ARCHAEOLOGICAL EVALUATION AND HISTORIC BUILDING RECORDING AT LOW GRANGE FARM, A1 TRUNK ROAD (A1085), ESTON, REDCAR AND CLEVELAND

MAY 2011

PRE-CONSTRUCT ARCHAEOLOGY

Archaeological Evaluation and Historic Building Recording at Low Grange Farm, A1 Trunk Road (A1085), Eston, Redcar and Cleveland

Central National Grid Reference: NZ 5405 1984

Site Code: LGF 11

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1. NON-TECHNICAL SUMMARY

1.1 A programme of archaeological work, comprising field evaluation and historic building recording, was undertaken in April 2011 by Pre-Construct Archaeology at Low Grange Farm, Eston, Redcar and Cleveland. The site is located on the north-east side of the junction of the A1 Trunk Road (A1085) and Normanby Road, centred at National Grid Reference NZ 5405 1984. The work was required as a planning condition ahead of the proposed development of the site for a new retail store and other facilities. The fieldwork was commissioned by CgMs Consulting on behalf of the developer, Tesco Stores.

1.2 An extant World War Two pillbox in the central part of the site represents the principal focus of archaeological interest, while aerial photographs from 1946 suggested the potential presence of other wartime defence structures in the western part of the site. The pillbox and any associated features were elements of the defensive perimeter of Grangetown 'Aerodrome', which was established during spring 1940 as a decoy airfield for RAF Thornaby. Grangetown served both as a day and night decoy airfield; it was equipped with a complement of dummy aircraft to deceive the Luftwaffe during the day and an arrangement of electric lamps that mimicked the lighting set of a real airfield at night. The defences may also have served as a component of the wider defensive network around the 'Fortress of Middlesbrough'.

1.3 The programme of archaeological work comprised a trial trenching evaluation to establish the archaeological potential for World War Two defence-related activity in the western part of the site and historic building recording of the pillbox to compile a permanent record of the extant structure, which was considered to be of intrinsic historical interest at a local level.

1.4 The building recording element of the project examined and recorded the rectangular concrete pillbox, located in the central part of the site, built to the Department of Fortifications and Works design known as 'Type DFW3/23'.

1.5 Two trenches (Trenches 1 and 2) were investigated during the field evaluation element of the project. The trenches were located within a pasture field in the extreme western part of the site, adjacent to Normanby Road, to test potential archaeological remains possibly representing World War Two defensive features, as suggested by the aerial photographic evidence. Trench 1, measuring *c*. 30m by 1.5m, was positioned to test what appeared to be a substantial circular feature, possibly representing a gun emplacement or section post, while Trench 2, measuring *c*. 25m by 1.5m, was sited to test possibly associated features to the west.

1.6 The natural boulder clay sub-stratum was exposed within the base of both trenches, this the glacially-derived 'drift' geology of the area. The clay was overlain by a sub-soil in both trenches and five undated linear features, likely representing elements of a ridge and furrow agricultural system, were recorded. With broad U-shaped profiles and producing no datable artefactual material, the features are likely of medieval or post-medieval date.

1.7 Parts of two features were also recorded in Trench 1, these possibly representing elements of World War Two defence-related activity as identified on the aerial photograph. Since both features were filled with fragmented concrete, it appears that the original structure(s) that they represented had been demolished following disuse. No other archaeological evidence of World War Two defence-related activity was recorded in either trench. Topsoil and its developed turf line formed the existing ground surface of the pasture field.

2. INTRODUCTION

2.1 General Background

2.1.1 This report details the methodology and results of a programme archaeological work, comprising field evaluation and historic building recording, undertaken by Pre-Construct Archaeology Limited (PCA) 4-15 April 2011 at Low Grange Farm on the A1 Trunk Road (A1085), Eston, Redcar and Cleveland (Figure 1). The work was commissioned by CgMs Consulting Limited (CgMs) on behalf of Tesco Stores Limited ahead of the proposed development of the site for a new retail store, parking areas and other facilities.

2.1.2 Planning permission (reference no. R/2010/0540/FFM) has been approved for the development, pending the signing of a Section 106 agreement, by Redcar and Cleveland Borough Council. A desk-based Heritage Assessment and supplementary document compiled in 2010 by CgMs concluded that there was low-nil potential for archaeological activity prior to World War Two.[1]

2.1.3 An extant World War two pillbox lies within the central part of the site, towards the A1 Trunk Road (A1085); constructed of concrete it is described as a 'Type DFW3/23' pillbox. The structure is not a Listed Building. Aerial photographic evidence indicated further wartime defence-related remains within the western part of the site, adjacent to Normanby Road.

2.1.4 A condition of planning permission for the development required a programme of archaeological work, comprising field evaluation and historic building recording of the pillbox, prior to the commencement of development. A Brief for this work was compiled by Tees Archaeology.[2] In response to the Brief a Written Scheme of Investigation (Project Design) was prepared by PCA detailing the trial trenching evaluation and historic building recording.[3] The Project Design followed the format set out in *Management of Research Projects in the Historic Environment (MoRPHE)*.[4]

2.1.5 Recording of the pillbox involved compilation of a photographic, drawn and written record of the structure to 'Level 3' standards, as described by English Heritage.[5]

2.1.6 The field evaluation involved the investigation of two trial trenches located to target potential archaeological remains associated with World War Two defence-related activity within the extreme western part of the site. Positioning of the trenches was based aerial photographic evidence collected immediately after World War Two.

2.1.7 The Site Archive (Site Code: LGF 11) is currently held at the Northern Office of PCA and the retained element, comprising the written, drawn and photographic records, will be deposited with Tees Archaeology, Sir William Gray House, Clarence Road, Hartlepool. The Online Access to the Index of Archaeological Investigations (OASIS) reference number for the project is: preconst1-101350.

[1] CgMs 2010a; CgMs 2010b.
[2] Tees Archaeology 2011.
[3] PCA 2011.
[4] English Heritage 2006a.
[5] English Heritage 2006b.

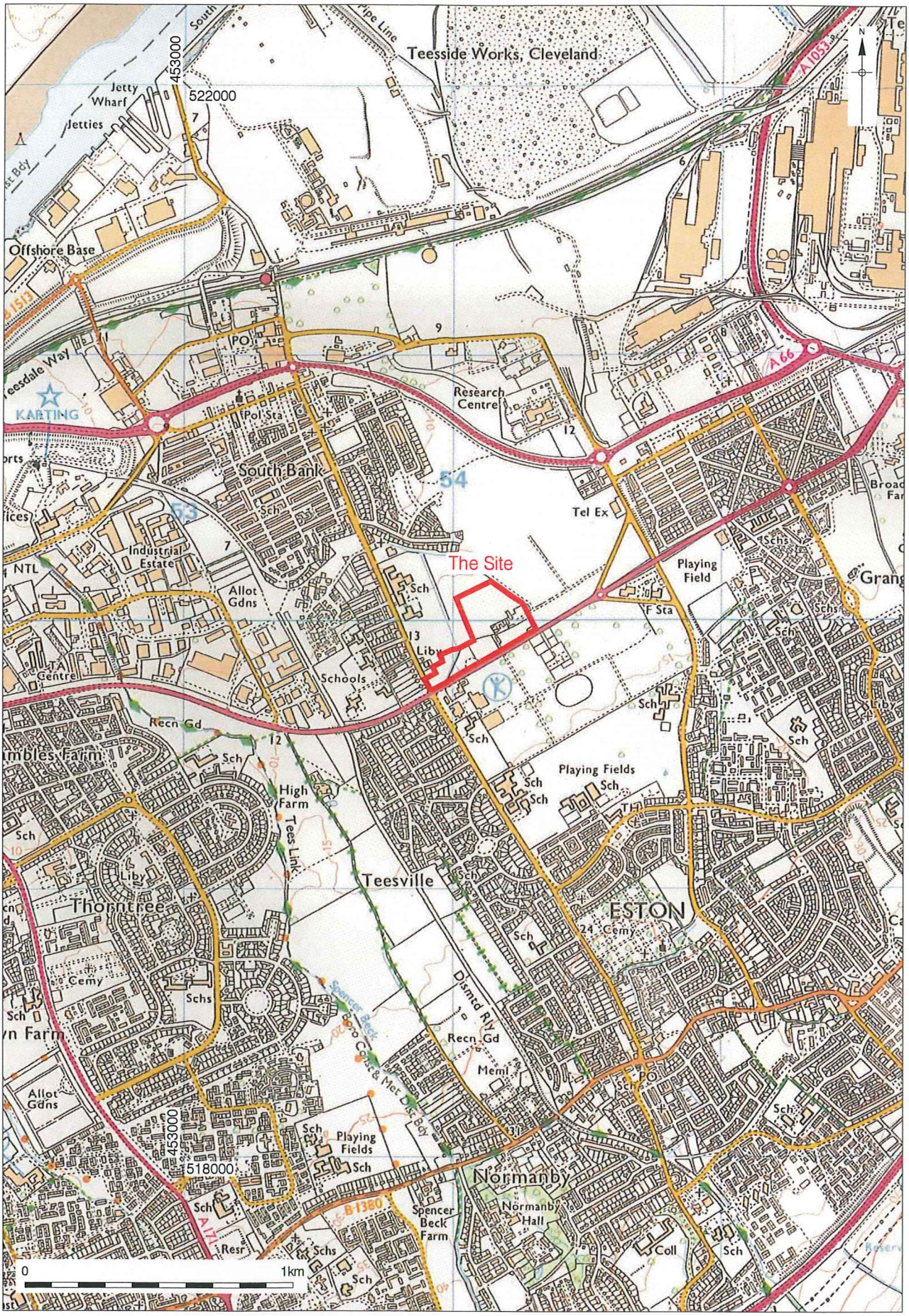

Figure 1
Site Location
1:20,000 at A4

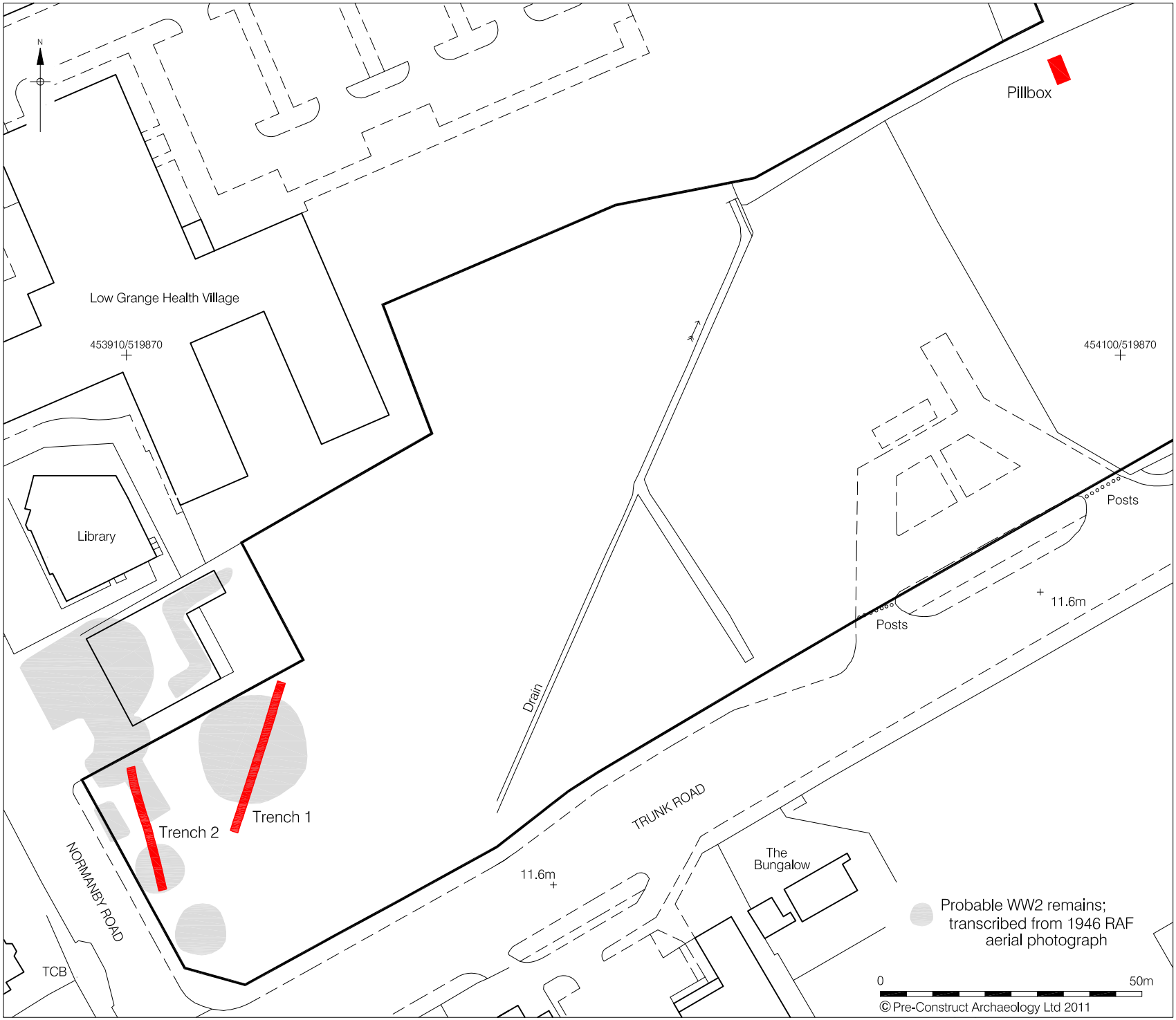

Figure 2
Trench and
Pillbox Locations
1:1,000 at A4

2.2 Site Location and Description

2.2.1 Eston is situated within the borough of Redcar and Cleveland, but is effectively part of the modern Middlesbrough conurbation. The site is located on the north-east side of the junction of the A1 Trunk Road (A1085) and Normanby Road, centred at National Grid Reference NZ 5405 1984 (Figures 1 and 2).

2.2.2 The site comprises a roughly L-shaped plot of land measuring *c.* 460m NE-SW by 260m NW-SE, with a total area of *c.* 6.75 hectares. It is bounded to the north mostly by field boundaries of rough pasture fields, as well as a Royal Mail depot to the west on Normanby Road, to the east by the field boundaries of rough pasture fields, to the south by the A1 Trunk Road (A1085) and to the west by Nomanby Road (Figure 1).

2.2.3 Prior to the archaeological work herein described, the majority of the site comprised rough pasture fields variously divided by hedgerows, fences and drainage ditches and an access road for the former Low Grange Farm. The farm buildings had stood within the central eastern part of the site, towards the A1 trunk Road, with the structures having been demolished ahead of the development. The site of a former filling station occupied the central southern part of the site, fronting onto the road (indicated by dashed lines on Figure 2); again this had been previously demolished.

2.3 Geology and Topography

2.3.1 The 'solid' geology of the area of the site is formed by the Redcar Mudstone Formation of the Lower Lias; formed in the Lower Jurassic this formation comprises the earliest element of the Eston Hills which flank the area of the site to the south.

2.3.2 Glacial 'drift' deposits in the area of the site generally comprise predominantly Devensian glaciolacustrine deposits of clay and silt, although a localised area of alluvium, comprising clay, silt and gravel, is known in the vicinity of canalised watercourse which runs SW-NE through the central part of the site and the easternmost portion of the site, the area formerly occupied by the buildings of Low Grange Farm, is known to be underlain by a localised area of Devensian till or boulder clay.[6]

2.3.3 Located *c.* 2km south of the river within the Tees Lowlands, the site lies on the northern margin of Eston, now part of the sprawling modern Middlesbrough conurbation. The site occupies generally level ground between a minimum height of *c.* 11.15m OD at the western and southern boundaries, gradually rising northwards to a maximum height of *c.* 12.50m OD. The 1st edition Ordnance Survey map from 1857 shows that Low Grange Farm had been established on the site by that date. It lay within what was still essentially a late post-medieval agricultural landscape along the Tees towards its estuary, an area which was to be rapidly transformed by industrialisation following the discovery of the Main Seam of the Cleveland Ironstone Formation in the Eston Hills in 1850.[7]

[6] The *British Geological Survey* website.
[7] Rowe and Green 2007.

2.4 Planning Background

2.4.1 Planning permission has been granted (reference no. R/2010/0540/FFM) to Tesco Stores Limited by the Local Planning Authority (LPA), Redcar and Cleveland Borough Council for the development of the site. The scheme involves construction of a new retail store, petrol filling station, public house/restaurant and community facility with associated access, car parking and landscaping.

2.4.2 The requirement to undertake the programme of archaeological work herein described is in line with planning policy at a national level as set out in *Planning Policy Statement 5 'Planning for the Historic Environment'* (PPS5).[8] PPS5 is a material planning consideration in the determination of planning applications. A key component of PPS5 is the definition of 'heritage assets', namely those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest.

2.4.3 The programme of archaeological work herein described was undertaken as a condition (no. 13) of the aforementioned planning permission, on the recommendation of Tees Archaeology, the body which provides archaeological development control in the four unitary Teesside local authorities. The aforementioned desk-based Heritage Assessment and supplementary document compiled by CgMs concluded that there are no designated heritage assets (*i.e.* scheduled monuments, listed buildings, *etc.*) within or particularly near the site and there is low-nil potential for archeological activity prior to the modern military era. An extant World War Two pillbox in the central part of the site is an undesignated heritage asset and buried archaeological remains within the western part of the site, as indicated by aerial photographic evidence, could potentially provide evidence for associated wartime defence-related activity. The reason given for the imposition of the planning condition was 'to ensure the recording of the heritage asset'.

2.4.4 Tees Archaeology produced the aforementioned Brief to outline the requirements for work at the site in order to fulfil the planning condition. The Brief stipulated that a Written Scheme of Investigation (WSI) was required in response to the Brief, this echoing the planning condition which specifically mentioned that a WSI must be submitted to and approved by the LPA prior to the commencement of development. The aforementioned WSI (Project Design) was prepared by PCA and approved by Tees Archaeology before the archaeological work was carried out.

2.4.5 At a local level, the Core Strategy Development Plan Document (2007) of Redcar and Cleveland's emerging Local Development Framework contains 'Policy CS25. Built and Historic Environment'. Full details of the policy and a discussion of its relevance in providing the local planning policy framework are set out in the Supplementary Heritage Assessment prepared by CgMs. In summary, the policy determines that development proposals will be expected to contribute positively to the character of the built and historic environment of the borough and the character of the built and historic environment will be protected, preserved or enhanced.

[8] Department of Communities and Local Government 2010.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Information in this section is largely extracted from the aforementioned CgMs Heritage Assessment and supplementary document. The research and writing of those responsible is acknowledged. Additional information has been added where appropriate from various sources. Tees Archaeology Historic Environment Record (HER) entry numbers are distinguished by the HER prefix.

3.1 Archaeological Background (and Map Regression Evidence)

3.1.1 The CgMs Heritage Assessment established that there are no scheduled monuments or other designated heritage assets within the development site. Three listed buildings lie in close proximity in South Bank, *c.* 1km to the north-west of the site, these comprising a war memorial in King George's Square (HER 60363), the Church of St. John the Evangelist (HER 60370) and a Baptist Church (HER 60371).

3.1.2 The CgMs Heritage Assessment identified that there were relatively few HER entries within a 1km radius study area around the site. The most significant entry relates to World War Two, this being the extant pillbox (HER 4880). Other potential World War Two activity was identified on the site from an on a RAF aerial photograph from November 1946, including a potential gun emplacement and anti-tank trench adjacent to Normanby Road (Plate 12). These are discussed in greater detail in due course below.

3.1.3 No HER entries for the various prehistoric periods lie within the 1km radius study area and generally there is sparse evidence for prehistoric activity within the wider area of the Tees Valley. The Eston Hills to the south-east of the site are known for their well-preserved prehistoric landscape, including evidence of settlement and funerary monuments of various prehistoric periods, and it has been suggested that the sparse prehistoric settlement activity recorded along the Tees Valley may be the result of the heavy soils, with the drier, well-drained soils of the higher ground being preferable.

3.1.4 The CgMs Heritage Assessment identified no HER entries of the Iron Age or Roman periods within the 1km radius study area. The nearest known Iron Age site is the earthwork remains of Eston Nab hillfort (NMR 20870) located *c.* 2.5km to the south-east. The nearest find associated with the Roman period is a chance find of pottery *c*. 1.6km west of the site.

3.1.5 There are no HER entries of the Anglo-Saxon or medieval periods within the site or in its immediate vicinity. Documentary sources record a religious cell at Middlesbrough in 686 AD. The earliest archaeological evidence of a religious order comprises the remains of a 12th century building. From 1300 onwards, priory land at Middlesbrough was let to tenants, although only five were recorded in the 15th century. By the 15th century, Middlesbrough comprised a small agricultural community with a parochial church.

3.1.6 Throughout the majority of the post-medieval period the Middlesbrough area essentially consisted of dispersed small villages within an agricultural landscape south of the Tees. From the mid 19th century the area's abundant mineral resources, particularly the ironstone of the Eston Hills, led to rapid industrialisation and it was the iron industry which undoubtedly provided the main catalyst for the associated expansion of settlement and infrastructure along the south bank of the Tees in the Middlesbrough area. By 1900 Middlesbrough was producing one third of Britain's pig iron. The drift and solid geology was exploited alongside the mineral resources as the demand for building materials was driven by the ironstone mining boom and many brickworks developed around the mines and iron works to provide both raw materials for the works themselves and the associated workers housing.[9]

3.1.7 The CgMs Heritage Assessment identified four historic farms within the 1km radius study area: the 18th century farmhouse and cottage at High Grange Farm (HER 5297), Clay Lane Farm, Eston Grange Farm and Low Grange Farm (this within the site, HER 6153). Low Grange Farm is shown on the 1st edition Ordnance Survey map of 1857.

3.1.8 The CgMs Heritage Assessment identified numerous HER entries associated with 19th century industrialisation within the 1km radius study area, and the main elements are summarised below. Approximately 700m to the north of the site was the Eston Iron Works (HER 5631). By 1874 their blast furnaces had been demolished and replaced by the Cleveland Steel Works (HER 5633) which opened in 1876. The Clay Lane Slag Works (HER 5618) and the Clay Lane Tramway (HER 5620) were both located *c.* 500m north of the site. To the east of the site are two earthwork features annotated on historic mapping as 'Old Clay Pits' (HER 5616 and 5617) and noted on the HER record as being associated with the South Bank and Normanby Brick Works (HER 5621) which opened in the 1880s. The brick works were serviced by a spur of the Normanby Branch Line (HER 5607). To the west of the site historic mapping shows an 'Old Shaft' (HER 5638).

3.1.9 The 1st edition Ordnance Survey map of 1857 is the earliest map to show the site in any detail, at this time it occupied parts of three fields. This map shows the Eston Branch Railway which was opened in 1853 (HER 1517/5626) to connect the ironstone mines in the Eston Hills to the Teesside iron manufactories.

3.1.10 Low Grange Farm is labelled as 'Eston Low Farm' on the 2nd edition Ordnance Survey map, which shows only minor changes to the layout of the field system within the site. The Ordnance Survey map of *c.* 1940 shows the addition of ancillary buildings to Low Grange Farm which is now labelled 'Low Grange'. The field system remains unchanged with the exception of the widening of a NE-SW aligned drainage ditch.

3.1.11 During World War Two, a pillbox (HER 4880) was constructed within the central part of the site. The pillbox is described on the HER as a 'Type 23' constructed 1940-1941. Built of concrete it is of a fairly common design. Rectangular in shape, it comprises a square enclosed chamber with three loopholes and is backed by an open platform with a centrally located mounting for a light anti-aircraft machine gun.

[9] Rowe and Green 2007.

3.1.12 An RAF aerial photograph taken 13 November 1946 (Plate 12) indicates other probable World War Two defence-related features within the extreme western end of the the site and to its immediate north, the area now occupied by the Royal Mail depot on Normanby Road. The HER notes a large circular feature which is possibly a gun emplacement and a possible anti-tank trench. These features formed part of Grangetown 'Aerodrome', which was established during spring 1940 as a decoy airfield for RAF Thornaby and may have also comprised an element of the wider defensive network around the 'Fortress of Middlesbrough'.

3.1.13 By the 1970s, a filling station (now demolished) had been built in the central southern part of the site, fronting onto the A1 Trunk Road (A1085).

3.2 Historical Background (Specific to the Low Grange Farm Pillbox)

The Development of Aerial Decoys, 1939-1940

3.2.1 During the World War One both the Admiralty and the Royal Flying Corps conducted experiments designed to test the effectiveness of dummy airfields as a means of diverting enemy aircraft from attacking operational airstrips.[10] While these exercises demonstrated the potential usefulness of such decoys, any lessons learnt were quickly forgotten after the Armistice and the subject was neglected until rearmament began during the mid-1930s.

3.2.2 The enlargement of the RAF after 1934 necessitated the construction of a substantial number of new airfields, the majority of which were concentrated in the southern and eastern counties of England. Most of these new 'expansion period' aerodromes were designed to ensure that the impact of enemy aerial attack would be dissipated, primarily by means of improved camouflage and protective measures and by dispersing buildings and parked aircraft as widely as was practicable. The principle of dispersal extended to the establishment of new satellite airfields, to which aircraft would be flown in the event of war.[11]

3.2.3 As the airfield expansion programme approached completion in 1938, officials at the Air Ministry began to investigate the possibility of establishing decoy sites to draw enemy aircraft away from attacking real airfields. Following months of discussion between the various RAF Commands, it was decided in June 1939 to establish a network of decoy sites east of a line between Southampton and Perth, although no further progress had been made by the time that war broke out in September.[12] It was therefore fortuitous that the Air Council independently appointed Colonel John Turner, the recently retired head of works of the RAF expansion programme, to head a new branch of the Air Ministry responsible for decoy airfields, known for reasons of secrecy simply as 'Colonel Turner's Department'.

[10] Dobinson 2000, 2-3.
[11] *ibid*, 8.
[12] *ibid*, 13.

3.2.4 Turner immediately drafted a specification for day and night decoy airfields; the former replicating the simple layout of satellite airfields and equipped with a complement of dummy aircraft, the latter comprising an arrangement of electric lamps that mimicked the lighting set of a real airfield at night.[13] Among the manufacturers that supplied the dummy aircraft for use at the 'K' sites were two key players in the British film industry, Sound City Films of Shepperton and Gaumont British Films, and a small number of engineering firms including the North-Eastern Aircraft Components Company of Gateshead.[14] While the night decoys were designated 'Q' sites (after the vessels used by the Royal Navy to lure German U-Boats to the surface during the previous war), the day decoy airfields became known as 'K' sites, although the reason for the 'K' prefix is unknown.[15]

3.2.5 The 'K' programme was launched in January 1940 and was approaching completion by the time that the earliest 'Q' sites came into operation in April 1940. Nearly 40 'K' sites were operational by the end of the month, including the present site at Grangetown, which served both as a 'K' and 'Q' decoy for the RAF Coastal Command station at Thornaby.[16]

3.2.6 The frequent use of incendiary bombs during early attacks on 'Q' sites suggested to Turner that enemy aircraft might be drawn by the use of controlled fires at night, which could deceive pilots into thinking that the decoys were targets 'lit up' by earlier waves of bombers. Working in collaboration with the technicians of Sound City Films, Turner's department introduced the first of a number of experimental 'Q' fire ('QF') sites that July.[17] A second decoy airfield for RAF Thornaby, located approximately 10km to the south-west at Middleton, was designated as a joint 'Q'/'QF' site for the Coastal Command station.[18]

3.2.7 Each 'K' site was manned by a detachment of approximately 20 RAF personnel, specially trained for the task at the RAF Balloon Depot at Hook, Surrey.[19] In order to convince enemy pilots and air photographic interpreters that 'K' sites represented actual satellite airfields, the 'K' crews created areas of disturbed soil to represent fuel and ammunition dumps, carved out landing strips and painstakingly formed tracks to the dummy aircraft dispersed around the site perimeter.[20] Rudimentary air raid shelters were provided to protect crews against attack from the air. By the summer of 1940, 'K' site crews were creating increasingly sophisticated deceptions, including spread gravel 'hard standings' dusted with clinker to suggest oil spillages, while vehicles were regularly driven across sites to suggest activity.[21]

3.2.8 'Q' sites were typically manned by a crew of two, usually detached from the parent airfield.[22] Each 'Q' crew operated the lighting set from a partly sunken brick and concrete bunker (sometimes known as an operation post) which contained a generator to power the lights, the switches to vary the lighting sequence and intensity and a telephone line to the parent station. These bunkers served the dual purpose of protecting their crews from the enemy attack.

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[13] *ibid*, 23.
[14] *ibid*, 21-25.
[15] *ibid*, 34.
[16] *ibid*, 39, 244.
[17] *ibid*, 58.
[18] *ibid*, 46, 244. The Middleton 'Q'/'QF' decoy site was an entirely separate operation from RAF Middleton St. George (aka RAF Goosepool), which was a Bomber Command station opened in 1941. Middleton St. George had its own 'Q' decoy site at Crathorne, which was situated close to the Thornaby decoy at Middleton (Dobinson 2000, 252).
[19] *ibid*, 30.
[20] *ibid*, 40-41.
[21] *ibid*, 41.
[22] *ibid*, 45.

The Defence of Britain against Invasion, 1940

3.2.9 In the weeks that followed the fall of France and the evacuation of the British Expeditionary Force from Dunkirk at the end of May 1940, a German invasion of the United Kingdom seemed imminent. In response to this threat, urgent action was taken to reinforce the nation's outdated home defences. A hurried campaign of coastal battery construction began the same month, while Prime Minister Winston Churchill made the Commander-in-Chief of Home Forces, General Sir Edmund Ironside, responsible for establishing defences capable of containing a German attack.

3.2.10 As a consequence of the loss of military matériel during the Dunkirk evacuation, British forces had no option other than to defend the country from fixed positions located behind the invasion beaches. It was hoped that these defences would be capable of withstanding the enemy assault long enough to allow the Royal Navy to sail south from Scapa Flow to attack the German invasion fleet, while the two armoured divisions that had remained in Britain during the Dunkirk evacuation would launch counter-attacks against those German units that had managed to get ashore.

3.2.11 The defended Coastal Crust represented the outermost layer of Ironside's system of defence in depth. Should the Germans have succeeded in breaching this layer before British reserves arrived, they would have been confronted by a network of fortified static 'Stop Lines' along rivers and other natural obstacles, which encircled the major cities and industrial areas with anti-tank (ATk) defences. The top tier of Ironside's hierarchy of defences was the General Headquarters (GHQ) Line, a series of linked linear ATk obstacles and hardened fortifications which ran nearly 640km from the Bristol Channel in the south-west to the Wash in the east.[23] The GHQ Line was complemented by a subordinate network of regional Army Command and local Corps, Division and Brigade Lines. When complete, Ironside's defensive network was designed to ensure that likely invasion areas were defended by a series of interlocking defended boxes, into which enemy units 'might be channelled, contained and ultimately destroyed'.[24]

3.2.12 Responsibility for the design of all fixed defensive military structures utilized by the army was vested in the War Office Directorate of Fortifications and Works (DFW). In May 1940 a department dedicated to the design of anti-invasion defences (DFW3) was established under the command of Major-General Taylor.[25] During May and June of that year DFW3 published a series of design drawings of hardened defensive structures, which included at least nine pillbox designs (drawings DFW3/22-28A). These drawings were issued to the commanders of Royal Engineers (RE) Companies in the field responsible for the construction of fixed defences in each Command, Corps, Division or Brigade area, who in turn supervised the local contractors who built the defensive works.

[23] Osborne 2004, 45-48; TNA CAB 66/9/16, 30/06/1940.
[24] Osborne 2008, 76.
[25] *ibid*, 77.

3.2.13 It had originally been intended to extend the GHQ Line north of the Wash as far as Richmond in North Yorkshire, although construction of pillboxes on the projected route north of the River Welland was suspended in June 1940.[26] Following the lukewarm reception given by the Chiefs of Staff to Ironside's home defence scheme at the end of June, on 19 July Churchill decided to retire his Commander-in-Chief and replace him with General Sir Alan Brooke, who had recently gained first-hand experience of modern mechanized warfare in France.[27] Brooke shared Churchill's doubts concerning the military value of static inland defences and set about establishing a mobile reserve force to engage invaders close to the coast. Although the Coastal Crust remained a vital part of Brooke's defence scheme, the rate of pillbox construction elsewhere slowed as the strategy of static defence was supplanted by an interlocking network of 'nodal points' (a concept originally devised by Ironside), within which key towns, road, rail or inland waterway junctions were designated as areas of fixed all-round defence which would stand firm against enemy attacks in order to act 'as 'hinges or pivots of manoeuvre' that would force the enemy into positions vulnerable to counter attack by mobile reserve units.[28] Brooke's new strategy was communicated to all Home Commands in early August when it was ordered that all further development of the GHQ Line cease.[29]

3.2.14 While the change of strategic direction forestalled the planned northward extension of the GHQ Line, construction of Coastal Crust defences in the North-East continued throughout the summer of 1940. 59 Division was responsible for the defence of much of the region, with Teesside comprising part of the Left Sub-Sector of the Division's Defence Plan.[30] This plan further sub-divided the defended area into Coastal Crust defences, Vulnerable Points and inland Defended Localities.

3.2.15 The Defence Plan designated the site of the investigations described herein as one of several Vulnerable Points on Teeside, so-called because they required special protection to prevent them from falling into enemy hands in the event of a raid or invasion.[31] Mindful of the tactics used by the German forces during the invasions of Norway and the Low Countries, defence planners anticipated that any attempt to invade Britain would involve the simultaneous landing of assault troops by sea and air in areas where the enemy had gained temporary air superiority. While the main thrust of any invasion would come from the sea, it was expected that the enemy would also land thousands of troops by parachute and glider to the rear of the forces defending the beaches. Paratroops would be dropped first, in order to seize landing grounds for troop-carrying gliders and transport aircraft, which would bring in further reinforcements. Having landed, these troops were expected to attack beach defences from the rear and to attempt to secure ground for the forward columns of armoured formations advancing from the coastal beachhead.[32]

[26] Osborne 2004, 48.
[27] TNA CAB 66/9/16, 27/06/1940; Wills 1985, 13.
[28] Lowry 2003, 76; Thompson and O'Gorman 2009, 12.
[29] Thompson and Bower 2010, 15.
[30] Wilkie 2006, 29.
[31] *ibid*, 30.
[32] Thompson and O'Gorman 2009, 13.

The Ground Defence of RAF Airfields and Decoy Sites

3.2.16 In the early summer of 1940 it became apparent to the RAF that its airfields were extremely vulnerable to this type of airborne assault. While Major General Taylor of the Directorate of Fortifications and Works was instructed to devise a national plan for the defence of airfields, all RAF station commanders were ordered to organize the defence of their airfields using any means available.[33] The 'K' sites were virtually defenceless against attack, prompting Colonel Turner to issue a circular that May instructing 'K' detachments to construct machine-gun emplacements to counter low-flying attackers.[34]

3.2.17 Although it has been suggested that the defence of RAF airfields was mainly improvised during the months preceding the publication of Taylor's report that September,[35] contemporary War Diaries suggest that extensive construction of defensive works took place at aerodromes across the country during July and August.[36] Taylor's report identified three classes of airfield, defined by their potential usefulness to the enemy and by their potential to be used as bases from which to launch counter-attacks. Thus any airfields located within 20 miles (32km) of a major seaport were designated Class I, which qualified them for the highest level of protection. In total Taylor identified five classes of airfield (Classes I, IIa, IIb, IIc and III) and proscribed the number of defence works necessary for each.

3.2.18 Using the tactics deployed by the Germans during the invasions of Norway and the Netherlands as a guide, Taylor anticipated that attacks would be preceded by bombing and strafing of the perimeter defences, followed by parachute drops beyond the perimeter. Having captured the landing strip intact, the enemy would subsequently land supplies and reinforcements using transport aircraft. It was therefore necessary to build defences that faced both outwards, to protect against external assault and inwards, to resist air landings. The schemes integrated dual purpose weapons that could be used in anti-aircraft and ground defence roles, dummy pillboxes designed to draw enemy fire, rifles pits and barbed wire entanglements. Taylor also specified the optimum sizes of the garrisons required to man the defences of each class of airfield, ranging from 200 men for a Class III site to 300 for a Class I station.[37] Until the formation of the RAF Regiment in 1941, these contingents were drawn from local Army units and defence platoons of RAF ground personnel.

3.2.19 The defence of RAF stations against ground assault was coordinated from a Battle HQ, which until a standardized design was issued by the Air Ministry in 1941, could be a converted airfield building or an adapted pillbox.[38]

[33] Osborne 2004, 92.
[34] Dobinson 2000, 52.
[35] Osborne 2004, 92.
[36] TNA WO 166/3806; Wilkie, 2006, 46-49.
[37] Osborne 2004, 93.
[38] *ibid*, 94-95.

The Ground Defence of RAF Thornaby and its Decoys

3.2.20 A contemporary War Diary indicated that RAF Thornaby was defended in August 1940 by an inner perimeter of eight light machine gun (LMG) pillboxes, which were sited so as to fire inward against any enemy aircraft attempting to land.[39] While these posts were manned by RAF personnel, the airfield's outer defensive perimeter comprised 14 'blockhouses', manned by regular troops of the Green Howards.[40] These were supported by eight dual-purpose anti-aircraft positions.

3.2.21 The War Diary of 509 Field Company Royal Engineers indicated that at least six machine gun pillboxes were built to protect the 'K'/'Q' decoy airfield at Grangetown, supported by a number of concrete section posts.[41] The posts are likely to have been simple entrenched positions reinforced with concrete and sandbags for troops armed with rifles and or machine guns, built to one or more of a number of standard designs used by the Royal Engineers.[42] It is conceivable that the potential gun emplacement identified from the 1946 aerial photograph was in fact one of these posts, which could be quite substantial structures. Construction of the pillboxes and posts was carried out during August 1940 by a local civilian contractor identified as a Mr. Coates, working under the direction of sappers of 509 Field Company Royal Engineers.[43]

3.2.22 Wilkie lists 68 Anti-Tank Regiment, 116 Field Regiment Royal Artillery and 13th Battalion Durham Light Infantry as amongst the defenders of the decoy airfield's perimeter in 1940.[44] The identity of the unit and contractors responsible for the construction of the 'Q' shelter at Grangetown (and the location of the structure itself) are presently unknown.

3.2.23 While the defences of Middleton 'Q'/'QF' decoy airfield were not investigated by Wilkie, a visual examination of Defence of Britain database records indicated the potential survival of two Type DFW3/23 pillboxes within the likely vicinity of the former site (S0010191 and S0010192). The same database contained records of a further four Type DFW3/23 pillboxes on or near the former Crathorne (Middleton St. George) 'Q' decoy.

[39] Wilkie 2006, 46.
[40] *ibid*, 47.
[41] TNA WO 166/3775, cited by Wilkie 2006, 49.
[42] TNA WO 166/3806.
[43] Wilkie 2006, 49.
[44] *ibid.*

4. PROJECT AIMS AND RESEARCH OBJECTIVES

4.1 Project Aims

4.1.1 The project is threat-led, as the extant World War Two pillbox will be removed as part of the development and any surviving sub-surface archaeological remains of associated wartime features will likely be destroyed. The specific aims of the programme of archaeological work, as set out in the Written Scheme of Investigation, were to record the pillbox and to inform all project stakeholders of the degree of survival and importance of archaeological remains in the western part of the site, specifically those associated with World War Two defence-related activity indicated by aerial photographic evidence.

4.1.2 Archaeological trial trenching was undertaken to test the archaeological potential of the westernmost portion of the site. Two trenches (Trench 1 and 2) were investigated within the where potential features associated with World War Two defence-related activity are shown on the 1946 RAF aerial photograph.

4.1.3 Additional aims of the project were:

- to compile a Site Archive consisting of all site and project documentary and photographic records, as well as all artefactual and palaeoenvironmental material recovered;
- to compile a report that contains the results of the pillbox recording, as well as an assessment of the nature and significance of all archaeological data categories, stratigraphic, artefactual, *etc.,* derived from the evaluation.

4.2 Research Objectives

4.2.1 The project was considered to have the potential to make a significant contribution to existing archaeological knowledge of the Eston area of Redcar and Cleveland, in particular of military activity during the World War Two period.

4.2.2 Specific research objectives to be addressed by the project were formulated with reference to an existing archaeological research framework, *Shared Visions: The North-East Regional Research Framework for the Historic Environment* (NERRF),[45] which highlights the importance of research as a vital element of development-led archaeological work. It sets out key research priorities for all periods of the past allowing commercial contractors to demonstrate how their fieldwork relates to wider regional and national priorities for the study of archaeology and the historic environment.

4.2.3 The NERRF identifies the the following research priorities for 20th century archaeological sites which is of direct relevance to this project:

> **MOvi. Military and defence.** *'Features of World War Two still need recording; not only military sites, but also elements of the wider infrastructure related to the Home Front, such as air raid shelters. These sites are increasingly under threat, as is the potential for exploiting oral history as a means of better understanding the period'.*

[45] Petts and Gerrard 2006.

4.2.4 As defined by the Tees Archaeology Brief, the specific research objectives of the project are:

- to provide a permanent record of the World War Two pillbox and any buried archaeological remains at the site;
- to provide an interpretation of the pillbox and any buried archaeological remains and suggest how they might relate to other military installations of the period in the local area;
- to use oral history to record the experiences of those who were involved in the construction and use of the facilities.

5. ARCHAEOLOGICAL METHODOLOGY

5.1 Fieldwork

5.1.1 The archaeological programme of work was undertaken 4 to 15 April 2011. All fieldwork was undertaken in accordance with the relevant standard and guidance documents of the Institute for Archaeologists (IfA).[46] PCA is an IfA-Registered Organisation. The programme of archaeological work was undertaken in accordance with the Tees Archaeology Brief and the Project Design compiled by PCA.

5.1.2 Two trial trenches were investigated in the westernmost part of the site during the field evaluation. They were positioned to target potential archaeological remains of the World War Two defensive installation adjacent to Normanby Road. The locations of potential features were obtained from an RAF air photograph taken 13 November 1946 (reference RAF/CPE/UK, Plate 12) with rectification undertaken manually using the Mobius Network method. Trench 1 measured *c.* 30m x 1.5m, aligned NE-SW, and targeted a substantial circular feature representing a possible gun emplacement. Trench 2 measured *c.* 25m x 1.5m, aligned NNW-SSE, and targeted potentially associated features to the west, along the frontage of Normanby Road. Trench 2 was positioned to avoid the easement corridor (5m either side) of a trunk water main which runs west-east through the southern part of the site.

5.1.3 Both evaluation trenches were mechanically-excavated by a JCB 3CX back-actor with toothless ditching bucket under archaeological supervision. The trenches were excavated to the clearly defined top of the natural geological deposits. Both trenches were hand cleaned and then photographed and archaeologically recorded, with partial excavation undertaken as necessary.

5.1.4 As specified in the Tees Archaeology Brief, recording of the pillbox comprised a photographic, drawn and written record to the 'Level 3' standards detailed in *Understanding Historic Buildings: A guide to good practice.*[47]

5.1.5 The interior of the pillbox was cleared of accumulated detritus by hand. Limited machine-excavation was undertaken adjacent to the pillbox to establish the depth of its foundations (Figure 5).

5.1.6 All external elevations and a plan of the pillbox were drawn to scale by hand.

5.1.7 A detailed photographic record of the pillbox was compiled including:

- general views of the building;
- all external elevations, including details of openings and other features;
- general views of the interior of the pillbox, along with details of features of interest;
- constructional details, including any details which might help phase the structure or allow interpretation of its construction.

[46] IfA 2008a and 2008b.
[47] English Heritage 2006b.

5.1.8 The photographic record of the investigations was compiled using 35mm SLR cameras with black and white film and colour transparencies for archival purposes. Photographs included a legible graduated metric scale. The main record was supplemented by digital photography, using the JPEG (Joint Photographic Experts Group) setting, with the camera set for the largest image size with least compression.

5.1.9 Temporary Bench Marks (TBMs) were established across the site using the Leica Viva Smart Rover Global Navigation Satellite System (GNSS). TBM 1 - used for Trenches 1 and 2 - had a value of 12.12m OD; TBM 2-used for the pillbox recording – had a value of 13.76m OD. The height of all principal strata and features were calculated relative to Ordnance Datum and indicated on the appropriate plans and sections.

5.2 Post-excavation

5.2.1 The stratigraphic data generated by the project is presented in the written, drawn and photographic records. A total of 21 archaeological contexts were identified in the two evaluation trenches and in the slots excavated adjacent to the pillbox (Appendix B). Post-excavation work involved checking and collating site records, grouping contexts and phasing the stratigraphic data (Appendix A). A written summary of the archaeological sequence identified at the site was then compiled, as described below in Section 6. The results of the building recording of the pillbox are set out in Section 7.

5.2.2 No artefactual material was recovered during the evaluation.

5.2.3 The palaeoenvironmental sampling strategy of the project was to recover bulk samples where appropriate, from well-dated (where possible), stratified deposits covering the main periods or phases of occupation and the range of feature types represented, with specific reference to the objectives of the evaluation. To this end, no appropriate deposits were encountered and therefore no bulk samples were recovered. No other biological material was recovered.

5.2.4 The complete Site Archive will be packaged for long term curation. In preparing the Site Archive for deposition, all relevant standards and guidelines documents referenced in the Archaeological Archives Forum guidelines document[48] will be adhered to, in particular a well-established United Kingdom Institute for Conservation (UKIC) document[49] and a recent IfA publication.[50] The depositional requirements of the body to which the Site Archive will be ultimately transferred will be met in full. At the time of writing this will be Tees Archaeology, Sir William Gray House, Clarence Road, Hartlepool.

[48] Brown 2007.
[49] Walker, UKIC 1990.
[50] IfA 2008c.

6. RESULTS: THE ARCHAEOLOGICAL SEQUENCE

During the evaluation, separate stratigraphic entities were assigned unique and individual 'context' numbers, which are indicated in the following text as, for example [1.2], with '1' denoting the trench number and '2' the context number. The archaeological sequence is described by placing stratigraphic sequences within broad phases, assigned on a site-wide basis in this case. An attempt has been made to add interpretation to the data, and correlate these phases with recognised historical and geological periods.

6.1 Phase 1: Natural Sub-stratum

6.1.1 Phase 1 represents natural geological deposits, [1.3] and [2.3], exposed within the base of Trenches 1 and 2, respectively. These comprised stiff mid pinkish brown and mid yellowish brown clay, respectively, with few inclusions. This material is the glacially-derived drift geology of the area. It was recorded at a maximum height of 11.04m OD in Trench 2 and a minimum height of 10.74m OD in Trench 1, reflecting the relatively level natural topography within the westernmost part of the site.

6.1.2 The two slots excavated adjacent to the pillbox encountered stiff brown clay, [3.3], at a maximum height of 12.09m OD.

6.2 Phase 2: Undated

6.2.1 Phase 2 represents a site-wide, naturally formed sub-soil. Overlying the natural clay in Trenches 1 and 2 the sub-soil horizon, [1.2] and [2.2], respectively, comprised firm mid brown clayey silt with relatively few inclusions. The sub-soil was recorded at a maximum height of 11.26m OD in Trench 1 and a minimum height 10.96m OD in Trench 2 and ranged in thickness from 0.24m to 0.28m.

6.2.2 Within the pillbox slots the same sub-soil, [3.2], up to 80mm thick, was recorded at a maximum height of 13.07m OD.

6.2.3 No artefactual material was recovered from the sub-soil, therefore its period of origin is uncertain, although it is likely to be of medieval or earlier origin. It probably accumulated over a substantial period of time and may have been subject to episodic reworking when the land was utilised for agricultural purposes.

6.3 Phase 3: Medieval?

6.3.1 Phase 3 represents undated but probably medieval or post-medieval agricultural activity. Features assigned to this phase were recorded within Trenches 1 and 2.

6.3.2 A group of four parallel NW-SE aligned linear features, assigned group number [1.11], was recorded within Trench 1 (Figure 3) cutting through sub-soil [1.2]. In general, each of the features had a broad U-shaped profile, and the most substantial, recorded towards the south-western end of the trench, was *c.* 3.40m wide and *c.* 0.40m deep.

6.3.3 A single NW-SE aligned linear feature, [2.5], was recorded extending along the eastern edge of Trench 2 (Figure 4) cutting through sub-soil [2.2]. This feature also likely had a broad a U-shaped profile and it measured at least 0.90m wide and at least 0.26m deep.

6.3.4 The fills of all these linear features comprised firm mid yellowish brown clayey silt with relatively few inclusions.

6.3.5 The group of linear features recorded in Trenches 1 and 2 are interpreted as representing ancient agricultural activity at the site, with the features likely being the surviving portions of plough furrows of medieval or post-medieval date. In Trench 1 the southernmost three furrows were spaced *c.* 8m apart (between the mid-points of adjacent furrows), while the northernmost furrow was situated only *c.* 4m from its neighbour. Although no dateable artefactual material was recovered from the fills of the features, the generally broad spacing recorded in Trench 1 is suggestive of a probable medieval date for this activity. However, the markedly narrower interval between the two northernmost furrows is perhaps more suggestive of a later, post-medieval origin.

6.4 Phase 4: World War Two?

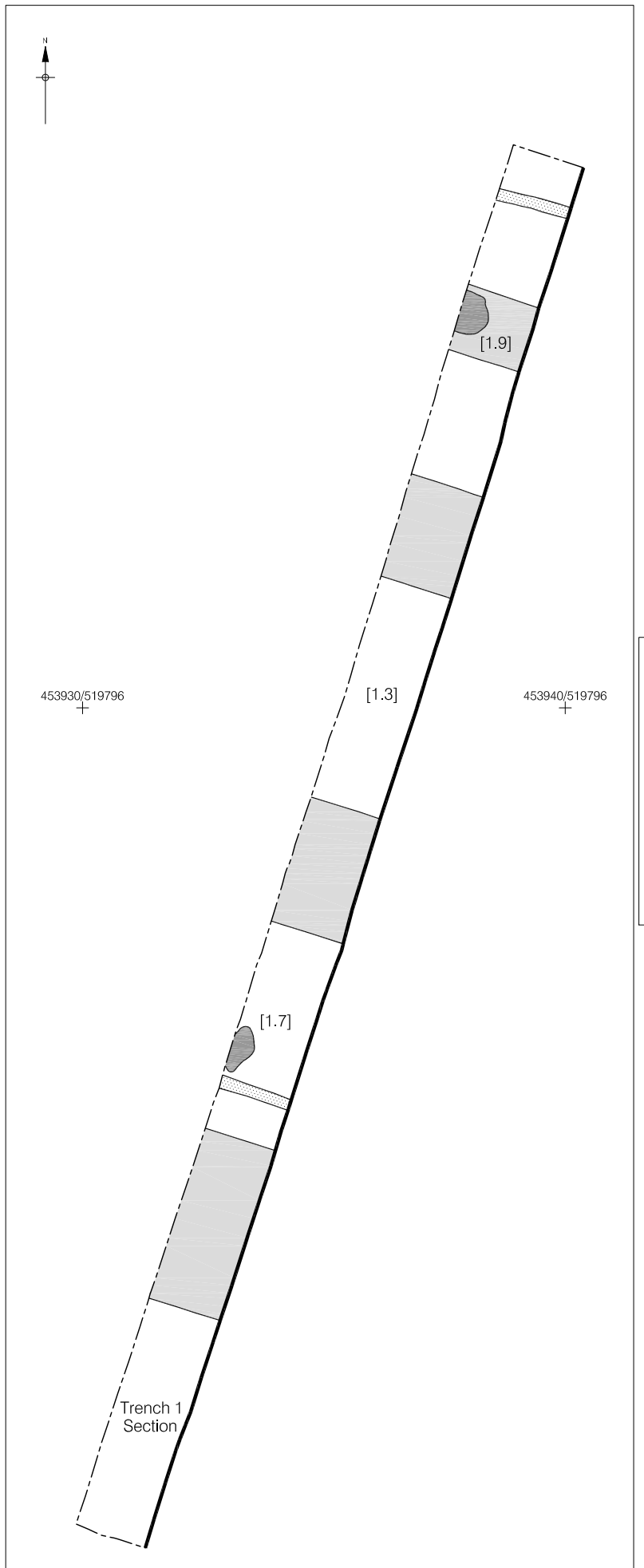
6.4.1 Phase 4 represents possible World War defence-related activity. Parts of two small discrete features, [1.7] and [1.9], were recorded within Trench 1, both adjacent to the western limit of excavation. The southernmost of these, feature [1.7], was sub-oval in shape and measured 1.0m north-south by at least 0.46m east-west and 0.37m deep. Located *c.* 16m to the north was the second feature, [1.9], this also sub-oval in shape, measuring 0.88m north-south by at least 0.62m east-west and 0.48m deep.

6.4.2 The fills of both features mostly comprised crushed and fragmented concrete, probably indicating demolition of a concrete structure. The features are likely to be contemporary and could represent the sub-surface remains of the substantial circular feature identified on the aerial photograph thought to represent a World War Two gun emplacement or similar feature (such as a former section post).

6.5 Phase 5: Modern

6.5.1 Two NW-SE aligned field drains were recorded within each of Trenches 1 and 2, with the pairs of features being designated group numbers, [1.5] and [2.7], respectively. All cut through the sub-soil and in Trench 2 one cut through plough furrow [2.5]. These are likely of late post-medieval or modern date, installed to facilitate drainage of the site.

6.5.2 Topsoil was recorded in Trenches 1 and 2 and within the pillbox slots and comprised friable mid grey clayey sandy silt. The maximum recorded thickness was 0.28m in Trench 2 (layer [2.1]) and the minimum recorded thickness was 0.12m in Trench 1 (layer [1.1]). The topsoil had a developed turf line, this forming the existing ground surface of the rough pasture fields on which the work was conducted.



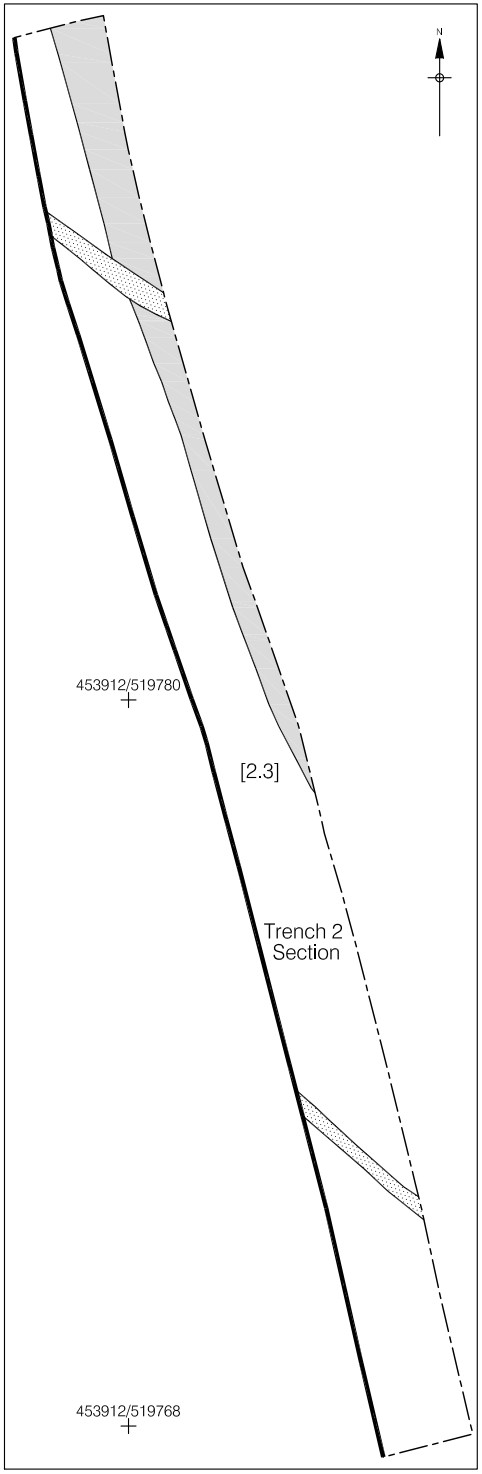
Trench 1 Section
North-west Facing

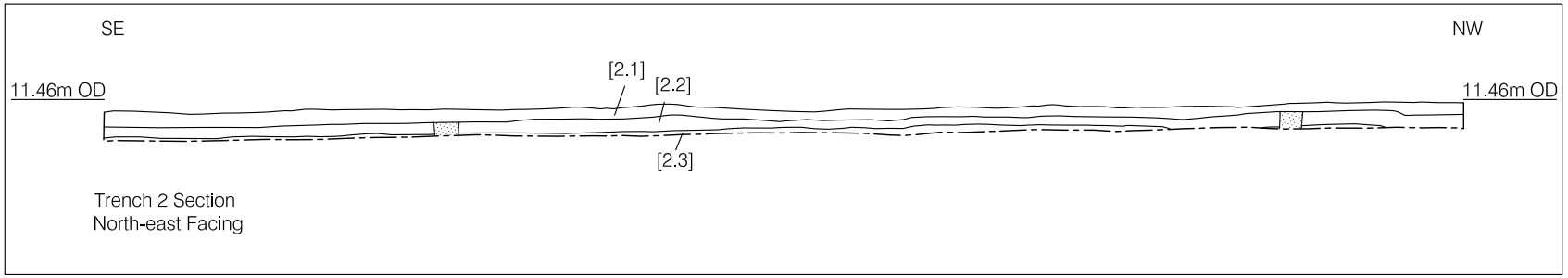
furrow

field drain

0 5m

Figure 3
Trench 1 Plan and section
1:125 at A3





furrow

field drain

0 5m

Figure 4
Trench 2 Plan & Section
1:125 at A4

7. RESULTS: HISTORIC BUILDING DESCRIPTION

7.1 General Description: The Low Grange Farm Pillbox

7.1.1 The building is a rectangular concrete pillbox, built to the Department of Fortifications and Works (DFW) design known as 'Type DFW3/23', The Tees Archaeology HER entry (HER 4880) describes the pillbox as being in fair condition. There are substantial areas of spalling evident on the external elevations exposing diamond-shaped reinforcement mesh which was evidently not a typical feature in the construction of these structures.

7.1.2 Situated on relatively high ground at *c.* 12.5m OD within rough pasture fields of the former Low Grange Farm, this pillbox was built to defend the former Grangetown 'K'/'Q' decoy aerodrome to the west and may also have served as part of the perimeter defence known as the 'Fortress of Middlesbrough'.

7.1.3 The pillbox comprises two principal elements: an enclosed chamber incorporating three loopholes for light machine guns or rifles on all elevations with the exception of the rear (north-west) elevation, and an open platform to the rear (north-west) with a mounting for a light anti-aircraft machine gun (LAA) located centrally. Access to the enclosed chamber is by a set of narrow steps from the open platform.

7.2 External Construction (Plates 1-8)

7.2.1 The pillbox is rectangular in plan and constructed of reinforced concrete measuring 5.0m NW-SE by 2.60m NE-SW. The pillbox comprises three main structural elements: the base, the walls and the roof forming the enclosed chamber. The foundations for the enclosed chamber element comprised an approximately square trench-cut foundation measuring 2.90m NW-SE by 2.60m NE-SW and *c.* 1.10m deep. The concrete walls were *c.* 0.40m thick and there was evidence that the foundation trench had been shuttered with timber before the concrete was poured. The horizontal impressions of the timber are visible in all the elevations (Figures 6-9 & Plates 4-7). The concrete application was typically undertaken in two pourings,[51] and a line marking the two applications is evident on the south-west elevation (Figure 7 & Plate 5). The final element to be constructed was the concrete roof, which also utilised timber shuttering.

7.2.2 The pillbox has three loopholes; one each in the south-east, south-west and north-east walls through which light machine guns or rifles could be fired. The loopholes were not pre-fabricated but integral to the construction of the walls.

[51] Osborne 2008, 78.

7.2.3 In general, the condition of the exterior can be described as fair with some areas of substantial spalling evident on all external elevations with the exception of the south-east (front) elevation. Where the spalling has occurred, diamond-shaped iron reinforcement mesh has been exposed. Typically the material used in this type of pillbox was a 150mm^2 grid-mesh and the use of the diamond-shaped mesh is likely to be the result of material supply shortages and having to use whatever materials were available at the time. The spalling itself is probably the result of the iron reinforcement mesh being placed too close to the surface.[52]

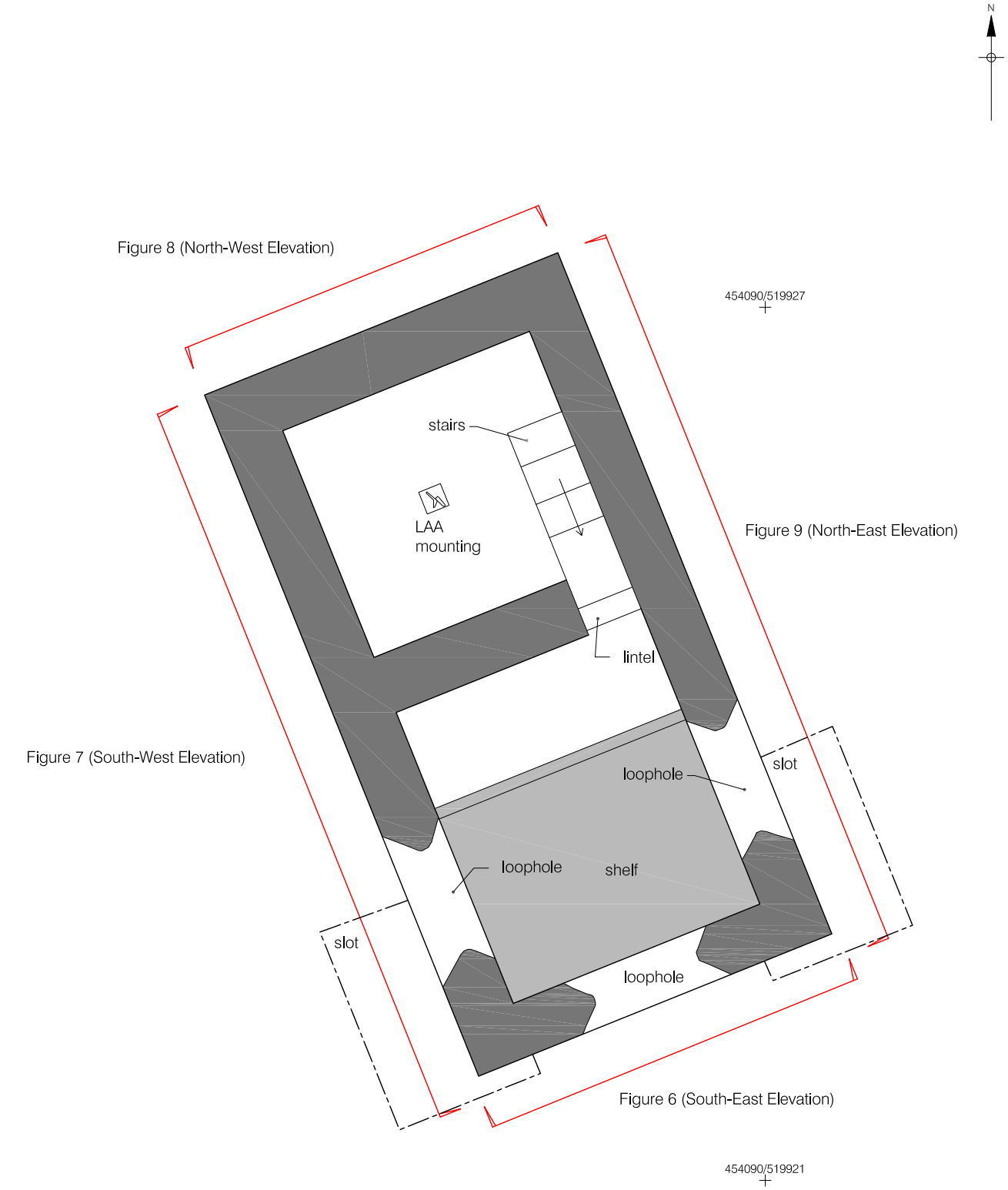
7.3 Internal Construction (Plates 9-11)

7.3.1 Typically access to the outer platform for Type DFW3/23 pillboxes was either by door or rungs set into the outer wall,[53] however, no evidence of these features were recorded on any external elevations. The outer platform comprised a centrally located pre-fabricated concrete steel reinforced mounting for a LAA machine gun, set into the concrete surface.

7.3.2 The enclosed chamber was accessed by narrow stairs from the open platform leading to a doorway with a raised concrete threshold. Evidence for timber shuttering is present in the form of horizontal timber impression on all internal elevations and the underside of the roof slab. Only small areas of spalling are evident within the enclosed chamber and predominantly occur close to the loopholes. As with the areas of spalling exposed on the external elevations, the diamond-shaped reinforcing mesh is also visible, although to a lesser extent.

7.3.3 Situated to the front of the enclosed chamber incorporating the area below the three loopholes is a substantial, *c.* 0.75m high, concrete slab shelf measuring 1.46m by 1.80m and *c*. 0.10m thick. The shelf was installed after the construction of the pillbox walls and timber shuttering method was used with the impressions of six timbers evident along its underside. The shelf presumably allowed the occupants to operate a light machine gun or rifles whilst in a seated or crouched position, while the area below the shelf was likely used to store ammunition or other equipment or kit.

[52] Wilkie 2006, 111.
[53] Osborne 2008, 162.



0 2 6 Feet
0 1 2 Metres

Figure 5
Plan of Pillbox
1:40 at A4

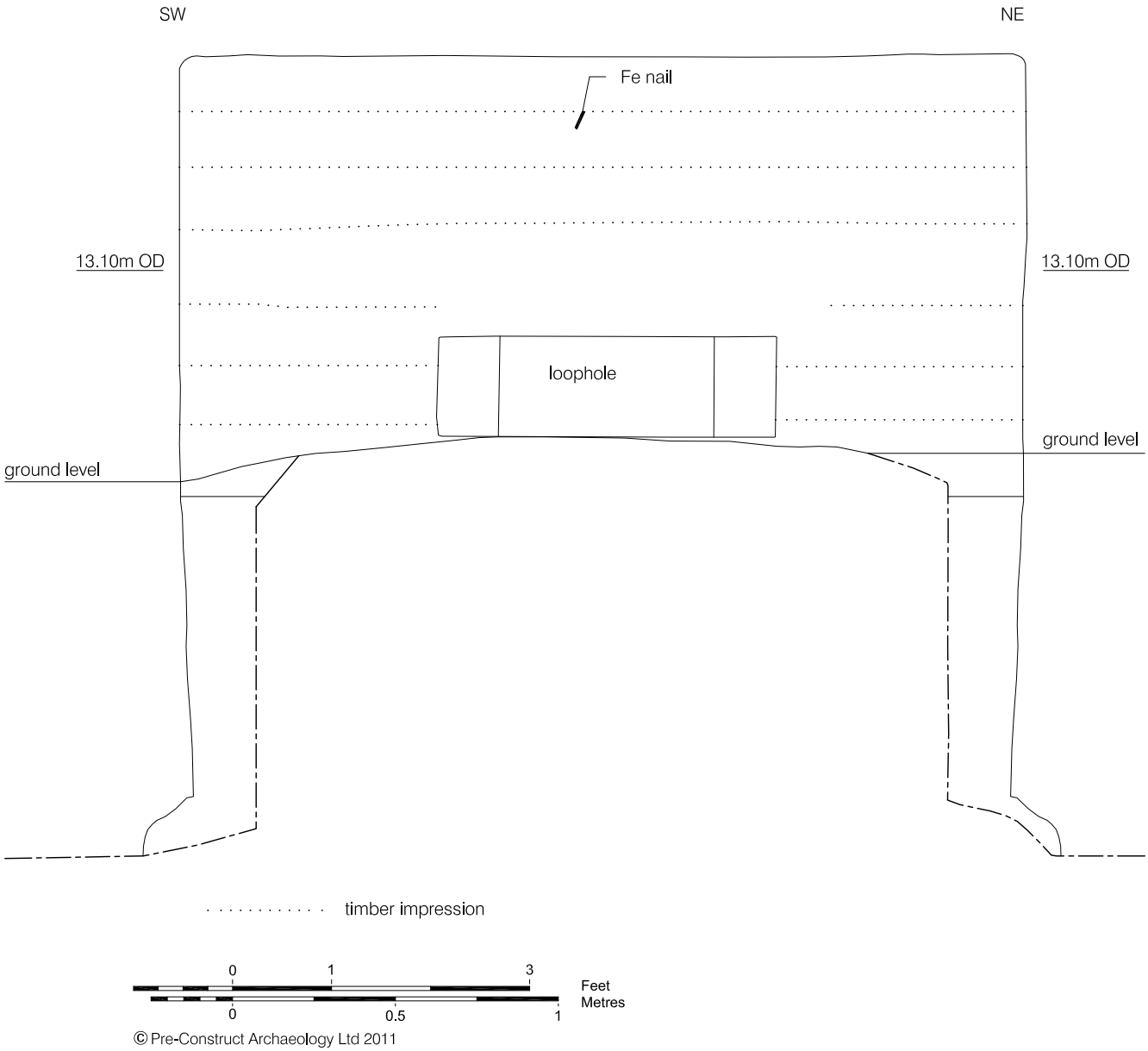


Figure 6
South-east elevation of Pillbox
1:20 at A4

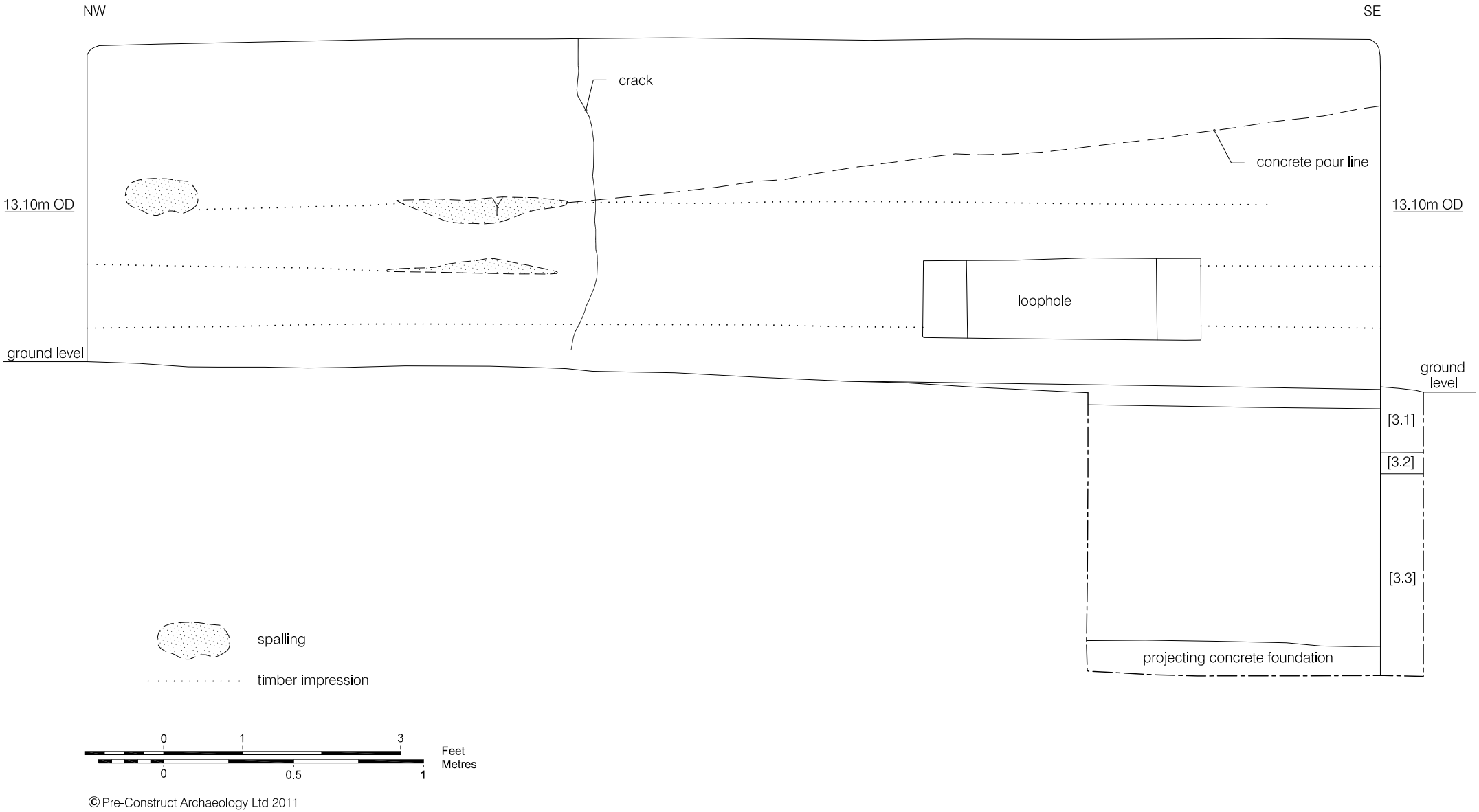
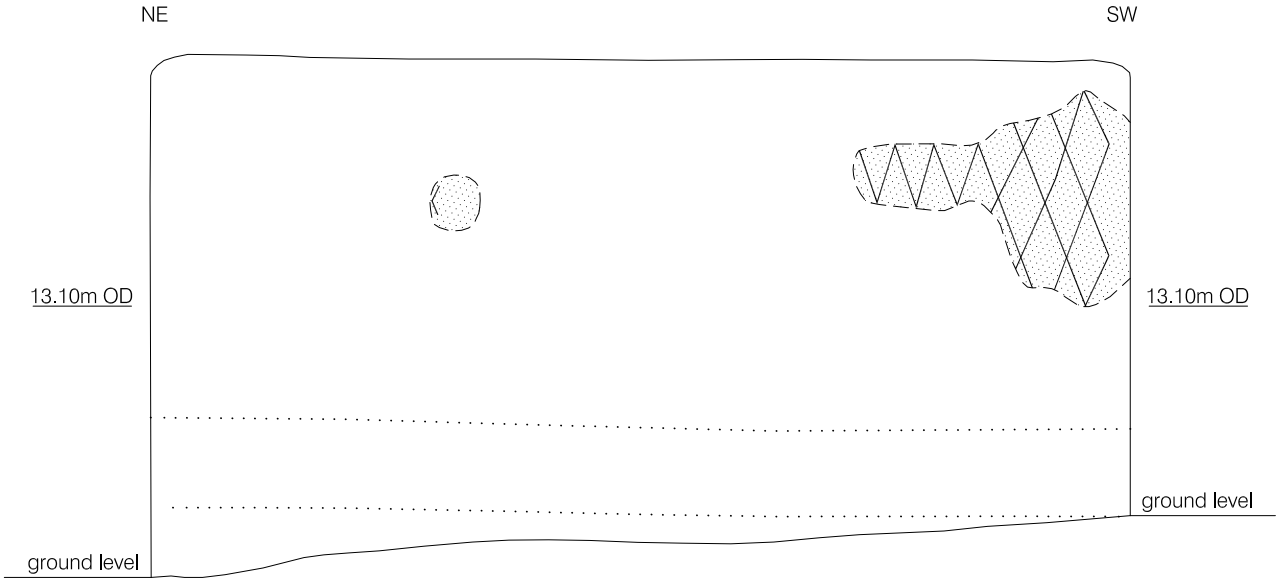


Figure 7
South-west elevation of Pillbox
1:20 at A4



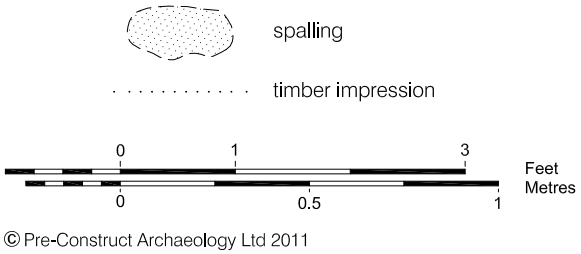


Figure 8
North-west elevation of Pillbox
1:20 at A4

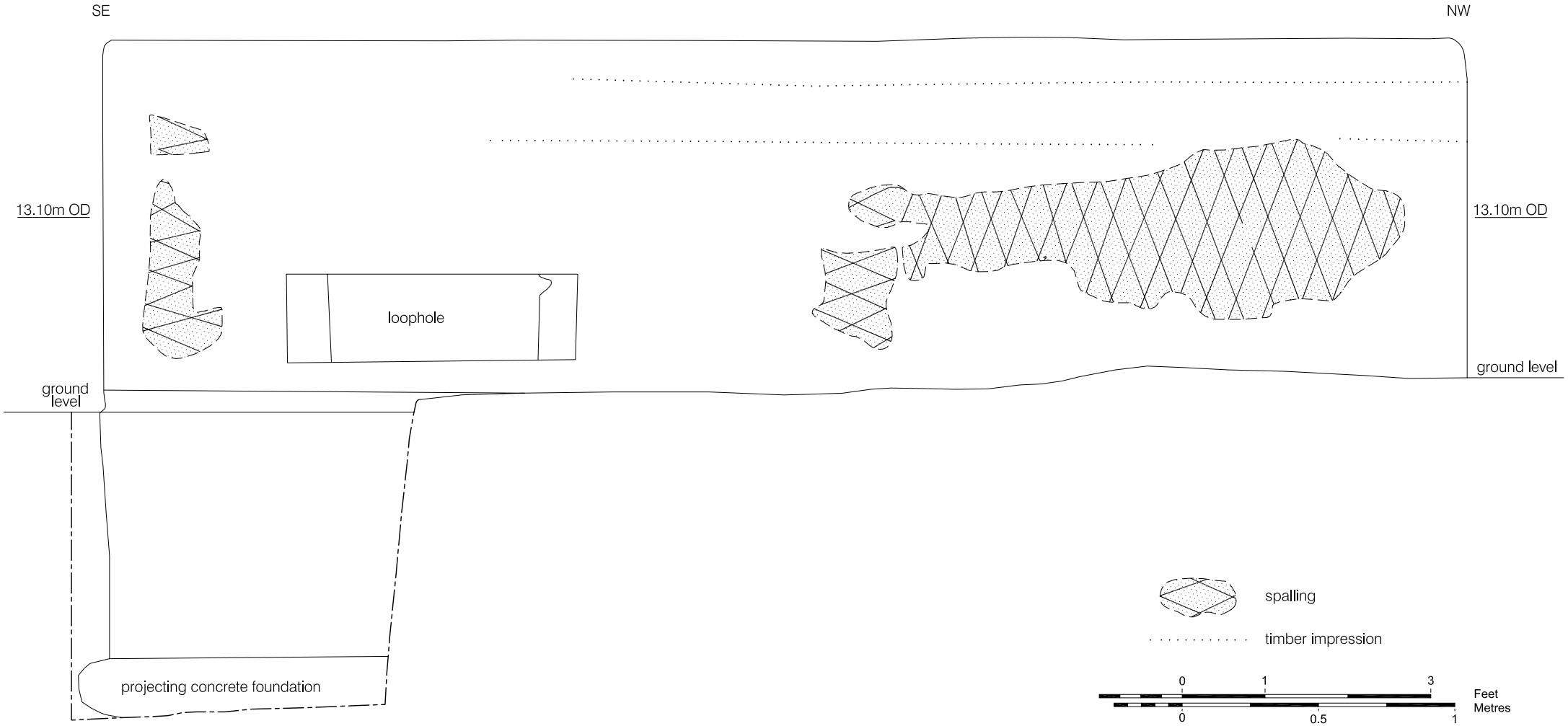


Figure 9
North-east elevation of Pillbox
1:20 at A4

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

8.1.1 Geological deposits and archaeological deposits and features encountered during the field evaluation element of the project have been assigned to five phases of activity:

- Phase 1. The depth at which the natural clay sub-stratum was encountered below present ground level ranged from 0.28m in Trench 1 to a maximum of 0.48m in Trench 2.
- Phase 2. A sub-soil deposit was recorded in Trenches 1 and 2 and the within the slots excavated adjacent to the pillbox. The maximum thickness of the sub-soil was 0.28m and the depth at which it was encountered below present ground level ranged from a minimum of 0.28m in Trench 2 to a maximum of 0.12m in Trench 1.
- Phase 3. Evidence of possible medieval agricultural activity – in the form of broadly-spaced linear plough furrows - was recorded in Trenches 1 and 2. These features are likely derived from the ridge and furrow agricultural system typical of the medieval period, although they could be of post-medieval date.
- Phase 4. Parts of two sub-oval features recorded within Trench 1 potentially represent the sub-surface remains of a substantial circular feature, possibly a World War Two gun emplacement, shown on a 1946 RAF aerial photograph. Fragmented concrete within the features indicates that demolition of the original structure took place.
- Phase 5. Land drains of late post-medieval or modern date were recorded in Trenches 1 and 2. Topsoil was the uppermost deposit recorded at all locations, the deposit ranging in thickness from 0.12m to 0.28m.

8.1.2 In summary, apart from a group of plough furrows, the trial trenching element of the project recorded no evidence for post-medieval or earlier activity on the site. The plough furrows, if of medieval origin, are of low archaeological significance. Two features probably associated with World War Two defence-related activity were recorded in Trench 1, these possibly representing the sub-surface remains of a gun emplacement (or section post) identified on an aerial photograph. It is likely, however, that the original structure was demolished following disuse. There was no evidence of any sub-surface remains in Trench 2 that would account for other features identified on the aerial photograph adjacent to Normanby Road and it is possible that any structures at that location were of simple construction and were removed when they went out of use, leaving no archaeological evidence.

8.1.3 It is concluded that the results of the trial trenching element of the project indicate that groundworks and any excavations for buildings and services associated with the proposed development will not impact upon any archaeological remains of significance within the western part of the site. The limited archaeological remains representing the possible gun emplacement appear to indicate that the structure was demolished following disuse.

8.1.4 It is concluded that the building recording element of the project has provided the permanent record of the World War Two pillbox as required by the planning condition and has set the structure in its historical context through interpretation and by relating it to other military installations of the period in the area.

8.2 Recommendations

8.2.1 No further work is required on the information recovered during the archaeological evaluation or building recording, with the Site Archive, including this report, forming the permanent record of the remains encountered in the trial trenches and the Low Grange Farm pillbox.

8.2.2 The remaining element of the project will engage the local community with at least one 'open day' to be arranged when members of the public can be informed of the results of the evaluation and building recording. Such an open day should be held at a local community facility, such as the local library, and a small display about the results/aims of the work should be installed. Advanced publicity would seek to engage local people who may have memories or photographs of the military use of the site during World War Two and who might be able to provide further information regarding either the pillbox or Grangetown 'Aerodrome', or indeed of the wider World War Two defensive network around the 'Fortress of Middlesbrough'.

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10. ACKNOWLEDGEMENTS AND CREDITS

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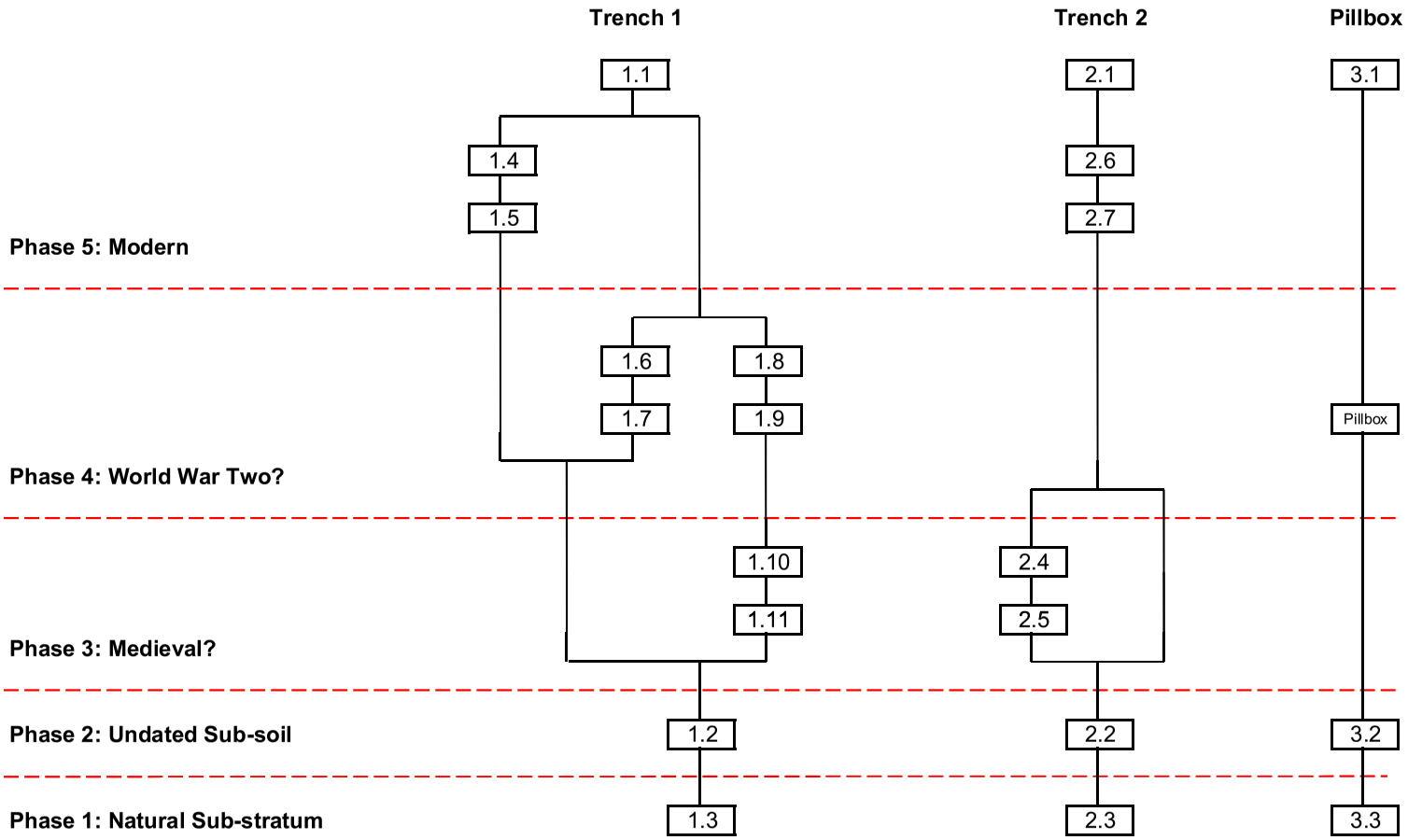
APPENDIX A
STRATIGRAPHIC MATRICES

LGF 11: STRATIGRAPHIC MATRICES



APPENDIX B
CONTEXT INDEX

LGF 11: CONTEXT INDEX

Context	*Trench*	*Phase*	*Type 1*	*Type 2*	*Interpretation*
1.1	1	5	deposit	layer	topsoil
1.2	1	2	deposit	layer	subsoil
1.3	1	1	deposit	natural	natural clay
1.4	1	5	deposit	fill	clay fill of field drain [1.5]
1.5	1	5	cut	linear	field drain; filled by [1.4]
1.6	1	4	deposit	fill	sandy fill of feature [1.7]
1.7	1	4	cut	cut	feature; filled by [1.6]
1.8	1	4	deposit	fill	clayey silt fill of feature [1.9]
1.9	1	4	cut	cut	feature; filled by [1.8]
1.10	1	3	deposit	fill	fill of furrows [1.11]
1.11	1	3	cut	linear	group of ENE-WSW aligned furrows; filled by [1.10]
2.1	2	5	deposit	layer	topsoil
2.2	2	2	deposit	layer	subsoil
2.3	2	1	deposit	natural	natural clay
2.4	2	3	deposit	fill	fill of furrow [2.5]
2.5	2	3	cut	linear	NNW-SSE aligned furrow; filled by [2.4]
2.6	2	5	deposit	fill	clay fill of field drains [2.7]
2.7	2	5	cut	linear	group of field drains; filled by [2.6]
3.1	Pillbox	5	deposit	layer	topsoil
3.2	Pillbox	2	deposit	layer	subsoil
3.3	Pillbox	4	deposit	layer	natural clay

APPENDIX C
PLATES

Plate 1: Trench 1, looking north-east *(scale 2m)*

Plate 2: Trench 2, looking south *(scale 2m)*

Plate 3: Pillbox, general view, looking north-west *(scale 2m)*

Plate 4: North-east elevation of Pillbox *(scale 2m/1m)*

Plate 5: South-west elevation of Pillbox *(scale 2m/1m)*

Plate 6: South-east elevation of Pillbox *(scale 2m/1m)*

Plate 7: North-west elevation of Pillbox *(scale 2m)*

Plate 8: Detail of loophole in north-east elevation of Pillbox *(scale 1m)*

Plate 9: Mounting for anti aircraft machine gun on platform in Pillbox, looking north-west *(scale 2m)*

Plate 10: Detail of shelf in enclosed chamber of Pillbox, looking south-east *(scale 1m)*

Plate 11: Detail of entrance to enclosed chamber of Pillbox, looking south-east *(scale 1m)*

Plate 12: RAF aerial photograph 13 November 1946, looking north

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