabric, architecture and political strategy from 1918 to the scaling down of facilities in the 1980s.⁴ An extensive range of re-workings of these standard works, published in smaller, 'rapid-read' volumes, often with surprisingly poor acknowledgement to their precursors, have capitalised on the earlier original research; they also focus much more on operational histories and personal anecdotes drawn from testimonial sources. Many such publications, though clearly designed to appeal to readers with an interest in local history, make little or no reference to the very landscape they pertain to, the omission demeaning its significance in the wider contemporary military rationale and strategy. Given the often cross-disciplinary nature of landscape history study, geology figures prominently in several studies by Ron Blake.⁵

² Freeman, R, *The Mighty Eighth: A History of the US 8th Air Force* (Aylesbury, 1970); *Mighty Eighth War Manual* (London, 2001); *Mighty Eighth War Diary*; *Airfields of the Eighth* (London, 1989); *Bases of Bomber Command-Then and Now* (London, 2001); Bowyer, M.J.F. *Action Stations 1. Military Airfields of East Anglia* (Wellingborough, 1990)

³ Smith, D. J. *Britain's Military Airfields 1939-45* (Wellingborough, 1989) Higham, R. *Bases of Air Strategy: Building Airfields for the RAF 1914-1945* (Shrewsbury, 1998); H.M.S.O. The Stationery Office *The Royal Air Force Builds for War: A History of Design and Construction in the RAF 1935-1945* (London, 1956, re-published Air Ministry, Air Historical Branch under licence, 1997)

⁴ Dobinson, C. *Twentieth Century Fortifications in England Vol IX 1 Airfield Themes - Studies in the evolution of Britain's military airfields, 1918-45; Vol IX 2 Airfield Themes, Appendices; Vol X Airfield Defences - Policy and fabric for the ground defence of airfields 1940-45* (Council for British Archaeology, 2000)

⁵ Especially Blake, R. 'Airfield Country: Terrain, Land-Use and the Air Defence of Britain 1939-1945' in Doyle, P and Bennett, M. R. (eds.) *Fields of Battle: Terrain in Military History* (Dordrecht, 2002) pp.363-383 and Blake, R. 'The Impact of Airfields on the British

Commemoration has a particular resonance in relation to airfields, generated by the human factor. No single aspect of the militarisation of the Norfolk landscape has been more associated with extensive loss of life than air operations, amplified by cultural and social upheaval. This aspect has not been explored academically until relatively recently and positively affirms the significance of landscape in memory and culture.⁶ Earlier contemporary accounts offer vivid and emotive personal experiences of the landscapes on and around wartime airfields, most notably that of Robert Arbib and John Tate Appleby.⁷ Blake's academic work on the national geo-environmental impact of airfields and their legacy offers helpful insight into, primarily, a further little-studied perspective, that of geology.⁸ To date, however, no studies directly address the importance of airfields in the regional landscape context, and that is the purpose of this chapter.

Official publications, drawn from original documents and intended as detailed histories of strategies, events and outcomes, comprise what might be termed 'interim' historiography between the primary sources and secondary texts. These are valuable for their recounting of official policy and strategy; notable among these are *Works* and *The RAF Builds for War*, both from the 1950s.⁹ Extensive RAF Operations Books exist at The National Archives, recording the day-to-day activities of squadrons and airfields, though by their nature contain little of value to the landscape historian, other than those sites not directly involved in air operations, which by contrast contain much useful information.¹⁰ Moreover, many RAF records at The National Archives are to be found in Ministry of Agriculture and Fisheries

Landscape' *The Geographical Journal* Vol.135, No.4 (1969) pp.508-528. Also Blake, R. 'Geological Influences on the siting of military airfields in the United Kingdom' in Rose, Edward P F and Nathaniel, C Paul (eds.) *Geology and Warfare: examples of the influence of terrain and geologists on Military operations* (Geological Society, London, 2000) and Blake, R. 'Geo- environmental factors in the regeneration of military airfields in Great Britain' in Ehlen, J. and Harmon, R.S. (eds.) *The Environmental Legacy of Military Operations* (Boulder, Colorado, 2001 vol.14) pp.203-213

⁶ Edwards, S. 'Ruins. Relics and Restoration: The Afterlife of World War Two American Airfields in England, 1945-2005' in Pearson, C., Coates, P., Cole, T. (eds.) *Militarized Landscapes – From Gettysburg to Salisbury Plain* (New York, 2010) pp.209-228

⁷ Arbib, R.S., *Here We Are Together: The Notebook of an American Soldier in Britain* (London, 1947). Arbib went on to become a respected author, conservationist and ornithologist in America. New York Times, 1st August 1987 <https://www.nytimes.com/1987/08/01/obituaries/robert-s-arbib-jr-72-dies-conservationist-and-writer.html> (accessed 16th September 2017); Appleby, J.T. *Suffolk Summer* (Ipswich, 1948)

⁸ Blake, R. 'Terrain, Land-Use and the Air Defence of Britain, 1939-1945' in Doyle, P. and Bennett, M. (eds.) *Fields of Battle – Terrain in Military History* (Dordrecht, 2002) pp.365-383

⁹ Kohan, C. *Works* (HMSO, London, 1952); *The RAF Builds for War* (HMSO, London, 1954, 2001)

¹⁰ TNA AIR/27 (Squadrons) and TNA AIR/28 (RAF stations). See Chapter 5 'Infrastructure and Logistics' for references to TNA AIR/29 series.

(MAF) records rather than Air (AIR), Works or War Office (WO) papers, requiring considerable lateral thinking on the part of researchers. This does however reinforce the very close connection between the wartime needs of agriculture and military aviation, and the correlative aspects are particularly helpful in supporting calculations of, and conclusions about, the true extent of military land use. The Air Ministry's Directorate of Works and Buildings site plans are held at the Royal Air Force Museum, Hendon and, specifically for USAAF bases in Norfolk, at the United States Army Air Force (USAAF) 2nd Air Division Memorial Library in Norwich. The RAF vertical aerial photographic surveys of 1946 and 1988 provide helpful land use and spatial relationship comparison as do oblique photographs held at Norfolk Archaeological Unit at Gressenhall Museum. Norfolk Historic Environment Record database contains archaeological data about military installations, useful for corroborating against other sources.

The national and geo-political background

Through the 1930s the series of Expansion-era airfield construction programmes formed the basis of Britain's burgeoning network of airfields and there is a clear distinction between these and the wartime 'fast-build' airfields. The former were built for the long term, and are aptly referred to as 'permanent stations', characterised by solid, architect-designed, aesthetically pleasing buildings. The latter were constructed for immediate use, for the obtaining of a major strategic objective in time of war – essentially short-term but durable. It is the earlier era airfields which generally survived, because of their relative permanence and redevelopment potential, to enter long term post-war use. Norfolk has examples of both categories, as will be discussed below. This chapter is not a gazetteer of operational histories of airfields, but operational chronologies and phases will be explained where they relate directly to their landscape impact. Case studies will detail the individual and localised impact and demonstrate characteristics shared with other Norfolk airfields. The aim is to assess the extent of their subsuming of the Norfolk landscape and, in particular, the agricultural land.

The political climate in which expansion took place was directly related to European geopolitics and the growing apprehension of the need for an effective air war capability. Britain entered the Second World War with no more than one hundred airfields of all types across Britain.¹¹ Six were fully operational in Norfolk. RAF Bircham Newton was a survivor from

¹¹ Dobinson, C. *Twentieth Century Fortifications in England Vol IX 1 Airfield Themes* p.175.

the First World War, albeit with a brief reversion to agriculture in the 1920s. Feltwell and Marham opened in 1937 with Methwold, Watton and West Raynham following in early 1939. Coltishall, Horsham St Faith and Swanton Morley became operational in 1940, the last of the county's complement of permanent bases.¹² All were permanent stations, characterised by the aesthetically pleasing, neo-Georgian designed permanent brick buildings designed by the likes of Edwin Lutyens and Clough Williams Ellis. Fine examples include Bircham Newton and Marham. Conversely, the buildings on airbases constructed during wartime were rapid-build, economically costed and temporary by virtue of their very design and intent. They are the epitome of form following function, even to the extent of their usefulness being constrained to the duration of the overall strategic objective. The physical distancing of technical and accommodation buildings from the flying areas of later airfields was deliberate, in order to minimise risk to personnel and materiel in the event of enemy aerial attack.

The remaining twenty-nine would be true wartime airfields. In 1939 deployment was primarily for defensive, maritime and short-range offensive operations but from 1941 was geared more towards offensive bombing operations into occupied Europe. Geo-political change came with the entry of the United States of America into the war in November 1941 and the arrival of the first United States Army Air Force (USAAF) units in 1942. The American government was persuaded to broaden its scope from a war against the Japanese in the Pacific, to major involvement in a series of second fronts in Europe. The air strategy, which became enshrined in the Combined Bombing Offensive, led to a rapid rate of increase in airfield provision for USAAF units, militarily co-existing and co-operating with an increased RAF bomber strength.¹³ It is important to appreciate that a major airfield construction programme was already in place but assumed greater proportion when the USAAF arrived in Britain.

Airfields, therefore, were already being built in the eastern counties before 1939 but the numbers, size and rate of construction increased throughout the war. The peak year, nationally, for airfield building, was 1942 during which, nationally, 125 new airfields were opened – one every three days - and this was reflected across Norfolk.¹⁴ Thus the search for

¹² Bowyer, M., *Action Stations: 1. Wartime Military Airfields of East Anglia 1939-1945* (Yeovil, 1979, 1992) *et al*

¹³ The American aviation military was a branch of the U.S. Army at that time. It became the United States Air Force in 1947.

¹⁴ Kohan, C.M. *Works and Buildings; History of the Second World War* (HMSO, 1952) p.281; Dobinson, C. *Twentieth Century Fortifications in England Vol.IX 1 Airfield Themes* p.175; Smith,

suitable sites intensified along with the attendant physical impact upon the landscape itself. More than six hundred new airfields were constructed nationally between 1939 and 1945, comprising some 160 million square yards of runways, perimeter tracks and dispersals. Sir Archibald Sinclair, Secretary of State for Air from 1940, equated this to a nine-thousand mile long concrete road reaching from London to Peking. Thirty million tons of hardcore and 336,000 miles of electrical cable were used, along with huge amounts of timber and steel in building accommodation and technical buildings, often in dispersed areas. By 1945 approximately 360,000 acres of the British landscape were occupied by airfields.¹⁵ An estimated three hundred thousand workers were employed in their construction.¹⁶ By the war's end 740 operational military airfields were distributed across Britain.¹⁷ Given that some airbases hosted up to three thousand personnel, the cultural and economic interaction with surrounding communities had profound cultural, economic and social effect on the lives of civilians and military personnel alike.

D.J., *Britain's Military Airfields 1939-45* (Wellingborough, 1989). The completion of 623 airfields was reached in 1944.

¹⁵ Smith, D.J. *Britain's Military Airfields* p.7

¹⁶ Higham, R. *Bases of Air Strategy: Building Airfields for the RAF 1914-1945* (Shrewsbury, 1998) p.23.

¹⁷ Dobinson, C. *Twentieth Century Fortifications in England Vol.IX* p.1

Numbers of wartime airfields by county	
Lincolnshire	48
Yorkshire	43
Norfolk	38
Suffolk	34
Hampshire	28
Essex	24
Wiltshire	24
Oxfordshire	10
Berkshire	18
Gloucestershire	18

Table 1: The ten most prolific airfield counties. ¹⁸

Region	% 1935	% 1945
London and South-East	13.3	5.8
East	18.3	19.6
South	18.3	11.1
South-West	11.7	11
Midland	1.7	7.2
North-West	-	3.5
East and West Yorks.	3.3	4.2
Northern	5	4.7
Wales	3.3	4.6
Scotland	8.4	11.1
Northern Ireland	1.7	3.2

Table 2. Regional distribution of military airfields 1935 and 1945 by percentage¹⁹

¹⁸ Adapted from: Blake, R. The Impact of Airfields on the British Landscape *The Geographical Journal* Vol.135, No.4 (Dec 1969), pp.508-528 p.511 [sourced from Ministry of Defence Master Schedule of Airfields, 1965]

¹⁹ Adapted from: Ibid. p.513

Norfolk is about 77 per-cent the size of Lincolnshire, and had a ratio of wartime airfields of around 0.79 to 1 compared with Lincolnshire. A simple measure of numbers of airfields by county against land area, whilst indicative, does not however represent an analysis of the impact on local landscapes. Table 2 demonstrates that whilst, for example, airfields located in the Midlands increased more than four-fold to 1945, they still amounted to little more than one-third those in the eastern counties.

An ominous demeanour – the Norfolk dimension²⁰

‘What else has happened in the immemorial landscape of the English countryside? Airfields have flayed it bare wherever there are level, well-drained stretches of land, above all in eastern England.’²¹

Perhaps, as the progenitor of modern landscape history, W. G. Hoskins may be afforded an emotive observation with one brief but memorable reference to the blight of airfields in the landscape. Airfields collectively comprise the largest sub-category of defined military structures across Norfolk, with thirty-eight complete examples being in operation during all or part of the Second World War. This figure includes twelve satellite airfields which were later upgraded to main station status, one which was abandoned before the war’s end and one, Fersfield, often overlooked because of its ‘clandestine’ status, but which nevertheless made a sizeable structural impact upon the landscape. Of the ‘thirty-eight’ Barton Bendish presents by far the lightest remnant footprint in the local landscape; no crop marks evidence its short life, the only extant structure being a perimeter pill-box.²² Many of the remainder made significant impact upon the contemporary Norfolk landscape – and surviving examples continue to do so.

²⁰ Hough, R., *One Boy’s War* quoted Ibid. p.6 Hough writes ‘Most [*airfields*] had an ominous demeanour, especially those like Watton.’

²¹ Hoskins, W. G. *The Making of the English Landscape* (London, 1955) p.253

²² RAF Barton Bendish was a satellite of Marham, abandoned in 1941 because of its proximity to the parent station just across the main A1122, and the inherent implications for flying operations management. Built as a Class A airfield, possessing full operational capability, RAF Fersfield is omitted from some gazetteer sources, possibly overlooked because of its ‘low profile’ secret operations.

Year	Number constructed	Total
1936	2	2
1937	1	3
1938	1	4
1939	3	7
1940	10	17
1941	6	23*
1942	12	34
1943	2	36
1944	1	37
1945	0	37

Table 3. Military airfields in Norfolk 1936-45. (*Barton Bendish abandoned 1941)

Norfolk is popularly closely associated with the ‘friendly invasion’ of the United States Army Air Force (USAAF) but more than half the airfields were primarily RAF bases. The distinction is not clear cut as there were periods of shared use and occasional reversion to original user after operational interregna. This however has little or no influence on the landscape context and is not an area of enquiry undertaken here, for it is location and typology rather than corporate identity that determined impact on the landscape. The implications for the landscape were in the decisions made by Air Ministry surveyors about how the chosen sites were, in the first instance, to be utilised then, later, how many could sustain re-development, enlargement and the installation of hard surfacing for runways and dispersal areas.

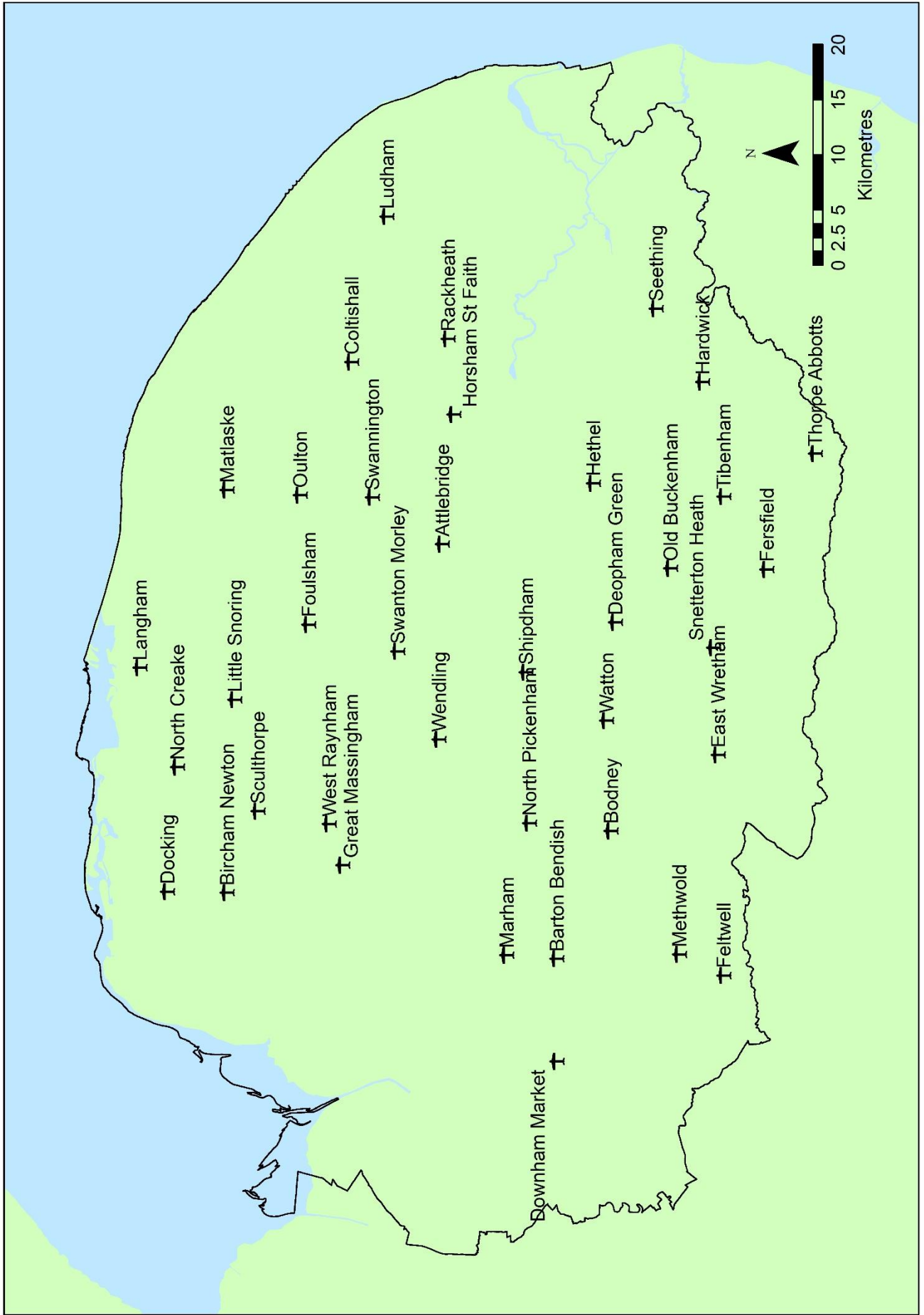


Fig. 28: Norfolk airfields distribution by location and name

Selection Criteria

‘A concave ground should always be treated with suspicion... A convex ground is better in every respect.’²³

Strategically and geographically there was a fortuitous correlation between preferred regions of the UK in which to site airfields. Though a less than objective exercise, it is interesting to speculate on the topographic difficulties that would have been encountered had strategic offensives been required to be launched from, for example, the north-west of England. The terrain would have proved impossible to work with. Though official documentation does not specify a particular predilection for choosing sites based on geological assessments, many airfields, nationally, were built on scarpland areas, and particularly ‘high crestal’ sites, often facing south or west facilitating take-off into the prevailing wind and safe descent over unobstructed areas, prime examples being Waddington on the Lincoln Edge and Biggin Hill on the North Downs.²⁴ Perhaps not surprisingly then, there is some early correlation at national level between the siting of airfields and the well-established concept of England’s Highland and Lowland Zones. The wartime shifts of emphasis would see more airfields built across East Anglia, Lincolnshire and the Vale of York, not for reasons of geological preference but in support of military strategy.

Whilst Bomber, Fighter, Transport, Coastal and Training Commands of the RAF were responsible for the strategic deployment of air operations, the Airfield Board of the Air Ministry oversaw airfield site selection and construction, along with the continuing maintenance of sites, depots and buildings.²⁵ The Directorate General of Works was therefore responsible for the production of all airfield site plans.²⁶ A ‘Lands Officer’ was assigned to survey a potential site.²⁷ In practice this individual would liaise with local

²³ *R.A.F. Pocket Book 1937 A.P.1081* (Air Ministry, 3rd edition June 1937). Ch.VIII Reconnaissance of Landing Areas and Routes, 37.436 p.434 [See Appendix 3]

²⁴ Blake, R.N.E ‘The Impact of Airfields on the British Landscape’ in *The Geographical Journal* Vol.135, No.4 (Dec 1969), pp.508-528, p.510

²⁵ Kohan, C.M. *Works and Buildings; History of the Second World War* (HMSO, 1952); Cantwell, J.D. *PRO Handbook No.15 The Second World War: A Guide to Documents in the Public Record Office* (Kew, 1998) p.44

²⁶ Most were redrawn in late 1944 to show the contemporary layout rather than the original design layout. The USAAF also compiled some of their own versions, stylistically different.

²⁷ Francis, P. *British Military Airfield Architecture – From Airships to the Jet Age* (Yeovil, 1996) p.21

surveyors and officials after a particular location had been deemed to be favourable. In 1935, at the commencement of the RAF's final peacetime Expansion phase, little recognition was afforded the need for paved runways, though wartime practicalities would soon emphasise their importance.

Topography, soils, transport, existing land use

There are four identifiable criteria that logically determined the choice of airfield sites in Norfolk and, for that matter, anywhere else in Britain. The strategic decision to locate in the east of England already having been made, the first and most important criterion is that of topography – the lie of the land - followed closely by suitable soil composition or terrain. The third is the availability and proximity of adequate transport links and the fourth, the minimisation of disruption to agriculture. Without a suitable soilscape on which to build and operate an all-weather airfield, the second and third criteria were irrelevant. Where a site was chosen all criteria were carefully assessed but compromises were clearly made between the needs of military strategy and those of agriculture. Fig.29 is a simple diagrammatic flow model that illustrates this:

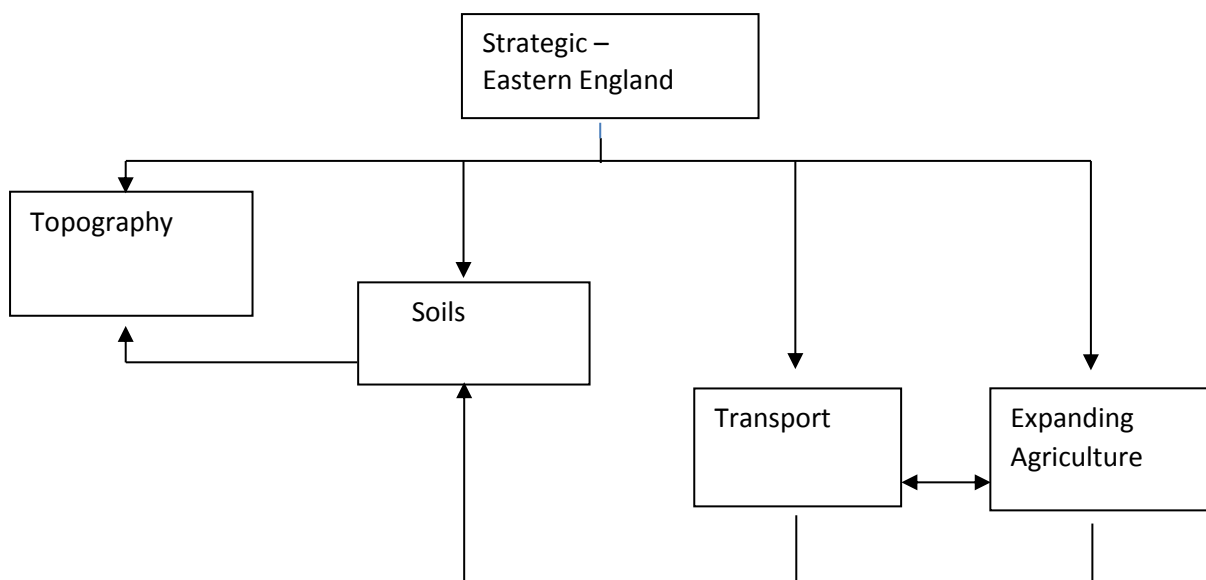


Fig.29: The priority relationship between airfield site selection criteria. In an ideal situation, all four elements would be complementary; as the war progressed and sites became more limited, the priorities became focussed more on topography.

The ideal topography for an airfield was a large, open area of relatively unobstructed countryside with a slightly convex contour to allow drainage. An acceptable alternative was flat but not completely level terrain, again for drainage purposes. The capability for natural drainage such as might be found on natural interfluves would prove to be crucial and even here require extensive artificial drainage to clear surface water quickly in times of operational urgency. Norfolk was not chosen as a suitable location for airfields because of the suitability of its terrain but because of its proximity to the North Sea and the European continent. Norfolk's popular reputation as a 'flat' county is misleading; the topography is variable and the terrain comprises a range of quite different soil sub-structures and land forms. The RAF had employed aerial photography in the First World War for military reconnaissance but its additional value emerged during the inter-war period in topographic surveying and photogrammetry, saving time in time-consuming land-based surveying. Shadow, shading and oblique perspective were instructive factors in identifying distance, height, obstruction and soil types. The application of aerial photography for airfield selection was championed by the Road Research Laboratory, summarised in a post-war report on its contribution to the war effort.²⁸

The ideal sub-surface conditions were light, free-draining soil. No landing ground could operate at peak efficiency when waterlogged, especially where the surface was undulating or the soil was heavy, clay-like and intractable. Royal Air Force surveyors were well aware of the importance of soils. The geological underlay was less of a consideration but still a factor. Soils, though highly important for good drainage and surface compaction, became secondary to topography as the war progressed, and the number of potentially ideal sites dwindled. The twenty-three soil categories shown in Fig.29 can broadly be reduced to three – freely-draining and of low fertility; slowly permeable clay with impeded drainage and high fertility; and shallow lime-rich soils over chalk and limestone, of medium fertility. Ultimately, perhaps eighteen of the wartime airfields could be said to be in the first category, fourteen in the second, and six on the intermediate soils. Most of the older pre-war airfields such as Bircham, West Raynham and Coltishall were located on the free-draining, slightly acid loams. Later airfields grouped in south Norfolk – Hardwick, Hethel, Fersfield, Thorpe Abbots, and Tibenham for example - were on the seasonally wet, base-rich loam and clay soils. Similarly, Wendling and Shipdham in central Norfolk suffered from impeded drainage. This is not

²⁸ TNA RRL/38 The Location of Airfields by Aerial Reconnaissance

chronologically exclusive however; pre-war RAF Swanton Morley also experienced drainage problems.

Agricultural consideration, though a ‘third tier’ priority, had of course direct implications for the selection, negotiation and subsequent acquisition of suitable sites, with later-war airfields being increasingly sited on areas of high fertility. This is explored further in Chapter 6.

Despite the apparent free-ranging scope for suitable airfield sites the land resource was not infinite; this would become apparent as landing surfaces at individual sites proved operationally problematic and the conflict with agricultural requirements intensified. Whilst a heavily-wooded area was clearly not suitable, topographically suitable sites across Norfolk would include farmed landscapes with hedged boundaries. This invariably meant that hedgerow and field trees had to be felled where they impinged upon the flying field. Conversely, but no less importantly, hedged landscapes with woodland provided excellent natural cover for bomb stores and ammunition dumps.²⁹

²⁹ See Chapter 5 ‘Logistics and Infrastructure’ for fuller explanation

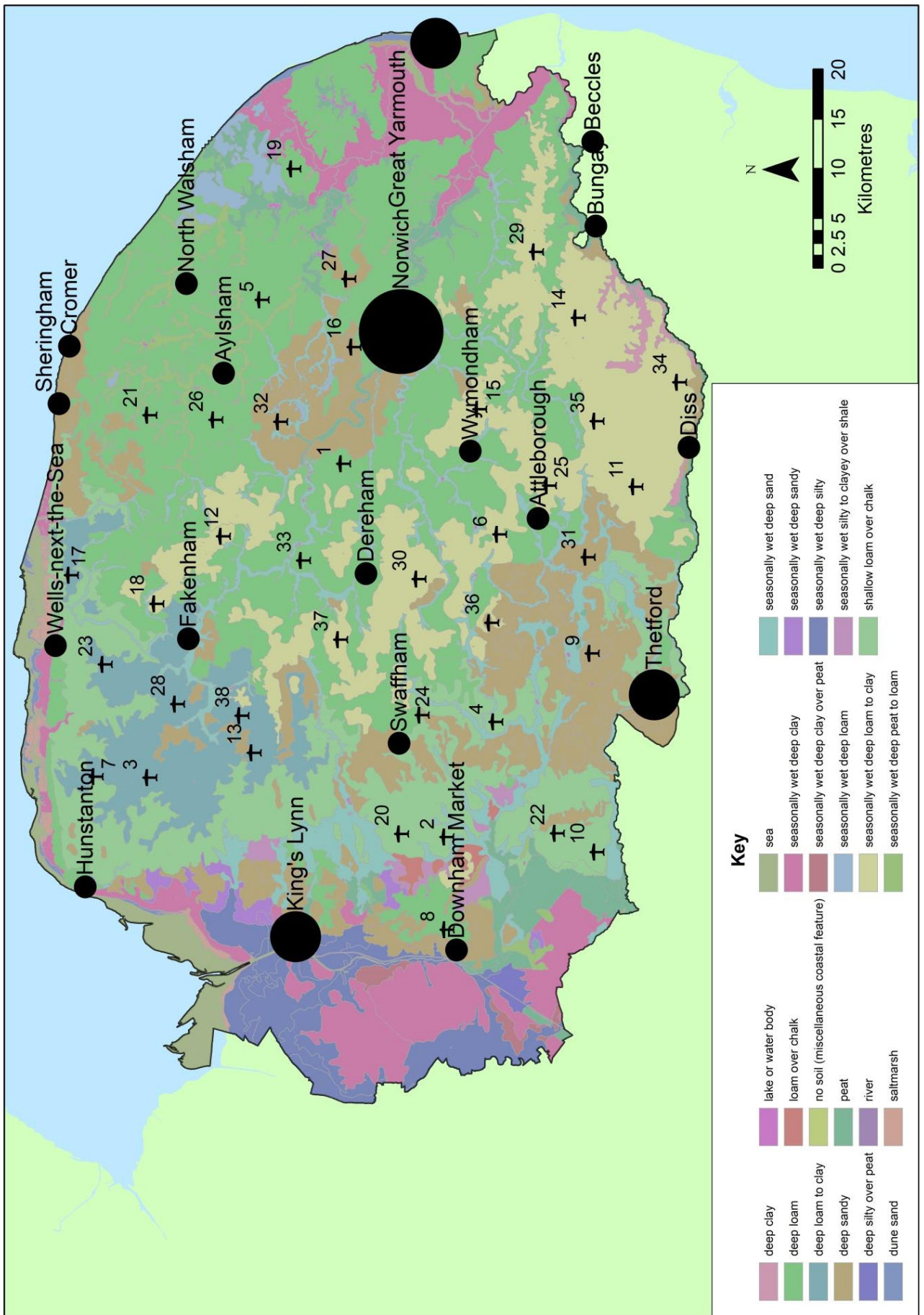


Fig.30 Soils categorisation map with airfield locations.³⁰

A further factor that compressed the search for airfield sites to the east of England was the inability to use neighbouring regions because of existing military activity. Land of poor agricultural value and good topography in south-east Essex, where aerodromes sites would be less disruptive from an agricultural perspective, was rendered unusable because of the balloon barrage across the Thames estuary.³¹ Conversely, the lack of large centres of population across Norfolk allowed the majority of airfields to be sited away from populated areas.

Given the unprecedented levels of consumption of, firstly, construction materials and, longer term, operational resources to airfield locations, road and rail transport from distribution localities were crucially important. This might appear to present a dichotomy if, given that if almost most airfield sites were located away from centres of population, they were not close to rail links. The national rail network during the 1940s was however far more extensive than would be the case twenty years later. The private motor car revolution was nearly two decades distant; freight and passenger traffic needs were in reality well served by rural rail services across Norfolk.³²

Militarised and conflict landscapes are conventionally measurable by distance and area. The air war could however be said to add a new dimension, that of vertical air space. In the first two years of war, both friendly and enemy aircraft were shot down, or crashed as the result of mechanical failure or pilot error. As air activity changed and intensified, larger aircraft were manoeuvring in greater numbers, on a daily basis. Training accidents became more common. Assembly areas for heavy bomber formations *en route* to the continent led to ever more crowded skies above East Anglia. 2,500 aircraft are said to have crashed in Norfolk and Suffolk during World War Two.³³ This equates to at least one a day, and presented a serious risk to the civilian population and property, let alone service personnel and structures. Figure 27 shows each airfield at the centre of a nominal six-mile diameter ‘flying zone’, allowing for landing, laden take-off and assembly areas. Clear overlap can be seen with the proximity of some airfields to their neighbours.

³⁰ Soils data from landis.org.uk/soilscapes/

³¹ TNA MAF 48/392 Aerodrome construction programme: agricultural considerations and priority of construction, 1941-1944

³² This theme is explored in detail in Chapter 4: ‘Logistics and Infrastructure’

³³ Eastern Daily Press 14th December 2017 www.northnorfolknews.co.uk/news/recent-tides-uncover-world-war-two-german-aircraft-in-north-norfolk-1-5321682

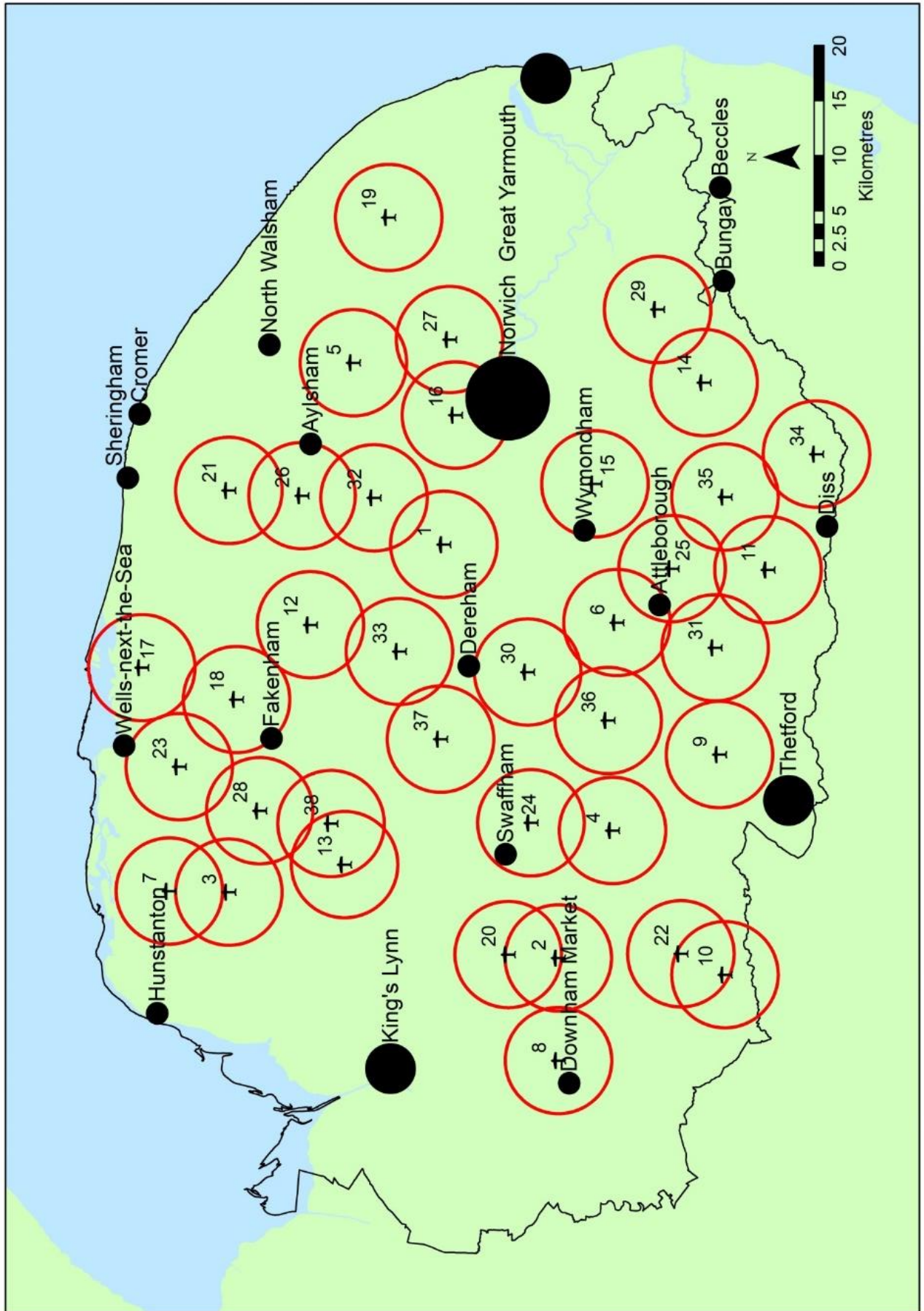


Fig.31: Norfolk airfields distribution with 6-mile diameter fly-zone indicating proximities

Typology and geometry

Wartime military airfields lend themselves to classification into three sub-typologies. The first category comprises the 'permanent' Royal Air Force stations commissioned and completed or part-completed by September 1939 under the Expansion period programme dating from 1934. These airfields were grass surfaced, with a broadly square or rectangular flying field. Contained within this would be the 'bombing circle' so called because of its convenience for bombing practice and usually a minimum 1,100 yards in diameter, and with four runway strips. Three, four or even five 'C' type hangars would be grouped in a close quarter circle at one edge of the landing field, with an intense cluster of technical buildings behind. This arrangement could be seen at Bircham Newton, Feltwell and Marham, all grassed airfields when built; and it illustrates the distinction between the vulnerability to attack of the operational flying field and important buildings, compared with the later dispersed spatial arrangements of wartime airfields.

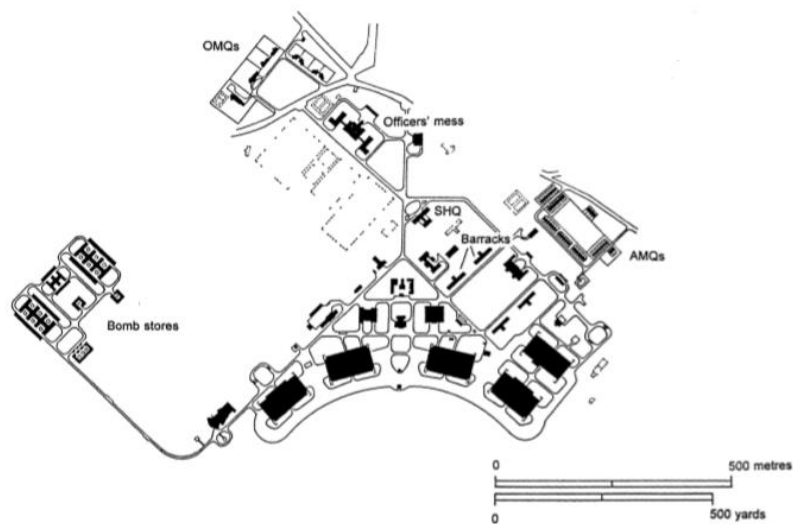


Fig. 32 RAF Feltwell plan of 1935, showing major buildings clustered behind five 'C' type hangars, the flying field sited immediately to southward.³⁴

³⁴ Extraction from Dobinson, C. *Twentieth Century Fortifications in England Vol. IX 1 Airfield Themes* p.137



Fig. 33 Oblique aerial view of Feltwell, Norfolk, from the west. The flying field extends south from the clustered buildings. The airfield has been skilfully camouflaged with a field pattern.³⁵

A second category is that of wartime temporary airfields built as fighter stations, which remained grassed and of conventional layout.

The third type is that of the wartime ‘temporary’ airfields commissioned and operational between 1941 and 1945, designed and built or re-developed as ‘A’ class airfields. They merit some explanation since they are the most numerous and physically enduring in the Norfolk landscape and indeed across much of East Anglia; despite their ‘temporary’ designation their design and construction has, where they have not been formally removed, left their remains highly visible in the landscape both from above and at ground level. Some were even expanded further towards the end of the conflict. From December 1940 the spatial arrangement of new airfields changed dramatically, partly in response to concerns about vulnerability to aerial attack, and partly in recognition of the need for hard runway surfacing, as larger and more powerful aircraft with greater laden weights were deployed. Bomber airfields – the majority – were now being designed with three interconnecting strips, the

³⁵ IWM HU 93048

primary being built to a length of 1,400 yards and the two subsidiaries being 1,100 yards; six months later the standard was 2,000 yards and 1,400, all three 50 yards wide and with grass over-run side-strips of 400 and 200 yards respectively. The three runways were set at, or as near as possible, sixty degrees to each other, the main runway lying north-east to south-west where possible orientated to the prevailing wind, although the two ancillary runways were available when needed.³⁶ It is this configuration, with hard-surface runways, that, seen from the air, gives an airfield built between 1941 and 1944 its unmistakable crooked 'A' shaped tri-axial appearance in the landscape, clearly visible in contemporary aerial photographs and indeed in very recent photographs too. Class A airfields were standardised to specifications from the Air Ministry's Directorate-General of Works (AMDGW) in August 1942, becoming the standard template, representing the product of years of discussion over the merits and costs of concrete runways, and differing radically from earlier flying fields with grass runways.³⁷ From 1944, selected locations were extended as 'very heavy bomber airfields' beyond Class A standard, the Norfolk examples being Marham and Sculthorpe; the main and secondary runways at each site were extended to 3,000 and 2,000 yards respectively, and widths increased to 100 yards.³⁸ The third prominent feature was the perimeter track which facilitated access to hardstanding dispersals of self-descriptive frying-pan and, later, spectacle, shapes. And in all wartime hard-surfaced airfields, some remnant of this characteristic triangulated layout remains, clearly visible even on small-scale maps, including where the airfield has long been abandoned or set to re-use. Lastly, unlike the earlier permanent stations, the ancillary technical buildings and accommodation areas were well-dispersed away from the flying area.

³⁶ Smith, D.J., *Britain's Military Airfields, 1939-45* (Wellingborough, 1989) pp.24-26; Bowyer, (2000) pp.12,24; Francis, P., Flagg, R., Crisp, G. *Nine Thousand Miles of Concrete - A Review of Second World War temporary airfields in England* (Historic England, 2016)

³⁷ Francis, P., Flagg, R., Crisp, G. *Nine Thousand Miles of Concrete – a review of Second World war temporary airfields in England* (Historic England, 2016) pp.2,7

³⁸

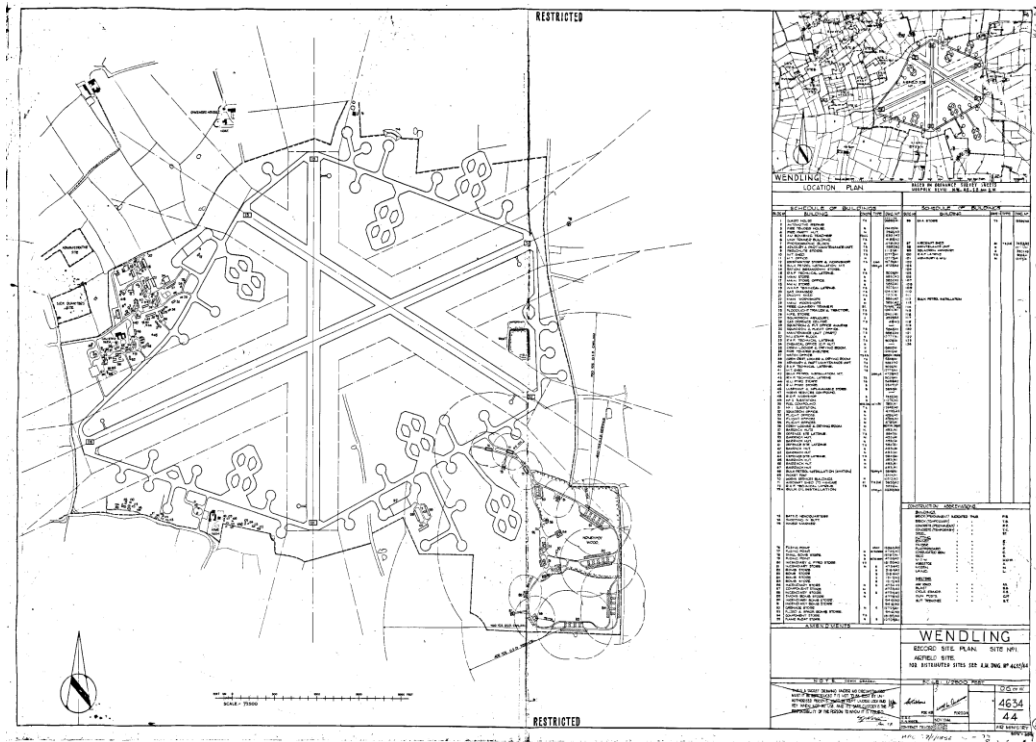


Fig.34 RAF Wendling: standard site plan showing 'A' plan runways and identifying dispersed sites³⁹



Fig.35 RAF Attlebridge in 2009, closed as an airfield in 1950, long used for poultry sheds – but still showing the distinctive 'A' class runway layout.⁴⁰

³⁹ Director General of Works plan no. 4634/43

⁴⁰ 2nd Air Division Memorial Library / Richard E. Flag

Airfield ‘life phases’ or chronology

The impact on each location may be viewed in four phases. Firstly, survey and affirmation marks the relatively short period of time between a location being considered for an airfield site and the confirmation to proceed - usually no more than a matter of months. It could be extended on occasion by appeals directed via the County War Agricultural Executive Committees, via the Ministry of Agriculture and Fisheries, to the Air Ministry. The tensions and uncertainty generated in the farming community during this phase should not be underestimated. Extended correspondence between MAF, the Air Ministry and WAECs attest to the genuine efforts made in alleviating such problems. Secondly, construction took up to a year, sometimes longer if disrupted by bad weather, characterised by intense sub-phases, from site clearance and levelling, runway construction, erection of buildings and laying-out of dispersed areas. Thirdly, operational duration may appear self-evident but wartime military operations, even though not located in a hostile environment, represented ever-present accident potential to the local populace. Constant and considerable transport activity in supplying food, water, munitions and other *materiel* to the site presented disruption to local community and commercial activity on a daily basis. Fourthly, the post-1945 period might be termed the ‘legacy’ phase, many airfields being de-requisitioned, returned to agricultural use or re-utilised in another commercial role. Some were retained into the 1950s but the number declined gradually. As at 2019, Marham is the sole remaining major RAF base in Norfolk.

These four phases witness the impact upon the landscape, but each is characterised by differing activity and intensity. Although phase three is clearly the ‘object’ or purpose phase, the first and second phases are those that had the most immediate dramatic impact upon the landscape; the first because of the disruption to existing, established, human activity in the landscape and the second characterised by the physical changes wrought to that landscape.

Acquisition – an uncertain time for agriculture

‘I am directed to inform you that the Air Ministry have decided to construct an aerodrome in the above district and certain land believed to be in your occupation is embraced therein.... Formal notice of requisition will be forwarded to you in due course and a Lands Officer will call upon the occupier and discuss details as to possession and the harvesting of crops.

In the meantime, I am to suggest you carry on with normal agricultural operations.’⁴¹

The County War Agricultural Executive Committees were empowered to overview and direct agricultural production for the duration and liaised with the Air Ministry’s lands officers and surveyors. It was through the CWAECs that landowners and tenant farmers made representation of objection to land being taken over. In Norfolk acquisition is inextricably linked with agriculture, for it was the latter’s continued function in the landscape that would be most threatened. Few records of contemporary acquisition procedures actually remain in the archives.⁴² Late 1941 saw a large number of sites still to be decided upon. Correspondence between the Air and Agriculture and Fisheries Ministries acknowledged the scale of the problem and the need to move quickly, whilst at the same time trying to see each department’s point of view.

‘It is rather late now for long-term planning and no useful purpose is served by arguing about what might have been.... I have walked sites with the reconnoitring officers and can say that the greatest care is taken by them; they study and try to safeguard the best interests of the farmers, compatible with certain definite and essential requirements which must be fulfilled.’⁴³

Correspondence illustrates the tensions that arose between the concerns of farmers and landowners, expressed via county WAECs thence via MAF to the Air Ministry. The needs of agriculture, though clearly not the Air Ministry’s highest priority, were not arbitrarily overridden. Some understanding of agricultural practice was recognised and acceded to when and where possible, and with some diplomacy. The issue that appears to have given most cause for concern and uncertainty was perceived lack of final decisions on site acquisition, of which

⁴¹ TNA MAF 48/392 Aerodrome Construction Programme: agricultural considerations and priority of construction; Standardised Air Ministry letter, first formal point of contact with the farmer, used in this form from late 1941.

⁴² The National Archives’ WORK 50/23-29 series of Government Property Registers relate to requisition, compensation and settlement regarding property taken over by the state in six counties. Records for most, including Norfolk, have not survived. Author’s correspondence dated 18 July 2012 *pers comm.* Sebastian Cox, Head of Air Historical Branch, R.A.F. Museum, suggests that although some records of land purchase may survive, few that relate to individual aerodromes are likely to be found.

⁴³ TNA MAF 48/392; LS 14034 interdepartmental memo dated 27th Sept 1941 from Air Ministry to Sir Donald Ferguson, (Permanent Under Secretary at MAF, 1936-45)

numerous Norfolk examples are recorded. Frank Rayns, the CWAEC's Executive Officer, raised the issues of lack of information about proposed sites at North Pickenham, Deopham Green, Thorpe Abbots and Tattersett.

‘Pending a decision of the Air Ministry farmers are naturally not inclined to spend money on cultivations, seeds and manures....I am most anxious to minimise the loss of agricultural land in Norfolk as much as possible. The total loss due to defence measures is really alarming, but I know of course, that defence measures are paramount.’⁴⁴

Rayns also alleged that contractors at many sites had been accessing land too early and destroying existing crops, notably at Denton and Topcroft in the south and Wendling and Shipdham in central Norfolk.⁴⁵ The Air Ministry's Aerodrome Construction Programme incorporated agricultural needs in its Priority Construction List, under the heading ‘Aerodrome sites not required until September (after Harvest)’. Specific reference was made to aerodromes which would be acquired and developed within the next three months (before Harvest) 1941, including Shipdham, Wendling, Foulsham, Downham Market, Hardwick, Great Snoring and Hethel.⁴⁶ The Air Ministry advised the Ministry of Agriculture and Fisheries that ‘sites which we shall not take this side of September [include] Great Snoring and Deopham but continued sites we think we must have and will need to start at once include...Tibenham and Horham.’⁴⁷ Great Snoring and Tibenham were in any event deferred whilst sites outside Norfolk took priority.⁴⁸ Great Snoring was itself replaced by Sculthorpe following objections from landowners via the County War Agricultural Executive Committee and MAF. Given that it is sited on some of the best quality agricultural land in Norfolk, Deopham Green was taken under advice and eventually selected in preference to Hingham, from where even stronger objection was received. 1942 was the busiest year of construction of airfields, and it follows that the preceding two years must have been an intense time for finding suitable sites, nationally and in Norfolk.

⁴⁴ TNA MAF 48/392 Aerodrome Construction Programme: agricultural considerations and priority of construction. Letter from Frank Rayns to E.L.Mitchell at MAF 6th October 1941

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Ibid. This area of conflict is explored in detail in Chapter 7 ‘Agriculture’

⁴⁸ Ibid. Letter A.75317/40/F.5 dated 10th May 1941. Great Snoring and Tibenham were deferred whilst sites outside Norfolk took priority.

Although many sites are popularly associated with the USAAF, some were selected in late 1940 and very early 1941. The USAAF was not operating formally from England until late 1942. A number of sites were chosen as RAF bomber stations as part of the Air Ministry's 1941 Expansion programme but re-assigned for American use. Construction contracts were not issued for tender until May, July and September of 1942.⁴⁹ The Air Ministry continued to make efforts to address farmers' concerns. In an especially diplomatic and lengthy letter, centred on concerns raised by MAF about the proposed site at Old Buckenham, the Air Ministry acknowledged that mid-Summer commencement of contracts presented a problem.

'Unless the arable land can be used for a pulse of fodder crop, I cannot see how it can be reasonably cultivated without an almost certain risk of loss. If occupiers are permitted to carry on normally we may have a regrettable waste of labour, manures and foodstuffs; if cultivations are stopped and commencement is deferred we have a waste of good land and the loss of potential crop.'⁵⁰

It suggests that sites such as Old Buckenham, where the airfields were scheduled for early summer commencement, could be ploughed, and then if the airfield construction were deferred or delayed, the land could still be sowed for summer harvesting. Consistency of notification seems to have been achieved by, for example, use of standardised correspondence. Overall, the Air Ministry became ever more aware of the need to consult with a variety of bodies, including local Boards of Health, Works, the Electricity Generating Boards, Post Office and other military authorities with allegedly stronger claims. Basically, land available for any military operational purpose, and not objected to by one agency or individual or another, was becoming very limited indeed.

Construction

'As each new field was invaded by our crushing machines, as each new hedgerow was smashed and uprooted and shattered, as each great oak succumbed before axe and dynamite and bulldozer, we felt a pang. For there is nothing quite as

⁴⁹ TNA MAF 48/392 Aerodrome Construction Programme: agricultural considerations and priority of construction

⁵⁰ Ibid. Letter dated 10th December 1941 from Air Ministry to MAF.

final, quite as levelling, as an aerodrome...It was as if a flood had risen and hidden a beautiful landscape, and then subsided, leaving a desolate wasteland where there was no life and no motion.’⁵¹



Fig.36 American construction engineers concreting runways. The image conveys the size and scale of specialised equipment used.⁵²

Whilst individual and hedgerow trees were subject to removal, densely wooded areas were to be avoided when choosing a location, regardless of the topography. Exceptions were notable by their rarity. Over a million small trees, not long planted by the Forestry Commission, were cleared to make way for RAF Woodbridge in east Suffolk.⁵³ No such extreme clearance occurred in Norfolk. Generally, woodland was removed only out of practical necessity on the flying fields of aerodromes but otherwise proved very useful for practical purposes in dispersed areas.⁵⁴ Spring Wood at Hardwick contained dispersed sites, access to the bomb dump and several aircraft dispersals and Hethel Wood contained a number of dispersed buildings. Perhaps the best example of partial concealment for bomb storage is the bomb

⁵¹ Arbib, R.S., *Here We Are Together: The Notebook of an American Soldier in Britain* (London, 1947) pp.18-19.

⁵² Roger Freeman Collection FRE 6325

⁵³ Bowyer, M. *Action Stations: 1. Wartime Military Airfields of East Anglia 1939-1945* (Yeovil, 1992)

⁵⁴ See Chapter 5 ‘Logistics and Infrastructure’

dump at Honeypot Wood adjacent Wendling airfield.⁵⁵ Rackham suggests that airfield construction may have been one of the few causes of loss of woodland during the Second World War, but that little compared to loss in the inter-war period from and from 1950 to 1973 and from 1945 onwards.⁵⁶ Whilst Rackham's survey is based on a very local sector of north Essex, it is still part of eastern England's 'airfield country' and may reasonably be held as an indicator that airfield construction was not responsible for mass loss of ancient or established woodland.

Having committed to a chosen site, the first major operation was to clear hedges and trees, fill ditches and remove root crops from the air operational area. This made the local topography more evident, at which stage depressions were filled and undulations levelled by state-of-the-art earth scrapers. Contouring could actually be created at this stage if needed. The flying area was pounded and rolled, and then ploughed to facilitate the sowing of grass. Great care was taken to analyse the soil and local climatic conditions to determine the best type of grass to be sown.⁵⁷ Pre-war, the Air Ministry had a somewhat anachronistic and unscientific method for determining the suitability of the established grass for flying operations; a small saloon car would be driven across the sward at no more than twenty miles per hour and, if the passengers experienced no particular discomfort, it was deemed serviceable.⁵⁸ This last element would change fundamentally with the later redevelopment and construction of deep-impact concrete runways and hard-standings. Site clearance was always a hazardous business. Sixteen year-old Reg Wyatt was employed on blasting tree stumps at Shipdham.

'The land was negotiated and compulsorily purchased pre-1940 and work started that year. Oaks were cut down, leaving the stumps to be removed. The explosives were stored in a small brick shed, two doors, four locks, partitioned with two rooms back-to-back, gelignite in one side and fuses in the other. We took the explosives to the airfield in cars.

⁵⁵ Honeypot Wood is examined in more detail in Chapter 4 'Infrastructure and Logistics'

⁵⁶ Rackham, O. *The History of the Countryside* (London, 1986) pp.93, 96. Rackham asserts that more timber was lost between the two wars than during. About four per-cent fell to wartime airfield requirements. From 1950 to 1973, agriculture and forestry accounted equally for a third of ancient woodland loss remaining in the area of studied.

⁵⁷ Francis, P. *British Military Airfield Architecture – From Airships to the Jet Age* (Yeovil, 1996) p.21 lists choices of hard fescue, fine-leaved sheep's fescue, smooth-stalked meadow grass, rough-stalked meadow grass, crested dog's tail, creeping bent, wavy mountain hair-grass and wild white clover, all sown at a rate of 100lb per statute acre.

⁵⁸ *Ibid.* p.21

A mallet was used to drive a hole for the gelignite, then the gelignite was inserted, fused and lit – and this would blow a decent sized hole under the stump of the tree. When cooled, usually the next morning, we would pack the hole with more gelignite and blast the stump out.

Meanwhile, bulldozers were being used to remove farm buildings. When the site had been levelled, the company supplied hardcore and shingle, quarried from its own quarries at Shipdham, for the runways, peri and dispersals. All this was laid to a depth of 1.5 to 2 metres, depending on levels. The Germans must have known about Shipdham, for they dropped land mines nearby.’⁵⁹

Drainage was ever to be a problem on some of the heavy clay soils of Norfolk, made worse by ground compaction by heavy bombers, and most deleterious when taking-off with a full payload. There were implications for farmers, with the potential for existing field and stream drainage systems being completely over-whelmed, damaged or destroyed. Many airfields had modern, heavy-duty drainage systems constructed adjacent to the runways but this did not address the question of where water run-off would be discharged. In apparent response to concern expressed by the National Farmers’ Union with regard to potential damage to farmers’ field systems, the Air Ministry discussed the idea of bringing in local water Catchment Boards and Land Drainage authorities to help with the necessary work. It was not just the practicalities of the work that concerned all parties but, in war as in peacetime, the monetary cost and material resources required for the task.

‘In the preparation of our new aerodromes with their large areas of hard runways... we are faced on almost every site with a problem of effecting satisfactory surface water drainage, usually necessitating improvements to ditches or other waterways taking the main outfall drainage from the completed landing ground. Sometimes it is a mere matter of persuading farmers to clean out their ditches but not infrequently it is a matter of arranging for large scale improvements to existing drainage schemes.’⁶⁰

⁵⁹ *Pers comm.* Interview with Reg Wyatt, Norwich, 10 April 2013

⁶⁰ MAF 222/376 Drainage of airfields: report of meeting on procedure and legal rights of Air Ministry, 1941-47. Letter dated 5th September 1941 from Air Ministry regarding drainage of airfields and a report of a meeting on procedure and legal rights of the Ministry.

Spatial Relationships

A characteristic unique to airfields of the Second World War was their physical relationship to their immediate environments. Whilst late-twentieth-century airfields are physically separated from local communities by ‘hard’ landscaping and rigorously enforced security zones, wartime airfields were notable by their integration into the existing landscape – see Figure 35. There is no disputing their starkness in the landscape but their peripheral features often intruded into the surrounding working landscape without disrupting its function. Field boundaries were often retained as formal concession to the incumbent farmer or landowner.



Fig.37 Snetterton Heath, August 1944. It is typical of many airfield boundaries, illustrating proximity, ‘mutual intrusion’ co-existence of agriculture and air power.⁶¹

This may have evolved by default rather than original design. Whilst land was requisitioned and compulsorily purchased when and where needed, individual landholder objections were not always ignored and so not only fields but occasionally homesteads would appear themselves as apparent intrusions into the ‘militarised zone’ – an inverse intrusion in effect.

Figure 38 is a 1946 RAF aerial photo of Attlebridge (actually centred on Hungate Common, West Longville) showing clearly the tri-axial runways and perimeter track, but also demonstrating the manner in which many of the ‘spectacle’ dispersals intruded into the surrounding fields. This feature, whilst an operational necessity, helped break up the outline of the airfield somewhat. The site is starkly apparent from the air but during wartime operations, camouflage would have partially - but not completely - obscured and obfuscated the runways and perimeter track.

⁶¹ Roger Freeman Collection FRE 5869



Fig.38 RAF Attlebridge showing spatial intrusion of dispersal hard-standings into surrounding farmland.⁶²

⁶² NHER Norfolk Archaeological Unit Collection

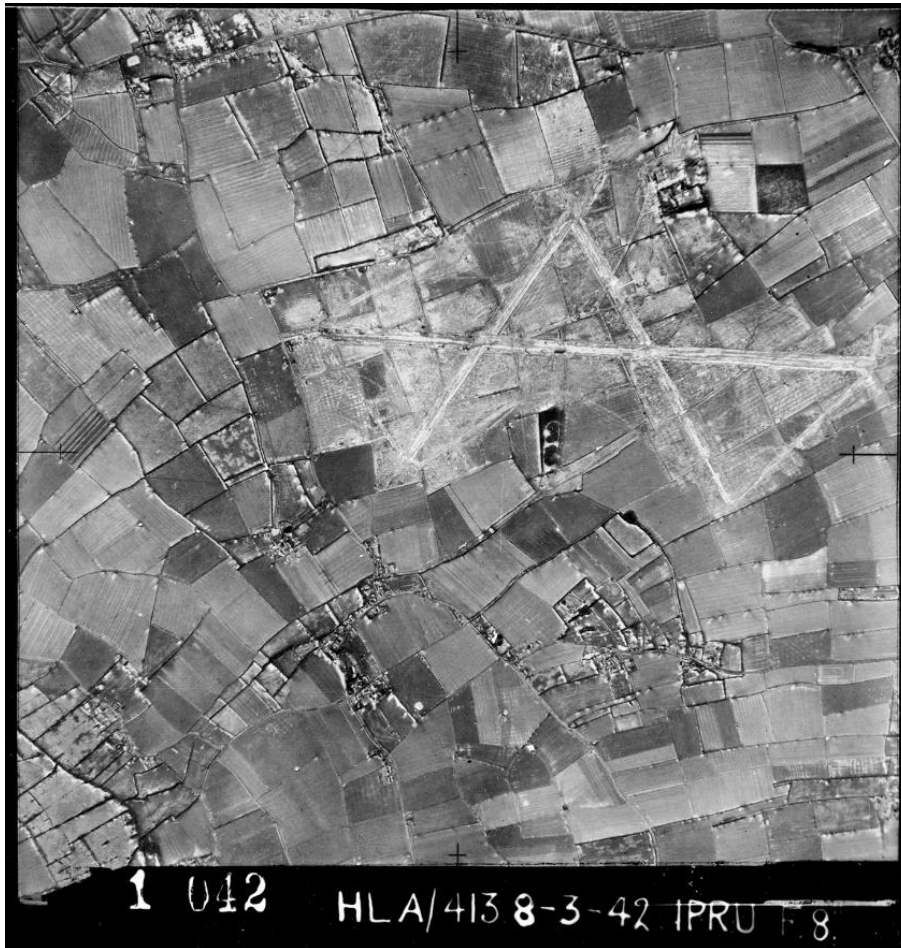


Fig.39 Tibenham airfield looking east, runways and perimeter under construction by W&C French Ltd, 8 March 1942, field patterns are clearly visible under the tri-axial runway layout.⁶³



Fig.40 Aerial photograph of Wendling airfield looking east, 18 April 1944. The perimeter mirrors the prominent field boundary line to the north (left of image). There is no evidence that this is intentional but it is striking nevertheless.⁶⁴

⁶³ English Heritage (RAF Photography). RAF_HLA_413_V1_42

⁶⁴ English Heritage (USAAF Photography) US_7PH_GP_LOC276_V_5046

A further feature, unique to air operations, is the airspace itself which, whilst not part of the physical landscape, impacts upon the landscape as what may be termed ‘operational flying radii’.⁶⁵ Whilst many overlap, the issue is further added to by assembly ‘layers’ and flight corridors to the continent, which would always extend broadly eastward. Assuming a heavy bomber travelling at 200 miles per hour would traverse a three mile radius in less than one minute, the capacity for aerial traffic congestion is immense. Whilst no activities in the flying radii technically impede ground activity beyond the airfield, they nevertheless exist and could at least be construed as visually and audibly disruptive to any or all activity not directly associated with flying operations. This would be of particular concern in the environs of at least one airfield.⁶⁶

Discussions took place at the Air Ministry regarding the rapidly dwindling number of suitable sites for airfields. Acknowledging that the whole country had already been thoroughly surveyed and that the finding of suitable sites would inevitably entail the taking of more valuable agricultural land, one option suggested was simply to increase the number of aircraft, and therefore, squadrons at each airfield, or the number of aircraft in each squadron. Further, indicating that ‘planes no longer have to be under cover’, there should be no need for extended dispersal areas. Finally, if more space were to be needed, ‘the taking of additional space on existing sites would be, certainly in some places, better from a food production point of view than the taking of complete new sites on good agricultural land.’⁶⁷

Architecture – the prominent buildings

Prominent among airfield structures are hangars, used throughout the duration and characteristic landmarks on all major airfields. There are known to be more than fifty Second World War hangar designs but some are iconic by survival, such as the austerity steel-framed Bellman hangar and the later T2.⁶⁸ Two basic variants were the 1934 Type ‘C’ and the 1941 ‘T2’. The pre-war permanent stations were characterised by stepped and gabled designs, sometimes with later additions, generally set in a curve adjacent the flying field. RAF Bircham Newton had three each of the original ‘C’ type and Bellman hangars, along with a number of blister types. The ‘C’ featured a steel framed, lattice girder design with an apex

⁶⁵ Fig.27 p.86 above, illustrates.

⁶⁶ Horsham St Faith ‘Case Histories’ below.

⁶⁷ TNA MAF 48/392 Air Ministry internal discussion note.

⁶⁸ *World War II Hangars – Guide to Hangar Identification ; technical Bulletin 02/02* (Defence Estates, Ministry of Defence, 2002) p.1

roof covered with timber and asbestos, along with large windows that served not only to admit light and give an aesthetic appearance but allowed for blast exit. Concrete between the steel sheets offered anti-shrapnel protection. The T2 was enormous – 300 feet long with a 150 feet wide entrance area.⁶⁹ Both marques of hangar survive *in situ* at many sites, having been re-used for a variety of modern commercial purposes. Blister hangars were a fast-build wartime expedient and quickly became service facilities, for aircraft were soon to be parked at dispersal in all weathers. From 1940, fighters were often parked on hard-standings protected on three sides by brick walls, themselves backed with earth and grass revetments.⁷⁰ It is these that survive whilst little else does, for example, at Matlaske. From mid-1942 hangars were very much seen as service areas and aircraft were generally parked in the open on the characteristic – and highly visible - ‘frying-pan’ and ‘spectacle’ hard-standings. Fear and actual danger of large-scale and sustained enemy air attack had reduced considerably by then.⁷¹ At ‘A’ Class airbases technical and accommodation buildings were deliberately dispersed rather than grouped behind the flying field. The vast range of service building types varied from the ubiquitous ‘half-cylinder’ Nissen huts and Handcraft and Quonset huts. ‘Half-brick’ buildings comprised simple stretcher bond brickwork with steel-framed windows. Timber shortages led eventually to fully pre-cast concrete structures.⁷² Many of these variants survive in varying stages of dilapidation or re-use. The more portable buildings were quickly sold off post-war, with examples being evident in farmyards and commercial premises across Norfolk.

Woodland and hedgerow

Whilst extended areas of woodland were clearly a counter-productive feature in terms of site selection and construction and consequently to be avoided, adjacent woodland was a positive asset in two respects. Firstly, concealment and camouflage for aircraft and sensitive buildings away from the flying areas was an established pre-requisite. This would be a particular landscape feature of individual sites. Secondly, blast protection, especially for ordnance

⁶⁹ *World War II Hangars – Guide to Hangar Identification ; technical Bulletin 02/02*

⁷⁰ *Ibid.*

⁷¹ ‘Frying pans’ or ‘banjos’ were the earlier type of perimeter hard-standing. The epithets describe their shape well, as does the term ‘spectacle’ applied to the later looped standings which allowed aircraft to manoeuvre on and off them more easily, without having to ‘swing’ at acute angles. Some airfields feature both types, indicating construction or adaptation taking place at different times.

⁷² Francis, P., Flagg, R., Crisp, G. Francis, P., Flagg, R., Crisp, G. *Nine Thousand Miles of Concrete - A Review of Second World War temporary airfields in England* pp.13-15

stores and, occasionally, aircraft. Woodland would prove key to the storage and concealment of bomb stores at airfields and particularly so in the cases of the three major forward ammunition depots at Earsham, Hockering and Barnham Heath. This second practice eventually extended beyond the core militarised zone to utilise roadside verges.⁷³

Whilst woodland in Norfolk suffered little destruction during the Second World War, considerable quantities of field and hedgerow trees were cleared for airfield construction. Horsham St Faith alone saw the removal of approximately 13.7 miles of field boundary and attendant hedgerow.⁷⁴

It is possible to interpret the airfields of Norfolk geographically as being grouped in four loose clusters, plus one ‘singleton’ at Ludham, in north-east Norfolk. This however would be misleading, as a ‘buffer zone’ representation indicates more clearly a relatively even distribution. Clearly, the wetland areas to the east were entirely unsuitable for airbases but the area towards the Cromer ridge in the north-east of the county appears to have been overlooked. This may have been due to an official inclination to leave well alone that large belt of high quality farmland but more likely is the wariness of locating airfields in coastal areas vulnerable to attack and invasion. The large tract of light soils in Breckland would have suited airfields but the area was secured for the Stanford Battle Training Area by 1941.⁷⁵ The siting of a cluster of later airbases on the clays of south and mid-Norfolk endorse that level land was the primary criterion, with soil composition a secondary, though still important, consideration. All airfields were built on farmland, though of varying quality and importance. Construction began at Deopham Green in 1942, on land well suited to airfield construction yet defined as very high quality agricultural land.⁷⁶ The few pre-war airfields of the 1930s were almost all sited to the west of the county, on the Good Sands, Breckland and even, in the case of Feltwell, to the very edge of the Fens. The exception was Coltishall, located to the north-east of Norwich, and this was a later choice of site, as the geo-political situation was becoming more defined. As pressure for numbers of airfields increased, sites on the Central and South Norfolk claylands were chosen. By no means ideal, the problems of draining surface water from later sites proved to be a major operational obstacle. This does

⁷³ See Chapter 5 ‘Logistics and Infrastructure’ for use of woodland for camouflage and ordnance storage

⁷⁴ See also case study Horsham St Faith, below.

⁷⁵ RAF Bodney and RAF East Wretham were in Breckland but neither were large ‘A’ Class sites.

⁷⁶ TNA MA 48/392 Aerodrome Construction programme: agricultural considerations and priority of construction 1941-1944

not mean the sites should not have been chosen, simply that as the war progressed the availability of ideal sites became almost non-existent.

Land use – Perspective and Proportion

‘[The] very large loss of agricultural land to the fighting services, especially for airfields and training grounds, must be recorded. Apart from large tracts many small pieces of ground were required for searchlight stations, anti-aircraft posts, strongpoints and so on. These areas, though, often caused serious hindrance to efficient farming.’⁷⁷

The volume of resources in labour and materials consumed for airfield provision during the Second World War is extraordinary even by modern standards. Dobinson has it that military airfields present as ‘one of the most numerous and complex settlement types to have appeared in Britain’s landscape during the 20th century.’⁷⁸ Pre-war, the impact of military airfields on the Norfolk landscape could hardly be said to be significant, with just four permanent stations – Bircham Newton, Feltwell, Marham and Watton – in evidence. The nearest county thereto already experiencing greater land loss to aerodromes was Lincolnshire. Military airfields occupied an estimated 25,000 acres nationally in 1935, not dissimilar to that which Norfolk alone would host by early 1945.⁷⁹ By 1945 approximately 360,000 acres of land across Britain were occupied by airfields.⁸⁰ In terms of land denied other uses, airfields subsumed around 162,000 hectares – 0.7 per-cent of the national land area of the United Kingdom.⁸¹ In Norfolk, Suffolk and Oxfordshire the airfield footprint exceeded two per-cent of the total land

⁷⁷ L Dudley Stamp *The Land use of Britain: Its use and misuse* (London, 1948) p.417

⁷⁸ Dobinson, C. *Twentieth Century Fortifications in England Vol. IX 1 Airfield Themes* p.1

⁷⁹ Blake, R. ‘The Impact of Airfields on the British Landscape’ *The Geographical Journal* Vol.135, No.4 (1969) pp.508-528. With an additional 255,000 acres acquired or requisitioned during the war, the war’s end total of 360,000 acres represented a little less than one per-cent of the UK land mass, but exceeded one per-cent in agricultural regions. Blake suggests that a useful working figure for an ‘average’ airfield is 500 acres, but that 600 acres or more would be more realistic in the eastern counties.

⁸⁰ Smith, David J. *Britain’s Military Airfields 1939-45* (Wellingborough 1989) p.7

⁸¹ Blake, R. ‘Geo-environmental factors in the regeneration of military airfields in Great Britain The environmental legacy of military operations’ in Ehlen, J. and Harmon, R.. (eds.) *The Environmental Legacy of Military Operations* (Geological Society of America, Boulder, Col., 2001 vol.14 pp.203-213).

area by county.⁸² Pre-war, an RAF airfield might cover nearly 350 acres, with a major bomber station reaching nearly 500 acres. By 1945 a standard A-class bomber airfield would easily subsume 670 acres whilst an average grass-runway airfield might still be 250 acres.⁸³ The statistics acquire meaningful proportion when put into local context. By calculating the proportion of air bases sited in Norfolk against the national total, Norfolk's total of thirty-eight represents 5.1 per-cent of the 740 airfields across Britain by 1945. A polygonal survey of contemporary aerial photographs shows that around 23,000 acres were subsumed to Norfolk's airfields, not including off-site accommodation and service buildings.⁸⁴

To contextualise further, the key point is that almost all the land taken for airfields was agricultural land, at a time when land was desperately needed for wartime agricultural production. The contemporary land base of Norfolk in 1940 was 1,307,333 acres.⁸⁵ The proportion of land in the county covered by airfields, then, amounted to a little under 1.8 per-cent, not including off-site buildings. This is similar to the generally accepted figure for an 'airfield county'. However, of the total land area of Norfolk, approximately 982,600 acres in total were used for arable, permanent pasture and rough grazing, including about 21,000 acres described as 'agriculturally unproductive'.⁸⁶ Given that almost all the land taken for airfields was agricultural, this indicates that approximately 2.34 per-cent was lost to airfields, this at a time when agricultural land was needed as never before.

The militarisation of the landscape during the Second World War is popularly seen as a significant marker in change of land use – principally because of the impression of a dramatic overhaul of farming practice and an imposed increase in productivity as part of the war effort. The evidence bears closer study. Whilst airfield and training areas in particular subsumed a considerable quantity of agricultural land, the war economy was but one factor in the chronology of agriculture. And it should be noted that increases in productivity are a separate issue to any increase in the amount of land brought into production. Dudley Stamp's pre-war

⁸² Blake, Ron N.E., 'Airfield Country: Terrain, Land use and the Air Defence of Britain, 1939-1945' in Doyle, P. And Bennett, M.R. (eds.) *Fields of Battle: Terrain in Military History* (Dordrecht (NL), 2001) pp.365-383 p.368

⁸³ *Ibid.* p.368. Blake states the figures in metric equivalent, at 135, 200, 272 and 100 hectares respectively.

⁸⁴ Author's computations, based on RAF aerial photographic surveys of 1946, via Norfolk Heritage Map Explorer. The area involved actually approaches three times that of the area of the city of Norwich, the county capital, as at 2013.

⁸⁵ Ministry of Agriculture *Agricultural Statistics 1939-44, England and Wales Pt.1* (HMSO, 1947)

⁸⁶ *Ibid.*

Land Utilisation Survey of Great Britain and the government's own Agricultural censuses from 1920s to the 1970s provide a chronology within Norfolk itself and a comparison with national levels of land use.⁸⁷ Mosby's 1938 survey of land use in Norfolk provides a detailed view of land use before radical change. Nationally, agriculture was depressed, marginal land neglected and low ratios of land under the plough.⁸⁸ Interestingly, military airfields across England sometimes appeared as red areas in maps supporting the original survey, the legend defining them as 'agriculturally unproductive areas'. This would of course highlight their locations to anyone with tactical interest in where airfields were located. Therefore the surveys maps of eastern counties had some locations concealed, indicating simply the prior use of that land.⁸⁹ In practice however, agricultural land in the east of England was already being used more efficiently than in other areas of the country. There was proportionately less grassland available to be ploughed for the war effort. Only a marginal increase in cultivated farmland was possible. As Dudley Stamp puts it

'[in the]...arable Eastern counties all land which could be ploughed in conformity with good husbandry was, in fact, under the plough and it has only been possible to increase the ploughed acreage by a small percentage.'⁹⁰

Given the dichotomy of land needed for airfields against that required for elevated levels of agricultural production, the added pressure of existing intense levels of land use for agriculture along with the sheer numbers of airfields required in the east, meant that the reality, for Norfolk at least, was that airfields were inevitably often to be sited on areas of highly productive land.

Dudley Stamp notes that whilst it is true that a greater proportion of the agricultural landscapes of the eastern counties of England were actively cultivated than anywhere else in the country, agriculture was in depression. Landed estates were being broken up and between the two world wars Britain was heavily dependent on imported food-basics to an extent that is almost unimaginable and politically unacceptable seven decades on. This would of course

⁸⁷ See Chapter 7 'Agriculture' for detail of conflicting land use priorities between agriculture and the military.

⁸⁸ Dudley Stamp, L. *The Land Use Of Britain: Its use and misuse* (London, 1948) p.404

⁸⁹ *Ibid* pp.194-5

⁹⁰ *Ibid.* pp.417-8

require most urgent attention from 1939 and its legacy would fuel the drive to maximise agricultural self-sufficiency after 1945, reaching its apogee in the 1970s.⁹¹

Every airfield in Norfolk, operational during the Second World War, was sited entirely or largely on agricultural land. The four pre-existing permanent stations at Bircham Newton, Feltwell, Marham and Watton are relevant to this study because of the military activity associated with them between 1939 and 1945 – and their post-war roles. RAF West Raynham was operational by May 1939 but is essentially a war-time airfield. Their physical presence emphasises continuity in the landscape.

The direct result was a direct conflict of interest between the ever-increasing need for agricultural land and that needed for military purposes. Dudley Stamp made a prescient observation in his post-war assessment of land use, reinforcing the permanence and physical nature of the land, geological structure and climate, and their constraints upon development, even with the help of modern methods.

‘Any efforts in levelling, considered in relation to the country as a whole, are puny in the extreme... such works are dictated by the physical nature of the land... most land can be upgraded into a sphere of usefulness which is not inherent to it, but can be upgraded only to a certain extent, depending on the starting point which is the inherent character of the land.’⁹²

Dudley Stamp described the characteristics of the working landscape in the context of agriculture. Whilst observing that geological structure and mineral disposition are even less alterable than the land itself, and that the climate cannot be controlled, he acknowledges that it is possible to change to implement changes in the landscape. This is strikingly apposite to the building of military airfields, especially given basic characteristics of the Norfolk landscape and the dry climate, so important when considering the need for runway drainage.

⁹¹ From 1920 to 1939 food and associated goods comprised 45 per-cent of UK imports; in 1937-38 76 per-cent of wheat supplies were imported. Barley, sugar, fruit and vegetables were heavily import-dependent, as were meat, dairy products and wool. Brassley, P. ‘British farming between the wars’ p.188 in Brassley, P., Burchardt, J., Thompson, L. (eds.) *The English Countryside Between The Wars: Regeneration or Decline?* (Woodbridge, 2006)

⁹² Dudley Stamp, L. *The Land Use Of Britain: Its use and misuse* pp.425-6

Case Studies

Bircham Newton

The only surviving First World War airfield, Bircham saw an unbroken operational history through to the mid-1960s. It was decided to base a peacetime bomber station here as part of the 1922 policy review, pre-dating the longer-term inter-war Expansion schemes of the 1930s. The site possessed contemporary hangars which, though supplemented with later C-type hangars in the 1930s, survived the war. Some 1922-style buildings survive which, together with the characteristic neo-Georgian permanent buildings, built to those very precise and exacting design standards, preserve a continuity almost unique to Bircham. As with many East Anglian airfields, the water supply came from boreholes. There were three here, supplying 100,000 gallons to storage tanks. The area is farmland, bordered by Honey Hills to the west but with marshy ground to the east. Hyde Park Plantation, Polney Plantation and Magpie Plantation were all close by the site but unaffected. A technical site was located in woodland at the southern boundary of the aerodrome. Total airfield area was 3.59 square kilometres and the perimeter ran to 11.84 kilometres.

The airfield pre-dated the Second World War. The contemporary landscape impact, therefore, was not especially increased when compared with other, newer airfields. It was a prestigious aerodrome and a focus of public engagement; in May 1939, 5,000 people watched a major air display.⁹³ A wide range of aircraft and functions operated from here over forty years, always from grass runways. Wartime operations saw accommodation expand to 3,000 by December of 1944. The 1950s saw consideration given to extending the runways to 2,000 yards but ground undulations would require heavy grading work.⁹⁴ From 1945 to 1962 Bircham was variously occupied by Fighter, Transport and Technical Training Commands and finally closed in 1962.⁹⁵ It has long been a training site for the Construction Industry Training Board but with extensive remaining contemporary architecture.

⁹³ Bowman, M. *RAF Airfields in Norfolk* (London, 2008) p.12

⁹⁴ Delve, K. *Military Airfields of East Anglia* pp.35-38.

⁹⁵ Bowman, M. *World War 2 RAF Airfields in Norfolk* (Barnsley, 2008) pp.16,17

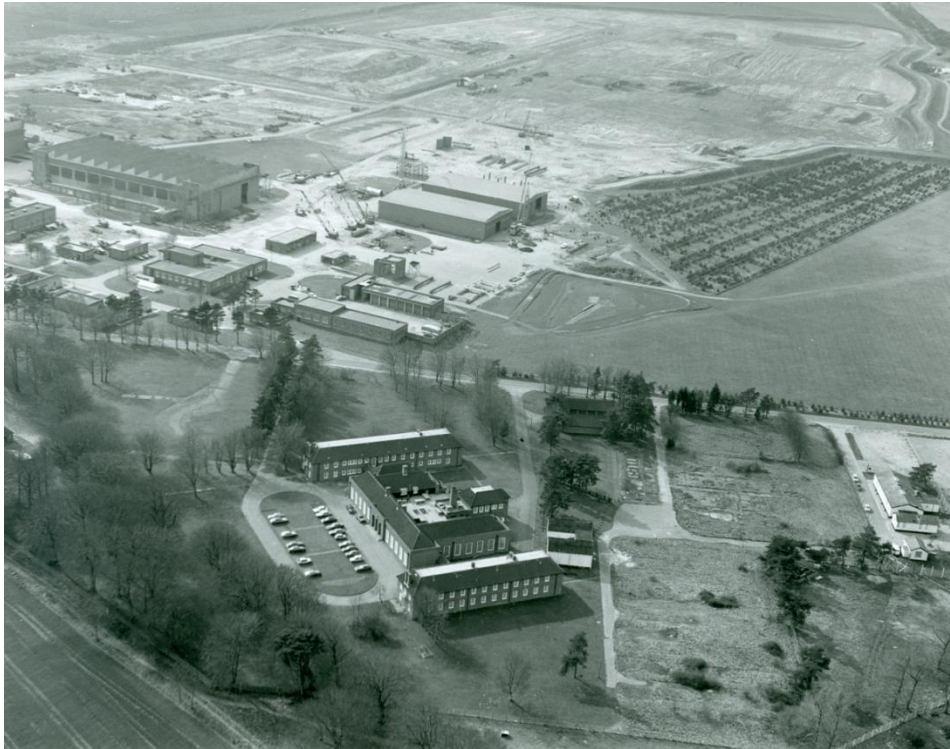


Fig.41 Bircham Newton in the 1980s with a complete C-type hangar and contemporary ancillary buildings fronting the main flying area, now used for construction industry training. Accommodation blocks are in the foreground.⁹⁶

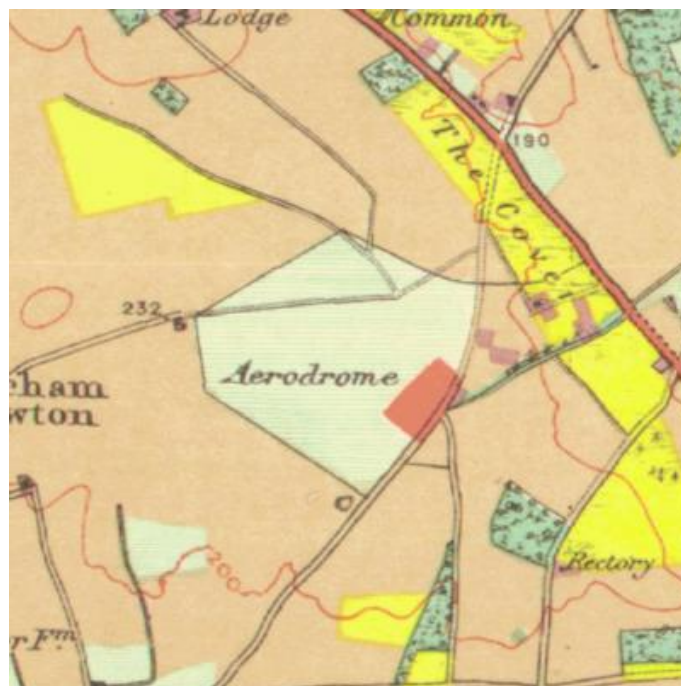


Fig.42 RAF Bircham Newton shown on the Land Utilisation Survey maps, which often show pre-war airfields as pale green, indicating them as areas of low agricultural production and/or grassland.⁹⁷

⁹⁶ Norfolk Historic Environment Record collection

⁹⁷ Extracted from Land Utilisation Survey of Britain, Sheet 66 www.visionofbritain.org.uk

Horsham St Faith

All airfields were rural except one – Horsham St Faith, at the outer fringe of Norwich. It presented a suitable large area of flat farmland, though immediately adjacent suburban areas to the south and west, and so was unusual in its proximity to a densely populated area. In 1938 farmland predominantly to the east of the main Norwich to Cromer highway was chosen on which to site a permanent RAF bomber station. The Land Utilisation Survey denotes the land as arable, with very small areas of new housing area or allotments. New residential housing and commercial building had been encroaching from the city for many years pre-war.⁹⁸ The main Norwich road ran north across the western side of the site and was diverted to where it remains as the present-day A140.

Map measurements taken from contemporary O.S. -maps suggest some 13.7 miles of field boundary was lost. Much of this must have been hedgerow and presumably a number of trees. About 2.25 miles of minor lanes and tracks were subsumed. Heath Farm remained, accessible from the North only; Wood Farm to the west had gone as had Heath Farm sited in the middle of the airfield. Just over 1 mile of the Norwich- Horsham St Faith village road was subject to major re-routing to the west, cut off completely by the new airfield.

⁹⁸ Mosby, J.E.G. *The Land of Britain: The Report of the Land Utilisation Survey of Britain, part 70 Norfolk* (Stamp, Dudley L (ed.), London, 1938). Definitions of ‘Arable Land’ includes ‘Fallow and Rotational grass’. ‘New housing or allotments’ often covered farmsteads of smallholdings and their central buildings.

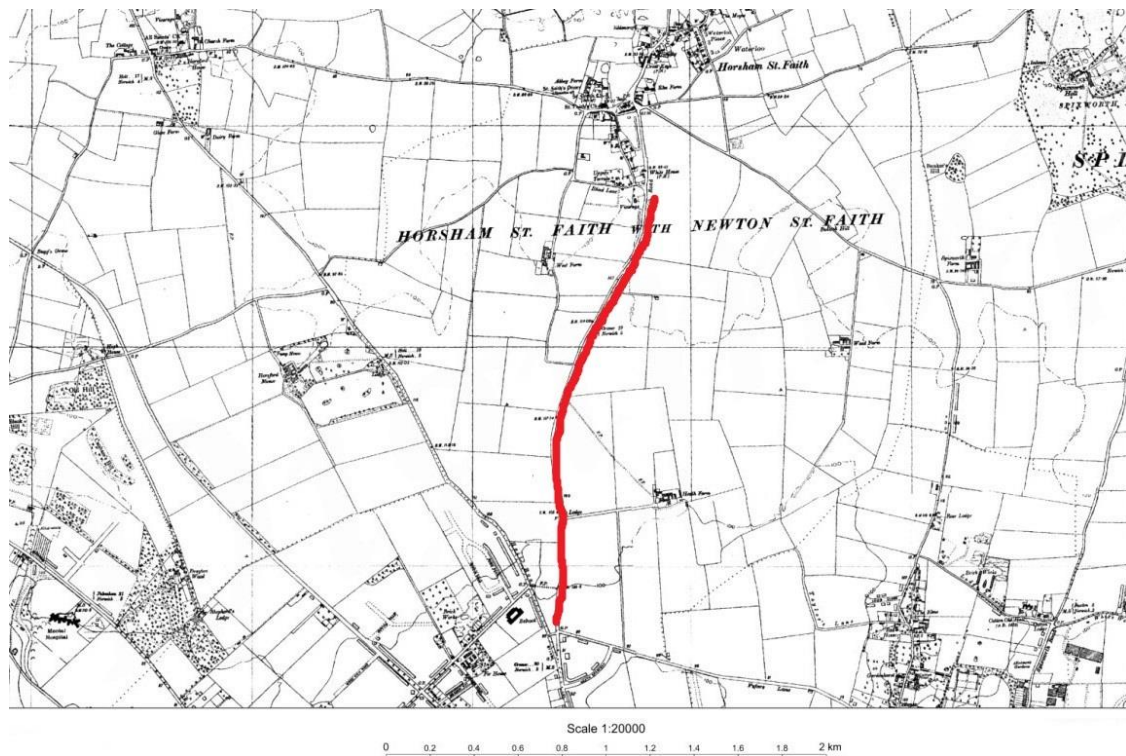


Fig.43 shows the original route of the main road to St Faith village before diversion. The central area became the extended airfield in 1943.⁹⁹



Fig.44 Horsham St Faith in 1940, showing the flying field and five C-type hangars in south-east corner. This spatial layout borders but does not block the St Faith road.¹⁰⁰

⁹⁹ Map created using 1:20000 Edina Historic Digimap Service

¹⁰⁰ Extracted from Norfolk heritage Explorer

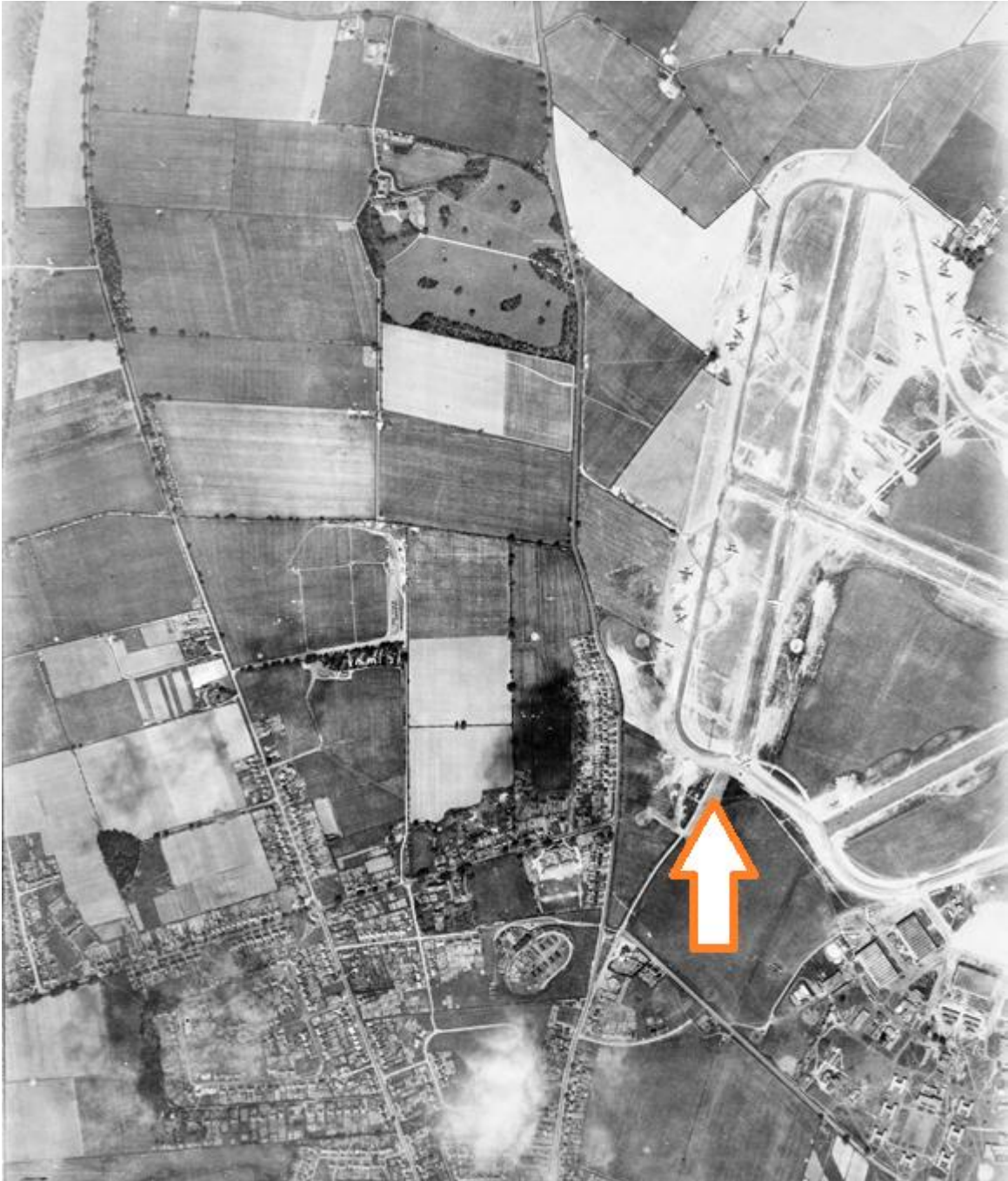


Fig.45 Redevelopment as a Class 'A' airfield in 1943 presented a much more intrusive configuration, and shows the closed-off Norwich road overlaid by the airfield western runway¹⁰¹

It is interesting to note that the decision to build was made before the outbreak of war and at least three years before the search for suitable wartime airfield sites began its most intensive phase. Whilst no definitive official record has come to light during the course of this

¹⁰¹ Photograph 27 May 1944: 7th Photographic Reconnaissance Group, sortie number US/7GR/LOC348. English Heritage (USAAF Photography) US_7GR_LOC348_RP_3195

research, it appears objective to conclude that topographic criteria simply took priority over community safety concerns. According to Freeman, the airfield proposal was not welcomed by the populace.¹⁰² Proximity to Norwich brought risk to the civilian population, sadly borne out by events. Six crashes occurred at urban sites, with two child deaths.¹⁰³ Building began in 1939 and the site opened for operations in 1940.¹⁰⁴ Five contemporary pre-war design C-type hangars were built at the south-eastern corner of the bombing circle. Permanent brick and tile buildings were constructed, with central heating and high quality accommodation, all in accordance with a typical permanent station layout. In September 1942 the airfield was transferred to USAAF. Construction work on upgrading to Class A standard began during 1943 and accommodation capacity was extended to two thousand.

Existing public concerns about safety and proximity were not allayed by the fact that the upgraded main runway was orientated in the direction of the city. In November 1940 a Blenheim bomber crashed narrowly missed housing to the south-east, crashing in a field, injuring the crew. One of the engines hit a nearby house, with no injuries. Another Blenheim crashed in a residential area of Hellesdon in May 1942, killing the crew.¹⁰⁵ As larger, heavier and more powerful aircraft, with more aircrew, came into service the potential for disaster increased. On 2nd March 1944 a B-24 failed to climb high enough before clipping the roof of a bungalow in Hellesdon, before coming to rest against a house in the next road. The bomb load did not explode and no civilians were injured, but seven of the ten crew perished. Whilst crashes clearly occurred in the vicinity of more rural sites, it seems providential that more regular incidents involving civilians did not materialise in the urban areas adjacent to Horsham St Faith. The accidents that did occur clearly vindicated the local populace's fears for the wartime present and post-war future.

¹⁰² Freeman. R., *Bases of Bomber Command* (London, 2001) pp.92-94

¹⁰³ Freeman. R., *The Mighty Eighth* (Aylesbury, 1970) pp.132, 134

¹⁰⁴ Freeman.,R. *Bases of Bomber Command* pp.92-94

¹⁰⁵

http://www.oldcatton.com/archive/featured_articles/007_blenheim_crash/1940_blenheim_crash.pdf
(accessed 12th December 2013)



Fig.46 A B-24 bomber crashed on a house in Berkley Close, Hellesdon on 14th January 1945. Eight crew members and two children playing in a garden were killed.¹⁰⁶

The total area encompassed by the flying area, buildings and accommodations in 1945 was nearly 1.42 square miles (911 acres). The total boundary distance, that is, the site perimeter was approximately 5 miles. Whilst it would be unrealistic to speculate that this entire area would have stayed under the plough in peacetime, even with the increased intensity of cultivation during wartime, it is a significantly large tract of land to be denied to agricultural use. The choice of proximity to the north-east boundary of Norwich was always controversial and has never been fully explained. Whilst occasional accidents on, and near, the environs of operational airfields were inevitable they were certainly less likely to cause human fatality and damage to property in a more rural setting; the risk was ever present in an urban environment. Indeed this continued to be a cause of concern to the populace of Norwich,

¹⁰⁶ American Air Museum, Duxford collection UPL 23061

expressed by Member of Parliament for East Norfolk, Brigadier Medlicott, in a House of Commons debate in 1948.

‘We have no wish to make any request which would embarrass the Air Ministry in the great responsibilities with which it is now faced, but we say that a grave mistake was made in the original siting of this air station..... and in view of the vast expanse of ground in the county which is suitable for airfields, why this particular site should have been chosen on the very fringe of the city passes comprehension. To the layman it does not seem as if this site has any particular tactical advantage over the many others that could have been chosen...’

To which the MP for Norwich North, John Paton, added:

‘The real truth is that this aerodrome should never have been put there at all. It is not only in the wrong situation but I am informed... that it is only possible for pilots to gain or lose height by manoeuvring over the City of Norwich itself. That seems to me to be an incredible stupidity on the part of whoever is responsible.’

Even the Under Secretary of State, Geoffrey de Freitas’ reply, appeared to concur and even empathised, but also misinformed the questioner:

‘...in recent years we have repeatedly examined the airfields of Norfolk to see if we are making the best use of them. We are satisfied that we are. We must not forget, in talking of the many airfields in Norfolk, that most of them have neither concrete runways nor permanent buildings. They are grass airfields. It is tempting to go back 11 years to the time of a Conservative predecessor at the Air Ministry and comment upon the wisdom of building this fighter station in 1937 on the outskirts of a great city like Norwich.’¹⁰⁷

The issue continued to fester in the public consciousness, as presented in Parliament five years later, again by Brigadier Medlicott. He formally petitioned on behalf of over 2,600 residents who were increasingly disturbed and anxious that:

¹⁰⁷ Hansard 24 September 1948 vol 456 cc1317-27. The statement ‘that most of them [airfields] have neither concrete nor permanent buildings’ was untrue and misleading.

‘...the nearness of this air station to so many houses and schools is a source of danger not only to the residents but also the pilots and crews of the aircraft... and, lastly, that with the increase in the speed and power of aircraft, all these tendencies will be increased with a consequent worsening of the conditions of which your petitioners complain.’¹⁰⁸

The east-west runway was extended eastward in 1956 to avoid take-offs and landings over built-up areas. RAF Horsham St Faith continued as a post-war military airfield until 1963, when it was sold to Norwich Corporation for redevelopment as Norwich Airport. Consequently the area was never to revert to agricultural use in any form. The accommodation areas on the south-eastern side of the site, both sides of Fifers Lane, were in used until 1993 as University of East Anglia student residences. Most of the A-class runways and dispersals tracks remain in but only the extended east-west runway is principally used as part of Norwich International Airport.

Matlaske

Matlaske is as different an example of land use and operational duration from Horsham St Faith as may be seen in Norfolk. By comparison it has left one of the lighter military aviation footprints in the county’s landscape. Originating as a satellite for RAF Coltishall, Matlaske was never redeveloped as a stand-alone or principal station. It therefore never had imposed upon it the massive constructional and logistical impact of concrete runways. Operationally, it varied on several occasions between RAF and USAAF occupation, and almost always by fighter aircraft requiring no more than grass landing and take-off areas, but with concrete perimeter tracks and hard-standing dispersals.

The area was requisitioned in 1940, a year into hostilities, as it became apparent that pressure on fighter parking at Coltishall necessitated a satellite field. The airfield was described as ‘hastily built’, leading to severe drainage problems throughout its operational life. Accommodation was established in the grounds of Barningham Park, with officers in the Hall itself, described as ‘charming’.¹⁰⁹

¹⁰⁸ HC Deb 17 December 1953 vol 522 c543

¹⁰⁹ Bowman, M. *World War 2 RAF Airfields in Norfolk* pp. 83-85

‘Then work began on the fields beside our school with round the clock working with heavy plant and lighting through the night.... This was to be an overflow airfield for Coltishall. The RAF also took over the Hall for officer's quarters and hospital.’¹¹⁰

Matlaske even became a prisoner of war camp for a time.

‘Hundreds of huts were being built in the park. It was not long before we found out what the huts were for, when our peace was shattered one evening... The road beside our house was filled with military vehicles and troops in all, and it took about three hours to pass through. The Americans were here, they had been airlifted into Sculthorpe air base and travelled by road to Matlaske Airfield, where they stored their vehicles, the troops billeted in the huts on the park. Just as suddenly as they arrived so they were to depart.

For a while the village was quiet then the huts in the park were filling up again, this time with Italian prisoners.’¹¹¹

Though technically a ‘grass’ landing area, areas of Sommerfeld net tracking were laid, made in Norwich by Boulton & Paul.¹¹² The 3rd US Engineer Aviation Battalion underwent training work at Matlaske, specialising in rapid airfield construction; they may have installed and removed Pierced Steel Planking and SMT of the type used in Normandy.¹¹³ There were only ever two directions of landing and take-off – one of 1,600 yards and another of 1,300. A variety of fighter aircraft operated from Matlaske and there is passing reference to the site being ‘unsuitable for Mosquitoes’ – a heavier aircraft – and one of the squadrons moving to Swannington in late 1944 because of the surface becoming waterlogged.¹¹⁴

¹¹⁰ Gray, Richard C. (contributor) *My life in Barningham 1938 to 1945*, BBC World War 2 People's War archive, relating to Ethel M Gray

<http://www.bbc.co.uk/history/ww2peopleswar/stories/46/a5472146.shtml>

¹¹¹ Gray, Richard C. (contributor) *My life in Barningham 1938 to 1945*

¹¹² Bowman, M. *World War 2 RAF Airfields in Norfolk* pp. 83-85

¹¹³ Delve, K. *The Military Airfields of Britain, East Anglia: Norfolk and Suffolk* pp.152-154

¹¹⁴ Bowyer, M.J. F. *Action Stations Revisited - The complete history of Britain's military airfields: No.1 Eastern England* p.251



Fig.47 Matlaske in June 1946. The lack of formal, concreted runways allow for speedy regression. Only the perimeter track and hardstandings were highly visible, being the only surface features made of concrete.¹¹⁵

The airfield was closed in October 1945 and reverted to agricultural use. Little remains of the wartime structures, the most significant being areas of concrete perimeter track and overgrown and partly demolished fighter pens.¹¹⁶

¹¹⁵ Norfolk Historical Collection, Gressenhall Museum

¹¹⁶ According to the Airfield Information Exchange, the Battle HQ was demolished by the landowner as recently as 2012.

Thorpe Abbots

The Norfolk County War Agricultural Executive Committee included Thorpe Abbots in a list of proposed sites that gave cause for concern because of the uncertainty over final decisions on choices of airfield sites. It had been known for some months in 1941 that Thorpe Abbots had been under consideration but no decision had been forthcoming.

‘We have continually been stressing the importance of a decision at Thorpe Abbots [sic], for the time has come when land of that character must be cropped, much of which should go in with wheat, if the Air Ministry do not want it.’¹¹⁷

Thorpe Abbots was built in late 1942 as a satellite for Horham, Suffolk as a Class A airbase. The main contractor, John Laing & Son Ltd., is said to have excavated 330,000 cubic yards of soil, and laid, respectively 149,000 cubic yards of concrete and 35,000 yards of tarmac.¹¹⁸ Typical of airfields designed originally for RAF use but then reassigned to the USAAF, the number of hardstandings was increased from 36 to 50. As was often the case in such hurried circumstances, there was still a good deal of work to do when the first operational units arrived. On one occasion an RAF Blenheim attempting an emergency landing on the partially completed runway and collided with the giant concrete mixers thereon.¹¹⁹

A local twelve year-old recalled the pressure on local services.

‘The local roads were narrow as they are today [2009] and were never intended to carry the thousands of tons of ballast and cement needed to lay the runways, dispersals and hut bases. A one-way system operated for lorries on and off the base but in spite of this the roads soon became rutted with a raised area in the centre on which cars grounded. Some local lorries were used but I can clearly recall the Dodge and Ford tippers imported from the U.S. and Canada... On one occasion one of the drivers had stayed too long at a local pub and veered off

¹¹⁷ TNA MAF 48/392 1 Aerodrome Construction programme, letter dated 6th October 1941 from Mr F. Rayns, Executive Officer of the WAEC, County of Norfolk to E L Mitchell at MAF on the subject of requisitioning, asking for help in obtaining decisions from the Air Ministry, lack of which are holding up agricultural production.

¹¹⁸ Freeman, R. *The Mighty Eighth* (Aylesbury, 1970) pp.216-219

¹¹⁹ Everett, K *Memories of Thorpe Abbots Airfield* p.3

the road into a hedge near where I lived, he was instantly sacked.’¹²⁰

Rapid construction was ever-hampered by mud, the heavy soil not taking well to being churned by heavy plant. The contemporary lack of security or spatial separation from the community is illustrated by the absence of guard posts on the approach roads, and the locals being able to wander around the aircraft parked near the public road. Even with later restriction it was possible to cross fields to access the dispersals areas. Following the first serious crash at Thorpe Abbots, local boys were able to collect unspent ammunition as souvenirs, open the bullets to extract the cordite and set the cordite ablaze.¹²¹ Local resident Ken Everett cites many examples of danger that the close geographic relationship brought to the civilian population. Aside from the many crashes that attended any large operational airbase in wartime, just one of them illustrates the bizarre and haphazard nature of proximity. A ball turret gunner on the airfield was removing the guns when one weapon fired by accident, randomly, in multiple directions. Not only were buildings and aircraft damaged, but local farmer Walter Brown escaped death or injury whilst enjoying a cup of tea at Rectory Farm as a bullet passed through the window and into a cupboard beside him.¹²²

Notable for the use of woodland stretching to the south and bordering the A143 Diss to Harleston road, for technical and domestic sites, accommodation for 2,900 was provided. The concrete runways extended to 2,100 yards for the main and 1,400 yards for the two transverse runways.¹²³ Sold in 1956, some relict buildings survive at the site; the control tower and several Nissen huts house a memorial museum. Much of the main runway remains intact. In principle however, the greater part of the site has reverted to agricultural use.

¹²⁰ Everett, K *Memories of Thorpe Abbots Airfield* pp2-3

¹²¹ Ibid. p.4

¹²² Ibid. p.15

¹²³ Delve, K. *The Military Airfields of Britain, East Anglia: Norfolk and Suffolk* (Marlborough, 2008) pp.224-225



Fig.48 Buildings construction in progress at Thorpe Abbots¹²⁴

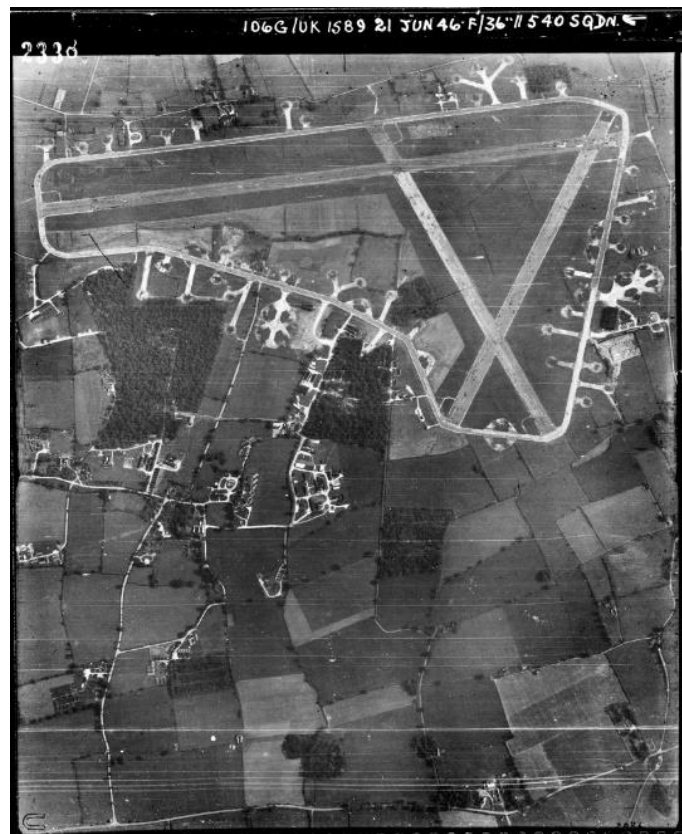


Fig.49 Thorpe Abbots 21 June 1946. A prime example, to the south-west, of use of woodland to accommodate dispersed sites.¹²⁵

¹²⁴ Mark Brotherton Collection

¹²⁵ English Heritage (RAF Photography). RAF_106G_UK_1589_FS_2338



Fig.50 Thorpe Abbots in the 1990s, showing woodland-based dispersed sites. No obvious World War Two remains are obviously visible but as of 2017 archaeological digs have revealed objects of interest.¹²⁶

Aftermath – redundant airfields

After the war and, indeed, before its end, the Ministry of Works dealt with the derequisitioning of land and claims for additional compensation related to the restoration of the land, via the Requisitioned Land and War Works Acts of 1945 and 1948. Some land was not returned for decades, if at all, because of continued military use or permanent structures having been built. For many farmers, though their land may have been returned, they found themselves having to bear the cost of removal of hard structures. In the case of concrete runways this was a daunting and expensive task.

Gazetteer publications often refer to ‘reverted to agriculture’. This generic phrase requires some definition and quantification to present the true picture. It seldom transpires to be a

¹²⁶ Operation WALBEA www.opwalbea.com/thorpe-abbotts/ (accessed 10th October 2013)

genuine reversion to agricultural use as understood in contemporary terms; and it is no simple task to return a concrete-surface airfield to former use; the removal of wartime airfield buildings is minor compared with the effort required to excavate concrete and hard-core runways. Contractors were said post-war to have paid £30 an acre to remove concrete, a typical runway yielding 100,000 tons capable of being broken up to provide hardcore for several miles of modern motorway.¹²⁷ Of the thirty-seven sites, thirteen, or 35 per-cent, could be said to have reverted completely to some form of agricultural use, though often fragmented by relict structures. Some airfields have had their concrete hard-standings utilised for intensive poultry rearing sheds, a practice unknown before the Second World War and which, therefore, should be seen as an entirely new function. Others have turned to hosting light industry and commerce on site. Four have developed some element of civil aviation, utilising wartime facilities. Two were partly incorporated into the STANTA military training area and of those, one, RAF Wretham, has become a nature reserve. Snetterton's runways formed the basis of the modern race-track. As of 2019 only Marham remains as a fully operational RAF base.

Post-war function	Number of sites
Agriculture	19
Poultry	4
Commercial / Light Industry	5
Civil aviation	4
Military aviation (part)	2
Military aviation (fully)	1
Military, army	1
Part agricultural, part STANTA	1
Part nature reserve, part STANTA	1

Table 4: Modern use of Norfolk airfields as at 2019

One issue which is seldom addressed in the historiography, perhaps because it is less visually obvious, is that of toxicity, or contamination. A sediment of aviation fuel, lubricants and other oils will have permeated the ground and its ingress will depend upon the nature and density of the soils. Concerns are presently being expressed over radioactive deposits

¹²⁷ Francis, P., Flagg, R., Crisp, G. *Nine Thousand Miles of Concrete - A Review of Second World War temporary airfields in England* (Airfield Information Exchange and English Heritage, 2016) p.24

associated with scrapped aircraft at sites across the UK, including Norfolk. The First World War airfield at Pulham, famously used for airship operations in the 1930s, though not an operational airbase in the Second World War, was used as a major aircraft salvage and disposal facility for the east of England during and after the Second World War.¹²⁸ The site is generally known to be contaminated by large numbers of scrapped, buried airframes. Press reports confirm findings of radioactive contaminants at Vaunce's Farm on the site. In particular, Radium-226 was used for luminosity in dials and instruments on military aircraft before and during the Second World War.¹²⁹ Elsewhere, Fersfield, Little Snoring, North Creake, Oulton and Swannington airfields were all used for redundant aircraft storage post-war. Seething was also used post-war for munitions storage. Whilst similar direct correlations with Pulham cannot be made without forensic investigation, storage of *materiel* and associated degradation should not be discounted when considering the subsequent re-use of airfield sites. Environmental contamination of the airfield landscape is an issue that will undoubtedly be investigated in even more detail in the future.

In summary it is, in landscape terms, that the permanent buildings of the pre-war stations survive to be preserved and re-used, whilst the operational flying areas have largely disappeared. Conversely; the runways and dispersal areas of the wartime bases have been more difficult to eradicate, but their buildings have proved to be far more vulnerable. In general, it is the pre- and early-war stations that saw extensive post-war service into the Cold War era and beyond; Marham, Feltwell and Coltishall, precisely because of their buildings infrastructures; and also Sculthorpe, built during the war but deemed suitable for retention after redevelopment in 1944 beyond Class A standard.

¹²⁸ Everett, K *Memories of Thorpe Abbotts Airfield* p.30. Wrecked aircraft were regularly transported to Pulham on 60 feet long low-loaders – ‘Queen Marys’ – which had difficulty negotiating narrow rural roads and junctions.

¹²⁹ Eastern Daily Press 19th Sept 2012 and the Diss Express 27th Sept 2012: Traces of a radioactive material were confirmed at a Norfolk airfield after seven artefacts were sent away for examination by scientists.

Conclusion

This chapter has drawn a distinction between the relatively low land use impact of the six pre-war airfields in Norfolk compared to the proliferation of successor wartime airfields; in particular the transition from grass runways to concrete, the nominal acreage subsumed by each site, and the level of operations increasing to an industrial scale between 1940 and 1944.

The fortuitousness of the East Anglian landscape being conducive to the siting and construction of airfields cannot be underestimated when compared with, firstly, almost any other large, contiguous region of Britain and, secondly, with its convenient proximity to the European mainland. Nor, even given that East Anglia generically offered an apparently predominantly flat and level landscape, can the importance of site selection criteria in terms of topography, soils, transport infrastructure, and existing land use be under-emphasised. Ironically perhaps, it was the fourth criterion, that of existing land use, that proved the most problematic, for it was a landscape very much required land for agricultural production. This is examined in more detail in Chapter Seven.

Airfields have also been shown to add a new dimension, that of the vertical, to the militarised landscape, presenting its own hazards to the landscape and local populace. Moreover the airfield is the category that transitioned from being a militarised landscape of defence and preparation to a landscape of offence and conflict, wherein enemy action engaged in and beyond that landscape. It is perhaps this last which has most served to reinforce the enduring cultural identity of the airfield in the landscape, along with the spatial relationships with adjoining agricultural land, the social impact upon surrounding communities and physical, visual presence which remains in evidence in all but a few locations across the county.

In terms of quantifying the impact on the agricultural landscape, a broad computation of total land surface in Norfolk, compared with total of agricultural land, against the acreage taken by airfields, produces a surprisingly small percentage:

Category acreages	1939 acreage	1944 acreage	1944 acreage	% agricultural land
Norfolk total land area (acres)	1,307,333	1,307,333	-	-
Crops and grass + rough grazings	976,746	982,615	-	100%
7 airfields @ 500 acres	3,500	-	-	0.36% (a)
38 airfields @ 600 acres	-	22,800	-	2.32% Increase factor from (a) = 6
Plus 20% allowance for dispersed sites	-	-	26,640	2.7% Increase factor from (a) = 7.5

Table 5: Land use by airfields against agricultural acreage in Norfolk¹³⁰

The maximum figure of 2.71 per-cent seems low, given the radical impact on hundreds of local communities of the relatively sudden appearance in their midst of what amounted to an additional small town, multiplied by thirty-eight across the county. An arithmetic computation can, however, be less descriptive than imagery in comparative terms. Twenty-first century Norwich covers an administrative area of approximately 13,000 acres, that is, around just half that of the maximum estimate for airfield coverage in Norfolk in 1944.¹³¹ In an additional convolution, Mr J Christie, chairman of Norfolk WAEC suggested in late 1946 that approximately 35,000 acres of airfields remained available to be handed back to farmers, exclusive of 3,324 acres already returned. If true, this would increase the percentage of agricultural land lost to airfields to 3.9 per-cent. The National Archives advises that, unfortunately, land acquisition records exist for only six English counties, not including Norfolk and so more precise figures are unavailable. The impact upon the agricultural

¹³⁰ Figures condensed from *Agricultural Statistics 1939-44, England and Wales Part 1* (HMSO, London, 1947)

¹³¹ TNA MAF 38/574, Land occupied by HM Forces taken over by service departments, 1940-48. 6th December 1946.

landscape might, then, be concluded to be less than severe in arithmetic terms but the figures need to be considered against the intensity of increase in agricultural productivity required contemporaneously. A quantitative approach cannot therefore fully, comparatively, measure the transitional disruption wrought by the four phases of airfield tenure described earlier – the requisition of land, construction, operations and long-term legacy. Nor can it begin to reflect the qualitative nature of rapid social, cultural and economic change over six, sometimes as little as two, intense years.

The next chapter will examine the impact and legacy of military training areas and their encroachment upon the landscape.

Chapter 4 : Military Training Areas

Introduction

It is in many ways a truism that the military is always preparing for war. Land for training purposes is a pre-requisite for a modern army and, to some extent, an air force. The principal training grounds used by the British army in the Second World War are well known; many others less so. As with airfields, much of Norfolk's terrain was ideal for land-based training. The profusion of sites represents the whole of the twentieth century, the county having experienced army training during The First World War in the form of, for example, trench networks at Weybourne and tank training at Berner's Heath on Lord Iveagh's estate between Elveden and Thetford, along with extensive infantry encampments at Barnham Cross Common. Major exercises took place across the county in 1912, predicated upon an invasion at Wells-next-the-Sea, sweeping southwards toward London, involving 30,000 troops and fourteen early aircraft used for aerial observation, in pursuit of modernising the British Expeditionary Force.¹ Modern military training had visited even before that, as early as 1906.² The Second World War however saw an unprecedented expansion of training facilities and their disruption to civilian and particularly agricultural life proved to be considerable. This chapter will assess the extent of their impact upon the county's working rural landscape and, in particular, the issue of long-term exclusion from domicile. Two case studies in particular will focus on radically different training areas in terms of use, profile, tenure and civilian disruption.

Historiography

Records in The National Archives provide an extensive and detailed chronology of the larger military training areas across Britain. This is especially so of the Stanford Battle Training Area, the largest training area in Norfolk, in greater part because of the associated controversy over the circumstances of requisition land and post-war continued controversy.

¹ Goulding, P. and Barry, J. *The Military History of The Brecks 1900-1949 – A Report by The Breckland Society* (Thetford, 2016) pp.9-11

² West Suffolk Record Office, map GB554/C7/1 shows part locations of 1912 manoeuvres. The 'Norfolk' section of the map is missing.

The negotiations between tenants, landowners, the County War Agricultural Executive Committee (CWAEC), the Ministry of Agriculture and Fisheries (MAF), the Army and the War Office demonstrate the strenuous efforts from all parties to reach some form of realistic agreement up to the point of final ultimatum from the military. Equally informative are the documents that chart the post-war controversy over land not returned to occupiers and owners after the cessation of hostilities. Documents can consequently be found across Ministry of Agriculture, War Office, Home Office, Cabinet Office and Air Ministry. Considerable lateral investigation is required to correlate their contents and ensure continuity of chronology, though the post-war period tends to gravitate towards Home Office documentation due to wider national and political interest in the unresolved issue of civilian evacuation. Landscape historians have incorporated the Stanford episode into twentieth-century agricultural histories; its fascination lies in the oddly blank area that appears on any modern map of Norfolk to the north of Thetford, bordered by Mundford to the west, Great Hockham to the east and Bodney and Watton to the north.³ Local and personal histories abound, inspired by the controversy arising from the eviction of the population. Perhaps the most moving and illustrative example is the autobiographical account by Lucilla Reeve, an enigmatic, determined and tenacious figure who took on the tenancy of a farm which would, in 1942, be subsumed by the Stanford training area; her account is both informative and engaging thanks to her description of farming in The Brecks in the immediate pre-war and wartime period, along with her encounters and negotiations with the military authorities.⁴ The drama of the civilian eviction continues to resonate to the present day, with features in local and regional media, often re-worked to include some new aspect pertaining to an individual's experience or memory.⁵ More recent research has focused on the conservation and environmental perspective, arising from the fact that undisturbed areas of the training facility have safeguarded important flora and fauna – of which the Ministry of Defence makes much in its

³ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes, 1870-1950* (2008)

⁴ Reeve, L. *Farming on a Battlefield - by A Norfolk Woman* (1950, reprinted Wymondham 2000)

⁵ 'My father was told his home no longer existed...' Eastern Daily Press, 30 January 2019

<https://www.edp24.co.uk/news/memories-of-tottington-one-man-s-story-of-losing-his-childhood-home-1-5871540> (accessed 16 Nov 2019). Colin Hunt described being evicted as a nine-year old; 'Help bring Norfolk's abandoned war villages to life...' Eastern Daily Press, 2 December 2010 <https://www.edp24.co.uk/news/help-bring-norfolk-s-abandoned-second-world-war-villages-to-life-with-your-photos-and-letters-1-743083> (accessed 16 Nov 2019)

assumed role as a conservator of the countryside. This theme of military environmentalism is a study in itself, described by Woodward as ‘khaki conservation’ or military ‘greenwash’.⁶

It should be noted that, contrary to the documentary and archaeological evidence that supports investigation into Stanford and Fritton, little survives to mark activities at the many short-term, much smaller training sites that proliferated across Norfolk as temporary measures associated with wartime military exercises or garrisoning.

Strategic background

Following the evacuation of the British Expeditionary Force from Dunkirk in 1940, retrenchment and consolidation were the over-riding priorities for the returning army, paralleled by the need for readiness against invasion.⁷ Geo-strategically, ongoing successes in North Africa through 1941 were about to be reversed following the arrival of Rommel and the Afrika Corps and further overshadowed by setbacks and military humiliation in Greece and Crete in early 1941, followed by the fall of Singapore in February 1942. And yet 1942 was a key year for the British war effort. Retrospectively it marked the chronological midpoint of the Second World War – at least as understood by the British. It witnessed the first real British military and strategic successes of the wider conflict – particularly those of the Second Battle of El Alamein and the Anglo-American invasion of French-occupied North Africa. Strategic retrenchment had, however, begun to turn to offensive planning well before this point, even as the threat of homeland invasion receded. In the context of pursuing the war to a conclusion, plans were already being formulated for invasion of the Axis-occupied European mainland. The raid on St Nazaire – a largely naval operation – in March 1942 and the combined services Dieppe Raid in August point to the determination of political and military strategists in testing military capability. The latter was a disaster in human and logistical terms, underscoring the need for realistic and relevant training.⁸

⁶ Woodward, R. ‘Khaki conservation: an examination of military environmentalist discourses in the British army’, *Journal of Rural Studies*, 17 (2001), pp.201-17; Woodward, R. *Military Geographies* (Oxford, 2004) p.102

⁷ French, D. *Raising Churchill’s Army – The British Army and the War against Germany 1919-1945* (Oxford, 2000) p.184

⁸ In fairness, the majority Canadian contingent did receive amphibious assault training, but there was no comprehensive training strategy for all involved.

Churchill's view in March 1941 was that it was impossible for the Army to play any significant role in defeating Germany. Home defence remained a priority for the Army until 1942. Up until then home forces were training to repel a well-equipped and highly trained German invader.⁹ In fairness, this did not mean they trained to fight defensively; offensive tactics were employed, and provided the basis of subsequent large-scale training. Some radical thinkers within the Army had proposed a new emphasis on mobility and surprise tactics, as opposed to the conventional doctrine of superior firepower, but change was slow.¹⁰ With British military strategy having moved from the defensive to the offensive, land was needed for training of infantry and armoured units on a thereto unforeseen scale. This then, was the context for the establishment of new, expansive, training areas, facilities specifically designed for that phase of military activity which precedes offensive operations. The ever increasing need for army training areas was a recognition of the need to employ modern operational tactics and strategies, in realistic environments with live ammunition and, especially, large areas in which to manoeuvre modern mobile armoured units. This, along with the subsequent progress of the war and the strategic long view, led to a huge expansion of militarily occupied land.

The national scale of military training

In September 1939 the British army occupied 235,000 acres of land, not including that utilised for training. By February 1944, training areas alone accounted for 9.8 million acres.¹¹ By June of that same year, three and a half million military personnel were based in England, with 11.5 million acres – almost twenty per-cent of the entire land surface of Britain – being under some form of military control.¹² By that time, the influx of American service personnel, along with those of exiled nationals, had greatly added to the roll call, and eighty-five per-cent of militarily controlled land had being given over solely to training. The great majority of land requisitioned did not involve the exclusion of civilian residents but

⁹ French, D. *Raising Churchill's Army – The British Army and the War against Germany 1919-1945* (Oxford, 2000)p.185-6, 196

¹⁰ Ibid. p.199 Equipment and ordnance shortages, along with a severe shortfall of land on which to train, was not addressed in practice until the South Downs battle training area was opened in March 1942, later to be closed, with room for a whole brigade to exercise in anything approaching a realistic situation.

¹¹ Schofield, J. *Modern Military Matters –studying and managing the twentieth-century defence heritage in Britain: a discussion document* (Council for British Archaeology, York, 2004) p.7

¹² Rowley, T. *The English Landscape in the Twentieth Century* (London, 2006) p.315.

evacuation was to prove the most contentious issue for the largest training area in Norfolk. The effect upon the contemporary landscape was often temporary; it is the longer-term impact of certain training areas that are most historically and culturally significant.

Understanding militarised landscapes

In the landscape context, training areas and bombing and gunnery ranges represent a sub-category of the militarised landscape which may be categorised as landscapes of military *preparation*, as opposed to subsequent offensive operations, logistics, administration or homeland defence. Moreover these are, typically of military installations imposed on a civilian environment, *contested* landscapes. Unlike airfields, training areas were not necessarily characterised by extensive areas of land disappearing under concrete or tarmac – the objective was to find terrain that best matched where the military was anticipating future operations to take place. However, the dichotomy for the larger training areas is that they denied to alternative use extensive contiguous areas of land; in that sense, training areas had more potential disruptive impact on the regional landscape than any individual airfield or defence installation. This new concept was relatively rare in Norfolk up until 1942, a county well known thereto for its military training activities. They were few in number and though Norfolk had historically been a defended landscape, extended offensive training sites were rare. They would come to subsume vastly greater areas of working land and, in some instances, on a permanent basis. As will be seen, the chronologies of significant training landscapes were heavily characterised by the personal influences of key administrative, political and military figures, some partisan and some with a keen sense of social accountability.

Norfolk's training sites

A wide variety of military training sites can be identified through listings at Norfolk Heritage Environment Record. Most were temporary, and clearly associated with adjacent encampments, airfields, defended areas, coastal defence installations, anti-aircraft batteries or barracks. Other sub-genres, such as bombing or gunnery ranges, had no ongoing garrison presence, were relatively remote and, despite mapped demarcation, are somewhat nebulous in

their chronology. Examples include the Brest Sand coastal bombing range at The Wash, for which records remain, but it impacted little on the adjacent landscape although in use into the 1950s.¹³ Still others manifested themselves in a ‘mayfly’ existence of very limited duration, a bizarre example being a temporary airstrip at Kelling Heath, apparently hurriedly created for a one-day D-Day preparatory exercise by DC-3 transports of the USAAF.¹⁴ These are relatively insignificant as occupiers of their landscapes – though landowners were undoubtedly inconvenienced - and they present a very light landscape footprint. Stanford, by contrast, and by far the largest training area in Norfolk, proved to be contentious and controversial from its inception in 1942 and well beyond the end of the war. Fritton Lake to the east, small in area, intensively utilised late in the war and unused after the mid-1950s, is all but forgotten as a military site. Weybourne on the north Norfolk coast, in addition to the intensive anti-invasion defences of 1940, hosted a busy anti-aircraft training facility, as did nearby Stiffkey. Further west along the coast Titchwell and Brancaster were the locations for armoured and amphibious training exercises. Snettisham Scalp was the site of a gunnery range from the First World War, further utilised for USAAF aerial gunnery practice from 1943. To the south lay the bombing range at North Wootton. Bombing ranges were also incorporated within the Stanford Training Area. The coastal locations were thinly populated, thereby minimising public disruption, but also offered suitable conditions for air, amphibious and ordnance training.

¹³ TNA AIR 2/10927 Re-siting of Brest Sands bombing range

¹⁴ Norfolk Heritage Explorer NHER 23129



Fig. 51 Principal training areas in Norfolk¹⁵

Two contested landscapes

By mid-1941, the Army's Land Commissioners had already turned their attention to an area of south-west Norfolk. There was indisputably a need to practise manoeuvres on land whose topographical characteristics emulated those to be found on mainland Europe. One important criterion was that of physical open space in which to manoeuvre large armoured formations, off road, and with few physical obstacles; a second was that Breckland's topography and flora were similar to much of the continent. The Thetford area within Breckland also had a history of military training from the First World War. Moreover it was believed that the land was of poor agricultural quality, though this was rather a superficial assessment. Breckland therefore stood little chance of escaping the attention of the War Office surveying suitable areas for training. In the end, the polite considerations of disruption to agriculture and displacement of civilian population were over-ridden.

¹⁵ Stanford / STANTA boundary geo-referenced from TNA WO 32/9841 Training: General (Code 35 (A)): Training areas: armoured formations

Two individual areas stand out as significant training landscapes, each with unique characteristics and operational histories. By far the single largest, most extensive intrusion into the wartime landscape of Norfolk was – and still is - the Stanford Training Area, centred to the north of Thetford.¹⁶ Stanford, along with the second largest training site at Fritton Lake or Decoy, is rare as a military site dedicated exclusively to both wartime contemporary and post-war ongoing training. These two sites therefore are particularly worthy of detailed attention, not least because their topographic characteristics and military utilisation were entirely different.

Stanford equates to Otterburn in Northumberland and Salisbury Plain in Wiltshire as a significant contemporary and subsequent consumer of regional landscape; but it stands apart from those comparable contemporaries in that it was devised and created during the war. Half the size of Otterburn and smaller still than Salisbury Plain Training Area, Stanford was a Second World War project, Salisbury Plain having been developed from 1897 and Otterburn from 1911. Moreover, Stanford, though marginally agricultural productive compared to all other regions of Norfolk, still had considerable potential for expanded wartime food production. The quality of the land proved to be a factor in its selection, though not the primary criterion. In late 1941, Breckland – ‘an area of low agricultural value’ – defined as an area of 24 miles north to south and 12 miles east to west, fitted the requirement for open country of ten to fifteen miles depth and width deemed suitable for training an armoured division. Most of the land required would be requisitioned under D.R.52 though some, particularly that owned by the Forestry Commission, might be subject to the more stringent D.R. 51. To clarify, the whole of the ‘Thetford’ training area was 117,000 acres, exclusive of the proposed Stanford Battle Area. It was the Stanford area that would be subject to requisitioning under Defence Regulation 52.¹⁷ At this early stage MAF had already expressed its objection though Norfolk CWAEC recognised the inevitability of the army moving in. CWAEC Executive Officer Frank Rayns met the newly-arrived Major-General Crocker, G.O.C. 6th Armoured Division, as early as 26th May 1941 and it was resolved that though the southern area would be mostly on Lord Iveagh’s land on the county border, the northern – and ultimately most contentious sector – would be for the C.W.A.E.C to negotiate

¹⁶ Contemporarily known as the Stanford Battle Area but of late the word ‘Battle’ has been substituted with the softer ‘Training’. The area is now known as STANTA, but throughout the text ‘Stanford’ will refer to the whole training area unless otherwise stated.

¹⁷ TNA WO 32/9841 Requisitioning of Land for Large Scale Training Exercises, 1941-44 Treasury memorandum 4th October 1941.

over. Its significance however came to be heightened by the compulsory evacuation of the inhabitants of six villages to allow the subsummation of 118,000 acres of land. This, when associated with the post-war refusal to allow residents to return to their homes and pre-war livelihoods, generated a controversy which remains unresolved for many of the descendants of those evicted, and which is still examined regularly by the media. The circumstances give meaning to the expression ‘contested landscape’ and have become part of the popular culture and social history of the area.

‘The Army must have land on which to train and the population and the Services must have food to eat... Although troops may have a legal right to train over land they should remember that it has been ploughed and tended for generations and it may therefore be difficult for the farmer not to regard them in the light of trespassers’ .¹⁸

Given that the army had to be trained somewhere there was clearly some contention about the choice of Norfolk, considering the profusion of air bases being built at the same time. Again, land would be denied to agricultural use but even a cursory overview of contemporary land use indicates that Stanford was very much on the geographic periphery in terms of existing land use, soil quality and population. Although Stanford and Fritton qualify as contested landscapes the two sites were quite different in terms of their landscape features and typologies, not least because a large proportion of Fritton comprises water – and water was a pre-requisite for the specialised training planned there. The point is that the military requirements for each were completely different. Planning for Stanford was under way in 1941 at a time when large-scale armoured vehicle training at divisional level was innovative; the physical area required was bigger than anything yet proposed in the east of England. Fritton was utilised just two years later, in pursuit of highly specialised, secretive and smaller scale operations.

¹⁸ TNA WO 199/802 Cole Committee ‘Guide to the use of land for Training 1942’

Stanford

The agriculture and geography of Breckland

Stanford was located in the northern part of a broad swathe of that very particular district of Breckland, and one that possessed a distinct social and farming culture of its own. Much of the land was considered marginal because of the poor, sandy soil. Only half the land was under the plough, the remainder being given over to grazing.¹⁹ As marginal land, during the 1930s many tenant farmers had paid no rent, whilst others had absconded when unable to pay workers' wages.²⁰ The new practice of afforestation with conifer plantations was well established as a significant function of land use in Breckland by the beginning of the war.²¹ The Forestry Commission was established in 1919 as a direct government response to huge depletion of timber resources during the First World War. Many Norfolk estates were being sold or broken up in the 1920s or being used for game shooting rather than agricultural production and Breckland in particular was characterised by decay and neglect, as indicated in the Commission's acquisition reports.²² 1922 saw the Commission's first purchases, near Swaffham and Elveden, then buying up estates on poorer quality marginal land at Downham Market, Lynford, Weeting, Didlington and Croxton. Extensive blocks of land were purchased up to the early 1930s; by 1939 the Forestry Commission controlled 59,000 acres, about three-quarters of which was freehold, the remainder on long leases up to 999 years.²³ All this contributed to a culture of separation for Breckland, an identity all its own, characterised by small settlements and yet the district was no stranger to incomers. The 1930s saw unemployed workers from the depressed North of England being resettled in the area and, in a radical measure reminiscent of reactionary political response, labour camps were established by the Ministry of Labour from 1928. The ultimate aim was to encourage overseas settlement, and four of twenty-two camps nationwide were sited in Breckland.²⁴ The area was however considered ecologically important. At the start of the century naturalists viewed heathland as of special ecological interest, and Breckland in particular as one of the

¹⁹ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes, 1870-1950* (Woodbridge, 2008) pp.36,37

²⁰ Douglas Brown, R. *East Anglia 1942* (Lavenham, 1988) p.180

²¹ *Ibid.* p.137

²² Wade Martins, S. and Williamson, T. p.80.

²³ *Ibid.* pp.97,99

²⁴ *Ibid.* p.102

most important in East Anglia, perhaps nationally.²⁵ The Norfolk Naturalists' Trust purchased Wretham Heath in 1938, followed by Weeting in 1942.

Breckland is a good location for a military training area for two predominant reasons; partly because it comprises some of the poorest agricultural land in Norfolk, and also because it was one of the least populated areas of the county.²⁶ Though being poor quality land is not necessarily itself a pre-requisite for selecting land for military use, it becomes an important factor when assessed against neighbouring landscapes, and so it was to this land of a mixture of middle-class leisure pursuit and expanding forestry that the military's attention turned in 1941.

An inevitable choice of site

‘You will see that reconnaissances have been carried out in conjunction with the Ministry of Agriculture in order to discover an area in East Anglia suitable for use by armoured formations.’²⁷

The Stanford Training Area was established in 1942 as part of the overall national military strategy of training for the later invasion of Europe. Detailed reconnaissance of the area had been carried out as early as April 1941, however, which raises a genuinely interesting question as to the extent of geo-strategic aspiration and associated military forward planning. In 1941 the British armed forces were in no position strategically, militarily, numerically or technologically to pursue a war on another front. The immediate threat of German invasion of the British mainland had receded slightly by the end of 1940 and a vast amount of German military resource had been committed to Operation Barbarossa, the invasion of Russia, from June 1941; and the United States had not yet entered the war. Yet the more forward looking of British strategists were looking to the offensive. The War cabinet and Chiefs of Staff still assessed the risk of a German invasion as high.²⁸

²⁵ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia* p.134

²⁶ Ibid. p.22 Wade Martins and Williamson succinctly summarise the Brecks as ‘an area of singularly appalling soils’.

²⁷ TNA WO 32/9841 Requisitioning of Land for Large Scale Training Exercises, 1941-44; Memorandum alluding to areas marked on a map of what would become the Stanford Training Area.

²⁸ TNA AIR 8/476 Anti-invasion plans – discussions; War Cabinet and Chiefs of Staff secret document COC (41) 173 dated 5th March 1941 ‘Likelihood of Invasion of the British Isles’:

‘Everything points to the most strenuous endeavours by Germany to win the war in 1941. Economic evidence in particular supports the view that German hopes for a short war.... If she could succeed in bringing in Japan, without the United States coming in our side, she would have hopes of success without having to attempt invasion.’

Given that it was thought the United States would enter the war eventually, and therefore Germany would strike before the might of American contribution was fully deployed, the Chiefs of Staff considered that an urgent change of strategy was needed. The raid on St Nazaire – a largely naval operation – in March 1942 and the combined services raid at Dieppe in August of that year, point to the determination of political and military strategists in testing military capability. The Dieppe Raid in particular could not have been undertaken without intensive training exercises.

Therefore the search for open, accessible areas of land for training of armoured formations was under way early in 1941. Fourteen areas and regions nationally were considered but East Anglia was judged to offer the most favourable conditions.

‘Several of the areas which have been offered are suitable from the Ministry of Agriculture’s point of view, since they consist in the main of moors and heathland, i.e. BODMIN MOORS (sic), EXMOOR etc. but the disadvantage is that the ground is either exceedingly rocky or very swampy and therefore presents a considerable obstacle to the free movement of armoured divisions.’²⁹

The Welsh Border country presented a workable terrain but was so far distant from existing locations of armoured formations that it was logistically impractical and the south-east of England was too enclosed.³⁰ In conjunction with the Ministry of Agriculture and Fisheries, as represented by the County War Agricultural Executive Committees, the army investigated the heathlands between Woodbridge and Hollesley, Bridgham and Brettenham Heaths, east of Thetford. Cavenham and Mildenhall Heaths and heathland between Barton Mills and Elveden were reconnoitred. Massingham and Grimston Heaths and ‘the poor, gravelly soils adjacent thereto’ up to the eastern approaches of King’s Lynn including Roydon Common and

²⁹ TNA WO 32/9841 Requisitioning of Land for Large Scale Training Exercises, 1941-44

³⁰ Ibid. Memorandum from Min of Agriculture to General Pope, Commander, Armoured Fighting Forces

Grimston Warren were all considered, as were East Rudham Common and – again – ‘poor, gravelly soil’ between Fakenham and Docking. Breckland, described as running from Swaffham to within a few miles of Bury St Edmunds, with an average width of about ten miles was the inevitable choice.³¹ This last point is key. An armoured division required an area of around twenty miles in width and similar in length in which to advance as a cohesive unit operating on a broad tactical front. For this purpose an extensive, contiguous, connected area of land was essential. Most existing training areas could accommodate one armoured brigade at a time; Breckland was deemed able to accommodate three. It was quickly decided that one brigade of 9th Armoured Division and two of 6th Armoured could train there.

Two further factors, albeit temporary, arose in choosing Stanford. At a meeting In April 1941 General Crocker, GOC 6th Armoured Division, presided over a meeting at which he reminded delegates that Breckland was closest to a potential invasion landing, still thought possible at this time; and his division was already billeted in the nearby Newmarket area. He added that ‘Thetford heathland offers the most suitable areas of low grade agricultural land where a measure of freedom of movement might be possible.’ Frank Rayns, Executive Officer of Norfolk CWAEC is recorded as stating that the land could be spared for such use.³² Six months later Exercise ‘Bumper’ demonstrated that the army’s mobile units were still inclined to be road-bound, rather than deploy across country; cross-country training was a mindset to be acquired, and only through practical training.³³

Forestry Commission

In the case of the Thetford area two prime interests were originally concerned, that of agriculture (and by association, the Ministry of Agriculture) and the Forestry Commission. The latter had already acknowledged the necessity of conceding adequate tracts of land for the training of armoured divisions. The inevitable questions for both parties was how much and under what conditions. It seemed, optimistically, that Defence Regulation 52 might suffice for the locations required.

³¹ TNA WO 32/9841 Requisitioning of Land for Large Scale Training Exercises; MAF recommendation 18th April 1941

³² Ibid. Meeting of CWAEC, Forestry Commission and Army presided over by General Crocker, April 1941

³³ Ibid. Memorandum 25th October 1941 from Army Council Secretariat regarding requisitioning of land for training.

‘It is unlikely we shall have to requisition any of this area. Since you are doing [sic] liaison with the Ministry of Agriculture in connection with DR52 area, I take it you will also deal with the Forestry Commission’.³⁴

This was of course, for some of the local populace, to end rather differently, and this is why Stanford is worth investigating as a particular case study. It is a prime example of the concept of identity in and identification with the landscape, and how long-established human interaction with the landscape came to be radically disrupted. The human aspect is reflected in two phases of narrative – between 1941 and 1944, within which requisition, eviction and wartime training took place, and a further period to 1950 when anticipated derequisition did not happen.

It is perhaps a measure of how seriously the proposition of the acquisition of such a large area of land was taken that a meeting on 10th May 1941 was attended by no less than eight generals. The area was primarily required for 6th Armoured Division for which it was decided that ‘Thetford will provide adequate facilities if two conditions are overcome (1) forestry areas taken over (2) recently ploughed land taken over.’³⁵ An associated memorandum added 9th Armoured Division to the equation with the succinct summation that ‘thus it will be seen that the taking over of the Brecklands area is of first importance.’³⁶ Negotiations with the Forestry Commission began the following month. Major General J T C Cole, then president of the Army’s Claims Commission, communicated personally with the Commissioner of the Forestry Commission to agree a way forward.³⁷ Military vehicular training conventionally, but unrealistically, took place on roads. The idea of training across open countryside, particularly farmland, was novel. The army recognised that there would be real difficulty in persuading troops ‘to leave the roads and run across land which is obviously bearing crops when the situation demands this.’ The same memorandum appears to demonstrate an understanding of the damage that the fauna of the area could wreak if, as was

³⁴ TNA WO 32/9841 Requisitioning of Land for Large Scale Training Exercises; Internal Lands Office (Army) memorandum to Ministry of Agriculture 29th May 1941.

³⁵ Ibid. Minutes ref: HF/6045/17/RAC. Repeated mention of ‘Thetford’ refers to the general area, not the town itself.

³⁶ Ibid. Undated but associated memorandum ref: HF.6035/RAC to the Under Secretary of State at the War Office.

³⁷ TNA WO 32/9841 and TNA WO 199/802. The Cole Committee was established on 6th January 1942 under the chairmanship of Major-General H.C.Cole, Claims Commissioner and Inspector of Lands, as a permanent body to encourage liaison between the army and other service departments, interested authorities and other agencies.

suggested, fences were removed to facilitate manoeuvrability. 'In many parts of the area rabbits will cause more damage than tanks.' Alternatively it could be a deliberately cynical underemphasising of the potential damage caused by armoured vehicles. Conversely, a companion memorandum does note that 'Considerable negotiations and adjustments will be necessary as this area is cultivated and in addition there are two established rabbit warrens.'³⁸

Military training already took place in the Brecklands, and indeed had done so during the First World War, but it was fragmented in nature by its avoidance of existing agricultural and general civilian activity. The army was conscious of the need to avoid damaging crops under cultivation, thus far.

A meeting of interested parties in May 1941 established the realities of military requirements. Major General J T Crocker explained that at least one armoured division would be stationed in the Thetford area for the duration of the war and that the area was one of the most likely to be affected in the event of invasion.³⁹ This is a significant statement as it underlines the ongoing concern about an invasion threat even in mid-1941, suggesting both an offensive and defensive role for armoured training. Crocker went on to explain that the existing billeting area west of Newmarket offered no scope for off-road training 'owing to high grade agricultural development.'⁴⁰ Thetford simply offered the most suitable areas of low grade agricultural land where a measure of freedom of movement would be possible. Even where areas of heath were relatively small, such as Berners, Cavenham and Lakenheath Heaths, it should, Crocker suggested, be possible to conjoin them.

Two important considerations were agreed upon by all parties, that of the negative effects on food production and forestry. These might appear obvious in context but the detail is significant. It was deemed important to try to use ground which minimised the adverse effect on national food production, though 'not in the interests of private individuals but in the public interest'. The proposed training area was provisionally demarcated as 'Southern' and 'Northern', the former being centred on Elveden with Lord Iveagh being the only landowner, whilst the interests of landowners and tenants in the latter would be represented by the

³⁸ TNA WO 32/9841 Requisitioning of Land for Large Scale Training Exercises

³⁹ Crocker was the first commander of the new 6th Armoured Division in September 1941, moving to Eastern Command at the time Stanford was first being surveyed. *Mead, Richard (2007). Churchill's Lions: A Biographical Guide to the Key British Generals of World War II. Stroud: Spellmount. p.106*

⁴⁰ TNA WO 32/9841

CWAEC. The army recognised that the proposed Northern area was more problematic but the CWAEC felt committed to the inevitable. Executive Officer Frank Rayns in fact suggested that

‘food production did not worry them much, and if it was necessary to take any land, the south-west of Norfolk was the area most easily spared.’

This was pragmatic, coming from a senior agricultural representative whose role was to consider the interests of farmers and landowners across the county as a whole. In response, General Crocker clearly stated that the army must be prepared to compensate the small farmer, for damage under D.R.52, promptly and generously, adding encouragingly that ‘many farmers might never see a tank on their land’⁴¹

It was requested that troops be educated to avoid unnecessary damage to crops and that recently planted Forestry Commission areas that could not produce timber for the next four or five years would be made available for training. Lord Iveagh raised no objection other than a request that crops being grown to feed his stock should be protected. Suffolk WAEC raised concerns about more highly-developed agricultural land in the Southern area. General Crocker frankly explained that perhaps seventy per-cent of young trees might be destroyed and, where concerns were raised about rabbit damage, that the relevant plantations could simply be written off. All concurred that swift agreement had to be reached but perhaps few, even the army, appreciated the long term implications of such large tracts of land being ceded for military training. Subsequent internal correspondence within the Army Council Secretariat expressed the inevitable need for intensive training practices which would impact severely upon any mutually inclusive land use. It became clear by late 1941 that nothing less than unrestricted access over a substantial area would do, to allow

‘...new armoured formations to train in a realistic manner... and be equipped to meet German armoured forces on equal terms. The road-bound mentality engendered by present training restrictions... would lead the army to ...suffer

⁴¹ TNA WO 32/9841 Minutes of meeting 26th May 1941, attended by senior representatives of the army, agricultural interests and the Forestry Commission.

heavy casualties and risk disaster when it again meets the Germany army in the field.’⁴²

Those last few words, by default or design, emphasise the importance of everyone, civilian and soldier alike, in helping support the army improve its capability. Further pressure on Breckland resulted firstly from a reconnaissance of Pockstones Moor, west of Harrogate, deemed in October 1941 to be unsuitable for tank training because of difficulty of access, the frequency of large stones and a tendency to bogginess. Secondly, in December 1941 it was announced that tank training was to be reduced on the South Downs, Sussex because of the effect on the corn crop. Thirdly, there was already an armoured billet presence not far distant, at Newmarket.⁴³ In short, Breckland fitted the bill perfectly.

⁴² TNA WO 32/9841 - secret memorandum from the Army Council Secretariat E.C.A.C./P(41) 91 25th Oct1941, reiterates that ‘units kept to roads long after they should have deployed... were unable to adjust themselves to the idea of moving across country.’

⁴³ TNA WO 32/9841 H.F.12065/3/G.(Trg): disposition of armoured forces in East Anglia as at 1st November 1941

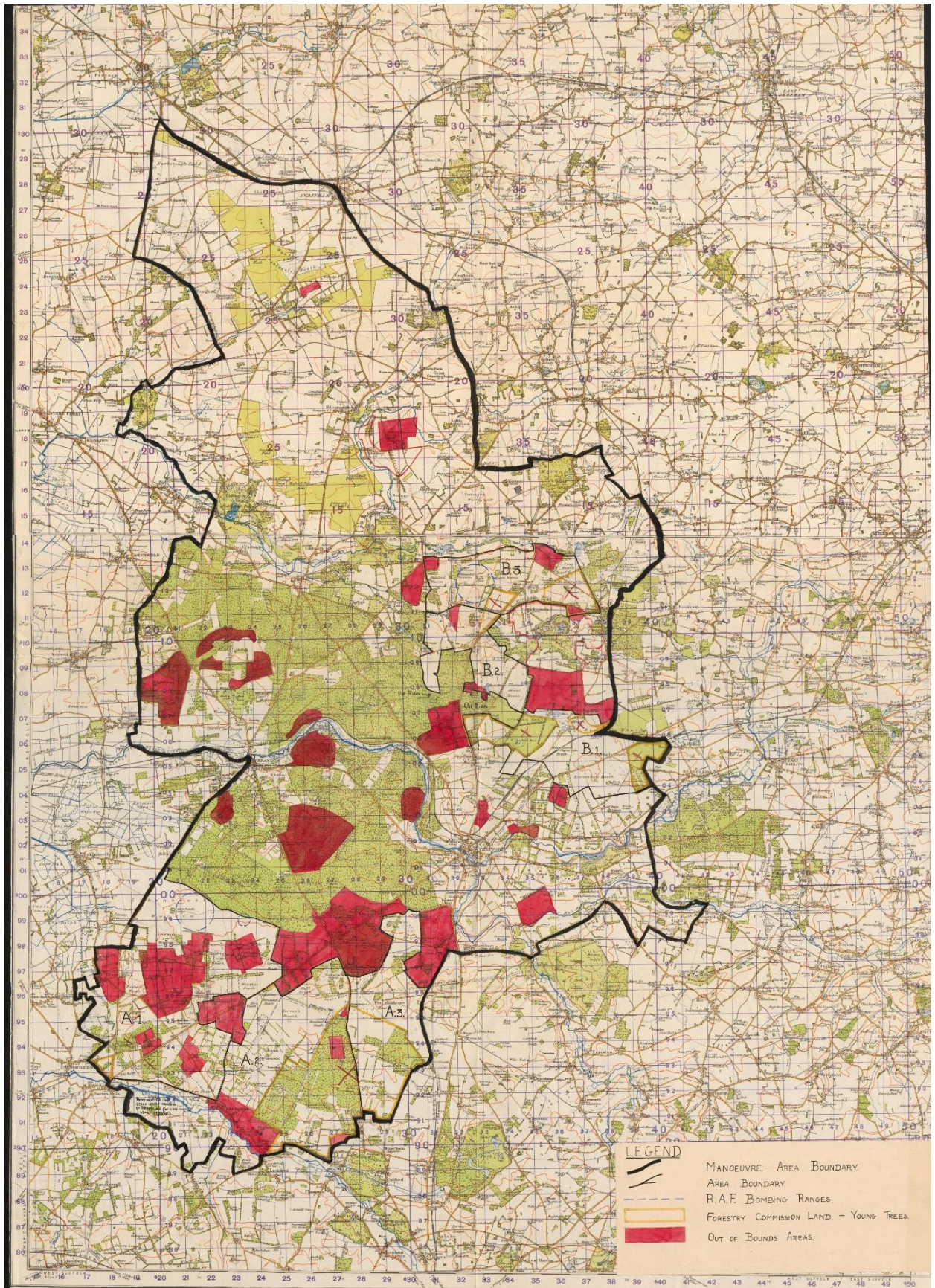


Fig.52 Survey working map, 1941, showing extended and proposed Thetford manoeuvre areas, RAF bombing ranges, Forestry Commission land and restricted areas⁴⁴

⁴⁴ TNA WO 32/9841 Training: General (Code 35(A)): Training areas: armoured formations

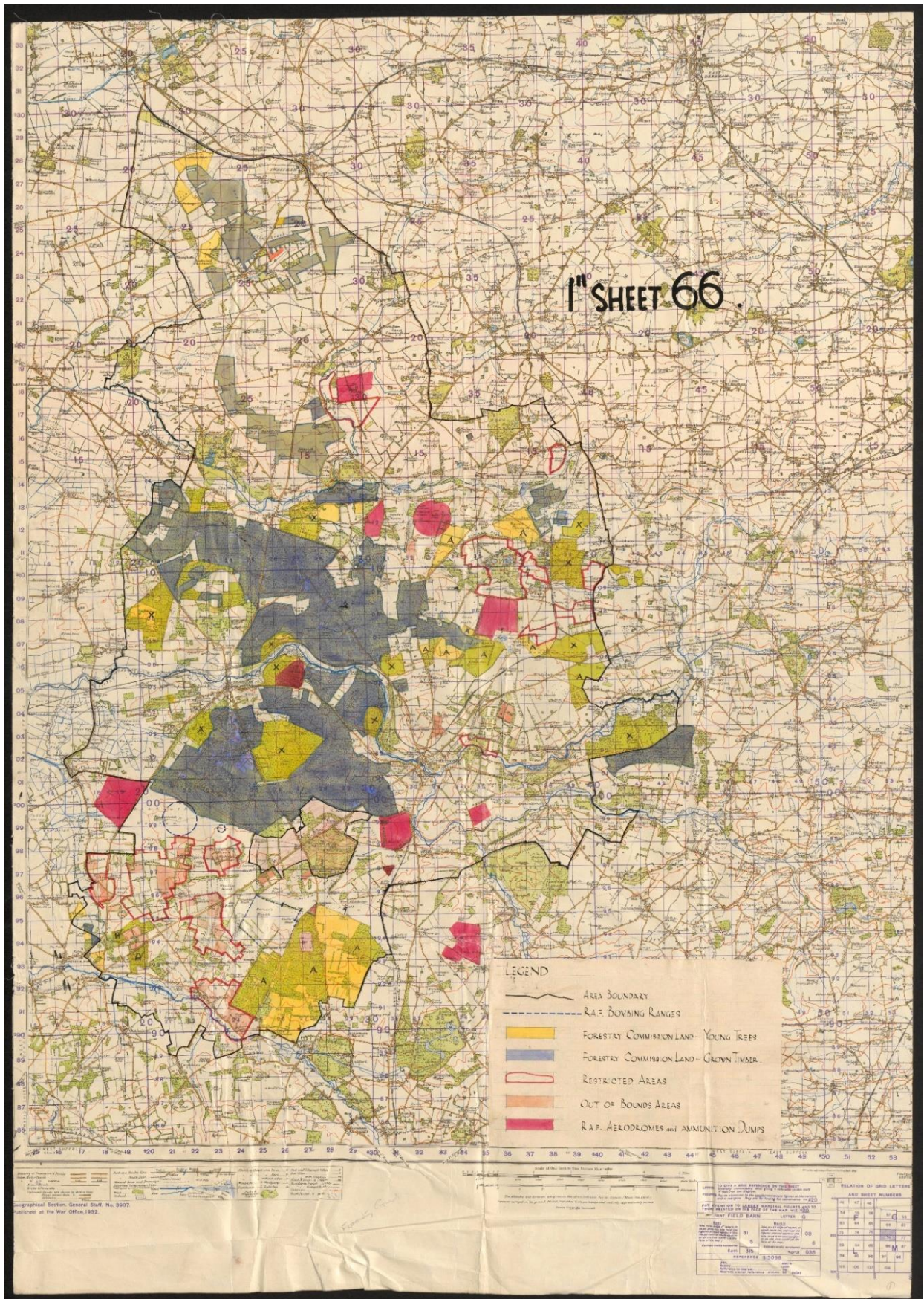


Fig.53 Alternate version, 1941, showing extended and proposed Thetford manoeuvre areas, RAF bombing ranges, Forestry Commission land and restricted areas⁴⁵

⁴⁵ TNA WO 32/9841 Training: General (Code 35(A)): Training areas: armoured formations

Negotiation and Evacuation

‘On 19th July 1942, Tottington, a small village in South Norfolk ceased to exist as a community.’

Succinctly and precisely, this single statement somehow underlines the swift and dramatic change in the fortunes of the communities uprooted by the arrival of the battle training area. The issue of residents being prohibited from returning to their homes is an emotive and on-going one, though few personal accounts are ultimately as balanced and objective as that given by Hilda and Edmund Perry.⁴⁶ Minister of Agriculture and Fisheries R. S. Hudson informed Henry Upcher, chair of Norfolk WAEC, with regret, to say that the Ministry could no longer object to the land centred on Stanford being taken but that liaison between the Committee and the military was important to ensure a ‘smooth handover’.⁴⁷ It was in July that around 750 men, women and children were required to leave their homes and livelihoods contained in an area of approximately 18,500 acres. The villages of Stanford, Tottington, Buckenham Tofts, West Tofts, Langford and Sturston are generally held to be the centres of de-population directly affected, though parts of the parishes of Lynford, Ickburgh, Hillborough, Little Cressingham, Merton, Thompson, Wretham, Stow Bedon and Croxton were also included. It has to be said that some of the villages were sparsely populated, even Stanford itself. In particular, Sturston had been ‘a ghostly place for at least 350 years’, White’s Directory or 1845 recording a population of just 47, along with ‘a prolific rabbit warren of 800 acres’, By the 1930s the residents were numbered in the twenties and Sturston Hall was derelict.⁴⁸

‘Settlements that first peeped forth out of the Neolithic gloom, survived the Norman Conquest, the Black Death, centuries of soil erosion, the Reformation, the Civil War and the Agricultural Revolution succumbed without too much fuss to Part IV of the Defence Regulations 1939.’⁴⁹

⁴⁶ Perry, H. And E. *Tottington, A Lost Village in Norfolk* (Wymondham, 1999) p.9

⁴⁷ TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes, 1942-47; Letter 16th June 1942 Hudson to Upcher.

⁴⁸ Davidson, A. *Norfolk Origins 5: Deserted villages in Norfolk* (N Walsham 1996) pp.55-56

⁴⁹ Conal O’Donnell 11th November 2004 www.bbc.co.uk/ww2peopleswar ‘WW2 People’s War’ - an online archive of wartime memories contributed by members of the public and gathered by the BBC. The archive can be found at

Realistically, the use of live firing meant that civilians could not be permitted to remain on the training area. In May 1942 a Mr Chester Riches was accidentally shot dead whilst driving his cattle onto marshland at the Orford training area in Suffolk.⁵⁰ More than half the requisitioned land was of the eighth Lord Walsingham's Merton estate, one of the oldest in Britain. At least six of the evicted families claimed to trace their lineage back five hundred years in local records. Walsingham was himself a retired army officer, brought back as commander of 30th (Home Defence) Battalion, Royal Norfolk Regiment, defending East Anglian airfields. In the often ironic manner of uncertain times, his battalion headquarters was at Westmere Farm, Tottington – inside the new training area.⁵¹

Official files contain any number of heartfelt letters of objection from residents, dignitaries and even businessmen at national level. A recurrent theme is why plenty of nearby heath was not taken so urgently since 'of course the War Office will maintain that the heath is unsuitable for someone's convenience'.⁵² Of immediate concern to the CWAEC was the imminent harvest of around 3,000 acres of corn crop awaiting.⁵³ Local farmer Mr Sanderson, who in fact stood to lose more land than any other, was prepared to help with the harvest. The question of need and waste was raised in the House of Commons, with local MPs asking Secretary of State for James Grigg about compensation for the overall loss of 26 square miles – or 23,000 acres – of land.

The depth of the relationship between people and the landscape in which they live and work is no better illustrated than by the public meeting on 18th June at the edge of a meadow in Tottington. Lieutenant-General Sir Kenneth Anderson, now G.O.C. Eastern Command announced that just four weeks' notice was to be given.

'This is the most unpleasant task of my army career. There is little you will want to hear in the way of sympathy, and the last thing anyone wants to do is turn Englishmen from their homes... I don't deny we are causing a lot of grief, pain and trouble, and I am deeply sorry for it, but this is one of the places where the disturbance will be least felt.'

He posited that people talked about a Second Front without realising what it really implied.

⁵⁰ Conal O'Donnell 11th November 2004 www.bbc.co.uk/ww2peopleswar 'WW2 People's War'

⁵¹ Douglas Brown, R. *East Anglia 1942* (Lavenham, 1988) p.180

⁵² TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes

⁵³ TNA MAF 48/620 letter from Christie 24th July 1942 qualifies the acreage as 2,775.

‘Those of you on leave and many of you in the Home Guard and Civil Defence know how futile many of the defence exercises are in their stupid imaginary situations. They need training where they could actually use bomb, bullet and shell.’⁵⁴

Anderson promised protection of homes and churches, along with ‘time corridors’ to allow harvest of grain and later sugarbeet. Curiously, a spontaneous burst of applause followed, and Lord Walsingham was moved to say ‘My word, I am proud to belong to an area where such people live’ whilst still seeing the situation as calamitous but that hopefully the training would help shorten the war.⁵⁵ Walsingham is said to have obtained a written guarantee from the Commander Home Forces that land and property would be handed back after the war – and therein lies the key to the vast amount of correspondence between the public and government departments post-war. At this stage the only compensation offered was the value of standing crops, less cost of harvesting.⁵⁶

There followed the legendary harvest of 1942 when a mixture of farmers, soldiers and schoolboys brought in the crops in a record two weeks. The War Office commended the speed and efficiency of the operation, noting that ten combines were at work between 17th and 31st August.⁵⁷ The official schedule states 2,854 acres in total were harvested, most by the WAEC, the crops including wheat, barley, oats, rye, mustard, peas, potatoes, carrots and blackcurrants.⁵⁸ This rather gives the lie to the image of an unproductive part of the county.

⁵⁴ TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes

⁵⁵ Douglas Brown, R. *East Anglia 1942* (Lavenham, 1988) p.180

⁵⁶ *Ibid.* p.183

⁵⁷ TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes

⁵⁸ *Ibid.*



Fig.54 Churchill tanks advancing over open country near Thetford, 10th November 1942⁵⁹

Legacy – post-war continuation and ‘The Pledge’

As early as August 1944 Frank Rayns, Executive Officer of the CWAEC, was starting to ask if and when the area might be reclaimed. Lord Cranbrook too was becoming concerned in early 1945 that

‘...as one who, on official instructions, gave the most solemn assurances (and the only one of those who hopes to live in East Anglia after the war) I want to try and see that the soldiers stick to their promises.’⁶⁰

⁵⁹ IWM H25260

⁶⁰ TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes; letter 11th February 1945 from Cranbrook to Mitchell at War Office

In May the War Office formally said it had no idea when it might be able to give up the area, as 35 Tank Brigade needed training at Stanford, as did reserve divisions. Later that year Rayns asked for clarification about derequisitioning of the 18,000 acres, of which 5,655 were arable.⁶¹ Before the year's end Members of Parliament were becoming agitated about the apparent coyness of the military, and began reminding the War Office of the undertakings to allow residents to return. Cranbrook expressed relief that Orford and Dunwich training areas were to be released – but concern for Stanford. The County Planning Committee unanimously resolved:

‘That in the interests of displaced persons, food production and the burden placed upon highways adjacent to the area in question, the County Council is strongly recommended to urge the government to return the land concerned to its owners with all possible speed.’⁶²

The CWAEC and MAF repeatedly maintained, from the outset to post-war years, that whilst the training area could conventionally be termed light land it was capable, under modern farming methods, of yielding good root crops – especially sugarbeet. By 1947 the National Farmers' Union had joined the fray, writing that

‘This branch strongly urges the necessity for the immediate return to agricultural cultivation of the Stanford Battle Training Area. The Branch views with alarm the danger of this becoming waste, derelict, vermin and weed infested, and vigorously stresses the need for early action.’⁶³

Concern from an academic perspective arrived in the form of a report from the Botany School of Cambridge University, asserting that in scientific, cultural and historical interests, Breckland is unique’, stressing the importance of glacial and inter-glacial deposits, the richness and diversity of archaeological remains and highly characteristic flora and fauna.

⁶¹ TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes letter 13th October 1945

⁶² Ibid. Committee paper 19th October 1946

⁶³ Ibid. Letter dated 15th January 1947, NFU to MAF.

Military use of the land was alleged to be ‘tantamount to destruction of scientific material of the highest importance.’⁶⁴

Two key elements characterise the post-war legacy of Stanford. The first was the decision that Stanford was still needed by the military, and not in a reduced form, but expanded to take in more acreage – a reflection of rapidly changing geo-politics in the 1940s and concomitant maintenance of large numbers of serving regular and incoming national service soldiers. This led to the second. Unique to Norfolk, and prominent in living and written memory, is the infamous broken pledge. The government’s promise to allow residents of the Stanford training area to return to their homes and farms was never honoured, but this is not to say it was ignored. The matter was extensively discussed at Cabinet level and the decision to effectively renege on the pledge seems to have genuinely presented a moral issue to senior government ministers, who recognised the principle. A public enquiry was held and the Commissioner took the view that, whilst he acknowledged the need for retaining Stanford, the inhabitants should be consulted and a majority view accepted as a decision. This of course did not happen.⁶⁵

Though a great deal has been written as personal testimony and recorded in official documents about the ‘promise’, one figure in particular links the plight of residents of the Sanford area and Fritton. Lord Cranbrook’s position as Deputy Regional Commissioner for Civil Defence during the war placed him often in the role of messenger to the affected communities, but that role also allowed him to mediate to the point of offering alternative proposals that could protect those same communities. He was moved to write to *The Times* in 1947 as follows:

‘Sir, I was one of those officially concerned with the evacuation at the Stanford Battle Training Area in 1942... I was in charge of the arrangements made to move the inhabitants of the villages involved and was present with the G.O.C.-in-Charge Eastern Command at the public meetings... Both of us gave the most categorical undertakings that the people would be allowed to return

⁶⁴ MAF 48/620 Stanford Battle Training Area: use for agricultural purposes; Report of Botany School, University of Cambridge, 1st March 1947.

⁶⁵ TNA PREM 8/898 Consideration on Services Land Usage, White Paper: retention of Stanford Training area, 1947-48

when the war was over.... They were told that every care would be taken to preserve houses and farm buildings intact against their return...and that any accidental damage would be repaired. Relying on these undertakings the inhabitants co-operated willingly.’

‘Military necessity may again demand that this area is used for military purposes, but the authorities should realise that this can only be done by breaking promises freely given. I have no doubt but that most of the inhabitants, relying on these promises, have made no attempts to set up permanent homes elsewhere; if they are not to be allowed to return to their homes they should surely receive special...assistance to help them start their lives afresh’.⁶⁶

A detailed County Council report details the cost to the landscape and community of the army retaining the northern training area. Twelve parishes were affected. Just 500 acres had been returned to agriculture. 5,600 acres of arable and 7,800 acres of heath were retained, as were 16 farmhouses, 132 cottages and 5 schools and schoolhouses. Transport links were still affected, with 4.5 miles of the B.1108 Watton to Brandon road were still closed and 5.25 miles of the Watton-Thetford road; with Class 3 and unclassified roads, the total closed amounted to 33.75 miles, together with four public rights of way. The reports adds that as early as 1942 it had been suggested that the area was deserving of national nature reserve and conservation status. Exclusion from 39 square miles of improvable farmland was not reasonable.⁶⁷

In addition, the Council for the Preservation of Rural England held that:

‘...as Norfolk has already made so much contribution to National Defence affecting agriculture and the amenities of the county and is to keep permanently not less than 22 out of 37 airfields and many AA camps that an equally suitable area for battle training could, and should, be found elsewhere’.⁶⁸

⁶⁶ TNA PREM 8/898 White Paper: retention of Stanford Training area; and The Times, 2nd June 1947

⁶⁷ TNA MAF 48/620 Norfolk County Council report

⁶⁸ Ibid.

The Ministries of Agriculture and Fisheries, Health, Transport and the Forestry Commission also wanted to see the land returned. The War Office alleged it could find no trace of a promise and, in an interesting twist of interpretation, considered it reasonable to assume that such an assurance had been given – but that it could be over-ridden on grounds of national security.⁶⁹ By the summer of 1947 it was clear that the war Office wanted to formally extend the training area to 28,000 acres.⁷⁰

By 1949 ‘the pledge’ was being discussed at length at parliamentary and cabinet level. The new Ministry of Town and Country Planning became involved, the minister explaining that were it not for the pledge the public enquiry commissioner would have recommended retaining the land. Stanford was one of five sites proposed nationally for retention. Honouring the pledge might prejudice opinion in the other four. The Minister of Defence suggested that if Stanford were not retained then other land of higher agricultural value would be taken instead. The Cabinet acknowledged the pledge but resolved they would ask to be released from it.⁷¹ It was subsequently decided that government departments so far involved would not be able to give much assistance to the resettlement of evictees, and that ‘displaced persons’ settlement should be directed by the Cambridge-based Regional Controller of Town and Country Planning. No government department seemed willing to accept responsibility for the cost – estimated at about £70,000 in all. The practical costs were thus far being borne by local authority housing departments, especially those of Wayland and Swaffham Rural District Councils. The War Office finally agreed to recompense councils on the basis of ‘lump sum payments actuarially calculated upon the life of the displaced person and, where appropriate, the life of the person accepted by the Stanford Resettlement Committee as his (or her) relict.’⁷²

In the end, it fell to Lewis Silkin, Minister of Town and Country Planning to call a meeting with the dispossessed residents. It is worth quoting at length from his opening address, since he clearly felt considerable sympathy for the people.

⁶⁹ TNA MAF 48/620 Stanford Battle Training Area: use for agricultural purposes; White Paper: retention of Stanford Training area

⁷⁰ Ibid. This, from the original 16,500 acres acquired under D.R.51 by the War Office, 2,215 acres under D.R.51 by the Air Ministry, together with 9,285 acres under D.R.52.

⁷¹ TNA WO 32/16670 Minutes of 33rd (48) Cabinet meeting 27th May 1948

⁷² TNA WO 32/16670. ‘Relict’ appears to be an archaic legal term referring to surviving spouse or off-spring.

‘...this is one of the most difficult meetings that I have ever had to attend in my life. I have been in some nasty jams before, but I do not think I have ever had so distasteful a duty to discharge as I have this morning. I recognise that some six or seven years ago, during the war, you were induced to leave your homes by solemn pledge given to you by H.M. Government that when the war was over you would be able to return to your homes once more’.⁷³

He went on to state clearly that the government accepted that a pledge to return had indeed been given but added that it was his duty to put to them that in the considered view of the government it was absolutely necessary to ask them to release the authorities from that pledge. Enlarging on the very much changed geo-political circumstance of the late 1940s he added:

‘I need not enlarge on the international situation today... The world is mad, but whether we like it or not...there is real danger of a conflagration even greater than the last, and it is the duty of the government to make preparations. They [peacetime-conscripted soldiers] have got to be trained in such a way that we shall avoid the heavy losses of life which we suffered in the last war as a result of our people not being adequately trained in war conditions.

Therefore in the larger interests of the people in this country as a whole I feel compelled...to ask you to release us from this pledge.’⁷⁴

An alternative area had long been mooted locally, that of an expanse of heath broadly to the south-west of the Stanford Battle Area in the direction of Lakenheath and Mildenhall. The Minister explained that the area did not have the right characteristics and it would be broken throughout by the main Norwich-London road; any rerouting would have to be for twenty miles, at great expense.

⁷³ TNA T 219/445 Service land requirements - retention of Stanford and Purbeck 1948-56; report of meeting at Municipal Offices, Thetford, 14th July 1948

⁷⁴ Ibid.

Over the course of the next two years, arrangements were made to compensate dispossessed farmers at market value; tenants with offers of similar livings elsewhere, and householders – ‘the saddest case of all’ as expressed by one official – with alternative permanent housing.⁷⁵ 1950 saw the final, formal decision to retain the Stanford Training Area in perpetuity, with compensation paid at 1938 land values of £25 an acre on the basis that owners ‘ought not to benefit from wartime inflation.’⁷⁶

Civilians were generally willing, as part of total war involvement, to allow unprecedented access to, and use of, their land. It was the contemporary culture of the ‘People’s War’. Official documents, correspondence and reports convey a sense of reasonably good relationships between farmers and the army, probably because civilians thought the arrangement to be temporary, for the duration. All this was to change rapidly in the five years following the war. They were, understandably, and as evidenced by the extent of documented correspondence referred to in this chapter in the less willing to do so in peacetime when the Ministry of Defence wanted even more land, less in a spirit of pulling together than in pursuit of measures in response to a new world order.

The longer term

In the first decade of the twenty-first century, the Stanford Training Area (STANTA) encompasses an area of about 24,300 acres and facilitates 340,000 training days annually, for the Regular and Territorial Army, cadet units, police and overseas forces.⁷⁷ It continues to be one of the UK’s current major live-fire training and manoeuvring facilities up to battalion level, including supporting mortars, artillery, ground-attack aircraft and parachute drops. STANTA now is a smaller but significant remnant of the original wider training area which peaked at 120,000 acres.⁷⁸ The battle area still includes four historic churches, including the Pugin-restored example at West Tofts.⁷⁹ Urban and chemical, biological, radiological and nuclear training also take place in purpose-built areas and the airspace is permanently

⁷⁵ TNA WO 32/16670 33rd (48) Cabinet meeting 27th May 1948

⁷⁶ Douglas Brown, R. *East Anglia 1942* (Lavenham, 1988) p.180

⁷⁷ Public Information leaflet, DTE (Defence Training Estates) East [undated, current publication] pp. 2-3.

⁷⁸ *Ibid.* p.2

⁷⁹ Six churches, one already ruinous, each with its own characteristic architecture, were included in the 1942 requisition. Laishley, A.L., *East Anglian Magazine* May 1956 pp.377-379

designated a danger area.⁸⁰ Surviving former villagers and their relatives are allowed to visit the area annually, and particular familial sentiment is attached to the church graveyards. Organised tours under the supervision of the military are welcomed. The story of the enforced evacuation of Buckenham Tofts, Langford, Stanford, Sturston, Tottington and West Tofts is the focus of continuing, unresolved controversy, often reported by press and broadcast media.⁸¹

Conservation and environmentalism

STANTA's use as a military training area has safeguarded a substantial archaeological landscape. It is also the home of a wealth of rare species of flora and fauna and about 70 per cent of the area comprises a Site of Special Scientific Interest.⁸² The Ministry of Defence is the second biggest land holder in the U.K., comprising around one per-cent of the total land area and has made strenuous efforts to support and initiate conservation efforts on its land. Whilst there may be a paradox in the concept of a natural environment side by side with one of busy military activity, safe havens are undoubtedly created. The MoD has for many years encouraged an image of military training areas as sites of environmental conservation, prompting extensive discourse as to the rationale behind this. One perspective describes the metamorphosis of military training areas into conservation as 'khaki conservation'.⁸³ Notably, the MoD publishes 'Sanctuary' an annual magazine bringing reports and events from training sites across the regions; the 2009 edition featured two articles about otters and rare flora at STANTA.⁸⁴ The conservation benefits to the natural environment of STANTA are well known, and it is questionable as to whether those benefits would have been achieved

⁸⁰ Public Information leaflet, DTE, p.3

⁸¹ Example Eastern Daily Press 22nd October 2010 <https://www.edp24.co.uk/news/touring-the-stanta-ghost-villages-1-689040>

⁸² 'Sanctuary' Magazine Issue 38 (MoD, 2010) p.12

⁸³ Woodward, R. 'Khaki Conservation: an examination of military environmentalist discourses in the British Army' *Journal of Rural Studies*, Vol. 17, Issue 2, April 2001, pp. 201-217

⁸⁴ *Sanctuary* Issue 38 (MoD, 2009) pp.12-15 and 82-83 authored by members of the STANTA Conservation and Botany Groups. There are one hundred and twenty conservation groups active on MoD land across Britain. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/33353/Sanctuary_38.pdf

had the area been fully returned to agriculture in 1945. Live rounds dating from the Second World War are, however, regularly found during clearance operations. This, along with the intensive and understandably at times secretive usage of the area, restricts public access. Limited arable and pastoral agriculture takes place however, in organised conjunction with military usage. There is also a footpath along the Watton Brook from Great Cressingham to Bodney. The Army's awareness of the value of good public relations is not new; in a 1965 television interview Major General Talbot, Commanding Officer 54th Division Territorial Army, discusses the retention of Stanford Battle Training Area, as it was then still known. He presents a map showing the extent of the area used for training during the Second World War, emphasises the comparatively small area that being used in the 1960s, and stresses the difficulty of giving up any more land. The interviewer thinks this perfectly reasonable and asks the officer about an area of interest to naturalists but which cannot be relinquished for safety reasons.



Fig 55 1965 television interview between Hugh Sykes Davies and Major General Talbot. The dashed line is referred to as 'Breckland' though the region is much larger than shown. The small central area is the retained Stanford Battle Training Area. The outer bold line is the wartime manoeuvre area.⁸⁵

⁸⁵ East Anglian Film Archive, Battle Ground Interview 1965 Stanford. cat. no.325

Fritton Decoy or Lake

‘We have a very urgent proposal to use an area at Fritton Decoy for training of a specialised nature...the area...will be requisitioned under Defence Regulation 51, and in order to obtain adequate security it will be necessary for complete evacuation to take place within this area.

It is most important that it should not get about in the area that there is anything special about this requisition except its urgency, and we hope to give the impression that we need the area for a building site.’⁸⁶

The second largest training area in Norfolk was centred on a large ribbon expanse of freshwater, bounded by the parishes of Fritton and Ashby. Prior to local government re-organisation in 1972, and therefore during World War Two, it fell within the Lothingland Rural District, then part of East Suffolk County Council. The point is technical and yet for historic military purposes, entirely moot. As a formal, identifiable training area Fritton differs in many respects to Stanford. The circumstances and approach to requisition helped it avoid the controversy surrounding Stanford. It had quite different purpose, yet still technically qualifies as ‘landscape’ though the greater part of it comprised water. Extensive remains of this strategically significant tract of training landscape are to be found on the borders of the two counties. Here, from 1943, was established a facility specifically for the training of tank crews learning to operate the Duplex Drive amphibious tanks employed in the invasion of the Normandy coast in June 1944, along with subsequent amphibious operations into the Netherlands and eventually across the Rhine into Germany itself.

Fritton Lake was chosen as the principal experimental and training site for 79th Armoured Division’s Duplex-Drive amphibious Sherman and Valentine tanks, one element of Major General Percy Hobart’s legendary ‘Funnies’ – the variety of specialised, adapted armoured vehicles which included amongst many the Churchill Crocodile flamethrower, Sherman Crab ‘mine-flail’ and armoured bulldozers. Planned relatively late in the war, it remained nominally in use until 1947. It was unique as an army training area in that a key part of its function required large tracts of water. The site, when fully operational, comprised

⁸⁶ TNA HO 207/1181 Region no.4 (Eastern) Issue of passes, civil population Fritton battle training area Doc. ref: B.M. 1/780/43 (L.B. (b)) – memorandum 12th May 1943 from Lands Branch, War Office to the Ministry of Home Security

accommodation, workshop and maintenance buildings, slipways, an extensive tank park, numerous tracks and roadways linking the sub-sites and, perhaps most intriguing of all, an underground water-filled training chamber specifically for training tank crews in emergency escape techniques. Due to the secret nature of the facility relatively little is known about its operations. Much more is now known following Suffolk County Council's Archaeology Unit survey of 2013 to further understanding of the site.⁸⁷ Following its decommissioning, the site was cleared and the majority of ground structures demolished. Despite this, significant evidence is preserved at this site in the form of foundations, floor slabs, trackways, and areas of hard-standing as well as the structural remains of the landing craft slipways. The entire site lay undisturbed in historical and archaeological context until the early years of the twenty-first century when the then Country Park Manger of the Somerleyton Estate, Stuart Burgess, undertook personal research and investigation into the site's history, with the ultimate aim of bringing recognition to the site's historical significance and to further explore the important role it played in the Second World War.

Fritton offers intriguing comparisons with Stanford from four important perspectives. Firstly, the site was, as with Stanford, established during wartime - but not until 1943. Secondly, it was designed for a specific medium-term and highly specialised training operation. Thirdly, it was highly secretive in nature, with attendant efforts to conceal its presence and, fourthly, water, not land, was the key component of the training operations. Fritton was a contested landscape from the agricultural and social perspective but not nearly as intensively as Stanford and its environs – not least because the former covered a fraction of the area of the latter.

The decision to use Fritton Decoy was made and implemented swiftly, especially when compared to the build-up to Stanford. A straightforward interdepartmental memorandum in May 1943 simply stressed the urgency and importance of the matter.⁸⁸ Lord Cranbrook, Regional Commissioner, Eastern Civil Defence Reserve, was already aware of the proposal; his view was that the area was not large and given that only about forty people lived there, resistance to the proposal was not justified.⁸⁹ Cranbrook met soon after with Major-General

⁸⁷ Sommers, M., *Tank Training Site, Fritton Decoy, Somerleyton, Ashby and Herringfleet* HER Ref: SOL 029 [Suffolk County Council Archaeological Service, Archaeological Survey Report, SCCAS Report No. 2013/052] (2013)

⁸⁸ TNA HO 207/1181 Region no.4 (Eastern) Issue of passes ; doc. ref: B.M. 1/780/43 (L.B. (b))

⁸⁹ In his official capacity, Lord Cranbrook features prominently in negotiations and liaison between agencies and departments, especially with regard to Stanford, Fritton and, in Suffolk, Orford,

Hobart and five other senior officers to consider the implications for residents. It was agreed to hold a public meeting with the local populace to explain, without divulging technical detail, the necessity for evacuation by 12th June. Site work would begin right away, regardless. The Army would not need the fields surrounding the decoy and access to livestock would be permitted. No wide scale live firing would be carried out. The question of potential oil pollution of the water was raised, subsequently investigated and deemed by the local water company to be limited and therefore not problematic.⁹⁰

On 27th May 1943, local landowner Major Buxton wrote to Lord Cranbrook saying that a reporter from the Eastern Daily Press had arrived on site, declaring he had been sent on instructions from the Ministry of Information; this, on 7th May, before the War Office's declaration of intent. This is intriguing, given the emphasis upon secrecy, and yet no further mention is made of this.⁹¹

Lord Cranbrook continued to suggest that military construction could take place whilst the populace was being evacuated, to at least give people more time to make arrangements. The idea was that people would be allowed to store their furniture in their homes for the duration. Incidentally, Cranbrook refers to discussing informally with Hobart the possibility of creating a new training area in the area bounded by the Dunwich – Westleton – Leiston – Sizewell roads.⁹²

Cranbrook expressed his concerns about the evacuation process and of its absolute necessity.

‘The preparations for the evacuation of the Fritton area will be put into operation this weekend, but I am very perturbed about the whole thing. As you know, the population – about 40 all told – is being removed, not as in the case of the Battle Training Areas because of danger to life and limb but for security reasons. At the same time, that which must not be seen will be seen by many hundreds, or possibly thousands, of troops undergoing training in the area, Officers and men drawn from the same social strata and probably of the same type of intelligence as the persons who are going to be removed.’

Dunwich and Aldeburgh. His sympathies with the plight of dispossessed residents were expressed firmly and publicly several years later, when it was proposed to extend Stanford.

⁹⁰ TNA HO 207/1181 - 18th May 1943 at the office of the Deputy Regional Commissioner.

⁹¹ TNA HO 207/1181. In practice, at this stage of the war, the authorities were less worried about possible espionage than discovery through aerial photography.

⁹² TNA HO 207/1181 – internal memorandum from Lord Cranbrook

Cranbrook's words seem anachronistically elitist if not viewed in contemporary context. His heart was in the right place, however, as he added:

‘I can quite see that the general public and strangers are to be prevented from having access, but as the soldiers are apparently prepared to give passes to specific and named agriculturists... I cannot see that any great harm would be done if the existing inhabitants were allowed to remain...’⁹³

This proved to be crucial, particularly for the local populace. Hurried negotiations in this respect were successful. It was proposed that a large and unclimbable fence would be built to separate the houses at the Decoy from the inner site and then another, outer fence. No civilian access would be permitted through the inner fence and passes would be required to enter the outer fence. ‘I think anything is better than being turned out of their houses’ observed Cranbrook.⁹⁴

The Army agreed and immediately drew up plans for exactly that, applying Defence Regulation 51 only to the inner ‘core’.⁹⁵ Defence Regulation 14 would regulate the overall area.⁹⁶ Cranbrook was able to confirm that no evacuation would take place.⁹⁷ It is to Cranbrook's credit that this *volte face* was achieved.

On the basis that the houses were *not* to be evacuated, and that realistically lakeside house-owners might see DD tank movement, a cover plan was devised. An armoured division would indeed be in residence but apparently as a bridging training camp. Equipment in tank parks was to be arranged such that any aerial photographs taken of the coast between Lowestoft and Great Yarmouth – which would include Fritton – would show no sign of armoured vehicles or indeed any military occupation. Even the perimeter wire was laid to follow natural lines along the ground. Rumours were already circulating that the area was to be used for training loading tanks on barges, practising loading invasion-type barges, a

⁹³ TNA HO 207/1181 Region no.4 (Eastern) Issue of passes – secret memorandum dated 20th May 1943 from Cranbrook to the Ministry of Home Security.

⁹⁴ TNA HO 207/1181 – Cranbrook to P. C. Loftus M.P., Southwold 1st June 1943.

⁹⁵ Ibid. Army memo. E.C.C. 74/L.B. 7th June 1943. The Decoy was prescribed to require 2,300 coils of dannert wire, 7,000 pickets and 250 coils of barbed wire to encircle the inner area.

⁹⁶ Ibid. Cranbrook to Kennet 10th June 1943. DR14 provided for bye-laws to be enacted, specifying conditions of access and egress to the specified area.

⁹⁷ Ibid. Letters to Sir Cecil Oakes, Clerk of East Suffolk County Council and to E J Gaymer, Chief Exec, East Suffolk WAEC, 8th June 1943.

prisoner-of-war camp and even a bomb disposal site.⁹⁸ Householders would be required to sign the Official Secrets Act – and cameras and field-glasses were strictly prohibited. It seems the army was happy to encourage these rumours; if, at ground level, it was clear the military was in occupation, misleading information was welcome. And the inconvenience to property owners was a small price to pay for not being evacuated.

One local landowner would regularly express discontent with the local arrangements however. Cranbrook consulted with Lord Somerleyton, Lord Kennet and Major Buxton. All except Lord Kennet felt the restrictions to be reasonable. On this occasion he

‘...seemed quite unable to understand why he should not be able to have week-end visitors exactly as he liked, saying that he frequently had the Admiral from Yarmouth and the Bishop of Norwich to tea and presumed that he could continue to do so.’

Cranbrook noted that he pointed out to Kennet that all should be treated exactly like, adding ruefully ‘I think it is likely that whoever is responsible for issuing passes will have a good deal of trouble with him.’⁹⁹

Cranbrook also tried to assuage fears from the Ministry of Town and Country Planning about certain damage to the land and tree felling. He assured them that this would be minimal, and no more than might be expected in the normal course of forestry

‘In fact, apart from the considerable disturbance of a considerable number of ducks and other birds, who would in the normal course of events, have led an uneventful life until they found their way onto the market via the Decoy pipes, I do not think there is any cause for your Department to worry very much.’¹⁰⁰

On 12th June a public meeting took place at Fritton Hall at which Major-General Hobart – officer commanding 79th Armoured Division - addressed the residents affected, explaining, as far as he was able, the need for taking over their properties. Terms of the Compensation

⁹⁸ TNA HO 207/1181. undated army memo of early June. This is the first use of the term ‘DD’. Their appearance could easily be mistaken for bridge- or pontoon-laying equipment.

⁹⁹ Ibid. Cranbrook, internal Eastern Civil Defence note, 8th June 1943. Reiterated in notes of a discussion with army officers.

¹⁰⁰ TNA HO 207/1181 Cranbrook to Min of Town and Country Planning, 11th June 1943

(Defence) Act, 1939 would after be outlined by the Land Agent.¹⁰¹ In authoritative but friendly terms Hobart underlined the need for important work at Fritton, explaining, as might be expected, that a number of reconnaissances have been undertaken across England and Scotland before identifying Fritton as the most suitable.

‘It is not too much to say that on its success will depend, certainly the lives of thousands of men, but also quite possibly the success or failure of some of our next operations’.

He went on to stress the importance of discretion, the initial plan for evacuation being moderated ‘as we feel that you are trustworthy people.’¹⁰² Percy Hobart was an extraordinary, larger than life figure. His military philosophy, associated with the radical views of journalist and military writer Captain B. H. Liddell Hart, and Major General J. F. C. Fuller, centred on the importance of mobility and highly trained soldiers. Forcibly retired in March 1940, then joining the Local Defence Volunteers as a corporal, he was the following year recommissioned as an armoured divisional commander. He was soon encouraged to develop the range of specially adapted vehicles known as ‘Hobart’s Funnies’ enabling the rapid assault of beaches, fording of rivers and clearing of obstacles, following lessons learned from the disastrous Dieppe Raid of 1942. His biographer writes of a ‘reckless, self-righteous belief in his (Hobart’s) own rectitude and a masterful zeal when ignoring the views of others.’ A picture emerges of a man whose ‘self-confidence degenerated into foul bad-temper when confronted or frustrated...on occasion a savage bully.’¹⁰³ It is worth noting his character traits for two reasons, here in context. Firstly, Hobart was obsessive about maintaining secrecy regarding his operations, which makes the survival of the transcript of his speech at Fritton, from notes taken by the parish clerk all the more unusual. Secondly, Hobart emphasised the importance of secrecy to the local residents by dark reference to one of his own staff officers who, after divulging secret information to a companion, was cashiered and sent to a military prison.

Had the residents of Fritton been more familiar with Hobart’s background they might have viewed his impending visit with considerable apprehension. As it was, his address exudes a comradely familiarity with those attending the meeting and, thanks to the timely intervention

¹⁰¹ Ibid. TNA HO 207/1181 Region no.4 (Eastern) Issue of passes Hobart’s address to the residents.

¹⁰² Ibid. Minutes of the meeting at Fritton Hall, 12th June 1943 – verbatim note of Hobart’s address.

¹⁰³ Ibid.

of Lord Cranbrook, no-one had to leave their homes. Later that month, letters were sent by the Regional Civil Defence Commissioner to all 'Frittoners' explaining the precise terms of being allowed to remain in their homes, ending with

'The Military Authorities have shown their consideration for your convenience by allowing you to remain. I appeal to you to show yourself worthy of that consideration by keeping to the Regulations in letter and in spirit.'¹⁰⁴

For the local population, life would change little, save for showing security passes and being discreet about what they might see and hear; and work in the surrounding farms and fields would carry on as before, unlike the radically different scenario in Breckland. Lord Kennet would continue to think himself hard done by.

'Local people are inclined to think that Lord Kennet is in a slightly privileged position... Lord Kennet receives no military favours. A short time ago, his car broke down, and the permit officer refused the entry of a mechanic. A Mr Cubitt, who lives nearby, is not so well off... his family and staff have to ring a bell and wait for a redcap to come about ½ mile.'¹⁰⁵

The famous DD tanks went on to prove their worth in the Normandy landings in June 1944, but the work at Fritton was not over. Shortly after, control of the training area passed from 79th Armoured to the Woodbridge-based Assault Training and Development Centre. The unit commander, in response to the ubiquitous Lord Kennet whose hopes of a return to normality were temporarily dashed, stated that

'...the slack periods...are now at an end for a further period. More troops are to be trained in the area....Fritton was not unconnected with the invasion and its affairs still have a vital part to play.'¹⁰⁶

In fact the site was retained into the early 1950s for use by the Specialised Armoured Development Establishment.¹⁰⁷

¹⁰⁴ TNA HO 207/1181 Region no.4 (Eastern) Issue of passes 26th June 1943

¹⁰⁵ Ibid. Letter from Police Supt. Franke to the Chief Constable, 27th August 1943.

¹⁰⁶ Ibid. [ATDC/107/7/DO] Brigadier R.M. Jerram to Lord Kennet, 26th June 1944.

The precise geographical extent of the Fritton Decoy training area is defined in a map and brief summary submitted in support of the D.R.14 application.¹⁰⁸ The War Office map extract used for reference delineates the inner and outer areas in just two simple colour codes.

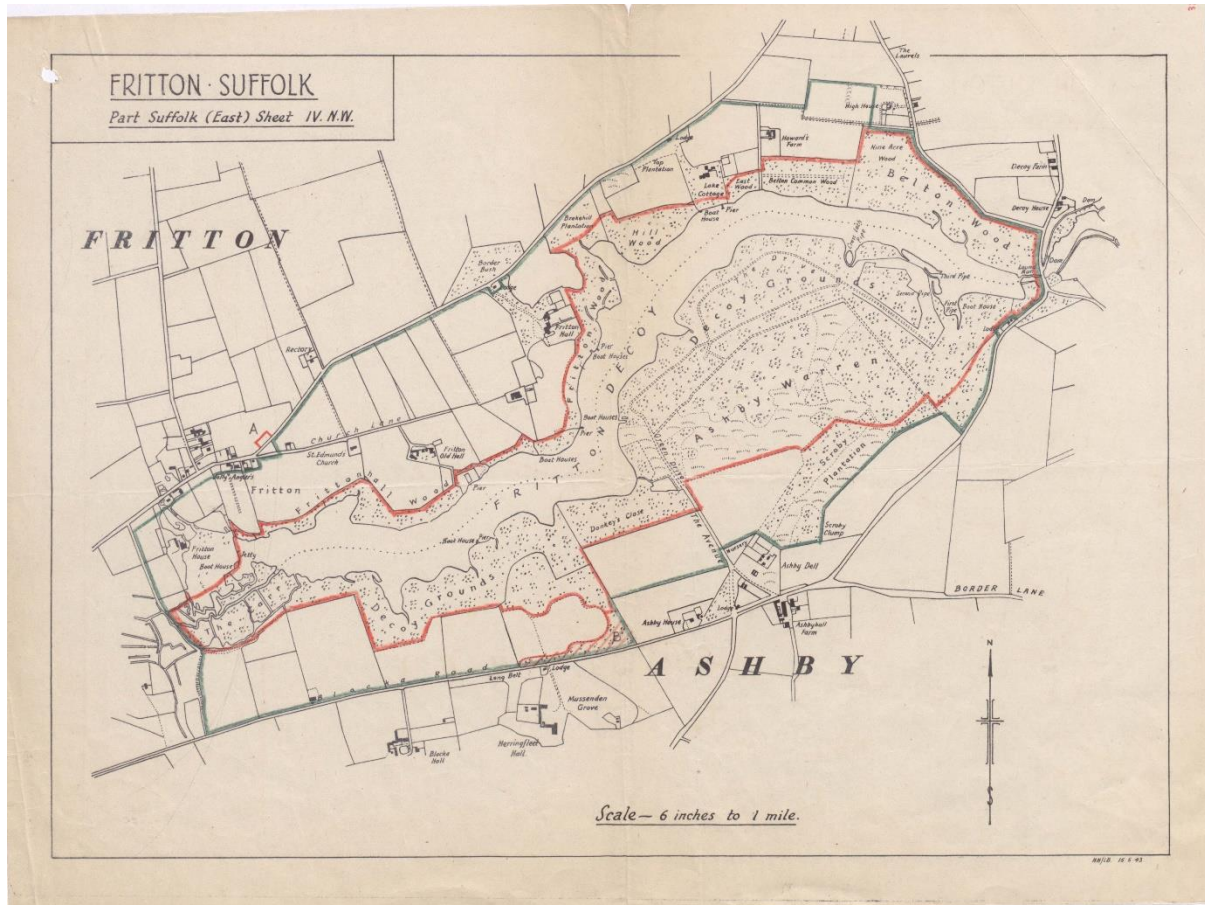


Fig.56 Site drawing for proposed 79th Division training area at Fritton Lake¹⁰⁹

Given the exceptionally secret nature of the work relatively little is recorded about day-to-day operations and, after decommissioning, the site was cleared and most buildings demolished. Foundations, trackways, hardstandings and slipways are still visible however. The lake and surrounding land are part of the Somerleyton estate, but administratively sits on the border between Suffolk and Norfolk, just to the east of St. Olaves. The body of water is meandering and elongated, measuring about 3.5 km by 270 metres – about 140 acres in all. The water is

¹⁰⁷ TNA WO 341/184 Final report of the Specialised Armour Establishment (Royal Armoured Corps) Volume 2: The post-war S.A.E. (R.A.C.) adopted 79th Division's badge and functioned in various forms until the end of the twentieth century.

¹⁰⁸ TNA HO 207/1181 The application for bye-laws under DR14, from the War Office, 12th June 1943

¹⁰⁹ TNA HO 207/1181 O.S. extract Part Suffolk (East) Sheet IV N.W. 6 ins to 1 mile

not much more than ten feet deep and may be the result of medieval peat extraction, much like the Norfolk Broads.¹¹⁰ Perhaps the most significant known yet, intriguingly, not visible, archaeological remnant is the tank crew amphibious escape facility or ‘immersion pool’, comprising an underground water-filled structure thought still to contain a tank.¹¹¹



Fig.57 Slipway at Fritton Lake; rare remaining surface structure¹¹²

The Fritton Lake facility is associated with a similar site more than fifty miles to the north-west. The lake at Narford Hall was utilised briefly in March 1943 for the same ‘swimming tank’ training but the fifty-two acres of water proved too limiting. Thirty-six tanks could be accommodated at Fritton.¹¹³ Moreover Fritton Lake was sited about thirty miles from Saxmundham, where Eastern Command G.H.Q. was located. Reservations were expressed by senior officers about Fritton’s proximity to the coast and vulnerability to observation from

¹¹⁰ *Tank Training Site, Fritton Decoy, Somerleyton, Ashby and Herringfleet* HER Ref: SOL 029 [Suffolk County Council Archaeological Service, Archaeological Survey Report, SCCAS Report No. 2013/052] (2013) p.3; and Burgess, S., *79th Armoured Division, Top Secret Duplex Drive Tank Training Wing: Fritton Lake, Somerleyton Estate, Suffolk* (included as Appendix 1 of Sommers, M.)

¹¹¹ *Pers comm* Stuart Burgess

¹¹² Evelyn Simak www.geograph.org.uk/photo/2445850

¹¹³ Burgess, S., *79th Armoured Division, Top Secret Duplex Drive Tank Training Wing: Fritton Lake, Somerleyton Estate, Suffolk* (also included as Appendix 1 of Sommers, M.)

enemy aircraft – a valid point, which was addressed by comprehensive camouflaging of the tank park and surrounding area.¹¹⁴

Summarily, key distinctions can be made when comparing Stanford and Fritton. The former was subject to the full extent of wartime requisition. The latter was not. Fritton was utilised for relatively short-term military objectives, whilst Sanford remains in perpetuity a military site. The populace at Fritton experienced none of the hardship and upheaval that occurred at Stanford. Nor does it hold any environmental conservation status. For all these reasons Fritton is an almost forgotten site, recorded for posterity and, indeed with a public open day in 2012 celebrating its history and its landscape footprint is, therefore, negligible compared to STANTA.

Other training sites

As well as the two training facilities explored in detail above, additional training sites fall in to the broad sub-categories of live or practice bombing ranges and gunnery ranges used by the RAF and USAAF. Any such facility was likely to prove dangerous to civilian populations so naturally these were sited well away from populated areas, usually at isolated coastal locations. The Breast Sand live bombing range, just west of Lynn Cut, was established in June 1942 for the use of Bomber Command under the provisions that practice would take place only when the area was completely clear, with no interference to public rights of way or navigation, and only during daylight hours.¹¹⁵ The specified area was restricted to a 1,000 yard radius of the centre point, noting that the nearest inhabited point was 2,500 yards distant from the target.¹¹⁶ There was some discussion between 1947 and 1951 about re-siting the

¹¹⁴ TNA WO 199/806 Armoured Training Area, Eastern Command 1942-43

¹¹⁵ TNA AIR 2/10927 Breast Sands bombing range, Norfolk; confirmatory letter from Ministry of War Transport to Air Ministry 21st August 1942

¹¹⁶ Ibid. note from Air Ministry 3rd June 1942

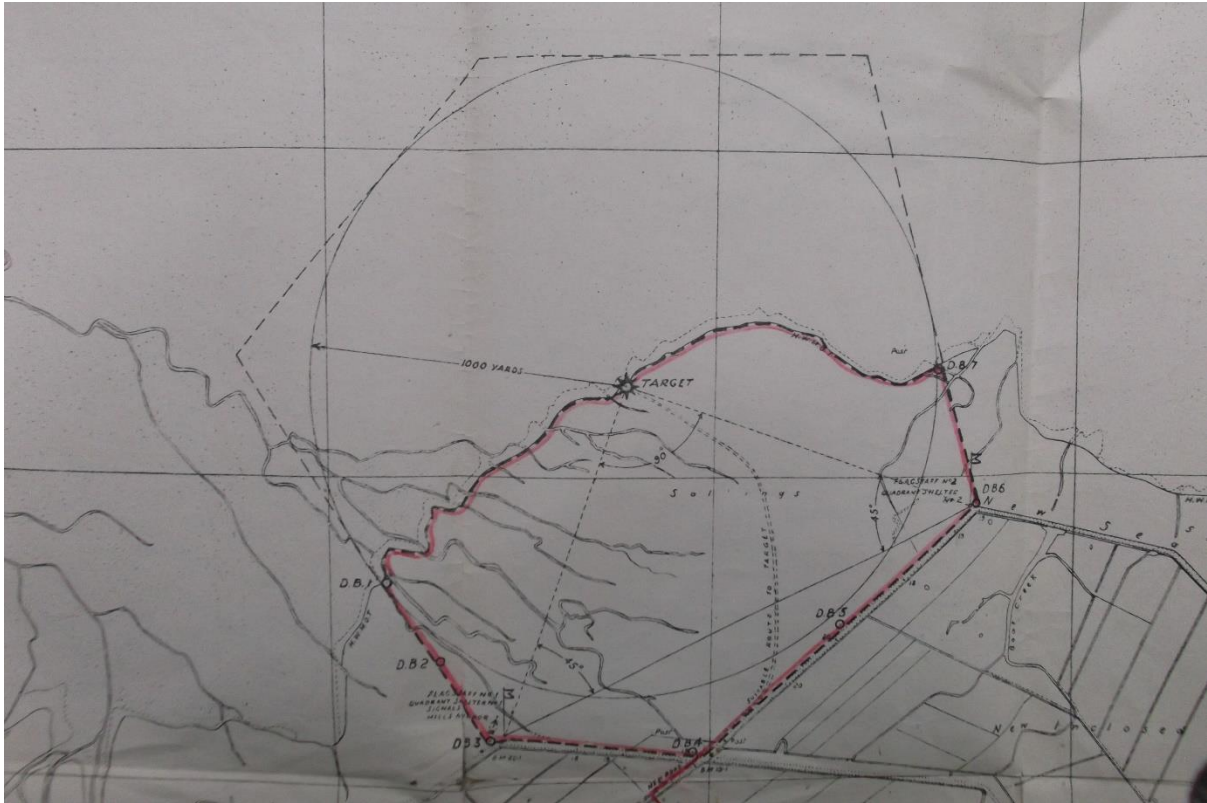


Fig.58 Breast Sand, The Wash, Practice and Live Bombing Range; land edged in red was requisitioned. The target is central, with flagstuffs to landward at east and south. Red flags were required to be flown when bombing was in progress.¹¹⁷

range so the land could be reclaimed for agricultural purposes but the outcome is unclear, though the range was subsequently abandoned.

Bombing and gunnery ranges were to be found at most airfields and training facilities, but significant archaeological remains can be found at Snettisham, where an RAF Gunnery Range was used by the USAAF from mid-1943 to provide aerial gunnery training for bomber crews; particular extant archaeological features include the remains of a narrow gauge rail track and embankment to facilitate moving targets for heavy machine gun practice. Later the site became a Prisoner of War Camp, still used up to 1948. In an ironic inversion compared to STANTA conserving rare flora and fauna, the Royal Society for the Protection of Birds' ownership of the site means that considerable areas of concrete and brick buildings and protective banks remain extant. The RSPB features again as a steward of the landscape at Titchwell, where the beach and marshes were, between 1942 and 1945, utilised by the Royal Tank Regiment and other armoured units as a firing range. A concrete road of triangular

¹¹⁷ TNA AIR 2/10927 extract from Air Ministry D of W drawing 3431/42

layout enabled tank transporters to off-load without having to reverse. Beneath the present Island Hide lie the foundations of a pumphouse, from where winches operated cables to present targets of opportunity for tank gunners.¹¹⁸ The rusted hulks of two Covenanter tanks appear occasionally at low tide. These were probably used as targets, as opposed to being operational. An important and extensive site, incorporating much remnant archaeology in its wider landscape setting, lies on the north Norfolk coast close to potential invasion approaches. Established in 1937 it soon had a dual role as both a training and anti-invasion defence site. The detail is covered in Chapter 2 ‘Anti-Invasion Defences’.

The landscapes of these, and similar, sites, remain relatively unchanged, for they were not required post-war for agricultural, commercial, industrial or residential use. Indeed, in some cases they continue to be protected by virtue of their nature conservation status, the standing features entering slow decline through weather erosion. The question of they can be conserved in conjunction with the preservation of wildlife habitat may rest in some form of multi-agency partnership approach.

Conclusion

Much like the airfields, the training areas chart clearly the major change in military strategy from early 1942 from that of defence to one of preparation – in the case of ground forces, for offensive operations in North Africa, Mediterranean and ultimately continental Europe. Again, in common with airfields, Stanford, the largest training area, demonstrated the rationale behind the appreciation and appropriation of terrain that facilitated armoured and infantry dispersed manoeuvring across open country; once again, the landscape of Norfolk accommodated a particular form of human activity that few other regions could offer. Fritton was not the only amphibious tank training area in Britain but its location and relative remoteness suited its purpose well. Both fitted the usual description of an inevitable choice of site. Further, the Stanford training area impacted upon agricultural land use in an area of the county that, though characterised by poor soils, witnessed a variety of crops cultivated by essentially farming-orientated communities before and during the war. Significantly, the history, legacy and continued presence of STANTA has contributed to the cultural identity of

¹¹⁸ Drawn from interview with RSPB warden at RSPB Titchwell Reserve, Eastern Daily Press 5th November 2011

this central area of Breckland, an identity augmented by the permanent air bases at nearby Lakenheath and Mildenhall. The co-existence of civilian and military livelihoods is not without parallel, Flintham's study of the Shoeburyness military testing and disposal facility on the Essex coast describing a smaller, less populated example.¹¹⁹ Finally, the concept of military environmentalism has reached its apogee within the bounds of Stanford; 11,500 acres are designated Sites of Special Scientific Interest (SSSIs). Fritton, however, by nature of its small scale compared to Stanford, is largely forgotten as a militarised landscape and remains largely unchanged from its pre-war appearance.

In conclusion, it has been shown that different categories of training facilities were established across Norfolk during the Second World War. Many were transitory but, generally, the longer the timescale of use and the larger the area subsumed, the greater was the change wrought upon the landscape. Stanford is the prime example not just of a relict landscape but a continuing, active facility which has evolved and adapted according to military need in the ensuing seven decades. Fritton resumed its quiet rural existence after short-term disruption. Both were responses to the military's durational requirements, which will be further explored in the next chapter examining the infrastructure and logistics of operational support, particularly as required by the intensification of air operations from 1942 onwards.

¹¹⁹ Flintham, M. 'The Shoeburyness Complex: Military Spatial production and the Problem of the Civilian Body' in Pearson, C., Coates, P, and Cole, T. *Militarized Landscapes – From Gettysburg to Salisbury Plain* (London, New York, 2010) pp.81-94

Chapter 5 : Logistics and Infrastructure

Introduction

The importance of logistics to the military cannot be overstated. Logistics is the management and implementation of moving resources to, and storing them at, the locations where they are required. In military terms, it is the organisation and movement of personnel, equipment, ordnance and supply to places of operational readiness. This chapter will investigate how existing transport and distribution infrastructure was adapted and changed by construction, servicing and supply needs, and how this impacted upon the Norfolk landscape.

The efforts made by the military and civilian workforces in the Second World War to support the prosecution of the war are impressive by any standard. In the eastern counties logistics supported the delivery of material for defensive operations from 1939 and then large scale offensive operations from 1942. The supply and maintenance of a network of military installations, above all, the airfields across Norfolk, would be logistically complex even with the benefit of twenty-first century technology. In the Second World War it was achieved with contemporary construction and engineering techniques, driven by urgent necessity. This chapter will assess the short and longer term physical impact of transport, delivery and storage facilities and their associated infrastructures, both on the landscape and on human activity. The materials to be discussed are primarily ordnance – ammunition, bombs and explosives - and fuel, oil and lubricants. Less impactful in the landscape, though culturally and socially important, are the movement, accommodation and provisioning of military personnel. Operational themes may be divided into (1) transportation (2) storage and (3) concealment of material prior to deployment; these three follow an operational ‘flow’.

Historiography

Several volumes of the exhaustive official histories provide detailed overviews of planning and management of transport, oil supplies, construction, manpower and economics at national

and strategic level but with little localised context.¹ For aviation-related supply however, Payton-Smith's *Oil* is especially useful in its explanation of the distribution methodologies of that most essential of lubricants to the war effort.² Road transport was rather more sophisticated than a casual retrospective view might initially suggest. Savage's *Inland Transport* is indispensable as a chronological and objective assessment of road, rail and sea transport in wartime Britain; in describing the British government's home front transport policy it paints a picture of an extensive road haulage industry, operating on roads the envy of other European countries.³ Little documented record remains at local level however, probably because, despite national strategic direction, the sector remained almost wholly private and commercial, with thousands of small operators working for the military.

The historiography of wartime railways comprises some good generalist volumes though, as with the official histories, include little local or even regional information about the involvement of the railways with military operations.⁴ A comprehensive work on Britain's railways in the Second World War has perhaps yet to be written, at least according to one authoritative source.⁵ Even the best known authors tend to address the railways' perspective rather than any deeper assessment of effectiveness of contribution to the war effort. An exception is Norman Crump's personally observed history of the London and North Eastern Railway's operation in wartime which provides excellent and immediate detail.⁶ Uniquely, it serves almost as a primary source in itself, for two reasons. Firstly, Crump writes from personal wartime experience and from interviews and site visits conducted in the immediate aftermath of the war itself. Secondly, as Crump himself points out, the L.N.E.R simply discarded much of its own operating record and so little formal documentation remains.

The most effective research approach pertaining to military operations is the information contained in military war diaries at the National Archives, which provide helpful detail of adaptation of existing infrastructure, site establishment, operations and delivery manifests.

¹ Hancock, K. and Gowing, M, *British War Economy* (H.M.S.O.London,1949); *Statistical Digest of the War* (Central Statistical Office, London,1949); Postan, M., *British War Production*,(H.M.S.O., London, 1952);

² Payton-Smith, D.J., *Oil – A Study of War-time Policy and Administration* H.M.S.O. London, 1971)

³ Savage, C.I. *Inland Transport* (H.M.S.O., London, 1957)

⁴ Williams, M., *Steaming to Victory: How Britain's Railways Won the War* (2014); Wolmar, C., *Engines of War: How Wars Were Won and Lost on the Railways* (2012); Lambert, A., *Britain's Railways in Wartime*

⁵ Pers. Comm. Nick Ellis, founder of World War Two Railways Study Group – meeting 21.8.15

⁶ Crump, N. *By Rail to Victory – The Story of the L.N.E.R. in Wartime* (London and North Eastern Railway, London, 1947)

Higham's *Bases of Air Strategy*, Smith's *British Military Airfields* and the government's own *The Royal Air Force Builds for War* are also useful in relation to airfield construction, containing data not found in similar publications.⁷

An integrated national transport system

The management of war has been described as a learning process.⁸ In simple terms, it is difficult to plan for unforeseen circumstances. This is evident in the way in which pre-war and early duration provision and logistical planning had to increase exponentially beyond all original expectation. The 158 airfields, nationally, of 1939 more than doubled to 353 in 1941, and many were not well located for rail or road links. This was especially so in Norfolk, the topography and dispersed population, which so suited the building of airfields, giving new emphasis to the meaning of the word 'isolation'. There was a need for frequent and well-managed trans-national transportation systems, with the building of spur lines and sidings in strategic locations. The actual railway infrastructure already existed but new spur lines and sidings were needed in specific locations. The national railway network was well-established but nowhere near geared towards the stringent requirements of wartime; road transport even less so. Moreover, the weather is ever a key factor in military logistics; the winters of 1939-40 and 1940-41 were severe and were, in their own way, as damaging as enemy action, because of blocked rail lines and roads and frozen machinery.

For the duration, the term 'inland transport' was used to describe road, rail, and, despite the apparent misnomer, coastal traffic for coaling and oil supply.⁹ Coastal shipping was still a viable medium for transporting oil and coal around the British coastline. This gives meaning to its perception as an inland transport medium, as distinct from international shipping. The government decided that it was a resource, much like any other, to be utilised to its maximum. The importance of a well-managed, integrated transport system to the war effort was well understood.

‘In a modern economy at war, the inland transport system plays an indispensable

⁷ Higham, R. *Bases of Air Strategy – Building Airfields for the RAF 1914-1945* (Shrewsbury, 1998); H.M.S.O. The Stationery Office *The Royal Air Force Builds for War: A History of Design and Construction in the RAF 1935-1945* (London, 1956, re-published Air Ministry, Air Historical Branch under licence, 1997)

⁸ Higham, R. p.29

⁹ Savage, C.I. *Inland Transport* p.29 and throughout.

role both in the process of war-time production and in supplying the military machine. The way in which inland transport is organised and managed therefore bears directly on the success or failure of the country's war effort.'¹⁰

The situation of 'total war' was new, though some harbinger of it had been seen in the First World War. The centralised management of transportation did however prove to be a process of trial and error, largely because of the all-encompassing nature of need. A number of state controls were imposed in the early years of the war, notably that the civilian Ministry of Transport was in 1941 superseded by a Ministry of War Transport.

The national road network

Road haulage was not, by 1939, an impoverished poor relation of the railways. The inter-war years witnessed a major burgeoning of road transport, free from restriction and regulation. Savage calls it 'unquestionably the most remarkable development in land transport between the wars.'¹¹ Britain possessed a greater mileage of roads in proportion to its land area – if not to its population – than any other country in the world. Road surfacing was of a high standard on major roads nationally and effective road space was being addressed by widening and improvement.¹² Roads, then, were not as archaic as popular culture often presents and, given the low level of private car ownership, which was not to rise dramatically until the 1950s, they were efficient, uncongested movers of goods. It was a serious competitor to the railways but, in wartime, road and rail found common cause. At the start of war, road networks out of London were already being improved to a standard suitable for long-distance haulage.¹³ As will be seen, below, however, provincial roads were less able to meet increases in traffic.

Roadworks not directly required for war needs were suspended for the duration; those required for transporting weapons and machines were prioritised.¹⁴ Petrol was rationed for private use from the outset; military and approved commercial and agricultural supplies were dyed red. Shortly after the outbreak of hostilities, road haulage was taken under the control of the Emergency Road Transport Organisation. Very few records of operations were kept,

¹⁰ Savage, C.I. *Inland Transport* (H.M.S.O., London, 1957) p xv

¹¹ *Ibid.* p.11

¹² *Ibid.* p.12 citing The Minister of Transport in his speech on the Estimates of 1939.

¹³ *Ibid.* p.11

¹⁴ *Ibid.* p.81

however, due almost certainly to the diverse and individual private ownership and operation of road haulage. The same might be said of the railways.¹⁵ The road haulage industry was being used at full capacity by the autumn of 1940, with extra vehicles being needed for delivering tarmac and cement for airfield construction. Long-distance vehicles were being loaded to 80% capacity, including return journeys.¹⁶ ‘Empty running’ had always been an issue and it was clear that emphasis should be given to carrying maximum loads in both directions.¹⁷ The overall history of road haulage in the early years of the war is characterised by conflict and tension between hauliers and the government. Co-operation proved to be problematic but by 1943 it was decided to take control of all commercial vehicles that might normally be engaged in haulage goods for distances over sixty miles. By April of 1944 direct control was such that general traffic was prohibited from moving more than sixty miles without formal authorisation.¹⁸ In terms of traffic density, between 1931 and 1938, 450 kilometres of new roads were built nationally, whilst the number of motor vehicles had increased by more than 70 per-cent.¹⁹ Throughout the war private car ownership steadied at around two million. The end of petrol rationing combined with increased prosperity saw car ownership more than double in the 1950s and again in the 1960s.²⁰

Norfolk’s road network

The county’s road network in the inter-war period was still recognisable in the early twenty-first century.²¹ Strategic routes radiated to the south-east to Thetford, westwards to King’s Lynn via Dereham, and directly eastward to Great Yarmouth. Additional major roads led north and north-east to Cromer and Fakenham respectively, whilst to the south lay the Waveney Valley towns with Ipswich forty miles distant, and a south-east route to Lowestoft. This disposition served a well-placed meeting of supply routes to the airfields, to the two strategic coastal ports and to national rail links. What differentiates the county’s road network in the interwar period from the present day is the composition of road surfacing and, even in the contemporary period, unprecedented increases in traffic. The early part of the century had

¹⁵ Savage, C.I., *Inland Transport* pp.145,153.

¹⁶ *Ibid.* p.300

¹⁷ *Ibid.* pp.550-1

¹⁸ *Ibid.* pp.540, 545

¹⁹ *Ibid.* p.11

²⁰ *Ibid.* p.14

²¹ Ayton, J, ‘The Pattern of Roads in the 20th Century’ pp.176-7 in Ashwin, T and Davison, A. *An Historical Atlas of Norfolk* (Phillimore, Chichester, 2005)

seen, nationwide, the reconstruction and sealing of some road surfaces with tar and bituminous surfacings. Main roads were generally cobbled, wood block paved or metalled with macadam, on which traffic generated huge clouds of dust, incommoding bystanders and motorists alike. Road construction developed eventually to the modern practice of a cambered surface for drainage, with an asphalt or even concrete surface.²²

Norfolk's experience broadly reflected national traffic trends, with increased bus services, encouraged by the advent of the pneumatic tyre, more private car ownership and lorry traffic serving both agriculture and commerce. In 1930 Norfolk County Council took responsibility for all roads and more than one hundred miles of minor roads were surfaced, widened and made safer each year and others widened and hazardous corners improved. These measures failed to keep pace with the increases in traffic however, which was estimated in 1935 to be four times greater than in 1924.²³ Norfolk's roads were ill-prepared for the increase of heavy traffic necessitated by the Second World War. The war saw permanent road closures and diversions across and around airfields and training areas. Notable among these are the diversion of the A140 Norwich to Aylsham road, previously lying directly across the western flank of Horsham St Faith airfield and permanently re-directed to its present day line of travel, and the closure of the road between Bodney and Little Cressingham, across the Stanford Battle Training Area. Curiously, a section of the road between Tunstead and Scottow, leading to RAF Coltishall, was re-constructed as dual carriageway, probably to accommodate heavy traffic to the airfield. No other plausible reason for its existence has come to light.²⁴ It remains an anachronism as the only example of its kind in the county. As a landscape feature, and compared to the steel and concrete central reservations of modern dual carriageways, it presents a visually aesthetic image of a road bisected by rough grass and mature trees.

²² Bayliss, D. *What Went Wrong?: British Highway Development before Motorways* (Motoring towards 2050 – Roads and Reality, Background Paper No.1 (RAC Foundation, 2008) p.8

²³ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes, 1870-1950* (Woodbridge, 2008) p.174 quoting NRO C/C10/270

²⁴ Ayton, J, 'The Pattern of Roads in the 20th Century' pp.176-7 in Ashwin, T and Davison, A. *An Historical Atlas of Norfolk* (Chichester, 2005)



Fig.59 Dual carriageway near RAF Coltishall (author's photo)

Railways – national background

Rail freight and passenger traffic were experiencing heavy competition from unregulated road transport by the 1930s. The inter-war chronology of the British railway network demonstrated a sound base for wartime operational management between 1939 and 1945. Whilst the golden age of railway building had long passed, since 1923 the network had been consolidated into four major operators, eliminating route competition, and would remain so until nationalisation in 1947. The railway companies were beset by financial problems throughout the 1930s but still dominated inland transport carrying in 1938 some 265.7 million tons of goods, minerals and livestock, across 20,000 miles, of which two-thirds was double track. Generally, the railway system immediately before the war of 1939 was efficient, comparing favourably with systems abroad, and the high standards of speed and safety of passenger trains were universally recognised.²⁵ Britain had no formal military railway authority however and relied almost entirely upon the existing civilian rail network and its operating infrastructures to support military transportation for the duration of the war.

²⁵ Bayliss, D. *What Went Wrong?: British Highway Development before Motorways* pp.29, 31

Enormous pressures were put on the civilian staff and rolling stock, leading to extreme debilitation of rail services by 1945, with no physical re-investment in that time.

The four railway companies retained their individual identities, but each would become known for a wartime 'speciality'. The London and North Eastern Railway (LNER), covering the East and North-East, would bear the burden of serving more than three quarters of Britain's airfields including those concentrated in East Anglia.²⁶ Whilst, however, the railways were efficient in peacetime, they were not geared to the exigencies of wartime pressure. It was the government's responsibility to organise and manage this and it was done without directly taking public ownership of the railways or creating a military command structure. Savage describes a catalogue of initial misperceptions and unrealistic projections between government departments about the ability of the railways to deliver. The Committee of Imperial Defence believed that surplus capacity on the railways would always meet wartime need, whilst the Ministry of Transport was more realistic. The most authentic projections of need came from the chairman of the Railway Executive in May 1939, just four months before the outbreak of war.²⁷ At midnight on 31st August 1939 the railways were brought under government control and a Railway Executive Committee formed, comprising the general managers of the four main-line companies and the vice chair of the London Passenger Transport Board, as agents of the Ministry of Transport but were still allowed to generate their own direct revenue up to £40 million per annum.²⁸ The pressure of expansion of the armed forces, from 2,212,000 personnel in June 1940 to 3,484,000 just a year later, along with logistical supply needs of airfield construction and military camps, was a portent of things to come as the war progressed.²⁹ By the end of 1940 it was acknowledged that whilst no new routes were to be constructed, £10 million was to be budgeted for the improvement of existing routes. The Railway Executive Committee based this proposal on the awareness of a diminishing pool of labour, that military freight and passenger traffic would inevitably increase, and that speedy turn-round was essential.³⁰ This is important, in that no attempt was made to significantly improve or extend the infrastructure of the railways to help meet expected war need. The government intended to rely upon the railways simply to adapt as need arose; and it did arise in the eastern counties, with the relentless programme of

²⁶ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) p.31

²⁷ Savage, C.I. *Inland Transport* pp.93-95

²⁸ *Ibid.* p.101, 103

²⁹ *Ibid.* p.220

³⁰ *Ibid.* P.249

airfield construction from 1941 peaking in 1943 and subsequent operational supply needs. As Savage puts it:

‘In the long run, the railways’ contribution to the war effort turned on their ability to perform ordinary task and adjust themselves to change in the volume and flow of different types of traffic as the course of the war changed.’³¹

Realistically, it was a case of first of all having to co-ordinate and refine the operating practices within the existing railway framework and, secondly, expand delivery and storage facilities at what might be termed military ‘hot spots’. In the Norfolk context this would entail engineering works at key locations, enabling fast, efficient and effective un-loading, storage and turn-around. Colliers, active along the east coast in the inter-war years, were utilised to the maximum during the war years, carrying 38 million tons of cargo, of which 24 million were coal.³²

The British transport system was, then, efficient at the outset of war. The increasing demands of the war effort were, however, to put unimagined strain upon the railways especially. By the autumn of 1943, logistical difficulties reached the peak of crisis in the eastern counties, when airfield construction was nearing its busiest, requiring the transport of both construction material and operational material for those sites already fully active. The LNER was, by that time, handling unprecedented levels of traffic, both military and agricultural.³³ The road haulage sector was prevailed upon to help and lorries which carried cement to eastern airfields were back-loaded with potatoes for London.³⁴ Despite the supply of specialist wagons and the introduction of imported American locomotives wagons, engines of all types and labour, were in crucially short supply.³⁵

The great achievements of inland transport organisation by 1944 contrasted sharply with the early war years’ failure to have an effective policy of management.³⁶ By VE Day, however, Britain’s railways were exhausted. It was a story of make do, expand where immediately needed, but not mend. After the war, the big four railway companies were effectively

³¹ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) p.41

³² *Ibid.* pp.33; and Savage, C.I. *Inland Transport* p.161

³³ Savage, C.I. p.627

³⁴ *Ibid.* pp.575, 576

³⁵ *Ibid.* pp.406-411

³⁶ *Ibid.* p.635

bankrupt. The 1947 Transport Act saw not just the railways, but also long-distance road haulage, coastal ports and bus companies taken into public ownership by the Attlee government. Bitter resentment within the road haulage industry led to the Conservative government de-nationalising that part of the sector in 1951. It is a matter of on-going debate as to whether the railways were already in a parlous state in 1939, regardless of their situation in 1945. The practical fact was that a radical organisational solution to re-investment and re-building was needed. There followed the 1955 Modernisation Plan which heralded genuine reinvestment in the railway infrastructure. Ever-increasing competition from road haulage and, later, private car ownership, however led in 1961 to the still highly controversial reassessment of the railways by Beeching.³⁷ Rail passenger traffic had actually seen an increase in the late 1950s, thanks to reinvestment and improvement but it was all too late. One third of the network was said to be carrying one per-cent of the traffic. Nationally one third of passenger services and about 4,000 of 7,000 stations were to close. The measures were extreme and saw some major national routes closed which subsequently proved to be needed. In Norfolk an example of the opposite happened; the King's Lynn to Dereham to Norwich line was closed, despite Beeching intending it to remain in business for express passenger and freight traffic, albeit with most small stations on the lined being closed. The war did not cause the dismantling of either the national or the Norfolk rail network. It could be said to have created conditions for their potential demise but the eventual outcomes were the result of political, ideological, economic and partisan decisions taken fifteen years and more after.

Norfolk's railway network

There is a generalisation that Britain's railway network in 1939, though extensive, did not serve geographically remote airfields well.³⁸ This was not the case in Norfolk. Fig,XX shows the correlation between airfield locations and corresponding road and rail networks. A GIS extrapolation of all 175 railways station and minor halts in contemporary Norfolk shows that ninety-seven per-cent of all places in the county were within 4.5 miles (7 km) of a station. More significantly, almost half the airfields were as little as three miles (5 km) from a railway station.

³⁷ Beeching, R. *The Reshaping of British Railways Part 1 Report* (HMSO, 1963),p.15

³⁸ Higham, R. *Bases of Air Strategy: Building Airfields for the RAF 1914-1945* p.31

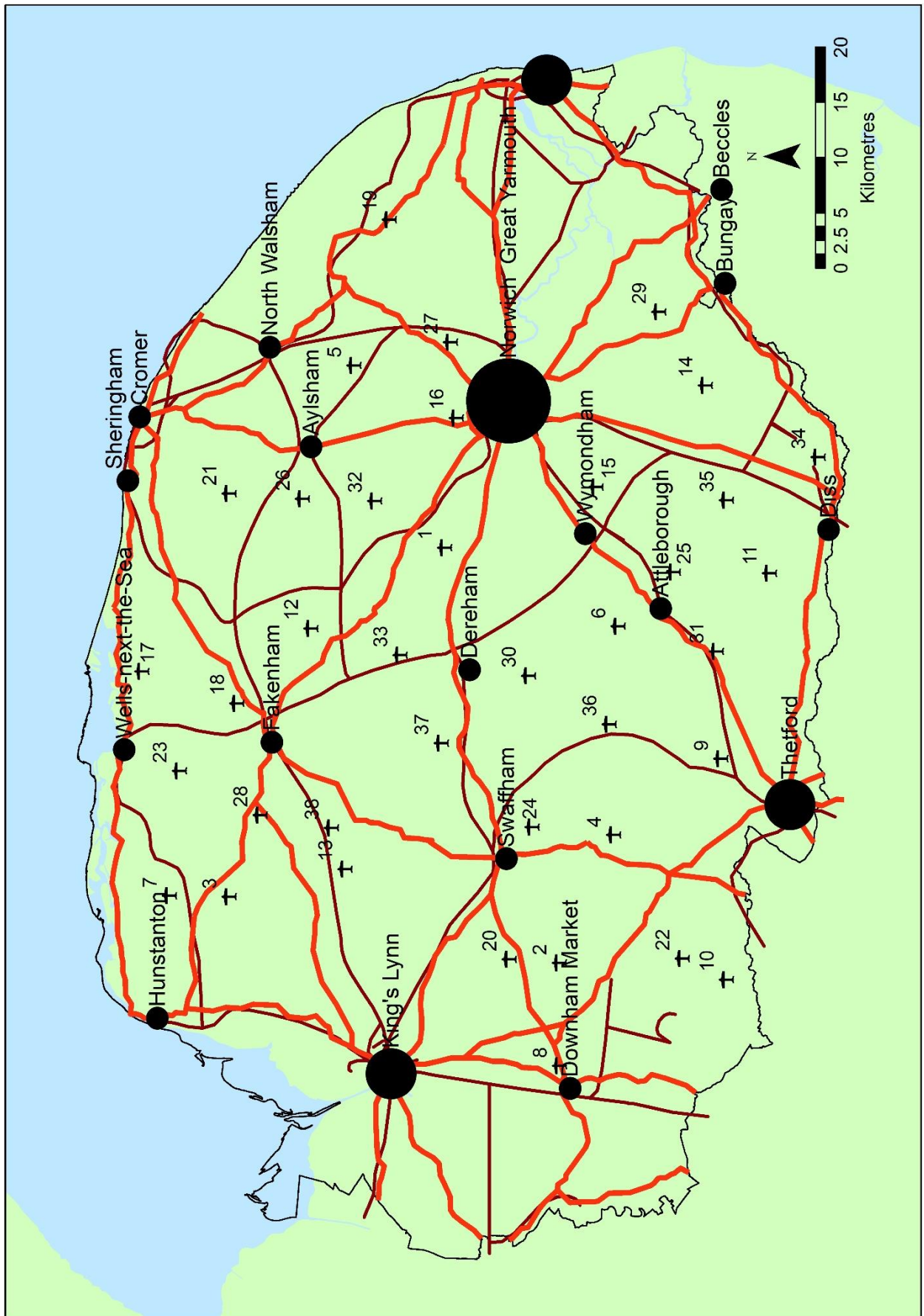


Fig.60 Norfolk's road (red) and rail (brown) networks showing proximity to airfields

The close correlation between rail and road routes further illustrates the comprehensive coverage of the regional transport network.³⁹ Twenty-five unspecified London and North Eastern Railway (LNER) stations where conditions were especially problematic are reported to have been extended but this is likely to have been across all of ‘bomber country’, that is East Anglia and Lincolnshire. One group of geographically unspecified ‘little country stations’ are said to have handled, in the first six months of 1940, 27,152 tons of traffic; they handled eight times that amount during the first half of 1943. One station is cited as processing twenty-six times more traffic in that second time period.⁴⁰ The rural railway stations across Norfolk had been built to deal with agricultural and horticultural freight and passenger traffic. There was not sufficient time to construct large scale extensions and some existing facilities were either inadequate or non-existent, and certainly not fit for wartime usage, requiring carriage of industrial goods on an intensive scale. Major cargo for airfield construction comprised rubble, bricks, tarmac and cement; the fact that a good deal of rubble was furnished from the ruins of buildings caused by the London air raids of 1940 and 1941, then to form the basis of striking at the heart of German industry, communications and cities, has been described as ‘poetic justice’.⁴¹ Indeed Crump states unreservedly that the LNER’s most important contribution to the defeat of Germany was its support of the bomber offensive.

‘Like many other people in 1941 and 1942, I often wondered when we were really going to bomb Germany. It was only when I came to write this book that I realised what a major bomber offensive really meant. First the airfields had to be built.... Then they had to be equipped with everything from the control tower apparatus to the coke for the cook-house. Next they had to be fed continuously with bombs and spare parts. Last but not least, they needed a continuous stream of petrol and oil.’⁴²

Beginning in November 1942, six trains a day were running into eastern England. By April 1943 this had increased to nine trains daily and during that period 750,000 tons of rubble

³⁹ In the early part of this century, just thirty-five stations remain across Norfolk.

⁴⁰ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) pp.31-32.

⁴¹ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) p.32; Crump, N. *By Rail to Victory – The Story of the L.N.E.R. in Wartime* (London and North Eastern Railway, London, 1947) p.148.

⁴² Crump, N. *By Rail to Victory – The Story of the L.N.E.R. in Wartime* p.146

were moved by 1,700 trains. In July 1943 the Air Ministry requested 14 million bricks to be accrued from Bedfordshire to airfield sites, requiring eighty special trains; at the same time the railways were charged with conveying 3,000 tons of tarmac or slag every day for eighty days from the Midlands to sixteen airfield sites in East Anglia, key delivery locations being Fakenham and Attleborough. This raised a tension between rail capacity required for military purposes and that for agricultural haulage.⁴³ In the context of railways, it was not solely the logistical requirements of the airfields and military training areas themselves, but the limitations of railway station handling capacities which were already having to cope with increased agricultural produce traffic.

Some new sidings were constructed however and within twelve months of their completion a total of 46,000 wagon loads of airfield construction traffic, on 800 special trains, had passed through them. 900 special cement trains were run to concentration points from August 1943. The railways also transported bulldozers, graders and other specialist runway construction equipment, often of American design of size and scale not before seen in the UK. Then followed lesser materiel such as asbestos sheeting, timber cladding, piping, electrical equipment, Nissen huts, storage tanks. Then, with the arrival of American personnel in mid-1942, the transportation of personnel increased considerably. From the autumn of 1942 for the next two years, more than 460 LNER trains conveyed around 167,000 personnel to East Anglian airfields.⁴⁴ Concurrent with this was the constant requirement for aviation fuel, petrol, oil, lubricants, bombs and ammunition. Fuel was originally conveyed in a motley selection of tank wagons but as the war progressed, exclusive fuel trains comprised of modern high capacity wagons were run from the west coast ports eastwards to the newer airfield distribution points. Although few consignment records survived the war, it is clear that the LNER carried vast amounts of petrol and aviation gasoline to the airfields.

⁴³ Anon. *It Can Now Be Revealed*: p.33

⁴⁴ .Anon. *It Can Now Be Revealed*: P.35

Air Depots	Ministry	Date opened	Numbers of trains received						Total
			1939	1940	1941	1942	1943	1944	
Thetford		June 1939	6	36	48	76	280	148	594
Massingham		June 1939	6	44	17	120	180	164	531
Hethersett		July 1943	-	-	-	-	132	236	368
Ellingham		March 1944	-	-	-	-	-	148	148
			12	80	65	196	592	696	1641

Table.6 Trains received at Air Ministry depots in Norfolk⁴⁵

Distribution railheads were established at Lowestoft, South Lynn, Roudham, Crown Point (Norwich), Norwich (City Station), Downham and Dereham. Dereham handled exceptionally heavy tonnage, the greatest single day's clearance in March 1944 amounting to 95 wagons, about a hundred tons of cement for construction work. Later, ordnance and fuel came to be the primary cargoes. The loads at these railheads were usually split into smaller local trains, releasing wagons at wayside sidings as they progressed. Late 1943 had seen new 'wayside' sidings become available at Attleborough, Dereham and Tivetshall. This last had a pre-war yard capable of parking twenty-six wagons; it was all that was ever needed in peacetime. When Tivetshall became the hub of seven airfields it had to handle up to 200 wagons at a time in addition to special passenger traffic for construction workers. Four new sidings were built at Tivetshall. One potential incident relates a bomb train, a fuel train and a third with bitumen, all being unloaded at the same time, after dark, when enemy aircraft passed over without incident. Diss had a special bulk cement handling shed built, accommodating uniquely designed fifty-ton steel wagons, discharging into customised lorries. Attleborough of course was also geographically central to airfields, including Old Buckenham and Deopham Green.⁴⁶ Crump describes Attleborough as handling during construction for these two airfields alone, 3,500 tons of stone, 37,000 tons of cement, 3,750 tons of ashes, over three thousand

⁴⁵ Compiled from Crump, N. *By Rail to Victory*

⁴⁶ Crump, N. *By Rail to Victory* pp. 148-150

tons of girders and roofing; four hundred tons of drainage and water pipes, 500 tons hangar sections; 400 tons air raid shelters; 300 tons petrol tanks, 200 tons electrical cables and fittings and 6,350 tons of stores.⁴⁷ Attleborough was extended several times by the Air Ministry, with siding accommodation for 36 wagons, along with a shunting neck, later extended to 65 wagons, allowing total parking for 100 wagons. Another 70 wagons were accommodated with later expansion. Harling Road was an archetypal rural wayside station on a main line and, though having to serve three airfields, had fewer extensions built. Ellingham and Earsham were even smaller, on single track, Earsham handling 625 special trains, comprising 21,038 wagons carrying 200,000 tons of freight over a three-year period.⁴⁸ Therefore, whilst many small stations and halts remained relatively unimproved by war needs, others were transformed beyond pre-war imagination. Crump, writing just two years after the war's end, states that Earsham, Watton and Ellingham had already become 'white elephants', presumably in terms of their post-war over-capacity. On the other hand, the District Superintendent regarded the improvements made at Attleborough, Brandon and Dereham as worthwhile for future use. Indeed the legacy of the line extensions was such that, for example, the Tivetshall branch line was by then connected to the Waveney Valley Line.⁴⁹ Large numbers of servicemen were entrained to airfields throughout the war, increasingly so from 1943 with the presence of USAAF personnel in East Anglia. It was by no means a one-way journey to the airfields however. Trains were constantly transporting service personnel on recreational leave and postings, especially at weekends. Thetford station saw the number of tickets issued from 21,418 in 1938 to 110,389 on 1944. Diss saw an increase over the same period from 40,000 to 330,000. The understandably cavalier behaviour of servicemen saw, on one occasion, the theft of front wheel valves from every one of more than a hundred bicycles parked at Diss station. Railway property was not always respected by troops making for short cuts back to base although relations between railway staff and troops were considered to be good on the whole.⁵⁰

⁴⁷ Crump, N. *By Rail to Victory* pp. 148-150

⁴⁸ *Ibid.*; also Adderson, R. and Kenworthy, G. *Tivetshall to Beccles – The Waveney Valley Line* (Midhurst, 2004) p.75.

⁴⁹ Crump, N. *By Rail to Victory* pp.150-1

⁵⁰ Crump, N. *By Rail to Victory* p.135

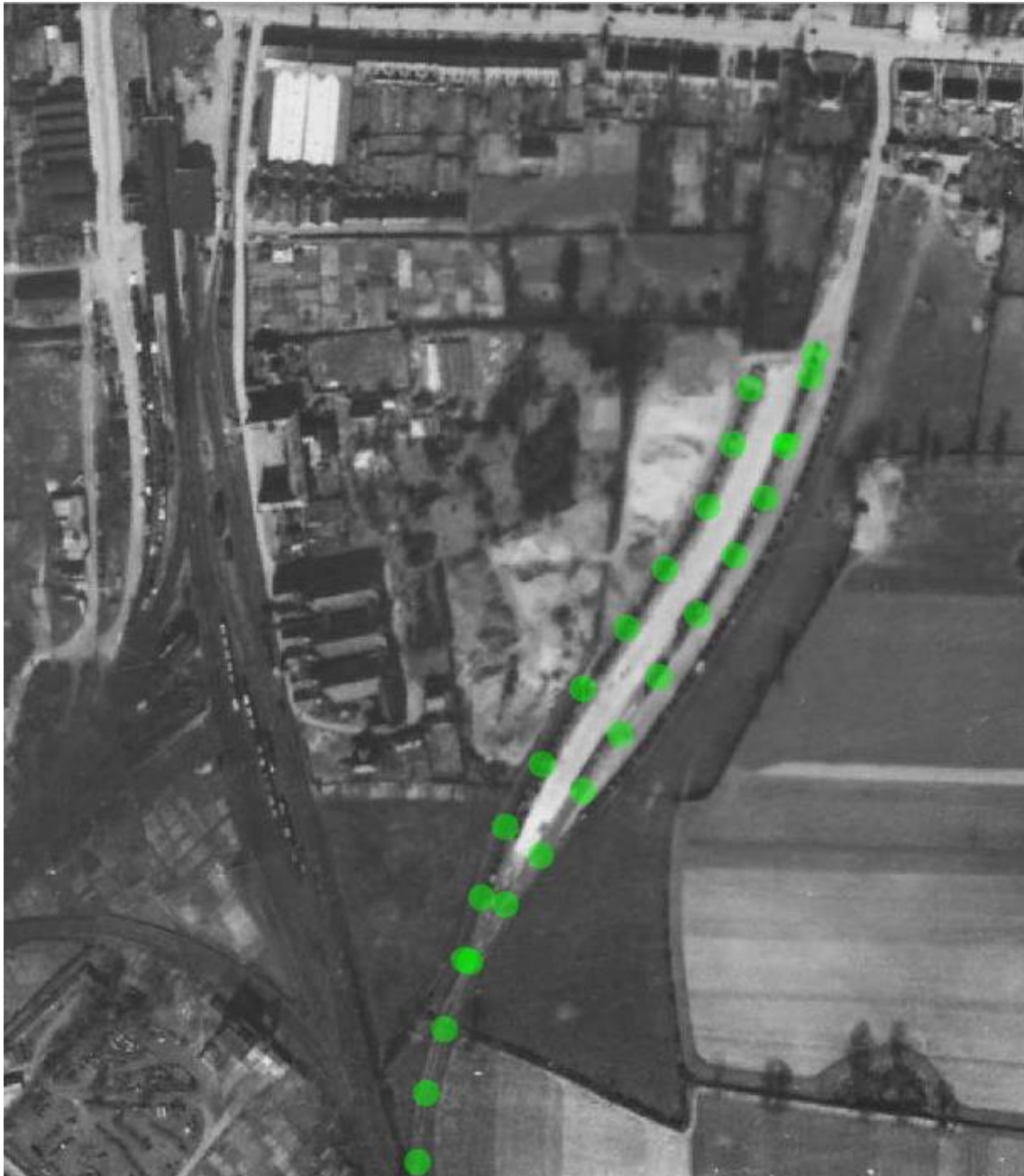


Fig.61 Dereham station, 1946. A key reception area for mid-Norfolk airfield supply trains and interchange to King's Lynn and Norwich. The main line runs south-north to the left of the image, with the main station buildings to top left. The green markers show the line of the Air Ministry siding heading the north-east.⁵¹

⁵¹ Extracted from RAF 1946 aerial survey, Norfolk Heritage Map Explorer

Petrol, oil and lubricants

Petrol, oil and lubricants (POL) were the lifeblood of aviation operations. Fuel oil, particularly aviation fuel, was used at phenomenally increasing rates by airfields, demand exceeding supply until late in the war, and an airfield without the means to power aircraft is rendered useless. Pre-war, the RAF's fuel reserves were never more than 8,000 tons, the estimated equivalent of ten days' war supply. It proved to be no more than one day's supply. This minimum requirement was increased beyond all projected need as the war progressed. By January 1941 the Air Ministry was holding 940,000 tons of aviation fuel in reserve; by September 1943, 1,337,000 tons. This all had to be stored, delivered and stored again at local sites. The complexities of transporting oil under extreme wartime conditions dwarfed pre-war requirements; in 1938 the railways handled 250,000 tons of petrol, oil and lubricants each month. In 1943, 350,000 tons were moved by rail each month.⁵² Civilian truck drivers were needed to distribute fuel locally, from railheads and sidings. The logistical paradox for supply to the airfields of eastern England was that of distance. Of equal concern was transporting oil to the UK itself. Britain had no homeland oil supply; in 1939 ninety per-cent of oil came across the Atlantic from the United States, Venezuela and Trinidad. The remaining ten per-cent came from the Middle East but the route became too dangerous by 1941.⁵³ The pre-war landfall for oil supplies to the UK was at west coast ports, for subsequent distribution by rail and coastal tankers. This did not change during wartime, except for the additional huge increase in demand for all kinds of oil products, especially aviation fuel, and for the hazards to shipping when delivering to the east coast ports.

The Government Pipeline and Storage System (GPSS)

Though railways were a major conveyor of POL, increasing wartime demands led to the need for a faster alternative. During 1941 an ambitious project was decided upon – the construction of a transnational underground pipeline. The Government Pipeline and Storage System (GPSS) eventually measured 504 miles, consuming 47,000 tons of equipment and material.⁵⁴ It is the basis of the modern-day commercial cross country pipelines still being

⁵² Higham, R. *Bases of Air Strategy – Building Airfields for the RAF 1914-1945* pp.31-33

⁵³ Deighton, L. *Blood, Tears and Folly: An Objective Look at World War II* (London, 1993) pp.497

⁵⁴ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) p.35

constructed in the 1960s and early 1970s.⁵⁵ From mid-1943 it was perceived that there was no scope for expansion of long-distance haulage of oil movements even by rail, and road haulage was for relatively short haul distances. So the next, most ambitious, project was a major extension to the newest airfields in the east of England. By that time the USAAF calculated it needed 80,000 tons a month. 900 new tank wagons would have been needed and this was just not feasible. The Air Ministry had earlier suggested a pipeline to run eastwards for 100 miles to the RAF Reserve Depot at Misterton near Doncaster. Then a smaller capacity line would chase south to Sandy Heath in Bedfordshire.⁵⁶ The logic to make the final expansion leg into the eastern counties was obvious.

It was estimated that an additional 108,000 tons of aviation spirit needed to be supplied to the eastern airfields and the Storage and Development Sub-Committee sanctioned the construction of a pipeline from Thames Haven to East Anglia. The pipeline was then to run north-west from the Estuary to an RAF depot at Saffron Walden in Essex. From there it ran north-east across Norfolk and Suffolk, with a spur to Thetford, terminating at a Fuel Distribution Depot at Hethersett station. The GPSS pipeline reached Hethersett in March 1944, up until which time the av-gas for Norfolk's airfields came in entirely by rail, with site distribution by road tanker. The complete 125-mile link thereby provided a constant, switchable supply, distributable via local road and rail links. A spur ran to Thetford and the main was linked to the Midland circuit again at Sandy Heath.⁵⁷ The key feature was that pipelines passed within 4½ miles of sixteen existing or projected airfields connected to the main system.⁵⁸ The reduced burden on rail and localised road haulage was considerable. The pipeline, as seen at Hethersett in 1947, was deliberately inconspicuous, although the pipe could be seen running overhead for several yards, high enough for aviation fuel to discharge into tank wagons for local distribution. An iron fence bordered the installation. Even with the pipeline in place fuel trains had to be backed in. The site lies on a 1 in 116 up-gradient from Norwich and tank wagons had to be fully secured lest they started to roll; three trains at any one time would cause a through blockage. Crump describes the 'successful use of inadequate

⁵⁵ <http://www.hmrc.gov.uk/manuals/hcotegmanual/hcoteg110500.htm> accessed 12th July 2015

⁵⁶ Payton-Smith, D.J., *Oil – A Study of War-time Policy and Administration* (1957) pp.332-333

⁵⁷ There was also standing for 175 rail tank cars at Sandy Heath, for direct delivery to Claydon, Hethersett, Massingham, Mountnessing, Saffron Walden and Thetford at the rate of 8 to 11 trains a day, seven days a week. Capacity was 40,000 tons but it was later enlarged. Between September 1943 and August 1944 dispatches totalled 54,791 tank car loads.

⁵⁸ Payton-Smith, D.J., *Oil – A Study of War-time Policy and Administration* p.409. By the end May 1944 the USAAF was accounting for nearly half the total aviation spirit consumption in Britain p.392

facilities in order to achieve the impossible.’⁵⁹ The disused station is adjacent to Norfolk County Council’s Ketteringham works depot and household waste recycling centre, half-a-mile south of Hethersett village, bounded to the north by the main Norwich-London rail line. The depot and rail sidings, covering 17.5 acres and comprising eight earth mounded storage tanks and specialist buildings were decommissioned as recently as 2009.⁶⁰

Whilst Hethersett was a rural station, the Thetford fuel depot, covering about forty acres, was located immediately to the west of the present-day A1088 to the north of the town, just south of the modern, re-routed, A11 London Road. The area is now an industrial estate, in common with so many wartime sites across Norfolk and, indeed, the UK. Other fuel depots, at King’s Lynn and Norwich Victoria, were supplied by rail as was fuel-oil for Fog Investigation and Dispersal (FIDO) operations at Foulsham and Downham Market.⁶¹

The steel tubes for the pipe-line varied in length from 20 to 60 feet, requiring the use of specially constructed bogie bolster wagons. Delivery to reception areas needed to be coordinated with varying speeds of excavation and pipe-laying, dependent on weather and geological conditions. Transportation from rail to site was another issue requiring fast but careful logistical planning; and yet it was achieved. One 40 mile section is said to have been completed in 36 days, though this seems a little unfeasible, even with much of the pipeline lying close to ground surface.⁶² Surprisingly, in a modern safety-orientated environment, much of the pipework is not far below ground, perhaps a metre at most, and can be found cutting through modern private residential gardens and driveways in Norfolk. No documentation of its construction is available through The National Archives; the fact that the network is still used to supply commercial airports seventy years later suggests that security concerns preclude such information being available, yet the entire system was, controversially, privatised as recently as 2015 and the basic routes are well known.⁶³

⁵⁹ Crump, N. *By Rail to Victory* p.155

⁶⁰ Hethersett depot and station sale particulars, accessed 12 November 2016
www.properties.deloitterealestate.co.uk/property-search/development/scheme/Former-Fuel-Depot-Hethersett-Nr-Norwich-Norwich.html

⁶¹ Crump, N. *By Rail to Victory* p.152.

⁶² Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) p.35

⁶³ <http://www.parliament.uk/business/publications/written-questions-answers-statements/written-statement/Commons/2015-03-20/HCWS434/> accessed 29 Oct 2016. Government Pipeline and Storage System Sale Update: Written statement from Under Secretary of State (Defence) announced the sale of GPSS to Compañía Logística de Hidrocarburos (CLH) of Spain for £82 million.

One statistical example illustrates the value of the national pipeline; the route specifically to serve ‘a large number of East Anglian airfields’ carried the bulk equivalent of 35,000 tank wagons, equal to 2,400 trains, within 12 months of completion. Even so, huge quantities of aviation fuel continued to travel by rail. In the three months following D-Day, 1,132 trains carried 100 million gallons of aviation gas to East Anglian airfields.⁶⁴ The pipeline was a crucial augmentation to rail deliveries but never replaced the train, not least because the Hethersett fuel depot was also a road and rail distribution point. In the three months following D-Day, for example, 1,132 petrol trains carried 100 million gallons of white oils to East Anglian airfields.⁶⁵ The remains of a lineside fuel depot still exist at Ellingham in south Norfolk; visible on the 1946 RAF surveys are four circular storage tanks. Used by the USAAF for aviation-gas storage and distribution, and sited on the strategically important Waveney Valley line, the choice of site suggests that oil supplies might also still being delivered through the ports of Lowestoft and Great Yarmouth. ‘We used to watch the open trucks coming up the railway line full of bombs for Seething and Flixton. There was a huge petrol dump at Ellingham’ recalls a local resident.⁶⁶ This also links the activities of the Ellingham fuel depot with the railway siding at Earsham installed for the unloading of ordnance for transit to the nearby ammunition depot. By the 1980s the tanks had themselves been removed and the site adapted as a grain store, with two rectangular huts, a vehicle shed and an air raid shelter remaining.⁶⁷

⁶⁴ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (British Railways Press Office, Westminster, 1945) p.36 Once again the author does not name the depot or the precise area of the airfields; It is highly likely that the distribution depot was that at Saffron Walden and the receiving depot Hethersett. The text was published in 1945 and much of it is written in the present or immediate past tense. Security and secrecy would still have been an issue.

⁶⁵ Ibid. p.35

⁶⁶ Reminiscence from local resident Alec Rogers, submitted to the BBC’s People’s War website 9th July 2004 by Bungay Library www.bbc.co.uk/history/ww2peopleswar/stories/90/a2822690.shtml accessed 5th December 2015.

⁶⁷ Norfolk Heritage Explorer ref. 44956

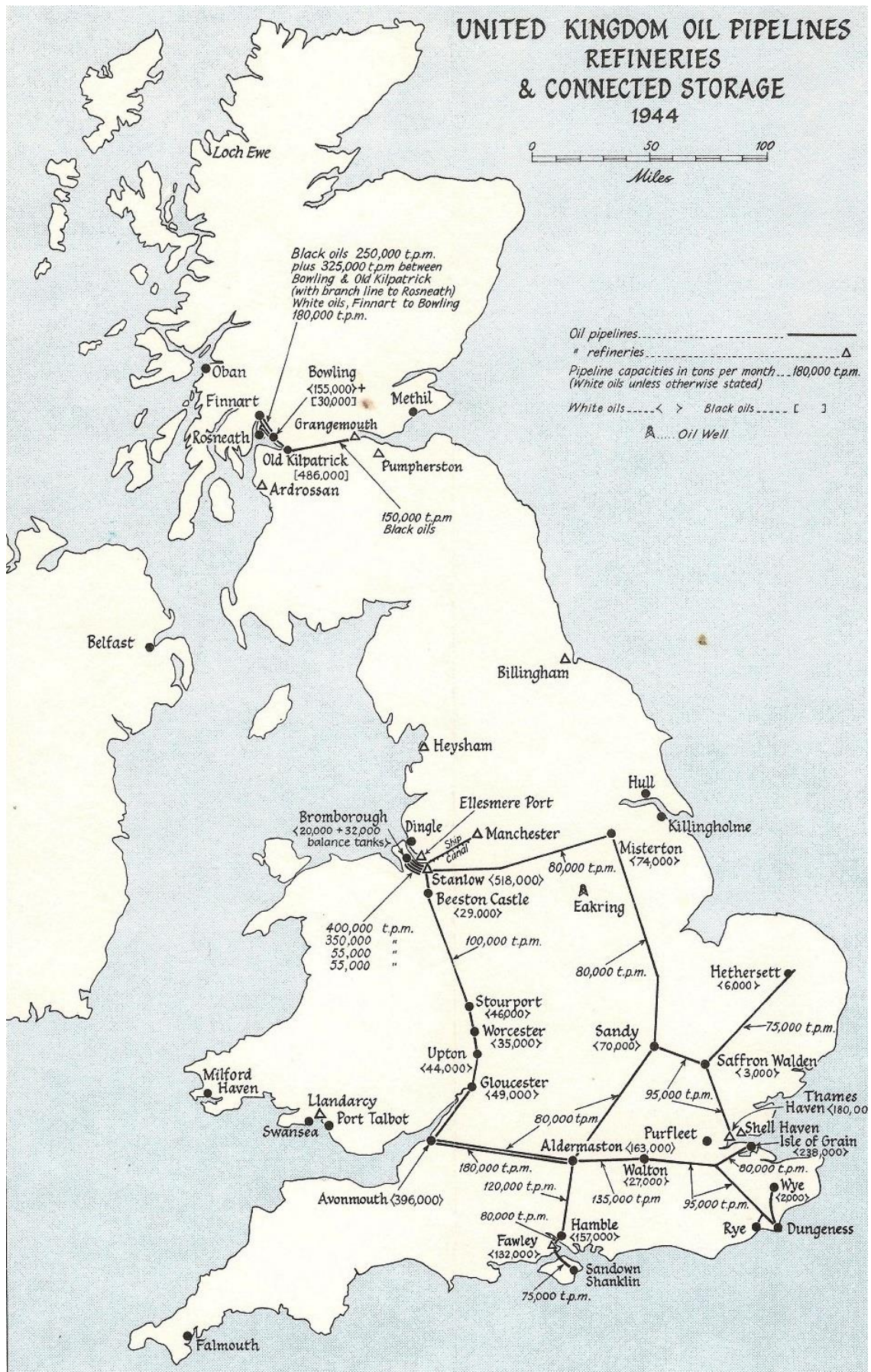


Fig.62 GPSS map showing spur to Hethersett.⁶⁸

⁶⁸ From Payton-Smith, D.J. *Oil – A Study of War-time Policy and Administration* (HMSO, London, 1971) facing p.213. The Hethersett depot was able to process 2.38 million gallons per month.



Fig.63 Hethersett Fuel Depot, 2012 ⁶⁹

The main Norwich-London railway line runs east-west, at foot of image. The station was closed in 1966. The wartime sidings are clearly visible, as are the earthworks of eight fuel storage tanks. On the south side of the site, top of image, is the present-day Norfolk County Council depot and household waste disposal site. Total contemporary site measures about 0.07 sq.km.



Figs.64 and 65 Thetford Fuel Depot sited accessed from the Norwich-Cambridge rail line, lower right of photo. The 1946 image evidence of activity at the site. The 1988 aerial view shows the earthworks still highly visible ⁷⁰ (Norfolk HER)

⁶⁹ www.airfieldresearchgroup.org.uk/forum/fuel-depots/4022-hethersett-fdd-norfolk (accessed 12th Jan 2016)

⁷⁰ Extracted from Norfolk Historic Environment Map Explorer



Fig.66 GPSS section from north of Thetford to Hethersett⁷¹

⁷¹ Map from Airfield Research Group

Much of the detail of railways in this chapter relates to aviation fuel and ordnance supply. The army also drew heavily on rail-borne transport, particularly for the transit of armoured vehicles for training exercises. Five new sidings were constructed at Two Mile Bottom signal box, two of which were a unique type of loading bay, referred to as ‘end-loading’, designed for loading tanks. These facilities were geared towards selected military personnel being trained in specialist techniques and experimentation in loading and off-loading tanks.⁷² Tanks and armoured vehicles were not loaded sideways onto wagons. The first vehicle was driven forwards in-line with the end wagon, then driven carefully along the line of wagons to the front; then the next tank followed until each successive wagon was laden.⁷³ Figure 64 almost certainly shows these techniques in practice two miles south at Thetford, a centre of army traffic, especially that of armoured brigades. 1941 to 1944 saw two or three train-loads of tanks every day. The station lay on an S-curve, with the view from the signal box obstructed by station buildings. The Two Mile Bottom sidings were intended to relieve the pressure on the Thetford anomaly.⁷⁴ The logistics of large-scale army exercise were not confined to the active terrain of the battle training area. Eastern Command Exercise ‘Bulldog’ was partly predicated on the enemy having control of Ely; sixty trains were run on alternate routes as far north as East Winch and Narborough, to Swaffham, Brandon and thence to Ely.⁷⁵ The railways and the military would continue their close relationship post-war and beyond the end of the twentieth century in another part of the county. The closure in 1995 of RAF Swanton Morley airbase was followed by its transfer to the Army, renamed Robertson Barracks. The military has used the restored heritage Mid-Norfolk Railway to transport armoured vehicles since the late 1990s; in January 2009 for example flat- and well-wagons loaded with Scimitar light tanks ran to Dereham station *en route* to Pembrokeshire.⁷⁶ Figure 65 evidences flat-car armour transport practised in much the same way as sixty years earlier.

⁷² Crump *By Rail to Victory* p.131

⁷³ A local resident recalls seeing ambulance trains disembarking wounded personnel to ambulances at Two Mile Bottom sidings. <http://www.wisearchive.co.uk/story/wartime-thetford/> (accessed 20 September 2017)

⁷⁴ Crump p.132

⁷⁵ Crump p.133

⁷⁶ ‘Army and infrastructure trains – all in a day’s work on the MNR’ accessed 16 Feb 2017 <http://www.norfolkrailwaysociety.org.uk/archive-jan-feb-2009.html#>



Fig.67 Covenanter tanks, 5th Royal Tank Regiment, 9th Armoured Division entraining at Thetford, May 1942⁷⁷



Fig.68 Scimitar light tanks, Mid Norfolk Railway, 1990s⁷⁸

⁷⁷ IWM H20244

⁷⁸ Archant Archive

Ordnance storage, camouflage and woodland

Bombs

The narrative of provision for bomb storage from 1939 onwards is one of exponentially increasing requirements and a resultant lack of storage space at all distribution levels. Six Air Ammunition Parks were completed or nearing completion by September 1939. Each was sited for good rail and road access. They were considered wartime-only facilities and, as such, were built with simple open storage traverses, with compromises being made on peacetime safety. The official history describes them succinctly as the ‘retail shops’ in the ordnance distribution chain.⁷⁹ The imagery is helpful if the airfields are seen as the ‘customers’ or, in marketing parlance, the end-users. By 1940 a hierarchy of three underground bomb storage depots had been constructed at key sites in northern, central and southern England. These served eight Air Ammunition Parks at regional level, all constructed to a common design. Sited with access to railway lines, these AAPs were each furnished with an enclosed component store, four stores for incendiary stores and groups of open-topped concrete magazines. They were dispersed sites, with blast barriers – these are the traverses which usually remain as earthworks. An open magazine was intended to accommodate 56 tons of bombs. Ancillary buildings for maintenance and staff were sited accordingly. The sites, re-designated Forward Ammunition Depots in October 1941, were at Barnham (Norfolk-Suffolk border), Earsham (Norfolk), Norton Disney (Lincolnshire), Snodland (Kent), Southbourn (Dorset), Brafferton (County Durham), Lords Bridge (Cambridgeshire) and Mawcarse (Perthshire). South Witham (Lincolnshire) came on line in mid-1942 and Hockering in January 1943, both for RAF use. Mid- to late-war FADs were built for specific USAAF use at Braybrooke (Northamptonshire), Melchbourne and Sharnbrook (Bedfordshire) and Bures on the Suffolk / Essex border.⁸⁰ The significance of the geographical distribution is that three of the original eight, in 1941, were in East Anglia, presaging the great surge in airfield construction in the east of England from that same year. The FADs at Barnham and Hockering are compared as case studies, below.

⁷⁹ *The Royal Air Force Builds for War: A History of Design and Construction in the RAF 1935-1945* (H.M.S.O. London, 1956, re-published Air Ministry, Air Historical Branch under licence, 1997) p.267

⁸⁰ Where RAF and USAAF units operated in similar geographic areas, the USAAF was granted facilities at the RAF sites.

Camouflage

The concealment of personnel, materiel and structures from enemy observation emerged as a combination of visual art and scientific principles from the First World War onwards. A government Camouflage Committee functioned in several incarnations for much of the war, with a specialist sub-committee for aerodromes in 1941 but no single authority had overall responsibility for camouflage policy. All three service departments were allowed their own practices and, in fairness, their operational environments were quite different in almost every respect. No further research on concealment techniques was carried out after 1943 which surely reflects the receding threat of attack on homeland military sites.⁸¹ For the R.A.F. the objective was to conceal and disrupt the appearance of the distinctive and vulnerable features of an airfield – the runways, key buildings and boundaries – from the air. Definitions of safe height and distance were, in fine weather, 10,000 feet at six miles distance or 300 feet at two-and-a-half miles, and in cloudy conditions 5,000 feet at three-and-a-half miles.⁸² The idea was to break up the angular boundaries and features of military installations. The problem is that nature, with the exception of water, is generally irregular in appearance, whilst man-made structures tend towards regularity, form following function. Natural objects also exhibit texture or multiple shadows, and therefore do not reflect light prominently. Buildings and concrete, with flat facings, reflect light. ‘Scrimmed’ netting, hemp and jute was draped over high vertical walls to disrupt form; bold dividing lines were painted on roofs; and the breaking-up of the linear layout of early-war grass runways was achieved by painting simulated hedge lines in keeping with similar surrounding features. Field colouration was sometimes effected by use of black, yellow or brown powders to simulate agriculture where, in reality, grass runways existed. Roadways were often treated with matt paint or brick dust. In the end, a range of bituminous, silicate and oil-based paints was used, black bitumen emulsion proving effective for ‘hedging’.⁸³ The later and more prolific concrete runways proved highly problematic. Concrete is matt in appearance close up, but from the air is highly visible. Experiments at Stradishall airfield, near Bury St Edmunds, led to the universal use of pre-coloured chippings to reduce the ‘shine’ from concrete. A more successful solution came from an age-old traditional source; it was found that tan bark, available in large quantities from tanneries, would produce an almost dark effect on concrete. The greatest success

⁸¹ <http://discovery.nationalarchives.gov.uk/details/r/C9081> (accessed 1st Nov 2016)

⁸² The Stationery Office *The Royal Air Force Builds for War: A History of Design and Construction in the RAF 1935-1945* (H.M.S.O. London, 1956, re-published Air Ministry, Air Historical Branch under licence, 1997) p.241

⁸³ The Stationery Office *The Royal Air Force Builds for War* p.243

however was discovered in simple wood chip, becoming the standard application. Camouflaging of airfields reached a peak in mid-1942, with 22 million gallons of paint being consumed that year, and one thousand men being continuously employed on the work. Later that year it was decided that even the screening of bomb stores was not worth the effort expended.⁸⁴ Staged reduction of camouflaging of airfields resulted in, in August 1944, its discontinuation.⁸⁵ By that time, the risk from enemy air attack was so much reduced because of the pursuit of the war in Europe, that concealment seemed no longer necessary.

As to impact upon the landscape, camouflage could be said to comprise three forms. Temporary concealment of equipment and structures - netting, canvas covering and surface colouring and texturing - has no physical impact on the landscape because it is visually discreet; and it has no legacy in the landscape beyond its durational use. Painted-based camouflage applied to buildings and structures which survive the duration no longer has purpose, but characterises the structures it is applied to – the long-surviving but now demolished R.A.F. Housing at Fifers Lane, Norwich, stood out prominently in peace time with their camouflaged brickwork (Fig.66).⁸⁶ Thirdly, camouflage which *is* the landscape itself exists prior, and endures, after military use. Woodland is the obvious medium, Hockering and Earsham Forward Ammunition Depots and the bomb dump at Wendling, sited within Honeypot Wood, being prime examples.

⁸⁴ The Stationery Office *The Royal Air Force Builds for War* p.251

⁸⁵ *Ibid.* p.255

⁸⁶ Later used, up to the 1990s, as student housing for the University of East Anglia.



Fig.69 Housing off Fifers Lane, Catton in 1957. Numerous adjacent buildings survived into the 1990s as off-campus UEA accommodation, retaining their tan / brown /black patterning until demolition⁸⁷

Woodland

Wood, as timber, has always been a staple of military endeavours, whether for firewood or cover, or for building assault weapons and defensive structures. It would be a mistake however to assume that both World Wars saw extensive loss of woodland; there is a distinction between the felling of individual trees, tactical use of woodland, and complete clearance or loss. Indeed, in neighbouring Suffolk's Brecks and Sandlings, more acres were planted in the 1930s than were later lost to wartime airfields or agriculture.⁸⁸ Thirty woodland sites have been affected by clearance since the early 1920s, with 95 per-cent cleared for agriculture, the remainder for urban development and mineral extraction.⁸⁹ The Second World War commissioned a new purpose for Norfolk's woodland; that of the storage and

⁸⁷ Airfield Research Group

⁸⁸ Rackham, O. *Woodlands* (Collins, London 2006) p.459. Rackham also states that, nationally, it was the post-1950 years that saw unprecedented destruction of woodland Ibid. p.69.

⁸⁹ Spencer, J. and Thomas, R. *Norfolk Inventory of Ancient Woodland (Provisional)* (Nature Conservancy Council, Peterborough, 1992) p.12

concealment of ordnance, on a scale which was to grow to requirement levels unimagined in 1939. To clarify, few formal areas of existing woodland were removed for airfield construction, though a great many mature hedgerow and field trees were removed.⁹⁰ Generally, larger or contiguous woodland sites were to be utilised as Forward Ammunition Depots for airfield supply, whilst smaller areas adjacent to airfields were chosen for on-site bomb storage, prior to immediate use. Logic directed the choice of woodland for ordnance storage; bombs, small arms ammunition and detonators were vulnerable to enemy air attack. Trees served as concealment, and as rudimentary blast containment. These newly-requisitioned, now militarised, woodlands were to be the penultimate link in the ordnance logistical supply chain.

The patterns of land ownership in Norfolk had seen change in the first half of the twentieth century, and woodland experienced a gradual decline in the quality of management. One new factor in woodland industry emerged in the period between the wars however - the great purchasing and planting schemes of the Forestry Commission. Relative to the Commission's centralising of activities in Breckland, the creation of the Stanford Battle Training Area was to be the major competitor for use of the land from 1941 onwards. Stanford Battle Training Area is not characterised by the use of woodland for concealment or camouflage – the Forestry Commission's trees were young. Its prime function as that of training armoured divisions in open country battle movement – concealment was of little purpose and, by the time it was operating at its fullest extent, the threat from enemy airborne attack was limited. The submersible tank training exercises carried out at Fritton Decoy at the eastern end of the Norfolk- Suffolk border were highly secret but, whilst the bordering woodland helped conceal ground activity from enemy aircraft venturing inland from the North Sea, the prime criterion for choosing Fritton Decoy as a training location was the lake itself.

Earsham and Barnham are the sites of Forward Ammunition Depots, already in existence as pre-war Air Ammunition Parks. Hockering, in central Norfolk, was the site of a new Forward Ammunition Depot, constructed in 1942 to meet the needs of the concentration of USAAF bases in the area. The best example of an airfield bomb dump being housed in existing, established woodland is that of Honeypot Wood, Wendling. Rackheath, to the east of Norwich, Thorpe Abbots, close to the Waveney Valley border with Suffolk, and Hethel airfields are characterised by the use of woodland for technical buildings, though not directly

⁹⁰ The point has been made in Chapter 3 that the felling of woodland for airfield construction is, with rare exceptions beyond Norfolk, not economically or resource viable.

for bomb storage. The point is that none of these sites were cleared of woodland, because woodland served as concealment, or blast containment, and sometimes both.

All military facilities constructed in wartime represent the most basic tenets of form following function. This manifested itself even before construction began, with the choice of sites. In the absence of formal documented policy regarding choice of site based on landscape characteristics yet coming to light, it might seem curious that Barnham, on the Norfolk / Suffolk border was an open heathland site, operational at the commencement of hostilities in September 1939, whilst Earsham was a woodland site, as was Hockering. It therefore appears highly likely that the choice of sites for ordnance storage was based on little more than two basic criteria – spatial proximity to as many airfields as possible, and sited well away from populated areas. Barnham in particular was close to RAFs Honington, Lakenheath and Mildenhall but also to Thetford and the Stanford Training Area. An open site could be artfully camouflaged, as could a woodland site. The advantage of the latter is natural concealment, with less camouflage required, and the greater benefit of blast containment in the event of accident or attack.

Given the exigencies and urgency of supply needs as the war progressed, the centralised underground depots were, in practice, bypassed, such that the FADs often received ordnance direct from factory and arsenal. The FADs eventually stored far in excess of their designed capacities, relying on rapid outward traffic to the airfields to ease the pressure of storage space. In wartime practice the traversed compartments, designed to store 56 tons of bombs, commonly accommodated 400 tons.⁹¹ All this came at the expense of peace-time safety distances and margins. Of the three sites in Norfolk Earsham and Hockering in particular utilised designated roadside verges for ‘open’ off-site storage. The sites then began to ‘sprawl’ as ever more storage space was needed; their form and function became less defined as they, in part, began to merge with the surrounding countryside. At these two sites Oliver Rackham’s assertion that ‘...military remains tend to be less tidied away and better preserved in woodland than elsewhere’ holds true.⁹² At the same time however, it should be noted that airfields demonstrate a wider spectrum of archaeological integrity, dependent upon the nature of their continued or adapted use, ranging from almost total obliteration to significantly and extensively intact structures.

⁹¹ The Stationery Office *The Royal Air Force Builds for War* p.268

⁹² Rackham, O. *Woodlands* p.222

Airfield bomb dumps

Every airfield had its own bomb storage area, the final stage in delivery before loading into aircraft for offensive operations. Spatial reasoning dictated the siting of the bomb dump as near to the flying area as practically possible whilst, for safety reasons, maintaining physical separation from other buildings. The spatial siting of storage of associated equipment such as fuzes, detonators and small arms further emphasised the need for physical separation of components, located in prescribed buildings at safe distances from flying operational areas and staff accommodation. The bomb dump would, then, invariably be sited on the outside edge of the airfield perimeter. The dump was therefore accessible for loading into aircraft but also remote enough from the centre of operations to minimise potential blast damage. The characteristic morphology of an airfield bomb dump appears quite distinctly on contemporary aerial photographs, usually as a precise ‘dog leg’ feature close to a remote aircraft dispersal hard-stand, characterised by serrated rows of bomb storage revetments. Paradoxically it also means they are ‘open’ features, visually vulnerable to enemy air attack, and required thorough camouflaging usually of the netting variety. The bomb dump at Honey Pot Wood, Wendling offered the ideal site for utilising extant woodland to serve as both blast containment and partial camouflage.



Fig.70 Bomb storage at Shipdham 30th April 1944⁹³



Fig.71 1960s image of airfield bomb storage revetments adjacent Honeypot Wood, Wendling. The main bomb store is to the right off-picture. The revetments are now ploughed out (Norfolk Archaeological Unit)⁹⁴

⁹³ www.b24.net History of USAAF 392nd Bomb Group, by permission

⁹⁴ Norfolk Historic Environment Service collection, Gressenhall Museum

The need for risk awareness and adherence to safety procedures was tragically demonstrated on 15th July 1944, when the bomb dump at Metfield exploded, detonating over one thousand tons of bombs and explosives, killing five men, wrecking five B-24 Liberators and severely damaging six more.⁹⁵ In summary, delivery convoy crews of the 2218th Quartermaster Truck Company (Aviation) based at Earsham appeared to have hurriedly unloaded their delivery of 500lb bombs. Careless handling led to a chain reaction as the bombs exploded. Perhaps because of the sheer size of the explosion, no attempt was made to infill the resulting crater, said to measure 75 feet wide by 25 feet deep. Following the incident, a loop road was built to by-pass the crater. Perhaps unsurprisingly it subsequently became a dump for a range of discarded equipment and was evident for some years after the war as a water-filled lake. When the lake was eventually cleared, many types of equipment were found, including several unexploded bombs. Ordnance shards thrown into the air during the explosion have been found in the fields surrounding the airfield to the present day.⁹⁶



Fig.72 Area of bomb dump explosion at Metfield, circled. (accessed 20 July 2016)
<http://googleearthcommunity.proboards.com/thread/187/massive-explosion-raf-metfield-1944>

⁹⁵ Bowyer, M.J.F. *Actions Stations: Wartime Military Airfields of East Anglia, 1939-1945* (Cambridge, 1990) p.159 also Freeman, R. *The Mighty Eighth* p.163 and *The Mighty Eighth War Manual* p.225.

⁹⁶ One thousand tons equates to about 450 aircraft payloads. <http://www.geograph.org.uk/article/RAF-Metfield---USAAF-Station-366> (accessed 23 Oct 2016) suggests this may be an exaggeration. The entire 491st Bomb Group was, however, moved to Pickenham as a result so presumably the airfield was unusable for a period. <http://usaaf.co.uk/forum/viewtopic.php?f=12&t=748> (accessed 23 Oct 2016)

Forward Ammunition Depots – case studies

Barnham

‘There is a little single line, which meanders across East Anglia, from Thetford to Bury St. Edmunds, and half-way along that line there is a typical little country station called Barnham.’⁹⁷

Barnham station was located south of Thetford Bridge and Thetford stations on a 21 kilometre single track line.⁹⁸ In 1938 the site handled just 2,000 loaded wagons, totalling 7,000 tons of freight.⁹⁹ Peacetime traffic amounted to six passenger trains and two or three freight trains daily. Overall, traffic increased by a factor of nine or ten during the war years.¹⁰⁰ The war utterly changed its importance and appearance. Firstly, sidings were installed at Little Heath to handle chemical weapons traffic destined for a storage site to the south.¹⁰¹ Subsequently a large area of heath on the Thetford side became one of the largest bomb dumps in Britain. Multiple reception sidings were built, large enough to accommodate seventy-five wagons, radiating into the bomb dump itself, enabling bombs to be off-loaded directly into earth-walled revetments.¹⁰² From September 1939 to December 1945, Barnham handled 139,729 loaded wagons, containing 721,000 tons, 55,620 wagons were processed in Barnham station itself. 53,706 wagons travelled to the revetment sidings, 30,903 to Little Heath.¹⁰³ This dramatically illustrates the heavy use of the new sidings compared to more conventional traffic and the ICI/chemical deliveries. The ordnance traffic comprised everything from 4 ½ lb. Incendiary bombs, small arms ammunition, detonators and fuses to massive 4,000 pounders. Aircraft were, unsurprisingly, off-loaded there and, controversially

⁹⁷ Crump, N. *By Rail to Victory* p.119

⁹⁸ Geographically, the station site is just inside the Suffolk border. The expansion took its facilities across the Norfolk border to the ammunition dump.

⁹⁹ Crump, N. p.119

¹⁰⁰ *Ibid.* p.120

¹⁰¹ *Ibid.* p.119. In a rare example of inaccuracy, Crump describes this as an Imperial Chemical Industries factory. It was almost certainly a chemical weapons storage facility, ‘receiving deliveries’ from an ICI factory elsewhere in the country, possibly Randle, Cheshire or Rhydymwyn in Clwyd. This possibility is also mentioned briefly at The Airfield Information Exchange at <http://www.airfieldinformationexchange.org/community/showthread.php?2334-Barnham/page3&highlight=Barnham+Camp> (accessed 27 Oct 2016)

¹⁰² *Ibid.* P.119 Crump visited the site immediately post-war and observed how the tracks ‘wandered about’ the bomb storage area.

¹⁰³ *Ibid.* P.119-120

in retrospect, poison gas.¹⁰⁴ The potential for congestion was high, and traffic was directed in such a way that each trainload could be manoeuvred in, unloaded and got out again as quickly as possible. Crump writes of one train being disposed of in the sidings, a second waiting on the through line, blocking a third train, itself in turn blocking a fourth.¹⁰⁵ A year after the cessation of hostilities, Barnham had reverted to the status of a ‘sleepy’ country station. The dump was being cleared but plenty of ordnance remained *in situ*. Crump suggests that Mr Hammond [the stationmaster] ‘...and his staff could look back with pride at the war years, when his station was one of the busiest in the country.’¹⁰⁶

The narrative of work undertaken at the site is worth exploring in three respects. First, the manner in which the site expanded into the surrounding landscape; secondly, the undeniably toxic imprint on the immediate environment; and thirdly the way in which this potentially limited future land use. Barnham Station is located at O.S. Map Ref. TL 86118 79167, becoming the entry point for all military rail deliveries. The first site established was the main Forward Ammunition Depot immediately to the north-west of the station itself, bounded to the west by Aughton Spinney and Belt, later to be known as Exclamation Spinney, evident from its shape seen from above. RAF 94 Maintenance Unit was established in August of 1939 and began operations immediately, with a train-load of 5,000lb bombs arriving right away. Camouflage measures had not even begun and by mid-September there were still no camouflage coverings for huts and buildings. The only blackout measure specified no matches to be struck out in the open after dark. The Officer Commanding, Flight Lieutenant Moore’s daily routine orders of 20th September stated

‘It is of vital importance for the safety of the country that no service matters are discussed with anyone. ALL PERSONNEL are warned that the R.A.F. now being engaged on active service, the giving of any information constitutes an act of treachery, for which the maximum punishment on conviction, under Sections 4 and 5 of the Air Force Act is PENAL SERVITUDE, and IN DELIBERATE CASES DEATH.’¹⁰⁷

¹⁰⁴ Crump, N. *By Rail to Victory*. P.120 The poison gas ‘caused some excitement on one occasion’. Mustard gas leaked across the line at the station. An American decontamination unit dealt with the spillage but had to monitor the site for forty-eight hours afterward.

¹⁰⁵ *Ibid.* p.120

¹⁰⁶ *Ibid.* p.120

¹⁰⁷ TNA AIR 29/1031 94 Maintenance Unit and Appendices Aug 39 – Dec 45 Operations Record Book RAF Form 540 94 MU Barnham nr Thetford – daily routine orders dated 2nd, 19th and 20th Sept 1939.

At the end of September, railway track and road camouflage finally began. On 1st October 1,200,000 Browning links – that is, small arms ammunition - were received from Altrincham. ‘Works and Bricks’ staff commenced camouflage of barrack blocks and 12th October 100,000 rounds of .303 tracer were delivered from Woolwich arsenal by road. By the end of that same month almost all the buildings had been camouflaged, Flight Lieutenant Moore commending endeavours to break up the regularity of the storage traverses by planting shrubbery. November saw defensive preparations in ‘readiness for a likely attack’ and the supply of 2,000 trees from the Forestry Commission to assist camouflage efforts.¹⁰⁸ December saw the acquisition, free of charge, of brushwood and larch poles from Herringswell Estate and the Forestry Commission at East Harling. ‘Sanding’ - camouflaging - of roads and bomb areas and disguising of gantries took place. Standing orders outlined a plan of defence from air attack and the need to isolate rail wagons and vehicles from bomb storage areas, but emphasised the need for vehicles already on the move are to be kept moving, thus underlining the constant flow of activity already in place. The only delays suffered were due to heavy snowfalls, for example in January 1940. Unit Standing Orders began to pay closer attention to action in the event of air raids. In July 1940 concern was raised repeatedly about delays to camouflage work; the officer commanding seemed relieved at the arrival of lorry-loads of ‘razzle’.¹⁰⁹

Understandably, local civilian services were concerned for public safety. In May 1940 the borough surveyor from Thetford, senior officers from Norfolk Constabulary and military police officers visited the site to discuss concerns raised by the Eastern Region Civil Defence Officer about evacuation and decontamination procedures.¹¹⁰ In that same month army representatives arrived to discuss siting an Army ammunition dump ‘as near to the RAF Air Ammunition Park at Barnham as possible’ on the Barnham – Elveden road to the south-west, approximately 500 yards from the main site.¹¹¹ In June concern was expressed about tarpaulins for camouflage; brushwood was being removed because of fire risk and the following month saw defensive pillboxes being built. In November black paint was sprayed over road surfaces and huts to disrupt outlines – the commanding officer flew over the site to

¹⁰⁸ TNA AIR 29/1031 94 Maintenance Unit Ops Record Book 24th Oct., 10th and 17th November 1939.

¹⁰⁹ ‘Razzle’ seems directly related to ‘dazzle’ – the staggered striping seen on naval vessels during the First World War. In the context of Second World War land-based camouflage it was probably coloured mesh and netting.

¹¹⁰ TNA AIR 29/1031 RAF Form 540 94 MU Barnham nr Thetford – 11th and 13th May 1940.

¹¹¹ Ibid. 23rd May 1940, the new site intended primarily for anti-tank ammunition.

assess its effectiveness. Whilst the Summer of 1940 was rightly a period of heightened concern about invasion and enemy attack, and whilst an occasional enemy aircraft was sighted, there is mention of bombs being dropped on a 'K' site two miles distant and a stick of fourteen bombs being dropped, straddling the Barnham-Elveden Road, some quarter of a mile distant from the Unit Rail Gate.¹¹² Whilst this caused no damage, it was close by and could easily have hit the main site. The incident hints at both the possibility of opportunistic bombing of the rail line and the success of camouflage measures at the Barnham ammunition site. In November a Junkers Ju88 was shot down by ground defences at nearby RAF Honington.

Clearly liaison between civilian and peer military authorities and the Forestry Commission were considered to be important at both practical and diplomatic levels.¹¹³ Joint army and RAF exercises were to take place on site subsequently, although when the Durham Light Infantry started training manoeuvres in Exclamation Spinney, it was quickly pointed out to them they were on Air Ministry property.¹¹⁴ Later, army units were prevented from exercising adjacent to the unit as their vehicular tracks would betray the presence of the ammunition storage site.¹¹⁵ Significantly, work began on cutting a road through Exclamation Spinney – for chemical weapons storage - with the unit diary commenting on the 'very impressive storage and camouflage', the latter consisting of sawdust spread across the road surface. Two days later, an enemy Dornier Do.17 passed over the Unit at 400 feet. It is fair to presume that the crew saw no evidence of either the site or activity within it.¹¹⁶ Probable testament to the effectiveness of the camouflage measures occurred the following month when a Dornier 215 circled the site at 400-500 feet and then proceeded to bomb nearby RAF Honington. The Commanding Officer noted at the end of that month that 'The camouflage is so good that that neither friend nor enemy could possibly be aware that anything was being stored or any work being done within the Spinney.'¹¹⁷

¹¹² TNA AIR 29/1031 94 Maintenance Unit and Appendices 4th and 29th October 1940

¹¹³ Ibid. 4th November 1940 – Informal conversation with the Thetford Borough Surveyor resulted in several tons of rubble for site road building being donated without charge.

¹¹⁴ Ibid. January 1941

¹¹⁵ This conflict of interest would continue. In May 1942 9th Armoured Division were seen to be holding manoeuvres near Warren Wood, with live firing. Barnham's C.O. contacted Divisional H.Q. to stop this immediately. Two smoke bombs were fired into the Unit the next day. Later, 50 tanks were encroaching upon the boundary of Warren Wood.

¹¹⁶ Ibid. 28th and 30th December 1940, 7th January 1941.

¹¹⁷ TNA AIR 29/1031 94 Maintenance Unit and Appendices

No. railways wagons unloaded November 1940	169	Lorries loaded	419
No. lorries unloaded	73		
Tonnage received	1,064	Tonnage issued	1,257

Issues and receipts, Barnham November 1940

No. railways wagons unloaded June 1941	372	Wagons loaded	10
No. lorries unloaded	14	Lorries loaded	777
Tonnage received	2,654	Tonnage issued	2,361

Issues and receipts June 1941

No. railways wagons unloaded April 1942	1,095	Wagons loaded	90
No. lorries unloaded	126	Lorries loaded	571
Tonnage received	5,822	Tonnage issued	3,204

Issues and receipts April 1942

No. railways wagons unloaded December 1943	651	Wagons loaded	161
No. lorries unloaded	339	Lorries loaded	625
Tonnage received	5,885	Tonnage issued	4,075

Issues and receipts December 1943

No. railways wagons unloaded April 1944	1,004	Wagons loaded	306
No. lorries unloaded	508	Lorries loaded	508
Tonnage received	7,354	Tonnage issued	7,502

Table 7: Issues and receipts April 1944 compiled from data TNA AIR 29/1031¹¹⁸

¹¹⁸ TNA AIR 29/1031 94 Maintenance Unit and Appendices Aug 39 – Dec 45 Operations Record Book RAF Form 540 94 MU Barnham nr Thetford

In May 1944 16,649 tons were dealt with. June 44 saw 680 wagons and 1,385 lorries unloaded, 582 wagons and 1,787 lorries loaded, handling a total of 23,076 tons of ordnance. So began a cycle of supply and dispatch of bombs of all sizes, small arms, signal rockets, smoke bombs, detonators, tail units, oxygen cylinders and associated operations that would increase exponentially for the next five years.¹¹⁹ By April of 1941 considerable amounts of bombs were having to be stored outside the traverses. In terms of the surrounding landscape, this increase would also necessitate additions and extensions to the original site, the first of which would be Warren Wood. Consideration was first given to this additional site in August of 1941. Shortly after, Warren Wood was being prepared for storage and by the end of November was reported as capable of holding 10,000 tons of ordnance. Hockering was first mentioned at this time, in connection with the RAF's search for a sub-park. September 1942 saw a further extension of the Warren Wood site, followed by the arrival of large quantities of American ammunition. By the end of the year, issues of British ammunition from Warren Wood were minimal.

Contamination from chemical ordnance was a constant threat and during May 1942 four personnel became casualties as a result of leakage from wagons. One contemporary serviceman refers to chemical weapons being '...stored in open topped trenches covered with tarpaulin' and describes in a personal memoir the mental and physical tension induced by transporting chemical weapons by rail from Randle in Cheshire for off-loading and storage at Barnham.¹²⁰

On 15th May 1942, 9th Armoured Division was under manoeuvres near Warren Wood and Barnham's commanding officer found army units firing live rounds near the site. This was put a stop to but the following day more live gunfire manoeuvres took place resulting in fire breaking out. The day after, the army fired two smoke bombs directly into the main Barnham site and, following that, fifty tanks were seen to be manoeuvring at the Warren Wood boundary fence. By September RAF and USAAF personnel were working double shifts to clear wagons and further inroads were made for storage into Warren Wood. February 1943

¹¹⁹ The expression 'Working parade – restacking – camouflage' occurs repeatedly throughout 94 MU's Operations Record Book from January 1940 onwards.

¹²⁰ Howe, R., 'Rail and Sea, Rail and Road' <http://www.rhydymwynvalleyhistory.co.uk/people/people-ted-howe.htm> (accessed 9th April 2016)

saw the RAF clearing stocks from Triangle Spinney prior to use by American units. April 1943 saw the Little Heath chemical weapons site construction under way.¹²¹

Soon after the cessation of hostilities in Europe a crisis of surplus stock quickly manifested itself. Nearby airfields, particularly at Mendlesham and Ashfield, were having to be used to store surplus ordnance. By October 1945 work was under way preparing for suitable parts of the site and methodology to ‘burn’ bombs. Experimental burning of chemical bombs began, continuing on ‘days when weather conditions are propitious’. By February 1946 the main unit was described as a ‘Danger Area’ where burning of chemical bombs continued. Given the intensity of work required of the railways and their facilities, Barnham might have been a typical example of how peacetime brings swift clearance or abandonment of a site. The term ‘clearance’ is, however, somewhat subjective. Barnham’s use as a major chemical weapons storage facility had significant implications for the legacy of subsequent land use. The operations record book of No.94 Maintenance Unit reveals a relentless cycle of post-war storage, removal and disposal of all types of ordnance, some by train to Cairnryan on the west coast of Scotland but with quantities disposed of, often in ad-hoc and clumsy fashion, on site at Barnham.¹²² Second World War ordnance – including chemical weapon detritus - was still being uncovered in the late 1990s as part of Project Cleansweep, an assessment of contaminated Cold War sites within the UK.¹²³ On 18th January 2016 Defence Minister announced the final release of twelve Ministry of Defence sites, including what remains of RAF Barnham, for housing development.¹²⁴

¹²¹ TNA AIR 29/1031 94 Maintenance Unit and Appendices Aug 39 – Dec 45 Operations Record Book

¹²² Underwater disposal was thought the most efficient method of disposal of excess ordnance. The largest marine dump is in Beaufort’s Dyke, a deep trough between Scotland and Northern Ireland. The military port at Cairnryan was the dispatch point. From 1945-46 explosives including bombs, shells, rockets and millions of rounds of small arms ammunition were transported from military sites across Britain and the continent to Cairnryan by wartime Liberty and Victory freighters and rail, then dropped from coastal freighters and landing craft. Dumping continued until the late 1950s and sporadically into the 1970s. In the mid-1990s the first items began washing ashore on beaches in Galloway in Scotland and County Antrim.
http://thedownrecorder.co.uk/pages/?title=Undersea_arms_dump_is_giving_up_its_secrets (accessed 30th March 2019)

¹²³ Rogers, G and Johnson, M. Little Heath Site Investigation (Defence Science and Technology Laboratory report, 1999)

¹²⁴ <https://www.gov.uk/government/news/defence-minister-mark-lancaster-announces-release-of-mod-sites-for-development> accessed 27th September 2016.



Fig. 73 RAF Barnham Heath, Thetford, Air Ammunition Park in 1946
<http://www.airfieldinformationexchange.org/community/showthread.php?2334-Barnham&highlight=Barnham+Camp>

Hockering

By 1942, with the desperate need for more bomb storage readily apparent, a site thirty-five miles north-east of Barnham was chosen, initially as a ‘satellite park’, a sub-site of Barnham. Aerial reconnaissance revealed a compact yet, for Norfolk, large parcel of woodland and, indeed, the choice of Hockering makes clear a change of selection criteria. Whilst Barnham was an ‘open’ site, directly adjacent to rail services, Hockering was a woodland location, twelve miles distant from its railhead at Dereham and accessible to a number of existing and newer airfields. Historically, Hockering, along with Foxley is, at 220 acres, one of the larger tracts of Norfolk’s ancient woodland, characterised by small-leaved lime.¹²⁵ Also now a Site of Special Scientific Interest, it would presently be unthinkable as suitable for military use. Contemporarily, natural and environmental considerations were rare.

Constructed in the later months of 1942, the unit became operational on 1st January 1943. In early February eighty-six wagons arrived at East Dereham ‘causing slight congestion on the

¹²⁵ Williamson, T. and Barnes, G. *Rethinking Ancient Woodland: The archaeology and history of woods in Norfolk* (University of Hertfordshire Press, Hatfield 2015) pp.31,33

railway company's sidings'. The local Movement Officer agreed to arrange for rolling stock to be riated through instead of accumulating whilst waiting to be unloaded. The LNER's District Goods Manager confirmed that work had started on constructing the new sidings at Dereham, six miles to the west, and that more use could be made of Lenwade station five miles to the north-west.¹²⁶ The 'backing-up' or accumulation, of wagons at stations waiting to be off-loaded was a persistent problem across the region throughout the duration, though contractors, RAF Movement Officers and railway managers liaised to improve matters at key locations. Not until April did work really start on camouflaging the site, following a visit from the Camouflage and Decoy Officer.

In June 1943 the Area Camouflage Officer flew over the site and reported that camouflage measures had been greatly improved by the tarring and chipping of roads, with bomb stacks practically invisible from 1,500 feet and not visible at all from any greater height. It was however suggested that camouflage netting be erected over various sections of road in the area for distances of 50 yards at 200 yard intervals. The effect would be to visually disrupt suspiciously linear features. The CO later repeated aerial inspection at 800 feet and determined that the site was almost entirely visually secure, apart from the main entrance.¹²⁷ Even in late 1943 preparations for defence against ground attack were being considered.¹²⁸

¹²⁶ TNA AIR 29/1065/4 No 231 Maintenance Unit RAF Hockering – unit diary note 2nd and 4th February 1943.

¹²⁷ Ibid. June 1943

¹²⁸ Ibid. 231 MU Defence Operation Order No.1 Appendix 'A' 15/10/43

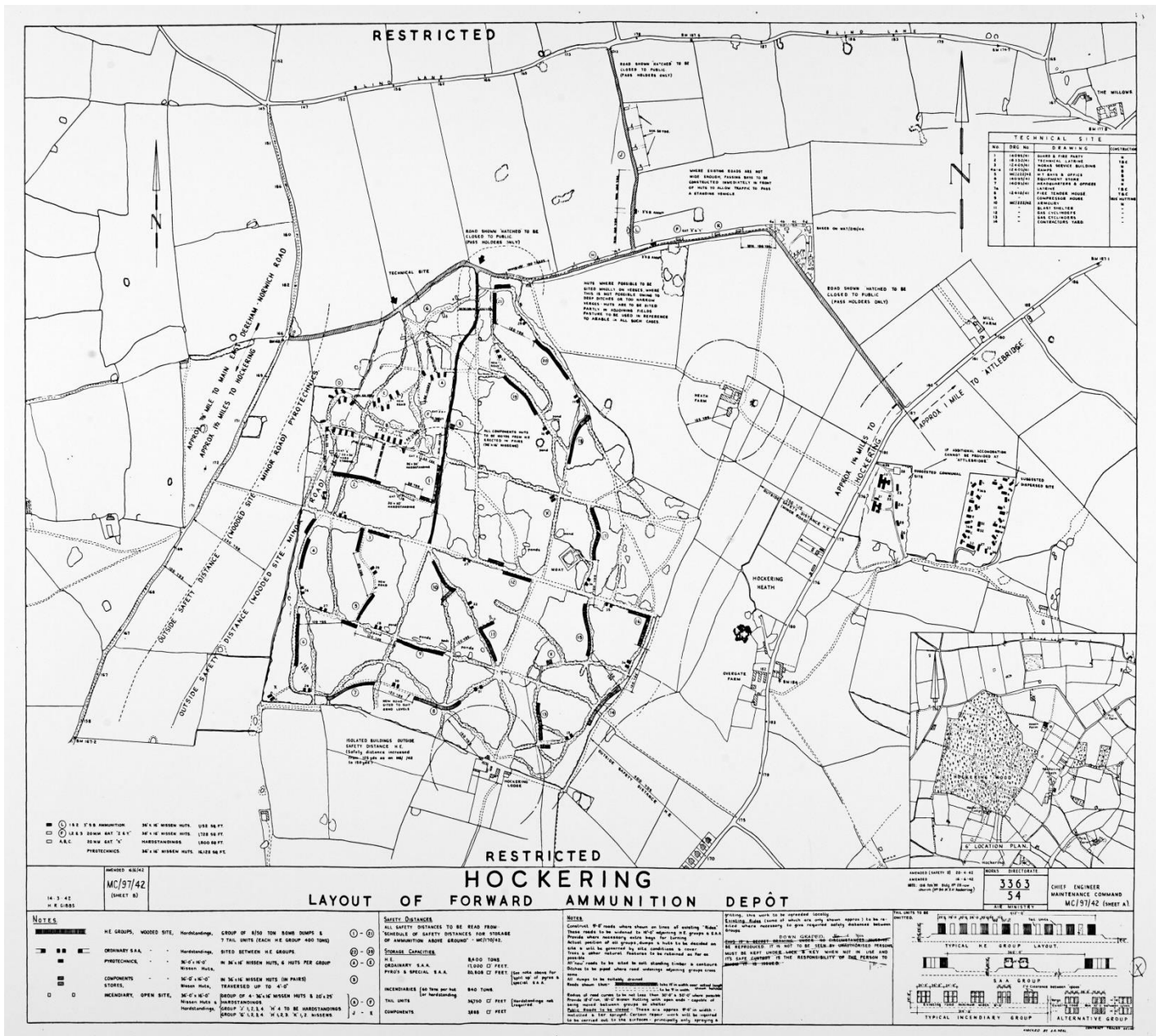


Fig.74 Hockering Ammunition Depot as at June 1942 Safety boundaries are drawn. Dispersed sites to include potential accommodation are to the far right. Attlebridge airfield lies just off-map to the north-east.¹²⁹

¹²⁹ Air Ministry Directorate of Works plan 3363/54 MC/97/42 16th June 1942.

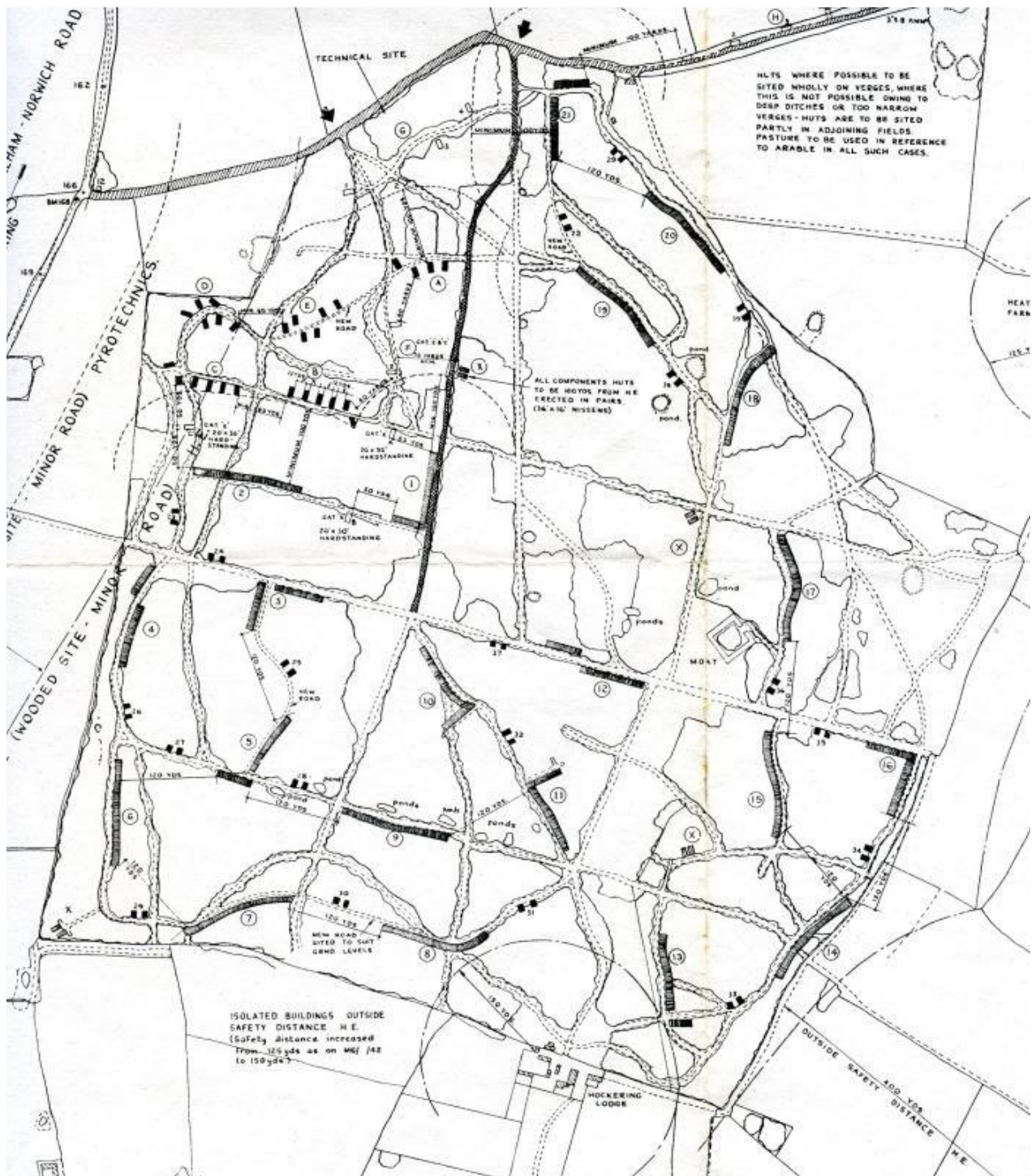


Fig.75 Closer detail of Hockering. The thick black lines denote 400 ton storage areas; the small squares denote smaller ordnance storage.¹³⁰

Early storage did not extend to the whole of Hockering Wood. Unsurprisingly, the entirety of the wooded area would eventually be subsumed and extension work started in October of

¹³⁰ Air Ministry Directorate of Works plan 3363/54 MC/97/42

1943. Work also began on storage at the eastern end of Blind Lane. Two months later came instructions from 42 Group HQ to finish additional temporary storage space for high explosives. 231 MU's commanding officer reconnoitred local roads and found suitable roadside storage three miles from the main site. Norfolk County Council gave permission to use the highway and space enough to store 5,000 tons of HE was found. Even this was not enough and in January 1944 more storage space on the north side of the Wood was started. An additional 1,920 tons of roadside verge storage was assigned near North Tuddenham, slightly nearer to the Dereham sidings.¹³¹ The roads were not closed to public access and consideration was given to Ministry of Agriculture and Fisheries requirements.¹³² All this coincides with the beginning of a period when the balance of ordnance issues from Hockering FAD were moving in favour of USAAF needs.¹³³ The Air Ministry wanted to partially or totally close the roads in North Tuddenham used for roadside storage – a reasonable stance on security grounds and safety grounds. It presented difficulties however; whilst not much used by the public, they ‘carry a certain amount of agricultural traffic which cannot be diverted’.¹³⁴

No. railways wagons unloaded May 1944	209	Wagons loaded	158
No. lorries unloaded	627	Lorries loaded	685
Tonnage processed	9,563		

No. railways wagons unloaded July 1944	247	Wagons loaded	107
No. lorries unloaded	647	Lorries loaded	723
Tonnage processed	10,057		

Table 8: Issues and receipts, Hockering, May and July 1944

¹³¹ TNA AIR 29/1065/4 No 231 Maintenance Unit RAF Hockering. Map ref sheet 66 1” 1 mile, OS Swaffham and East Dereham 487321 – 484328 – 492344 – 496327.

¹³² Ibid. 29th March 1944. This does indicate that agricultural considerations were often accommodated or at least compromise reached.

¹³³ Ibid. 30th March 1944

¹³⁴ Ibid. 22nd June 1944

The pressure was on. 231 MU's unit diary notes a 'record handling of well over 14,000 tons' for August 1944. In February 1945 a senior visiting RAF officer was 'justifiably alarmed at the storage overloading and meagre safety distances' on site. The scenario changed even before the cessation of European hostilities for, on 17th May 1945, the airfield at Old Buckenham, seventeen miles southward, was allocated to Hockering as a satellite storage site.¹³⁵ Subsequently, Attlebridge and Rackheath airfields were selected for surplus bomb storage, even with concerns that the latter had civilian residential buildings in its vicinity.

'Very few airmen seemed to realise that the Victory in Europe (which was celebrated very quietly) merely marked the end of a phase so far as the work of this Unit was concerned, and that there could not be, and would not be, any slackening off of the amount of work to be done. Only when trucks began to arrive in ever increasing numbers, did it begin to dawn on the majority that there was a still a war on in the Far East.'¹³⁶

This was the beginning of the post-war chapter in Hockering's history. Different service arms began to compete for use of Attlebridge and Rackheath airfields. The County War Agricultural Committee made its own bid for resumption of agricultural work but the RAF wished to restrict this to 'haymaking'.¹³⁷ By now 6,462 tons of HE were being stored at Old Buckenham, whilst experienced drivers were in short supply due to demobilisation release. There followed a proposal to use RAF Swannington for storage but it was felt inhabited dwellings were too close to the perimeter, other, empty, houses were to be re-occupied by civilians and a closed road was due to be re-opened.

Of the considerable numbers of representatives of different departments visiting Attlebridge, Old Buckenham and Rackheath the unit diary observes:

'Their enthusiasm has been somewhat damped when it has been explained to them that airfields used as explosive storage areas are subject to Explosives Regulations and that they cannot be used as battle practice areas etc. nor even as sports fields, however suitable they may appear for the purpose. It

¹³⁵ TNA AIR 29/1065/4 No 231 Maintenance Unit, Hockering: Operations Record Book 1943-47; Eighteen miles distant by road, but just four miles from Attleborough rail station, Old Buckenham made logistical sense given that was one of the first airfields to be vacated for flying purposes.

¹³⁶ Ibid. 8th June 1945. Unit Diary monthly, Officer Commanding

¹³⁷ Ibid. 27th July 1945

would save a lot of embarrassment if this Unit could be notified beforehand that these visitors are arriving...’¹³⁸

August 1945 saw over 400 personnel on strength and the Hockering main site was full to capacity. Staff were busy cutting down undergrowth, maintaining firebreaks, and inspecting and stacking tail units, with 50 tons of various ordnance going to Old Buckenham each day. The problem was exacerbated with some of the accommodation sites at Attlebridge and Old Buckenham being occupied by German prisoners-of-war. The main Unit site at Hockering Wood was disbanded to 94 Maintenance Unit at Barnham in early 1948, although bomb disposal would continue on-site for a time.¹³⁹

Barnham and Hockering were two quite different Forward Ammunition Depots from the landscape perspective, their different commissioning dates influencing both choice of location and subsequent chronologies. Both expanded into the surrounding landscape as logistical need arose, and both were sited away from densely populated areas. Barnham, opened in 1940 as a relatively ‘open’ site but with some associated areas of woodland, was later able to accommodate complex additional railways sidings, along with multiple storage facilities to include chemical weapons; Hockering was chosen as a contained area of woodland, comprising just 221 acres, with a view to both blast containment and natural camouflage, with major road and rail links nearby and, crucially, accessible to the newer airfields in central Norfolk not extant in 1940. It also, as demand increased, expanded to include roadside storage. Despite these differences, both sites required camouflage measures to protect against aerial reconnaissance and attack, even though in the case of Hockering the depot was not commissioned until the beginning of 1943 when the risk of enemy air activity was greatly reduced. The establishment of Barnham as an early-war FAD, along with its scope to expand across the landscape, contributed to its post-war use as a nuclear warhead storage site. Hockering was much more a temporary expedient and the comparisons are evident in Barnham’s continuation as a military site until much of it was released for housing development more than seven decades after its inception. Hockering, beset by the decreasing inability to disperse its cargoes to nearby military locations because of immediate post-war

¹³⁸ TNA AIR 29/1065/4 No 231 Maintenance Unit 30th September 1945

¹³⁹ Hockering was always considered a satellite of Barnham.

agricultural and housing demands, was swiftly cleared and decommissioned, reverting to managed woodland. As with airfields and training areas, and despite the differing selection criteria of the two locations, the local landscape offered the terrain required by the military.

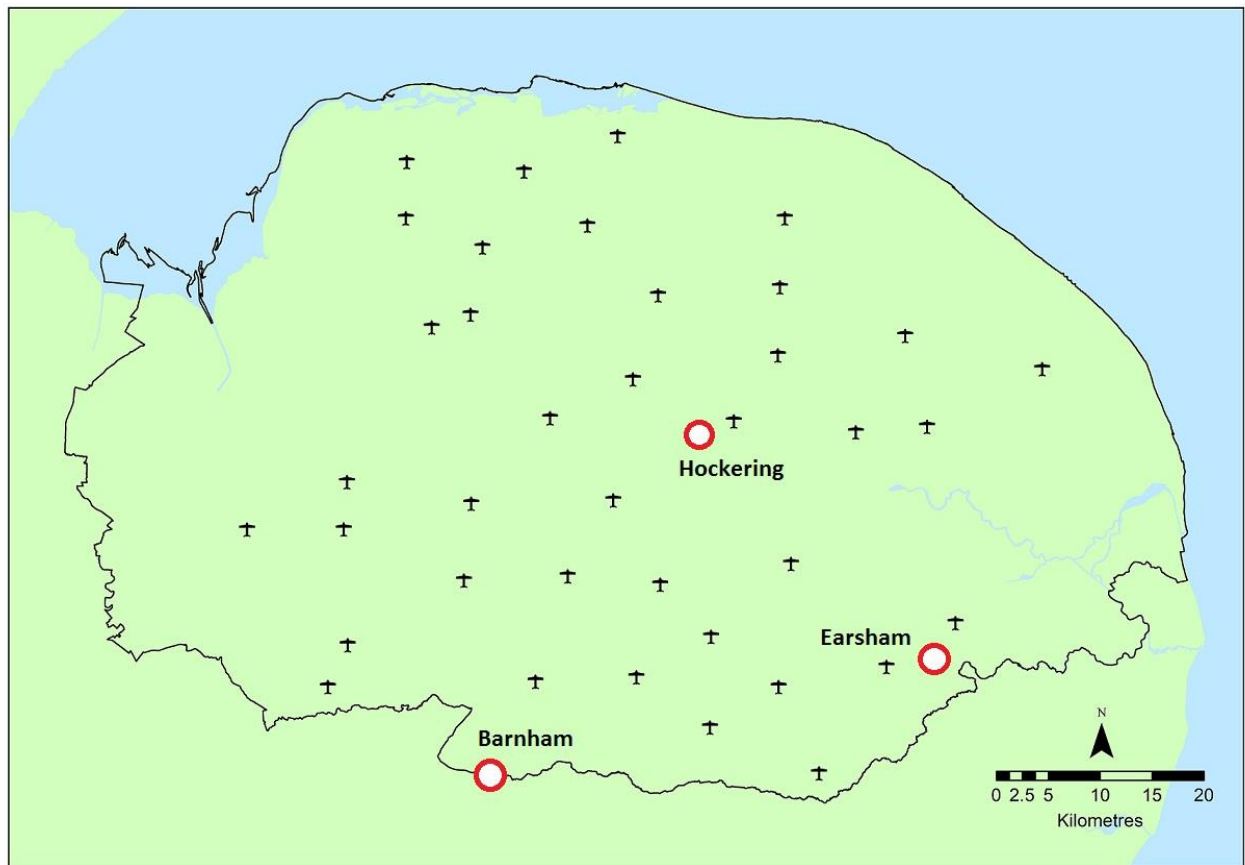


Fig.76 The three Forward Ammunition Depots

The preceding case studies are focused on two different landscapes and the ways they were exploited to best advantage. The third FAD in the region was located at Earsham, north of Bungay on the county border with Suffolk. The site was characterised primarily by its use of woodland and roadside storage as at Hockering, and on-going geographic expansion similar to Barnham. One contemporary plan shows an all-encompassing view of installations at Earsham, indicating they cover an area of approximately four square miles.¹⁴⁰ A post-war official statement reports eighteen miles of roadside storage area within a three mile radius of Earsham Hall, extending from ‘densely wooded’ main storage areas.¹⁴¹ Concern over the fragile state of rapidly deteriorating stocks of ordnance on the site had led to the recent

¹⁴⁰ Air Ministry, Directorate of Works: plan nos. 3040,41,42,43/52, 3820/56

¹⁴¹ TNA AIR 29/1558 No.280 Maintenance Unit, Earsham, 1949-50: Operation status report by Squadron Leader Smith 1st April 1943

removal of 420 tons of 1,000 lb bombs from overloaded bomb stacks; a prolonged drought had exacerbated the risk of combustion. Fire breaks were being cut and fire patrols by RAF and civilian police and fire services were necessary by day and night.¹⁴² The post-war chronology is similar to that of Barnham, characterised by seemingly hapless attempts to destroy ordnance on site, and transit to distant off-shore disposal. As with Barnham, but unlike Hockering, close rail access was a key factor; a siding being constructed one mile west of Earsham station to receive bomb deliveries for USAAF airfields.¹⁴³

Quarries and gravel extraction

Whilst it is well-known that train-loads of bomb damage rubble were delivered into the East Anglian hinterland to serve as ballast or hoggin for concrete runways, local quarries were not used for the same purpose nor in raw form. The point of local sand and gravel extraction is that it could be mixed with cement to form concrete – generally for runway construction and buildings. No traceable records of wartime mineral extraction exist with Norfolk County Council. The most useful reference source is aerial photographs, comparing 1st edition Ordnance Survey with the 1946 RAF aerial survey and subsequent 1988 survey. Larger mineral extraction sites are clearly visible on the 1946 survey, smaller ones less so. Abandoned marl pits and well-used field entrances can be mistaken for small mineral workings. Closer, repeated scrutiny enables elimination of most of these questionable small sites. In many cases, an extraction site appearing as an extended, working site in 1946 is shown as a pre-existent site on 1st edition Ordnance Survey as ‘sand pit’ or ‘gravel. Their life cycles continue as the sites are expanded post-war, clearly identifiable on 1988 aerial views. Not all sites continued to be worked – some shown on 1946 aerial survey have ‘greened over’. In the main, sites continue to be worked post war to the present, and almost always very expanded, or adjacent to, the original site.

The contemporary legacy is evident in major mineral extraction sites across Norfolk. Sand and gravel are still the main aggregates worked in the county. Almost all the active sites, as at

¹⁴² TNA AIR 29/1558 No.280 Maintenance Unit, Earsham, 1949-50: Operation status report by Squadron Leader Smith 1st April 1943

¹⁴³ Freeman, R., *The Mighty Eighth War Manual* (London, 2001) pp.140, 257. Earsham FAD supplied the 2nd Air Division of 8th USAAF, with sixteen airfields at Attlebridge, Bodney, Bungay (Suffolk), Deopham Green, Hardwick, Hethel, Horsham St. Faiths, North Pickenham, Old Buckenham, Rackheath, Seething, Shipdham, Thorpe Abbots, Tibenham, Watton and Wendling.

2012, produce sand and gravel, except three carrstone quarries in West Norfolk. Sand and gravel is still the main aggregate worked in Norfolk. Crushed rock for asphalt production is still imported in to Norfolk, mainly by rail, exactly as during wartime, for no indigenous material is suitable for the purpose.¹⁴⁴

There is a dearth of airfield-related extraction sites in South Norfolk across the heavy clay areas. The Waveney valley however, is replete with extraction sites, old, contemporary and present-day, the valley soils being exactly what was required for pre-construction minerals. Comparisons between the 1946 RAF aerial photographic survey, 1988 aerial survey and First Edition O.S. Maps give, in most cases, clear indications of pre-extant, contemporary or later mineral extraction activity. Many locations present reasonable correlation with a nearby airfield; the Waveney Valley extraction sites would have provided a rich source of extraction for the concrete runways of, for example, Tibenham, Thorpe Abbots, Fersfield, Old Buckenham, Hethel and Seething and further afield as needed.

Conclusion

A number of factors, then, influenced the development of logistical infrastructure in Norfolk and the war years demonstrate the impressive speed with which logistical requirements brought about infrastructure development, helped particularly by a pre-existing efficient and emplaced rail network. This network in Norfolk had to deal with three pressure points - military construction and supply, passenger and agricultural traffic. During the two years up to August 1944 more than 600 'bombs only' trains transported 300,000 tons of bombs from west coast ports to USAAF airfields alone. Branch lines that normally operated only in daylight were kept open at night to ensure the cargo got through and passenger trains were on occasion not just side-lined but cancelled completely to make sure that crews were available.¹⁴⁵ Table 6 indicates how the pressure on rail stations increased in wartime, with Thetford's train arrivals increasing by a factor of twenty-five between 1939 and 1945.¹⁴⁶ Farmers who were used to accessing urban markets conveniently took second priority to the military. That so many rural railways stations closed in the following decades was however

¹⁴⁴ Norfolk County Council, Norfolk Minerals and Waste Development Framework, Ninth Annual Monitoring Report, Mineral Data, Local Aggregate & Silica Sand Assessment 2012 (Norfolk County Council, May 2014 pp.5 and 6)

¹⁴⁵ Anon. *It Can Now Be Revealed: More about British Railways in Peace and War* (issued by British Railways Press Office, Westminster, 1945) pp.36, 37

¹⁴⁶ Table 6, p.185

symptomatic of post-war lack of investment in an exhausted railway network and national policy changes favouring road-building'¹⁴⁷ Road haulage predominates as a result. The existing integration of rail and road services for military logistics served the military across Norfolk well and is a good example of 'total war' in the sense of civilian and military working together without being under formal direct control of the military. The county's road network remains schematically similar, albeit with wartime and major post-war capacity-enhancing improvements

The natural terrain features that favoured airfields also made transport less problematic than in other regions of the UK and, though not thought of as a heavily forested region, woodland has been shown to be crucial to the concealment and blast protection of particular ordnance areas; and where woodland lacked presence as at Barnham, the use of camouflage proved a good substitute. The need for ordnance storage sites in Norfolk was clear, given the proliferation of airfields. This chapter has demonstrated their busy wartime function and post-war efforts to decommission them. They still bear much evidence of busy times but have seen adapted use. The fuel depot at Hethersett is now a local authority service depot and recycling centre. The bomb depot at Hockering has reverted to managed woodland, scarred by the remaining structures but designated a Site of Special Scientific Interest. Barnham still retains a limited military presence, part of the site serving as a Cold War nuclear weapons storage facility in the 1950s and 1960s, now a scheduled monument considered to be of important archaeological importance. The importance of petrol, oil and lubricant supply to airfields has been explained in the context of the long-forgotten pipeline was deemed vital enough to have a major spur built into the heart of the Norfolk countryside.

Finally, the quarries and mineral extraction sites to be found across the county, some pre-war, many of wartime origin, provided essential construction material for the airfields.

The following chapter investigates a hierarchical and prolific feature of the Norfolk landscape – the country house. Many were to be occupied by the military between 1939 and 1945 and for some the Second World War was to become an important element of their history.

¹⁴⁷ Approximately 119 working rail stations in Norfolk in 1939 have reduced to 30 in the eighty years since.

Chapter 6 – The country house and estate

Introduction

The occupation and use of country houses and estates is an important feature of military strategic planning, operations and training on the home front during the Second World War. As such, the conflict, with country houses routinely being commandeered, constitutes a significant, though brief and intense, waymarker in the overall history of English landed estates and their primary buildings.

The aim of this chapter is to assess the impact of military occupation of the country house in Norfolk between 1939 and 1945, and to what extent the war contributed to their demise or decline. This involves the question of whether or not the national image presented by post-war commentators is reflected in Norfolk's experience.¹⁴⁸ The debate about the extent to which military requisition contributed to the loss of country houses nationally is ongoing. In common with other aspects of the militarised landscape explored in this thesis, an understanding of the country house in context necessitates an overview of a longer timeline, as far back as the last quarter of the previous century. Whilst a 'counter factual' exploration of how the country house might have fared had there been no war is subjective and unquantifiable, for many country houses had already faced abandonment, dereliction, ruination and even demolition as the result of factors pre-dating 1939.

Historiography

The major writers of the country house tend to be architectural historians, or enthusiasts of aristocratic ownership and lineage. Roy Strong's 1974 exhibition and subsequent book were highly influential in drawing attention to decline and demise throughout the twentieth century and cited the Second World War as a key factor as, later, did Robinson.¹⁴⁹ It has to be questioned whether or not concern would have been expressed for the perceived damage caused by military occupation had not the 'cult of the country house' materialised in the post-

¹⁴⁸ Strong, R., Binney, M., Harris, J. *The Destruction of the Country House 1975-1975* (London, 1975) exhibition and subsequent book were highly influential.

¹⁴⁹ Robinson, John R. *Requisitioned: The British Country House in the Second World War* (London, 2014)

war decades.¹⁵⁰ Marcus Binney and Roy Strong, curators of the seminal exhibition in 1974 in London, estimated that 629 large country houses had been lost between 1945 and 1974.¹⁵¹ No direct inference to military occupation was made as a primary cause of loss however; *The Destruction of the English Country House* was more a lament for a disappearing world of landowning hierarchy, increasingly threatened by the advancing bourgeoisie.

Few other volumes deal with the war as a feature of an individual house's history, particularly not in gazetteer works; some make no mention even where it is relevant in the individual context. Seebohm alludes to this paradox:

‘Whilst volumes have been written about Britain’s country houses, their grand history, architecture, art and gardens, and the power and frivolity that governed them, a strange veil of silence seems to have been drawn over them during the period 1939-45, a major watershed in the country’s history.’¹⁵²

Burke’s and Savills’ series of reference volumes on English Country Houses is comprehensive in its coverage of architectural features and ownership histories, but makes almost no reference to the Second World War in individual cases. For example, Blickling’s well-known use as officers’ quarters from 1941 to 1945 is not mentioned, the estate passing to the National Trust in 1940 being seen as a more noteworthy event. Didlington’s entry makes no mention of General Miles Dempsey’s use of the house as his divisional headquarters. Buckenham Tofts Hall is described as being within the army training area but not in relation to its abandonment. The Second World War seems an aberration unworthy of mention; it may be that architectural historians see the duration as of less importance than the popular writers, such as those ‘writing *from the pages of Country Life*’.¹⁵³ Sayer, author of the Norfolk volume, does allude briefly to the longer term factors in the twentieth century, including two world wars, that resulted in some one hundred and ten Norfolk estates being sold and broken up since 1900, leaving about one hundred and twenty intact.¹⁵⁴ He adds that

¹⁵⁰ Littlejohn, D. *The Fate of the English Country House* p.38. Littlejohn conceived this expression and narrows it down to the ‘provocative exhibition’ *The Destruction of the English Country House* exhibition in 1974.

¹⁵¹ *Ibid.* p.38

¹⁵² Seebohm, C. *The Country House: A Wartime History* (London, 1989) p.xiii

¹⁵³ Sayer, M. ‘Norfolk’ in Kenworthy-Browne, J., Reid, P., Sayer, M., Watkin, P., *Burke’s and Savills Guide to Country Houses: Volume III, East Anglia* (1981) p.81.

¹⁵⁴ *Ibid.* p.83

the trickle of new owners who were prepared to own and effectively manage family estates ended in about 1950. Only recently has a measured attempt been made to quantify the extent of loss and the causal factors.¹⁵⁵ This suggests a baseline from which to attempt to quantify or otherwise assess the real effect of wartime requisitioning on the country houses of Norfolk. Robinson is one of the few authors who have written specifically on the issue of military occupation, though his viewpoint is somewhat partisan both from the architectural historian's perspective and mourning for the departure of a landowning aristocracy.¹⁵⁶ No individual gazetteer-style book records the same number or composition of country houses as another, thereby underlining the vagueness about exactly what constitutes a country house or an estate. Even a cursory tour of suburban and rural Norfolk reveals houses which have escaped the attention of writers and gazetteers. Seven decades on, the property supplements of the provincial press regularly reveal a fascinating selection of houses that would clearly fit the definition but are not featured in gazetteers; this also indicates the frequency with which large period houses change ownership, often in good restored or maintained condition. This may in part reflect houses which have become recognisable only as houses, disassociated from any original extended estate lands that may have been broken up, piecemeal, over time. Gaps in a house's history may lead to subjective interpretation of the causes of their decline and loss, military requisitioning becoming a likely candidate but often with mixed evidence. As Sproule observes: '...people move away, people die and the people who knew them die and the threads of information become twisted and broken;' added to which many houses simply have no records at all.¹⁵⁷

An eccentric but illuminating source of contemporary observation is offered by James Lees-Milne, country house expert, architectural historian and secretary of the Country Houses Committee of the National Trust from 1936 to 1950. A frequent visitor to Norfolk, especially Blickling, his observations are personal and quirky, yet curiously dispassionate at times. The National Trust took a keen interest in the fate of country houses, Lees-Milne recommending and overseeing many of the transfers, including that of Blickling. He understood the stately home but had also served two years in the Army from 1939 which may have given him a

¹⁵⁵ Williamson, T., Ringwood, I., Spooner, S. *Lost Country Houses of Norfolk: History, Archaeology and Myth* (Woodbridge, 2015)

¹⁵⁶ Robinson, J. M., *The Country House at War* (1989) and Robinson, J.M. *Requisitioned: The British Country House in the Second World War* (London, 2014). Robinson clearly blames the war for the greater part of country house loss during and since 1945

¹⁵⁷ Sproule, A., *Lost Houses of Britain* (Newton Abbott, 1982) p.271

pragmatic view. He never hesitated to refuse recommending a house to the Trust if he felt it had no aesthetic merit.

Of the few writers who do include the war the impression given is of country houses and estates that were at best sullied, and at worst destroyed, by their involvement in the prosecution of the war. Littlejohn unequivocally states that ‘what really destroyed the stately homes of England was the Second World War’ adding that ‘the major destruction was wrought by the British government itself.’¹⁵⁸

The National Archives appears to hold no detailed official records of house and estate requisitions for Norfolk; military unit war diaries do however make passing reference to headquarter and leaguer dispositions where based at country houses. Family archives where they exist are often held *in situ* or at local record offices. Norfolk Record Office yields some information and individual estate records bear patchy witness to events.¹⁵⁹ Some information is surprisingly inconsistent given the relatively recent timescale; this may in part be due to frequent changes of ownership and imprecise understandings of even the exact identities and locations of some larger houses. Notable exceptions are Blickling and Wolterton, both of which retained extensive archives.

The most helpful and objective sources explore both world wars as contributors to long term decline in association with other macro-environmental factors. Wade Martins and Williamson provide a clear and objective background, chronology and explanation of the series of economic and political events that impacted upon country houses and estates in East Anglia, from the agricultural depressions of the late nineteenth century though to the immediate post-Second World War period.¹⁶⁰ Littlejohn takes a similar path of investigation relating to England as a whole, to include the modern heritage industry and its contribution to the renaissance of the English country house.¹⁶¹ Williamson, Ringwood and Spooner’s recent work on Norfolk’s lost houses is especially thorough with focus on the twentieth century.¹⁶² These recent investigations encourage greater accuracy in looking at the actual causes of loss and will be looked at in more detail below.

¹⁵⁸ Littlejohn, D., *The Fate of the English Country House* p.49

¹⁵⁹ The Walpole archive however, until 2016/17 held at Wolterton Hall, is exceptionally good.

¹⁶⁰ Wade Martins, S., and Williamson, T., *The Countryside of East Anglia – Changing Landscapes, 1870-1950* (Woodbridge, 2008)

¹⁶¹ Littlejohn, D. *The Fate of the English Country House*

¹⁶² Williamson, T. Ringwood, I. and Spooner, S. *Lost Country Houses of Norfolk*

Definition of the country house

Any assessment of Norfolk country houses allegedly lost, directly or indirectly, to military occupation, is problematic because it requires some clarification. The term ‘country house’ might refer to the house alone, the house with parkland and estate, or its sheer physical size. As important is the cause of loss, when it occurred and how directly it was connected to military use. Clearly, some association between military occupation of a house for any sustained period between 1939 and 1945 and its destruction or loss during that period and into the immediate post-war years can be made. Loss, destruction, ruination taken as a whole span a much longer chronology, and causation cannot be ascribed without proper context.

At one end of the spectrum is the archetypal historic myriad-roomed country house, set in its own landscaped parkland with farms beyond, possibly with historic provenance and owned by generations of the same aristocratic family, notable examples being Blickling, Felbrigg, Holkham and Kimberley. At the other are the smaller manor houses and the more generously proportioned rectories. In between lie what were once, at least, the smaller houses of the lesser gentry and even suburban villas. To this could even be added semi-rural or suburban large townhouses, though few of these would possess parkland or an extended estate. Assumptions about what actually constitutes the country house and estate would explain variations in alleged numbers of property losses after 1945. Also, it was common enough for the house to remain, isolated, after the break-up of the estate and, conversely, for the estate to continue to function without its house. It is however the house which was, when extant, and continues in popular memory, to be the focus of loss.¹⁶³ Added to this is the reality that, despite the sheer physical size and imposing presence of some houses, changes in ownership and the often segmented break-up of the estates led to confusion or even complete loss of records.

Further still, as Williamson, Ringwood and Spooner express it, the answer to the question of definition is clouded by ideology.¹⁶⁴ Definition is permeated by perceptions of the past, a lost though not forgotten world of stability and bucolic gentility, trampled upon by the modern world, whether that is represented by the social upheaval after the First World War, the alleged ravages of the Second or the rapidly changing post-war political and social landscape.

¹⁶³ Wade Martins, S., and Williamson, T., *The Countryside of East Anglia* p.77

¹⁶⁴ Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses of Norfolk*

As Williamson *et al* explain, whilst Norfolk's country house loss accelerated after 1945, less attention is paid to the extreme financial problems faced by a nation recovering from huge war debt and an almost bankrupt economy. The Attlee government was trying to provide financial stability, better education and free health care for all. The nation expected something better after nearly six years of war, much of it on the home front. Tax breaks and financial incentives for the wealthy were not a priority.

Littlejohn quotes Strong and Binney as giving a figure of 629 country houses lost, nationally, in the thirty years following the end of the war and Robinson opting for closer to one thousand in the first post-war decade.¹⁶⁵ This also raises the question of why so few country houses appear to have actually been requisitioned, unless the subject of definition relates more to substantial properties with parkland and estate, at which point their potential use becomes clearer – that of barrack, school, hospital or headquarters. Perhaps this is the distinction; the larger houses were chosen because their size and capacity proved suitable for durational occupation. The smaller houses were suitable only for short-term billeting purposes and records may be long-lost.

An holistic count of all historic houses, drawn from a range of sources, suggests a figure of over 450 houses in Norfolk in 1900.¹⁶⁶ Recent assessment, given that there is uncertainty about definition, suggests about 320 country houses in the county in 1939, a very helpful start point.¹⁶⁷ Of this, a conservative estimate of no more than fifty were directly impacted upon by wartime requirements between 1939 and 1945. Starting from the understanding of a 'country house' as a rurally located mansion with an attached estate, the first issue when calculating those extant in 1939 is that gazetteers tend towards listing houses possessed of an estate and without. Some small country houses had long functioned as farm houses. Some West Norfolk tenanted farms ran to more than a thousand acres, effectively large working estates, whilst other holdings to the north west of the county, described as country houses, were no more than large farms.¹⁶⁸ The largest landed estates might be defined as extending to more than 10,000 acres, whilst houses of the gentry might cover less than half that area of land.¹⁶⁹ In 1871 there had been 70 estates of over 3,000 acres in Norfolk; by 1941 there were

¹⁶⁵ Littlejohn, D. *The Fate of the English Country House* p.49

¹⁶⁶ Appendix 1, compiled from: Sayer Kenworthy-Browne, J., Reid, P., Sayer, M., Watkin, P., *Burkes and Savills Guide to Country Houses: Volume III, East Anglia*

¹⁶⁷ Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses of Norfolk* p.42

¹⁶⁸ *Ibid.* p.42

¹⁶⁹ *Ibid.* p.9

forty-three estates of over 3,000 acres, amounting to 28 per-cent of the county, declining from 49 per-cent seventy years before.¹⁷⁰

Requisition

The image of the barbarians at the gate, the occupants of the once-sacred big house haplessly awaiting the invader, is perhaps a little fanciful. There is no evidence that the war offered the opportunity for some kind of wartime socialist undermining of the landed classes. Large houses proved very useful for accommodation and headquartering. As with other properties, owners were paid rent under the 1939 Compensation (Defence) Act, based upon the rental value as at August 1939.¹⁷¹ Whilst there were isolated cases of major despoliation of estate landscape elsewhere in Britain during the Second World War, such as open-cast mining sanctioned in the park at Wentworth Woodhouse in the West Riding of Yorkshire, it was rare, and nothing on that scale occurred in Norfolk.¹⁷² There is little doubt that there are examples of the damage caused to several prominent houses and their estates, ranging from vandalism to complete loss, as will be seen in the case studies, below. The question is whether the Norfolk experience reflected this in any great measure. As this chapter will show, the arrangements worked as well as could be expected in trying circumstances, but difficulties were experienced and tensions arose between some owners and the military. Compensation was payable under the 1941 War Damages (Compensation) Act; the family archives at Wolterton provide a number of examples of relevant negotiations. Case studies will look at what the outcomes of wartime occupation were for the houses, and whether or not it was statistically significant.

In the event it was by and large the greater houses that found themselves under scrutiny by the military from 1939, and it is these that are often seen as the victims of wanton vandalism and neglect – and not always at the hands of the military, as many were to function as hospitals, convalescent homes, schools and bureaucratic headquarters. Some owners clearly feared requisition, be it by the military or the bureaucracy, and offered their houses

¹⁷⁰ Farm Economics Branch, Cambridge University, Report No. 30 (1947), *Land Ownership in the Eastern Counties*; Wade Martins and Williamson, *Countryside of East Anglia*, pp. 73-7

¹⁷¹ Seebohm, C. *The Country House: A Wartime History* p.45 and Williamson, Ringwood, Spooner *Lost Country Houses* p.45

¹⁷² Robinson, J.M. *Requisitioned- The British Country House in the Second World War* pp.177-178. Robinson suggests the open-cast mining in the park – to produce coal for the war effort – was more politically motivated than practical. He describes Emmanuel Shinwell, Minister of Fuel's consent to mine right up to the house itself as a 'doctrinaire socialist gesture.'

voluntarily, at an early stage of the war, as refuges, schools or hospitals. This effectively offered some properties a new role that in respects could be said to have physically saved them from military occupation and offered a post-war function preventing continuing decline. It is however very difficult to ascertain the extent of unrecorded damage to the smaller houses, unless specific examples are evident.

The Norfolk experience was not necessarily a direct reflection, a microcosm, of the national picture but, as with airfields, training areas and defence sites, the political and strategic bigger picture directed local land requirements. In specific instances, in common with the national picture, the arrival of the military heralded a short, sharp regime of new use and occasional abuse. It may be misleading to cite the Second World War as a primary cause of the decline of the country house as a genre in Norfolk, and it will be useful to distinguish between wartime military and non-military use. Many houses were utilised for schools, hospitals and civil administrative centres and some of these suffered more damage than those occupied by the military. In some examples, such as Blickling, wartime occupation has become an intrinsic and marketable part of the house's history and continued existence. Conversely, at Diddlington, the post-war period saw the house's decline and eventual sale, culminating in demolition in the 1950s. Both were heavily impacted by wartime occupation but with very different outcomes. In every case the relative significance of wartime occupation can be markedly different.

Historic background

A range of economic, political and social changes contributed to the decline of the country house and estate for at least sixty years prior to the Second World War; the years 1939 to 1945 were yet another factor in abandonment or ruination for some, whilst for others the war years passed them by. In any event, the ultimate fate of the house is often a separate issue from that of its surrounding estate. The one may survive the other or be disposed of at different times, though the demolition or ruination of the house is often seen as a bench-mark for the end of an aristocratic landholding. Norfolk had its share of large country houses and estates utilised for war use between 1939 and 1945.

The zenith of the English country house was the mid-Victorian period, associated with the height of agricultural prosperity. The long term agricultural depression, discussed in more detail in Chapter 7 took hold from the 1870s, a major causal factor being cheaper food

imports arriving in Britain on an ever-increasing scale – particularly from America.¹⁷³ Agriculture, as a source of income for estate owners, was becoming less viable. The following decades saw income from tenants begin to decline as economic downturn affected their ability to pay.¹⁷⁴ Death duties were introduced in 1894.¹⁷⁵ As a result of local government reform local legislative, judicial and administrative offices were no longer the exclusive preserve of the landed classes. The country house became vulnerable to new social structures in which the landed classes no longer exclusively made decisions for the wider community but were shared by a wider range of elected members.¹⁷⁶ The perceived assault on the invulnerability of the landed classes and their country estates gained momentum in the early years of the twentieth century, with radical and Liberal ideas about land reform. Lloyd George's proposed land tax of 1909 and, later, Chancellor Philip Snowden's plans for a Land Value tax in his 1931 budget, fed fears of nationalisation of private land. All this represented an assault on the hitherto unassailable position of large landowners, both urban and rural; Traditional landowners were beginning to feel beleaguered, politically and economically. To this can be added the devastating loss of the inheriting generation – the officer class that perished in the fields of Flanders and France in the First World War and domestic staff who did not return from war. It became increasingly difficult to employ or retain staff amid a changing social hierarchy and increasing mobility. With ever increasing death duties, and a perception that agriculture was not the productive income stream it once was, began to raise the question of the economic viability of maintaining a large house. The hold of some major landowners on their houses and estates became increasingly tenuous.

The age of sales, demolitions and dereliction then, had begun, with estate lands often being sold to former tenant farmers, who did not have the same priorities of land use and perception of the *status quo*. Between the wars, the rate of sales hastened, which increased the prospect of being able to sell, though many houses and estates did not reach their reserves or indeed attract any interest at all, even when sub-divided into smaller lots. Littlejohn sees the country house and estate as a social phenomenon in itself, but one that was rapidly changing as a concept. He suggests that part of the problem was that owners often had no real interest in the

¹⁷³ Agricultural depression in the first four decades of the twentieth century is discussed in more detail in Chapter 7.

¹⁷⁴ Barnes, P. *Norfolk Landowners since 1880* (CEAS, UEA, 1993) pp.16,17

¹⁷⁵ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia* p.73. Death duties were increased in stages, being raised in 1919 to 40 per-cent on larger estates valued at over £200,000.

¹⁷⁶ *Ibid.* pp.73,74

house or estate, often using it only as a weekend retreat from the London lifestyle.¹⁷⁷ The key point is that the continued existence of country house and its environs were under threat long before the Second World War, and would continue thereafter as, in a changing society and political environment with less favourable views of those who owned large houses with extensive lands, sales accelerated once more. Even before the war, in 1935, Osbert Sitwell observed: ‘What country houses of any size, one wonders, can hope to survive the next fifty years?’¹⁷⁸

The first chosen option was to sell items or simply make economies. The next, more dramatic and irrevocable step was to sell the house or estate or both. Wade Martins and Williamson describe a veritable revolution in patterns of land ownership in East Anglia. Norfolk saw seventy estates of three thousand acres or more reduced to forty-three by 1941, the proportionate land share declining from forty-nine percent to twenty-eight. With the sell-off of major land tracts, forty-three per-cent of land in Eastern England was owner occupied in 1941, compared with an average of twenty per-cent from 1887 to 1922.¹⁷⁹ Farming itself recovered towards the war years and this, ironically, improved the prospects for sale for impoverished landowners.¹⁸⁰ The decline of the great estate after 1880 was therefore more complex than is often assumed.¹⁸¹ The sale of an estate was not necessarily its demise and, conversely, some big landowners actually bought up the smaller ones.

This is the chronological background that illustrates the slow demise of many – though not all – country estates and this before the start of war in 1939. Moreover, some estates, though broken up, or partly sold, were not entirely disposed of until after the Second World War and not necessarily solely or even partly as a result of the war itself.

The approach of war

Norfolk possessed – and still does, despite post-war losses - an extensive range of country houses from every era, from numerous smaller gentry houses, and later great houses with

¹⁷⁷ Littlejohn, D. *The Fate of the English Country House* p.34

¹⁷⁸ Ibid. p.34 quoting Sitwell’s foreword to Dutton, R., *The English Country House* (1935)

¹⁷⁹ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia* p.74

¹⁸⁰ Ibid. p.77

¹⁸¹ Ibid. p.75

accompanying large estates.¹⁸² The historic wealth of the county, followed by lack of industrialisation, left many houses intact through to the twentieth century. From 1938 onwards, with the spectre of war looming, the Office of Works began a confidential official register of larger property ownership, though not yet complete at the outbreak of war.¹⁸³ Since the presumption that large-scale aerial bombing would decimate cities and populations, especially in the south of England, it was anticipated that large houses in rural areas, able to accommodate numbers of civilian wounded, schools and government departments, would be needed. The War Office, Admiralty, Air Ministry, Ministry of Transport, the Air Raid Precautions Department and Board of Education were among those departments who were asked to state their projected needs.¹⁸⁴ All were asked to state their projected accommodation needs in the event of having to desert urban centres *en masse*. General military requirements were not the absolute priority in the build up to war, nor in the first year of hostilities, save for training purposes, which was an absolute priority. The somewhat secretive nature of the property register undoubtedly threatened to fulfil some of the by then traditional fears of estate owners; compulsory acquisition by government and the undermining of rights of major property owners.¹⁸⁵ Priorities were to skew markedly as, firstly, civilian deaths proved to be a fraction of that anticipated and, secondly, the requirements of the military increased exponentially, with a second surge in 1942 heralding the arrival of American service personnel. Local authority buildings, hospitals, transport-related buildings were excluded by nature of their existing function. Private houses with less than four rooms on the ground floor were exempt.¹⁸⁶ Whilst this still left considerable scope for choice, large country houses inevitably became the focus of attention for the military, both for house and parkland. The houses and estates were capacious, and numerous, relative to their size.¹⁸⁷ Most were also readily accessible to road, rail and towns, though this could not be said of, for example, Wolterton; and in the case of Blickling it was the proximity of a site suitable for an airfield – RAF Oulton – which was the deciding factor. The preponderance of airfields, increasing year on year in Norfolk, along with military training areas and coastal and inland defences systems, prefaced an increasing intensity of requisitioning of country houses.

¹⁸² Kenworthy-Browne, J., Reid, P., Sayer, M., Watkin, P., *Burkes and Savills Guide to Country Houses: Volume III, East Anglia* (1981)

¹⁸³ Robinson, J.M. *The Country House at War* p.5

¹⁸⁴ *Ibid.* p.6

¹⁸⁵ Robinson, J.M. *Felling The Ancient Oaks* (London, 2011) p.32

¹⁸⁶ Robinson, J.M. *The British Country House at War* p.9

¹⁸⁷ Littlejohn, D. *The Fate of the English Country House* p.50

Case studies

Given the number of larger country houses, it is reasonable to assume that many more may have been occupied for shorter duration as the need arose – but if this is not recorded within an estate or family archive, then it is reasonable to assume that no lasting damage was done. Lack of information about house histories may be explained by the frequent changes of ownership; breaks in continuity result in gaps in information. With frequent proximity to airfields and training sites, it may seem surprising that many more were not requisitioned for the longer duration. They may have been deemed unsuitable for all kinds of practical reasons – Felbrigg Hall in north Norfolk was considered by the army but rejected because there was no electrical lighting to the house.¹⁸⁸ In two cases, Buckenham Tofts and Weeting Halls, the houses were not occupied but requisitioned within the Stanford Battle Training Area, and simply abandoned. Blickling was chosen because it was close to a major airfield, RAF Oulton; Wolterton because it suited the army to have accommodation near the coast for training and defence purposes.

Blickling

‘In spite of the RAF station Blickling seemed to me at the furthestmost extremity of East Anglia, if not of the United Kingdom.’¹⁸⁹

RAF Oulton and Blickling Hall are two miles distant from each other but inextricably linked by their wartime history. The early years of the Second World War represent a three-way pull of interests between the needs of the military, the continuation of the house and estate, and the arrival of the National Trust as prospective guardian of the property. It is in this last respect that James Lees-Milne’s presence and observations figure prominently, both as representative of the Trust and incidental observer of the militarised landscape.

Philip Kerr, 12th Marquis of Lothian was acutely aware of the doubtful future for the fabric of country houses, and Blickling in particular. In a speech in July 1934 at the annual meeting of

¹⁸⁸ Seebohm, C., *The Country House: A Wartime History* p.12. Also Ketton-Cremer, R.W. *Felbrigg – The Story of A House* (Ipswich, 1962) The last family owner of Felbrigg wrote poignantly that ‘Felbrigg survived the war, shaken now and then by bombs, a few windows broken, a few cracks in the ceiling, nothing worse. Since it was then [*in 1941*] still without electricity, it could not be adapted for any military or civilian purpose whatever. In contrast to its neighbours, occupied from cellar to attic and ringed round with caps and hutments, it remained undisturbed.’ p.291.

¹⁸⁹ Lees-Milne, J. *People and Places, Country Houses Donors and the National Trust* (London, 1992) p.31

the National Trust he proposed the idea of the Trust saving threatened houses as a ‘landlord on an ampler scale’.¹⁹⁰ Lothian subsequently bequeathed Blickling, with contents and over a hundred houses and cottages, along with 4,700 acres of woodland. He died in post as British ambassador to the United States in December 1940. His possessions were vast and it was several years before executors were able to convey the estate fully.¹⁹¹

Lees-Milne had been invalided out of the Army after two years’ service and did not first go to Blickling as representative of the National Trust until May 1942. His first impression describes exactly the features, bordering the approach from the south, shown on the contemporary Ministry of Works site plan.

‘... leaving Aylsham we were greeted on our right by a sea of Nissen huts obliterating the orangery and on our left by an amorphous brick NAAFI complex in direct view from the front door of the Hall. There was likewise a settlement of what were termed semi-permanent office buildings right up to the west elevation which we were shortly to come upon. But just past the church we were subjected, at the end of a straight drive, to the breath-taking view of the south front of high, fanciful gables, tall chimney stacks and central cupola between flanking square towers.... The more I gazed the more I was impressed by the dowagerial majesty of this ancient pile.’¹⁹²

The Nissen huts obliterating the Orangery were on the main roadside accommodation site; the site of the Navy, Army and Air Force Institute (NAAFI) can still be seen as an earthwork on the opposite side of the road.

Lees-Milne noted that the remaining furniture which had not been removed for safety was shrouded under dust-sheets, but that the pictures had been removed. The RAF was in occupation of the rest of the house, ‘seemingly packed by the hundred into bedrooms and attics.’¹⁹³ The attendant risks from fire were ever present. Even a few minutes spent in the attic rooms in mid-summer offer an indication of how cold the accommodations must be for most of the year.

¹⁹⁰ Littlejohn. D., *The Fate of the English Country House* p.58, 59.

¹⁹¹ Lees-Milne, J., *People and Places* p.28

¹⁹² Ibid. p.30

¹⁹³ Lees-Milne, J. *People and Places* p.30

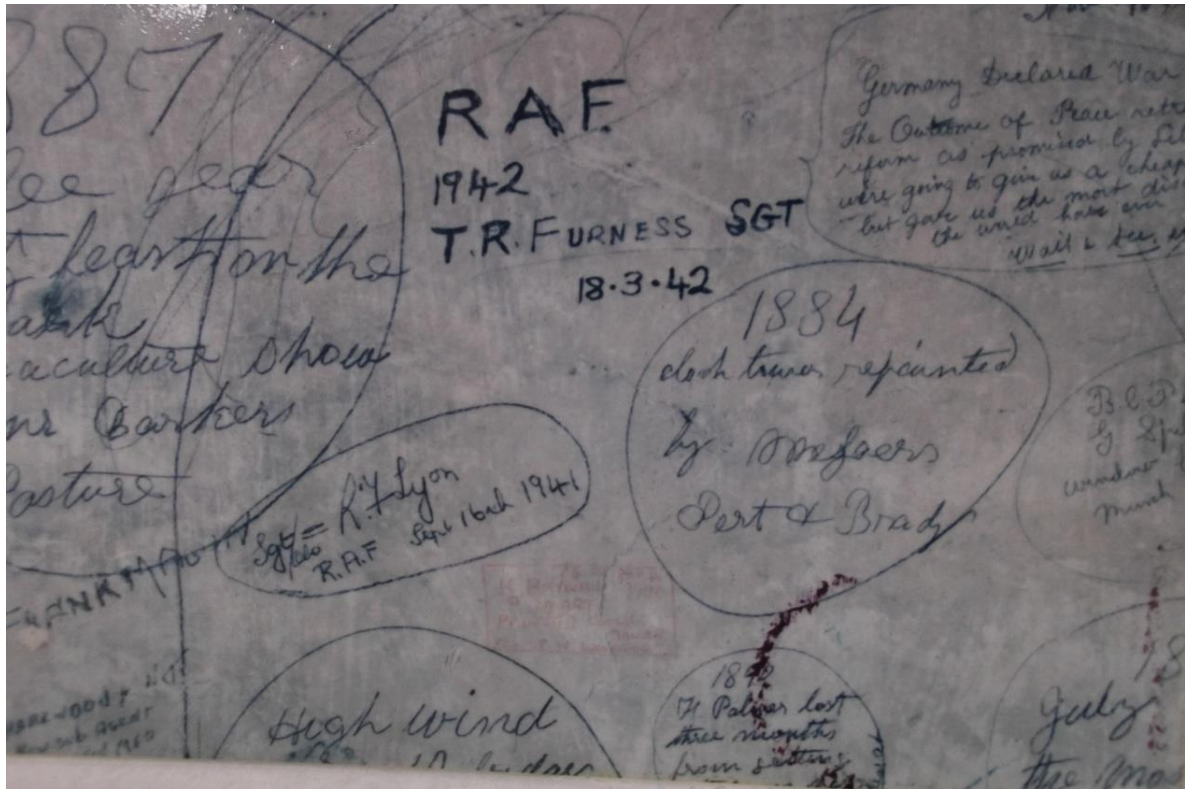


Fig.77 RAF personnel left a record of their presence, along with those of house staff, on the wall of a door-less attic room located over the main doorway to the house (author's photo)

Royal Air Force, Oulton

HYGIENE AND SANITATION

Preservation of Health during Winter Months

1. With the Winter approaching, and with it a possible sharp rise in cases of infectious disease, it is essential that the closest attention be given to all measures which help in the preservation of the general health of personnel. This is not the task of the Medical service alone, but one which demands the co-operation of every Officer and Airman on this Station.
2. In the ensuing winter months, we may expect the development, possibly in epidemic form, of cases of such diseases as Influenza, Sore Throat, Measles, German Measles, etc., etc., most of which are caused by what is known as "droplet infection." Expressed simply, this means that the germs of the diseases above mentioned, and many others, are spread by coughing, sneezing, speaking and breathing. With coughing and sneezing, germs may be spread more than 15 feet away from the individual, and with ordinary speaking and breathing within a radius of approximately 3 feet.
3. The spread of these conditions is favoured by close contact, under communal living and working conditions, in winter weather when windows are kept closed either to exclude cold or from forgetfulness. Therefore, the greatest safeguard is free ventilation, fresh air, and early detection of cases.
4. The following are the main points to be observed:—
 - (a) The senior Airman is responsible for the enforcement of ventilation arrangements in each Office, Barrack Room, Dining Room, Mess, Ante-Room, Canteen and work place.
 - (b) Wall ventilators, where provided, should be examined to ensure that they are not stuffed with paper; etc., but remain in the open position.
 - (c) During daylight all black-outs must be removed, and a proportion of windows kept open in Barrack Blocks, Messes and Dining Rooms. In Offices, if the position of the windows prohibits their being kept open, they should be opened at frequent intervals to allow free air entry.
 - (d) All black-out screens must be made of the ventilating type. Particular attention should be paid in this respect to personnel accommodated in dispersed positions, e.g., the defence huts around the perimeter.
 - (e) During black-out, black-out screens in Barrack Blocks must be removed after "lights-out," so as to provide cross ventilation.
 - (f) Beds in Barrack Rooms and Huts should be staggered head to feet and properly spaced, so that each man has at least the statutory 45 sq. ft. of floor space.
 - (g) Floors, where possible, are to be cleaned and disinfected with Cresol daily (2½) by Room Orderly.
 - (h) Particular attention should be paid to the drying and airing of all clothing and bedding before use. Care should be taken to ensure that clothes of airmen, which become wet during the course of their duty, are properly dried before again being taken into use.
 - (i) Regular daily period of exercise should be taken by all personnel, particularly for those

B. ROBINSON, S/Ldr., 234
Station Administration Officer.

Fig.78 Preserved RAF Hygiene and Sanitation poster on the wall of one of one of the attic rooms. (author's photo)

Lees-Milne's accounts of his visits are populated by larger than life, but real, characters that add to the humanity of the situation, prominent of all being his picturesque turn of phrase in

describing the relationship between Miss O'Sullivan, Lord Lothian's secretary, and the military personnel.

'The lusty young pilots were even more terrified of Miss O'Sullivan, whom they called 'the dragon' than they were of night flights over Germany.'¹⁹⁴

She mercilessly scolded them for consistently vandalizing the house and anything else they could lay their hands on recounts Lees-Milne.¹⁹⁵ And this was vandalism of a type not experienced at, for example, Wolterton. The airmen smashed the old crown glass of the windows and broke open doors leading to the staterooms. Worse still, subsequently, a group of airmen used a tree trunk as a battering ram to force the iron doors of the mausoleum in the park. In search of the Countess's jewellery, which they wrongly supposed to have been buried with her, they prized open the marble sarcophagus. Lees-Milne observed 'This sort of thing is inevitable.'¹⁹⁶

'Miss O'Sullivan's protective instincts were roused and she was out for retribution. But Birkbeck (Lothian's agent) did not in the circumstances like to appear too disapproving of 'our brave boys' who were nightly risking their young lives on England's and our sedentary behalf.

She regarded Blickling as a sacred trust. To her it was sanctified territory... The dragon of the RAF was respected by one and all. ...she was not afraid to raise Cain with the Wing Commander. Unannounced she would boldly stalk into his office waving her arms in indignation and abusing his subordinates as barbarians.'¹⁹⁷

Mr Birkbeck, the estate manager, was also a frequent subject of Lees-Milne's accounts.

'With two surveyors from the Ministry of Works, Birkbeck and I spent an April day.....crawling on hands and knees under the roof of the west wing looking for, I am glad to say, non-existent death-watch beetle in the rafters the

¹⁹⁴ Lees-Milne, J. *People and Places* p.34

¹⁹⁵ *Ibid.* p.34

¹⁹⁶ Robinson, J.M. *The Country House at War* p.168 and Lees-Milne, J. *Ancestral Voices* (London, 1975) p.58

¹⁹⁷ Lees-Milne, J. *People and Places* p.34

ticking of which the RAF complained been keeping ‘our boys’ awake at night.¹⁹⁸

One evening was spent stamping out a fire in Hercules Wood, to the west of the house, which had either been started mischievously, or inefficiently by the Home Guard in constructing, unknown to Birkbeck, a bomb dump under dry bracken covering a trap door.¹⁹⁹

The contents which on the outbreak of war had been removed from the house to London were no safer than at Blickling. Three important paintings stored at Partridge’s shop in King Street – a Holbein copy of Henry VIII, Zuccherò’s panel of Queen Elizabeth and Samuel Scott’s *The Thames* – were badly damaged in an air raid when water flooded a basement safe. In contrast other treasures removed to the country fared very well. Another consignment went to Henley hall near Ludlow, where the head housemaid kept tapestries sealed against moth rolled up in wax paper and sprinkled with naphthalene flakes.²⁰⁰ Lees-Milne noted that Lord Lothian had taken away Pollen’s Florentine fireplace and replaced it with nothing, which he interpreted as another kind of vandalism. Lees-Milne was so involved with and fond of Blickling that he spent his fortnight’s holiday there in 1945. He noted ‘overlooking the beautiful but unkempt, unmown, unweeded garden.’²⁰¹

¹⁹⁸ Lees-Milne, J. *People and Places* p.35

¹⁹⁹ Lees-Milne, J. *Ancestral Voices* p.188-9

²⁰⁰ Lees-Milne, J. *People and Places* p.36

²⁰¹ *Ibid.* p.37

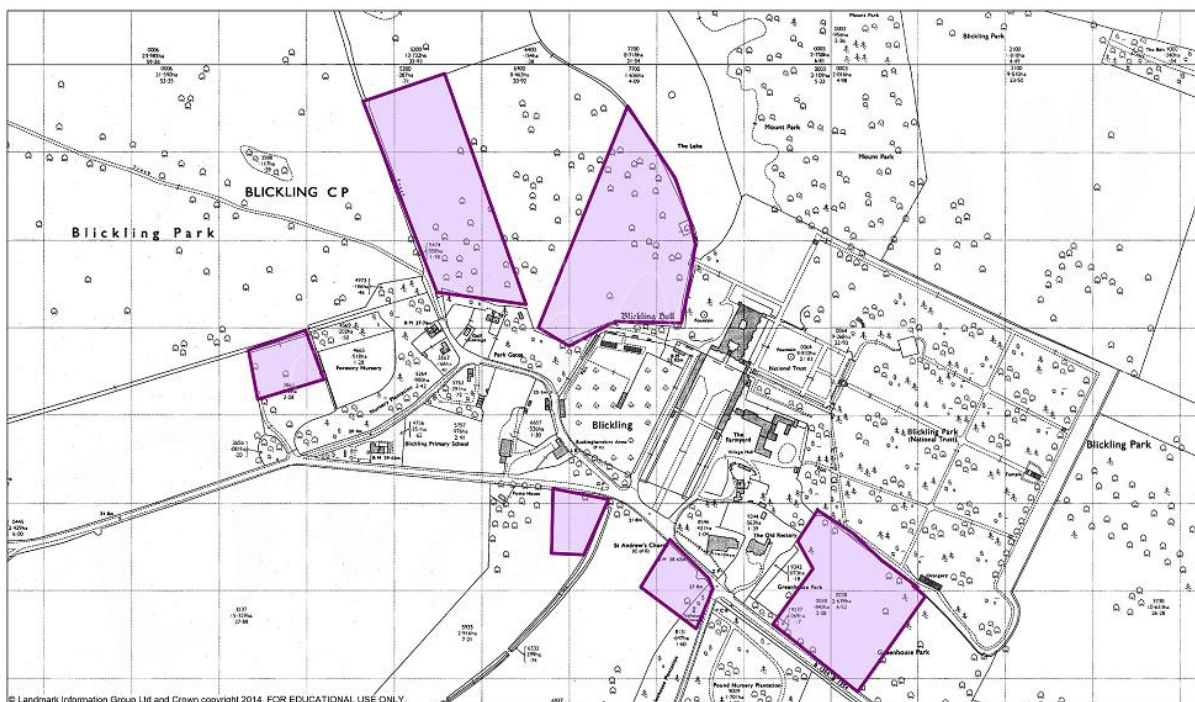


Fig.79 Areas of garden and park occupied by RAF personnel from 1941 onwards.²⁰²

Nearby, Aylsham Old Hall is a house of some size of house in its own right, set by the roadside half-way back to Aylsham, and part of the Blickling estate. Lees-Milne describes it in July 1945 as a perfectly preserved red-brick house though, after de-requisitioning, it required a good deal of refurbishment. Of the £450 compensation given by the Army for dilapidation compensation, the National Trust was permitted by the government to spend £100 a year on repairs, with the pre-condition that the work would be started in less than four weeks' time. Subsequently an ongoing expenditure of just £10 a year was allowed.

‘How these absurdly arbitrary figures and dates were calculated is unclear.

They merely indicate the difficulties that thwarted owners of historic buildings in those lean days of privation and prohibition.’²⁰³

The National Trust was unable to open Blickling to the public until May 1947 but not because of wartime vandalism. The Trust had to fulfil the wishes of Lord Lothian’s will that it should be let as a family residence to persons who will love appreciate and respect Blickling Hall and will use it not only as a private residence but as a place from which - as he phrased it - public or intellectual or artistic activities go forth and in which persons or conferences or persons interested in such things are entertained and who have the means

²⁰² Based on modern Ordnance Survey map

²⁰³ Lees-Milne, J. *People and Places* p.39; also in Lees-Milne *Prophesying Peace* (London, 1977) p.210

necessary to enable them to live at Blickling and use it for such purposes. He named his title successor, and three sons of his friends Lord and Lady Astor. All turned the idea down.²⁰⁴ So it was that on May Day 1947 twenty bedraggled visitors on a cold, rainy day paid one shilling each to view the house. ‘Today Blickling is very much alive and very flourishing. And the number of visitors is prodigious’ reported Lees-Milne in 1992.²⁰⁵ In the early years of the twenty-first century Blickling Hall hosts the RAF Oulton Museum, and the war is fast becoming a key element in the National Trust’s marketing of the Hall.

Wolterton

‘To the owner and occupier of the land and buildings described in the Schedule hereto attached:

I, Major General I. G. Morgan Owen, being one of a class of persons to whom the Secretary of State as a competent authority for the purposes of Part IV of the Defence Regulation, 1939, has in exercise of the powers contained in that Part of the said Defence Regulations delegated the necessary authority, give notice that I, on behalf of the Secretary of State take possession of the land and buildings described in the Schedule hereto annexed.

Signed on behalf of the office i/c Administration, Eastern Cmnd 1 Sept 1939.’²⁰⁶

The announcement that a property, with its adjoining lands, was to be requisitioned for an indeterminate period at a time of national crisis, was non-negotiable. In part expected, albeit with some apprehension, it might not be the last such demand. In the case of Wolterton supplementary similar forms of requisition were to be received, relating to detached parts of the estate, the second significant notice of requisition occurring in July 1941, with areas of parkland identified for military use.²⁰⁷ At least one notice of requisition was to be reinforced after the war’s end.

²⁰⁴ Lees-Milne, J. *People and Places* p.40

²⁰⁵ *Ibid.* p.40

²⁰⁶ WOLT 8/140/86 Central Register Serial No. NORF/505 official ‘Form of requisition’ 1st September 1939

²⁰⁷ WOLT 8/140/86 Central Register Serial No. NORF/3830. 31st July 1941

Two particular sources offer fascinating insight into the Army's occupation of the grounds and part of the house. The present Lord Walpole gives a rare, possibly unique, view of life at an occupied country house during World War Two. Born in 1938, he lived through the 'requisition' years at Wolterton as a small child and remembers life alongside the military as an integral part of his childhood. Secondly, the family and estate records, housed in the Hall's library, present not only a detailed record of correspondence between various agencies but also contain important site plans of the Army's use of the location. The overall impression is of a pragmatic, if not actually symbiotic, relationship between, on the one hand, the resident Walpole family, their agent and tenants and, on the other, the occupying units and the Army's land agents. The evidence draws a picture of a house and estate that suffered some damage, considerable inconvenience, but generally borne in good part with good working relationships on all sides given the imposed circumstances. As with all properties requisitioned over the duration, it is difficult to identify individual military units in occupation at any given time. The most direct approach to identification is through landowner and local historical records. No records for the occupation exist at the National Archives, wherein enquiries are redirected to the Walpole archive.

Lord Walpole relates that the area in front of the Hall's main entrance was reconfigured to establish a parade ground. The Army installed drains at the front of the Hall and he remembers the Horse Guards' armoured cars moving about the place.²⁰⁸ The parkland was requisitioned at the outbreak of war but the house itself not directly considered for immediate use. Shortly thereafter however, twenty rooms at the top of the house were allocated as officers' accommodation. A sergeants' mess was established in Saracen Park, and another for other ranks and Nissen huts began to arrive in numbers. Valuable pictures and portraits were removed for storage in a slate mine in Wales. It is debatable as to whether this would have been the appropriate climatic environment for them but it is typical of valuables removed, stored and later returned.

The Wolterton estate was contemporarily larger than now, encompassing estate land as far as the coast at Weybourne. Itteringham Mill was requisitioned as an officers' mess for the RAF units at Matlaske airfield, itself part of the Wolterton estate. At Beckham, four wooden radar

²⁰⁸ Pers. Comm. Lord Walpole 12th September 2014. Lord Walpole's account is reflected in the family archive, with direct reference to installation of a new drainage system and re-configuration of the area in front of the Hall. The problem was that the newly-surfaced parade ground was prone to flooding, even in relatively clement summer weather, with surface water reaching the cellars of the house.

masts were built in the form of a square; Lord Walpole remembers them being later felled.²⁰⁹ Canadian army units occupied the parkland in the later years of the war, embarking from the east coast to Normandy several days after D-Day. Lord Walpole recalls that, post-war, his father was none too pleased to return to find the parkland being used as a prisoner-of-war camp for captured Italians. As to the parkland immediately adjacent the Hall, that not directly occupied by the military was ploughed up as part of the intensified agricultural effort. A photograph in the family exhibition in the Hall shows land under the plough right up to the piazza.

Asked about how things were for Wolterton before, during and after the war, Lord Walpole reports that it was;

‘...relaxed, worked well. The kitchen garden did well supplying the troops with peaches at half-a-crown a time! After the war a lot of restoration took place, so the eventual outcome for the Hall was good.’²¹⁰

As to the physical structures on site, a contemporary plan shows areas of occupation in the immediate parkland. Twenty-six ‘living huts’ for enlisted men and numerous associated buildings were located to the West of the house, with officers’ huts and mess across to the North, towards the church tower. At the main park entrance to the north-east were twenty-four more living huts, more ancillaries, the guard room and SAA (small arms ammunition) store. The same location housed the Quartermaster’s Office and store. To the far north by the roadside were twenty-seven more living huts and the regimental institute. The map key suggests accommodation is provided for eighty warrant officers and thirty-five officers; clearly the enlisted ranks would have, by proportion, run to several hundred. The chlorinator and water tower, together with a borehole, were sited by the main road. This, though appearing mundane is, along with sewage disposal facilities, a crucial pre-requisite for any fully functioning military encampment intended for long term use.²¹¹

²⁰⁹ Pers. Comm. Lord Walpole, 12th September 2014. RAF Beckham was part of the Chain Home defence system. Opened in 1938, the wooden pylons were receiver masts 240 ft high; four related metal transmitter pylons were 360 ft tall. All were dismantled in the late 1950s when the site was closed down.

²¹⁰ Pers. Comm. Lord Walpole, 12th September 2014.

²¹¹ WOLT 10/117 Box 37 L. Contemporary 1:1200 scale map shows precise location of every hut and out-building.

Contemporarily, RAF Matlaske was part of the Wolterton estate.²¹² These outliers of estate land are excellent examples of how the main house, adjacent parkland, farms and detached estate lands under single ownership could all be potentially subject to military requisition.

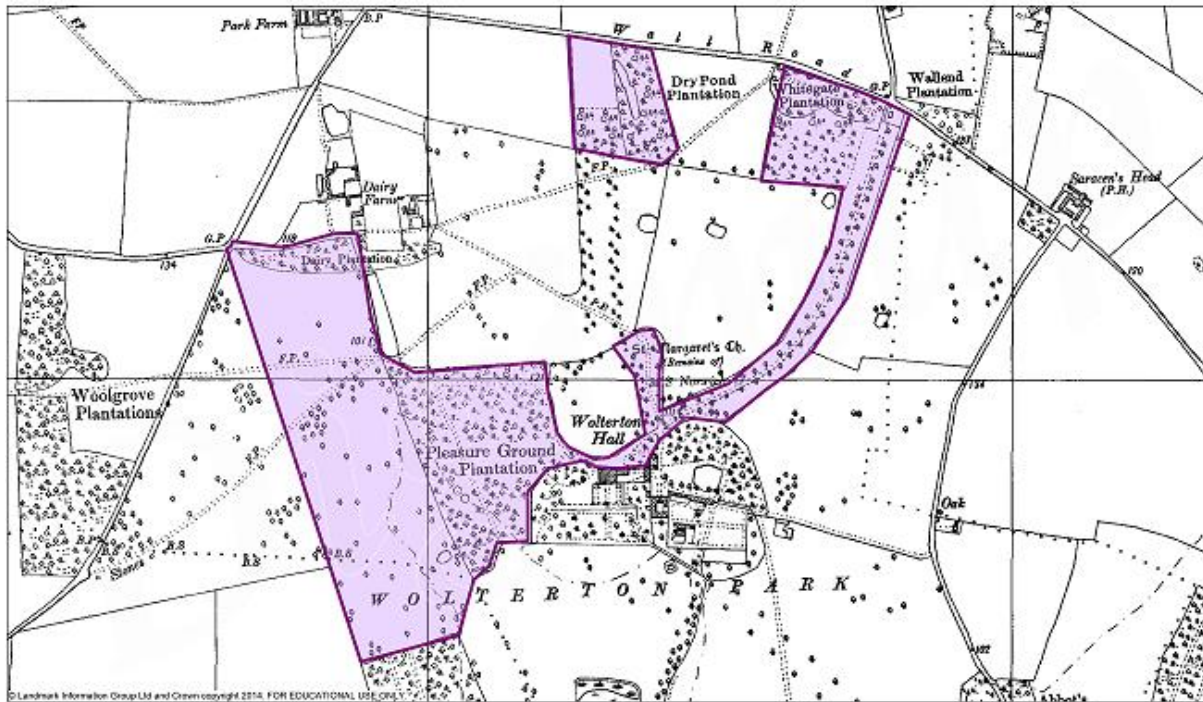


Fig.80 Wolterton Hall, garden and parkland occupied by the Army.²¹³

What might be termed peripheral damage to property was inevitable. A distinctly separate issue is that of wanton vandalism and yet even this has to be viewed with pragmatism; there is a spectrum, with malicious criminal damage at one end and youthful high-spirits at the other. Little deliberate vandalism appears to have taken place on Walpole land, though the chronology of requisition at Wolterton and beyond is peppered with damage incidents.

One item that ran continuously and never seem quite to be resolved was that of damage to a wall at Church Farm, Weybourne in April 1943. The farmer, Frank Dady, alleged that a War Department lorry pulled out to avoid pedestrians and caused an oncoming civilian lorry to hit said wall, necessitating £17 5s of repair work. In September that year a fence was damaged at Mannington Hall Farm. It was observed that the Canadian occupants abandoned the vehicle

²¹² WOLT 10/30 Box 37 L 1:2500 plan of Matlaske airfield serial WA 7/2189/44 HQ no 7 Works Area Newmarket (October 1944)

²¹³ Based on Ordnance Survey Map

and made off towards Mannington Hall.²¹⁴ In December 1944 a number of Bren carriers were alleged to have smashed down a field gate whilst being washed down in the river at White House Farm, Itteringham, with ‘considerable damage...done to the pasture by the carriers...’. The Army’s District Claims Officer accepted the tenant’s claim for £2. 10 shillings damage.²¹⁵ The glass houses at Wolterton were damaged by an explosion, allegedly caused by the Army, in May 1944 and in March 1945 the military police managed to damage the walls adjoining the gatehouse lodge. Damage continued after the war’s end. In October of 1945 £75 worth of damage was caused to a main entrance pillar at the Hall, with full responsibility accepted by the Army.²¹⁶

Lord Walpole’s agent for most of the duration was one R.J.Wortley. His and the tenants’ correspondence with the District Claims Office at Dereham are extensive, chronicling a steady but not frequent run of incidents of damage. Agreement was reached in most cases but in November 1945 two pre-war boats at Wolterton Lake were damaged to the alleged sum of £58. On this occasion Captain Francis wrote that

‘Although it is realised that troops have been in occupation of this park for some considerable time it has not been possible to establish conclusively that troops have been responsible for the damage forming the subject of this claim, and under the circumstances it is considered that only a portion of the damage can be considered as War Department liability.’

He suggested £47/3s/4d as a compromise. Lord Walpole was none too happy at the outcome.²¹⁷

There are more incidents reported, some dramatic, others obscure but there was clearly an underlying acceptance both that such incidents would inevitably occur, that some form of recompense would have to be made, and that the outcome was not always a foregone conclusion.

²¹⁴ WOLT 8/140/85

²¹⁵ WOLT 8/140/85

²¹⁶ WOLT 8/140/85 Letter CC2VII/2566 from Capt Francis, District Claims Officer at Dereham, accepts the claim as valid.

²¹⁷ WOLT 8/140/85 Letter ref. CC3/VII/3137, Francis to Wortley

The cessation of hostilities abroad did not mean a swift withdrawal from requisitioned land. Despite the post-war demobilisation programme, the British Army maintained a significant numerical presence both at home and abroad. Lord Walpole received yet another notice of requisition under Defence Regulation 52 in regard to the continued use of land at Kelling Heath.²¹⁸ Captain Lewis of the Claims Office wrote to R J Wortley confirming continued use of the firing range at Kelling Heath stating that ‘...it is not proposed to ‘requisition’ this land, but only to regularise the construction of the Range and the existence of the danger area relating thereto.’ No rent was payable.²¹⁹ This was intended to be more helpful than proscriptive for on 3rd April Lewis dispatched a ‘Notice of Surrender’ explaining that requirement for the land would expire as from 10th April 1946 ‘and that all rights of user conferred by the said Defence Regulation and Order will cease on that date.’ It seems the Army simply wished to search, locate and dispose of as much small arms ammunition and ordnance as it could, to make the area safe. The notice states that ‘the area has been carefully searched by visual means and all unexploded missiles found have been destroyed’ and offers advice on what to do if any suspect objects are found. It further advises of a statement made by the Secretary of State of War that makes provision for financial compensation for damage to property or person.²²⁰

Wortley was nonetheless exasperated by the overall damage to estate property and particular to the ongoing and seemingly never to be resolved issue of Farmer Day’s wall at Weybourne.

‘I think this damage has been going on ever since the land was requisitioned for the camp. One unit, the Household Cavalry, closed the road for a time in 1943 and others have used it for parking vehicles. I think a good deal of the damage has been done by Bren gun carriages [*sic*] and lorries turning round in the road.’²²¹

²¹⁸ WOLT 8/140/85 Standard notice of requisition under Emergency Powers (Defence) Acts 1939 for period 1st February 1946 to 31st March 1946.

²¹⁹ WOLT 8/140/85 Francis to Wortley 1st February 1946 ref. CCO/F.173. [Claims Office now located at Bury St Edmunds]

²²⁰ WOLT 8/140/85 Notice of Surrender ref. CCO/F.173, 29th April 1946

²²¹ WOLT 8/140/85 Wortley to War Claims Office, Dereham 28th January 1946.

Holkham

The beaches and salt flats to the north of Holkham proved ideal as amphibious landing training areas. The area was also at the geographic frontline of a potential invasion, as discussed in Chapter Two. Holkham Hall therefore was ideally suited as a base for military use. The 3rd Earl of Leicester's family was in residence for the duration, living on the west side of the house. The state rooms in the central block were put under dust covers, while the east side – kitchen wing, stables and outbuildings - were requisitioned by the Army, as were a number of farms on the estate.²²² The kitchen court area was utilised for tank parking and the serials and names of individual tanks – *Andon, Atlas, Albatross, Albacore, Albemarle* - can still be seen on the walls. The Earl is said to have feared German occupation of the house, asserting that ‘...unlike the Kaiser, Hitler [who was not a gent] would never understand houses.’²²³

The 3rd Earl's occupation of the Hall was reflective of a way of life impossible to maintain in modern times. He died in November 1941, succeeded by the 4th Earl who had already considered making much-needed economies in the use of the house. The former librarian wrote that

‘...a tremendous task lies before you in gathering up the threads of House & estate and family matters...knowing something of the conditions at Holkham, I own I am aghast when I think of all the labour, and I will add sorrow, that you will now have to meet.’²²⁴

In the event, in January 1942, parts of the building and immediate environs were requisitioned by the Army. The Earl appeared to enjoy aspects of military company, reflecting as it did his own service in the Scots Guards, and described the Royal Engineers as ‘exemplary tenants’.²²⁵

The house was undamaged by occupation, though several estate buildings were left in a state of dereliction and practice shelling is said to have weakened the sea defences. Robinson

²²² Robinson, J.M. *The Country House at War* p.144

²²³ Ibid. p.144. The Earl was said also to be prepared to ‘call out the keepers’ in the event of invasion, and to have laid dramatic plans to blow up the Marble Hall as Nazis marched into the house. He appeared genuinely disappointed at Hitler's switching his attention to the Soviet Union in 1941.

²²⁴ Hiskey, C. *Holkham – The social, architectural and landscape history of a great English country house* (Norwich, 2016)

²²⁵ Ibid. pp. 506-7

asserts that this caused tidal flooding of some low-lying farms and led to a substantial and successful claim against the War Office which directly funded modernisation of the estate farms in the following years.²²⁶ Whilst compensation claims included clearance of the defences, the primary concern was that of damage caused by wind erosion caused by military structures disturbing the dunes. The War Office is alleged to have ignored local advice about environmental maintenance; when questioning comparisons with pre-war measures against erosion, the estate agent explained the principle of ‘accretion rather than erosion’.²²⁷ The failure of the War Department to entirely remove barbed wire, admiralty scaffolding and associated anti-invasion defences is said to have exacerbated post-war compensation claims by the estate. Descriptions of wartime damage include ‘heavy army lorries and Bren gun carriers charging.... along the woodland rides and out the other end.’²²⁸ Such was the acrimony between the two parties that the estate office posted notices to visitors warning of the presence of defence works ‘left uncleared by the War Department’ and that the Holkham Estates Company accepted no responsibility for injury or damage incurred by visitors.²²⁹ Negotiations with the War Office for compensation continued until 1952, culminating in a compromise agreement at £65,000.²³⁰

It is clear that military occupation of the house did not contribute to the decline of the house and estate, the owners of which were living beyond their means by the late 1930s and consequently facing financial difficulty. It also appears the case that and damage caused by military exercises to outlying estate land, especially sea defences, was compensated by the War Office to an extent that supported recovery of the estate farms in the post-war years possibly beyond which that could have been achieved by the owners even in less trying circumstances.

Perceptions of country house owners trying to preserve the dignity and sanctity of their ancestral homes can be misleading; the truth was that many felt there was little future in maintaining a large, draughty house simply for aesthetic purposes. Some found that trading their house to the government in lieu of death duties was an attractive option. The Earl of Leicester was no exception, being ‘bitterly disappointed’ that he was unable to dispose of

²²⁶ Robinson, J.M. *The Country House at War* p.145

²²⁷ Accretion refers to the formal maintenance of natural coastal features against the ingress of the sea, as opposed to abandonment against erosion.

²²⁸ Hiskey, C. p.454

²²⁹ *Ibid.* p.454

²³⁰ *Ibid.* p.455

Holkham in that manner.²³¹ Concerns about his wayward heir, long resident in South Africa and with no interest in living in the house, along with the financial worries of maintaining the estate, led to ongoing post-war discussions with James Lees-Milne with regard to transfer to the National Trust.²³² ‘If you can find any means by which the Trust can take on this house and contents, I shall be prepared to leave it, should my staying on make the transfer easier’ were the Earl’s parting words to James Lees-Milne in June 1945, though the latter writes of the Earl’s repeated subsequent indecision.²³³ The potential for sale of outlying land, continuous occupancy during military occupation, the absence of a secondary house and the swift succession in 1949 of the 5th Earl in 1949 seems to have secured Holkham’s future at a time when military use may have contributed to the decline of other great houses. Holkham is today a thriving estate and tourist attraction, with seldom any reference being made to its wartime use.

The following composite examples comprise a major house and estate whose demise can be significantly attributable to wartime occupation; one that survived being enclosed by an airfield site; another that was restored and later sold by its owner, disillusioned by the effort and expense; a house that was occupied by the military and survived without apparent damage of incident; and finally, two examples of houses that illustrate how the vagaries and personal tragedy of war can lead to ironic and tragic outcomes for the owners.

Didlington

‘It is a strange feeling to look at a wood and visualise a drawing room.’²³⁴

Didlington Hall is said to have been very much the centre of the community, remembered as ‘one of many whose disappearance has left a gap in their individual landscapes and a sense of deep loss amongst...those who knew the buildings.’ There are clear reminders of the lost grandeur, notably a rectangular, house-shaped grove of wild birch and cherry’ that marks the site with ruler-straight precision.’²³⁵ Didlington has been described as a reflection of three hundred years of British architectural history, presenting a seventeenth-century west wing, a Georgian south front, a north front built the year after Waterloo, a Victorian water tower and

²³¹ Mandler, P. *The Fall and Rise of the Stately Home* (London, 1997) pp.316, 317

²³² Hiskey, C. *Holkham* p.509 quoting Holkham archives and especially correspondence between Lees-Milne and the 4th Earl throughout 1947.

²³³ Lees-Milne, J. *Caves of Ice* (London, 1983) p.174 and Hiskey p.509

²³⁴ Sproule, A., *Lost Houses of Britain* p.7

²³⁵ *Ibid.* p.7

twentieth-century additions.²³⁶ It is worth dwelling on the scale and grandeur of the house because its complexity may have contributed to its demise whilst military occupation, no conserver of the fabric and premises, certainly contributed to its final loss.

William Tyssen-Amherst had amassed a library of antiquarian books; these and the contents of the house were sold in 1908 and 1909 for a total of £109,592.²³⁷ Amherst died the following year and Didlington, then comprising 7,105 acres was eventually sold to Colonel Herbert Francis Smith, who spent considerable sums of money on modernisation and leased land to the Forestry Commission.²³⁸ The Hall in good order just prior to the Second World War being set in a ‘finely-timbered park of about 1,500 acres, with a beautiful sheet of water of nearly 50 acres in extent, dotted with many small islands, the principal crops being rye, wheat, barley and turnips and the soil a light sandy loam with a chalk and sand subsoil.’ The estate is listed as 2,738 acres of land and inland water.²³⁹

Didlington was requisitioned by the army in 1941 and occupied as the headquarters for General Miles Dempsey, commander of the British Second Army during the D-Day landings. By 1944, 7th Armoured Division was encamped in the grounds, having been in action in Italy and relocated to England for training in preparation for the Normandy landings. Norfolk historian E. C. ‘Paddy’ Apling reports that when he visited the site in September 1999 many of the military huts, present but disintegrating in the estate woods, still bore slogans and posters left by the personnel of 7th Armoured.²⁴⁰

The house remained empty after the war as the damage and neglect during requisitioning had left it beyond economic repair. ‘Soldiers have smashed the place up with a kind of wantonness which defies explanation.’²⁴¹ Colonel Smith died in 1949, the estate was broken up and the greater part of the hall demolished in 1952 after sale of contents.²⁴² The remaining structures have subsequently been renovated and modifications made to the old stabling and carriage blocks.

²³⁶ Sproule, A., *Lost Houses of Britain* p.7

²³⁷ Barnes, P. *Norfolk Landowners since 1880* (Norwich, 1993) p.20.

²³⁸ Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses of Norfolk* p.133

²³⁹ Kelly’s Directory, Norfolk, 1937 pp.126,127.

²⁴⁰ <http://apling.freesevers.com/Didlington/1950/DidlingtonHall.htm> (accessed 22 Oct 2014)

²⁴¹ Goulding, P. and Barry, J. *The Military History of The Brecks 1900-1949 – A Report by The Breckland Society* (Thetford, 2016) p.29 quoting local author Leslie Paul.

²⁴² Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses of Norfolk* p.133; and *Lost Heritage – a memorial to England’s lost country houses* www.lostheritage.org.uk (original website accessed 22 Oct 2014)

A family descendant has taken a longer-term view stating that:

‘by the turn of the twentieth century, the Hall had expanded into a sprawling Italianate mansion, reputedly with eighty bedrooms. In the end its sheer size was its downfall; the house was demolished in the 1950s as no one had the money, staff or desire, to maintain it.’²⁴³

Even allowing for an element of questionable continuity of existence in the post-war era however, the eventual loss of the greater part of Didlington Hall was precipitated by military occupation.²⁴⁴



Fig.81 Didlington Hall²⁴⁵

²⁴³ ‘The Amhersts of Didlington Hall’, www.amhersts-of-didlington.com/index.html website maintained by Amherst family descendant (accessed 23 Oct 2014)

²⁴⁴ *Lost Heritage – a memorial to England’s lost country houses* www.lostheritage.org.uk (accessed 15 Dec 2014)

²⁴⁵ www.lostheritage.org.uk (accessed 23rd Oc 2013)

Rackheath

A rare instance of a house that survived being entirely subsumed – but not damaged - by an operational airbase exists on the site of RAF Rackheath, five miles north east of Norwich. Rackheath Hall, despite parkland and estate areas being ploughed and militarised, still stands, albeit not as a family house. It is however an example of military occupation and use of the estate impacting upon the future of that landscape, although perhaps less so than the death in 1949 of owner Sir Edward Stracey. The hall, a late-Georgian house, was remodelled in the mid-nineteenth century by the Straceys, who had acquired the estate from the original incumbents, the Pettus family.²⁴⁶ The wartime requisitioning of the estate effectively initiated the wholesale change in the use of the extended landscape. A segment of amateur colour film footage of the site is held by the East Anglian Film Archive, and clearly shows the house, separated by a rudimentary fence from the operational site.²⁴⁷ The house was situated to the south-east of the runways but abutted by accommodation and service buildings to its east, North and south, these latter extending across the parkland itself and into the adjacent woods.

As with the inter-war period, many houses failed to sell post-war. The auctioning off of the hall and 1,500 acre estate in 1950 led to the break-up of the estate, but fetched no bids for the hall itself.²⁴⁸ Rackheath Hall may have been saved by the vagaries of the a later property market in which large, low-cost country houses proved suitable for such basic purposes as storage, expressed in one individual's entrepreneurial necessity; antiques dealer Sydney Cramer needed space to store and sell his wares.²⁴⁹ The Hall functions in the early part of the twenty-first century, restored and renovated, as prestige apartments. The airfield's technical site eventually became the modern Rackheath industrial estate with several wartime buildings being modified or extended for commercial and light industrial use. The major access road on the estate is named Wendover Road after the airbase in Utah where the 467th Bomb Group was formed. Other roads carry related names including those of the base commander and aircraft nicknames. The Control Tower was completely restored in 2007 and is used as an office block. The location therefore continues to present standing structural archaeological legacy from two key periods of its history – the Hall itself and the physical imprint of the

²⁴⁶ Kenworthy-Browne, J., Reid, P., Sayer, M., Watkin, P., *Burkes and Savills Guide to Country Houses: Volume III, East Anglia* (1981) p.169

²⁴⁷ East Anglian Film Archive, cat. no.1042

²⁴⁸ Clarke, D. *The Country Houses of Norfolk – Part 3: The City and Suburbs* (Norwich, 2011) p.83

²⁴⁹ *Ibid.* p.87.

Second World War airbase. That the Hall survived integration into a busy military site is indicated by the lack of reference to its wartime episode by Norfolk Heritage Explorer.²⁵⁰

Honingham Hall

If the landscape bears physical witness to human activity, it also occasionally serves as the backdrop to incidents that would not otherwise occur outside the context of time and place. Honingham Hall provides a unique example that serves to underline the complexity of civilian and military wartime relationships in a bizarrely unpredictable manner. The hall was not requisitioned or occupied by the military during the Second World War but an individual incident links it to RAF Attlebridge in an unanticipated tragedy. From 1940, at the invitation of the owner, noted diplomat and explorer Sir Eric Teichman, the hall hosted a contingent of evacuated Barnardo's children. The family continued to live in the staterooms and, in any event, Sir Erich was away for much of the time. So impressed was he with the behaviour of the children that he bequeathed the entire estate to Dr Barnardo's in his will, with the stipulation that Lady Teichman would be able to reside in her quarters for her lifetime. Sadly, the will was to be enacted sooner than anticipated. Sir Erich had been serving as adviser to the British Embassy at Chungking in south-west China. On 3rd December 1944, having returned to Honingham just six days earlier, he went outside to investigate the sound of gunfire and confronted two poachers, American soldiers from Attlebridge, armed with M1 carbines. During the altercation Sir Eric was killed by a shot to the head.²⁵¹ Privates George E. Smith and Leonard S Wjppacha were court-martialled at Attlebridge and found guilty, the former of murder. An appeal was launched and among those asking for clemency was Lady Ellen Teichman, widow of the victim. The pleas were dismissed and on May 8th 1945 - VE Day - George Smith was hanged at Shepton Mallet Prison in Somerset. Wojtacha was imprisoned for his part as an accessory.

In a further twist that links two entirely physically separate militarised landscapes, Smith's remains are buried in grave 52, row 3, plot E of Oise-Aisne American Cemetery, in France, along with ninety-four other American military prisoners, convicted of various capital crimes against twenty-six fellow Americans and seventy-one civilians in the UK and mainland

²⁵⁰ Norfolk Historic Environment Record usually references wartime use, where known, as intrinsic to holistic information at a site.

²⁵¹ 'Old Goldonians' – website archive for ex-Barnardo's children's memories; http://www.goldonian.org/photos/photo_archive_homes/pages/honingham-hall.htm (accessed 16 June 2014); Eastern Daily Press 8th September 2006

Europe.²⁵² The Hall was used by Barnardo's until 1965, the resident boys being transferred to the new Teichman House in the Heartsease area of Norwich.

Ketteringham

The USAAF's Second Air Division Headquarters was located at Camp Thomas, Old Catton from September to October 1943, but relocated to Ketteringham, thereafter known as Station 147, in December of that year, through to June 1945. The nearest airfield is Hethel, home to the 2AD's 389th Bomb Group.

The Boileaus had lived in the house since 1836; some family members apparently refused to move out and continued to live in part of the house for the duration. The interior was remodelled for use as the operational HQ, whilst the ubiquitous Nissen huts and ancillary buildings were sited in the parkland, mostly under the cover of trees. The ground floor of the Hall housed the Operations Section, War Room and Intelligence Section. The Chapel, built by the Boileaus in 1840, was employed as the operations room and a mezzanine floor constructed to allow USAAF officers a view of a large operations map. Over the main entrance, at first floor level, was the office of the Division Adjutant General. On the same floor were located the offices of the Commanding General, the Chief of Staff and Deputy Chief of Staff. On the second floor were the senior officers' quarters along with a small dining room. At any given time there about seven hundred military personnel were stationed at Headquarters. The Boileau family members lived in the wing facing the pond, whilst the Annex housed the Signals Section. The Hall was returned to the Boileau family post-war but the estate was sold to the Duke of Westminster in 1948. After being used as a school it was, in 1968, sold to Lotus Cars.²⁵³ No mention of the important hierarchical occupation of Ketteringham Hall is made in Burke's and Savills. The house remains structurally intact.

²⁵² <http://www.americanairmuseum.com/place/193913> Plot E Oise-Aisne American Cemetery

²⁵³ 2nd Air Division Memorial Library doc pdf ncc081411



Fig.82 Ketteringham Hall (www.lostheritage.org.uk)

Kimberley

Prisoner of war camps were few and far between across Norfolk.²⁵⁴ Kimberley Park was requisitioned for that purpose, latterly hosting Italian PoWs in designated camp number 132, in huts under the trees by the drive.²⁵⁵ The extent of the encampment is not clear, though the scale of land use was by no means as extensive as that at, for example, Wolterton or Blickling. Aside from military use in wartime, much of the Hall's extensive parkland was put under the plough. Part of the core of the park, along with areas of the deer park to the east and the river valley to the north have been retained as or returned to grass whilst the remainder remains agricultural land.²⁵⁶ There is still a good deal of surviving woodland, boundary belts and plantations. The landscape is essentially unchanged from Lancelot Brown's design of the 1780s, with even earlier mature oaks and limes still *in situ*. The house however suffered, presumably at the hands of the prisoners' guardians. John Wodehouse, 4th Earl of Kimberley, was not impressed when he returned home from active service. He wrote 'I couldn't have

²⁵⁴ Thomas, Roger J. C., 'Twentieth Century Military Recording Project – Prisoner of War Camps 1939-1948' (English Heritage, Swindon, 2003) p.12, notes eleven sites in Norfolk, with only one retaining any remnant buildings.

²⁵⁵ *Ibid.* p.30

²⁵⁶ English Heritage Register of Historic Parks and Gardens list number 1001007 <http://list.english-heritage.org.uk/resultsingle.aspx?uid=1001007> (accessed 24 September 2014).

dreamed of the horrendous mess it would be in. It was in a terrible state.’²⁵⁷ The Ministry of Works agreed to pay up to £10,000 compensation. The house needed re-roofing and every window had to be re-glazed and painted. Soldiers had apparently wandered up on to the roof and punctured the lead sheeting, causing leaks. The mahogany doors of the library had been used as dartboards by the soldiery. The Earl describes working with the estate employees to restore the house and claims to have spent twice the stated compensation fee.²⁵⁸ Nevertheless the 4th Earl sold up in 1958. His bitterness and anger is clear, especially when writing of his outrage at having to pay death duties on his late father’s estate.²⁵⁹

Great Glemham House

There is one house, beyond Norfolk, that is worthy of mention because of the wartime connection between its owner, his civic role and changes wrought in the not so far distant landscapes of two separate parts of Norfolk. Great Glemham House, in East Suffolk had been owned by the 3rd Earl of Cranbrook since 1914.²⁶⁰ The Fourth Earl, Lord Cranbrook, returned to the house on the outbreak of war, stowed the best furniture and paintings in the drawing room, and made the house ready for schools being evacuated from Leytonstone, London.²⁶¹ In the late Spring of 1940 the Army displaced the schoolchildren, whilst Lord Cranbrook took office as Eastern Region deputy regional commissioner, based at Cambridge. Officers were billeted at Little Glemham Hall, about three miles distant, whilst non-commissioned officers and enlisted men occupied the ‘big house’. There followed a classic example of, at best, negligence, at worst, vandalism, causing almost irreparable damage to the house. One night soldiers turned on all the bath taps and the resulting flooding led to serious ceilings damage. On another occasion, in an apparently genuine effort to be helpful, officers arranged for the dining room to be redecorated – in an ‘institutional, shiny, strong green up to dado height, and then brown – including stonework, fireplace and mantelpiece’. In 1945 the Cranbrooks returned to find the wet rot, banisters gone and floors wrecked.²⁶²

²⁵⁷ Wodehouse, J. *The Whim of the Wheel: The Memoirs of the Earl of Kimberly* (Merton Priory Press, Cardiff, 2001) p.38

²⁵⁸ *Ibid.* p.39

²⁵⁹ The 3rd Earl had been killed in an air raid in London, whilst a serving Army officer, and was himself paying off his own father’s death duties.

²⁶⁰ Not to be confused with nearby Great Glemham Hall.

²⁶¹ Seebohm, C. *The Country House: A Wartime History* (London, 1989) p.105

²⁶² Seebohm *The Country House: A Wartime History* (1989) pp. 106,107

This is the same Lord Cranbrook who defended the rights of the expelled villagers of the battle training area north of Thetford and persuaded the military that the residents around Fritton Lake need not be evacuated when the area was required for secretive tank training.²⁶³ There is no small element of irony in the Earl altruistically speaking up for others whilst the fabric of his own family home was suffering. Despite initial despair, the family proceeded, patiently and philosophically, to gradually restore and renovate the house.

Conclusion

Relative to the number of country houses extant in Norfolk in 1939 is the proportionately small number that experienced intensive military occupation, given their geographical proximity to key military installations. Whilst sheer physical floor space and estates land may appear to be a pre-requisite for military use, the relatively low level of occupation may say far more about the general unsuitability of the country house as a facility. In truth, a large, draughty country house, with little or no modern heating or lighting, was a poor substitute for a proper military barracks with customised facilities. There were surprisingly few country houses lost in Norfolk before 1939. The peak period of destruction came in the 1940s, 1950s and 1960s. Williamson, Ring and Spooner indicate losses in the key relevant decades as follows: in the 1940s, fourteen demolitions, of which one caused by fire, and two which were demolished after having been unoccupied for at least twenty years; then in the 1950s, nine losses, of which three were to fire; then three further houses which were ‘severely truncated or restored from dereliction.’²⁶⁴ Of thirty-four houses wholly or partly demolished between 1940 and 1960, fourteen were occupied by the military but occupation did not have an inevitable outcome of loss; many were in a dilapidated state before the war.²⁶⁵

Hethel and Heacham Halls were a direct consequence of military use but a great series of demolitions followed from 1945; twenty-eight were completely demolished in the fifteen years to 1960, with a slowdown thereafter.²⁶⁶

At least two houses may be said to have been lost directly as a result of military occupation – Heacham and Hethel. In the case of the former, the owner’s widow was living at the hall in 1937 and in the same year, part of the estate was put up for sale, with the hall’s contents

²⁶³ See Chapter 4 ‘Military Training Areas’

²⁶⁴ Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses of Norfolk* p.20

²⁶⁵ *Ibid.* p.43

²⁶⁶ *Ibid.* pp.38,39

following the year after.²⁶⁷ In 1939 more of the estate as sold, following which the hall itself was requisitioned by the army. Soon after, the hall was requisitioned by the army, and accidentally burnt to the ground in 1941. Fire was ever the enemy of the country house, whether occupied by owner or visitor, or empty. Hethel Hall was requisitioned as part of the airfield site but not arbitrarily demolished. It was a small house, not much used by the Boileau family of Ketteringham Hall and it could be argued that its passing was not much noted. A good deal of the park and woodland were utilised for USAAF accommodations and technical buildings. Little regret seems to have been expressed about the passing of Heacham or Hethel.

More indignation has been expressed at the loss of Didlington, a major house by any measure. The drama may be seen in the speed of change in the sense that the Hall had expense lavished upon it in the 1920s, was occupied by the army in the Second World War and decayed rapidly thereafter. Didlington's demise was as a result of a chronology involving a number of factors, of which military occupation was a major one.

Rackheath Hall survived, and in the twenty-first century flourishes as multiple occupancy units, still retaining its structural integrity and appearance. The estate has long gone; the estate landscape had been radically changed by the USAAF's concrete runways and attendant structures. If the will to return to estate farmland had existed, perhaps the estate could have been restored in part, but the death of Sir Edward Stracey in 1949 almost certainly initiated proceedings to sell. Therefore the cause is related to military occupation by cannot be solely ascribed to it.

Summarily, many larger houses were too large and too costly to maintain. Few demolitions occurred before the Second World War however, notable examples including Gawdy Hall in 1938 and Stoke Hall in 1939.²⁶⁸ The real period of loss was seen post-war through to the 1960s, with the loss of twenty eight large houses.²⁶⁹ The success of the 1947 Agriculture Act, which guaranteed farmers a market and prices for their produce, accelerated the post-war boom in farming. The sale of land became viable to an extent not seen since the nineteenth century and estates became easy to dispose of.²⁷⁰

²⁶⁷ NRO BR 143/20; NRO BR 143/160.

²⁶⁸ Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses* p.38

²⁶⁹ *Ibid.* pp.38-39

²⁷⁰ *Ibid.* p.39 and Morgan, K.O. *Labour in Power 1945-1951* (Oxford,1984), p.304

The nebulous definition of the country house makes assessment difficult; many are smaller or secondary houses, often as adjuncts to larger properties, and others being larger farmhouses assuming the title of 'hall' or 'house'.²⁷¹ Williamson, Ringwood and Spooner authoritatively suggest a figure of 320 at the beginning of the war in 1939, which is very valid if the interpretation is that of an established country house with estate or attached farms. The accompanying, evidence-based assertion that under one-third were occupied by the military or for other wartime service such as hospitals, storage, schools or convalescent homes gives a sound base for quantification.

Of thirty-four houses wholly or partly demolished between 1940 and 1960, fourteen were occupied by the military.²⁷² This equates to a correlation rate of 41 per-cent but, as the authors point out, some of these properties were in a parlous state before requisitioning. Moreover, the familial connection between owner and house was easily lost over the duration, leading to further lack of interest in maintaining the property.²⁷³

This, then, leaves a still lesser number of houses, probably no more than fifty, requisitioned for military use during wartime and occupied for all or a short part of the duration and most surviving intact with little or no recorded damage. The early part of the war saw predominantly army units in evidence, whilst mid-war onwards saw an increasing, and longer, R.A.F. presence.²⁷⁴ Moreover, based on an approximation of around fifty properties, now lost or extant, the loss ratio against military occupation decreases to 28 per-cent.

Britain's ability to survive through the Second World War saw the agricultural economy focussed on two all-consuming objectives – maximising production and productivity, and homeland self-sufficiency. This mantra set the trend for post-war agriculture and the aftermath of the Second World War saw farming booming. Concurrently many of the succeeding generation of landowners were less attached to their familial estates, seeing more clearly the prospect of a good sale. Final estate break up was then often followed by demolition of the house. Few mansions were physically demolished during the agricultural depression; this became more the pattern after the war, with many notable houses disappearing. Boyland, Brooke Hall, Burlingham, Bylaugh, Castle Rising, Cranmer, Diddington, Feltwell, Garboldisham, Haveringland, Heacham, Hillington, Honingham,

²⁷¹ Such as Appleton House, part of the Sandringham estate. See Appendix

²⁷² Williamson, T., Ringwood, I. and Spooner, S. *Lost Country Houses* pp.42-43

²⁷³ *Ibid.* p.43

²⁷⁴ See Appendix 2: TNA WO 166/1193 2 Corps HQ War Diary July 1940 and TNA WO 166/329/1'G'Branch XI Corps June-Dec 40 HF 3779/Ops

Hunstanton, Morton, Weeting, Woodbastwick, Wretham and Wroxham were all lost between 1945-1950.²⁷⁵

Lord Lothian was all too familiar with the problems that faced the owners of the larger country houses even before the Second World War. He observed in 1934 that ‘within a generation, hardly one of these historic houses...will be lived in by the families who created them.’²⁷⁶ The war was five years distant.

John Martin Robinson, despite offering military and other wartime occupation as the primary cause of wartime and post-war loss of houses, still offers a contradictory, yet positive overview. Whilst suggesting that the despoliation of country houses in the Second World War can find a parallel in the architectural losses of the Reformation:

‘there is a resourcefulness, an exhilaration, a sense of achievement in this unique contribution to the war effort that...marks the five years between 1939 and 1945 as the country house’s ‘finest hour’.’²⁷⁷

The experience of the country house in wartime leads to the next chapter, which assesses the impact of a two-fold pressure on the agriculture of Norfolk, that of land requisitioned for military purposes and the requirement to cultivate more land to meet national food production targets.

²⁷⁵ Kenworthy-Browne, J., Reid, P., Sayer, M., Watkin, P. *Burkes and Savills Guide to Country Houses: Volume III, East Anglia* p.83

²⁷⁶ Seebohm, C. *The Country House: A Wartime History* p.61

²⁷⁷ Robinson, J.M. *The Country House at War* p.2

Chapter 7 – Agriculture

Introduction

The demands of war had a dramatic impact upon the agricultural landscape of Norfolk and contributed to a longer-lasting legacy of farming practices. The war ended a long period of relative depression in agriculture and represented an unprecedented level of state intervention in the farming economy. The dichotomy was the competition between land required for increased agricultural production and, increasingly as the war progressed, that required for military purposes. Norfolk, as a predominantly arable county, already had a greater percentage of its countryside under the plough than most other English counties. It would also see one of the highest concentrations of airfield construction in the six-year duration.

The agricultural scenario might be seen as a triangular relationship between the farming community, the War Office and Air Ministry which required land for military purposes, and the County War Agricultural Executive Committee (CWAEC) appointed to implement the requirements of the Ministry of Agriculture and Fisheries and the durational Ministry of Food. It will be helpful to present an overview of the diverse state of British and Norfolk agriculture prior to 1939 as part of the chronology. Although reclamation of grassland and underused land for cultivation for wartime food production was not the result of military requirements, it was born of the same period of national crisis. A conflict of interest in land utilisation was therefore inevitable.

This chapter explores the competing needs of the military and agriculture across Norfolk, the role of the CWAEC, the extent to which requisitioning of land was tempered by negotiation, and the impact upon contemporary farming, concluding with a brief insight into the post-war legacy. The relative effectiveness of increasing the area under plough versus yield or productivity, and the soil variations across the county, The impact of mechanisation and permanent changes in the landscape such as at Feltwell Fen and south Norfolk are also important and the discussion is complicated by the all-important question, dominant throughout agricultural history, of whether to increase productivity by bringing more land under the plough, or by raising yields on existing land. In wartime Norfolk, as the narrative will show, the competition for land between the farmer and the military would become ever more intense as the war progressed.

Whilst international developments influenced Norfolk's agriculture as much as any other part of the country, historic patterns of settlement and land ownership also directed farming practice.¹ Farming was not homogeneous across the fifth largest English county, measuring more than seventy miles across at its widest, containing 1,307,333 acres of land; the different soils historically directed what type of farming was best suited to a particular region of the county. The 'Good Sands' of north-west Norfolk had been transformed to become highly productive under High Farming during the previous century, characterised by arable root fodder crops, barley and wheat, based on sheep-fold fertility. To the south-west of the county lay Breckland, with its poor, acidic soils making arable difficult, though not impossible, and featuring large expanses of heath. In the inter-war years Breckland was the subject of the first huge tracts of Forestry Commission plantings. The northern heaths extending northwards from Norwich and the Greensand strip in the far north-west were similarly 'thin' and characterised by large farms and estates. The estuarine marshlands to the far west and along the eastern seaboard provided excellent pasture as did Broadland itself. The biggest region by far is that of the boulder clay running through mid-north, central and south Norfolk – fertile, heavy but tractable clay with perennial problems of drainage, and generally cereal growing.² Finally, the southern Fens would prove to be spectacularly successfully subject to wartime reclamation. Mosby describes a preponderance of arable in every region except Broadland, the Northern plain and Breckland – though the last had 27,000 acres under the plough just pre-war, albeit on sandy, flinty soils; he also notes the 'vast tracts of lands' acquired for afforestation by the Forestry Commission. Overall, wheat was the principal crop and, despite the increase in grassland in the inter-war period, had begun to return to favour, with an increase of wheat cultivation of two to three thousand acres per annum between 1934 and 1936.³ Norfolk was already intensely arable compared with other English counties and in 1939 the demands on local farmers seemed impractical and illusory.

¹ Wade-Martins, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes, 1870-1950* (Woodbridge, 2008) p.5 emphasise the relevance of antecedent structures.

² Ibid. pp.6-9.

³ Mosby, J.G.E., *The Land of Britain, Part 70, Norfolk* (London, 1938) p.160.

Historiography

Secondary sources for the history of wartime agriculture in the county are plentiful and generally mutually corroborative but with emphases on different aspects of the agricultural chronology. Susanna Wade-Martins' and Tom Williamson's assessment of the changing contemporary Norfolk landscape suggests the conventional image of pre-war agricultural depression is not entirely accurate, certainly not for the east of England.⁴ The Land Utilisation Survey of 1938 provides a comprehensive overview of agriculture in Norfolk in 1938 but does not of course provide a comparison with the wartime years.⁵ L. Dudley-Stamp's post-war assessment, however, does give a summary overview of the dramatic changes the war brought nationally.⁶ The official history provides a detailed national background but very little specifically on contemporary Norfolk; it also, by its nature, presents an unreservedly complimentary view.⁷ Brian Short's focus on the War Agricultural Executive Committees does much to shed positive light on their role as local intermediaries but less so on the inevitable tensions that arose in practice.⁸ Foot's study of the impact of the military on agriculture nationally provides both background and observational data, though little of Norfolk.⁹ Douet's chronology of twentieth-century farming in Norfolk charts the wartime progress of food production but alludes only briefly to the inter-relation with military land use.¹⁰ Primary sources at Norfolk Record Office comprise a collection of 'ploughing-up' orders and a variable collection of maps related to the Norfolk War Agricultural Executive Committee's surveys and assessments of farming activity on and adjacent to airfields. Unfortunately, the former represent only a fraction of orders issued and are useful illustratively but not as a quantitative measure. Almost all the maps have no accompanying supporting documentation; most are undated and appear to range from the

⁴ Wade-Martins, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes, 1870-1950* p.38

⁵ Mosby, J. *The Land of Britain: The Report of the Land Utilisation Survey of Britain, part 70 Norfolk* (Stamp, Dudley L (ed.), London, 1938)

⁶ Dudley-Stamp, L. *The Land Use of Britain: Its Use and Misuse* (London, 1948)

⁷ Murray, K.A.H. *Agriculture (History of the Second World War)* (H.M.S.O. London, 1955)

⁸ Short, B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* (Woodbridge, 2014)

⁹ Foot, W. 'The Impact of the military on the agricultural landscape of Britain in the Second World War' (*unpublished MPhil thesis, University of Sussex, 1998*); Foot, W. 'The Impact of the military on the agricultural landscape of England and Wales in the Second World War' in Short, B., Watkins, C. and Martin, J. (eds.) *The front line of freedom – British Farming in the Second World War Agricultural History Review Supplementary Series 4* (British Agricultural History Society, Exeter, 2006) pp. 132-142

¹⁰ Douet, A. *Breaking New Ground: Agriculture in Norfolk 1914-72* (Norwich, 2012)

early war years through to the mid-1960s and much of the annotation is informal and inconsistent.¹¹ The remaining records of the Norfolk County War Agricultural Committee (NCWAEC) hold no comprehensive register of which land was ploughed up voluntarily or compulsorily. The National Archives contain minutes of meetings, particularly for the early war years, and provide a helpful insight into the mindset of local committees when interpreting and implementing national policy. This chapter aims then to offer perspective on seldom-investigated aspects of the impact on the rural environment and, in particular, the direct competition between agricultural and military land-use requirements which has to date not been fully explored.

Historical background

The background to British farming's wartime 'revival' can be set against the agricultural depression of the inter-war years, a deadlocked period in which no prospect of improvement was evident. Norfolk had been a leader in agricultural advances since the seventeenth century but the mid-nineteenth century Golden Age of high farming was over by 1880, with international market forces beginning to impact heavily – notably imported grain transported from the United States' mid-western farms by the expanding railroad network.¹² The refrigeration of meat also allowed cheap meat to be imported from across the globe. Subsequent depression saw rent incomes and land values falling, with the laying down of much arable land to permanent grass. The impact on the landed estates contributed to their decline as traditional exemplars of progressive agriculture, with land tumbling to dereliction as less grain was grown. Revisionist historians have, however, cast doubt on the idea that the late nineteenth century agricultural trend was unremittingly downward, in so far as it may have triggered adjustments or diversification to deal with changing times; and whilst cereal growers were impacted upon by cheaper imports, livestock farming suffered less and fruit and vegetables, poultry, pork and milk were profitable.¹³ The rail network made access to urban markets and longer distance distribution feasible; in the first half of the twentieth century, almost every rural railway station and country halt had a stock shed, served by a

¹¹ NRO HNR 46/2 Ploughing-up orders; NRO ACC 2010/85 Ministry of Agriculture, Fisheries and Food and Air Ministry Records, 1941-1970

¹² Perren, R., *Agriculture in Depression 1830-1940* (Cambridge, 1995)

¹³ Wade-Martins, S. and Williamson, T. *The Countryside of East Anglia, Changing Landscapes 1870-1950* (Woodbridge, 2008) p.11

siding. While the acreage of wheat had declined in the late-nineteenth and early-twentieth centuries, permanent pastures steadily increased and, whilst sheep and beef cattle numbers dropped, dairying expanded, especially where railway stations were close by.¹⁴ Likewise fruit and vegetable production flourished and continued to do so. In the years leading up to the outbreak of the First World War, farms on the loam soils of the east of the county were said to be in reasonable order, and the light lands elsewhere were being well cultivated. The higher proportion of owner-occupiers in the heavier, more fertile areas of the county were concentrating on dairy and horticultural production.¹⁵ In essence, farmers could perhaps have claimed to have weathered the depression but were fearful of the future. Despite modest uplifts in the national agricultural economy prior to 1914 however, there was a steady exodus of farmers in the six decades to the Second World War. With little technological innovation to compensate, this was illustrative of an industry which was inexorably forming a smaller proportion of the British economy.¹⁶

There was little in the early part of the First World War that hinted at any significant government intervention in agriculture. The value of the farming sector's contribution to the national economy had remained fairly constant but with a declining share; between 1911 and 1913 it amounted to just six per-cent.¹⁷ The outbreak of war could not fail to bring change, not least with supply routes from the United States raising the price of wheat, although given the *laissez-faire* nature of government policy, the start of hostilities in July 1914 did not have an immediate impact as it would twenty-five years later. Although the government began to encourage the production of cereals instead of livestock, the farming fraternity, given that mechanisation would be needed to plough large acreages of pasture, expressed a preference for continued dairy and meat production.¹⁸ The recommendations of the Milner Committee led to the establishment of a War Agricultural Committee for each county, but this did not occur until relatively late in the war, Norfolk's being constituted at the beginning of 1917.¹⁹ Farmers were directed to plough up sixty-two or more per-cent of their cultivable land but there were objections and material difficulties, not least because of a shortage of labour; some

¹⁴ Wade-Martins, S. and Williamson, T *The Countryside of East Anglia* pp.17, 18

¹⁵ *Ibid.* p.22

¹⁶ Perry, P.J., *British Farming in the Great Depression 1870-1914 – an historical geography* (Newton Abbot, 1974) pp.129,142; Perren, R. *Agriculture in Depression 1830-1940* p.69.

¹⁷ Murray, K.A.H.. *Agriculture: History of the Second World War* (H.M.S.O. London, 1955) p.4

¹⁸ *Ibid.* p.23

¹⁹ Wade-Martins, S and Williamson, T. pp.23,24

farms were taken over by the Committee as would be the case in 1939-45. Just two of the five harvests during the First World War were driven by official production programmes.

It had taken wartime necessity to bring about a resurgence in farming profitability and a future trend towards government intervention had begun. From the mid-1920s however the emphasis was on free trade and a non-interventionist policy though with some encouragement towards education, research and marketing of product. As general economic recession deepened, landlords found themselves reducing rents to keep tenants on the land.²⁰ Two choices presented to farmers – increasing cereal acreage and reducing labour costs with mechanisation, or diversification.²¹ Some pursued the former course, with noted examples on the light soils of west Norfolk but overall, sugarbeet was the major success story from the mid-1920s, a rise in global sugar prices signalling a resurgence of interest in beet production which continued unabated. A cash crop, grown to contract as opposed to having to find a market and a price post-production, by the end of the 1930s it was the principal root crop with more than 136,000 acres of beet growing across Norfolk and Suffolk.²²

Legislation, notably the Agriculture Act of 1931, Import Duties Act 1932 and Wheat Act of 1932 saw a reversal of *laissez-faire* policy, reintroducing import duties, guaranteeing prices and introducing marketing arrangements and subsidies.²³ The acreage of wheat in Norfolk and Suffolk increased in the first half of the 1930s but even so the overall acreage of arable was in steady decline. Primarily then, an arable county, Norfolk saw a good deal of arable land revert to pasture or grass. Generally, through the first three decades of the twentieth century, large farms were decreasing in number, and mid-sized holdings were often under-capitalised; few could afford to mechanise. This last point is significant, as mechanisation did not replace horse-power overnight, nor indeed directly post-war. Summarily then, farming was unprofitable but not all was negative, as was promulgated by rural writers such as Adrian Bell and Henry Williamson.²⁴ The move to diversification and away from tradition in the 1930s proved to be a marker for the coming conflict.

Equally important in sustaining inter-war agriculture was a diversification into fruit growing, market gardening or combinations of mixed farming such as pigs, poultry, eggs and dairy. A

²⁰ Wade Martins, S. and Williamson, T. *The Countryside of East Anglia: Changing Landscapes* p.29

²¹ *Ibid.* p.30

²² *Ibid.* p.31

²³ *Ibid.* pp.29, 30

²⁴ *Ibid.* p.36

new variation on small-owner, mixed farming emerged in the early 1900s. The large landowners and their tenants were still a traditional feature, and the market gardeners were flourishing but smallholdings quickly became established against the historic trend toward larger farms. Susanna Wade-Martins describes the movement as of cultural and social significance:

‘unique in modern agricultural history...the only occasion on which we see the promotion of small, rather than ever-larger farming units.’²⁵

The rationale behind their inception, that of halting the decline in the rural population and of small farms, the incentivisation of agricultural workers to take on their own tenancies and non-traditional workers moving onto the land, is redolent of a social intervention model completely contrary to earlier non-interventionist government policy. Other than the fear of losing workers to urban employment, it presents an apparent contradiction with the interests of large landowners. Norfolk County Council, though dominated by landed interests, displayed consistent commitment to acquiring and supporting smallholdings well beyond the Second World War and was a model of innovation; by 1946 the Council was the largest landowner in Norfolk, with 31,928 acres and 1,896 tenants.²⁶ Norfolk was a model example of smallholding innovation. Smallholdings were concentrated on the rich fen soils of the east of the county, largely following an established tradition of market gardening, and on the Broadland loams in the east, with mixed farming, bullock rearing and market gardening. Smallholders were inevitably affected by inter-war depression as the larger owners and tenants but similarly helped by diversifying innovations such as sugarbeet.²⁷

The seminal, immediately pre-war Land Utilisation Survey is positive about Norfolk agriculture in the later inter-war years. Of 1930s Norfolk, Mosby remarked that:

‘...important changes were taking place in the land utilisation of certain parts of the county. New aerodromes and many housing estates came into being, mainly at the expense of arable land. The very worst phase of the agricultural depression having been passed, certain fields which had been laid down to

²⁵ Wade-Martins, S. ‘Smallholdings in Norfolk, 1890-1950: a social and farming experiment’ *Agricultural History Review*, Vol 54, Part 2, 2006 pp. 304-330 (2006) p.300

²⁶ *Ibid.* pp.309,310, 323

grass were broken up again. In Breckland thousands of young trees were planted... New orchards were planted in the east and old orchards uprooted in the west.²⁸

That observation was made in 1938, when just four airfields were in existence in the county. A further thirty-four such installations would appear across the Norfolk landscape by 1944. The Land Utilisation Survey gives a total of approximately 708,443 acres of arable land in Norfolk.²⁹ This was to prove a key element of the competition between land for farming and that required for military purposes – in a highly-arable county, owner-occupiers and landowners alike would be pressed to find even more arable land from within their holdings at the same time as land was being taken over by the military.

The ‘revisionist’ arguments, in Norfolk or elsewhere, should not be taken too far. On balance, the seventy years to 1940 was predominantly a downward path, with internationally low prices and competition, and farming becoming an ever smaller part of the national economy. As a result, Britain was chronically unprepared, agriculturally, for the outbreak of war in 1939. David Lloyd George had acute memories of the lack of early agricultural intervention in the First World War. He expressed his concern in the House of Commons during a discussion on government defence proposals in March 1936.

‘I regret very much...that the Government seem to ignore completely one of the most important elements in the defence of the realm, and that is the provision of food... I cannot understand why, when they are thinking out the whole problem of war and possible dangers, that the greatest danger of all seems to have been left out of account.’³⁰

He was not alone in this. European geopolitics was beginning to ring alarm bells and, recognising food production as an essential staple in time of war, preparations for wartime conditions had begun as early as 1936 when a Food (Defence Plans) Committee was set up under the auspices of The Board of Trade, charged with planning transportation, storage and

²⁸ Mosby, J.E.G., *The Land of Britain: The Report of the Land Utilisation Survey of Britain, part 70 Norfolk* (Stamp, Dudley L (ed.), London, 1938)

²⁹ *Ibid.* p.160.

³⁰ Hansard Col.2031 – HC Deb 10 March 1936 vol 309 c2031

rationing of food for both civilian and military consumption.³¹ Agriculture was still not regarded with the same importance as manufacturing however; even in 1938 less than four per-cent of the population made a living from farming and it comprised just 3.2 per-cent of national income. Two-thirds of foodstuffs were imported.³² Farming was not seen as an important provider of food for human consumption – the concepts of ‘food’ and ‘agriculture’ were actually quite different, the first being seen as predominantly import-based and the second domestic. In practice, home production for food was to prove crucially important, though the government seemed less than worried about the threat to shipping than would subsequently prove wise. The Food and Supply Sub-Committee recommended the practice of encouraging soil fertility by livestock, thereby increasing the potential for arable should the war require it. The 1937 Agriculture Act provided for subsidised drainage, use of new chemical fertilisers and increased grain subsidies. Rapidly changing continental geo-politics including the Anschluss and annexation of the Czech Sudetenland in 1938, followed by the Munich Crisis, further conveyed a sense of urgency which was soon to be manifested in the loss of continental imports. The 1939 Agriculture Development Act enabled the purchase of machinery and fertilisers but perhaps most significantly, the Act provided a payment of £2 for each acre of pasture ploughed for arable between May and the autumn of that year, in preparation for 1940 harvesting.³³ Not only had land use been in decline nationally and locally for some years but, significantly, decline had continued from when preparations for wartime food production had started in 1936, compounded by 15,000 workers leaving the land in each of the three pre-war years.³⁴

Two broad challenges were set before Britain’s farmers; the first to increase production to make the nation as self-sufficient in food for human consumption as possible, and the second to become individually self-sufficient in terms of avoiding reliance on imported feedstuffs for livestock. As Dudley Stamp put it ‘The pre-war annual import of over eight million tons of animal feeding stuffs practically disappeared.’³⁵ The measures taken from then on to encourage and enforce conformation to regulation and intensified practices demonstrate a level of state direction of a scale previously unknown. The drive for increased food

³¹ Short, B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* (Woodbridge, 2014) pp.27,28

³² Wilt, A.F. *Food for War: Agriculture and Rearmament in Britain before the Second World War* (Oxford, 2001) p.2; Murray, K.A.H. *Agriculture* (1955)

³³ Wilt, A.F. (2001). pp.10, 30

³⁴ Murray, K.A.H. *Agriculture: History of the Second World War* (H.M.S.O. London) p.271

³⁵ Dudley-Stamp, L. *The Land of Britain: Its Use and Misuse* (London, 1948) pp.404-405

production was a direct response to the justifiable fear of inability to import food and livestock foodstuffs, in the light of wartime geopolitics. By mid-1940 European trading partners were inaccessible to the British market and the risk to international shipping precluded reliance on imports from further overseas.

State intervention – the County War Agricultural Committees

The County War Agricultural Executive Committees (CWAECs) had technically never been disbanded after the First World War and were formally revived in 1939 to administer, implement and enforce government directives from the outset. Their first task was to encourage the ploughing-up campaign. Arable overtook livestock production, just beef and dairy being retained, whilst other livestock were greatly reduced. Stability came with produce prices fixed at agreed rates throughout the war. Each CWAEC's committee's members were drawn from the ranks of local land agents and key figures in the county's agricultural community, directly appointed by the Ministry of Agriculture and Fisheries.³⁶ The key operational point here is that the CWAECs were directly responsible to the Ministry, thence working at three levels; the executive of the Committee representing and directing operations at county level, then District Committees liaising with farmers at local level with representatives from almost every parish; and finally a range of specialist sub-committees with responsibility for machinery, land drainage, pest and disease control, building materials, fertilisers and training.³⁷ It was then, with a prepared policy, that British agriculture entered the war. This was forward-looking, a de-centralised, dispersed structure of authority that worked because familiar, trusted faces were seen to be deliver change. It is also worth noting that whilst committee members were drawn from local agricultural interests, both public and private, from the political spectrum and the Agricultural Workers' Union, they specifically did not represent their organisations, but were appointed for their experience and knowledge. Perhaps the most important figure to emerge in Norfolk's CWAEC was Frank Rayns. Director of the Norfolk Agricultural Station before the war, his appointment as Executive Officer allowed him to have direct communication upward to the Committee's members and downward to the District Committees. An American newspaper described Rayns as 'being

³⁶ Dudley-Stamp, L. *The Land of Britain: Its Use and Misuse* pp.56, 62.

³⁷ Short, B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* p.65

responsible for the administration of the government's policy in the most important arable county in England.'³⁸ Well respected, he was instrumental in the long-term establishment of the sugarbeet industry in Norfolk and declined national appointment post-war to continue working locally.

'Rayns and Mann [Assistant Director] headed a team that dominated agricultural development in Norfolk in the 1930s, during the Second World War, and through the post-war reorganisation of agricultural advisory work.'³⁹

Generally, the CWAECs were not resented by the farming community; rather the duration was characterised by a pragmatic co-operation.⁴⁰ The CWAECs eventually employed their own labour forces, amounting to 35,500 in England and Wales by the end of 1943.⁴¹ At the extreme the CWAECs could send in their own workers to repossessed farms, but more usually were employed on major works such as drainage schemes, or hired out to farmers. As the war progressed, the employment of prisoners-of-war and the Women's Land Army proved crucial to achieving the necessary levels of production.

The CWAECs had conducted their own assessments of available and suitable land in 1939 but a much more formal and far-reaching survey was planned from 1940. The National Farm Survey of England and Wales 1941-43 arose directly in response to the CWAEC's immediate needs. Based on standardised forms and reporting procedures, and administered by the CWAECs, it was far-sighted enough to enable a thorough assessment of resource and capacity and to form a basis for post-war administration, planning and policy.⁴² Such was its importance it has often been referred to as a 'Second Domesday'.⁴³ It followed three principles – that of a farm survey record, a comprehensive agricultural census as at 4th June 1941, and plans of farm boundaries and fields, surveyed on holdings of five acres and

³⁸ *The Spokesman Review*, February 6th 1944 p.15

³⁹ Hutchinson, A. and Owers, A.C. *Change and Innovation in Norfolk Farming - Seventy Years of Experiment and advice at the Norfolk Agricultural Station* (Chichester 1980). Frank Rayns stood down from the position of Executive Officer on 1st January 1945 (TNA MAF 39/281, Norfolk WAEC Constitution).

⁴⁰ Dudley Stamp, L. (1947) 'Wartime Changes in British Agriculture', *The Geographical Journal*, 109 (1947) p.50.

⁴¹ Short. B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* p.74

⁴² The earlier county records do not survive. The National Farm Survey however is recorded in considerable detail at The National Archives.

⁴³ TNA MAF 38/216 National Farm Survey Report and publicity draft; also *Land At War* (HMSO, 1945) p.14

upwards, around 290,000 in total across England and Wales.⁴⁴ The parish summary from Stradsett is one example among many hundreds across the county and thousands across the country, all following a universal survey format. An arithmetic measure of acreage, crops grown, livestock, machinery and labour would prove invaluable to the CWAEC in assessing the capability and potential and the limitations of each holding. A more controversial aspect of the CWAECs' activities was the grading of farmers according to their perceived abilities, and the implementation of measures to expropriate their land, and have it farmed by someone else if necessary. Many farmers were resentful of the grading process, others philosophical. Lucilla Reeve, farming in the centre of what was to become the Stanford Battle Training Area, was livid at being graded 'B'.

'How angry I was about the way the farms were classed A, B or C. The whole thing was a farce. 'But you don't know what the farm is like – you haven't seen it since I've had it. You must see the crops – there is wheat equal to any you can see anywhere.'⁴⁵

The gradings were subject to constant review, with the aim of encouraging, coercing and otherwise bringing B- and C-graded farms up to the next higher standard and A-grades to maintain their status. In June 1941 seventy-six farms in the District north of Norwich were classified 'C' of which two were described as 'termination certain', twenty-two 'certain or probable', seventeen 'unlikely' and thirty 'unlikely'.⁴⁶ At the same time, in the south of the county, forty-three 'C' farms were under review, with two deemed 'termination of possession inevitable and sixteen 16 possible'.⁴⁷ Some 'B' farm reports read not unlike like school reports, with descriptions such as 'very backward generally', 'some improvement but still very late' and 'helps others and neglects his own.'⁴⁸ These perhaps reflect the emphasis that classification placed upon the managerial capability of the occupier rather than the fertility of the soil.

⁴⁴ TNA MAF 38/216 National Farm Survey: Report and publicity, 1941-46

⁴⁵ Reeve, L., *Farming on a Battleground - by A Norfolk Woman* (1950, Wymondham 2000) p.41

⁴⁶ TNA MAF 80/4559 St Faiths and Aylsham District Committee, 1939-1964, Minutes 17th June 1941

⁴⁷ TNA MAF 80/4553 Forehoe and Henstead District Committee, 1939-1942, Minutes 11th June 1941

⁴⁸ TNA MAF 80/4559 St Faiths and Aylsham District Committee

The Plough–Up Campaign

The initial national plough-up target was 1,285,000 acres but, given that in the three years preceding the declaration of war half-a-million acres of arable had been lost, that objective would achieve only a net increase of 785,000 acres beyond the mid-1930s arable acreage.⁴⁹ It was not just about ploughing-up land however; a sustained emphasis on the use of fertilisers, research and mechanisation was needed. The national plough-up campaign eventually achieved an extra six million acres of arable crops across Britain between 1939 and 1945, a figure unimagined six years earlier. The war ended with a net loss however of approximately 500,000 acres, due in greater part to the demands of the military.⁵⁰

The Ministry of Agriculture and Fisheries directed that 20,000 additional acres of Norfolk farmland should be ploughed up. In the event, the county's farmers far exceeded this, almost doubling the requirement in the following year.⁵¹ It was Norfolk CWAEC's task to implement this directive, although farmers, knowing their own land, were encouraged to make their own judgements on which acreages could be ploughed. By November 1939 inspecting officers were busy issuing certificates of approval. Even so, around one hundred instances of badly cultivated land or derelict farms were revealed, with some owners being untraceable.⁵² The CWAEC, based at Sprowston Hall for the duration and post-war, administered fifteen district committees, based on the contemporary local government Rural Districts, each with a staff of seven and incorporating 276 parish correspondents in all.

A total of 148 cultivation orders are held at Norfolk Record Office. All carry a formal statement superseding existing agreements between tenant and landowner.

Some of the more noteworthy examples are tabulated in Appendix 1, with cultivation instructions in italics indicating the precise detail of instructions issued. A very few instances indicate very little time for completing ploughing and sowing, and may well serve to

⁴⁹ Short, B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* p.32

⁵⁰ TNA MAF 38/574, Land Occupied by H.M.Forces and taken over by services departments for industry 1940-1948

⁵¹ Upcher, H. 'Norfolk Farming' (President's Address) *Transactions of the Norfolk and Norwich Naturalists' Society* Vol. XVI Pt.2 26th May 1945 p.99

⁵² Douglas-Brown, R. *East Anglia 1939* (Lavenham, 1980) p.96

underline the seriousness with which the CWAEC's inspector perceives the failure to have put larger tracts of existing arable land to good use prior to inspection. The CWAEC ploughing-up orders that remain in the local archives appear to be all that remain of a far greater quantity actually issued across the county. A separate hand-written ledger of County Council smallholdings lists a further separate 361 farms subject to plough-up orders, of which just three are identified as 'compulsory'.⁵³ It is not clear whether the local authority had its own version of issuing plough-up orders but their tenants were subject to the same CWAEC directives as private tenants and landowner. These cultivation orders represent but a fraction of the whole and can only be taken as illustrative. By early 1940, for example, the number of cultivation orders issued across the county had already exceeded 1,200. Conversely, it should be remembered that in the first 'round' of ploughing-up, the initiative was met by voluntary effort on the part of many, perhaps most, tenant farmers and owner-occupiers, and many of those would have tried to bring in additional land where they could in successive years. Moreover, it is highly likely, with the CWAEC represented right down to parish level that many a cautionary or helpful word was passed by local War Ag officials to their neighbouring friends and farmers, never to be formally recorded in any ledger. Clearly, there were farmers who had not the means, technological or physical, to work the necessary changes to their land. Their written ploughing-up orders were very much a late resort measure, though by no means the last. A further recourse would be for the CWAEC to undertake the work itself and re-charge the farmers or landowner, or assist the farmer with machinery and labour. The final resort would be to take possession of the land and there are, in the minutes of the Committees at the National Archives, references to such action. The ploughing-up orders canvass a wide area of Norfolk, from Walpole Highway in the west to Hickling and Ingham in the east, from Cley-next-the-Sea on the north coast to Alburgh at the Suffolk border. Throughout, the Morningthorpe, Hempnall and Fritton areas of south Norfolk figure large. In 1945 Norfolk County Council chairman Henry Upcher spoke of 'much heavy land badly drained and badly bushed in the Hempnall district' prior to ploughing adding that, subsequently, '90-odd acres of wheat in a block was a grand sight.'⁵⁴

As stated earlier, the County Council held a considerable amount of farmland, tenanted largely as smallholdings, amounting to more than 31,000 acres in 1945.⁵⁵ They played their

⁵³ NRO C/VES 59 'Pasture ploughed up during 2nd Great War 1939'.

⁵⁴ Upcher, H. 'Norfolk Farming' *Transactions of the Norfolk and Norwich Naturalists' Society* p.102

⁵⁵ *Ibid.* p.98.

part. In 1944 George Reed of Ten Mile Bank, a farm worker who had taken on a smallholding of 39 acres, brought back twelve acres at Southery into cultivation and had:

‘fought and won a ceaseless battle to make the soil of Britain productive ... in addition to growing wheat, potatoes, sugar beet, carrots, celery and onions for the nation, he grows oats and mangolds for his three horses, his two cows, his heifer and two calves; his sow and her litter of nine pigs; and his 30 chickens.’⁵⁶

Upcher noted that in just a few cases occupiers were summoned before magistrates for non-compliance, though under what regulation is not clear.⁵⁷ The County Agricultural Committee functioned contemporaneously to the CWAEC and, though no direct references appear in the local authority archives, it seems perfectly feasible that the County Council might wish to appear to be ‘putting its own house in order’ to set a good example. There does appear to be an ambivalent relationship between the two bodies; the national representative body of county council agricultural committees was, in 1943, petitioning the Minister of Agriculture to rescind Regulation 28B of the Defence Regulations which allowed for the transfer of certain powers and staff to CWAECs. The County Committee expressed polite indignation that their ongoing co-operation with the CWAEC should be so rewarded.⁵⁸ The County Committee was in fact dissolved on 1st October 1947 whilst the duties thereto carried out would be delegated to newly-formed sub-committees of the Council. The CWAEC continued its work steadily through the immediate post-war years, and continued in existence until the mid-1960s.⁵⁹

The focus of the early plough-up campaign, from May 1939, had been on tenant and owner-occupier farmers; the results were thought very satisfactory, the exercise of compulsory powers being avoided as far as possible, most of the quota being achieved voluntarily through

⁵⁶ Wade-Martins, S. ‘Smallholdings in Norfolk, 1890-1950’ pp.325-6 quoting from the Daily Express of 21st May 1944.

⁵⁷ Upcher, H. ‘Norfolk Farming’ *Transactions of the Norfolk and Norwich Naturalists*’ p.99

⁵⁸ NRO C/C 10/6 Agricultural Committee and Sub-Committee 1943–1947

⁵⁹ NRO ACC 201/285 comprises extensive map collections, many referring to land use and sale negotiations up to 1965; almost no supporting documentation is contained therein.

the £2 an acre incentive.⁶⁰ Given, however, that not all rural landholdings were owned by members of the farming community, attention soon turned to non-farmer landowners.

‘The proper procedure is that particulars of the land should be submitted with a view to service of an order on the owner, requesting him to cultivate the land. It would then be for the owner to arrange with some farmer or other person, to carry out on his behalf the requirements of the order.’⁶¹

Executive Officer Frank Rayns reported in October of 1939 that ‘Without being too optimistic I think I can say that Norfolk will contribute the 25,000 acres required’ stating that the District Committees had received voluntary promises to plough up 25,702 acres.⁶²

At this early stage of the war there was of course considerable capacity for extra ploughing of grassland, along with a category of land not familiar to post-war farmers, described as ‘derelict’. Eight thousand such acres were reported by Downham District Sub-Committee. An unused acreage of this size would be unknown subsequently, as more and more land came into cultivation. The Ministry was surprised that so little derelict land across the county had been taken into cultivation and was keen this should be rectified as soon as possible. Rayns was clearly stung by this and retorted that ‘in Norfolk a large acreage of derelict land had been brought back to cultivation without recourse to compulsory powers.’⁶³

Two key points of discussion arose in the following month. Firstly, that of how much grassland could be ploughed up in 1941 bearing in mind MAF had suggested a further 25,000 acres. Secondly, the Livestock Feeding Stuffs and Supplies sub-committee warned of the implications for livestock, and that the Ministry would have to clarify whether livestock or cereals were to take priority.⁶⁴ Frank Rayns reported in February 1940 that the total acreage of grassland scheduled for ploughing up in Norfolk, including that ploughed between 3rd May and 3rd Sept 1939, amounted to 24,087 and the number of voluntary ploughing orders

⁶⁰ TNA MAF 80/4553 Forehoe and Henstead District Committee 1939-42, Minutes 30th September 1939

⁶¹ TNA MAF 80/4559 St Faiths and Aylsham District Committee 1939-1964, Minutes of meeting 24th Oct 1939.

⁶² TNA MAF 80/1864 Norfolk War Agricultural Executive Committee, Minutes 4th November 1939

⁶³ TNA MAF 38/575 Rendering of returns by County War Agricultural Committees 1941-46, 17th February 1940

⁶⁴ *Ibid.* Minutes 21st February 1940

recorded already exceeded 1,200.⁶⁵ The total that year would provide 28,700 acres, nearly 4,000 acres in excess of the minimum requirements for Norfolk.⁶⁶ The extent of these targets even in 1939 further demonstrates that the local archives retain only a small fraction of Norfolk's cultivation orders.

There appears, from national and local archives, to be an informal distinction between 'Compulsory ploughing-up orders' and 'cultivation orders'. They are not synonymous. The former relate to specific acreages and field parcels, whilst the latter generally relate to a specific farm. Likewise, the difference between voluntary and compulsory ploughing-up orders is often unclear. Often, a *cultivation* order appears to be subsequently formalised as a *ploughing-up* order.⁶⁷ In the first phase of the campaign, before the outbreak of war, farmers of their own volition set land to the plough, incentivised by the £2 per acre government grant. Subsequently, voluntary ploughing-up was on occasion *confirmed* by a ploughing-up order. A routine visit by a District Officer or the Executive Officer might prompt a voluntary agreement which again might be confirmed formally. Finally, land remaining uncultivated which came to the notice of officials and was deemed suitable for crops would be subject to a compulsory order, the detail being either negotiated or imposed, but still confirmed formally.⁶⁸ Even more confusingly, an individual reference to 'protective orders' is unclear but in context might appear to be an encouragement rather than an ultimatum.⁶⁹ It seems highly likely that often achieving the right outcome was more important than the administrative or bureaucratic methodology.

Moreover, if a farmer persistently refused to co-operate, the land could be passed to another farmer prepared to work the land. A tenant at Cawston who did not fail, but refused, to plough seven acres, was to be the recipient of a 'strong letter'. If he still refused, the land was to be handed over to Mr Harold Jones who was willing to cultivate the land.⁷⁰ It seems then that a cultivation order might be served upon either tenant or owner, but the rationale is not clear; it is possible that the order was served upon the individual who the District Officer met

⁶⁵ Ibid. Minutes 3rd February 1940.

⁶⁶ TNA MAF 80/1864 Executive Committee (Sub-committees, Panels and District Committees) Norfolk 1939-40, Minutes 16th September 1939

⁶⁷ TNA MAF 80/1864 Executive Committee (Sub-committees, Panels and District Committees) Norfolk, 1939-40 Minutes 8th November 1939

⁶⁸ TNA MAF 38/575 Rendering of returns by County War Agricultural Committees 1941-46, Minutes 3rd February 1940

⁶⁹ TNA MAF 80/1864 Executive Committee (Sub-committees, Panels and District Committees) Norfolk 1939-40, Minutes 8th November 1939

⁷⁰ Ibid. Minutes 12th March 1940.

on the day and in many cases this would be the tenant. Short of the complication and distress caused by a farmer being formally dispossessed, his or her land could be handed over to a neighbouring, more able and willing farmer.

As the war progressed, the pressure upon Norfolk's farmers and landowners intensified. The national food production campaign for 1942-43 prompted the following response from one district committee:

‘Maximum utilisation of land under the plough would entail heavy calls on both men and machinery and ... a wider adoption of the ‘Help your neighbour’ effort as there were ample tractors in the county if they were all kept fully at work. Adjustments of cropping would be necessary on many farms to make them self-supporting for milk production and livestock. A more intensive supervision of ‘B’ and ‘C’ farmers would be necessary.’⁷¹

The issue of crop fires caused by enemy action, deliberate or otherwise, seldom arises in secondary literature and there is no documented record of recommended prevention measures. The protection of crops from incendiaries was discussed at district committee however, with the suggestion that large fields of corn could be split up by cultivating strips with roots or other non-flammable crops.⁷² There is no record of this ever having been implemented as a local policy, and it would have disrupted the efficient use of land for cereal growing. A more traditional threat was dealt with by a specialist sub-committee addressing the very real concerns about pests – rats, rabbits, rooks, pigeons, and even sparrows – whose depredations presented a serious threat to growing crops and stored product. Warreners were held in very high regard and considered a priority for military exemption.⁷³

An example of how the CWAEC would brook no deceit or concealment is shown in the example of one William Harry Moore, owning land in Fornsett and Tacolneston, who had failed to comply with Direction Order no. 1245 and not reported ownership of three other fields. The CWAEC resolved to apply for consent to take possession as there would be no

⁷¹ TNA MAF 80/4559 Norfolk – St Faiths and Aylsham District Committee 1939–1964 Minutes 16th June 1942

⁷² TNA MAF 80/4553 Minutes 29th January 1942. Also referred to in Arbib, Robert S, *Here We Are Together – The Notebook of an American Soldier in Britain* (Plymouth, 1947) p.15

⁷³ TNA MAF 80/4553 Forehoe and Henstead District Committee 1939-42, Minutes 14th September 1940

difficulty in finding another tenant.⁷⁴ The minutes of the District Committees also clearly illustrate the range of sympathy accorded struggling farmers, as well as the swift responses to those perceived to be less than compliant. No immediate action was to be taken, for example, with regard to the ploughing up of Marsh Piece at Hall Farm, Belaugh, as the tenant only ‘went in’ on 11th Oct 1939. Sympathy was extended to Mr W Pumfrey, Field Farm, Heydon. ‘In view of Mr Pumfrey’s age, it was recommended not to call upon him to plough’. Conversely, Mr Pipe, tenant of Abel Heath Farm, Blickling, was requested to plough up 24 acres of grassland opposite Blickling Hall and, if refused, an order to be served. Then again, the case of a farmer at Wood Norton who:

‘had been farming successfully and fairly effectively on this farm for 40 years, and as the poor state of affairs this year was due to a very late ploughing season and a very poor root year, he should be helped by sympathetic direction and advice...and not served with a cultivation order.’⁷⁵

Significantly, smallholdings of less than ten acres were to be ‘encouraged’ but not compelled; it may be that the small and mixed quantity of product was been considered negligible in its contribution to the wider market.

South Norfolk has historically been known to be an area of heavy, clay soil, difficult to drain. A farm of 121 acres at Stoke Holy Cross, just eight of which were arable, suffered from poor drainage with ditches and hedges in bad condition but the new tenant was thought capable of bringing it to standard. Mr Rackham at Hethel had half his cattle on low marsh and the only pasture good for ploughing was valued for the cattle. Some areas of urban and suburban land in greater Norwich came within the remit of Forehoe and Henstead District Committee, with potential housing sites and ‘other lands’ being considered for cultivation.⁷⁶ Woodhouse Farm, at Saxlingham Nethergate was swiftly taken possession of as no satisfactory results had been achieved by the occupier and similarly at Crane’s Farm, Newton Flotman.⁷⁷ Another was told that if he failed to plough within fourteen days the Committee would do so and re-charge him.⁷⁸ Conversely another farmer was described simply as ‘trying hard’. Some

⁷⁴ Ibid. 28th February 1940. ‘Direction order’ – an alternative term for cultivation order.

⁷⁵ TNA MAF 80/4561 Walsingham District Committee 1939-56, Minutes 15th September 1940

⁷⁶ TNA MAF 80/4553 Forehoe and Henstead District Committee 1939-42, Minutes 10th August 1940

⁷⁷ Ibid. Minutes 10th December 1941

⁷⁸ Ibid. Minutes 17th September; 19th December 1941

sympathy and flexibility was accorded 'C' graded farmers where there was evidently not much capacity to improve.

The Limits to Expansion

Both contemporary commentators, and later historians, have generally agreed on the success of the ploughing up campaign. Working the land, however, was distinctly different to clearing it. As the war progressed and more tumbled-down land was reclaimed, new specialist types of machine appeared on the land. Perhaps the most impressive and, in an ecological sense, the most destructive, was the Gyrotiller. Humphrey Jennings' short film *Spring Offensive, 1940* presents a vivid contemporary evocation of the initial work of the CWAECs and the plough-up campaign in the East Anglian landscape. Filmed at Moat Farm, Clopton in Suffolk, but undoubtedly representative of so many farms across the region, it tells of the creation and purpose of the CWAECs. A radio announcer reports the Minister of Agriculture's appeal to farmers to 'trust the committees as friends and as men who know their job and to have patience and understanding. Their task is just as vital to national defence as that of the armed forces.' There are no actors. The central character, Mr Martin, is seen to join the CWAEC. When his committee colleague states that one-and-a-half million acres of grassland are required and that local farmers need to be told to plough up at least ten per-cent of their grassland, Mr Martin observes 'That won't make us very popular visitors'. He subsequently visits his neighbours and fellow farmers, exhorting them to do their bit. Unsurprisingly he meets a combination of good humoured co-operation and downright obstinacy. In suggesting to one neighbour at an upstairs window that, if he ploughs up sixty-four acres of his grassland he will receive the government grant of £64 in return, he receives the blunt reply 'I'll give you £64 to mind your own business and clear off.' As the film moves to its conclusion, images of a semi-derelict farm are shown, the question is raised of the CWAEC intervening on recalcitrant or on behalf of financially constrained farmers with its own machinery, at which point the Gyrotiller appears as the harbinger of change. The film conveys the sheer physical size of the new machine, much larger and more powerful than a contemporary tractor, with huge contra-rotating scythe wheels digging deeper into the soil

than a conventional plough could reach.⁷⁹ A 1943 colour documentary ‘Power on the Land’ also shows the Gyrotiller at work, accompanied by suitably stentorian music.⁸⁰

National attention focused on spectacular war-time attempts to reclaim marginal land, such as the drainage of Feltwell Fen.⁸¹ The Fenland areas of west Norfolk, Cambridgeshire and



Fig.83 Fowler Gyrotiller. The 225hp engine was far more powerful than any previous tractor type; the people give a sense of scale ⁸²

Huntingdonshire – an area of some 10,000 acres in all - were poorly maintained but their highly fertile soil proved a tempting reclamation project for the respective CWAECs. The draining of Feltwell Fen is the best-known example, wherein the Norfolk CWAEC reclaimed 1,500 acres on the eastern edge of the Black Fen for growing wheat, potatoes and beet. Excellent harvests were produced.⁸³ Hockwold and Feltwell Fens comprised the largest block of 6,000 acres, derelict for many years and not having been farmed since the failure of drainage pumps in 1915 when the River Ouse flooded the area. The CWAEC surveyed the

⁷⁹ *Spring Offensive, 1940* (1940) East Anglian Film Archive <http://www.eafa.org.uk/catalogue/995>

⁸⁰ *Power on the Land- The Story of the Mechanisation of British Farming*(1940) British Film Institute <https://player.bfi.org.uk/free/film/watch-power-on-the-land-1943-online>

⁸¹ Hurd, A. *A Farmer in Whitehall: Britain's Farming Revolution 1939-1950 And Future Prospects* (Country Life, London, 1951) pp.56-66. The Fenland reclamation merited an entire chapter.

⁸² Photograph credit: Farmers' Weekly

⁸³ Ministry of Information *Land at War* (H.M.S.O.,1945) P.41

area in 1940 to find the land in such bad order that local owners were reluctant even to admit ownership. Drains and ditches were cleared with dragline excavators and pumps installed, twenty miles of concrete roads were built to improve access and by autumn 1941 1,200 acres had been reclaimed.⁸⁴ The herculean effort in reclaiming the land included digging out many ancient bog oaks and the use of heavy duty Jumbotrac double-furrow ploughs. Anthony Hurd's detailed, first-hand account reflects the interest shown nationally in the project.⁸⁵ The Fens were never allowed to revert to their derelict state and it can be argued that their reclamation changed the social and community structures of the region. There is an important point to be made in the context of the competition with the military for land use; the RAF would never consider using such vulnerable land for airfields – the nearest being RAF Feltwell, sited on safer ground to the east – and the army would not, for the same reason, use it for military training. The Fens would never be at risk of requisition by the military. Much the same could be said of marsh areas. Around seventy per-cent of 278 acres of Holkham Marshes were to be ploughed in 1940 and three years later Wiveton Marshes were said to be capable of cultivation after drainage by a drag line excavator.⁸⁶

Other dramatic schemes of improvement occurred elsewhere. In the north-west of the county, five hundred acres of Massingham Heath were ploughed; Dersingham, North Wootton and Snettisham marshes were drained and ploughed. In the east, land at Waxham and Palling between New Cut and Hickling had reeds cleared and burned, then ploughed and grassed, primarily for dairy production. To the north, Ridlington Common was ploughed in a partnership between farmer and CWAEC. At nearby Thwaite major drainage work, along with the removal of trees and gorse led to 'a wonderful crop of oats'. The south of the county saw Wacton Common cleared by the CWAEC and four hundred acres at Woodton Hall Farm taken over by the committee.⁸⁷ Not all common land was suitable for cultivation but efforts were made to exploit its possibilities. One hundred acres at Buxton Heath, north of Norwich, were considered but deemed of questionable value because of poor soil.⁸⁸ Briston, Melton Constable and Sculthorpe Commons totalled 200 acres but were considered unsuitable for

⁸⁴ Short, B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* (2014) pp.289-290

⁸⁵ Hurd, A. *A Farmer in Whitehall: Britain's Farming Revolution 1939-1950 And Future Prospects* pp.56-66

⁸⁶ TNA MAF 80/4561 Walsingham District Committee, Minutes 5th September 1940; 24th July 1943

⁸⁷ Upcher, H. 'Norfolk Farming' *Transactions of the Norfolk and Norwich Naturalists' Society* pp.101-102, 103

⁸⁸ TNA MAF 80/4559 St Faiths and Aylsham District Committee 1939-1964, Meeting minutes 17th June 1941

plough-up, comprising as they did sand, gravel and heather and Sculthorpe particularly boggy.

The plough-up campaign knew no class favouritism despite the presence of some landed figures on the committees. Country estate owners were said to have done their share. Blickling, Barningham, Elmham, Felbrigg, Gunton, Holkham, Melton Constable and Sandringham saw some plough-up on the estate lands.⁸⁹ The parkland immediately adjacent Wolterton Hall, that not directly occupied by the military, was ploughed up as part of the intensified agricultural effort.⁹⁰ A photograph in the family archive shows land under the plough right up to the piazza.⁹¹ Although most of Rackheath Hall's suitable areas were being grazed by cattle, in mid-1941 Sir Edward Stracey offered 57 acres for ploughing, with more to follow. A ploughing-up order was served for the land offered plus an order for a further forty-three acres.⁹² All this was to change later when the Air Ministry decided upon Rackheath for an Class A airfield site. Areas of Kimberley, Ketteringham and Great Melton parks were deemed suitable for ploughing, as were those at Beeston and Horstead.⁹³ Sir Dymoke White of Salle Estate features repeatedly through 1941, beginning with a failure to use phosphates supplied and not ploughing grassland as requested; reference was made to the 'deplorable condition of [*his*] hedges and ditches', whereat he offered to sort out the ditches but was happy for someone else take over the ploughing.⁹⁴ Dunston Park sustained cattle across 110 acres, described as very poor land, covered with trees. Some ploughing had been done and the district committee decided not to ask for more. Forehoe and Henstead District details more such examples, where cattle were farmed, often on poorer land or marsh, and no more would be asked of those farmers.⁹⁵ East Carleton Manor had fifteen acres ploughed but 210 acres remained, given over to a large, accredited poultry flock numbered up to 5000, which the committee felt was acceptably productive both in quality and quantity.⁹⁶ Though Henry Upcher made much of country estates being ploughed there is little evidence of this happening on any great scale, with perhaps Blickling and Kimberley being notable exceptions and part of Sandringham's private royal golf course was ploughed to grow oats

⁸⁹ Upcher pp.101-102

⁹⁰ Lord Walpole *pers comm* 12th Sept 2014

⁹¹ WOLT 23/2/45/3

⁹² TNA MAF 80/4559 St Faiths and Aylsham District Committee 1939-1964, Minutes 17th June 1941

⁹³ TNA MAF 80/4553 Forehoe and Henstead District Committee 1939-42 Minutes 25th September 1940

⁹⁴ TNA MAF 80/4559 Minutes 17th June 1941

⁹⁵ TNA MAF 80/4553 Minutes 25th September 1940

⁹⁶ TNA MAF 80/4553 Minutes 25th September 1940

and rye.⁹⁷ There was clearly more capacity on some large estates however; Williamson's study of Norfolk's parks' archaeology shows numerous surviving older earthworks which would not now exist had they been ploughed out during the war. Gardens had already been simplified, many being 'grassed down' with little incentive to turn grassland to arable until the war suddenly necessitated it.⁹⁸



Fig.84 South front of Wolterton Hall 1946⁹⁹

Though there is little evidence of large-scale tillage on estate lands, in the cases of Wolterton and Blickling for example, extensive areas of parkland were taken up with, respectively, army and RAF encampments.

The importance of fruit and vegetables to a balanced diet was not overlooked, even if the emphasis on arable crops as the prime means of feeding the population saw them somewhat marginalised. Captain Cator at Ranworth asked to plant thirteen acres of blackcurrants and was given permission for 4½ acres in 1939 and 1940 providing an equal amount of land was

⁹⁷ Short, B. *The Battle of the Fields*: p.130 quoting *The Times*, 18th August 1943, p.6

⁹⁸ Williamson, T. *The Archaeology of the Landscape Park: Garden Design in Norfolk, England c.1680-1840*: BAR British Series 268 (1998) p.215

⁹⁹ Wolterton Archives WOLT 23/2/45/3

grubbed up and the bushes interplanted with a food crop.¹⁰⁰ Applications were received for small acreages of strawberry growing at various West Norfolk locations and at Cawston, to the east, along with blackcurrants at Cawston, Salhouse and Hickling and raspberries at Great Plumstead and Surlingham near Norwich. Growers were no more exempt from problems than arable farmers however and Allen's Nurseries at Bracon Ash and Mulbarton were taken into possession for cultivation in 1942.¹⁰¹ In 1944 fruit and vegetables accounted for just 2.5 per-cent of national calorific output but then so did milk, eggs and wheat. 42.5 per-cent of calories came from wheat, simply because of its share of acreage.¹⁰² One Norfolk farmer noted that, whilst her own arable fields were to be requisitioned by the Army, the otherwise sympathetic CWAEC official let slip that her neighbour's fields of asparagus and blackcurrants were not to be taken over.¹⁰³ The importance of fruit and vegetable crops should not, then, be overlooked.

While the arable acreage within the county did increase, the scale of expansion is difficult, in the absence of surviving records, to assess. Comparisons between the RAF aerial survey of 1946 with First and Second Edition Ordnance Survey maps and the pre-war Land Utilisation Survey maps indicate areas of land uncultivated pre-war. Close examination shows extensive areas of marginal land – heath and marsh – some of which could have been cultivated, but were not. This seems curious and raises questions that can perhaps only be answered speculatively. First, it is entirely possible that, given the impetus of the initial plough-up campaign, much of the land 'taken in' early that already bordered working land was therefore easily accessible. Moreover, once the early plough-up targets had been reached and indeed, in Norfolk, exceeded, there was little reason to pursue a policy of taking-in all potentially workable land when resources would be better employed making most efficient use of the already-reclaimed land. There was no need to plough every last unused field and meadow, drain every last marsh and fen and clear heavy scrub and thorn where the effort would produce no return on effort invested, or when there was no capacity to work it.

One piece of archaeological evidence demonstrates clearly that not all permanent pasture was ploughed. Ridge and furrow, closely associated with mediaeval and post-medieval strip farming, survived into the twentieth century at a number of locations across Norfolk,

¹⁰⁰ TNA MAF 80/1864 Executive Committee, Norfolk 1939-40, Minutes 10th November 1939

¹⁰¹ TNA MAF 80/4553 Forehoe and Henstead District Committee 1939-42, Minutes 12th March 1942

¹⁰² Short, B. *The Battle of the Fields*

¹⁰³ Reeve, L., *Farming on a Battleground - by A Norfolk Woman* (1950, reprinted Wymondham 2000) p.39

particularly in the west of the county.¹⁰⁴ These ridges would not have been ploughed since being laid to pasture and the strong presence of such sites in the west of Norfolk is explained by the retention of more land as permanent pasture than elsewhere; this is borne out by Mosby's map of pasture in 1937.¹⁰⁵ The war had little if no impact upon these areas of ridge and furrow. Records indicate that such damage and loss that has been incurred to ridge and furrow in Norfolk has occurred post-war.¹⁰⁶

Figs. 80, 81, 82 and 83 (below) show sections of the 1937 Land Utilisation Survey Map (Norfolk). Estimated additional land ploughed up in four different locations in the county between 1939 and 1946 outlined in RED.

Land Utilisation Key:

Light brown = arable land

Yellow = heath, commons, rough pasture

Green = woodland

Pale green = meadowland and permanent grass

¹⁰⁴ Liddiard, R. 'The distribution of ridge and furrow in East Anglia: ploughing practice and subsequent land use' *Agricultural History Review* Vol 47, Part 1, 1999 pp.1-6

¹⁰⁵ Mosby *The Land of Britain: The Report of the Land Utilisation Survey of Britain, part 70 Norfolk* (Stamp, Dudley L (ed.), London, 1938)

¹⁰⁶ Norfolk Heritage Explorer details many locations of definite and possible ridge and furrow across the county, largely in West Norfolk.



Fig.85 Hempnall, Fritton, Topcroft areas of South Norfolk

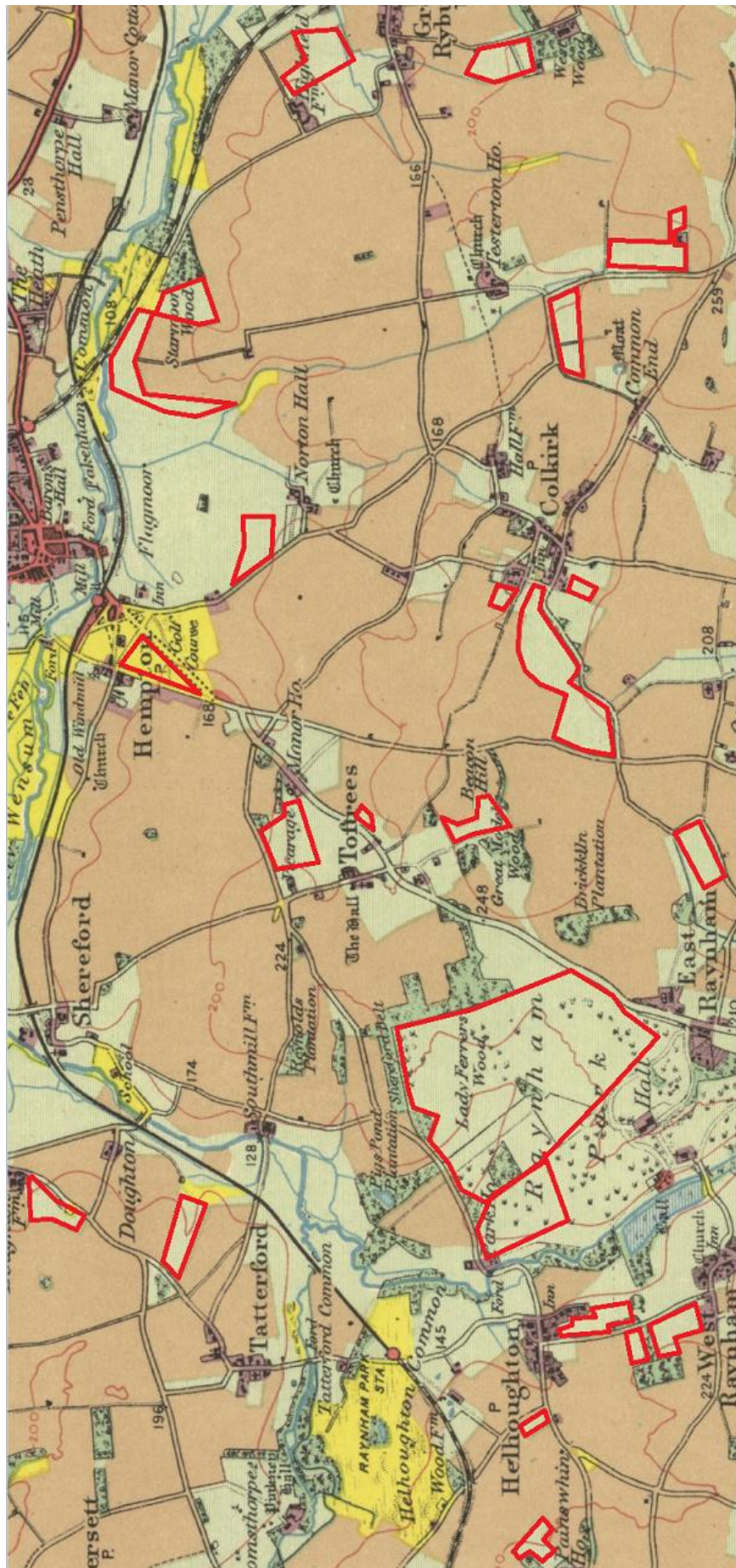


Fig.85 Hempton, Fakenham, Raynham Park area of north Norfolk

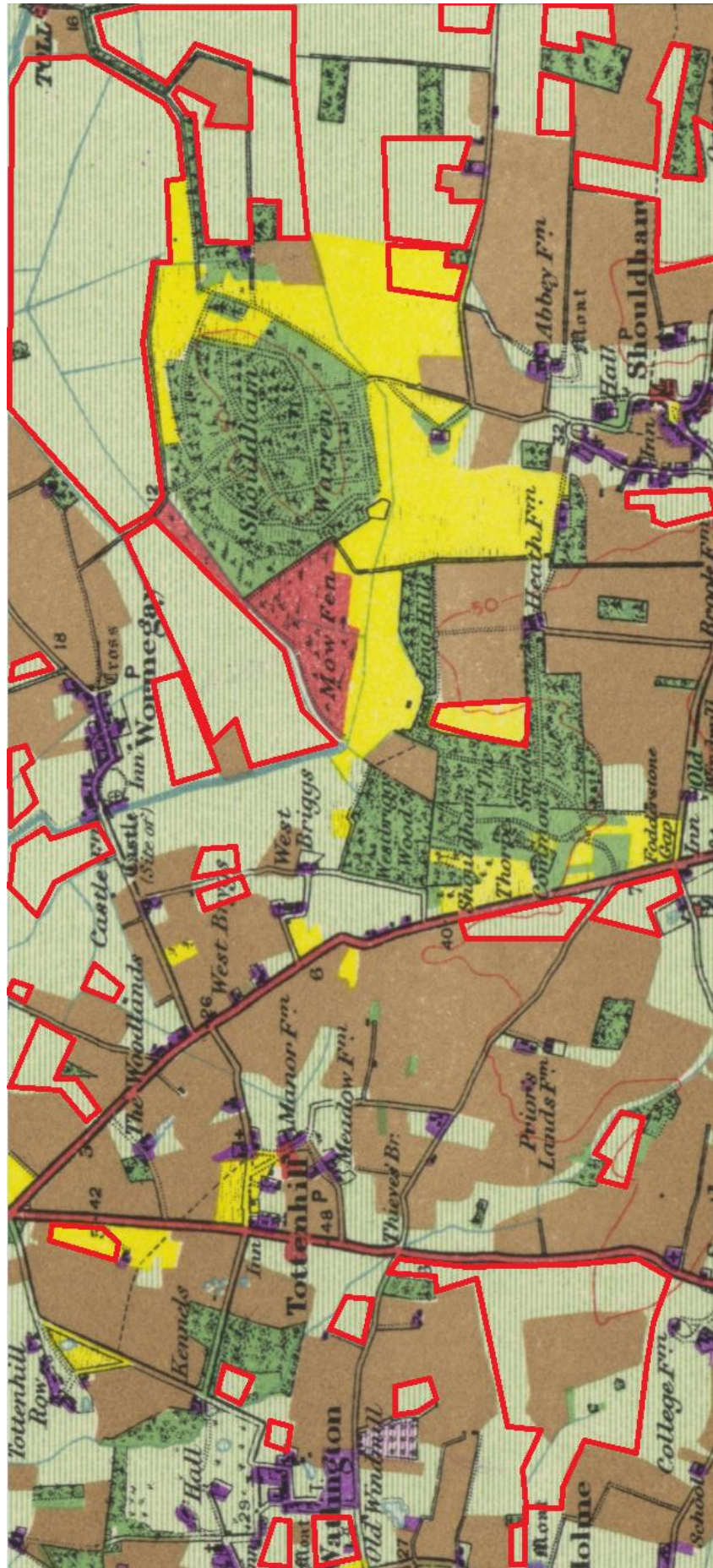


Fig.86 Shouldham Warren, Wormegay and Tottenhill areas of West Norfolk

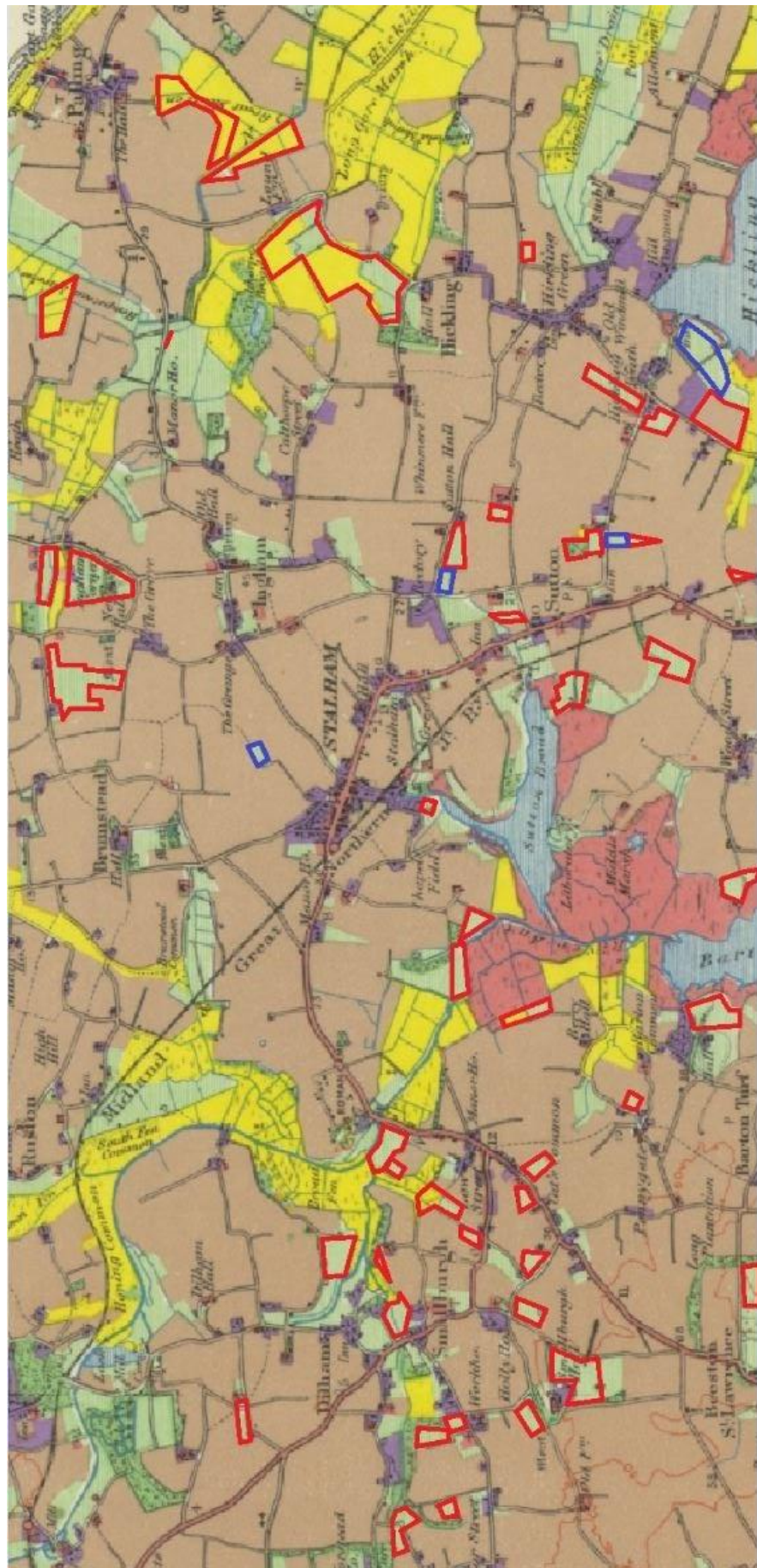


Fig.87 Smallburgh and Hickling area of east Norfolk

It should be noted that the interpretation of the RAF aerial survey is not conclusive due to the fact that the images are monochrome; colour photography would make land use identification much easier. The photography would seem to have taken place during or just after harvest - many fields appear to show standing stooks or sheaves waiting threshing. Other fields present apparent cultivation patterns, though often with different shading, perhaps indicating a harvested and emptied field, an area awaiting harvesting, or different types of crop. Woodland, marshy areas and commons are much clearer. Extant pasture can often be identified by clear livestock tracks, indicating contemporary use. The areas that are less easy to identify are pasture adjacent to arable, and therefore potentially cropped but not visually distinctive.

Mechanisation and Labour

Mechanisation was a long time coming; despite the introduction of steam-driven traction engines in the second half of the nineteenth century, most of those worked ‘on the belt’ powering threshing machinery in the fields. By the mid-1930s, though petrol-driven tractors and stationary engines were well in evidence, the horse was still the predominant motive power throughout the farming year, with 700,000 nationwide drawing cultivators, seed drills, balers and threshers.¹⁰⁷ Tractors were concentrated in the arable areas of the eastern counties; the government had taken a census of in 1937 and the following year was proposing to requisition tractors from the east to be deployed in other regions. An unworkable and unpopular scheme, this was replaced by a government contract with the Ford Motor Company of England to provide a reserve of tractors.¹⁰⁸ Even so, by 1941 Ford would experience nearly a year’s backlog of orders, such was the demand. A desperate shortage of tractors and associated equipment was, then, a feature of the early war years and Norfolk CWAEC was seriously concerned about its impact upon ploughing-up capability.

‘The Committee desires to call the attention of the Exec Cttee to the serious shortage of tractor ploughs. Although many are on order from dealers it is impossible to obtain delivery.’¹⁰⁹

¹⁰⁷ Hurd, A. *A Farmer in Whitehall: Britain’s Farming Revolution 1939-1950 And Future Prospects* (London, 1951) p.22

¹⁰⁸ Hammond, R.J. *Food and Agriculture in Britain 1939-45* (Oxford, 1954) pp.75-76.

¹⁰⁹ TNA MAF 80/4561 Walsingham District Committee 1939-56, Minutes 5th October 1939

Ransomes, Sims & Jefferies explained that large stocks had failed to meet the demand and that staff, working late into the night, had not been able to provide adequate output. Freebridge Lynn and Swaffham Districts reported early in 1940 that farmers did not have enough tractors and ploughs to cope with requirements. Frank Rayns subsequently placed an advertisement in the Eastern Daily Press and the Lynn News asking farmers experiencing difficulty to contact him.¹¹⁰ The shortage of plough parts and the need for temporary release of men from the army created its own crisis.

‘This committee is most seriously disturbed to find that despite applications no key men have been released to help with Spring sowing. This Committee wishes to warn the Executive Committee that unless these two matters are dealt with at once, the required cultivations and food production asked for will not be secured this season.’¹¹¹

The shortage of tractors would continue for the time being. Even so, in early 1940 the Executive Officer secured the release of more than 150 tractors to Norfolk.¹¹² What is less known is that there was also a shortage of drivers. The county’s labour force had been steadily decreasing since 1933. Secondly, despite agriculture being a reserved occupation, wartime military manpower demands had the potential to greatly exacerbate the loss.¹¹³ A third factor, particularly for the eastern counties, was the number of agricultural workers lured to comparatively well-paid airfield construction jobs throughout the war.¹¹⁴ Some were said to be earning £3 a day on airfield construction and the committee considered whether action could be taken to obtain their release for ploughing.¹¹⁵ Additionally, unemployed agricultural workers were refusing to take up available farm work and choosing to work as general labourers on aerodromes for higher wages; they could not be compelled to work on

¹¹⁰ TNA MAF 38/575 Rendering of returns by County War Agricultural Committees 1941-46 Norfolk, 12th October 1939

¹¹¹ TNA MAF 80/4561 Walsingham District Committee 1939-56, Minutes 21st March 1940

¹¹² Ibid. Minutes 25th April 1940

¹¹³ Murray, K.A.H. *Agriculture: History of the Second World War* pp.271-2. With the declaration of war the Territorial Army would draw off 20-30,000 part-time soldiers from farming; the Military Training Act 1939 would impact another 30,000 younger workers, although its supersede the National Service (Armed Forces) of 1939 would specify agriculture as a reserved occupation.

¹¹⁴ Ministry of Agriculture *A Century of agricultural statistics, Great Britain 1866-1966* S217 p.62 in 1940/41 the minimum agricultural wage was less than 50 shillings a week.

¹¹⁵ TNA MAF 38/575 Rendering of returns by County War Agricultural Committees, Norfolk 17th February 1940.

the land.¹¹⁶ Contract firms were available to help with ploughing but it was only a partial a solution, and no precise figures of manpower loss to airfield construction have come to light. This manpower crisis is a prime example of resource conflict between the interests of agriculture and the military. There is no simple correlation that might suggest increased mechanisation somehow compensated for the loss of manpower to the military. The Women's Land Army was not extensively present in Norfolk but as the war progressed greater numbers of German and Italian prisoners-of-war were deployed to the land. Their contribution has not been quantified but certainly in north Norfolk PoWs workers were much needed for multi-tasking on small farms.¹¹⁷

Generally, mechanisation was slow and for many farmers not an economic option and many large landowners lacked the finances to invest in infrastructure and technology. Whilst a tractor was undoubtedly faster than horses, it required oil and petrol rather than fodder and had nowhere near the same productive working life.¹¹⁸ Nevertheless by 1945 there had been a three-fold increase in their number, along with dramatic increases in associated and new types of machinery.¹¹⁹ The displacement of horses by tractors enabled ploughing, planting, cultivation and harvesting to be completed more quickly and economically, and at the right time. There were about 52,000 tractors working across Britain in 1939; by the spring of 1943 this had more than doubled, to 125,000, equating to an additional 2,000,000 horsepower available to the land.¹²⁰ By 1944 there were over 175,000 nationwide.¹²¹ Norfolk was already advanced in the numbers of tractors deployed across the arable landscape, with around 3,000 in evidence at the start of hostilities, rising to 4,500 by 1942 and to 6,800 by 1944.¹²² Of specific relevance to arable, at the beginning of war there were about 150 combine harvesters across Britain; by 1943 this had increased by a factor of ten.¹²³

¹¹⁶ TNA MAF 80/1864 Executive Committee (Sub-committees, Panels and District Committees) Norfolk 1939-40, Minutes 18th November 1939

¹¹⁷ TNA MAF 80/4561 Walsingham District Committee 1939-56, Minutes 6th September 1945

¹¹⁸ Petrol rationing was introduced at the war's beginning and continued until 1950 but farmers were exempt, their allocation, like the military's, being dyed red to distinguish it from 'civilian' petrol.

¹¹⁹ Martin, J. and Langthaler, E. 'Paths to Productivism: Agricultural Regulation in the Second World War and its Post-War Legacy in Great Britain and German-Annexed Austria' (2009) p.10

https://www.kuleuven.be/icag/files/John_Martin_Ernst_Langthaler.pdf

¹²⁰ Dudley-Stamp, L. *The Land of Britain: Its Use and Misuse* (London, 1948) p.405

¹²¹ Ministry of Information *Land at War* (H.M.S.O., London, 1945) p.23

¹²² Douet, A. *Norfolk Agriculture, 1914-1972* (unpublished PhD thesis, University of East Anglia, 1989) p.291 quoting from TNA MAF 38/262, SS 3049 and TNA MAF 38/278

¹²³ Dudley-Stamp, L. p.405

Mechanisation would help offset labour shortages especially when combined with more sophisticated use of artificial fertilisers as substitutes for the traditional use of by-product from imported feedstuffs. None of this should be surprising in a war characterised by leaps forward in the availability and application of new technology in civilian and military theatres. There is however additional significance in its longer-term effect on farming practice in the post-war years. As the official historian puts it:

‘This was a change of revolutionary consequence to systems and techniques of farming, not only during the war but in the succeeding years as farm workers continued to leave the land, as the number of hours in the working week was reduced and as the rise in agricultural wages continued to outstrip the rise in agricultural prices.’¹²⁴

Motorised technology undoubtedly contributed to in the longer term towards larger fields and the modern ‘prairie’ style farming. Tractors and combines cannot easily manoeuvre in the same limited space as horses, and unrestricted movement is efficient. The trend to larger fields had started before the war but the rapid loss of hedgerow in Norfolk’s fields accelerated in the three post-war decades.

The competition for land – the military, the CWAEC and MAF

Laurie Lee wrote prosaically of the loss of good British farmland, describing it as a ‘shrinking commodity...consumed and lacerated by spreading cities and aerial roads’. Summing up the immediate pre-war situation succinctly he wrote ‘There was never so little of it as when the war began. And never before did we need so much.’ Then:

‘The first thing war did was to seize a great deal more... aerodromes, requiring thousands of flat dry fields, obliterated many farms... land was used up in essential preparations for defence and attack, in the siting of batteries, searchlights, camps, store-dumps, radio-location and battle-practice grounds.

¹²⁴ Murray. K.A.H. *Agriculture: History of the Second World War* pp.274-275

Since war began, several hundred thousand acres have been completely lost to food production in this way...’¹²⁵

Professor L. Dudley Stamp put it more succinctly.

‘...the very large loss of agricultural land to the fighting services, especially for airfields and landing grounds, must be recorded. Apart from large tracts many small pieces of ground were required for searchlight stations, anti-aircraft posts, strong-points and so on. These areas, though small, often caused serious hindrance to efficient farming.’¹²⁶

The exponential growth of airfields, described in Chapter 3, subsumed in excess of 21,000 acres of Norfolk’s available agricultural land. The Stanford Battle Training Area alone accounted for 18,000 acres, controversially the permanent displacement of the residents and farms of six parishes. The plethora of coastal and inland anti-invasion defences – pillboxes, gun-sites, searchlight sites, prohibited areas, took still more. Almost all the considerable acreage of agricultural land taken by airfields was arable. Comparisons with the Land Utilisation Survey of 1931-34 indicate that thirty-one (of thirty-eight) airfields appear to have been exclusively so, though some with nominal, marginal sections of indicated meadowland/permanent pasture. The exceptions to the rule are few. RAF Hethel appeared to have an equal proportion of arable and meadowland lost to the airfield; Hardwick was mostly meadow/grassland, located centrally in an area which came to see one of the most dramatic long-term landscapes changes from ‘tumble-down’ to intensively farmed cereal production; North Pickenham appears to have a significant proportion, perhaps one-third, of its operational area, as heathland. Snetterton Heath, alone, was built on an equal proportion of meadow/grass and heath, with a woodland covert also being subsumed in the flying area. Of the pre-war Expansion era airfields, Feltwell, Marham and Methwold in the west of the county were sited on entirely arable sites, as were West Raynham to the north, Swanton Morley, and Coltishall and Matlaske. Horsham St Faith and Watton were sited on predominantly arable land, each with a minor element of existing meadow or grassland. The single RAF site which was built on land comprising entirely grassland was Pulham – not an

¹²⁵ Ministry of Information *Land at War* (1945) p.38

¹²⁶ Dudley-Stamp, L. *Wartime Changes in British Agriculture* (Geographic Journal 109. 1947) p.417

airfield, but a pre-existing airship and communications station, and from 1939 a maintenance unit for disposal of damaged or written-off aircraft.¹²⁷

By 1941, the year preceding the busiest year of airfield construction, the ‘land grab’ was at its keenest. Some flexibility was demonstrated on the part of the Air Ministry in their dealings with the CWAEC and the CWAEC officers were engaged in land ‘trade-offs’ with the Air Ministry. Old Buckenham was under discussion in September 1941 when it alleged that three of the four farms affected were in a good state of cultivation, and construction would entail the destruction of a number of buildings and cottages. The CWAEC offered no objection provided Deopham was not taken. It was suggested that the north-east to south-west runway could perhaps be moved and the companion runway designs revised.¹²⁸ Deopham was of course built anyway, with 437 acres, mostly arable, and eleven farms and smallholdings being subsumed. On this occasion the CWAEC objected strongly at the loss of ‘some of the finest land in mid-Norfolk, intensively farmed.’¹²⁹ The airfield at Snetterton Heath would initially cover three farms, 356 acres of woodland and sixty-six acres of ‘waste’, whilst Thorpe Abbots would entail some 448 acres and five farms. The CWAEC offered no objection to either on agricultural grounds.¹³⁰ The proposed airfield site at Seething, described as ‘cold, heavy clay, very wet and drainage required’, would see fifteen farms and smallholdings disappear. Once again, the committee made no objection but asked that every effort be made to exclude the fields of Derrins Farm where a good herd of cows resided. In the north of the county, 388 acres at Sculthorpe described as ‘average, light loam soil, some derelict but now producing good crop’ were proposed as an alternative to the Air Ministry’s intended site comprising three hundred well-farmed acres at Great Snoring were left alone as a prospective aerodrome site.¹³¹

A secret and confidential MAF memorandum regarding the Air Ministry’s 1941 expansion programme lists sites selected in Norfolk for development by the Aerodrome Board. Some were to be acquired and developed prior to harvest, with others deferred until after September. To ensure the minimum of wastage of growing crops the CWAEC District and

¹²⁷ Visual comparisons of each airfield site between The R.A.F. Aerial Photographic Survey at Norfolk Heritage Explorer, contemporary Ordnance Survey maps and Land Utilisation Survey maps 1:63360 (1 inch to 1 mile) at http://www.visionofbritain.org.uk/maps/sheet/lus_stamp/

¹²⁸ TNA MAF 48/392 Aerodrome construction programme: agricultural considerations and priority of construction 1941-1944 15th September 1941

¹²⁹ Ibid. October 1941

¹³⁰ Ibid. August and September 1941

¹³¹ Ibid. October 1941

Executive Officers were urged to contact the Superintendent Engineer at the earliest opportunity. These engineers were instructed by the Air Ministry to give every practicable attention to local agricultural interests ‘but you will no doubt appreciate that the Air Ministry’s requirements must have precedence.’¹³²

‘...under war cabinet decisions, the Air Ministry remain [sic] the sole judge of their own requirements under the general directions given by the Prime Minister and we cannot have an independent authority to determine priorities as between the claims of air defence and food production.’¹³³

Frank Rayns, Executive Officer of Norfolk CWAEC wrote to the Air Ministry requesting clarification of decisions, specific to airfields that might unnecessarily disrupt agricultural production.¹³⁴ Short notice was the chief issue. For example, the first official notification that North Pickenham was under consideration had been received on 26th September, just two weeks after an informal visit from a junior Flying Officer. There was no negotiation process for Deopham Green, simply a notification.

Of Thorpe Abbots, Rayns wrote that it had been:

‘known for some months that (the site) is under consideration but replies from the Air Ministry just say no decision has been made. We have continually been stressing the importance of a decision at Thorpe Abbots, for the time has come when land of that character must be cropped, much of which should go in with wheat, if the Air Ministry do not want it.’

Tattersett, also under consideration for some months, was

‘farmed by an extremely progressive young farmer who has been looking for another farm since he felt he would lose his at Tattersett, but has been unable to make a decision for he was left in the air as to whether the Air Ministry would really require the Tattersett site.’¹³⁵

¹³² TNA MAF 48/392 Aerodrome Construction programme: agricultural considerations and priority of construction 1941-1944, 15th September 1941

¹³³ Ibid. 14th October 1941

¹³⁴ Ibid. Letter 16th October 1941

¹³⁵ Ibid.

At Seething the CWAEC had been spending considerable sums of money improving the area, including clearing bushed lands. Again, it was known that the area had been surveyed by the Air Ministry but the CWAEC could obtain no information, and staff were waiting to drill.

‘Pending a decision of the Air Ministry farmers are naturally not inclined to spend money on cultivations, seeds and manures. Indecision at seeding time is a most serious type of indecision, and I am most anxious to minimise the loss of agricultural land in Norfolk as much as possible. The total loss due to defence measures is really alarming, but I know of course, that defence measures are paramount.’

There were also problems with contractors starting work on farmland without authorisation from the Air Ministry. Bean, oat and barley sheaves had been cut to place under lorries to obtain better wheel grip. Rayns asserted that these were not isolated incidents citing Denton, Wendling and Shipdham in particular, and he expressed the opinion that it resulted from the Air Ministry’s inability to make up its mind about aerodrome sites. This is an important point, raising once again the issue of confusion and misunderstanding caused by poor communication, with contractors apparently being informed ahead of the CWAEC and individual farmers about the requisitioning of their land. MAF wrote to the Air Ministry’s Superintendent Engineer at Cambridge in July 1941 about disruption at Shipdham and Wendling, asking that the

‘procedure for local consultation agreed between our respective Departments may be strictly observed in order to avoid the recurrence of complaints and the possibility of unnecessary damage to local farming interests.’¹³⁶

MAF was able to clarify queries to Norfolk CWAEC about each site in question.¹³⁷ Shortly thereafter the Director General of Works at the Air Ministry made it unequivocally clear to staff that practices had to change.¹³⁸

¹³⁶ TNA MAF 48/392 Aerodrome Construction programme: 15th September 1941 and ongoing correspondence October of 1941.

¹³⁷ Ibid. 15th October 1941, letter from MAF to Frank Rayns

¹³⁸ Ibid. Memo 21st October 1941 from DGoW(AM) to Superintending Engineers Nos. 1-20 Works Areas. APPENDIX

It is possible that this was a particular Norfolk problem because of the density, frequency and number of airfield sites required. Clearly some significant agreement had been reached on the importance of good communications, recognising that, whilst airfield construction was a priority, the most efficient use of farmland was also of great importance. An example of the Air Ministry's improvement in appreciation of the CWAEC's concerns is demonstrated by a letter to Frank Rayns at the end of November 1941 which, while stating that the conduct of the war must take priority, offered to give better indication of when work need to start on airfield sites, and even to defer commencing construction until after harvest. It further confirms that 'fair and reasonable' compensation would be paid if deferment proved impossible.¹³⁹ Assurances were given that compensation would be properly made in accordance with the terms of the Compensation (Defence) Act, 1939, but without excluding the possibility of land being purchased outright if needed; also that Air Ministry valuers would fully discuss with owners and tenants requisition notices and terms for occupation. Further, no action to requisition would be taken until a closer estimation of required dates of possession could be determined.

Of Old Buckenham the letter concludes

'It is appreciated that a more definite indication of the Department's intentions would be of value to the Committee and the occupiers, but at present this is not possible and it is hoped that the foregoing represents a practical arrangement in the interest of food production and in the avoidance of waste of labour and cropping.'¹⁴⁰

USAAF serviceman Robert Arbib observed at first hand an altercation between a farmer and a construction colleague and wrote:

'But that farmer was an oft-repeated symbol... refusing to believe what he knew was true, that the field he had ploughed for years, the soil that he had nourished and tended, the beets that he had planted and hoed and weeded, would soon be under eight inches of concrete.'¹⁴¹

¹³⁹ TNA MAF 48/392 Aerodrome Construction programme: agricultural considerations and priority of construction 1941-1944 Letter 29th November 1941 from E.C.Kitts, Air Ministry to Frank Rayns.

¹⁴⁰ TNA MAF 48/392 Ibid.

On occasion the CWAEC's direction saw the farmer caught between two agencies; Mr Holman, of The Belt, Aylsham said he could not comply with a cultivation order owing to military activity on the site. In other instances agricultural activity was constrained by the state of land after the military had moved on. The difficulty of cultivating vacated searchlight sites was discussed and the Executive Committee asked to approach military authorities with a view to leaving vacated searchlight sites in a cultivable condition.¹⁴² The chairman of one district WAEC expressed concern about deterrents to enemy aircraft landing. Very large fields at Overlands Farm, Bawburgh had no obstructions laid out but the military seemed unconcerned and the so matter was left.¹⁴³ In early 1940 the question of grassland on aerodromes and golf courses was raised but not pursued. The cultivation of Foulsham and Weston airfields was discussed two years later but it was decided that the areas available were too small for cropping though could be seeded for hay.¹⁴⁴

The single great section of land requisitioned was that which became the Stanford Battle Area, discussed in Chapter 4. Edgar Granville, Member of Parliament for Eye, Suffolk, raised the question of the three thousand acres of land which would have to be abandoned just before harvest. The blunt answer from the Secretary of State was that the land would be needed before the harvest was complete.¹⁴⁵ There may have been a perception that the War Office had selected what its lands officers assumed to be relatively unproductive agricultural land, and therefore less of a loss to agriculture, overlooking the recent improvements in Breckland, notably important dairy farms at Wretham and Bodney Hall.¹⁴⁶ The War Office originally wanted some thirty thousand acres but Hudson, the Minister of Agriculture, negotiated this to 17,500 centred around Stanford. Controversially, the Norfolk WAEC was not informed until a very late stage, whereupon Messrs. Upcher and Christie objected. Of the acreage the military eventually wanted to commandeer, 8,600 were agriculturally productive, incorporating thirty-three farms, of which sixty per-cent were graded 'A' by the CWAEC and

¹⁴¹ Arbib, R. *Here We Are Together* pp.19-20. Robert S. Arbib Jr. had a conservationist's insight into what he observed in East Anglia. Post-war he became a respected author, editor and ornithologist in his home country.

¹⁴² MAF 80/4559 St Faiths and Aylsham District Committee 1939-1964, Meeting minutes 17th June 1941

¹⁴³ MAF 80/4553 Forehoe and Henstead District Committee 1939-42, Minutes 25th September 1940

¹⁴⁴ MAF 80/4559, Minutes 6th January 1942

¹⁴⁵ Hansard HC Deb 23 June 1942 vol 380 cc1796-8

¹⁴⁶ Douet, A. *Norfolk Agriculture, 1914-1972* (unpublished PhD thesis, University of East Anglia, 1989) (1989) p.281

thirty per-cent 'B'.¹⁴⁷ Almost three hundred acres had crops growing, approaching harvest. The CWAEC requested a delay of occupation until after harvest but this was rejected.

A fundamental point is that the almost exclusively arable land subsumed by airfields, and tracts of land taken for army training purposes, were therefore not available for agricultural use. The first plough-up campaign took place very early in the war, nearly three years before the height of airfield construction in Norfolk. The need to bring in more land for food production was not therefore in any way a reaction against land lost to airfields, and training areas. It was an objective in and of itself. However, good arable land lost to the military invariably reduced the ability of the county to further increase agricultural capacity. A conservative average estimate of the acreage covered by a wartime airfield is 500 acres.¹⁴⁸ More precisely, the average size of an Expansion era (between 1934 and 1940) grass airfield was 400 acres; by the war's end, with many airfields having tri-axial concrete runways built, the landing ground area had increased to anything between 600 and 850 acres.¹⁴⁹ West Raynham, for example, is quoted at 761 acres.¹⁵⁰ Significantly, these figures do not include the myriad dispersed sites associated with each airfield. The total acreage therefore could easily approach 29,000 acres -excluding dispersed sites. Although the juxtaposition of cultivated crops and concrete hard-standing blurred the demarcation between military and agricultural territory there could be some collateral negative outcomes. It has been suggested that the uncultivated grassland within airfield perimeters 'may have provided a breeding ground for rabbits 'wreaking havoc on surrounding crops.'¹⁵¹ The basic premise for requisitioning land for airfields was that the Air Ministry paid farmers a rent based on the contemporary valuation, and thence on the assumption that it would be returned at the war's end. In practice, the cost of restitution to an airfield's former status could prove too high and, invariably, between 1947 and 1952 much of the land was simply bought from the owners at £35 an acre and the land licensed back.¹⁵² The amount of land lost to military activity needs to be viewed against agricultural land use before and, indeed, after the duration. Norfolk was, as stated earlier, traditionally an intensively agricultural county, subject to more intensive arable farming than most other areas of Britain. Dudley Stamp put it succinctly:

¹⁴⁷ Douet, A. *Norfolk Agriculture, 1914-1972* p.282; also TNA MAF 48/620

¹⁴⁸ Douet, A. p. 280

¹⁴⁹ Francis, P., Flagg, R., Crisp, G., *Nine Thousand Miles of Concrete - A Review of Second World War temporary airfields in England* (Airfield Information Exchange and English Heritage, 2016) pp.4,5

¹⁵⁰ Ibid. p.5

¹⁵¹ Douet, A. *Norfolk Agriculture* p.280

¹⁵² Ibid. p.281

‘In the eastern counties all land which could be ploughed in conformity was, in fact, under the plough and it has only been possible to increase the ploughed acreage by a small percentage.’¹⁵³

Productivity and yield

Tillage nationally increased between 1939 and 1945 from 8.3 million acres to 13.75 million, or 65.66 per-cent. The estimates of how much extra food was produced vary but in calorific terms it represented an increase in output of 70 per-cent.¹⁵⁴ Essentially, the ploughing of grassland reduced the supply of meat, milk production was stepped up dramatically, and cereals, potatoes and sugarbeet became the major crops.

A further succinct remark by Professor Stamp is devastatingly blunt in its retrospective implication:

‘The government’s objective to put a million new acres of old grassland under the plough, and then more millions, caught the public imagination. But a 10% yield from existing acreage would have met the same result as ploughing up another million acres,’¹⁵⁵

In reality, there were two factors militating against the possibility of achieving such a growth in yields. Firstly, even with the application of new fertilisers and pesticides later in the war years, fewer fields were being allowed a ley season, the land therefore not being ‘rested’. Secondly, even with new science and technologies, a ten-percent increase in yield is a very ambitious target in the most favourable of circumstances, let alone in the short term and in sustained time of crisis. The plan to put a million acres of grassland under the plough, and to add still more, became the fervent pursuit of almost every farmer and smallholder, along with the ‘Dig for Victory’ campaign embraced by householder in town and country. The supreme irony is that a ten per-cent increase in yield on the existing ploughed acreages could have matched the increase in production gained by the ploughing-up of an additional one million

¹⁵³ Douet, A. *Norfolk Agriculture, 1914-1972* pp.417-418, quoting Menzies-Kitchin, A.W. and Chapman, W. D., ‘War-time changes in the organisation of two groups of Eastern Counties farms’ *Economic Journal*, **LVI**, 1946, pp.37-85.

¹⁵⁴ Hurd, A. *A Farmer in Whitehall: Britain’s Farming Revolution 1939-1950 And Future Prospects* p.94.

¹⁵⁵ Dudley-Stamp, L. *The Land of Britain: Its Use and Misuse* p.405

acres. Production is about outputs, whilst productivity, or yield, is a measure of efficiency. Undoubtedly mechanisation, labour, natural and artificial fertilisers and improved drainage were significant contributory inputs. Nationally, the total acreage of crops and grass changed little, in fact declined slightly, between 1939 and 1945. A dramatic increase of almost 49 per-cent in arable land was mirrored by a 37 per-cent decrease in permanent grass and the acreage of actual tillage cropped increased by 57 per-cent from beginning to end of the war years. Dudley Smith asserts that:

‘the decrease in the overall acreage of crops and grass in the war years was due primarily to the huge demand from the fighting services for land for airfields and training grounds’.

adding the proviso that the loss of agricultural land was more than offset by that gained by reclamation.¹⁵⁶ Nationally, nearly six million extra acres were ploughed up, through to the war’s end, but with a net loss of around half-a-million acres.¹⁵⁷

Conclusion

Henry Upcher claimed that by the end of the war some 136,000 acres of Norfolk grassland had been ploughed.¹⁵⁸ It is difficult to ascertain the accuracy of this figure but it probably represents a reasonable estimate. It is likewise almost impossible to accurately quantify the acreage of actual and potential arable lost to the military for, whilst the acreage lost to airfields and training grounds is calculable, that lost to coastal defences, often to several miles inland, along with decoy and dummy airfields, anti-aircraft emplacements, QF, Starfish and searchlight sites, is for the most part ephemeral. Many such sites disrupted rather than denied access to farmland, or were made available again before the war’s end; some 146 searchlight sites in Norfolk are recorded on a contemporary military map but few archaeological remains survive.¹⁵⁹

¹⁵⁶ Dudley-Stamp, L. *The Land of Britain: Its Use and Misuse* p.422

¹⁵⁷ Foot. W. *The Impact of the military on the agricultural landscape of Britain in the Second World War* (MPhil thesis, University of Sussex, 1998) pp.8-9

¹⁵⁸ Upcher, H. ‘Norfolk Farming’ *Transactions of the Norfolk and Norwich Naturalists’ Society* p.99

¹⁵⁹ TNA WO 166/189 War Diary 2 Corps War Diary 1941, A.A.Searchlights in 2 Corps Area 1941

What is clear is that by 1945 Norfolk's arable acreage comprised 77 per-cent of farmed land, compared with 67 per-cent in 1939. Vegetable and potato growing had increased, the latter particularly in the east of the county. The Good Sands region had seen arable increase from 72 to 90 per-cent. Breckland's barley acreage roughly trebled by 30 per-cent to 1947.¹⁶⁰ The point is that Norfolk, with its already predominantly arable farming landscape, compared to counties beyond East Anglia, had less capacity to bring more acreage into cultivation and thereby increase output. Norfolk was also a county very much subjected *long term* to land given over to the military. In the event the land gained by ploughing up had to be off-set against land lost to the military – 51,000 acres all told, comprising airfields, the Stanford Battle Training Area, disruption to agriculture several miles inland of the coastal belt, along with myriad sites for searchlights, supply depots and ammunition parks. Stanford alone accounted for 17,500 acres. Upcher's claim of land ploughed indicates by comparison that approximately of all land use change in Norfolk during the war, about 62.5 per-cent was due to additional land under the plough, whilst military use accounted for 37.5 per-cent. That the war had a profound effect on Norfolk agriculture and farming methods is undeniable, but it was prompted more by wartime food production targets than the military.

Wartime changes in land use and farming technology and practice might almost be said to have constituted a second British agricultural revolution, instituting radical changes in the status and importance of farming. It was perceived by state and farmers alike that maximising the efficient use of farmland in pursuit of growing as much of the nation's food as possible, without significance reliance upon imports, was a priority. The 1947 Agriculture Act enshrined this ethos, which set standards for the following five decades. The County War Agricultural Committees were not disbanded; their worth had been proved in wartime and their relevance in the new agricultural era was signified by simply omitting the word 'war'.¹⁶¹ Norfolk's committees carried on well into the 1960s, still advising and supporting farmers about, and with, new technologies and practices. The Walsingham District Committee for example was investigating derelict land at RAF Langham as late as 1954 which the Air Ministry apparently intended to tidy up but then planned to acquire more land to extend the

¹⁶⁰ Douet, A. *Norfolk Agriculture, 1914-1972* p.309

¹⁶¹ Short, B. *The Battle of the Fields: Rural Community and Authority in Britain during the Second World War* p.375.

runway for jet aircraft.¹⁶² The St Faiths and Aylsham Committee records its aim, twelve years after the cessation of hostilities:

‘to maintain close contact with farmers in their areas and in co-operation with the advisory services to give leadership in the promotion of good farming in agriculture and horticulture.’¹⁶³

The CWAEC had become the farmers’ adviser, mentor and overseer, but also its supporter and champion against the insistent requirements of the Air Ministry. Nominally disbanded after the war’s end, Norfolk CWAEC continued to operate for many years. The impact of war food production is still felt in the present. In 2006 the 2,700 acres of the derelict Feltwell Fen, considered worthless and reclaimed by the CWAEC in 1941, came on to the market valued at almost £10 million, a figure based upon it being considered amongst the U.K.’s most fertile and productive farmland.¹⁶⁴

This chapter differs from earlier chapters in its emphasis on both the impact of wartime food production targets as well as the military. In the following concluding chapter the connective themes throughout this thesis will be reviewed and summarised as integrated factors in Norfolk’s wartime landscape.

¹⁶² MAF 80/4561 : Walsingham District Committee 1939-56, Minutes 14th October 1954

¹⁶³ MAF 80/4559 : St Faiths and Aylsham District Committee 1939-1964, Minutes 16th May 1957

¹⁶⁴ Eastern Daily Press 7th September 2006

Chapter 8 - Conclusion

The aim of this thesis has been to assess the impact of the Second World War on the landscape of rural Norfolk. It has chiefly discussed the changes brought about by militarisation, but has sought to do so against a background of the civilian landscape. Its chief objective has been to discuss together – under the umbrella of the landscape approach – aspects of the conflict that are normally treated in isolation.

The combination of archival and official documents, cartography, computer-aided mapping, assessment of upstanding structures and reference to secondary sources has brought a corroborative element to this study which reinforces the validity of the conclusions. This could not have been objectively reached by using just one individual source. It also reinforces the value of the inter-disciplinary nature of landscape history. The research involved has revealed so much more that is of interest but, firstly, is not under the direct remit of this thesis and, secondly, would take more time and space than allowed here. The limitations have excluded discussion of, for example, airfield defences, searchlight sites, decoy airfields, the Home Guard and civil defence measures. As indicated in the introduction, this thesis has focused on the rural landscapes of Norfolk; the urban landscapes of the three major towns in the county – Norwich, Great Yarmouth and King's Lynn – have their own histories, already well documented but awaiting assessment from the landscape perspective. It has been possible to allude only briefly to aspects of collective memory, commemoration, culture and heritage of the Second World War; these themes have become increasingly important and popular as the conflict recedes from human memory. In the same vein, space has permitted only passing reference to modern themes of military environmentalism, the role of the modern military in the conservation of flora and fauna in militarised landscapes. But despite these limitations, a series of meaningful observations can be made.

This thesis has demonstrated that landscape is indivisible from the human activity, in this case military and agricultural, that takes place upon it. The themes explored are not concepts but tangible historical and archaeological realities, intricately interconnected and the inter-disciplinary methodologies have proved invaluable in assessing and quantifying the impact that each had on the landscape. Aside from the politics and governance that, inevitably for worse, bring about the circumstances of war, the essence here is very much about the human experience and the landscapes in which it takes place, whether these take place directly on the

battlefield or in areas of defence and preparation. These are very much the elements of landscape history and hopefully this approach may encourage further studies of twentieth-century militarised landscapes in Britain, not in localised isolation, but as part of a wider conjoined local, regional and national context.

Despite landscape history being inter-disciplinary, some writers have taken a more conceptual or metaphysical view of the relationships between the land and human activity and, in so doing, offered generalisms rather than precise analysis. Matless writes that ‘war shook up the geography of England, unsettling people and their objects, transforming landscapes, moving things to where they weren’t before’ but makes almost no reference to the physical impact of the military on the landscape, focussing briefly on agriculture and more extensively on future post-war planning and reconstruction.¹ He also describes a consequence of war as being - along with other outcomes - the transformation of agriculture.² While such observations may be true, they need to be evaluated through the lens of region and place - and this is what this thesis has attempted to do.

In taking this very particular ‘landscape approach’, this thesis has shown that while the Second World War is normally treated, especially by archaeologists, as one datable ‘horizon’, it is more profitable to see landscape change in terms of two time periods. The first, from 1939 to 1942, was largely concerned with the needs of national defence in response to perceived German territorial aspirations. It was in this period that anti-invasion defences were rapidly constructed and in considerable number. Airfields were also part of this ‘defensive’ landscape but with operations confined to home defence, coastal patrols and minor tactical forays to the continent. The second period, from 1942 to 1945 was characterised by offensive operations, in preparation for taking the war to occupied Europe and Germany. This aspect is most evidenced in the increased number and size of airfields and the requisitioning of key areas of land for training areas. The expansion of airfields was particularly dramatic as far as Norfolk was concerned, especially after 1943 with the beginning of the Combined Bomber Offensive.

The idea of two periods of time is helpful but they should not be thought of as mutually exclusive, for none of the themes explored in this thesis existed in isolation. The discussions over requisitioning land for airfields while also retaining enough for food production, for

¹ Matless, D. *Landscape and Englishness* (London, 1998) Chapter 5 ‘Landscapes of War’ pp.173-188

² *Ibid.* p.173

example, took place concurrently. Moreover, as successive chapters in this thesis has explored, each individual aspect has its own distinctive pre- and post-war history for which the Second World War was only a short-term episode. By taking this longer-term view, it avoids the misleading perception of the Second World War as an isolated, single causal event. This is not to underestimate the war's material impact however; a uniform characteristic of the war years was an unrelenting intensification of application of resources, and hence pressure on the landscape, a theme that has recurred throughout this thesis. With this broad sense of period division in mind, it is worth reprising each element in order to draw out the overall significance.

The anti-invasion defences explored in Chapter Two had a very short operational lifespan, albeit a crucial one, but the principle of anti-invasion defence in Norfolk reached back to the sixteenth century and before. What is also now being appreciated is the level to which the coastline was fortified during the First World War and so the 'footprint' of the defences of the Second was not so much new, but rather of a greater intensity and was a response to a modern geo-political environment. Here the 'big geography' is important as the neutrality of the Netherlands during the earlier conflict meant that Norfolk was more in the line of invasion from Germany than it was during the Second, when the traditional invasion routes to England from France and the Low Countries re-emerged. The number and density of Second World War defences in the very earliest part of the conflict – especially the number of Stop Lines that ran across the county - can to some extent be said to reflect the thinking of the previous conflict. Thereafter, Norfolk was less vulnerable and this is reflected in the material evidence. Although the typologies of anti-invasion defences were broadly universal across Britain in terms of their approved design, construction and use, there is considerable regional variation in their strategic siting, deviation from Department of Works design drawings – notably with ECDBs and pillboxes – and use of local materials. Even operational chronology varies, as seen with the continued construction of pillboxes in Norfolk through to mid-1941 when, for example, the military strategy in the neighbouring county of Suffolk had decreed them fully obsolete. The correlations made between military war diaries, the implementation of official strategy, cartography and the evidence of upstanding structures in the landscape have therefore underlined the importance of studying archaeology and archival sources in combination.

Airfields by contrast have been shown to possess a much shorter antecedent history, dating from the First World War but with a steady expansion in the 1930s and an exponential increase from 1939. As has been discussed, the impact of their presence across Norfolk is directly related to wartime military strategy and to topography. Firstly, the proximity of East Anglia to mainland Europe, and especially Germany, was hugely strategically important from 1942 onwards. Secondly, the topography of the landscape itself facilitated that strategy. But while the idea that airfields were simply slammed down onto the landscape in the most brutal manifestation of top-down planning is a familiar one, as this thesis has shown, far from an exclusively authoritarian approach to the choice of locations, there was considerable negotiation with landowners, farmers and local authorities in the matter of their siting. The idea that there was a dialogue here – albeit perhaps mainly a one-sided one – has been endorsed further by the level of officialdom’s awareness of the opportunities and constraints offered by the landscape – a factor which has seldom been taken into account in previous studies. As with anti-invasion defences, the military understood the importance of topography and terrain. In particular with airfields, it has been shown that an appreciation of the varying soils, existing land use and infrastructure across Norfolk was essential. But while airfields were – and to some extent remain – highly visible structures in the landscape both from the point of view of their physical infrastructure and the role in post-war commemoration, it should not be thought that this visibility must mean that they automatically had greater quantitative representation in the landscape. As this thesis has demonstrated, evidence has shown is not actually the case; although almost all the agricultural land subsumed by airfields was arable, the relative proportion to the total, though not insignificant, was also less than might be expected in an already heavily arable region. Even so the landscape footprint of airfields has been shown to be considerable because of the durability of many upstanding built structures. One particular aspect that has been visited is the effect, or rather the lack of effect, on woodland, and its distinction from hedgerow and field trees. It is hoped that the conclusion to that chapter, in qualifying the extent to which airfields despoiled valuable agricultural land and disrupted existing patterns of life, has given more of an objective measure of their contemporary impact.

The third major aspect of landscape change directly associated with the conflict concerned land for training. The pragmatic truth is that the military has always to prepare for war, and practical training requires terrain. The training areas left scars in the landscape, but were redeemable for future use. Here the county is unusual in that, while the vast majority of

training areas reverted to civilian ownership, the Stanford Battle Training Area, long since re-named Stanford Training Area (STANTA) remains in use by the British Army. But what needs to be remembered here is that the area had been used during the First World War for military manoeuvres and so the use by the military during the Second is, historically speaking, entirely unsurprising. Moreover, this history of state intervention also extended to the inter-war period, where the planting of Thetford Forest by the Forestry Commission completely changed the fabric of the countryside. What makes Stanford stand out is its continued use beyond the Second World War and, from a cultural perspective, it is the renegeing by the military of their wartime guarantee that displaced civilians would be able to return that is important. The outrage surrounding the displacement of civilians and their livelihoods triggered national repercussions, being discussed in Parliament and resulting in a post-war public enquiry relating to its retention and proposed expansion; and the controversy continues to the present. Therein lies the value of the inter-disciplinary characteristic of landscape history; the infamous evacuation was essentially a modern manifestation of transhumance, with whole communities being moved on, never to return. Essentially one form of human activity was abruptly replaced by another.

While anti-invasion defences, airfields and military training areas are obvious manifestations of the conflict in the landscape, logistics and infrastructure are not 'high profile' subjects in discussions of regional landscapes in war.³ They are important however as the link between wartime production and military operations. While perhaps self-evident, without supply the airfields, the training areas and the overall military presence could not have functioned. Supply is an operational link in the chain which had its own impact in the landscape and was dependent on antecedent structures, that is, the existing road and rail networks. A clear conclusion of this thesis is that the region's rail network served both the logistical requirements of the military and the market needs of agriculture more than adequately during the war years. Whilst it is generally acknowledged that Britain's railways were mechanically exhausted by the war's end, it is because they did their job well.⁴ The rail network had far greater cross-country provision than today, with stations and freight sidings at regular intervals often exactly in locations where they would be needed. Only occasionally was enhancement in key locations such as Thetford, Dereham and Thetford, close to airfields and training areas, needed. Some passenger and freight services were withdrawn post-war,

³ Ellis, J. *Brute Force - Allied Strategy And Tactics in the Second World War* (London, 1990)

⁴ Savage, C. I. *Inland Transport* (H.M.S.O., London, 1957)

reflecting the steady increase in road freight and private car ownership, but the swingeing cuts inflicted upon the railways came only in the years after 1963 following the Beeching Report. The evidence discussed here unequivocally shows that the transport infrastructure coped more easily under intense pressure than might be imagined, as evidenced by the regular and frequent trains delivering firstly construction materials and, later, ordnance and fuel into hitherto quiet areas of the county.

This thesis has deliberately investigated the impact of the conflict on other less ‘military’ aspects, but whose history are often seen as inexorably bound up in the war. This is particularly the case with country houses. The sheer number of country houses and estates across Norfolk had clear potential for the military for requisitioning and their association with the elite and with social hierarchy and order dovetailed neatly with the authoritarianism of the military leadership itself. There was undoubted symbolism in senior military figures occupying country houses whilst lower ranks were accommodated in huts or under canvas in the parkland. They are also important because the extent of large landownership in Norfolk presents an almost feudal aspect to the wartime scenario – the traditional rural values coming to terms with a modernising, technological society. Country houses have always been seen as very ‘English and rural’ yet they represent the lifestyles of a tiny, though influential, minority of the population. But, as has been shown here, while the image of the ruined country house of the post-war period is a familiar one, it has been shown that a longer view demonstrates that their decline and in some cases demise is part of a much longer and multi-factored chronology, of which the Second World War was only one factor. Firstly not all the properties were of a size and capacity that lent themselves easily to headquartering and centralised accommodation; on occasion the same factors meant they were not suitable at all for the practical reasons of cost of heating and lack of electric light. Secondly, it is simply the case that the popular image of destruction and loss related to wartime requisition and occupation is inaccurate. As has been demonstrated, there were other factors in place leading to the decline of the country house from at least the beginning of the century, not least the loss of sons of the gentry in the First World War, increased taxation and the cost of maintaining large estates. The fact that few of the standard works listing the great country houses make mention of the Second World War in its history of each house, is telling. Certainly, some houses were damaged or ruined by military occupation, and lost in subsequent decades. Very few were lost during the war itself. The point is that, once again, the war was part of their chronology, not the whole.

Turning to the farming landscape, Norfolk was a well-established agricultural county, more so than much of the rest of Britain, long before the Second World War. The diversity of arable and livestock farming, the different soil regions of the county and the economic pressures of the first half of the twentieth century have been described in detail as a precursor to the wartime experience. An awareness of this longer history has illustrated that agricultural change came about due to multiple factors in the lead up to the Second World War. The war itself accelerated change but agriculture was not solely impacted upon by military requirements. The chief driver for change and intensification was the pressure of the government's national food production campaign from 1939. The purpose of detailing the agricultural background has been to try to quantify the two-fold, conflicting pressures on Norfolk's farmers – that of the plough-up campaign and the forfeit, largely of good arable and, required for military purposes. It would be easy to assume that an already busy agricultural region could do little to extend its capacity under the requirements of the plough-up campaign from 1939 but analysis has shown that it did, exceeding set targets. Despite the war years being seen as revolutionising farming, once again, as with much of the infrastructure of the county the Second World War was clearly one factor in a much longer-term chronology of a region already moving through periods of economic and technological change. Whilst the impact of the plough-up campaign certainly imposed more dramatic change on less agriculturally advanced or diversified regions, the Second World War was but one episode in a much longer chronology of the modernisation of agriculture in Norfolk.

The landscape history approach offers instructive analysis in investigating the complex direct relationships between human agency and built structures in the context of time and place. This thesis has demonstrated the inter-disciplinary nature of landscape history and its value in bringing a multi-faceted approach to investigating little researched aspects of that most written about conflict in human history, the Second World War. The methodology is not rigid one; some aspects of investigation have proved more useful through use of official documents and others more on cartographic comparison. This flexibility is a virtue since it encourages exploration of a range of diverse sources, and hopefully this thesis may serve as a guide to studying the landscape of the Second World War in other counties and regions of the country.

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APPENDIX 1 to CHAPTER 2:

TNA WO 199/85 Beach Defence Reconnaissance, June 1940

Eastern Command

The importance, in the early summer of 1940, of understanding the detailed vulnerability of the Norfolk coast to enemy invasion was not underestimated.

Earlier naval reports suggested that the eastern foreshore might be accessible for tanks although ‘considerable difference of opinion exists’ and it was strongly suggested this should be decided by tank trials. Ships of 12 to 15 feet draught were deemed able to navigate anywhere over the shore of The Wash at or near high water.¹ At high water ships would not have to bother about channels unless their draught exceeded 15 feet.² On 14th June Admiral Dreyer visited the Norfolk coast as far east as Bacton.³ ‘Experienced military officers’ considered the beach between Sheringham and Cley-next-the-Sea to be vulnerable to tank landing. Tanks were said to be capable of landing at Heacham at low water and moving inland, similarly at Hunstanton either side of high water, where they could get over sand dunes and a dyke with light bridging equipment, though rapid changes in weather conditions, heavy swell and surf could alter this scenario even in summer. Brancaster to Cley was considered unsuitable because of the saltmarsh. Concerned that the pier at Cromer was still intact, Dreyer recommended demolition charges being set. He concluded that ‘The Wash is in my opinion a dangerous area which we must be prepared to deny to the enemy.’ Even aside from direct assault, the enemy could land near Skegness and rush The Wash area with shallow draft motor boats laden with troops, and open sluices at Boston to flood the countryside to the south to block defenders moving to engage.

¹ The ECDB at Ongar Hill would have been unable to engage such craft. Op cit p.

² TNA WO 199/85 Beach Defence Reconnaissance: Eastern Command, Jan 1942 – July 1944, Letter HF/Int/31/1 15th June 1940.

³ Ibid. Secret letter from Admiral Dreyer. Dreyer had retired in 1939 but returned as a volunteer in the Royal Naval Reserve; in 1940 he served as advisor on anti-invasion measures under GOC C-in-C Home Forces.

Capt Croucher, Dock Master at Lynn, writes of shallow draught Dutch vessels fitted with modern navigation devices, and their masters knowing every channel from Cromer to King's Lynn. Built at Groningen and Delfzyl, Germanic sympathies were suspected in that area. Mr Palmer, a ships' broker, stated that the port of Lynn had been used often by German captains, their knowledge of The Wash being considerable, and one of their new shallow draft cargo vessels could make a very fast run across the North Sea with tanks, gear and troops aboard.⁴ Those vessels could anchor at Hull Sand to allow tanks to disembark on to hard, dry sand, followed by easy runs to Sandringham and RAF Bircham Newton. Snettisham Beach was thought an even better choice, for a 'quick run' to Bircham. A boom defence across the Lynn Channel and The Wash was recommended. Inland topography was not ignored in the reconnaissance report – it was suggested that securing of the high ground in West Norfolk could facilitate disembarkation of airborne troops. It seems the west coast of the county could not be over-protected.

A 'General reconnaissance of the coast from The Haven to King's Lynn for purpose of estimating the possibility of an enemy landing accompanied by wheeled and tracked vehicles' suggested that a landing in this area presented great difficulties from a navigational point of view. Apart from the channels themselves large craft would have to lie six to eight miles offshore from the high water mark. Much of this is sand at low water, so light craft would be needed before vehicles could be off-loaded into shallow water. The characteristic small creeks and tidal scourings would present obstacles, though would not stop infantry. The military objectives might actually be limited if the bridges over the Ouse and Welland were blown by defenders.⁵

Extensive shoal waters extend along the full section of nine thousand yards from Weybourne Hope to The Hood. The approach from seaward was clear for shallow draft craft but 'beach work' for heavy lighters would be difficult in conditions of heavy swell and variable winds. Dead calm would be needed for beaching heavy landing craft. Inland offered several road exits, as well as cross country options, and ample aircraft landing grounds in the hinterland. Tank movement would be slow however. The eleven thousand yards from The Hood to Brancaster harbour presented navigational hazards and, whilst the creeks were navigable at the top of spring tides they would be difficult without intimate local

⁴ TNA WO 199/85

⁵ TNA WO 199/85

knowledge, given constantly shifting channels. The foreshore comprised deep sand, firm to soft and wet, backed by salt marsh and were 'quite impracticable' for the disembarkation of armoured fighting vehicles. Infantry in light vehicles could be landed if weather risks were accepted. Brancaster harbour to Hunstanton over a distance of twelve thousand yards offered several areas 'with free exits from the beaches' on firm flat sand. The shallow water was reported to be impractical for AFVs but suitable for infantry and light vehicles. Then Hunstanton to Stubborn Sands featured a small bay, less subject to variations, sheltered, but with deeper water inshore and difficult to locate except in daylight. Finally, Stubborn Sands to King's Lynn was reported to be unsuitable for armoured vehicles but the Lynn Channel was very vulnerable, with clear deep water approach.⁶ In West Norfolk, then, King's Lynn was considered to be most vulnerable and all areas vulnerable to aircraft landing airborne troops.

A reconnaissance of the area from Ness Point, Lowestoft to Gorleston demonstrated a clear seaward approach, suitable for infantry and light vehicles but probably not tanks. Good vehicle exits at Gorleston could be easily blocked. The beaches were suitable for landing craft but not aircraft but the hinterland from Corton onwards presented possible aircraft landing grounds. There were few exits for tanks. Scroby Sand, one mile offshore, offered a fine natural obstacle to the approaches to Great Yarmouth, though craft could veer south if necessary. The harbour approach itself was easy and the beach suitable for infantry though not for armoured fighting vehicle (AFV) disembarkation. The piers and harbour would of course be useful for unloading enemy supplies and equipment. The port facilities therefore were vulnerable and blocking and mining were problematic. Main road exits were available to north, south and west but the river and marshy countryside inland restricted vehicles to roads only. Seaplanes however had a choice of landing areas, especially with the wide expanse of Breydon Water.

Caister-on-Sea featured dry sand and sand dunes up to thirty feet high – but with numerous exits in breaks between those dunes. Further north to Newport steep clay or sand cliffs reached fifty feet in height, then along to Winterton back the dune-scape returned. There was also a concrete

⁶ TNA WO 199/85 Secret Admiralty report to GOC CIC Home Forces 2nd June 1940 'Reconnaissance of beaches – Weybourne Hope to King's Lynn' and report from Naval Officer in charge Great Yarmouth 31st May 1940 'To determine whether beaches are suitable for the disembarkation and operation of AFVs or for landing aircraft.'

retaining wall at Winterton Ness and aircraft could not land on the beach as the sand was too soft. Free exit from the dunes to the flat, featureless countryside was a clear hazard however, made worse by gaps in the cliffs at Hemsby. Seaplanes could easily land on The Broads however. Tank landings were considered unlikely but they would make good speed across country until hitting the line of the Rivers Bure and Thurne, several miles inland. The conclusion as that the whole of this section, from Kessingland to Winterton Ness, was unsuitable for tanks – but vulnerable to almost all other forms of enemy landing, including seaplanes.

‘Taking into consideration the long stretches of coast with no or few exits for vehicles, the general nature of the hinterland, and the restricted sphere for tank operations due to marshy country and large areas of inland water, the section would appear to be an unlikely objective for this form of attack. It is however vulnerable to infantry and probably to motor bicycle motorised troops. Light vehicles also could be disembarked at almost any point except where a few local offshore obstructions exist. It is also vulnerable to infantry landing by seaplane or floatplane on inland lakes.’

Extensive shoal areas lay offshore from Winterton Ness to Weybourne Hope and deep water channels were plentiful. Nevertheless the section of more than twelve miles offered opportunities. The seaward approach at Happisburgh, with Haisborough Sand featuring as little depth as half-a-fathom presented a dangerous approach for even shallow draft boats on any tide. Deep water channels to north and south were better but strong currents and heavy surf prevailed outside the summer months. Wide, flat, soft, dry sand at high water mark were very suitable for infantry and light vehicles. Friable, crumbling, sheer cliffs offered occasional exits by ladder but where there were dunes, free exits allowed passage for infantry and tracked vehicles. As to the south, the flat terrain inland could be negotiated and although there were no landing grounds, the Broads again provided opportunities for sea- or floatplanes. The line of the North Walsham-Dilham Canal five miles inland presented another fine tank obstruction, except for the road crossings. Mundesley offered good exits inland for vehicles and useful assembly areas inland. A 250 acre field at Paston was said to offer a good landing ground – but this was in the process of being blocked in the prescribed manner. The cuttings and embankments of the Norfolk and Suffolk Joint Railway provided excellent obstacles inland. The coast between Overstrand and Cromer was

reported to be similar generally but offered numerous exits from the beach for infantry and vehicles, though the beaches themselves were intractable to aircraft. Inland was unfortunately assessed as ‘first class tactical country in immediate hinterland.’ Tanks would be able to make good progress inland.

It was concluded then that the areas Winterton Ness to Bacton Green and Sheringham to Weybourne Hope were most vulnerable, but even then would require precise weather conditions.⁷ Admiral Dreyer’s recommendations in a letter dated 3rd June 1940 ‘East Coast of England’ to Captain J R Storey, Eastern Command, suggested blocking gaps at Hopton and a tunnel through the cliff at Gorleston. Similar gaps at Ormesby St Margaret, Hemsby and Winterton should be blocked with concrete obstacles and mines. Dune gaps at Cromer must be blocked with concrete obstacles, dannert wire and mines. Road crossings North Walsham and the Dilham Canal should be prepared for instant demolition. A gap at Overstrand had to be attended to and Cromer Pier should have a large section removed to render it useless to the enemy. Seven gaps in cliffs and dunes between Sheringham and Cley must be blocked. The sands north of Wells would provide good landing grounds for aircraft at low water and Dreyer concurs with much of the other report – also that Dutch officers were navigating into King’s Lynn up to September of 1939, though the harbourmaster said that even local pilots would not try it after dark.

⁷ WO 199/85 [T.O.O. 1625/31/5/40.]

APPENDIX 2 to CHAPTER 2

Tabulated summary of Emergency Coastal Defence Batteries along Norfolk coastline from west to east

Location	Established	Closed	Armament	Condition
King's Lynn (Ongar Hill) TF 5901 2411	1940	1941	2 x 6 inch guns	Structural remains of observation tower
Hunstanton TF 6744 4186	1940	1943	2 x 6 inch guns	Lost
Brancaster (High Cape) TF 774 452	1940/41	1944	2 x 6 in guns	Brickwork remnants on beach
Cley Eye (Wells-next-the-Sea) TG 0512 4514	Early 1941	Closed Jan 1944	2 x 6 inch guns covering Holkham Meals and Wells harbour	Remnant on beach
Weybourne	1940	1958	A.A.guns	Part-reinstated for heritage purposes
Sheringham TG 1493 4344	1940	1944	2 x 6 inch guns	Cliffside remains
Cromer TG 2268 4193	1940	1944	2 x 6 inch guns	Gone

Mundesley TG 3092 3707	1941	'Care and maintenance' 1944	2 x 6 inch guns - removed 1945/46	Relatively intact except for gun covers. Considered 'very rare' for Norfolk. ⁸
Happisburgh TG 3860 3090	1940	1945	2 x 4.7 in guns	Gone
Winterton TG 4970 1922	1940	1945	2 x 4 in guns	Gone
West Caister (Nova Scotia Farm) TG 50950 13349	1940	1941	Mobile artillery in casemates	Casemates remain
Gt Yarmouth /Caister North Denes) TG 5307 1028	1940	1945	2 x 6 inch guns	Gone
Yarmouth (Denes) & Gorleston (South Pier) TG 534 043	June 1940 Mid-1941 1 gun moved to GY side of harbour to provide enfilading fire	1945	Not technically an ECDB but an anti- torpedo boat site with 2 x 12 pdrs	Gone

⁸ <http://www.heritage.norfolk.gov.uk/record-details?MNF14142> accessed 7th Oct 2017

Gorleston (Golf Links) TG 530 020	Mid-1940	'care and maintenance 1945 - guns still in situ 1947	2 x 6 in guns	Gone
Hopton-on-Sea ⁹ TG 534 006	1941	1944-45 'care and maintenance'	2 x 6 in guns	Gone

APPENDIX 3 to CHAPTER 2:

List of nodal (defended) points Norfolk in 1942

Acle	Diss	Melton Constable	Thetford
Attleborough	Docking	Mundesley	Thorpe Market
Aylsham	Fakenham	Narborough	Watton
Binham	Foulsham	North Walsham	West Runton
Blakeney	Happisburgh	Norwich	Weybourne
Burnham Market	Holt	Overstrand	Wroxham
Castle Acre	King's Lynn	Reepham	Wymondham
Cley-next-the-Sea	Langham	Saxthorpe	Great Yarmouth
Coltishall	Little Walsingham	Sheringham	
Cromer	Loddon	Stiffkey	
Dereham	Ludham	Swaffham	

⁹ Hopton-on-Sea was in the administrative county of East Suffolk until local government reorganisation in 1974.

APPENDIX 1 to CHAPTER 3: Airfield Gazetteer 'A' – Location, chronology, post-war use

Airfield	Geographic Environment	Chronology and Facilities	Runways	Post-war use or disposal
ATTLEBRIDGE (USAAF). Actual location Weston Longville	Several small roads closed in Weston Longville parish. ¹⁰ Green Farm subsumed, along with orchard and roadside trees Hungate Common in middle of W end main runway	Within general programme to provide principal stations with satellites, pasture at Hungate Common selected as satellite for Swanton Morley. Constructed 1941-42 with rudimentary grass runways. Late 1942 Costain redevelop site with larger, hard runways, including 36 pan-standings off perimeter track. ¹¹ 1943 - assigned to USAAF and closed for further redevelopment as Class A heavy bomber base; peri-track further extended, whole area enlarged and 50 new hard-standings built. ¹² Later, satellite for Horsham St Faith. Busiest early 1944. ¹³ Accommodation originally in local houses, eventually accomm. for 2,900 in 8 dispersed sites to South ¹⁴	1120 +1120 + 1080 yards 1220 +1220 + 1120 yards 2000 +1400 + 1400 yards (x 50 yds wide). ¹⁵	Reverted to satellite for Great Ashfield, Suffolk (Maintenance Unit). Then designated as ammunition storage depot to 1948. ¹⁶ Site disposed of between 1959 and 1962. Now turkey sheds; control tower is Bernard Matthews' site office. ¹⁷
BARTON	340 acres immediately	Often overlooked by chronologists. Built 1939,	Non-specific runways,	NNHER 20129 records

¹⁰ Freeman, R. A. *Airfields of the Eighth: Then and Now* (Old Harlow, 2001) pp.24,25

¹¹ Ibid. p.25

¹² Bowman, M. *World War 2 RAF Airfields in Norfolk* (Barnsley, 2008) p.9

¹³ Freeman, p.25 *Airfields of the Eighth*

¹⁴ Freeman, R. A. *Bases of Bomber Command* (London, 2001) pp. 80,82

¹⁵ Delve, K. *The Military Airfields of East Anglia: Norfolk and Suffolk* (Marlborough, 2005) pp.25,26

¹⁶ Bowman, M. p.9

¹⁷ Freeman, R.A. *Airfields of the Eighth* p.25

BENDISH (RAF)	adjacent to Marham. Woodland used to partly hide Wellington bombers. ¹⁸	satellite for Marham but replaced in this role in 1942 by Downham Market. By 1940 being used as a decoy site. ¹⁹ Grass surface unsuitable for later heavy bombers, also too close to parent station, so simply abandoned 1941.	simple grassed areas.	large military bunker and 2 Type 22 pillboxes nearby. ²⁰
BIRCHAM NEWTON (RAF)	Farmland. Bordered by Honey Hills N-S to W. Fakenham Rd NW-SE to E. Bircham Rd NE-SW to SE. Marshy ground to East. Interesting slab of woodland to NW. As with many East Anglian airfields, water supply came from boreholes. Three here, supplying 100,000 galls. storage tank.	The only surviving World War 1 airfield in Norfolk. Bomber station 1930s. Coastal Command base in WW2. Built to exacting pre- war Expansion standards. Focus of public engagement – in May 1939, 5,000 people watched major air display. ²¹ Wide range of aircraft and functions for over forty years. Dec. 1944 accommodation for 3,000.	Always grass runways (1300 yds.) but very high quality buildings associated with pre-war RAF Expansion period. 1950s – consideration given to 2000 yd runways but ‘ground undulations would require heavy grading work’. ²²	1945 to 1962 variously occupied by Fighter, Transport and Technical Training Commands. Closed 1962. ²³ Now training site for CITB with extensive contemporary architecture remaining.
BODNEY (RAF / USAAF)	Slightly rolling farmland. ²⁴ Heathland. Some woodland removed. ²⁵ Not too close as	Fear of attacks on permanent stations led to remote locations as satellites for dispersed and remote functions. ²⁶ (Is Bodney remote, relative	Hard-standings dispersed in woodland bordering the airfield. ²⁹	1945 de-requisitioned and sold to pre-war owner Major J C T Mills.

¹⁸ Bowman, M. *World War 2 RAF Airfields in Norfolk* p.11

¹⁹ Ibid. p.11

²⁰ Ibid. p.11

²¹ Ibid. p.12

²² Delve, K. *Military Airfields of East Anglia* pp.35-38.

²³ Bowman, M. pp.16,17

²⁴ Freeman, R.A. *Airfields of the Eighth* p.32 Bowman p.17

²⁵ Freeman, R.A. *Bases of Bomber Command* p.85

	with Barton Bendish. Site borders Bodney Carr (N) and Blackwater.	to any rural location in Norfolk?). Opened 1940 as satellite to Watton. Requisitioned local housing. 1943 transferred to USAAF. Accom. For 1700. 'Essentially a large, roughly circular field'. ²⁷ 'Square grass field'. ²⁸	Steel mat and PSP hard-standings installed, with extra taxi-ways in tarmac and concrete to take weight of P-47 Thunderbolts. ³⁰ Grass runways throughout. 1,000 + 900 + 900 at Dec 1944. ³¹	Particular contractors specialised in re-claiming materials from temporary war-time airfields. St. Ives Sand & Gravel Company as 'both midwife and undertaker' supplying hardcore for construction and removing it for subsequent sale and re-use. ³² Site completely reverted to agriculture but control tower extant. But Freeman also says absorbed into STANTA. ³³
COLTISHALL (RAF)	Farmland / estate	Built 1939 Expansion bomber airfield with characteristic Lutyens architecture, permanent buildings and 5 C-Type hangars. Changed to fighter base before opening in 1940. ³⁴	Grass (not concrete until 1950 and extended 1958), although Sommerfield track laid in 1944.	Much extended and developed post-war. Closed 2006 – last station in continuous use since Battle

²⁶ Bowman, M. *World War 2 RAF Airfields in Norfolk* p.17

²⁹ Freeman, R.A. *Airfields of the Eighth* p.32; Delve, K, pp.40-42.

²⁷ Delve, K. *Military Airfields of East Anglia* p.40

²⁸ Bowman p.17

³⁰ Freeman, R. A. *Airfields of the Eighth* pp.32-34

³¹ Delve, K. pp.40-42, Bowman, M. p.17

³² Freeman, R.A. *Airfields of the Eighth* pp.32-34

³³ Freeman, R.A. *Bases of Bomber Command* p.85

³⁴ Bowman, M. pp.23,24, D, K. pp.49,50

		<p>Accommodation for 2,100 by 1944. 'Overspill' with Sector Ops Room based at Stratton Strawless Hall.³⁵</p> <p>Satellites at MATLASKE and LUDHAM.</p>	2000 + 1400 + 1400.	<p>of Britain.</p> <p>2012 – conservation work imminent.</p>
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³⁵ Delve, K. pp.49,50

DEOPHAM GREEN (USAAF)	Farmland. '6 miles hedges, 1,400 trees removed' Local roads closed/diverted, one re-opened post-war utilising part of a runway. ³⁶ 'a sandy-heath area well-suited to airfield construction'. ³⁷	Constructed 1942-43 by Laing to Class A spec; 500,000 cubic yds. Soil excavated, 223,000 sq.yds. concrete laid, 32,000 sq.yds tarmac. Not occupied immediately. No clear reason for this but there was actually a surplus of airfields for the USAAF in 1943, because crews were still being trained in the U.S. Tech facilities and accomm for 2,900 in temporary buildings. USAAF occupied Jan 1944, reverting to RAF late 1945. ³⁸ Assessed for expansion in 1944, especially runways, but not recommended because it would have involved demolition of a school, a farm and ten cottages. ³⁹	Concrete and tarmac 2000 + 1400 + 1400 (x 50 yds)	Abandoned 1948. Now agricultural.
DOCKING (RAF)	Sunderland Farm (known locally as Sunderland Airfield) 1m NE village, LNER ran longitudinally below site	Satellite for Bircham Newton. Coastal Command convoy protection. Meteorology functions. Officers' mess in Docking Rectory ⁴⁰ Accomm. For 900. ⁴¹	Grass with concrete peri. 1730 + 1400 + 1400. Largest aircraft probably Wellingtons. ⁴²	Closed 1946, sold 1958. ⁴³
DOWNHAM	Bexwell (locally referred to	Initially satellite to Marham; Main contractors	Concrete.	Closed 1946, disposed of

³⁶ Freeman, R.A. *Airfields of the Eighth* pp.68,69

³⁷ Delve, K. p.57

³⁸ Freeman, R.A. pp.68,69 Delve, K. pp.57-59

³⁹ Delve, K. pp.57-59

⁴⁰ Bowman, M. p.37

⁴¹ Delve, K. pp.60-62

⁴² Ibid.

⁴³ Bowman, M. p.42

MARKET (RAF / USAAF)	as such perhaps because of WW1 landing ground) ⁴⁴ , east of Downham Mkt. Farmland. Wimbotsham to Crimplasham road closed across North of site. ⁴⁵	Messrs. W C French. Opened 1942 to Class A specification. Dispersed camp south of Bexwell Hall for 2000. Hall itself officers' mess. 1943 second Norfolk site to have FIDO installed. ⁴⁶ Decoys at South Acre and Wormegay. ⁴⁷	1900 + 1400 + 1400 x 50 yds., 36 pan standings. ⁴⁸	1957, reverting to agriculture ⁴⁹ but as at 2012 has commercial units on site.
EAST WRETHAM (USAAF) Satellite Honington orig.	'Dry, sandy brecklands (sic) of south-west Norfolk were ideal for locating grass-surfaced airfields as no extensive under-surface drainage systems were necessary.' 'Immediate area heavily wooded and remote' ⁵⁰	Satellite of Honington (Suffolk) 1940. Grassed surface could accommodate only Wellingtons at most, then assigned to USAAF 1943. Planned to bring to Class A standard but not done when retained as a fighter base – so grass sufficed. Site configuration unconventional, described as 'hurriedly acquired'. Requisitioned local housing and temporary accommodation. Wretham Hall requisitioned as officers' mess. ⁵¹	Landing area 1880 x 1400, grass then Pierced Steel Planking laid on 1944 by USAAF. 36 hard standings. Service roads and h/s tarmaced. ⁵²	Used for housing Polish veterans and families late 1940s. Parts later incorporated into STANTA. ⁵³ Most original building still extant. Also bird reserve.
FELTWELL (RAF)	Edge of Feltwell Fen	Classic Expansion period design. Opened 1937 for existing bombers. Grass oval and semi-circle C-type hangars	Grass. 1800 + 1400 + 1200 Dec '44, Sommerfield track in	1954 third runway considered but for 'very heavy grading, severing the

⁴⁴ Delve, K. pp.63,65

⁴⁵ Freeman, R.A. *Bases of Bomber Command* p.131

⁴⁶ Ibid. pp.131-132

⁴⁷ Delve, K. pp.63,65

⁴⁸ Ibid.

⁴⁹ Freeman, R.A. p.132

⁵⁰ Freeman, R.A. *Airfields of the Eighth* p.82.

⁵¹ Freeman, R.A. *Bases of Bomber Command* p.133

⁵² Freeman, R.A. *Airfields of the Eighth* p.82

⁵³ Freeman, R.A. *Bases of Bomber Command* p.133

		Accomm. For 1800. ⁵⁴	places, with grass. ⁵⁵	B1112 and the demolition of a bungalow, house and bakery. ⁵⁶ Continuous use since WW2 – Thor missile site 1958-63. and now used by USAF, for Mildenhall accommodation. ⁵⁷⁵⁸
FERSFIELD (USAAF) Partnered Knettishall	Spectacles East of Kenninghall Place. Kenninghall Lodge adjacent dispersals.	Built as standard Class A bomber airfield 1943. Not used fully but as bomber base for secret – and unsuccessful - Operations Aphrodite and Anvil missions, which were abandoned end 1944, then returned to RAF but not used. A curious, apparent waste of resource investment. Accomm. For 2900. ⁵⁹	2000 + 1400 + 1400 concrete. ⁶⁰	RAF storage of Mosquitoes in 1945. Little trace left with rapid reversion to agriculture.
FOULSHAM (RAF)	North end Manor Farm and remains of St Peter's Church	Opened 1942 but inspection deemed it not fit for purpose, with problems with mud on surfaces. Runways then consolidated with tar and wood-chip.	Tar and wood-chip. 1900 + 1400 + 1350 37 pan h/s 7 hangars. ⁶³	Used by USAF ground units 1950s, disposed of 1980s. ⁶⁴

⁵⁴ Freeman, R.A. *Bases of Bomber Command* p.136, 137. Delve, K. pp. 75-78. states accommodation for 2200

⁵⁵ Delve, K. pp.75-78

⁵⁶ Delve, K. p.78

⁵⁷ Freeman, R.A. p.137

⁵⁸ Delve, K. pp.79,80

⁵⁹ Ibid.

⁶⁰ Ibid.

		Accomm 2500. ⁶¹ Dispersed in sites on farmland to south of Skitfield Road. Kirk & Kirk Ltd erected many of the buildings. FIDO installed 1944. ⁶²		
GREAT MASSINGHAM	Only 2 miles from main a/f at West Raynham; Hedges and trees cleared; ditches filled. ⁶⁵	1940, grass, satellite W Raynham; upgraded concrete A 1944; minor use after war 1943 relinquished for Unit Construction Company Ltd to hard-surface. Re-opened early 1944. Extended runways led to overlap circling with W. Raynham. Accomm. max 2200.	2000, 1400, 1400; 36 h/s	Little post-war use and late 1950s sold off. Outline looks intact. ⁶⁶
HARDWICK (USAAF) <i>(see Delve quote</i>	Some domestic sites in woodland. ‘During late 1941/ early 1942, another great swath	Site originally requisitioned for RAF use 1941. ⁶⁷ Like Hethel, planned for RAF use, site had 3 T2 hangars with technical buildings. Accomm temporary Nissen hut type.	Concrete 30 h/s increased to 50 for USAAF. Some pans, later	RAF ownership continued and 1954 survey considered that any extension would require roads to be severed

⁶³ Ibid. pp.86,88

⁶⁴ Ibid. pp.86,88

⁶¹ Delve, K. p. 81-83

⁶² Freeman, R.A. *Bases of Bomber Command* pp.86,88

⁶⁵ Delve, K. 90, 92

⁶⁶ Freeman, R.A.88, 91

⁶⁷ Delve, K. p.96

<p><i>about Suffolk, not Norfolk)</i></p>	<p>of Suffolk countryside was transformed from peaceful agriculture to a 'state of the art' military airfield.' (Delve p96)</p> <p>Much 'blacked out' on 1946 aerial photo.</p>	<p>Built by John Laing & Son Ltd. With 'four miles of surface drains, 13 miles French drains, 13 miles roadway, five miles sewers, seven miles water mains and 4,750,000 bricks'.⁶⁸ 1942 assigned to USAAF.</p> <p>Accommodation at Dec 1944 – 3,000</p>	<p>spectacles.⁶⁹</p> <p>2000 + 1400 + 1400⁷⁰</p>	<p>and four cottages demolished. Closed 1962.⁷¹</p> <p>Buildings demolished, runway part removed but site still used for aviation.</p>
<p>HETHEL (USAAF)</p>	<p>Hethel is typical S Nfk 'wooded' land; this shows on the '46 aerial photo, around the site and even within the perimeter track.</p> <p>Air Ministry plan shows much more tech site to East right up to Long Wood.</p> <p>Peri-track runs right through Stanfield Hall wooded area. Potash Fm in middle of tech site – what happened to it?</p>	<p>Requisitioned 1940. Similar Hardwick – immediate hard runways but temporary-style buildings. Early RAF heavy bomber field, contracted 1941-42 by George Wimpey & Co Ltd. and extended to provide more hard standing for US heavy bomber group.</p> <p>Accomm 3,000.</p>	<p>Concrete part-covered with tarmac and wood-chip.⁷²</p> <p>2000 + 1400 + 1400, 36 h/s increased to 50.</p>	<p>RAF fighters post-war, then personnel transit centre, tasked with de-militarising Britain; also housing displaced persons. 1950s farmed by Ministry of Agriculture but still available to military. 1954 survey showed limited expansion potential as it would involve cutting an adjacent road and a considerable proportion of Ketteringham Park would be lost and many trees felled... ' the site is said to be very wet'⁷³. St Ives removed some concrete for</p>

⁶⁸ Freeman, R.A. *The Mighty Eighth* p.116

⁶⁹ Ibid.

⁷⁰ Delve, K. pp.96-98

⁷¹ Ibid.

⁷² Ibid.

⁷³ Delve, K. pp. 99-102

				hardcore use. Sold to Lotus 1960s. ⁷⁴ .
HORSHAM ST FAITH (RAF /USAAF)	<p>Large area of flat farmland but close to urban area S & W. Unusual in that respect. Main Norwich Road diverted to where it is now. Heath Fm inside site.</p> <p>Not welcome by populace. Main A140 diverted.⁷⁵</p> <p>Proximity to Norwich brought risk to civilian population, six crashes occurred at urban sites, with two child deaths.⁷⁶</p>	<p>1938 farmland to east of A140 selected for permanent RAF bomber station. Building began 1939, opened 1940.⁷⁷ 5 C-type hangars semi-circled around bombing circle, permanent brick and tile buildings with central heating and high standards of accommodation.</p> <p>Sept 1942 transferred to USAAF and upgraded to Class A. Accommodation 2,000.⁷⁸</p> <p>Interesting that main runway is orientated towards Norwich itself.</p>	<p>Grass</p> <p>2000 + 1400 + 1400 and 50 loop h/s.</p>	RAF 1945- 1963, then, to present, Norwich Airport, operated initially by local authority.
LANGHAM (RAF) Cockthorpe	<p>Cottage Plantation to E unaffected although on site boundary.</p> <p>Rare dome trainer building remains.</p>	<p>1940 grass emergency landing ground. 1941 satellite of Bircham Newton. 'Strong cross-winds a problem here'.⁷⁹</p> <p>1942 raised to independent status. Variety of extensive operations by RAF, Coastal</p>	<p>Grass initially. From 1942 tar on concrete.⁸¹</p> <p>2000 + 1400 + 1400</p>	Dutch Air Force training school to 1947. US Army drone activity to 1957. Also emergency landing ground for Sculthorpe. Resurfaced 1953, closed 1959 and sold

⁷⁴ Freeman, R.A. *The Mighty Eighth* pp.123-4

⁷⁵ Freeman, R.A. *Bases of Bomber Command* pp.92-94

⁷⁶ Ibid.

⁷⁷ Freeman, R.A. *Bases of Bomber Command* pp.92-94

⁷⁸ Freeman, R.A. *The Mighty Eighth* pp.132,134

⁷⁹ Bowman, M. p.67

		Command and Fleet Air Arm. Accomm. 2,400 ⁸⁰		off to agriculture in 1961. ⁸²
LITTLE SNORING (RAF) Orig satellite of Foulsham - 36 loop hardstands + 5 hangars	1946 aerial completely blacked-out The Ling, Brick Kiln Plantation, 40 Acre Pl, Brookhill Pl, Lawn Pl. Park, Thursford Hall. Unaffected Thursford to Little Snoring road closed. ⁸³ Re-opened 1960s using part of perimeter track. ⁸⁴	1942-3 built by Taylor Woodrow in seven months as Class A satellite to Foulsham. ⁸⁵ Heavy bombers and also Mosquitoes fighter-bombers – a number of Norfolk sites were used as post-wars storage for this marquee. Accommodation 2,200 at December 1944. ⁸⁶	Owing to gradient of land, some h/s sited off north side of peri. ⁸⁷ Concrete 2000 + 1400 + 1400	Post-war aircraft storage. Redundant 1958.
LUDHAM (RAF)		1941 built as additional satellite for Coltishall. ⁸⁸ But also for forward deployment, especially for maritime operations. One of very few exclusively fighter stations in Norfolk. 1943 redevelopment for USAAF fighter units but they never deployed. Fleet Air	Grass initially but 1943 three concrete and tarmac runways and 50 new dispersals surfaced by PSP. ⁹⁰	Decommissioned 1945. Scenes for <i>Conflict of Wings</i> filmed here in 1954. ⁹¹

⁸¹ Delev. K. pp.125-8

⁸⁰ Delve, K. pp.125-8

⁸² Bowman, M. pp. 69, 71

⁸³ Ibid. pp.71,72

⁸⁴ Freeman, R.A. *Bases of Bomber Command* p.96

⁸⁵ Bowman, M. pp.71,72

⁸⁶ Delve, K. pp.134-6

⁸⁷ Bowman, M. pp.71,72

⁸⁸ Ibid. p.72

		Arm arrived in 1944 but no activity until RAF returned in 1945. ⁸⁹ Accom.1,700Accomm. 1,700.		
MARHAM (RAF)	<p>Breckland, free-draining heath; always held interest for air operations. Possible issues with having to close too many roads if old Narborough site chosen, so Marham was a good alternative.⁹²</p> <p>Farmland. 'Frying pans' going into extant fields W. (Chapel Hill).</p> <p>Two new public roads to replace those closed.⁹³ Moved section of A1122 at south-east with heavy bomber redevelopment.</p>	<p>First World War landing ground of 80 acres 'revived' under 1933 Expansion scheme. Built 1936, opened 1937. Fully permanent station of 200 acres with flying field and C-Type hangar disposition. with 13 acres of playing fields, church, cinema, shops – self contained community. 6,500,000 bricks, 3,000 tons cement, 100,000 sq.ft. glass, 30 miles cable, seven miles drainage pipe.⁹⁴ Technical and barracks sites accessible from village.</p> <p>Redevelopment took 1,000,000 sq.yds.concrete. workforce laid 1,850 cubic metres concrete each day. Decoys at South Acre, South Pickenham, Swaffham, Wormegay, Barton Bendish.⁹⁵</p> <p>Accomm. 2,700.</p>	<p>Grass flying field. 1940 asphalt pan h/s, at least 30 by 1942.</p> <p>1944 redevelopment as very heavy bomber base, with concrete runways:</p> <p>2000 + 2000 + 2000 x 100 yds (twice width of Class A standard) taking in new land to south and south-west. About 1,100 men employed for 18 months at cost of £1,740,000.⁹⁶ Some re-shaping of overall layout and peri-track.</p>	<p>Closed 1945 for concreting of runways for post-war use. Re-opened 1946 as very heavy bomber base for experimentation operations.⁹⁷</p> <p>Continued extensive RAF use to present.</p>

⁹⁰ Ibid.

⁹¹ Bowman, M. p.76

⁸⁹ Delve, K. pp.137-139

⁹² Freeman, R.A. *Bases of Bomber Command* pp.144-147

⁹³ Bowman, M. pp.76,77

⁹⁴ Ibid. pp.76,77 and Freeman, R.A. *Bases of Bomber Command* pp.144-147

⁹⁵ Delve, K. pp. 140-144, 146

⁹⁶ Freeman, R.A. pp.144-147

⁹⁷ Freeman, R.A. 144-147

<p>MATLASKE or MATLASK</p> <p>(RAF) Satellite of Coltishall</p>	<p>‘E’ dropped on many records, especially in RAF records.⁹⁸</p> <p>Hedgerow trees surely removed</p>	<p>Requisitioned 1940, as apparent that pressure on fighter parking at Coltishall necessitated a satellite. Ultimately fully integrated with Coltishall.</p> <p>‘Hastily built’ leading to severe drainage problems throughout its operational life.</p> <p>Accomm in grounds of Barningham park, officers in Hall, described as ‘charming’.⁹⁹</p>	<p>Grass throughout but later Sommerfield net tracking made in Norwich by Boulton & Paul.¹⁰⁰</p> <p>1600 + 1300.</p> <p>Note: 3rd US Engineer Aviation Battalion underwent training work here, specialising in rapid airfield construction; they may have installed and removed PSP and SMT of type to be used in Normandy.¹⁰¹</p>	<p>Closed Oct 1945.</p> <p>Little remains overall but some concrete perimeter track.</p>
<p>METHWOLD</p> <p>(RAF) Satellite of Feltwell</p>	<p>‘Stretch of open fields in Breckland’.¹⁰²</p> <p>‘Stretch of flat land S of village’¹⁰³</p> <p>Numerous shelter belts and hedgerow trees removed</p>	<p>1938/39 Air Ministry seeking dispersal landing ground for Feltwell. Woods and plantations offered natural camouflage cover for aircraft.¹⁰⁴</p> <p>1943 closed for upgrading to Class A. F H Higgs Ltd main contractors. Thenceforth higher standard than parent base.</p>	<p>Grass runways + later h/s.</p> <p>Concrete 2000 + 1600 + 1500. 36 loop h/s + 1 pan h/s.¹⁰⁶</p>	<p>Lancasters based here to 1946, retained to 1958.</p> <p>Reverted to agriculture 1960s. Most of concrete broken up, poultry sheds. Much of one runway left.</p>

⁹⁸ Delve, K. pp.152-4

⁹⁹ Bowman, M. pp. 83-85

¹⁰⁰ Ibid.

¹⁰¹ Delve, K. pp.152-154

¹⁰² Freeman, R.A. *Bases of Bomber Command* pp.150-151

¹⁰³ Delve pp.162-164

¹⁰⁴ Freeman, R.A. pp.150-151

		Accomm. 1,400 - 2,200. ¹⁰⁵		
NORTH CREAKE (RAF)	<p>Bunker's Hill – farmland.</p> <p>Removed road running SE-NW. Egmere Farm to S.</p> <p>Burnham Thorpe to Walsingham road closed across airfield.</p> <p>Some h/s by Egmere Wells – Crabbe's Castle road, which closed to civilian traffic.¹⁰⁷</p>	<p>Decoy for Docking from 1941 and as such unusual to be developed as a base.¹⁰⁸</p> <p>Built 1942 to Class A standard by Taylor Woodrow. Flying field cost £331,000. W Lawrence & Son Ltd built buildings at £336,000.</p> <p>Domestic sites for 3,400 on farmland to east.; technical/admin sites bordered Wells-Fakenham roads.</p> <p>Considered for upgrading to very heavy bomber status but surveys decided against this and Sculthorpe was chosen.¹⁰⁹</p>	2000 + 1400 + 1400 yds + 36 h/s, mostly loops. ¹¹⁰	<p>To 1947 Mosquito storage.¹¹¹</p> <p>Then reverted to agriculture, runways extensively removed. Control tower now private house.¹¹²</p>

¹⁰⁶ Freeman, R.A. pp.150-151

¹⁰⁵ Delve pp.162-164; Freeman pp.150-151

¹⁰⁷ Freeman, R.A. *Bases of Bomber Command* pp.98-99

¹⁰⁸ Delve, K. pp.174,175

¹⁰⁹ Freeman, R.A. pp.98-99

¹¹⁰ Delve, K. pp.174,175

¹¹¹ Ibid.

¹¹² Freeman, R.A. pp.98-99

<p>NORTH PICKENHAM (USAAF)</p>	<p>190 feet above sea level.¹¹³ ‘...local topography restricted main runway length to 1,900 yds instead of normal 2,000 & most of hardstands laid to NE side of airfield’.¹¹⁴</p>	<p>1944, relatively late heavy bomber base Class A. ‘Cramped ‘ site.¹¹⁵</p> <p>Accomm. 2,900 in valley to east.¹¹⁶</p>	<p>Tarmac and concrete.</p> <p>1900 + 1400 + 1400 x 50 yds.</p>	<p>Post-war various RAF functions, 1945 satellite for Shipdham, even reverting to USAF 1954. THOR site 1958-63 but abandoned when fixed sites seen as vulnerable compared to V Force. CND protests 1959. Kestrel trials 1964, then closed. St Ives And & Gravel reclaimed some of the site Mostly agriculture and poultry now.¹¹⁷</p>
<p>OLD BUCKENHAM (USAAF)</p>	<p>Woodhall Farm right in middle.</p> <p>195 ft above sea level.</p>	<p>Built 1942/43 Taylor Woodrow Ltd to Class A, straight to USAAF.</p> <p>Accomm. 2,900 in temporary buildings¹¹⁸</p>	<p>Concrete 2000 + 1400 + 1400, concrete peri and 50 concrete and partial wood-chipping h/s to USAAF specification.¹¹⁹</p>	<p>Used RAF maintenance units to 1960. Sold, extensively demolished by St Ives but still used for private aviation.¹²⁰</p>

¹¹³ Freeman, R.A. *The Mighty Eighth* p.174

¹¹⁴ Delve, K. pp.176-178

¹¹⁵ Freeman, R.A..p.174

¹¹⁶ Delve, K. pp.176-178 and Freeman, R.A.p.174

¹¹⁷ Freeman, R.A. *The Mighty Eighth* p.174 and Delve, K. pp.176-178

¹¹⁸ Freeman, R.A. pp.180,181

¹¹⁹ Freeman, R.A. pp.180,181 and Delve, K. pp.179-181

¹²⁰ Ibid. pp.180,181

<p>OULTON (RAF) Originally satellite for Horsham St Faith</p>	<p>1946 serial photo blacked out. Oulton Hall may be within the site? Check Cawston Street – Oulton road re-opened 1948.¹²¹</p>	<p>Site requisitioned 1940, satellite landing ground for Horsham St Faith. Some accomm. In local community, some in Blickling Hall (great quote about nature of accomm at Blickling). Closed 1942 upgraded to Class A, became satellite to Swanton Morley.¹²² Prestige & Co. built some buildings.¹²³ Some USAAF and Coastal Command presence. Accom.1,500¹²⁴</p>	<p>Concrete 2000 + 1400 + 1400¹²⁵</p>	<p>Storage for Mosquitoes to 1948. Reverted to agriculture, poultry sheds.¹²⁶</p>
<p>RACKHEATH (USAAF) Early 1945</p>	<p>Heathland / farmland. Rackheath Hall and Park integral to site.</p>	<p>Land requisitioned early 1943, largely built John Laing & Son Ltd. Direct to USAAF. 556,000 cubic yards soil excavated, 14,000 yds soakaway drains, 504,000 yds concrete, major overhead power lines buried to clear the approaches. Dispersed temporary accomm for 2,900 in woods to SW.¹²⁷</p>	<p>Concrete screed finish 2000 + 1400 + 1400 50 spectacle h/s. Peri track 2.7 miles.¹²⁸</p>	<p>Early post-war disposal, partly to agriculture, partly to industry.¹²⁹ St Ives broke up the runways.¹³⁰</p>

¹²¹ Freeman, R.A. *Bases of Bomber Command* pp.100,102,104

¹²² Bowman, M. p.89

¹²³ Ibid.

¹²⁴ Delve, K. pp.182-184

¹²⁵ Freeman, R.A. *Bases of Bomber Command* pp.100,102,104

¹²⁶ Ibid.

¹²⁷ Freeman, R.A. *The Mighty Eighth* p.189

¹²⁸ Ibid.

¹²⁹ Delve, K. pp.185,186

¹³⁰ Freeman, R.A. p.189

<p>SCULTHORPE (RAF, later USAF)</p>	<p>Surrounded by 6 other AFs in 5 mile radius. Fields with irregular trees in boundaries</p> <p>Closure of two rural roads. Two more closed with 1944 upgrade.¹³¹</p>	<p>One of three in the West Raynham ‘clutch’. Built 1942 by Bovis and Constable Hart & co. to Class A.¹³² Satellite of West Raynham, with six airfields in five-mile radius.¹³³</p> <p>1944 conversion to very heavy bomber base, all runways replaced. Not finished by end of war, didn’t reopen until 1948. Some suggestion that very heavy status not possible and runways strengthened but later lengthened.¹³⁴</p>	<p>3000 + 3000 + 2000 (x 100 yds.)</p>	<p>Used from 1949 period by USAAF, for nuclear and exercises; substantial extra expansion 1952, closed 1992. Occasional present day use by STANTA.¹³⁵</p>
<p>SEETHING (USAAF)</p>	<p>Accomm dispersed in farmland to south. Woodland / extensive farmland centred around Ugate Farm. Minor roads closed.¹³⁶ Mundham Grange NE corner. Upland Hall Fm NE corner</p>	<p>Built 1942-43 by John Laing & Son Ltd to Class A.¹³⁷</p> <p>Accomm for 2,900.¹³⁸ Sites on farmland to South. Dispersed sites to South near Hedenham Wood.</p>	<p>Concrete. 3 mile peri. 51 k/s of spectacle and pan.¹³⁹</p>	<p>1945 used for munitions storage. [Possible connection with Earsham]. Sold 1959, most runways broken up by St Ives.¹⁴⁰ Some private flying continues.</p>

¹³¹ Freeman, R.A. *Bases of Bomber Command* pp.105,107

¹³² Bowman, M p.91

¹³³ Delve, K. pp.193-196

¹³⁴ Delve, K. pp.193-196.

¹³⁵ Bowman, M. p.91 and Freeman, R.A. *Bases of Bomber Command* pp.105,107

¹³⁶ Delve, K. pp.197-8

¹³⁷ Freeman, R.A. *The Mighty Eighth* pp.200, 202

¹³⁸ Delve, K. pp.197-198

¹³⁹ Freeman, R.A. pp.200, 202

¹⁴⁰ Ibid.

SHIPDHAM (USAAF)	Farmland, some woodland. Peri-track bends to accommodate Park Farm. Southern edge mirrors existing road. Few obstacles needed removing. ¹⁴¹	First USAAF heavy bomber base in Norfolk (1942) though originally designed for RAF. ¹⁴² Cost £1,100,000. 550,000 sq yds concrete, fuel storage for 216,000 gallons. Camp dispersed in farmland to east. Accomm. for 3,000 ¹⁴³	Concrete and macadam. Class A 30 h/s + 35 more later. 2000 + 1400 + 1400 ¹⁴⁴	1946-47 transit centre for German PoWs en route from Florida to Germany. Sold late 1950s. Owned 1960s by E A Savory, farmer. Refurbished for light aviation use. ¹⁴⁵
SNETTERTON HEATH	Heath. Snetterton Heath and Heath Covert subsumed. Snetterton Hall to W. Eccles Hall used Railway and A11 restricted siting of h/s. Minor roads closed.	Built 1942 primarily by Taylor Woodrow Ltd, cost £950,000. 530,000 sq.yds.concrete. Opened 1943. Eccles Air Depot (extension across A11) started but not finished. ¹⁴⁶ ‘Strange choice of site’ because of physical restrictions. ¹⁴⁷ Accomm. for 3,000	Concrete 36 h/s for RAF use but increased to 50 for USAAF. 2000 + 1400 +1400	1945 abandoned; 1952 bought for motor racing. ¹⁴⁸

¹⁴¹ Delve, K. pp.203-204

¹⁴² Ibid.

¹⁴³ Freeman, R.A. pp. 205,206

¹⁴⁴ Delve, K. pp.203-204

¹⁴⁵ Freeman, R.A. *The Mighty Eighth* pp.205,206

¹⁴⁶ Ibid. p.207

¹⁴⁷ Delve, K. pp. 205-208

¹⁴⁸ Freeman, R.A. p.207

<p>SWANNINGTON (RAF)</p>	<p>St Peter's Church right by spectacles; Haveringland Hall affected.</p> <p>Sited east of Brandiston Road which was closed. Cawston-Horsford road cut S of St Nicholas' church. Camp dispersed between airfield and Hall Farm mostly in Haveringland Hall park. Officers mess in Hall itself.¹⁴⁹</p>	<p>Built late 1942/early 44 main contractor Kent & Sussex Construction Co Ltd. Class A. Cost £882,000. Class A spec.</p> <p>Accomm. 2,400¹⁵⁰</p>	<p>Concrete 2000 + 1400 + 1400</p>	<p>Post-war used for Mosquito storage, closed 1947. Intact until sold 1957, then reverted to agriculture and runways broken up for hardcore.¹⁵¹</p> <p>Many buildings survive 'Some buildings in excellent condition – not bad for structures erected for temporary use'.¹⁵²</p>
<p>SWANTON MORLEY (RAF)</p>	<p>Overlooking south side of Wensum valley. Several roads closed between Worthing and Swanton Morley.¹⁵³</p> <p>'Ridge of well-drained soil, laid out to give large grass operating surface, not completely level but with long runs in several directions'.¹⁵⁴</p>	<p>1930s Expansion airfield but never fully completed. Opened 1940. More utilitarian than usual with no C-type hangars. Richard Costain & Co Ltd built the camp buildings. Some tarmac h/s built by Costain at £490,000.¹⁵⁵ Later h/s and peri track added.</p> <p>Accomm. at max. 2,400.</p>	<p>Grass – largest grass airfield in Europe.¹⁵⁶</p> <p>1650 + 1600 + 1350 yds. 1954 survey suggested not suitable for extension because of its convexity. Decoy at North Tuddenham.¹⁵⁷</p>	<p>Continuing RAF use to 1995 when relinquished to army which built Robertson Barracks over the very large grass airfield.</p>

¹⁴⁹ Freeman, R.A. *Bases of Bomber Command* p.108

¹⁵⁰ Ibid p.108

¹⁵¹ Ibid.p.108

¹⁵² Delve, K. pp.216-218

¹⁵³ Freeman, R.A. pp.110,112,113

¹⁵⁴ Delve, K. pp.220-222

¹⁵⁵ Freeman, R.A. pp.110,112,113

¹⁵⁶ Bowman, M. p.93

THORPE ABBOTTS (USAAF) Orig satellite for Horham	Farmland, lot of woodland on site, especially to west. Technical and domestic sites in woodland stretching south and bordering A143 Diss – Harleston. ¹⁵⁸	Built 1942 as satellite for Horham (Suffolk) as Class A heavy bomber field. John Laing & Son Ltd. 330,000 cubic yds soil excavated. 149,000 cubic yds concrete laid, 35,000 yds tarmac. ¹⁵⁹ Accommodation for 2,900 ¹⁶⁰	Concrete 36 h/s increased to 50 for USAAF 2100 + 1400 + 1400 ¹⁶¹	Sold 1956, most reverted to agriculture but good deal of buildings and runway remain intact. ¹⁶²
TIBENHAM (USAAF)	Channonz Hall on N boundary. Adjacent armoury too! Sometimes referred to as Tivetshall as partly located in parish. ¹⁶³ Site highly suitable. Closed minor roads, one or two buildings demolished, removed hedges and filled in ditches. ¹⁶⁴	Built 1941-2 main contractor W & C French Ltd. Operational late 1943. Camp dispersed in farmland to east. Accommodation for 2,900. ¹⁶⁵	Concrete and tarmac 2000 + 1400 + 1400 ¹⁶⁶ 36 pan h/s and 14 loops. ¹⁶⁷	Main runway lengthened 1955 for emergency use by jets, closed 1959. ¹⁶⁸ Demolition by St Ives' competitor H Minns 1964-65. 1978 control tower abruptly demolished by landowner. ¹⁶⁹
WATTON	Griston Hall to W, Old Hall	Permanent RAF station built late 1930s by	Grass (250 acres),	RAF post-war, electronic

¹⁵⁷ Delve, K. pp.216-218

¹⁵⁸ Freeman, R.A. pp.216-219

¹⁵⁹ Freeman, R.A. *The Mighty Eighth* pp.216-219

¹⁶⁰ Delve, K. pp. 224-225

¹⁶¹ Delve, K. pp. 224-225

¹⁶² Delve, K. pp. 224-225

¹⁶³ Freeman, R.A. pp.223,226

¹⁶⁴ Delve, K. pp.226,227

¹⁶⁵ Freeman, R.A. pp.223,226

¹⁶⁶ Delve, K. pp. 226,227

¹⁶⁷ Freeman, R.A. pp. 223,226

¹⁶⁸ Delve, K. pp.226,227

¹⁶⁹ Freeman, R.A. pp.223,226

(RAF, USAAF)	<p>Farm affected.</p> <p>Built on free-draining soil to east Watton.¹⁷⁰</p>	<p>John Laing & Son Ltd. for light bombers, one of four for No.2 Group. Operational 1939. 1942 assigned to training unit - although a front line station there was a shortage of training airfields. Re-assigned to USAAF air maintainance 1943, at which time runways concreted, more buildings added. Complex extended to Necton parish.¹⁷¹</p> <p>Site also housed HG and two batteries US AA artillery.¹⁷²</p>	<p>concrete from 1943. USAAF constructed 53 h/s mixed pan and spectacle.¹⁷³</p> <p>By early 1943 pressure on the building programme led to decision not to build hard runways on existing grass surfaces but 1943/44 steel mat reinforcement was laid and July 1944 the 899th Engineer Battalion US Army laid concrete runway (2,000 yds.) and peri track and new h/s.¹⁷⁴</p>	<p>counter-measures. flying ceased 1969.</p> <p>Considered for major expansion 1954 but deferred.¹⁷⁵ Partly site of HMP Wayland.</p> <p>Now controlled by commandant STANTA, reactivated occasionally for co-operation exercises.¹⁷⁶</p>
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¹⁷⁰ Freeman, R.A. *Bases of Bomber Command* pp.116-118

¹⁷¹ Freeman, R.A. p.231 and Freeman, R.A. *Bases of Bomber Command* pp.116-118

¹⁷² Delve, K. pp.237-239

¹⁷³ Freeman, R.A. *The Mighty Eighth* p.231

¹⁷⁴ Freeman, R.A. *The Mighty Eighth* p.231

¹⁷⁵ Delve, K. pp.237-239

¹⁷⁶ Bowman, M. p.112

WENDLING (USAAF)	Site partly in Wendling and partly Beeston-with-Wittering. ¹⁷⁷ ‘Owner of Cannister Farm flatly refused to move out. The NW peri-track bends in to avoid the farm; the Americans didn’t mind the ready supply of milk and eggs.’ ¹⁷⁸	Requisitioned 1941. 1942 main build by Taylor Woodrow for RAF to Class A standard with pan h/s. Most northerly US 8 th AF bomber base. Reassigned USAAF 1943, new loop h/s/ Accom for 2,900 in Beeston area. ¹⁷⁹	Wood-chip runways with protective covering. ¹⁸⁰ 2000 + 1400 + 1400 and concrete peri. ¹⁸¹	Closed 1961, sold 1963, now another Bernard Matthews poultry site. ¹⁸²
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¹⁷⁷ Delve, K. pp.241,242

¹⁷⁸ Delve. K. p.241

¹⁷⁹ Delve, K. pp. 241,242 and Freeman, R.A. *The Mighty Eighth* p.234

¹⁸⁰ Delve, K. pp.241,242

¹⁸¹ Freeman, R.A. *The Mighty Eighth* p.234

¹⁸² Freeman, R.A. p.234 and Delve, K. p.242

APPENDIX 2 to CHAPTER 3: Airfield Gazetteer ‘B’ – Munitions, woodland, area and perimeter

Airfield	Munitions locations	Woodland type & area sq km	Airfield Area in sq km	Perimeter km	Air Min map ‘Works Directorate Air Ministry’ or ‘DG of W’
ATTLEBRIDGE (USAAF)	Ammo & bomb dumps in wooded area to NE perimeter, adjacent dispersal spectacles. Extra b/storage shown on 1946 aerial c/w Air Min plan – not unusual. Small field corner stands end up in bomb store	Woodland near dispersed sites to S	2.07 Dispersed sites 0.41 – grad. Spreading to W towards Hockering Wood but stopping short.	8.57 Dispersed sites 11.99	4862/44 Dec ‘44
BIRCHAM NEWTON (RAF)	Not in woodland. ‘though ordnance store adjacent woodland far to SE	Hyde Park Plantation .07 km2 unaffected Polney Plantation .05 km2 Magpie Plantation .04 km2 adjacent but unaffected. Tech site in wood S boundary of a/f (identify)	3.59	11.84	756/51 745 747/8/51 1192/28 (Sep’28) 828853/28
BODNEY (RAF / USAAF)	A & B possibly to SW, not woodland. BUT tech sites to W in Great Wood. Accommodation borders Heater Plantation & High Plantation	Great Wood.0.13 +1.73 circum. Heater .02 /.63 High Pl. .06 / 1.45 km	5.35	16.55	2923/44 May ‘44 MFC 78/24/129 = inset of bomb store detail

COLTISHALL (RAF)	Dispersals by Manor Farm	N borders Scottow Hall + large Covert but not used. Steward's Plantation to E unaffected. Likewise Durrant's Grove & woods at Hall 'though border peri-track	3.00	11.62	Not accessible
DEOPHAM GREEN (USAAF)	Bomb & ammo below S peri-track in lightly wooded area not shown 1 st ed OS	Attleborough Wood 1km >SE, not used	2.42 Dispersal sites 0.3	7.50 Dispersal sites 8.21	
DOCKING (RAF)	Accomm on Docking - Brancaster Rd W airfield, tech site near Sunderland House Bomb store E boundary	Narrow Covert to farm entrance + very small area woodland	2.12 main site 0.26 dispersed	3.94 2.12 dispersed	
DOWNHAM MARKET (RAF / USAAF)	Well E of site, adjoining but not with woodland. New Covert .01 / .52 + Old Covert 0.04/.79 (Bomb stores in Lough Covert ¹⁸³)	Possible woodland integral to banjos NE in Oak Wood. Not in flight path but unusually close. Oak Wood 0.05 / 1.88; Rough Covert 0.02/0.73	2.29 km2 .09 dispersed	8.68 km 2.49 dispersal	2294/54
EAST WRETHAM (USAAF) Satellite Honington orig.	Bomb store in Middle Plantation .09/1.71 but much expanded from OS 1 st ed	Some tech facilities and possible additional bomb storage within site of what was Langmere Plantation & Little Long Plantation on OS 1 st ed (was this cleared prior to WW2?) 0.17 / 2.13	2.75	11.51	

¹⁸³ Freeman, R.A. *Bases of Bomber Command* pp.131-132

FELTWELL (RAF)		No woodland	3.2	12.59	
FERSFIELD (USAAF) Partnered Knettishall	B/Stores in Birch Wood	Birch Wood 0.27 / 2,36	2.28	9.5	
FOULSHAM (RAF)		Newton Wood 0.10 / 1.35 to NW but unused	2.64	8.79	
GT MASSINGHAM (RAF) Orig satellite of W Raynham (RAF)		Harpley Common & W Rudham Common way to N	2.85	10.38	
HARDWICK (USAAF) <i>(see Delve quote about Suffolk, not Norfolk)</i>	Bomb & ammo dump NW corner adjacent Spring Wood. B/store also in field to W + between 2 busy dispersal areas!	Spring Wood 0.26 / 2.3 seems to have been replanted by 1988 (query use and appearance as 1946 looks different to Delve at this point).** Bush Wood + Long Wood – some facilities intrude here	2.39 <i>** check different sources for area and sites</i>	7.36	1376/5- 1808/44 dispersed sites not available)
HETHEL (USAAF)	Bomb dump W adjacent woodland, Long Drive ammo closer in, within wooded belt. Admin bldgs appear to be in woodland to SE.	Long Drive 0.08 / 2.41 (Stanfield Hall). Hethel Wood adjoins tech sites but appears generally unused BUT Air Min plan refers to Communal Sites here. Water Tower just inside wood. Ayes Corner .07 / 1.16 looks lost to plough before airfield	3.4	9.04	1295/50

HORSHAM ST FAITH (RAF /USAAF)	Bomb dump?	No woodland	3.69	9.62	
LANGHAM (RAF) Cockthorpe			2.28	6.64	
LITTLE SNORING (RAF) Orig satellite of Foulsham - 36 loop hardstands + 5 hangars		New Covert 0.14 / 1.63 Dark Trees .03 / .73 Jex's Covert .03 / 0.75 Cranepot Covert .12 / 1.48 all gone from OS 1 st ed but prior to airfield?	2.64	7.56	
LUDHAM (RAF)			2.01	7.34	
MARHAM (RAF) + small satellite site at Barton Bendish	Bomb dump to E. bounded by hedge but no woodland	Woodland to NW possible AA site .16 km2 / 1.79 perimeter.	5.46 0.17	10.07 2.27	Not accessible
MATLASKE (RAF) Satellite of Coltishall		No woodland but	1.38	4.96 (some accom to N)	
METHWOLD (RAF) Satellite of Feltwell	Bomb stores to S but not wooded	Tennis Plantation subsumed 0.11 / 1.7.	3.68	10.79	
NORTH CREAKE (RAF)			3.32 Dispersed 0.20	10.18 Dispersed 5.85	

NORTH PICKENHAM (USAAF)	Ammo & bomb dumps close in by S & SW perimeter; dispersed sites to E.	Lodge belt ran N-S, truncated by being within peri-track (or already gone?) Grove Covert very close SW end main runway	2.38	8.55	4615/44 Nov '44 4616/44 dispersed sites – shows v small woodland x2
OLD BUCKENHAM (USAAF)	Bombs & Ammo to N, not wooded.		3.09 Dispersed sites 2.3	9.5 Dispersed sites 6.16	4871/52 date u/k 4873/52 dispersed sites Burgh Common >W
OULTON (RAF)		Large wood The Leasland then N to Hercules Wood + Long Plantation (-> Blickling). Also Leechpit Plantation & Law Pl? Several other Plantations e.g. Oxnead – query exact locations.			
RACKHEATH (USAAF) Early 1945	B & A to North	Accomm + tech sites in woodland W. Ortolan's Grove, Osier Carr, Round Hills, Green Plantation. Quarters gathered around but not in Heath Wood, Whitw Wd, Round Hills 'Deer park', Gazebo Covert, Rhododendron Covert, Cock Shoot,	2.48 Dispersed .34	7.19 Dispersed 5.59	unclear
SCULTHORPE (RAF, later USAF)			4.74 Dispersed 0.21	9.35 Dispersed 6.61	
SEETHING (USAAF)	Bomb dump to W side, Sashlight Farm to N b/stores. Hedenham Wood not used for bombs	Some encroachment of accomm up to Long Wood. Woodland SW adjacent admin site	2.47 Dispersed .2	9.95 Dispersed 10.41 (?)	4706/44 Nov '44 4706/44 Dec 44 dispersed sites specifying types of bldg incl. 'Thorn Hutting'

SHIPDHAM (USAAF)	Bomb dump SW corner, slight encroachment into Brick kiln Covert and Letton Hall grounds (deer park?)		2.34	7.91	1012/45 (2 of 2) March '45 1013/45 dispersed sites
SNETTERTON HEATH			3.77 Dispersed 0.64	14.92 Dispersed 8.7	
SWANNINGTON (RAF)	bomb storage S by Furthpit Plantation, past Moegbe's Pl up to Crimea Covert. Suggests using as cover but not in it as such	Facilities in Top Clump. + West Belt + parkland.	2.33 Dispersed .03	9.26 Dispersed .50	DGofW 4325/44 = bomb stores
SWANTON MORLEY (RAF)			3.62 Dispersed sites 0.17	11.23 Dispersed sites 4.4	
THORPE ABBOTTS (USAAF) Orig satellite for Horham	Ammo/bombs to W partially in woodland W of Billingford Wood). Various tech sites in woodland locations	Billingford Wood appears to have been entirely subsumed by the lower perimeter of the AF – barracks on left side of wood. Tech site in Thorpe Wood, not cleared but utilised.	2.5 dispersed .52	8.04 Dispersed 8.41	
TIBENHAM (USAAF)	Bombs and ammo in woodland to S	Non –woodland trees / hedges lost to airfield but no woodland	2.42 dispersed .33	8.93 Dispersed 6.21	1810/45 May '45
WATTON (RAF, USAAF)	Bomb dump partial woodland to S	The Grove - unaffected	4.66	13.74	
WENDLING (USAAF)	Bomb and ammo dump in Honeypot Wood to SW. (well-documented represented). Extensive tech + accomm to W	Honeypot Wood 0.11 sq km / 1.59 circum.	2.55 Dispersed	7.24 Dispersed	Loops vs frying pans 4634/44 4635/44 dispersed sites

WEST RAYNHAM (RAF)		Langton Green Wood -> E just excluded. Kipton Heath -> W adjacent but not used	3.37 Dispersed 0.05	12.5 Dispersed 1.63	
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APPENDIX 1 to CHAPTER 5:

TNA AIR 29/1031 No 231 Maintenance Unit RAF Hockering – Unit diary note 2nd and 4th February 1943 to prepare against air attack on munitions site

Defence Operation Order No.1 Appendix 'A' 15/10/

Ground attack would be preceded by heavy and dive bombing, saboteurs, paratroops and airborne troops. With 210 RAF personnel on strength, supported in emergency by 1st Battalion Norfolk Regiment, 231 MU could call upon six Battle platoons for defence. Also a machine-gun post at Church Farm, Hockering, Defence HQ at unit site, Battle HQ at Little Copse and the surrounding area split into A, B, C and D (4) sectors. This might seem an over-compensation, given that hindsight suggests that, by late 1943, there was little danger of a strategic invasion. Such defensive preparations were not uncommon however and it was as well to be prepared. In practice, late-war German attacks on British soil comprised the V1 'Doodlebug' throughout the Summer of 1944, followed by the much larger V2. Neither posed a direct threat to airfields or other military installations; they were relatively randomly targeted on civilian centres. A direct threat to airfields was so-called 'tip-and-run' raiders – and camouflaging military facilities deterred such opportunistic enterprises. It could be argued that there was more danger from 'friendly' air traffic; on 25th July 1944 a B24 Liberator from USAAF Attlebridge with 32 100lb bombs on board developed engine trouble after take-off, and, if the pilot had jettisoned the payload as soon as trouble started, it would all have landed in the bomb storage area. The pilot was able to 'nurse the aircraft over the wood' and jettison in a field where the only casualties were two horses.

APPENDIX 2 to CHAPTER 5: Working gazetteer of quarries and gravel extraction sites

Airfield	Notes (some marl pits, even field gates) Key: FEOS = 1 st ed OS
Docking	No visible gravel extraction sites in vicinity
Bircham Newton	Limited gravel extraction to NE boundary of a/f Large pre-existing site (look as if worked in WW2 as well) 2 miles SSW of a/f boundary. Now water. 'Boiler Common' Great Bircham Smaller poss site 1m SSW in Sandpit Plantation but could just be clearing for wood management work
Sculthorpe	New gravel site ½ m south of Syderstone village & 1m W a/f boundary
Downham Market/ Bexwell	Pre-extant gravel pit 1.5m E (on 1 st ed OS)
Barton Bendish	Several hundred yds SE a/f – what <i>looks</i> like a gravel extraction site – but it was grass a/f throughout!
Marham	Poss gravel extraction site 1m S a/f boundary. Dubious though
Feltwell	Extraction site 1m SW a/f at Blackdike Farm. Shown (smaller) on 1 st ed OS as 'gravel pit'
Methwold	Eastern boundary – gravel workings which may be older but look contemporarily worked (tree boundary shown on 1 st ed OS) Poss superficial extraction 2 mi East
Gt Massingham	No specific large sites but the area to the south seems peppered with small roadside sites which are not on 1 st ed OS, though older, hedged/treed marl pits exist. Were trad marl pits still being used in 1940s??
W Raynham	Approx 1m N a/f boundary is a visibly worked area, extant on 1 st ed OS as 'lime kiln' – still being used in WW2?
Langham	2.5 m E a/f boundary Bilsey Hill gravel pit within/Bilsey Plantation FEOS, WW2 definite large site, some appears still to be being worked 40 yrs later. Another site ½ mi to NE. Smaller sites between Saxlingham and Glanford (2 nd , smaller, 'gravel pit' on FEOS)
N Creake	Chalk pits, Lime kiln, Chalk FEOS; WW2 site extended to Stiffkey Rd, extant 1988; small poss workings at Burnham Thorpe?
L Snoring	Extensive workings Gravel Pit Hill, Hempton; 'gravel pits' on FOSE; extant 1988; small extraction site at Pudding Norton (NE of Hempton)

Foulsham	No visible adjacent sites (remember notes about construction traffic – maybe all trucked in?)
Oulton	Brick Kiln nr Lime Tree Fm N side rly btwn Oulton/Corpusty; ww2 worked out but extended W slightly other side rly; greened over 1988. 1m NW a/f
Matlaske	Nothing (grass airfield)
Coltishall	Nothing evident ww2
Ludham	Nothing evident ww2
Attlebridge	½ m E on N side A47 at Hockering; small site, looks worked out by 1946, grown over by 1988
Swannington	The Warren, GT Witchingham Hall, flooded workings by 1946, nothing FOSE 2mi SW a/f boundary
Horsham St F	Pound Hill Frettenham 3 sites, one Marl Pit FEOS extended 1.5mi NE of a/f
Rackheath	Nothing evident from ww2
Swanton Morley	Large site SW corner of Billingford Hall (park). Nothing FOSE; part-grown over and part-arable 1988. Extensive workings ww2 Gorgate Rd Hoe (nr Beetley), 'gravel pit' 'old gravel pit' FEOS, greened over 1988
Wendling	Limited WW2 working on v NE edge a/f by dispersals. No prior or since. Small working Watery Lane, twixt Beeston and Litcham 2mi NW a/f, much extended by 1988. 1.25mi NE a/f large site ww2 , much extended by 1988, no data FEOS Reed Lane, Bittering
Shipdham	1m W a/f Mill Rd, Shipdham/Carbrooke WW2, extended post-war, greened over 1988. Site re-opened 2000s
N Pickenham	1m S a/f small working Cranbrook; gravel pit FEOS, some working + flooded 1988
Bodney	Nothing evident ww2
Watton	Large workings to NE corner of a/f; site of Corn Windmill FEOS; grown over 1988
E Wretham	Nothing evident WW2 around, except one site directly by A1075 just N of Stonebridge, Stonehill Plantation, no FEOS, extant 1988; 1.5 mi NW a/f
Deopham Gn	Nothing evident ww2
Snetterton H	Possible workings 1m NW a/f but flooded 1946. Site 1.5mi SSW a/f, site of Harling Hall, 'old sand pit' FEOS; site 2mi to NNW a/f, flooded by fresh 1946, much extended 1988, no FEOS
Old Buck'm	Nothing evident ww2
Fersfield	Nothing evident ww2
Tibenham	2mi NE a/f Randall's Farm, ret to arable by 1988, nothing FEOS
Seething	Nothing evident ww2

Hardwick	Nothing evident ww2
Thorpe Abbots	Nothing evident WW2
Waveney Valley	Series of linked gravel quarries along river valley

APPENDIX 1 to CHAPTER 6: Working gazetteer of country houses in Norfolk

Norfolk country houses extant 1900 (= 135)	Lost pre-1939 (cause)	Lost post-'45 (cause)	Requisitioned? y/n	Demolished or rebuilt / refurbished	Post war demolition	NOTES
Abbot's Hall, Aylsham	No		No	No		Extant present
Aldborough Hall, Aldborough	No		No			Extant 1968
Alpington Hall, Alpington	No		No			extant
Anmer Hall, Anmer	No		No			extant
Appleton Hall / House	No	Yes 1986 WW2	No	Dem 1984/6		Last inhabitants were King George VI and the Queen Mother, who lived in the house during a visit to Norfolk during World War II. a large anti-air raid structure had been constructed around the property during WWII and that this was unattractive and expensive to remove. In addition it would have been extremely costly to restore the property to a habitable state again. Pulled down in July 1984.

Ashby Hall, Ashby St Mary	No		No			extant
Ashwellthorpe Hall	No		No			
Ashwicken Hall	yes		No		1956	Ruination/partial dem.1935; rest/rebuilt 1970s
Aslacton Manor House	No		No			extant
Attleborough Hall			No			
Aylsham Manor House	No		No			Extant, now a hotel
Aylsham Old Hall	No		yes			extant
Bagthorpe Hall	No	Dem 1945+ of no use to owners	yes	Dem late 1940s	1956	Inspected and req by Air Min 1941 (nr Bircham Newton) but no real evidence of use; demolished post-1945 as of no use to owners
Bale Hall	No		No			extant
Barmer Hall	No		No	Dem 1956	1956	Dem 1956
Barnham Broom Hall	No		No			extant
Barningham Hall	No		No?			
Barton Bendish Hall	No		Yes (ref)			??
Barton Hall, Barton Turf	No		No			extant
Barwick House, Barwick	No		No			extant
Bawburgh Hall	Sold 1942 (query limited req use?)		Poss	Dem 1963		
Bawdeswell Hall	No		No			extant
Bayfield Hall	No		Yes			extant
Beaupre Hall		yes	Yes		1966	'left in sorry state' demolished 1966 (B&S)
Beechamwell Hall		yes	??			extant
Beeston Hall, Beeston Regis	No		No			Extant, school
Beeston Hall, Beeston St Laurence	No		No			extant
Beighton Manor	No		No			extant
Bergh Apton Manor House	No		No			extant

Berry Hall, East Tuddenham	?		No			
Bessingham Manor			No			Extant, but partly ruined
Besthorpe Hall			No			Extant
Billingford Hall			No			Extant
Bittering Hall			No			Extant
Bixley Manor			No			Extant
Blickling Hall			Yes			Extensive info esp from Lees Milne. B&S refer to C20 events but not WW2!
Blofield Hall			No			extant
Blofield House			No			Extant
Blo' Norton Hall			No			Extant
Blundeston Hall			No			
Bolwick Hall			No			Extant
Booton Hall			No			Extant
Bowthorpe Hall			No			Extant (Bell School?)
Boyland Hall			?	Dem 1947	1947	Contents sold 1938 New house built recently, so what constitutes historic up to 1939?
Bracon Ash Hall			No			Extant
Bracondale Lodge, Nch			No			Extant
Bracon Lodge, Bracon Ash			No			Extant
Bradenham Hall, West Bradenham			No			Extant
Bramerton Hall			No			Extant
Brampton Hall			No			Extant
Brancaster Hall			No			Extant
Brandiston Hall			No			Extant
Braydeston Hall			No			Extant
Breccles Hall			No			Extant
Bressingham Hall			No			Extant
Briningham House			No			Extant
Brinton Hall			No			Extant
Brisley Old Hall			No			Extant

Brockdish Grange			No			
Brockdish Grove			No			
Brockdish Hall			No			
Brooke Hall			yes	Dem 1970s ?	1952	
Brooke House			Poss		1952	Extant - 'a modern C20 house' (B&S)
Broom Hall, Saham Toney			No			'16 bedroom Victorian country house hotel in 15 acres' http://corporateinternational.colliers-uk.com/Modules/Shared/OpenDocument.aspx?F=0adccdd1-37af-4371-9164-40468d857921.pdf&p=documents&HID=212010&PID=-1&departmentID=10 Colliers International estate agents accessed 4 July 2014 AND NOT LISTED ELSEHWERE IN ANY DRIECTROIES
Broome Place, Broome			No			Extant
Buckenham Hall?			No			
Buckenham Tofts Hall			Yes	Dw	1946	B&S – incl.Didlington est mid-C19. Dem 1946, stables survive. Site in Army training area
Burfield Hall, Wymondham			No			Extant
Burgh Hall, Burgh next Aylsham			No			Extant
Burgh Hall (Tuttington)			No			
Burlingham Hall, B St Peter			No	Su, De	1952	B&S – sold 1919, used as school, dem c.1952
Burlingham House, B St Andrew			No			Extant
Burlingham Old Hall, B St Edmund			No			Extant
Burnley Hall (aka Somerton House), East Somerton			No			Extant
Bylaugh Hall			Yes	Ruinat ed 1952	1952	But restored in recent years for commercial use B&S says built 1852 and reputedly cursed to stand for only 100 years!
Bylaugh Old Hall			No			Extant

Caister Castle			No			Extant
Caistor Hall, Caistor St Edmund			No			Extant
Caistor Old Hall, C St Edmund			No			Extant
Cantley Manor			No			Extant
Carbrooke Hall			No			Extant
Carrow Abbey, Norwich			No			Extant
Castle Rising Hall			No		Dem 1926 - >	Dem 1940 nothing to do with WW2
Catfield Hall			No			Extant
Catton Hall			No			Extant
Catton House			Yes	Dw, Du		
Cavick House, Wymondham			No			Extant
Cawston Manor			No			Extant. Public school
Channonz Hall			No but impacted upon by airfield site			Just converted to farmhouse remains by WW2 (B&S)– but affected by airfield
Chedgrave Manor			No			Extant
Claxton Castle			No			Extant
Clermont, Little Cressingham			No			Extant
Cley Hall			No			Extant
Clippesby House			No	P	1925	Mostly dem (20 – but when and why?)
Cockley Cley Hall			No			Extant
Colney Hall, Colney			No			Extant
Coltishall Hall			No??			Extant. Now hotel (must have been used RAF?)
Congham Hall			No			Extant
Congham House	Yes		No		1938	Burnt down 1938
Conifer Hill, Starston			No			Extant

Costessey Hall			N/A		1925	WW1 occupation; largely broken up (estate) 1925. Not relevant to WW2
Cranmer Hall, Sculthorpe			Yes?			Extant
Crimplesham Hall			No			Extant
Cromer Hall			No			Extant
Crown Point, Norwich (Whitlingham Hosptl)			No			Extant
Croxton Park			No			Extant
Curzon Hall, East Carleton			No			Extant
Deepdale House, Burnham Deepdale			No			Note – C20 house Extant
Denton House, Denton			No			Extant
Denver Hall			No			Extant? Sold 1965
Dersingham Hall			Yes			Very small, inconsequential in context?
Didlington Hall			Yes	Dw/Su	1950	B&S mentions sold 1943, dem 1950, rew 2 nd Army, Gen Dempsey
Dilham Grange			No			Extant
Dillington Hall, East Dereham			No			Extant
Diss Manor House			No			Extant
Ditchingham Hall			Yes			Extant and restored
Ditchingham House			No			Extant
Ditchingham Lodge			No			Extant
Docking Hall			No			
Dudwick House, Buxton			No			
Dunston Hall			No			Extant furniture store?
Earlham Hall			No			Extant
Earsham Hall			Not hall			Extant. Grounds incl FAD
East Barsham Manor			No			Extant, for sale 2014
East Bilney Hall			No			
East Carleton Hall			No			
East Carleton Manor			No	De, N		When was new hall built?
East Hall, Feltwell			No			Dem., little history

East Winch Hall			No			Extant, fire 1964, reconstructed
Eccles Hall			No			Extant, school (used WW2? No evidence)
Edgefield Old Hall, Edgefield			No			Extant, part of Blickling estate
Ellingham Hall			No			Extant (? – but then Flixton used by USAAF)
Elmham Hall/Park (N Elmham)			No		c.1950 (B&S)	Estate broken up c1920, house dem 1924
The Elms, Toft Monks			No			Extant
Elsing Hall			No			Extant
Erpingham House						Extant
Felbrigg Hall			No			R W Ketton-Kremer gave to NT 1969 (no elec in war!)
Felmingham Hall			No			Extant
Felthorpe Hall			No			Extant
Feltwell Hall			No		1955	Demolished. Used by RAF at all? Prob not
Filby House			No			Extant – but ruined in part?
Fincham Hall			No			Extant
Fitton Hall, Wiggenhall St German's			No			Extant
Flordon Hall			No			Extant – but a farmhouse for some centuries (B&S)
Foulden Hall			No			Extant – incorp into Didlington estate
Foulsham Old Hall			No			Extant
Framingham Earl Hall			No			Extant
Framingham Pigot Manor			No			Extant
Frenze Hall			No			Extant
Fring Hall			No			Extant
Fulmodestone Hall			No			Extant
Fulmodestone Old Hall			No			Extant
Garboldisham Manor			No	B,D	c.1955	Dem post-war (nothing to do with WW2) except for part of gabled stable block
Garboldisham Old Hall			No	B,N	1955	Destroyed fire 1955 and dem
Gately Hall			No			Extant
Gawdy Hall			No	De, N	1939	Estate spilt up 1938, house dem 1939 (B&S)
Gayton Hall			No			Extant

Gaywood Hall			No			Nursing home after 1935, now college
Geldeston(e) Hall			No			Extant. B&S adds an 'e'
Gillingham Hall			No			Extant
Gimingham, John of Gaunt's Hall			No			??
Gissing Hall			No			Extant
Godfrey's Hall, Hindringham			No			Extant but converted to small residential use
Gowthorpe Manor			No			Extant
Great Cressingham Priory/Manor			No			Extant but would have been entirely unsuitable? See similar for comparisons?
Great Ellingham Hall			No			Extant
Great Hautbois House or Hall			No			Extant
Great Hockham Hall			No			Extant
Great Melton Hall			No		1949...?	Extant
Great Ryburgh Hall			No			Extant, incorp into Sennowe estate
Great Snoring Manor House			No			
Great Witchingham Hall			No			
Gresham Hall			No			Extant (note B&S also list Gresham castle but ruin only)
Gressenhall House			?	Dw		Dem 1948 (NHER)
Guist Hall			No			Extant
Gunthorpe Hall			No			Extant
Gunton Park			No			Extant – notably refurbished and reutilised
Gunvil's Manor, Wymondham			No			Extant
Gurney's Manor, Hingham			No			Extant
Hackford Hall			No			Extant
Haddiscoe Hall			No			Extant
Hainford Hall			No			Extant, semi-derelict (check local history for WW2 use)
Halvergate Hall			No			Extant
Hanworth Hall			No			Tom – sweet chestnut girth 29'7" and 90' high
Hardingham Grove			No			Extant

Hardingham Hall			No			Extant
Hardley Hall			No			
Hargham Hall			No			
Haveringland Hall			Yes	Dw, Su	1947	B&S sold c1930 to 1 st Visc Rothermere's estate company and dem foll breakup estate 1946
Heacham Hall			Yes	B	1966	Strachan trustees owned until 1940/45 (B&S). dem.
Hedenham Hall			Poss?			Extant
Heggatt Hall, Horstead			No			Extant
Heigham House, Norwich			No	Su		Norwich – dem (when?)
Hemblington Hall			No			
Hemsby Hall			Yes	Dw, P	1966	Dem accor to B&S. photo, no date. Note extensive NHER WW2 refs and items
Hethel Hall			No		1966	
Hethersett Hall			No			Private, then school
Heydon Hall			Poss			Extant
Hickling Hall			No			Extant acc to Br Listed Bldgs but little else. Also NHER
Hilborough Hall			No			
Hillington Hall			No	N	1966	Dem 1946, estate survives(?)
Hindringham Hall			No			Extant
Hingham Hall			No	P, D	1966	Dem c.1947 nearly all gone 1978 v little know (also whimsically 'Southernwood', a 17th century house which was for twenty years the home of Field Marshal Edmund, Lord Ironside, until his death in 1959., Chief of the Imperial General Staff at the outbreak of World War II and Commander of the Home Forces in 1940.
Hockering House			No			Extant
Hockwold Hall			No			Extant
Hoe Hall			No			Extant
Holkham Hall			Yes			No WW2 ref in extensive listing in B&S but other info availa.
Holme Hale Hall			No			Extant
Holme House, Holme-next-the-Sea			No			Extant
Holme Place/Voewood			No			Not extant 1900

Holt Hall			No			Extant
Holverston Hall			No			Extant 'Holveston' in B&S
Honing Hall			No			
Honingham Hall			No – but Teichman incident	Su	1966	Dem 1967 Barnardo's up to then
Hope House, Hindolveston			No			Extant
Horsey Hall			No			Extant
Horsford Hall			No			
Horsford Manor			No			
Horstead Hall			Yes	Dw, P		Research more detail – relevant. Wiki: World War II the house was requisitioned by the War Office and used by a cipher unit, who put up numerous huts in the grounds, some of which survive. The hall's Italianate water tower, which stood among outbuildings, now derelict, is visible from the roads around the park. The estate was sold in 1947 and most of the house came down soon after. Today part of the estate is used for quarrying.
Horstead House			No			Extant – research more detail
Houghton Hall			Yes			Occupation of grounds – hut remnants still there – check with Tom
Hoveton Hall			No			Extant
Hoveton House, Hoveton St John			No			Extant
Hoveton Old Hall, Hoveton St Peter			No			
Hunstanton Hall			Yes		Gutted 1949	B&S bad fires 1853 and 1950. Sold off 1949, estate remains in family. Fragmented ownership of outbuildings.
Hunworth Old Hall			No			Later part of Blickling and the Stody estate
Ingham Old Hall			No			Rebuilt 1904 with mediaeval remains (B&S), extant, nursing home
Inglethorpe Manor, Emneth			No			Extant
Ingoldisthorpe Hall			No			Extant. Stands in small park on top of coastal ridge (B&S)
Ingoldisthorpe Manor			No			Now hotel

Intwood Hall			No			Extant
Irmingland Hall			No			Extant, much altered C20. www.britishlistedbuildings.co.uk
Irstead Hall			No			Extant, now farmhouse http://www.britishlistedbuildings.co.uk/en-224350-irstead-old-hall-barton-turf-norfolk
Islington Hall			No			Extant
Itteringham Manor			No – but Itteringham Mill			Extant
Kelling Hall			No			Extant (WW2?)
Ken Hill, Snettisham			No			Extant
Keswick Hall			Yes (Clarke)			Extant .
Ketteringham Hall			Yes			No ref in B&S to WW2. Sold 1947 USAAF 2AD HQ
Kilverstone Hall			No			Extant
Kimberley Hall			Yes			Extant – history of WW2 use PoWs
Kirby Cane Hall			No			Extant
Kirstead Hall			No			Extant
Knapton House			No			Extant
Lammas Hall			No			Extant
Langham Hall			No			Extant (must have been used by RAF...?)
Langley Hall			No			Extant
Lessingham House, Nch			No			
Letheringsett Hall			No			Extant
Letton Hall			No			Extant (some Milit use)
Lexham Hall			No			Extant
Litcham Hall			No			Extant
Little Dunham Lodge			No			Extant
Little Ellingham Hall			No			Extant
Little Fransham Old Hall			No			Extant, nut now a farmhouse
Little Hautbois Hall			No			Extant
Little Massingham House			No			Extant
Little Melton Manor			No			Extant?

Little Ormesby Hall			No			Extant
Little Plumstead Hall			No			Extant. Psychiatric hospital since 1929.
Little Witchingham Hall			No			Extant
Long Stratton Manor			No		1952	Dem (when?)
Lovell's Hall, Terrington St Clement			No			Extant
Ludham Manor House			No			Extant
Lynford Hall			Yes			Extant – some WW2 history
Mangreen Hall, Swardeston			No			Extant
Mannington Hall			No			Extant
Marham House			Yes		1949 ??(much reduced)	Mostly dem 1931 leaving small L shaped 2 storey house
Mattishall Hall			No			Extant
Melton Constable Hall			No			Extant
Mergate Hall, Bracon Ash			No			Extant
Merton Hall			Poss	B, P		Gutted fire 1956, surviving wing and gatehouse
Middleton Hall			No			Extant
Middleton Tower			No			Extant
Mileham Hall			No	De	1949?	Dem C20 but not WW2 relevant
Morley Hall, Morley St Peter			No			Extant, school
Morley Old Hall, Morley St Peter			No			Extant
Morningthorpe Manor			No			Extant
Morton Hall			No		Eliz part 1949	Extant
Mulbarton Old Hall			No			Extant
Mundham House			No			Extant
Narborough Hall			??			
Narford Hall			No			
Necton Hall			No	Su, De	1949	Dem 1949
Northrepps Hall			No			Extant

North Runcton Hall			No			Dem 1962-72
Northwold Lodge			No			Dem u/k
North Runcton Hall			No	Du	Ca1946	
Old Buckenham Hall			No	B, D	1952	School, burnt down 1952
Ormesby Hall, Ormesby St Margaret aka House			No			Dem early 1960s name was changed from The Hall to Old Hall when Ormesby House became known as Ormesby Hall (clarification needed re B&S and NHER)
Little Ormesby Hall			No			Extant
Oulton hall			No			Extant
Overstrand Hall			No			Lutyens 1899. Christian Endeavour 1937, now nursing home
Oxburgh Hall			No			Extant
Oxnead Hall			No			Extant
Pages Place, Saham Toney			No			Extant
Paston Hall, Paston			No			Extant, hotel
Pentney Hall			No			?
Petygards Hall			Yes		1949	Extensively dem
Pickenham Hall, South Pickenham			No			Extant
Pudding Norton Hall			No			Now farm
Pynkneys Hall, Tattersett			No			Extant
Quebec House, East Dereham			No			Extant , old peoples' home
Quidenham Hall			No			Sold 1948 Carmelite convent and children's hospice
Rackheath Hall			Yes			Sold, estate broken up 1949; now apartments.
Rainthorpe Hall, Flordon			No			Extant
Raveningham Hall			No			Extant
Raynham Hall			No			Extant
Ranworth Old Hall			No	De		Extant
Reedham Hall			No			??
Reymerston Hall			No			Extant
Reymerston Old Hall			No			Extent, farmhouse
Riddlesworth Hall			No			Extant school

Rippon Hall, Hevingham			No			Extant
Rokeles Hall, Watton			No			Extant
Rollesby Hall			No		1949	Extant
Rougham Hall			No			Extant
Roydon Hall			No			Extant
Ryston Hall			No			Extant
St German's Hall, Wiggshall St German's			No			Extant www.britishlistedbuildings.co.uk lists a variety of houses not listed in any other gazetteers.
St Mary's Hall, Wiggshall St Mary The Virgin			No			Extant ditto above
Saham Hall, Saham Toney			No			Gutted by fire 1973
Salhouse Hall			No			Extant
Salle Park			No			Extant
Salthouse Hall						Extant
Sandringham House (Appleton)			No			Extant
Saxlingham Hall, Saxlingham Nethergate			No			Extant
Saxlingham Old Hall			No			Extant
Scole Lodge			No			Extant, nursing home
Scole House			No			Extant
Scottow Hall			No			Extant
Scratby Hall			No			Extant, school
Sedgeford Hall			No			Extant; family left c.1940
Seething Hall			No		Ca 1946	Dem acc to B&S
Seething Old Hall			No			Extant, refurbished
Sennowe Park, Stibbard			No			Extant
Shadwell Park, Rushford			No			Extant
Sharrington Hall			No			Extant
Shelton Hall			No			Extant
Sheringham Park (house)			No			Extant (WW2?)
Shernbourne Hall / House,			No			Extant, hotel

Attleborough						
Shimpling Place			No			Extant, farmhouse
Shotesham Park			No			Extant
Shouldham Hall			No			Extant, care home
Shropham Hall			No			Extant
Shropham House			No			Extant
Sidestrand Hall			No			Extant, care home
Sloley Hall			No			Extant
Sloley Old Hall			No			Extant
Smallburgh Hall			No			Extant
Snarehill Hall, Brettenham			No			Extant, incorp Shadwell estate
Snettisham Old Hall			No			Extant
Snettisham Park			No			Park Farm facility but how about house?
Snore Hall, Fordham			No			Extant
Southrepps Hall			No			Extant
South Walsham Hall			No			Extant , country club
Southwood Hall			No			Extant, farmhouse
Sparham Hall			No			Extant
Sparham House			No			Extant
Spixworth Hall			Yes	De	1946?	Dem 1955
Sprowston Manor			Yes			Extant, hotel
Stalham Hall			No			Extant
Stanfield Hall, Wymondham			No			Extant
Stanhoe Hall			No			Extant
Starston Place			No			Dem 1962
Stiffkey Old Hall			No			Extant (not suitable for milit use?? At a guess??)
Stody Lodge			No			Extant
Stoke Ferry Hall			Yes			Extant (passing ref from Lees Milne)
Stoke Holy Cross Hall			No	Su		Dem c.1939 by family
Stokesby Old Hall			No			??? ext C20
Stow Bardolph Hall			??	Su, De		Extant
Stradsett Hall			No			Extant

Stratton Hall			No	P		
Stratton Strawless Hall			Yes			Much reduced but extant WW2 history
Strumpshaw Hall			No			extant
Sturston House/Hall			Yes?			
Sustead Hall			No			Extant
Sustead Old Hall			No			Extant, farmhouse
Swaffham Manor House			No			Extant
Swafield Hall			No			Extant
Swafield House			No			Extant
Swannington Hall			No			Extant
Swannington Manor			No			Extant
Swanton Abbott Hall			No			Extant
Swanton Morley House			No			Extant
Swanton Novers House			No			Extant
Tacolneston Hall			No			Extant
Tacolneston Old Hall			No			Extant – farmhouse now?
Tasburgh Hall			No			Extant?? (B&S)
Tasburgh Lodge			No			?? (B&S)
Taverham Hall			No			Extant , school from 1920
Templewood, Northrepps			No			Extant
Testerton House			No			Extant but reduced
Tharston Hall			No			Extant
Thickthorn Hall, Hethersett			No			Extant, apartments
Thornham Hall			No			Extant
Thorpe Abbots Place			No			Dem accord B&S but accord Country Life 29 Mar 2007 house up for sale!
Thompson Hall/Butters Hall			No			Not mentioned in B&S
Thorpe Hall, Thorpe Market			No			Not mentioned B&S
Thorpland Hall, Fakenham			No			Extant
Threxton House			No			Extant sold 1946
Thrigby Hall			No			Extant, wildlife centre
Thurgarton Hall (aka Old Hall			No			Extant

and House)						
Thurning Hall			No			Extant but neglected (B&S)
Thursford Hall			No		1952	Dem except for kitchen wing 1919
Thurton Hall			No			Extant
Thwaite Hall, Thwaite All Saints			No			Extant
Toftrees Hall, Dunton			No	De	1952	Ruinous and dem 1958
Topcroft hall			No			Extant
Tottington Hall			???			Not in B&S
			STANTA			
Trunch Hall			No			
Tunstead Hall			No			
Twyford Hall			No			Estate split up 1925, house extant Fire??
Twyford House			No			Extant
Wacton Hall			No			Extant
Walsingham Abbey			No			Extant
Washingford House, Bergh Apton			No			Extant
Wallington Hall			No			Extant
Watlington Hall			Yes	Bn		Extant
Wattlefield Hall			No			Extant
Waxham Hall			No			Extant
Weasenham Hall			No	Du, N		Extant
Weeting Hall			No	Su	1952	Dem 1952
West Acre High House, Westacre			No			Extant
West Barsham Hall			No		1966	New hall built
West Bilney Hall			No			Extant
Westgate Hall, Burnham Westgate			No			Extant
West Harling Hall			No		1947 but see->	Sold, dem 1929

West Lodge, Aylsham			No			Extant
Weston House, Weston			No		1971	Extant
Weston House, W Longville			No			Extant
West Somerton Hall			No		1946	Occ until 1934, now dem – when?
West Tofts Hall			STANTA			Dem mid-C20 accord B&S (battle area but not mentioned)
Westwick House			No			Extant
Westwick Old Hall			No			Extant
White House, Whitwell			No			Extant
Whitwell Hall, Whitwell			No			Extant
Wicklewood Hall			No			Extant
Wilby Hall			No			Part extant, farmhouse
Windham Manor			No			Not listed B&S
Winnold House, Wereham			No			Not listed by B&S
Winston Hall, Gillingham			No			Extant – now known as farmhouse
Witton Hall, N Walsham			No		1971	Dem 1927
Witton House, nr Norwich			No		1971	Dem
Wiveton Hall			No			Extant
Wolterton Hall			Yes			Major long-term occupation
Woodbastwick Hall			hosptl	Su, De		Dem 1971
Wood Dalling Hall			No			Extant
Woodgate House, Aylsham			No			Extant
Wood Hall, Hilgay			No			Extant
Wood Norton Hall			No			Extant
Wood Rising Hall			No			Present house built 1960 replacing Victorian one.
Worstead House			No		1939	Dem 1939, estate broken up
Wortwell Hall			No			Extant – much like a large farmhouse
Wramplingham Hall			No			Extant
Wretham Hall			Yes	Dw, Su		Burnt 1900 rebuilt, Lived in WW2 but included in Battle Area . Dem.1950s
Wroxham Hall			No	Su		Demolished – estate owned by owner of Broad House
Wroxham House			No			Burnt, demolished
Yarrow House, Bintree			No			Extant

Summary: 459 houses itemised as extant at 1900 or, in one case, built in 1903.

Of which: 32 occupied, rendered unusable (STANTA) or known to have been surveyed by military WW2

B = house destroyed by fire; where B is followed by a D, that denotes when the house was finally demolished

N = house demolished and replaced by a new house

P = a significant part of the house has been demolished

Pr = where the house was partially rebuilt

S = it is a shell or ruins

A = abandoned

Su = surplus to requirements (ie. family had other houses or was no longer required by owners (the government etc))

D = date of final demolition - usually following partial demolition or fire

Du = urban development (replaced by housing estate, hospital, school)

Di = industrial development (replaced or blighted by industrial works, coal mining)

De = derelict (ie. had fallen into such a state of disrepair that there was either not the will or financial means to repair it)

Dw = wartime damage (either enemy action or through requisition) too severe to be economically repaired

Iw = insufficient wealth to maintain house - sometimes linked to conversion of stables to replace main house

Pr = partially restored

Sources

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APPENDIX 2 to CHAPTER 6: Additional noted military units located at country houses

2 Corp's 18th Division Signals were based at Rackheath Park in July and August 1940, leaving the house itself undisturbed, and fully three years before the USAAF's airfield on the same site was completed.

2nd Cambridgeshires were encamped at Melton Constable at the same time, as were the 5th Suffolks at Rollesby Hall.

Royal Army Service Corps units were based as The Grange, Catton, Letton Hall, Gressenhall House, East Carleton Manor and Hingham Hall.

Royal Artillery troops were quartered at Crome House and The Warren, Old Catton, Merton Park near Watton, Kimberley House, Wymondham and Taverham Hall.

Royal Engineers occupied Bryn House, Wroxham, Cawston Manor, Woodbastwick Park, East Harling Park and Shadwell Court, Brettenham.

Ambulance units were stationed at numerous locations including Bylaugh, aside from the RAF's presence there, and Keswick Hall, Norwich. In particular, Didlington was utilised as 52 Division's HQ long before 7th Armoured Division arrived in 1943.

Horstead Hall and Brandon Hall were hosting anti-aircraft units. Other occupancies among many included Brandon Hall, Westmere, Weeting and Glandford.

Brooke Hall was HQ 4th Bn Royal Norfolk

Part of the Haveringland estate was taken over for Swannington airfield and the Hall for officers' quarters