

Drumcross Farm, Bishopton, Renfrewshire:
Historic Building Recording
Data Structure Report

by Louise Turner

issued 28th April 2010



Rathmell

Archaeology Ltd

Quality Assurance

This report covers works which have been undertaken in keeping with the issued brief as modified by the agreed programme of works. The report has been prepared in keeping with the guidance of Rathmell Archaeology Limited on the preparation of reports. All works reported on within this document have been undertaken in keeping with the Institute of Field Archaeology's Standards and Policy Statements and Code of Conduct.

Signed

Date

In keeping with the procedure of Rathmell Archaeology Limited this document and its findings have been reviewed and agreed by an appropriate colleague:

Checked

Date

Copyright Rathmell Archaeology Limited. All rights reserved.

No part of this report may be copied or reproduced by any means without prior written permission from Rathmell Archaeology Limited. If you have received this report in error, please destroy all copies in your possession or control and notify Rathmell Archaeology Limited.

This report has been prepared for the exclusive use of the commissioning party and unless otherwise agreed in writing by Rathmell Archaeology Limited, no other party may use, make use of or rely on the contents of the report. No liability is accepted by Rathmell Archaeology Limited for any use of this report, other than the purposes for which it was originally prepared and provided.

Opinions and information provided in the report are on the basis of Rathmell Archaeology Limited using due skill, care and diligence in preparation of the same and no explicit warranty is provided as to their accuracy. It should be noted and it is expressly stated that no independent verification of any of the documents or information supplied to Rathmell Archaeology Limited has been made.

Contents

Overview	3
Historical Background	3
Project Works.....	7
Findings: Building Recording	7
Landscape Setting	9
Gun Pits 1-4	9
Magazines and Gun Store	15
Command Post.....	18
Accommodation Area	21
Discussion	21
Conclusion	23
References	23
Documentary	23
Appendix 1: Discovery & Excavation in Scotland	25
Contact Details	26

Overview

1. This Data Structure Report is for a programme of Historic Building Recording works required by Mr Peter Anderson in respect of the partial demolition of the historic structures at Drumcross Farm, Bishopton, Renfrewshire (NGR: NS 4519 7095). The works were designed to create a competent record of the surviving elements of a Heavy Anti-Aircraft Battery dating to the Second World War (Canmore No. NS47SE 80) prior to the construction of new agricultural buildings (Figure 1).
2. The West of Scotland Archaeology Service, who advise Renfrewshire Council on archaeological matters, provided guidance on the structure of Historic Building Recording works required on this site to inform the planning process. In particular, they specified a Level 2 survey in accordance with *Recording Historic Buildings, A Descriptive Specification* (RCHME Third Edition, 1996).
3. The archaeological works were intended to minimise the impact of future development upon any archaeology present. Rathmell Archaeology Ltd has been appointed to act with regard to the archaeological issue by Mr Anderson. The project works described below were designed to comply with the identified requirements of West of Scotland Archaeology Service.

Historical Background

4. It was during the First World War that aircraft were first used to launch offensives against targets in mainland Britain, with zeppelins used to launch air raids on 'military shipyards, arsenals, docks, and in general, military establishments' (Anon 1943, 9). The first raid of this kind was carried out against King's Lynn, with London expressly excluded from attack by the instruction of the Kaiser.
5. The British response to this threat was to create a series of anti-aircraft artillery defences, which by 1918 numbered 284 guns, 377 searchlights and 11 fighter squadrons (Anon 1943, 9), all based around London and south-east England. The majority of these used improvised weapons derived from conventional field artillery such as the 13 pounder and the French 75mm (Brown *et. al.* 1996, 48).
6. Following the cessation of hostilities in 1918, the need for anti-aircraft defences dwindled. By 1922, the size of this defence force had shrunk immensely, to one small brigade and searchlight battalion. However, the need to have at least some form of anti-aircraft defence remained, and 1922 saw the formation of four heavy Anti-Aircraft Regiments and two searchlight battalions, based in and around London. Deteriorating political relations then led to a gradual build-up of forces until by 1939 there were seven Anti-Aircraft Divisions, once again focussed in and around London and the south-east.
7. With the improvement in aviation technology that took place throughout the interwar period, it was no longer the south-east of England which became a target for enemy attack from the air. In the opening stages of World War II, any centre of heavy industry or engineering which might support the Allied cause found itself a focus for Luftwaffe bombing squadrons.
8. Attacks appear to have focussed on the London area at first, but attention gradually extended outwards to industrial centres and ports located outwith the south-east. Coventry suffered carpet-bombing on November 14th, 1940, and the Humber ports came under attack in early 1941.
9. At this time, Scotland seems to have been a focus primarily for the role it played in providing a safe anchorage for military shipping. An attack is recorded in the Forth estuary as early as October 1939, which indicates that even at this time, the Luftwaffe had the capability of striking targets in Scotland (Anon 1943, 17).

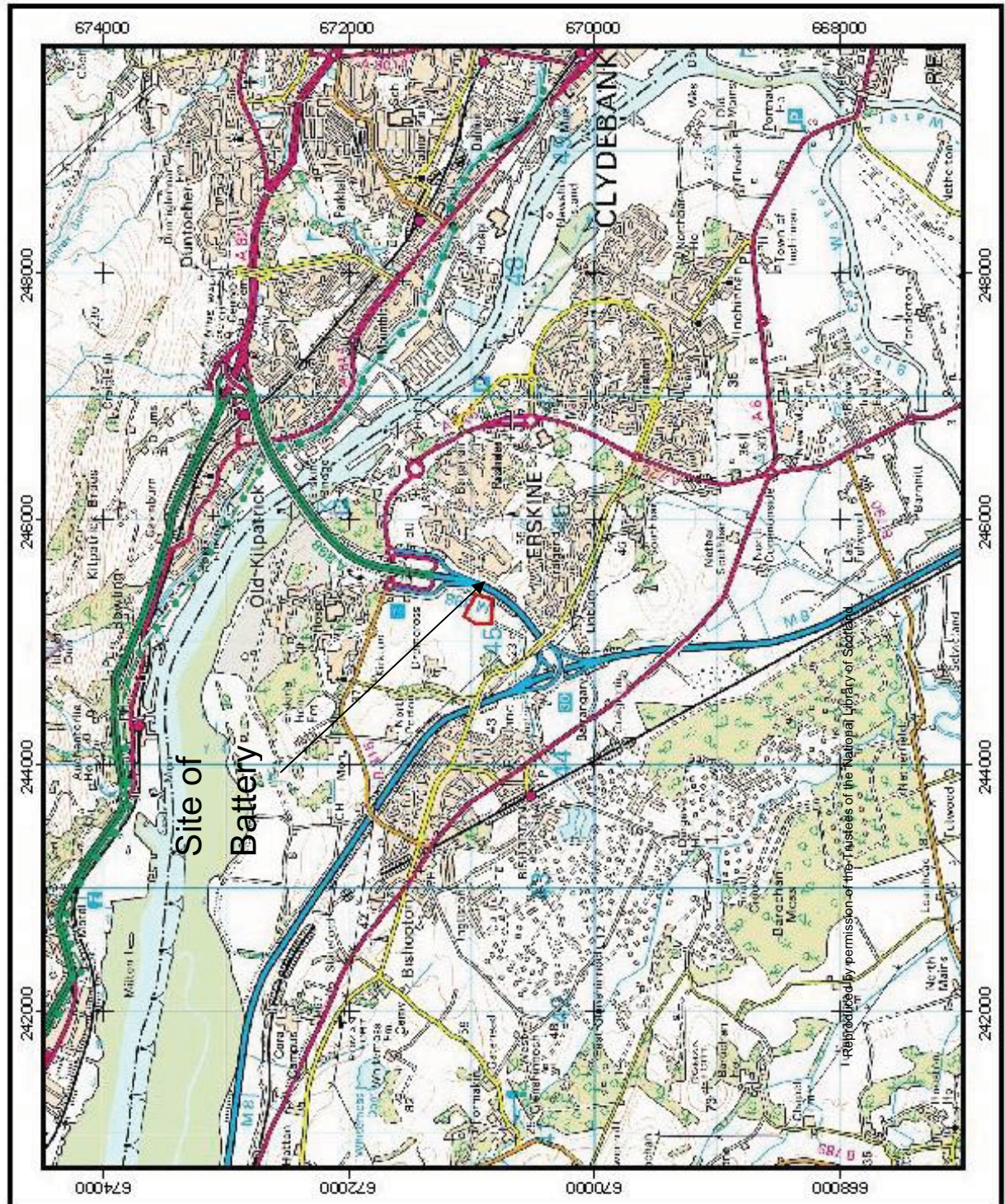


Figure 1: Site Location Plan

10. It was popularly thought amongst the inhabitants of Clydeside that they would be safe from attack. Harris states that:
'only 30% of the people expected heavy raids, 42% were quite vague or indifferent to the threat and 28% were not expecting any large scale raids at all. This last group advanced an interesting set of theories as to why Clydeside might be spared, ranging from the protection afforded by the surrounding mountains, magnetic elements in the hills which would dislocate aero engines, the impossibility of locating the Clyde accurately amongst the myriad of west coast lochs, the region was too far from German bases and the attitude – which was especially popular with the upper and middle class respondents – that the Germans believed that revolution would develop on Clydeside so long as the people weren't stirred up by bombs.'
11. This laid-back attitude proved, however, unfounded when the Clyde ports – Glasgow, Clydebank and Greenock – were attacked on four separate occasions between March and May, 1941, with Clydebank suffering a disproportionate degree of predation (Hood 1988, 129). These raids were launched with attacks on the consecutive nights of 13th and 14th March. These alone left an estimated 1000 people dead and another 1000 seriously injured in Clydebank itself.
12. It may be the case that the construction of anti-artillery defences around the Clyde basin was already underway prior to the events of March-May 1941. Redfern suggests that the first phase of development in Britain's Anti-Aircraft defences comprised the period of re-armament and consolidation which started immediately after World War I and continued up to 1942 (Redfern 1998, 5).
13. Like the rest of the Clyde batteries, Drumcross appears to have been a late creation, first appearing on record in 22 June 1942; evidence suggests that it was brought 'on-line' in response to the attacks on the Clyde ports, though it seems likely that it had been planned at an earlier date.
14. Batteries like Drumcross (Figure 2a), usually incorporating four guns within a single gunsite (though sometimes including up to six or eight guns) were created to provide cover for 'Gun Defended Areas'. Drumcross formed part of the Clyde GDA, and like the rest of its sister sites, was prefixed by the site code 'GSG', which stood for 'Glasgow South G_' with, presumably, the final 'G' standing for 'Gun' (Redfern 1998). The Drumcross code name in full was GSG7, and the first evidence for its use was in 22 June, 1942.
15. Many of the individual batteries in a GDA were prepared in readiness to receive guns, but never actually had them fitted. The aim behind their construction was to create a dense network of sites which were never intended to be in full operation at any one time. This provided additional operational capacity if required, as well as giving the public reassurance by providing a continuous carpet of cover (Redfern 1996, 5).
16. Sites were often equipped at first with mobile 3.7 inch guns which required no more than rudimentary facilities before more permanent structures were created which could then be equipped with larger bore, static guns. According to the 1942 records, Drumcross was one of only four sites in the Glasgow South GDA actually equipped with guns, the others being Carmunnock, Darnley and Linwood (Redfern 1998, 12). The 4.5 inch guns employed at Drumcross (see example, Figure 2b) had their origins as naval weaponry, and were effective to a ceiling of 34,500 feet. However, by relining the barrel it was possible to combine a 3.7 inch shell with a 4.5 inch cartridge giving a vastly increased performance (a ceiling of 45,000 feet) (Brown *et. al.* 1996, 50).
17. Drumcross was also equipped with radar from its earliest period of use. Prior to the introduction of gun-laying radar, the manner in which data was collected and relayed back to the batteries as a means of locating enemy aircraft and predicting their future course was far too coarse for the electronic equipment – the 'predictor' – employed to collate and interpret it. The end result was inefficient use of ammunition: between September and October 1940, for example, 260,000 rounds were employed to bring

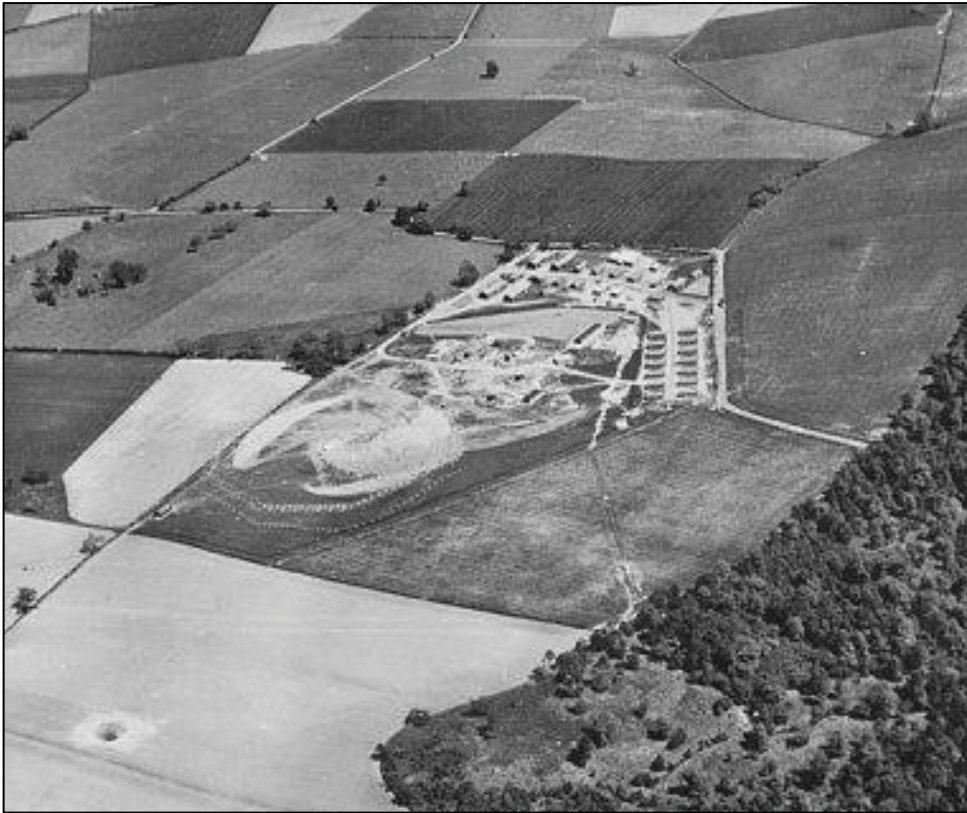


Figure 2a: Aerial View of Drumcross Battery, taken by RAF in late 1940s.



Figure 2b: Heavy Anti-Aircraft Battery with 4.5 Inch Guns *in situ* (from Anon, 1943)

down 14 aircraft, averaging 18,500 rounds per 'kill' (Dobinson, 1996).

18. By January 1941, early advances in gun-laying radar resulted in the Radar AA No 1 Mk II, described as a 'complete fire control set'. By mid 1942, most HAA sites, including Drumcross, were equipped with GL Mk II, with a total of 1679 sets having been delivered by August 1943 (Dobinson 1996, 132)
19. Of the four Clyde GDA batteries which records show to have been armed and fully equipped in 1942, Drumcross was the first to be disarmed. By 10th November, 1943, both guns and radar had been removed and redeployed elsewhere. This coincides with the second phase in the chronology of Britain's Anti-Aircraft defences, as characterised in Redfern 1998. This period saw the redeployment of equipment to southern England, in response to a change in tactics by the Luftwaffe, including the introduction of the V1 flying-bomb, or 'doodle-bug'.
20. Following the war, the vast majority of Heavy Anti-Aircraft batteries fell into disuse. While some World War II sites were retained and modified for use as anti-aircraft missile sites during the Cold War, Drumcross was never subject to re-use in this way.

Project Works

21. The programme of works was undertaken on the 8th of April 2010 and included Level 2 building recording on the surviving elements of the Drumcross Battery, and an assessment of the extent of recent damage to the site as a result of large-scale earth-moving works carried out in its immediate vicinity.
22. All works were conducted in accordance with the Institute for Archaeologists' Standards and Policy Statements and Code of Conduct and Historic Scotland Policy Statements.
23. The information contained in this report is augmented by an accompanying disk containing additional data obtained during the on-site survey. This material includes digital photographs, scanned copies of site records and .shp files of survey data.

Findings: Building Recording

24. The purpose of the building recording was to investigate and record the surviving elements of the Drumcross Battery, a Heavy Anti Aircraft battery of World War II date. The aims of the exercise were to provide a baseline record of the extant structures, and to establish the nature and extent of damage to the site caused by recent large-scale earth-moving activities.
25. The site itself comprised the remains of the Drumcross Battery, established by 1942 as part of the anti-aircraft defences employed to protect the ports and industrial centres of the Clyde Basin from aerial attack by the Luftwaffe. Built rapidly as part of a network of similar sites across mainland Britain, the Drumcross Battery can be closely tied in with examples built elsewhere. This allows its individual elements to be readily identified, and a reasonable idea of the extent of the damage incurred through the recent on-site works obtained.
26. Heavy Anti-Aircraft batteries invariably comprised a standard set of components (Brown *et. al.* 1996). Sites were divided up into the Operational Area known as a 'Gun Park', which contained various elements, including a single-storey, semi-sunken structure known as the Command Post. This was located at the centre of a 130' (39.6m) radius semi-circle along the line of which lay four (or more) Gun Pits. Ammunition was stored in one or more Magazines. Located beyond the Gun Park was the GL mat, a levelled stretch of ground, octagonal on plan, at the centre of which was located the radar. The last important part of the battery was the 'Domestic Site', which included hutted accommodation for the gun crews and other service personnel.

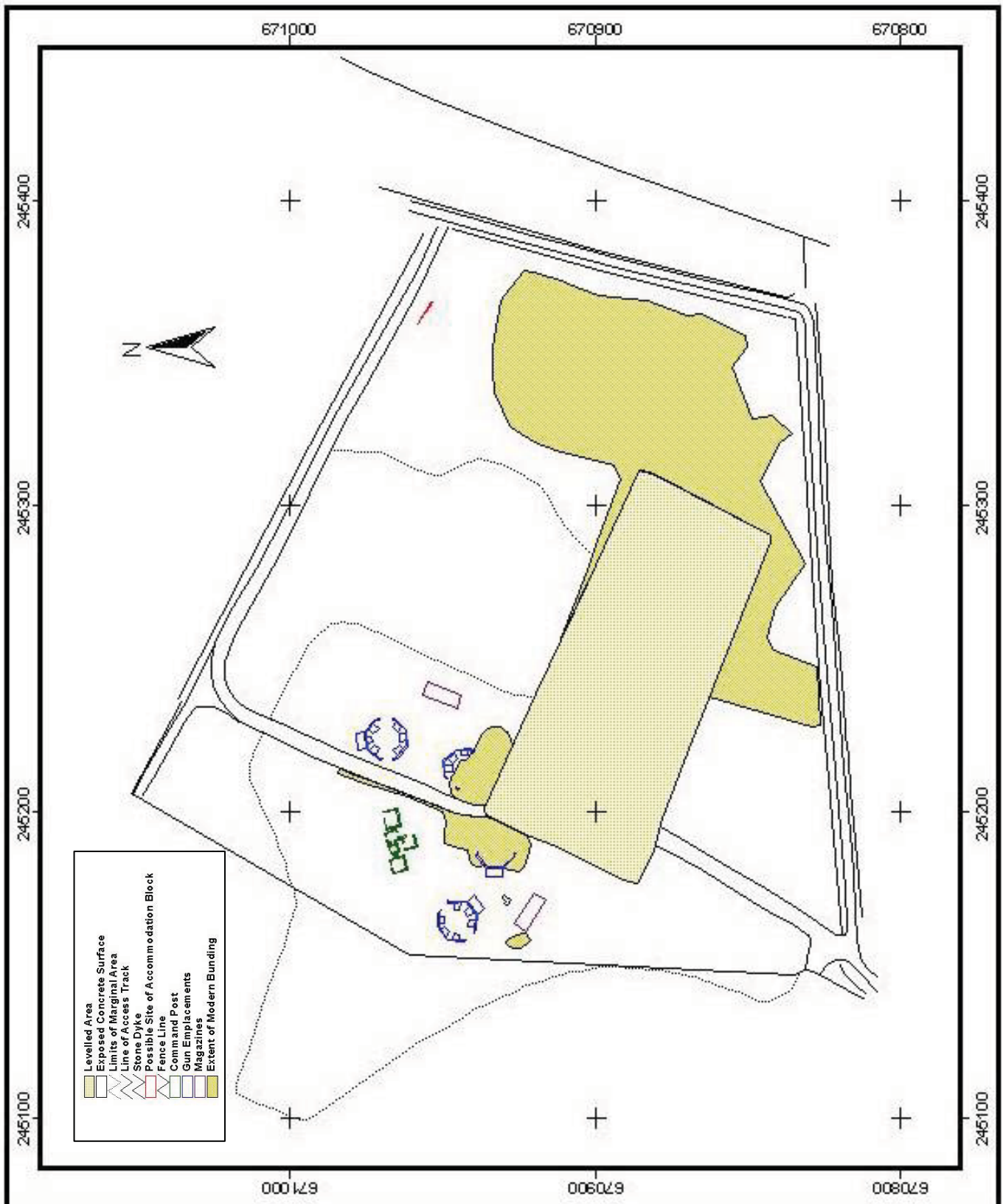


Figure 3: Plan of Site as surveyed

Landscape Setting

27. Figure 3 clearly shows that most of the original elements of the Gun Park still survive in some shape or form. The outlines of four Gun Pits are clearly visible, along with two Magazines, and the Command Post. A further two structures, visible on the aerial photographs, could not, however, be identified. No upstanding remains of the GL mat could, however be identified. Of the Domestic Site, there was only ephemeral evidence for one structure that once formed part of this service area.
28. Superimposed over the original plan is, however, an area of modern bunding which partially overlies the footprint of Gun Pits 1 and 4. This large quantity of spoil appears to result from the levelling of a rectangular area measuring 125m by 50m in extent and the cutting of an associated access road which runs from NNE to SSW across the middle of the battery (Figure 5a). The entire extent of the site appears to have been subject to the large-scale dumping of rubbish over the past six decades, so it is difficult to establish where the original ground surface actually lay. Only one small stretch of concrete hard-standing was identified, lying between Magazine 1 and Gun Pits 1 and 2. This clearly represented the ground surface as it was at the time the battery was in operation.
29. It seems likely that the construction of the access road involved the reduction of ground levels along its length, perhaps by as much as 0.3m in places, though it was hard to be certain of this as the area was already much disturbed as a result of earlier dumping activities that post-dated the use of the battery.
30. A more detailed account of the site now follows, with a more general summary of the component parts which serve to make up the battery followed by a detailed evaluation of the condition of each individual representative of these components. The first to be discussed will be the Gun Pits, with the Magazines second and the Command Post third. For a detailed breakdown of the individual elements that make up the site, refer to Figure 4, which shows the western portion of the HAA battery in greater detail.

Gun Pits 1-4

31. The Gun Pits represented the most diagnostic features on the site (Figure 5b). There were four in total, each of identical form. Octagonal on plan and measuring approximately 12.3m across the interior, each provided a level fixed platform for a 4.5 inch gun and storage space for the ammunition and fuzes required to fire it. The internal height of the walls was 1.65m, though in the majority of cases, it was impossible to identify the internal ground level due to later build-up of debris or vegetation growth.
32. The main construction material was concrete, and each Gun Pit had six Ammunition Recesses spaced evenly around the interior walls (Figure 5c). There were two entrances measuring 3.6m wide on opposing sides each replacing one side of the octagon, with the axis through the entrances always orientated on the central Command Post. Originally, these entrances would have been fitted with gates to control access. The Holdfast for the emplaced gun would have been central to the Gun Pit.
33. One brick-built structure with concrete slab roof abutted the exterior wall of each of Gun Pits 1, 2 and 3 (Figure 5d). All three structures observed were placed on the exterior of the middle section of one of the stretches of the octagonal wall (see Figure 3). They were not consistently placed on the same side of the Gun Pit.
34. Since Gun Pit 2 survived in best condition, it was decided to use this as the 'type-site' with which the rest of the battery could be compared. A close inspection of its six Ammunition Recesses demonstrated that these internal features represented two different forms. Four were of less substantial build, comprising a reinforced concrete slab resting on a concrete slab laid vertically, with an inner brick lining. The supporting wall thickness in these particular examples was 0.25m (Figure 5e) and they were located at those points in the gun pit located immediately adjacent to the opposing entrance gates.

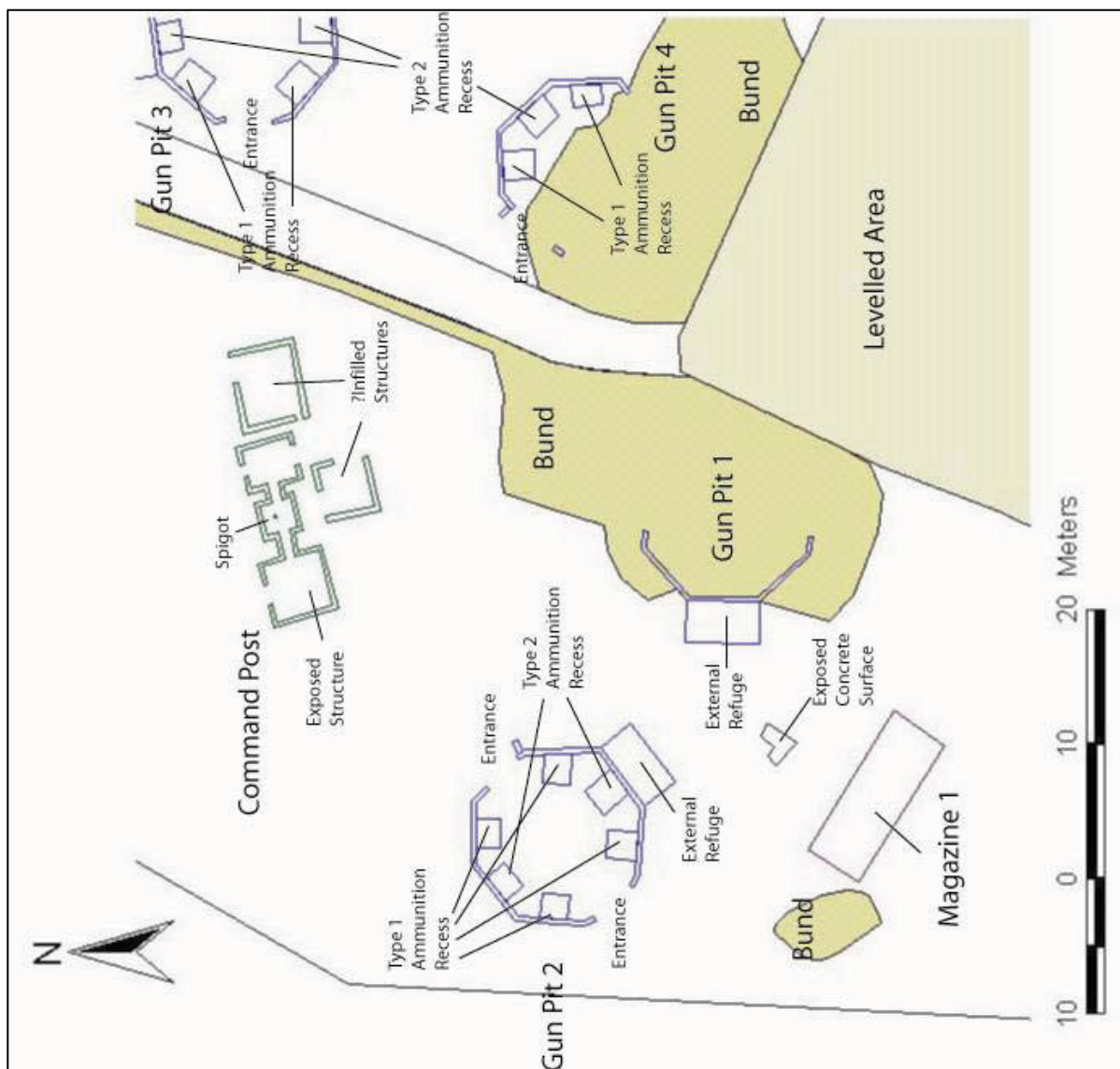


Figure 4: Annotated Plan of HAA Battery (Western Half)



Figure 5a: View across levelled area towards Gun Park



Figure 5b: General view of Gun Pit 2, with Magazine 1 to left



Figure 5c: Interior of Gun Pit 2



Figure 5d: View of External Refuge (Gun Pit 2)



Figure 5e: Type 1 Ammunition Recess (Gun Pit 2)

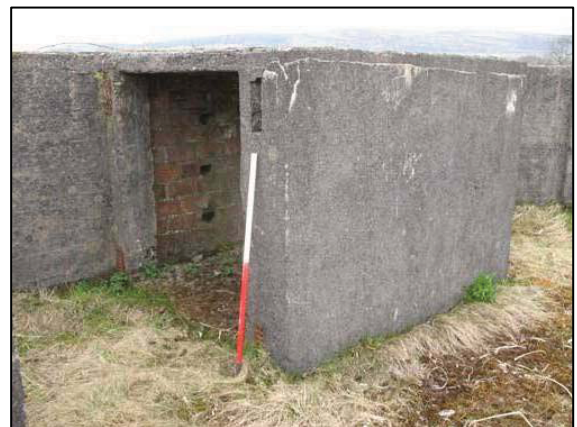


Figure 5f: Type 2 Ammunition Recess (Gun Pit 2)



Figure 6a: Ventilated Brick inset into Type 2 Ammunition Recess (Gun Pit 2) - rotated



Figure 6b: Socket for Racking (Gun Pit 2)



Figure 6c: Numbered Ammunition Recess (Gun Pit 2)



Figure 5d: 6d: *In Situ* fitting (Gun Pit 4)



Figure 6e: Gun Pit 1; Outline of Structure exposed through bunding, NW Side



Figure 6f: Gun Pit 1; Outline of Structure - rotated

35. The central Ammunition Recesses were, however, more robust (Figure 5f). The supporting wall thickness here was 0.33m, with ventilated bricks set into the concrete at the upper and lower ends of each stanchion (Figure 6a). It is possible that these more robust structures functioned as shelters for the gun crew, one allowing on-site gun maintenance to take place (the 'limber gunner's shelter') the other for the on-site personnel (Brown et. al. 1996) though the presence of sockets within the brick lining of all six recesses (Figure 6b) suggests that they could all, if necessary, have had racking inserted for the storage of ammunition and fuzes.
36. Each Ammunition Recess would have been fitted with doors set tangentially to the wall of the Gun Pit and each appears to have been individually numbered (Figure 6c). Original fittings still survived in places (Figure 6d).
37. Gun Pit 1 had been almost completely engulfed beneath a modern bund, and as a result it was difficult to establish its condition. The outline of its external walls was, however visible over the western half of its extent, which suggested that at least some of the structure, perhaps representing half of its original extent, remained intact beneath the bund (Figures 6e and f), and even where traces no longer remain visible, it is likely that elements of the structure still survive as buried remains (Anderson pers. comm.).
38. It seems likely, however that even where the outer walling remained intact, the roofs of the Ammunition Recesses had now been displaced. Comparison with the other gun pits on the site suggested that these should, when *in situ*, lie flush with the upper edge of the external wall. Judging by the displaced examples in Gun Pits 2 and 4, these represent weak points in the structure which are prone to collapse, so it seems likely that the weight of earth-moving equipment above will have resulted in their destruction. The external brick refuge, however, remained intact and in good condition (Figure 7a).
39. Most of the bunding that obscured the site was clearly of very recent date. However, there were indications in places that the outer walls of the structure had been banked externally at an earlier date. Since gun pits were originally intended to be surrounded by banks of upcast earth or sandbags, etc. which functioned as blast banks, there was a possibility that this banking was original. However, comparison with Gun Pits 2 and 3 suggested that there had already been a substantial amount of earthmoving on the site at an earlier date. It therefore seemed likely that any original banking had been disturbed by more recent activities over the site's extent.
40. Gun Pit 2 lay outwith the extent of the modern bunding, and survived in good condition (for images, see Figures 5b-f & 6a-c). Its interior, though grassed over for much of its extent, was relatively free of soil-buildup with the original concrete base visible. The central holdfast, upon which the gun would have been mounted, could not, however, be identified, as a large tree had grown up in the central area, obscuring the original surface (Figure 7a).
41. Five of the six Ammunition Recesses had survived in good condition, some with painted numbers still faintly visible. The sixth example had collapsed (Figure 7b). Its fallen concrete slab roof remained, but there was no trace of the brick and concrete walling that had once supported it. Judging from the way in which the roof lay flush against the basal slab, the wall had been removed perhaps through an initial attempt at demolition, in the period following the decommissioning of the site.
42. Though the interior of Gun Pit 2 was clear of soil buildup, the external walls were partially buried by banks of earth and rubble. Again, though blast banks would have been an integral part of the original layout, there was no indication that these 'earthworks' (which reached a height of 1m above the internal level of the gun pit) were part of the original design. They lacked any form or structure, and evidence of concrete hardstanding, exposed between Gun Pits 1 and 2 and Magazine 1, suggested that the ground level had been raised between 0.3 and 0.5m across much of the western portion of the Gun Park. A heap of rubble and masonry which abutted the NW side of Gun Pit 2 suggested that the site had been used as a rubbish dump for many years (Figure 7c).



Figure 7a: Gun Pit 2; View of Interior, with Tree to right of image



Figure 7b: Gun Pit 2; Collapsed Ammunition Recess



Figure 7c: Dumped Masonry on west side of Gun Pit 2



Figure 7d: Gun Pit 3, General View



Figure 7e: Gun Pit 3, Soil Buildup in Interior



Figure 7f: Gun Pit 3, Recent damage to roof of Refuge

43. Lying to the east of the recent access road, Gun Pit 3 had been largely obscured by similar dumped material, which obscured its external wall surfaces to a depth of 1.4m over much of their extent (Figure 7d). However, in this instance, the interior had also been subject to partial infilling to a depth of 0.4m and it was now also badly overgrown (Figure 7e). The original floor levels, and the central holdfast, could therefore not be identified.
44. All six Ammunition Recesses remained in good condition, and they matched those of Gun Pit 2 exactly, with the two lighter 'Type 1' recesses flanking a more substantial central example ('Type 2') on either external wall. No numbering could be identified on any of these examples. The brick external refuge was also present, though it had been virtually buried as a result of modern large-scale dumping and its roof appeared to have suffered damage in the very recent past (Figure 7f).
45. The last of the gun pits, Gun Pit 4, had, like Gun Pit 1, been partially buried beneath a modern bund (Figures 8 a & b). Roughly half of its original extant had been obscured in this way, though in this instance, it was unclear to what extent the external wall still survived beneath the bund. Discussion with the client suggested once again, however, that elements of the structure would still survive as upstanding, though now buried, remains (Anderson, pers. comm.).
46. Only one small stretch remained visible at the surface of the bund, and this lay close to the north-west edge. Where the structure remained clear of the bund, it remained in reasonably good condition, though one of the ammunition recesses had collapsed (c.f. Gun Pit 2). There was, however, no sign of the external brick-built refuge structure and it seems likely in this particular instance that this feature has now been entirely removed. Fragments of concrete slab, recently broken, lay at the edges of the bund (Figure 8c), suggesting that at least some of the Gun Pit had been demolished during the earth-moving process.
47. In summary, though varying markedly in the degree of preservation, enough survived of the four Gun Pits to demonstrate that they represent examples of the March 1938 emplacement design (as illustrated in Dobinson 1996, 117). The addition of the external shelter does not however appear to be a standard part of the March 1938 design, and may perhaps be interpreted as a local variant on the standard form.

Magazines and Gun Store

48. Two rectangular concrete buildings, one located in the vicinity of Gun Pits 1 and 2, and the other close to Gun Pits 3 and 4, were interpreted as Magazines, and indeed they matched the description given in Brown, *et. al*: '*a common and more substantial type consists of a rectangular single-storey, concrete or brick building divided into five bays, lit by two windows and entered at each end by a double door*' (Brown *et. al*. 1996, 52). The structures at Drumcross differed from this standard pattern in that they were in possession of a third door in the central bay, but their location (each servicing two gun pits) and general appearance supports the magazine hypothesis.
49. The first of the two magazines, Magazine 1, serviced Gun Pits 1 and 2 and was located at the south-west corner of the site (Figure 8d). According to Brown *et. al.*, these structures were often semi-sunken, or if this proved impractical because the water table was too high, they would be protected by a 3m high blast wall. No such feature was identified here, which probably reflects disturbance or partial demolition which took place after the site fell out of use.
50. Recent large-scale earth-moving activities on the site had resulted in the creation of a substantial bund to the south and east of the structure, burying it to a depth of 0.4m in places (Figure 8e). The original WWII ground level could only be established through the exposure of a small section of concrete hardstanding immediately to the north of the structure, between the Magazine and Gun Pits 1 and 2.



Figure 8a: Gun Pit 4, View From South



Figure 8b: Gun Pit 4, View From E



Figure 8c: Gun Pit 4, Concrete fragments on edge of Bund



Figure 8d: Magazine 1, N-Facing Elevation



Figure 8e: Magazine 1, Recent Bunding



Figure 8f: Interior View from E - rotated



Figure 9a: Magazine 1 – Numbered Bay



Figure 9b: Magazine 1 - Original Signage?



Figure 9c: Magazine 2, General View



Figure 9d: Magazine 2, *in situ* window frame



Figure 9e: Magazine 2, *in situ* Fitting - rotated



Figure 9f: Magazine 2, Numbered Bay – rotated

51. The Magazine survived in good condition. The structure was built of concrete stanchions infilled with brick, and roofed with concrete, and was subdivided into five bays of roughly equal size (roughly 1.96m wide). A corridor measuring roughly 1.2m wide ran the length of the structure, allowing access to each bay (Figure 8f). Bays 1, 3 and 5 had a circular vent in the roof, and each bay had originally been numbered (Figure 9a). There were additional examples of potential original signage in places, but their details could not be established (Figure 9b).
52. Magazine 2 survived as a semi-sunken structure, which suggested that it may once have been surrounded by a blast bank (Figure 9c). It was evident, however, that this original banking had been later augmented by rubbish dumped upon the site. As a result of this additional material, access to all three doorways was restricted. The presence of a mature tree upon this bank of upcast earth suggests that the accumulation of this later material may have started not long after the site was abandoned.
53. Magazine 2 had some evidence of decay in terms of its structure, with the surface of the concrete eroded in places and sections of the internal reinforcing rods exposed. However, it still retained evidence for internal fixtures and fittings that were absent in Magazine 1. Cast iron window frames still remained in place in both windows (Figure 9d), and a stretch of ducting remained *in situ* in the west wall (Figure 9e).
54. Once again, the bays had been numbered, and although the form of the numerals was broadly similar, there were noticeable differences between the two styles employed (Figure 9f).
55. The interior of the structure was partially filled with late twentieth century debris, including dismantled fragments from a modern road vehicle. Further demolition debris had been pushed flush against the northern-most window frame. This was further evidence that the site had been used as a rubbish dump in the years following its abandonment.
56. Aerial photographic evidence from 2009 suggests that a further two structures once stood to the south-east of the surviving elements of the Gun Park (Figure 10). These bear no close analogy to the upstanding structures that still survive at the site, but comparison can be made with similar sites elsewhere. The smaller structure appears to have been the Gun Store where instruments and spare parts were housed (Brown *et. al.* 1996, 59), while the other appears to have been another, larger, magazine.
57. The location where these buildings once stood is now occupied by the levelled area of hard standing. Photographs of the missing buildings which help elucidate their original character can, however, be seen on the Secret Scotland website (www.secretscotland.org.uk).

Command Post

58. The final element of the operations area was the Command Post. Located at the northern edge of the Gun Park, this structure was fundamental to its successful operation (Figures 11a & b). It would have housed the electronic equipment which received data from the radar and translated this into information for target plotting (Dobinson 1996, 125).
59. The most commonly encountered form of Command Post was the DFW 55402, which from the middle of 1941 onwards became the standard model (Dobinson 1996, 127). At the heart of the structure was the plotting room, where the semi-automatic plotter was located. Also crucial to the smooth operation of the battery were the predictor and the heightfinder, which also assisted in the correct location of incoming target aircraft.
60. It is highly likely that the ruined command post identified at Drumcross represents an example of the DFW 55402, but since it survives only in incomplete condition, it is hard to equate the visible remains to the plan shown on Dobinson's plan.



Figure 10: Aerial Photograph Showing Lost Structures to SW of Surviving Elements of Battery



Figure 11a: Command Post, General View



Figure 11b: Command Post – surviving upstanding elements



Figure 11c: Command Post, Interior View



Figure 11d: Command Post, ruined footings to south



Figure 11e: Site of Accommodation Hut



Figure 11f: Looking across Accommodation Area towards Gun Park

61. The main surviving element of this structure comprised three adjacent rectangular rooms, measuring (from northeast to southwest) approximately 3.5m by 4.2m, 4.5m by 2.9 m and 4.9m by 4.9m in extent. Each was linked to the next by a narrow corridor 0.75m wide. A concrete pillar or spigot remained upstanding within the central room (Figure 11c); with no clear means of establishing what the original layout of the structure would have been, it was impossible to interpret this feature further, though it may have been used to support the heightfinder or predictor.
62. Footings of a further two rectangular rooms could be identified to the SSE (Figure 11d) and ENE. Much of the original extent of this structure had, however, been obscured as a result of recent earth-moving activities. These probably covered over additional elements – voids could be glimpsed in the vicinity of the visible structure, indicating that additional rooms survived beneath the bunding, but the character and extent of these could not be determined.
63. It is possible that the structure was once semi-sunken over much of its extent, with blast banks built up around its external walls. Once again, though, it is difficult to determine whether any of the banking on the northwest external wall of the structure is contemporary with the site. It does not seem robust enough or sufficiently well-formed to be a surviving intact blast bank – once again, it is possible that earth-moving activities, carried out in the late twentieth century, removed or at least disturbed some of the WWII earthworks. This seems highly likely given the situation encountered elsewhere on the site (i.e. Gun Pit 3 and Magazine 2).
64. The situation had been further confused by similar large-scale earth-moving activities undertaken in the very recent past. Here, a large bund of earth has been pushed towards the site from the south. It appears to have obscured some of the footings and has even encroached into interior of the surviving element of the structure. Discussion with the client suggests, though, that the remainder of the building will survive at least in vestigial form as subsurface remains now hidden beneath the bunding (Anderson, pers. comm.).

Accommodation Area

65. Lying beyond the extent of the Gun Park or Operational Area was the Accommodation Area, which would originally have comprised a number of prefabricated hut structures (Nissen huts or similar). These are clearly visible on aerial photographs, forming a sweeping curve around the south and east edges of the operations area (refer to Figure 2). Of these accommodation huts, only one possible fragment remained upstanding (Figure 10e). This was a line of brick walling, at the northern limit of the accommodation area. This would once have provided the footing for a hut-type structure.
66. The rest of the extent of the accommodation area had been subject to demolition and landscaping (Figure 10f). Some large fragments of brick-built masonry and concrete could still be identified within this area. Across its northern half, it is possible that elements of the huts and other buildings still survive as sub-surface remains. In the southern half, where the levelled area is located, it is likely that all remaining traces will have been destroyed.

Discussion

67. Aerial photographs dating back to the immediate post-war period revealed the remains of a World War II Heavy Anti-Aircraft battery. Originally the site comprised an Operations Area, which included four Gun Pits, three Magazines, a Gun Store and a Command Post, and an Accommodation Area which took the form of a hutted encampment. The entire extent of the battery was originally enclosed by a boundary fence, with small gatehouses located at the access points.
68. Much of the Operations Area, the 'Gun Park' remained intact and in good condition, with two of the four Gun Pits surviving in a virtually complete form. Each Gun Pit was octagonal on plan, with a reinforced concrete wall and two opposing entrances which would originally have been fitted with iron gates.

69. Six Ammunition Recesses projected at right angles into the interior; these appeared to represent two different forms, though each was fitted with sockets which would allow racking to be installed. A brick-built Refuge also projected from the external wall on one side, a variant from the established 1938 form illustrated by Brown *et. al* (1996) and others.
70. Gun Pit 1 had suffered the collapse of one of its six Ammunition Recesses, but was otherwise in excellent condition, though there was evidence of large scale dumping of soil and other debris in its vicinity. Gun Pit 3 had been similarly used as a focus for dumping and tipping, but in this instance its interior had been partially infilled. Here, however, the ammunition recesses remained intact, though recent damage to the external brick Refuge was evident.
71. Gun Pits 1 and 4 had, however, survived less well. Large-scale earth-moving activities on the site had resulted in the build-up of a massive bund which in the case of Gun Pit 1 had consumed virtually the entire feature. The outline of its external walling could be traced in the bund over its western half, however, suggesting that this feature remained intact, though the roofs of the Ammunition Recesses had, apparently been displaced, either prior to or during the infilling. The brick external Refuge remained intact and in good condition.
72. Roughly half of Gun Pit 4 lay concealed beneath a bund, but in this instance there was only a very short stretch of walling evident in the bund near the entrance on the west side. Fragments of freshly-broken reinforced concrete also strengthened the possibility that the structure had been partially demolished. No traces of the brick external refuge could be identified.
73. Two Magazines survived in excellent condition. The more westerly of these structures, Magazine 1, was abutted by a recent bund along its S edge to a depth of 0.4m, but the structure itself appeared undamaged. Original numerals could be seen on each of its numbered bays, though in some instances modern graffiti partially obscured these features.
74. Magazine 2 may once have been a semi-sunken structure, but with its doorways and windows partially obscured, it was evident that some of this build-up was recent. Demolition debris, including bricks and metal, could be seen amongst the earth, further indication that the site had been used as a location of tipping and dumping at an earlier date.
75. A third, larger Magazine and a Gun Store, though recorded as upstanding structures until 2009, had now been removed. Their original location was now occupied by a levelled area of hardstanding, recently constructed.
76. The final element of the operations area was the Command Post, which appears to have been a semi-sunken structure located at the north edge of the operations area. This structure clearly survived in an incomplete form, with so little remaining that it was hard to establish what its original layout would have been. Some elements on the south and east sides had been reduced to footings, with much of this area now obscured as a result of recent earthmoving activities. The presence of subsurface voids in the vicinity of these footings did, however, suggest that additional elements of the Command Post may survive as buried, subsurface remains.
77. Beyond the Operations Area, aerial photographs confirmed that there had once been an extensive Accommodation Area, covering a substantial stretch of ground to the south and east of the Gun Park. One stretch of brick walling was identified which probably represented the upstanding remains of a Nissen hut or similar prefabricated structure. This lay at the northern edge of the former Accommodation Area – elsewhere, all previously existing structures had been demolished at an earlier date and the ground subject to landscaping.
78. It is possible, however, that subsurface remains will still survive to the north of the recently-constructed rectangular area of hard standing. In the ground underlying the footprint of this modern feature, however, it seems likely that all surviving traces of the

camp will have been eradicated.

79. There were no traces of the GL mat, and the boundary fencing and associated structures had also been removed.
80. Conversation with the client helped to elucidate the history of land use and development on the site. This confirmed that the site had indeed been a focus for tipping and dumping throughout the past six decades. It was noted in particular how teams working on the construction of the nearby approach road to the Erskine Bridge used the site of the battery as a dump and spoilheap, and it seems likely that at least some of the demolition and earth-moving activity evident on the site was undertaken at this time.
81. The first step undertaken in the current programme of clearance and construction was therefore to clear away this earlier debris from the site. It was noted that Gun Pits 1 and 4, at the commencement of this latest phase of works, already partially infilled as a result of these earlier dumping episodes (cf. Gun Pit 3). No structures were recalled as being upstanding in the accommodation area at the time the current phase of works began – again, it is highly likely that these were at least partially demolished at the time of the nearby road-construction works.

Conclusion

82. A programme of archaeological works was required by Mr Peter Anderson following the partial demolition of a World War II Heavy Anti Aircraft Battery at Drumcross, near Bishopton, Renfrewshire (NGR: NS 4519 7095). The surviving remains of this feature were subject to a Level 2 Historic Building Recording exercise, in order to create a baseline record of the feature's surviving elements to assist in future management of the site.
83. The historic building recording exercise confirmed that all the original elements of the operations area, which would have comprised four Guns Pits equipped with 4.5 inch guns, 2 Magazines and a Command Post, survived in at least an incomplete form. Two of the four Gun Pits were intact and well-preserved, with a further two partially buried as a result of recent large-scale earthmoving activities on the site. While the two Magazines also survived in good condition, the command post had been subject to partial demolition and its original plan could not be established on account of later infilling.
84. The recent large-scale movement of material on the site was associated with the creation of a large, levelled area of hardstanding. This was accessed by a recently-constructed track which cut through the extent of the Gun Park. The levelled area occupied a stretch of ground which appears once to have been occupied by the southern half of the battery's Accommodation Area. It seems likely that all traces of the structures once occupying this location will now have been removed, though it is possible that subsurface remains will survive in the northern half, which lies east of the battery and has its northern extent limited by an upstanding stretch of walling, which probably represents the footing of a Nissen hut or similar structure.
85. These large-scale earthmoving activities undertaken in the recent past appear to be the latest in a series of landscaping or similar activities which had resulted in a massive accumulation of imported material onto the site, probably representing dumping and tipping of demolition debris and other rubbish.

References

Documentary

Anon	1943	<i>Roof Over Britain: The Official Story of the A.A Defences, 1939-42.</i> HMSO
Brown, I, Burridge, D, Clarke, D, Guy, J, Hellis, J, Lowry, B, Ruckley, N and Thomas, R,	1996	<i>20th Century Defences in Britain: An Introductory Guide</i> (Council for British Archaeology)

Dobinson, C S	1996	<i>Anti-Aircraft Artillery 1914-46, 20th Century Fortifications in England, Vol. 1.3</i> (Council for British Archaeology)
Harris, P	1986	<i>Glasgow and the Clyde at War</i> (Bowden)
Hood, J	1988	<i>The Clydebank Blitz</i> . In Hood, J. (ed.) <i>The History of Clydebank</i> . (Parthenon Publishing, Lancs.)
Redfern, N I	1998	<i>Site Gazetteers: Scotland, Twentieth Century Fortifications in the United Kingdom, Volume IV</i> (Council for British Archaeology)

|

Appendix 1: Discovery & Excavation in Scotland

LOCAL AUTHORITY:	Renfrewshire
PROJECT TITLE/SITE NAME:	Drumcross, Bishopton
PROJECT CODE:	10022
PARISH:	Erskine
NAME OF CONTRIBUTOR:	Louise Turner
NAME OF ORGANISATION:	Rathmell Archaeology Limited
TYPE(S) OF PROJECT:	Building Recording
NMRS NO(S):	NS47SE 80
SITE/MONUMENT TYPE(S):	Heavy Anti Aircraft Battery
SIGNIFICANT FINDS:	None
NGR (2 letters, 6 figures)	NS 4519 7095
START DATE (this season)	8 th April, 2010
END DATE (this season)	8 th April, 2010
PREVIOUS WORK (incl. DES ref.)	None
MAIN (NARRATIVE) DESCRIPTION: (may include information from other fields)	<p>A historic building recording exercise was undertaken on the site of a World War II Heavy Anti-Aircraft battery at Drumcross, near Bishopton, in order to assess the impact of recent large-scale landscaping activities undertaken in its immediate vicinity.</p> <p>The survey revealed that all the major elements of the operations area – comprising four gun pits, two magazines and a command post – could still be identified as upstanding remains. However, much of one gun pit and roughly half of another had been buried beneath bunds and some of these features' structural elements may have been demolished during the landscaping process. The command post had also been subject to partial demolition. The remaining two gun pits and the magazines were, however, in good condition.</p> <p>Aerial photographs indicated that the battery's accommodation area had originally been located to the east and south of the battery. Much of this area had been subject to landscaping, but one upstanding stretch of brick walling was identified that appeared to represent the footing of a Nissen hut or similar temporary structure.</p>
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	None
SPONSOR OR FUNDING BODY:	Mr Peter Anderson
ADDRESS OF MAIN CONTRIBUTOR:	Unit 8 Ashgrove Workshops, Kilwinning, Ayrshire KA13 6PU
E MAIL:	contact@rathmell-arch.co.uk
ARCHIVE LOCATION (intended/deposited)	Report to Fife Council Archaeology Service and archive to National Monuments Record of Scotland.

Contact Details

86. Rathmell Archaeology can be contacted at our Registered Office or through the web:

Rathmell Archaeology Ltd
Unit 8 Ashgrove Workshops
Kilwinning
Ayrshire
KA13 6PU

www.rathmell-arch.co.uk

t.: 01294 542848

f.: 01294 542849

e.: contact@rathmell-arch.co.uk

87. West of Scotland Archaeology Service can be contacted through the details noted below:

West of Scotland Archaeology Service
Charing Cross Complex
20 India Street
Glasgow
G2 4PF

t.: 01412878330

f.: 01412879529

e.: enquiries@wosas.glasgow.gov.uk

End of Document