

The Adam Park Project

Metal Detector Survey Report No.3



**17 Adam Park
19th – 28th May 2010**

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Introduction

This metal detector survey took place between 17/05/10 to 28/05/10 at 17 Adam Park. The tenants had kindly agreed to host a team of archaeologist for a two week metal detector survey of the front garden. The aim of the survey was to recover any artefacts that may be associated with the fighting that took place at Adam Park from the 13th to 15th February 1942 and the use of the estate as a POW camp from March 1942 until the end of the Japanese occupation of Singapore in 1945.

It appears from the research into the history of the fighting at Adam Park that No.17 was used by the 1st Battalion of the Cambridgeshire Regiment as their Regimental Aid Post (RAP) and as such housed the medical teams responsible for the treatment and onward evacuation of the battalion's casualties.

At the end of the fighting, during what proved to be a fragile cease fire on the 15th February, the house was reportedly set alight as Japanese tanks and light machine guns fired into the building. One orderly was killed but the wounded men were evacuated from the burning building from the first floor out onto the back lawn. The house was subsequently destroyed by the fire, so much so that the POWs were unable to use it as accommodation and one resourceful team sold the ruins to a local Chinese trader and stripped the site of all salvageable building material.

The objectives of this survey were three fold:

- 1) To prove through the archaeological record that this was the location of the RAP and scene of fighting.
- 2) To find evidence of the post ceasefire debacle.
- 3) To assess the potential for battlefield and POW archaeology on the rest of the estate.

This was the first survey carried out in conjunction with local archaeologists and volunteers so time was also used to train those new to the methodologies.

Ten days were allocated to the survey and it was hoped that the much of the front garden could be covered in that period. The site clear up operation went on into an eleventh day.

The Survey Criteria and Area of Interest

Twelve 2m wide transects were set out, ranging in length between 20m to 30m. The first two transects were laid along the edge of a platform which had originally been a tennis court but latterly had been the site of a swimming pool. The intention was to see whether any artefacts had been left post the excavation of the pool and to give the team a 'training area' on which to hone their detecting skills and get used to the equipment.

The next 8 transects were located on the sloping ground at the north end of the garden which appeared to be relatively untouched by garden features. The most northerly transect was extended in width to take in the lawn going up to the northern fence line of the garden. The eastern boundary of the grid was bordered by a steep bank that went up onto another platform that fronted the house. This was also surveyed in the hope that bullets fired at the house and gardens would have hit this slope. The most southerly transect of the eight ran along and took in the top of an embankment that led down onto the tennis court platform and the western boundary ran along an arbitrary line which segregated the search area from an area of rough ground which appeared to be strewn with building material.



Fig 1 – The Google earth image of the site showing the location of the transects. Blue – Transects 1 & 2, Green – Transects 3 to 10 and Red – Transects 11 & 12.

The final two transits ran along a north / south line and along the crest of the slope that bordered the tennis court platform to the west and at the foot of the embankment that led up to the house to the east. The total area surveyed was estimated to cover 40% of the front garden of the house.

An initial sweep of the proposed transects was carried out on each day before the full survey began using the ‘all ferrous’ setting on the metal detectors and a multitude of returns were registered. Therefore a full survey of all ferrous returns was deemed to be inappropriate given the time constraints.

Two detectors were used. A White’s Prizm Mk 2 metal detector was used as the preferred machine as its operation was simpler and was familiar to the majority of the team members after a brief training session. It was set to maximum sensitivity but to exclude ferrous materials (1st two settings muted). By the end of the two weeks the detector was picking up bullets and cartridges at a rate of 2 in every five hits.

MD Survey Report

A Garrett Ace 250 was also made available to the team but unfamiliar operation meant it was relegated to a support role.



Fig 2 – This picture shows the team working on the first two transects that ran parallel with the border of the old tennis court and adjacent to the site of an old swimming pool and associated decking.

Transects 1 & 2 revealed a number of what the team termed ‘hot rocks’ that is to say small stones that seemed to have a high metallic content. These may have been associated with the surfacing of the tennis court. Their presence certainly hampered efforts to recover metallic artefacts along the first two transects.



Fig 3 – This image show the area covered by the transects 3 to 10 at the north end of the garden over the gently sloping ground. It is taken from the top of the bank, on the driveway that ran in front of the house and bordered the survey area to the west. The gazebo is located on the ‘tennis court’ platform.

The second area (Transects 3 to 10) was bordered to the west with a small anti-malarial concrete lined ditch which ran along the line of the embankment. There were five trees located in the northern end of area that appeared to be post war additions to the landscape.

The ground was an urban garden with a covering of ‘tropical broad leaved grass’ which was easy to uproot. It covered a layer of topsoil of between 10 – 15cms deep. There was some ingress of roots from neighbouring plants. This topsoil layer was laid on top of an orange clay layer. Notably all the finds were in the topsoil although not stratified within this layer.

The area and in particular that next to the fence line and among the trees was scattered with broken red / orange tiles and bricks. There was also a patch of tarmac on the platform pierced by the remains of the iron footing that once held up the fence around the tennis court.

On the initial field walk of the site a number of depressions were noted. Each was about 3m by 1.75m, their long side running along the contour of the slope. They were regularly dispersed in line with a distance of approximately 4 metres between each.

The initial sweep of with the detector on all ferrous setting suggested there was an intensity of hits in the depressions. It was therefore decided to place transects 3 & 4 directly over two of these features. These were completed in good time so the survey zone was extended either side of these initial two grids.

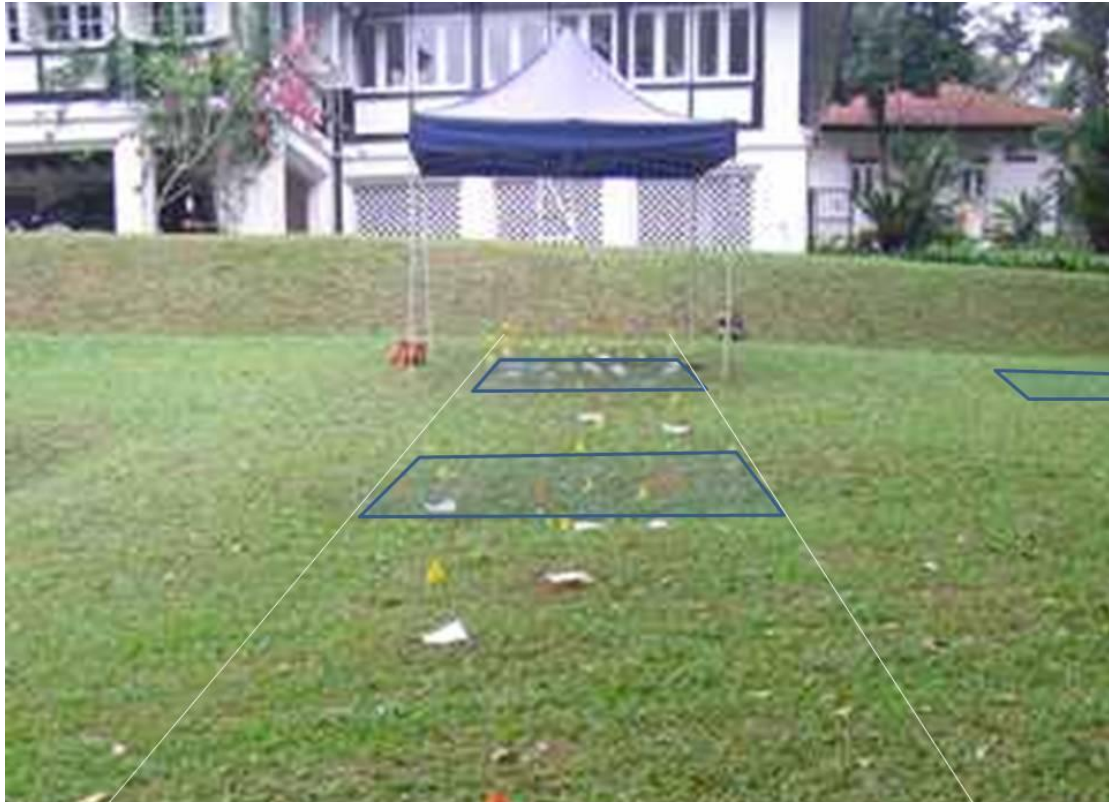


Fig 4 – Transect No.3 crossed two features thought to be the remains of slit trenches. Each depression provided a concentration of hits however the most westerly features nearer the house (under the gazebo) appeared to filled with modern domestic rubbish

Recovery of artefacts was done by trowel as there was a need to restore the garden to its original condition after each recovery. Location of the finds was recorded to within 5 cms by measuring tape. Latitudes and longitudes of the corners from the three survey areas were taken from Google Earth.

The weather was fairly hot yet over cast and turned showery at the end of each day. The team worked from 9.00am until 5.00pm on weekdays only to ensure minimal disturbance for the tenants.

The Location and Type of Artefacts

TAPP Finds Logs for the survey are shown at Appendix 1.

There was a significant patterning of artefacts across the survey areas. In Transects 1 & 2 there was relatively few metal items discovered. This was due partly to the inexperience of the detectorists and the large amount of 'hot rocks' which prevented other items being identified.

On transects 3 – 10 the intensity of non ferrous artefacts appeared around the features believed to be slit trenches. However most of these finds proved to be post war building and domestic material as if the depressions had been used as a rubbish pit. This was particularly true for the features near the house on the western end of the survey area. The bank beyond the area to the west was also surveyed but there were no bullets or cartridges recovered, just building material suggesting the bank was reinforced post was with a material deposited from the rebuild of the house or landscaping of the garden.

This theory was strengthened by the artefacts found in Transects 11 & 12. The area near the southern end returned a large amount of non ferrous hits but they turned out to be domestic post war items again suggesting debris had been scattered down the embankment during a post war clear out.

The artefacts that could be directly associated with the wartime occupation of the site were split into 4 groups: Bullets, fired cartridges, unfired or dropped rounds and other wartime artefacts. These groups are reviewed in detail in below. Suffice to say the amount of relevant finds was impressive for such a small area and the subsequent patterning proved provocative.



Fig 5 – Numerous hits along Transit 12 in Area 3 proved to be mostly post war domestic rubbish.

Summary of Artefact Catalogue

Out of the 174 items recovered just under half could be considered as having direct relationship with the events of 1942. The great proportion of the relevant finds was either bullets, cartridges or shell fragments. Other items which may have seemed unrelated when revealed have proven to be dateable to the 1940's and have become very relevant to the investigations. There follows a summary of the items revealed and a full Finds Log can be found at Appendix 1.

The Cartridges

There were 22 cartridges found during the survey, the great majority was .303 calibre and all were in some way deformed or broken. Two were found with the bullet and still containing cordite strings (See Dropped Rounds). One cartridge was of a significantly larger calibre.

The cartridges were cleaned and the heads of each round were examined to ascertain details of the head stamp. The majority of head stamps were only partially decipherable but it would appear that the cartridges came from three separate arsenals; The Woolwich Arsenal in Kent, Greenwood and Batley in Leeds and the Dominion Cartridge Company in Brownsburg Quebec. The bullets from the Canadian arsenal may well have been picked up during the Cambridgeshires' stopover in Halifax Nova Scotia on their way to Singapore.

Patterning

The general patterning of the cartridges in Area 2 offered little to comment on. There were few cartridges found amongst the trees in the North East sector of the area which was a trend found with the bullets. There are tentative signs of a firing line running in a NNW direction across the survey area, What is notable is the lack of cartridges found around the 'slit trench' features. It is hoped that the cartridges fired by the occupants landed at the bottom trench or were pushed in with the spoil when the trenches were refilled and are yet to be discovered. It is speculated that the rounds discovered to date are those fired by troops on the move between cover.

Two cartridges found in west end of Transect 7 offered an interesting interpretation as they were found at the top of the bank bordering the 'tennis court'. It could be speculated that the bullets were fired by a man taking cover by the bank from enemy fire coming in from the north. However there is no evidence from the head stamps to support the theory that the two cartridges could have come from the same weapon.



Fig 6 – Archaeologist Lim Chien Sian strikes a suitable pose to demonstrate the possible location of the man who fired the two rounds found at the markers just behind him

The .55 Round

The partial battered remains of one larger calibre round were found. It appears to be the shoulder and neck of the cartridge and had dimensions of 15.20mm and 14.00 mm respectively. It is possible that this is the remains of a Boys AT Kynoch & RG .551 inch round which has a diameter at the shoulder of 15.596mm and has a neck diameter of 14.45mm (<http://www.antitank.co.uk.htm>). If this is the case then this round could have come from the weapon manned by Pte Irons and Eldred from D Company who were sent to Battalion HQ to act as a special defensive unit with a Boys AT Rifle and took up defensive positions overlooking the Adam Road between the HQ Company and Headquarters (Moore 1988: 47). Alternatively and perhaps a more likely explanation is that the round may be the remains of a Breda 12.7 x 81SR ejected from a passing Japanese aircraft armed with the common HO- 103 machine gun. This bullet has a neck diameter of 13.95mm and shoulder measurement of 16.30mm.

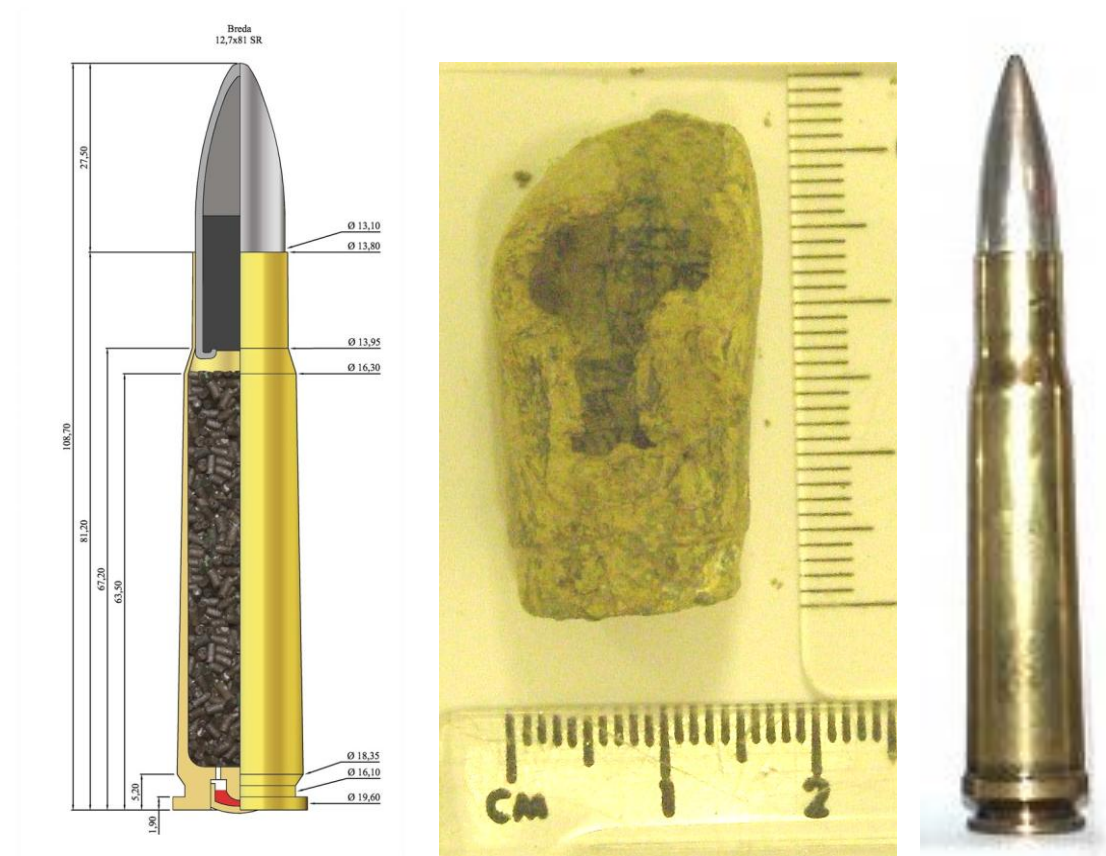


Fig 7 – The large calibre round may have come from a Boys Antitank rifle (right) or the machine gun of a Japanese aircraft firing the Breda 12.7mm round (left)

Bullets

There were 28 bullets found during the survey the great majority being Japanese Type 99 7.7mm rimless rounds fired from a Type 99 Arisaka Rifle or the Type 99 or Type 92 Machine Gun.

Three bullets were deformed probably from impact after being fired rather than damage caused after being deposited.

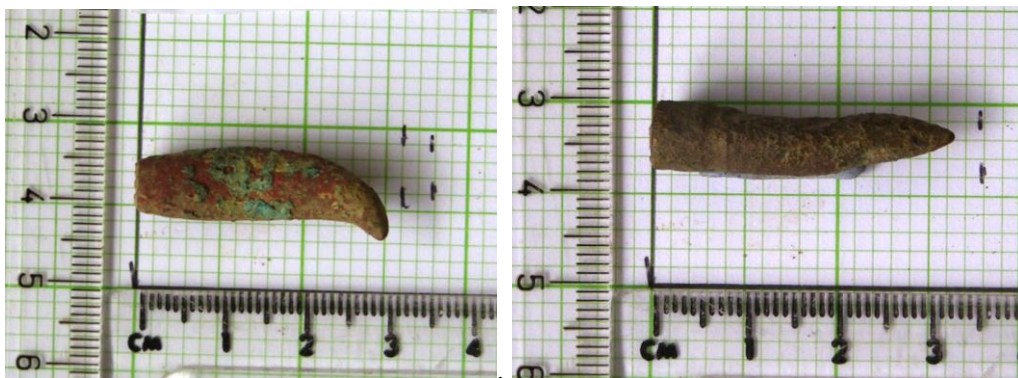
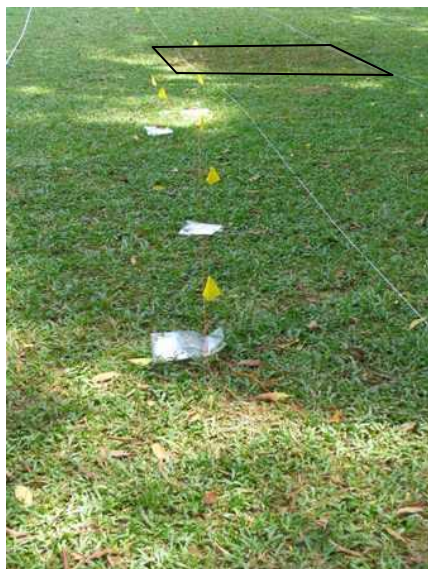


Fig 8 – Two of the three deformed Type 99 projectiles found in Area 2 at the end of what may have been bursts of machine gun fire.



Two of these bullets were found at the end of what appeared to be a line of projectiles suggesting these were fired from a machine gun. One line passed through the southerly end of a feature believed to be a slit trench. It would appear that the shooter was aiming at a target in the trench and the final bullet had passed through its mark before embedding itself in the lawn behind it. This in itself is convincing evidence to suggest that the depressions are the remains of manned trenches. The planned geophysics and excavation will be substantiate or rebuke this theory. See Appendix 4 for the dispersal pattern of the bullets.

Fig 9 – The line of bullets heading towards the southern end of a possible slit trench. The direction of the line of fire suggests the bullets were fired from behind the Cambridgeshire lines as part of the Japanese attacks on the 15th February or possibly after the ceasefire.

The presence of lines of machine gun bullets in the front garden ties in nicely with an account of the activities of Lt Col Carpenter on the 15th February as noted by Major Hutt in his unpublished history of the Cambridgeshires.

At 9.00 am a medium tank was observed in the open ground beyond Hill 95 and, being engaged by Sgt Holyhead, was halted by a direct hit. For some time Japanese salvage parties were kept away from the disabled vehicle by heavy fire but eventually they were able to attach a cable to it and tow it back into cover. All firing was now stopped for a few minutes, to find out if other tanks were in the neighbourhood, and the sound of engines was heard to the north of Water Tower Hill.

(Major) Few thereupon went down to Battalion HQ to report this discovery to Carpenter, whom he found in the garden by No. 17; Spooner was then collected to discuss the problem of how to deal with these tanks and it was arranged that he should put down a heavy concentration of 3" mortar fire in the hope of causing some damage or at least putting the wind up their drivers.

At this moment a stream of bullets passed between the members of the 'conference' and ripped up the bank a few yards in the rear. There was a dive for the nearest cover and Pte Nunn established a record for the standing jump with the aid of a well placed boot. The author of this interruption was located barely 400 yds off below Hill 95, operating a light automatic, and Carpenter crawled away to organise retaliation while Spooner made off to start his tank shoot.

It is interesting to speculate that it is this burst of fire that has now been revealed.

Dropped Rounds



Two dropped round were found at the north end of Area 3 (17/11/002 and 17/12/002). The first was found in conjunction with another bullet and a perfume bottle. This was first believed to be a deliberate attempt to hide these items but later investigations show that the bottle post dates the bullets by some time. Both rounds are .303 calibre and contained traces of the cordite propulsive that characterised the allied ammunition sent to the Far East. Unfortunately the headstamp on each round was indeterminable with only one possibly bearing the letters 'RV'. The rounds may have been dropped during combat or more likely abandoned during the ceasefire.

Fig 10– 17/12/002 being unearthed



Fig 11 a & b – Artefacts 17/11/002 (above) and 17/12/002 (below) are the intact rounds found in Area 3.

Shell fragments

A collection of artifacts were categorised under the loose heading of 'fragments'. The majority of these pieces was small and had some kind of machine work on them. They were plotted onto the grids but there was little to gain in studying the patterning as there were too few items. Suffice to say it appeared the garden did come under some form of barrage.



Fig 12 – Five out of the eleven artifacts categorised under the heading of ‘shrapnel’ – the first 4 showing evidence of machine work but the last appears to be waste from metal working as the edges are too well defined.

Other Related Artifacts

'The Pistol'

This collection of artifacts was excavated from the top few centimeters of the lower 'slit trench' in Area 2 Transit 3 and was initially overlooked as being 'lumps' of metal however closer inspection determined they were from the same item and could be pieced together. Speculation then ran riot as to whether this was the remains of a pistol or possibly a rifle, however it does not readily match any of the weapons thought to have been carried by the combatants and bears greater resemblance to a garden hose attachment.



Fig 13 a,b & c -- Three images of the 'gun'. a) the right profile, b) the left profile with detached pieces in place and c) left profile with pieces removed to reveal inner workings

Toothpaste Tubes

Two toothpaste tubes were recovered from the front garden of No.17. Both 17/4/14 and 17/10/2 were rolled up tight in order to get the very last of the contents out but careful unrolling and cleaning revealed the maker of each.

17/4/14 turned out to be a 1956 Macleans tube and not associated with the fighting or POW years. However the tube of Odol toothpaste was made in Norwich close to the recruiting area of the Cambridgeshires and was a popular brand for servicemen to take with them. We have been unable to associate the packaging with a certain era as yet so it is still possible that this came from the kitbag of a British soldier.



Fig 14 - The Macleans toothpaste tube is easily identifiable with the image on this 1955 poster – even the strap line on the box is the same as the one on the tube.



Fig 15 - The Odol toothpaste has yet to dated and could still be associated with the Cambridgeshires or the British POW's.

Razors

Two razors were found during the survey; a traditional cutthroat razor and the head of a safety razor both possibly from the war years. It is feasible that both items could have belonged to prisoners however there are no markings or evidence to say that either item was army issue and could have therefore been associated to the household.



Fig 16 – The cutthroat razor found during the survey is badly corroded but still has sections of the protective sleeve in place.



Fig 17 - A safety razor that could be from the personal kit of a soldier but with no distinguishable markings it is difficult to relate it directly with the war.



Fig 18 – Standard issue razor as issued in 1943 clearly shows markings identifying as military kit. The razor head discovered at No.17 Adam Park has no such markings.

Cigarette Packaging



Item 17/12/008 is a strip of aluminium 110mm in length and 25mm wide. One side has a green tinting to it and near the bottom edge has a silver strip 7.5mm wide bearing the inscription 'THE CONTENTS OF THIS PACKAGE ARE THE GOODS OF THE SUCCESSORS TO WA & AC CHURCHMAN ENGLAND'. The strip seems to have been rudely cut from a larger object.

Fig 19 – War time poster for Churchman No.1's

The firm of W.A. and A.C. Churchman was founded in Ipswich by William Churchman in 1790, beginning as a small pipe tobacco manufacturer with a shop at Hyde Park Corner. In 1888 William Alfred and Arthur Charles Churchman (later Lord Woodbridge and a director of the British American Tobacco Company from 1904 to 1923), took over the business and it was from them that the Company derived its title. At that time output was mainly shag, snuff and tobacco. By 1890 the Company was also making 'white cigarettes', and six years later installed one of the first cigarette-making machines, producing 20,000 cigarettes an hour; the famous 'Churchman's No. 1' brand dates from this period. In 1891 Churchmans opened a new factory in Portman Road, Ipswich. In 1902 Churchmans joined the new Imperial Tobacco Group. Churchmans' Portman Road factory was extended several times during the inter-war years. From at least as early as 1918 to at least as late as 1944 they also had a small branch in Norwich, of which very little documentation appears to have survived. In 1961 W.A. & A.C. Churchman amalgamated with Lambert & Butler and Edwards, Ringer & Bigg, to become first Churchman, Lambert & Ringer, then renamed Churchmans in 1965.



Fig 20 – This strip of dirt coated aluminium proved to be a fascinating find. Once cleaned it was found to be painted green and revealed a line of text which gave the manufacturer details.



Fig 21 – A wartime packet of Churchman’s ‘No1’ Cigarettes on which you can just make out the same wording along the bottom edge as found on the artefact. The box has the dimensions of 20mm x 144mm x 112mm – the same width as the artefact. This container would carry 50 cigarettes.

(<http://www.nz museums.co.nz/account/3021/object/27977>)

Cigarette tins of this nature were often used by the Japanese troops to carry the ashes of their fallen comrades; they were a good size and waterproof. Why this piece has been removed and lost can only be speculated upon.

Coins

There were five coins retrieved from the survey. Three were post war coinage however a 1920 King George V 1 Cent coin was found in Area 1. This would not be an important find in other contexts but here, when you consider POW’s got paid a mere 10 cents a day for working on the Shrine, the loss of this coin would have meant much more.





Fig 22 – The 1 cent George V coin found on the ‘Tennis Court’ area was in poor condition but the figure ‘1’ and enough of the surrounding text are visible to identify and date it.

A fifth ‘coin’ (item 17/11/006) has been more difficult to identify. It appears to have the wording ‘GEORGIVS’ around the outside and it is 25 mm in diameter. The head is indiscernible however the reverse is clearly stamped with a ‘heater’ shield split into quadrants and surmounted with a crown. Little detail remains as to what is in the quadrants.

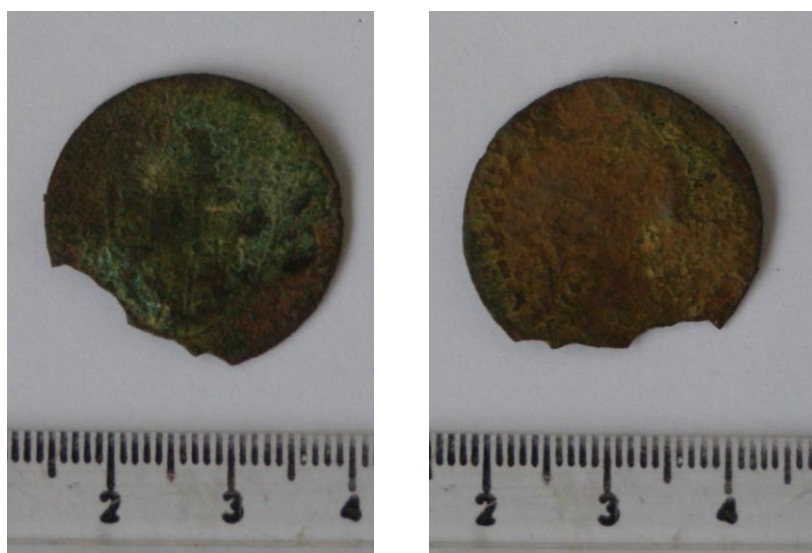


Fig 23 – This well worn ‘coin’ clearly shows a ‘heater shield and crown on the reverse and the word ‘GEORGEVS’ on the head but gave no clue as to the date.

The obvious candidate for this coin is the George III Half Guinea coin series that were circulated between 1762 and 1813. The ‘spade’ design reverse, used from 1787 - 1800, was designed by Chief Engraver, Lewis Pingo (1743 – 1830). The Royal shield was far more ornate on the earlier issues. The original 1761 obverse was designed by Johann Sigismund Tanner (c.1706 - 1775). But what would a George III coin be doing in the front garden at 17 Adam Park and what is more - it’s not gold!



Fig24 –The real thing - a George III Half guinea coin

The answer is a little more mundane. According to Volume 11 Issue 6 of the Tasmanian Numismatic Society newsletter, in Australia, and some other former English dominated countries, gaming counters styled, crudely, on the George III Gold 'Spade' Guinea and Half Guinea were produced. These virtually worthless tokens are often mistaken for genuine. Like casino chips, the 'Spade' Half Guinea card-counters were used as a substitute for cash when gambling. The counter which is most commonly encountered in Australia is a relatively crude copy of the real thing and incorporates the reverse legend surrounding the spade design which reads, 'In Memory of the Good Old Days' ! Our example appears to have been clipped, possibly inferring it was an I.O.U on some gambling debt.



Fig 25 – An example of the gaming piece produced in 1788

Although this may not be the genuine article it should be noted that there remains a more interesting possibility in that this gaming piece was brought to Adam Park by an Australian POW. For many cards was the main antidote to the long hours of boredom experienced by the inmates and as money was scarce the use of tokens may have been a more viable alternative. Alternatively it could have been lost during a poker night by one of the residents of the house.

Reference: <http://www.vision.net.au/~pwood/june06.htm>

Bottle Tops

Particular interest was paid to the collection of bottle tops. A number of historical records recall the fact that the Cambridgeshire resorted to using bottled water from the mess of the RASC camp after the mains water supply was blown up on the 13th February. Cases of beer was also brought across the road and distributed to the men as a fortifier. This led to the strange sight of men loosing off a few rounds before ducking down into the trench to take a well earned swig of beer.

Presumably the empties would then be scattered around the site and perhaps left in the bottom of the trenches on capitulation. Full ones if not hidden away would have been systematically denied to the enemy. A soldier's personal kit may also included tins and bottles from home and POWs undoubtedly recycled various containers for their own domestic use. Therefore those branded tin lids and bottle tops may be associated with the events of 1942.

Twenty five bottle tops and container caps were gathered many resembling the foil milk bottle type and were could not be dated. However two of the more interesting caps were thought initially to pertain to the war years.

Item 7/03/008 is a metal cap from the top of a jar. It is 55mm in diameter and has an inner screw thread. The writing on the top clearly says the word 'Horlicks' in heavily italicized text.

Horlicks is a well known malt drink that was first created by William and James Horlick in Chicago in 1873. The brothers soon established a dry powder version of their product and set about exporting their product worldwide. So much so that James returned to Britain to start a new factory in Slough in 1906. In 1909 Horlicks notoriously became a stable part of the arctic explorers ration packs and when the First World War broke out Horlicks was used by the armed forces. By 1939 Horlicks tablets became standard issue in the ration packs for allied troops and these are today manufactured in Malaysia as Horlicks Malties. At the end of the war the company headquarters were moved to the UK where it has continued to strengthen the brand up to the present day under the auspices of the Beecham Group.

The presence of this Horlicks lid in the front garden of No.17 Adam Park in itself cannot be directly related to the Cambridgeshires or the POWs but the fact that it was found in the fill area of a trench feature does infer that contemporary domestic rubbish was used to fill the 'weapons pits' after they were no longer required.



Fig26 – The lid from the Horlicks jar found at Adam Park seems to be very similar to this 1939 example found in the Slough Museum.

Cascade Brewery was founded by Peter Degraives in 1824 in Hobart, Tasmania and is Australia's oldest continuously operating brewery. Set in the rolling hills of South Hobart, the brewery lies in the shadow of Mount Wellington and surrounded by 250 hectares of pristine forest. The brewery, now under the Fosters Group, is of great interest to beer lovers, connoisseurs as well as heritage buffs and is well known tourist attraction in Tasmania. Cascade Pale Ale beer was shipped to New Guinea, Singapore and the Pacific Islands during the 2nd World War and was a great hit with American soldiers.

This aluminium screw top (Item 17/8/011) has been dated by the Cascade heritage team. They report that 'the bottle top was used on Cascade Krinkley Orange produced at the Cascade Beverage Company between 1959 and 1967. To our knowledge - Cascade non-alcohol products were not shipped overseas until 1962.'



Fig 27 - The Tasmanian company 'Cascade' not only make fruit juices and cordials they are also a renowned brewer of beer.

Helmet Chin Strap

Item 17/4/0002 is thought to be the remains of the spring and clip found in the chinstrap of a British Brodie steel helmet. The buckle is 23.8mm in length and has an average thickness of 2.05mm. One of the longer sides has a protective sleeve of 3.00mm thickness giving an overall width of buckle of 12.20mm. The spring was found partially stretched out and deformed however the compressed section has 19 coils in a measurement of 14.40mm and there are another 67 loser coils which in theory makes the total length of the fully compressed coil approx 65mm.

This item was found with the remains of three pieces of bone which were highly eroded and indiscernible as being human or animal



Fig 28 a, b & c -- Modern recreation of the chinstrap showing the spring stitched into the liner. The right hand image is of a chinstrap attached to a 1941 Canadian made helmet. Compare this to the item 17/4/0002 shown in the bottom picture.

No.152.1 3" Mortar Fuse Safety Cap

This artefact was retrieved from the 'tennis court' platform. It was initially thought to be a canteen cap but the cleaning revealed the phrase 'Remove Before Firing' and the figures 'No.152.1'. This turned out to be the safety cap off a 3" Mortar fuse which appears to have been broken off taking the top of the fuse with it.

Captain Spooner's mortar platoon had 5 x 3" mortars with them and on the 13th February it was Sgts Holyhead and Cross who were on the battalion right front under the command of Captain Hockey of D Coy. As Holyhead was located in No.13 Adam Park it is possible that this mortar fuse belonged to Sgt Cross's team based around 17 Adam Park.



<http://www.oztion.com.au/buy/auction.aspx?itemid=9756496>

Fig 29 a,b & c -- This image shows the fuse of a No.162 fuse with a similar cap. Compare this with the 152.1 cap found at Adam Park (top left)

Webbing Buckles

There were three webbing buckles found on site during the surveys. Items 17/1/003 and 17/07/008 were complete. The third, 17/03/028, was broken and deformed. The inner dimensions varied; 003 could take webbing up to 30mm in width, item 008 was a little narrower at 25mm and 028 possibly 45mm wide. The 'Padang dig' in December 2009 unearthed a range of buckles at the bottom of an ARP trench but all were found with artifacts related to the contents of the haversack or pouch. The loss of individual buckles on the surface is intriguing as it begs the question as to what happened to the rest of the equipment.



Fig 30 - Artefacts 17/1/003 (top left), 17/07/008 (top right) and 17/03/28 (below) are enigmas; how did they get to be lost and what happened to the rest of the kit? This picture of the Padang dig in Dec 2009 shows the variety of buckles and clips found but all associated with the contents the equipment they came off.

Iron Slab and Spoon

One of the more enigmatic finds was an iron slab (Item 17/6/3). Roughly rectangular and 80mm x 120mm x 17mm and covered in dirt and rust the item was first thought to be simply an piece of scrap metal. However as cleaning commenced it appeared to have something sticking out of the larger face. This remarkably turned out to be a spoon, perhaps for medicine or tea, 65mm long, which had been adhered to the face of the slab. Traces of the 'solvent' seemed to cover the slab face around the edge of the spoon and items best described as 'elongated cloves' were found in the bowl of the spoon.



Fig 31 - The iron slab appears to have been used as a mixing palette for some kind of adhesive and the spoon used for the mixing was permanently glued in place.

The Slit Trenches and Weapon Pits

Perhaps the most exciting discovery of this survey was the presence of a number of features that may be the remains of 'slit trenches' in the garden. These regularly spaced features run along the contours of the garden on the second tier of the platform in front of the house at the western side of Area 2, a lower couple in the middle of Area 2 and some on the lawn in front of and at the same level as the house. The trenches in Area 2 are set one behind the other and although the westerly trenches are higher up the slope it is worrying that their line of fire is directly over the trenches to their front. This maybe because these trenches were initially to be used as ARP trenches where such niceties are not considered or that the trenches were deep enough to ensure the occupants were safely below any rounds being fired from the position in the rear.

According to the Field Service Pocket Book Pamphlet No.4 issued in 1939 on Field Engineering a slit trench or weapon pit should be 6ft x 3.5ft x 3ft deep.

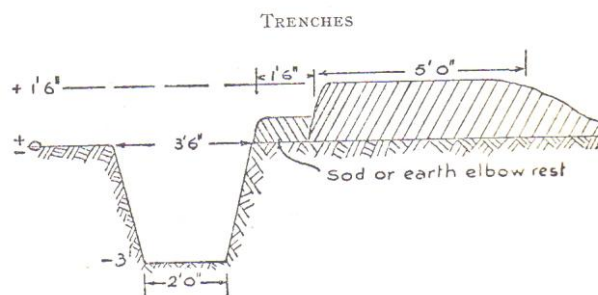


FIG 3.—Section of a weapon pit.

(393/4645)Q

A 8

Fig 32 – The FSP'd diagram showing the dimensions of a weapon pit. Note the piling of earth at the front of the trench. This could be used to refill the pit at the end of the fighting taking any battle debris to the bottom of the pit.

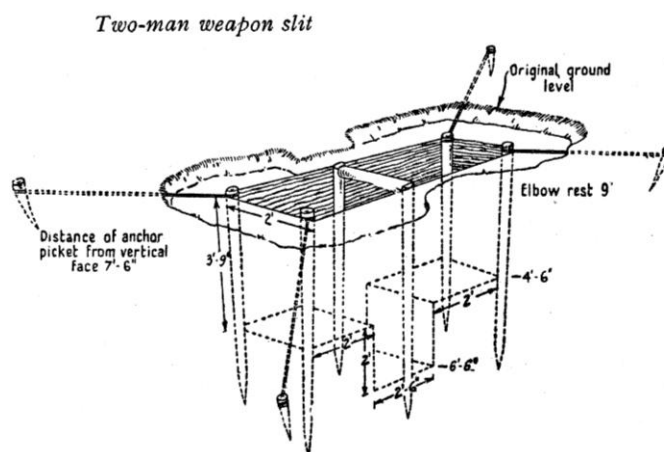


Fig 33 – This diagram taken from the similar training manuals shows a more complicated structure which incorporates reinforcement stakes and a sump to catch the rain water. Note however the surface cross section is narrower 6ft 6" by 2ft

It is hoped that future excavations will be carried out to reveal the structure of these features and confirm whether or not they are slit trenches associated with the fighting. It will also be interesting to reveal what is at the bottom of the trench.



Fig 34 – This view of Area 2 shows approximately the location of the depressions believed to be slit trenches. The fact that they sit directly in line with each other seems tactically unsound. The transect lines are 2m apart

According to the surviving veteran Sgt Len Baynes, during the ceasefire he passed the order to his men to lay down their weapons out of reach and for them to stay where they were in their dugouts. He also asked them to remove bolts from all the rifles and Brens and hide them. It is easy to imagine that many of them dropped or buried their equipment at the bottom of their trenches alongside all the detritus of battle that had gathered there over the last three days and then covered them with the spoil on the lip of the trench. We can therefore expect to find spent cartridges, unfired ordnance, broken working parts from weapons, used ration packs, used medical supplies and perhaps even the beer bottles brought across from the RAOC Camp Mess.

It is hoped both tenants and landlords agree that the potential for excavating and retrieving these items is worthy of allowing a future dig to take place.

Conclusions

This was a very successful survey. Thanks to the help of the volunteers and the hospitality of the tenants nearly half the garden was surveyed allowing for the discovery of a considerable amount of artifacts. A number of procedural lessons were learnt and new skills attained by the team. But what is perhaps the most important lesson to be learnt is that the finds were discovered in a controlled context and the patterning of the ordnance told us more about the site than the individual bullet or cartridge ever could.

In addition other apparently more mundane finds told amazing stories. Although many of these could not be definitively linked to the Cambridgeshires or POWs there are a number of coincidences that cannot be ignored and strongly suggest they have something to do with the wartime heritage of the site.

One of the main learning points for the team was not to write off an artifact as being irrelevant and therefore consign it to the rubbish bag. Even the dirtiest most mundane item, such as the strip of metal from the cigarette tin, can turn out to be a find of great relevance.

As for our original objectives for this survey it is clear that the front garden of No. 17 Adam Park was the scene of fighting despite being located near the RAP. This may be seen by some as controversial in itself as such buildings should not become the target of attack under any circumstances however the evidence suggest that the garden around the house was occupied by British defenders who were suitably armed and could therefore be considered legitimate targets.

There is no direct evidence of the post ceasefire debacle. The closest we get is the firing of Japanese machine guns from the environs of Adam Road east of Adam Park which according to the histories was occupied by the Japanese on the morning of 15th February 1942.

The survey at No.17 demonstrated yet again that Adam Park is a unique site. The archaeological record is in remarkably good condition just a few centimeters below the surface. The two week long metal detector survey revealed an incredible testimony to the fighting and POW life. However there is still a requirement for further surveys in the garden. A full topographic survey would set the features in the landscape, a series of geophysical surveys would confirm the presence and dimensions of the remaining trenches and of course an excavation of a couple of these features would confirm once and for all their role in the fighting. It may also reveal a plethora of related artifacts. Once armed with this information identifying similar features in the rest of the estate will be much easier. As successful as this survey was, so much more can be revealed by a full battlefield survey.

Appendix 1 - TAPP - Finds Log – May 2010 Dig

	Line Number	Transect	Item Number	Description	Location	Notes	
Transects on Tennis Court				All distances taken from the NW Corner			
	1	1	1	Cap, Nail, shard of pottery	22.2m x 3.0m	8 cmbs	
	2	1	2	Shrapnel	26.20m x 2.90m	10 cmbs	
	3	1	3	webbing buckle	27.70m x 2.30m	7 cmbs	Outer Dimensions 34.10mm x 25mm Inner measurements 30.50mm x 7.10mm
	4	2	1	4 Hot rocks	29.15m x 0.32m		
	5	2	2	Shrapnel	27.86m x 1.70m		
	6	2	3	Nail - Round head	25.80m x 0.50m	5 cmbs	
	7	2	4	Small square headed nail	24.70m x 0.30m	4 cmbs	
	8	2	5	Iron Lump	23.40m x 1.30m		
	9	2	6	Iron Lump	20.60m x 0.80m		
	10	2	7	Nail	15.00m x 1.35m	6 cmbs	
	11	2	8	George V 1 cent coin	13.20m x 1.50m	10 cmbs	
	12	2	9	5 Cents Coin	11.10m x 0.70m	2 cmbs	
Transects on the north end of the garden				All referenced to the SE corner of a 23m x 20m grid		001.19.50.30N 103.48.52.11E	
	13	3	1	Shrapnel	0.15m x 4.20m		
	14	3	2	Cartridge	1.40m x 5.63m		
	15	3	3	Iron Lump	2.60m x 4.76m		
	16	3	4	Nail	6.16m x 4.50m		

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17	3	5	Cartridge	7.10m x 4.97m		
18	3	6	Iron Lump	8.93m x 5.40m		
19	3	7	Iron Lump	9.10m x 5.10m		
20	3	8	Cap Horlicks	9.70m x 4.26m		
21	3	9	Projectile	11.90m x 5.65m		
22	3	10	Iron Strip	12.70m x 5.08m		
23	3	11	Projectile	14.70m x 4.23m	Mangled	
24	3	12	White Porcelain Fragments	15.10m x 4.60m		
25	3	13	4 x Nails	21.20m x 5.38m		
26	3	14	Nail	15.40m x 4.32m		
27	3	15	Nail	15.80m x 4.37m		
28	3	16	Nail	15.80m x 4.74m		
29	3	17	Iron Lump	15.90m x 5.41m		
30	3	18	Hot' Rocks	16.30m x 5.86m		
31	3	19	Thick Metal Strip	17.20m x 4.26m		
32	3	20	Bottle Cap, sheets of aluminium, lego bit, 3 nails	17.40m x 4.20m		
33	3	21	Metal Cap	17.20m x 4.61m		
34	3	22	4 Iron lumps	17.30m x 4.90m		
35	3	23	Rivet	16.90m x 5.19m		
36	3	24	Pieces of glass, iron lump	17.20m x 5.19m		
37	3	25	Iron lumps, ceramic fragments , plastic toy part	17.30m x 5.29m		
38	3	26	Iron lumps, iron strips	16.90m x 5.44m		
39	3	27	Plastic Toy parts and iron lumps	17.30m x 5.52m		
40	3	28	Iron Lumps	17.20m x 5.88m		

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41	3	29	Iron Lumps	18.00m x 5.29m		
42	3	30	Nail	17.80m x 4.24m		
43	3	31	Projectile	18.90m x 4.42m		
44	3	32	2 Iron Lumps	19.20m x 5.30m		
45	3	33	Iron rod	19.40m x 4.64m		
46	3	34	Metal Bottle Cap	20.30m x 4.45m		
47	3	35	Screw	18.90m x 5.88m		
48	3	36	2 x Coins	17.60m x 5.88m		
49	4	1	Cartridge	3.60m x 6.87m		
50	4	1a	Projectile	0.70m x 7.20m		
51	4	2	Helmet Chin Strap, Bone Fragments	6.30m x 8.24m		
52	4	3	Aluminium Cap	7.47m x 7.53m		
53	4	4	Aluminium Strip	7.60m x 8.09m		
54	4	5	Aluminium Cap	8.33m x 7.44m		
55	4	6	Projectile	8.40m x 8.31m		
56	4	7	Aluminium Cap	8.83m x 6.98m		
57	4	8	Shrapnel	11.29m 7.80m		
58	4	9	Projectile	12.70m 6.69m		
59	4	10	Battery Terminal	13.30m x 8.27m	5 Cents	
60	4	11	Coin	13.50m x 7.74m		
61	4	12	Cartridge	15.56m x 7.59m		
62	4	13	Rivet	16.50m x 7.31m		
63	4	14	Toothpaste Tube (Macleans)	16.92m x 7.71m		
64	4	15	Nail	16.80m x 8.53m		
65	4	16	Projectile	20.20m x 6.40m		

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66	5	1	Iron Lump	5.70m x 9.78m		
67	5	2	Cartridge	5.85m x 8.48m		
68	5	3	Aluminium Bottle Cap	6.35m x 8.19m		
69	5	4	Aluminium Bottle Cap plus piece of glass	7.24m x 8.54m		
70	5	5	Aluminium bottle cap / top	7.42m x 8.11m		
71	5	6	Aluminium Bottle Cap	7.62m x 8.81m		
72	5	7	Aluminium Bottle Cap	7.75m x 9.51m		
73	5	8	Aluminium Bottle Cap	7.85m x 9.23m		
74	5	9	Projectile	8.13m x 8.82m		
75	5	10	Aluminium Bottle Cap	9.97m x 8.78m		
76	5	11	Shrapnel	10.30m x 9.50m		
77	5	12	Projectile	11.30m x 8.87m		
78	5	13	Projectile	12.15m x 8.84m		
79	5	14	Bracket	15.75m x 9.83m		
80	5	15	Shrapnel	15.84m x 8.71m		
81	5	16	Aluminium Bottle Cap	16.98m x 9.42m		
82	5	17	Cartridge	18.12m x 8.11m		
83	5	18	Iron Lumps	18.34m x 9.25m		
84	5	19	Shrapnel	19.12m x 9.80m		
85	5	20	Nut and Bolt	19.17m x 8.24m		
86	5	21	Pliers	19.37m x 8.49m		
87	5	22	Projectile	6.48m x 8.43m		
88	6	1	Iron Lump	0.23m x 10.90m		
89	6	2	Screw	3.22m x 10.51m		

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90	6	3	Iron Slab	5.84m x 11.42m		
91	6	4	Cartridge	9.50m 10.45m		
92	6	5	Projectile	11.61m x 11.19m		
93	6	6	Shrapnel	17.03m x 10.71m		
94	6	7	Piece of Brick and Glass	19.92m x 10.24m		
95	6	8	Cartridge	20.39m x 10.34m	Outside grid	
96	6	9	Pieces of Brick, Nut	20.55m x 10.28m	Outside grid	
97	7	1	Projectile	1.50cm x 1.45m		
98	7	2	Cartridge	3.20m x 1.95m		
100	7	3	Cartridge	7.45m x 0.86m		
101	7	4	Cartridge	7.85m x 1.00m		
102	7	5	Projectile	16.20m x 1.18m	deformed	
103	7	6	door hinge	16.90m x 0.92m		
104	7	7	foil	18.35m x 1.00m		
105	7	8	webbing buckle	18.75m x 0.65m		Outer Dimensions 34.40mm x 25.4mm Inner measurements 27.10mm x 7.00mm
106	7a	1	Shrapnel plus bike badge	3.60m x 13.49m		
107	7a	2	Cartridge	9.20m x 12.10m		
108	7a	3	Bottle Cap	9.40m x 12.17m		
109	7a	4	Cartridge	10.22m x		

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					12.42m		
110	7a	5	Projectile		10.55m x 13.18m		
111	7a	6	Cartridge		12.10m x 13.88m		
112	7a	7	Plastic coated wire		12.90m x 13.30m		
113	7a	8	Shrapnel		14.70m x 12.35m		
114	7a	9	Nail		17.15m 12.60m		
115	7a	10	Cartridge		21.00m x 12.85m	Outside grid	
116	7a	1a	Aluminium bottle cap		12.40m x 12.32m		
117	7a	2a	Cartridge		12.50m x 12.53m		
118	7a	3a	iron fragments		13.06m x 12.55m		
119	7a	4a	Aluminium bottle cap		13.60m x 13.26m		
120	7a	7a	ornamemt		17.96m x 12.72m		
121	8	1	Thin metal piece		0.00m x 3.03m		
122	8	2	Projectile		1.90m x 3.23m	Mg line	
123	8	3	Projectile		3.28m x 3.35m	Mg line	
124	8	4	Oblong square bar green plastic coating		4.30m x 3.48m		
125	8	5	Projectile		5.52m x 3.36m	Mg line	

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126	8	6	Projectile	6.28m x 3.67m	Mg line	
127	8	7	Amorphous piece of metal	6.60m x 3.45m		
128	8	8	Shrapnel	12.49m x 3.60m		
129	8	9	Projectile	15.83m x 2.63m		
130	8	10	Metal Ring and washer plus stud / button	17.20m x 3.69m		
131	8	11	Bottle Top 'Cascade'	9.60m x 4.10m		
132	10	1	Projectile	7.30m x 15.75m		
133	10	2	Toothpaste Tube 'Odol'	9.40m x 15.55m		
134	10	3	Unidentified metal piece	10.10m x 16.30m		
135	10	4	Unidentified metal piece	10.45m x 17.05m		
136	10	5	Cartridge	11.20m x 16.20m		
137	10	6	Projectile	11.45m x 18.80m		
138	10	7	Lead Weight	13.45m x 18.80m		
139	10	8	Unidentified metal piece	14.60m x 15.05m		
140	10	9	Screw	14.20m x 18.20m		
141	10	10	Unidentified metal piece	16.90m x 18.40m		
142	10	11	Cartridge	17.60m x 18.75m		
143	10	12	Projectile	19.45m x		

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					14.25m		
	144	10	13	Projectile	19.60m x 14.85m		
Transects on the bank in front of the house				All referenced to the NW corner of a 20m x 4m grid		001.19.50.20N 103.48.51.59E	
	145	11	1	Clothing Rivot	6.70m x 0.84m		
	146	11	2	Cartridge 2 x Bullets, Perfume Bottle	7.03m x 1.44m		
	147	11	3	Bottle Top	7.20m x 0.93m		
	148	11	4	Tin Foil	8.60 x 1.20m		
	149	11	5	Square Headed Bolt	10.10m x 1.13m		
	150	11	6	Coin	10.21m x 0.73m		
	151	11	7	Foil	11.04m x 0.63m	Not Collected	
	152	11	8	Cartridge	11.38m x 1.97m		
	153	11	9	foil	12.10m x 1.61m	Not Collected	
	154	11	10	Bottle top	12.48m x 0.56m		
	155	11	11	Drinks Can	14.87m x 0.88m	Not Collected	
	156	11	12	Small Belt Fitting	15.03m x 1.60m		
	157	11	13	Top of a Toothpaste Tube	15.29m x 1.29m		
	158	11	14	Foil, Can and Button	15.77m x 0.32m		
	159	11	15	Small Bolt	15.87m x 0.96m		
	160	11	16	Dring Can, small round pin / rod	17.22m x 1.00m		
	161	11	17	Bottle Top	17.82m x 0.42m		
	162	11	18	Stopper with screw thread	17.83m x 0.99m		

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163	11	19	Hose Pipe Nozzle	18.28m x 0.92m		
164	11	20	Small Toy Tractor	19.89m x 0.71m		
165	11	21	Bottle Top	20.40m x 0.43m		
166	11	22	Bottle Top	20.95m x 0.05m		
167	12	1	Chinese Bowl	0.98m x 2.05m		
168	12	2	Bullet and Cartridge	1.90m x 4.49m		
169	12	3	Lead Strip	3.27m x 2.07m		
170	12	4	Head of a Razor	4.27m x 3.32m		
171	12	5	Ring Pull	8.28m x 3.13m	Not Collected	
172	12	6	Foil	8.94m x 3.13m	Not Collected	
173	12	7	Projectile	11.57m x 2.86m		
174	12	8	Aluminium Strip	12.09m x 2.10m		

Appendix 2 – List of Shell Fragments Found

Line Number	Transit	Item Number	Description	Location	Notes
2	1	2	Shell Fragments	26.20m x 2.90m	10 cmbs
5	2	2	Shell Fragments	27.86m x 1.70m	
13	3	1	Shell Fragments	0.15m x 4.20m	
57	4	8	Shell Fragments	11.29m 7.80m	
76	5	11	Shell Fragments	10.30m x 9.50m	
80	5	15	Shell Fragments	15.84m x 8.71m	
84	5	19	Shell Fragments	19.12m x 9.80m	
93	6	6	Shell Fragments	17.03m x 10.71m	
106	7a	1	Shell Fragments l plus bike badge	3.60m x 13.49m	
113	7a	8	Shell Fragments	14.70m x 12.35m	
128	8	8	Shell Fragments	12.49m x 3.60m	

Appendix 3 – List of Projectiles Found

Bullet Number	Line Number	Transit	Item Number	Description	Location	Notes	Base Diameter	Widest Diameter	Length	Type
1	21	3	9	Projectile	11.90m x 5.65m		7.25mm	7.75mm	32.5 mm	Type 99 7.7 mm
2	23	3	11	Projectile	14.70m x 4.23m	deformed	6.70mm	7.80mm	30.70mm	Type 99 7.7 mm
3	43	3	31	Projectile	18.90m x 4.42m		7.11mm	7.40mm	32.70mm	Type 99 7.7 mm
4	50	4	1a	Projectile	0.70m x 7.20m		7.45mm	7.95mm	32.00mm	Type 99 7.7 mm
5	55	4	6	Projectile	8.40m x 8.31m		7.20mm	7.70mm	32.15mm	Type 99 7.7 mm
6	58	4	9	Projectile	12.70m 6.69m		7.45mm	7.9mm	31.50mm	Type 99 7.7 mm
7	65	4	16	Projectile	20.20m x 6.40m		7.40mm	7.70mm	32.40mm	Type 99 7.7 mm
8	74	5	9	Projectile	8.13m x 8.82m	Small bullet	6.00mm	6.60mm	31.95mm	Type 38 6.5mm
9	77	5	12	Projectile	11.30m x 8.87m		7.20mm	7.40mm	32.15mm	Type 99 7.7 mm
10	78	5	13	Projectile	12.15m x 8.84m		7.25mm	7.8mm	31.90mm	Type 99 7.7 mm
11	87	5	22	Projectile	6.48m x		7.40mm	7.80mm	32.05mm	Type 99 7.7 mm

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					8.43m					
12	92	6	5	Projectile	11.61m x 11.19m		7.40mm	7.90mm	32.00mm	Type 99 7.7 mm
13	97	7	1	Projectile	1.50cm x 1.45m	Small base diameter	6.00mm	7.40mm	34.20mm	Type 99 7.7 mm
14	102	7	5	Projectile	16.20m x 1.18m	deformed	7.35mm	9.10mm	32.40mm	Type 99 7.7 mm
15	110	7a	5	Projectile	10.55m x 13.18m		7.25mm	7.8mm	34.65mm	Type 99 7.7 mm
16	122	8	2	Projectile	1.90m x 3.23m	Mg line	7.50mm	7.85mm	32.20mm	Type 99 7.7 mm
17	123	8	3	Projectile	3.28m x 3.35m	Mg line	7.45mm	7.80mm	32.75mm	Type 99 7.7 mm
18	125	8	5	Projectile	5.52m x 3.36m	Mg line	7.40mm	7.80mm	32.20mm	Type 99 7.7 mm
19	126	8	6	Projectile	6.28m x 3.67m	Mg line	7.45mm	7.80mm	32.50mm	Type 99 7.7 mm
20	129	8	9	Projectile	15.83m x 2.63m		7.35mm	7.70mm	32.20mm	Type 99 7.7 mm
21	132	10	1	Projectile	7.30m x 15.75m		7.50mm	7.55mm	32.15mm	Type 99 7.7 mm
22	137	10	6	Projectile	11.45m x 18.80m		7.15mm	7.45mm	32.90mm	Type 99 7.7 mm
23	143	10	12	Projectile	19.45m x 14.25m		7.80mm	7.90mm	32.70mm	Type 99 7.7 mm
24	144	10	13	Projectile	19.60m x 14.85m	slight deformation	7.95mm	8.40mm	32.80mm	Type 99 7.7 mm

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25	146	11	2	Cartridge 2 x Bullets, Perfume Bottle	7.03m x 1.44m	Bullet 1	7.45mm	7.90mm	32.20mm	Type 99 7.7 mm
26	146	11	2	Cartridge 2 x Bullets, Perfume Bottle	7.03m x 1.44m	Bullet 2 - Still with cardboard wadding and corroded	7.30mm	7.95mm	34.00mm	0.303
27	168	12	2	Bullet and Cartridge	1.90m x 4.49m		7.70mm	7.97mm	32.45mm	0.303
28	173	12	7	Projectile	11.57m x 2.86m		7.50mm	7.70mm	32.40mm	Type 99 7.7 mm

Appendix 4 – List of Cartridges Found

Line Number	Transit	Item Number	Description	Location	Notes on location	Dimensions Base	Rim Diameter and thickness	Calibre	Description	Headstamp marks
14	3	2	Cartridge	1.40m x 5.63m		11.25mm	13.40mm X 1.2mm	0.303	Royal Laboratory, Woolwich Arsenal, Kent, UK	R AL,41
17	3	5	Cartridge	7.10m x 4.97m		11.50mm	13.20mm x 1.5mm	0.303		VII
49	4	1	Cartridge	3.60m x 6.87m		11.45mm	13.00mm x 1.10mm	0.303	Kynoch and Co.	VII, KI3,41
61	4	12	Cartridge	15.56m x 7.59m	traces of cordite	11.45mm	13.10mm x 1.40mm	0.303	Possible DAC Mk VII	VII, C, 39
67	5	2	Cartridge	5.85m x 8.48m		11.40mm	13.30mm x 1.40mm	0.303		IV
82	5	17	Cartridge	18.12m x 8.11m		11.70mm	13.05mm x 1.25mm	0.303		no headstamp marks visible
91	6	4	Cartridge	9.50m 10.45m		Neck - 14.00mm	Shoulder - 15.20mm	0.55	Large round, neck and shoulder	No base plate
95	6	8	Cartridge	20.39m x 10.34m	Outside grid	11.50mm	13.50mm x 1.20mm	0.303	Dominion Cartridge Company Brownsburg Quebec	.303, DC , 41,Z11 symbol.

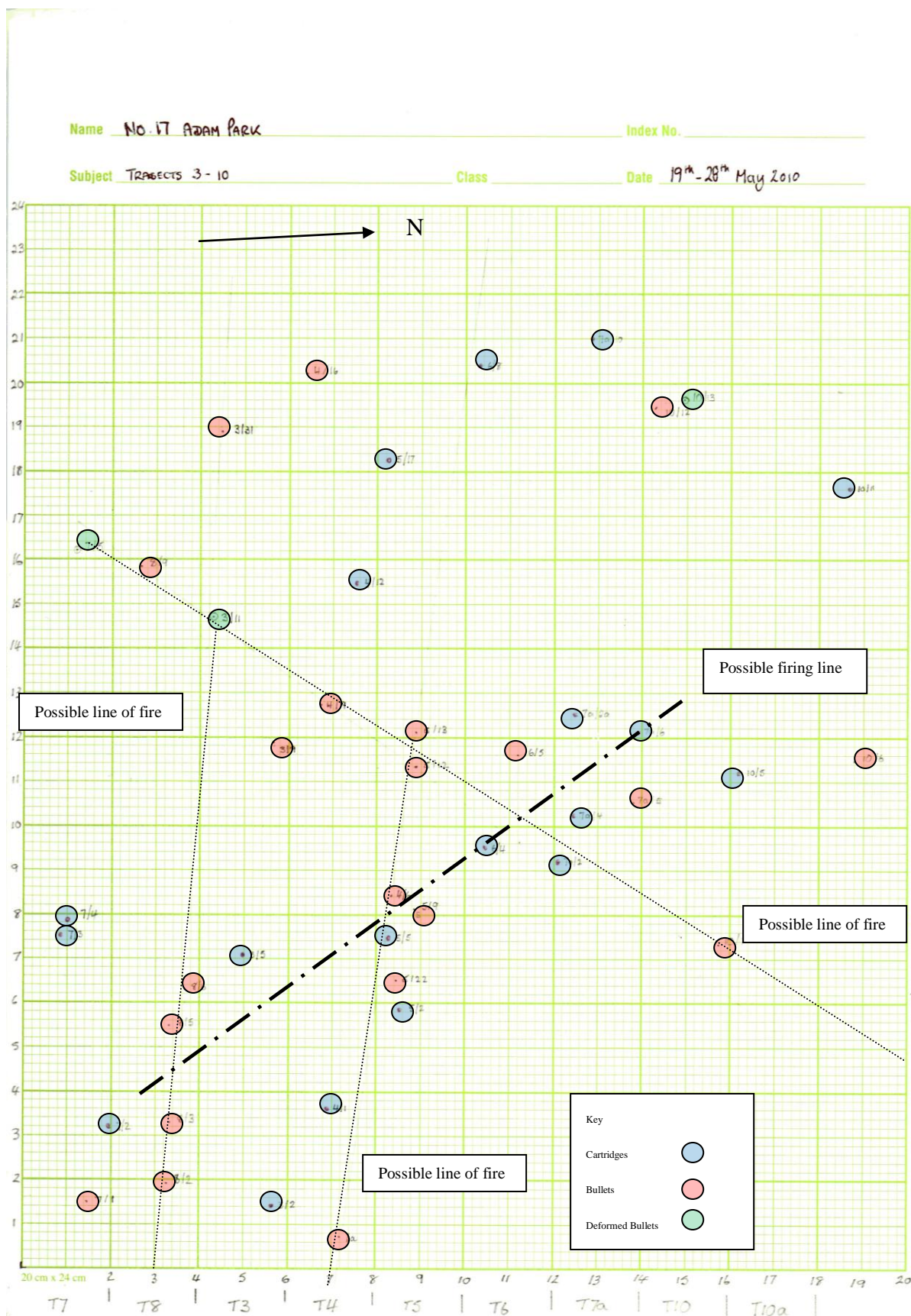
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98	7	2	Cartridge	3.20m x 1.95m		11.55mm	12.75mm x 1.30mm	0.303	very corroded	non visible
100	7	3	Cartridge	7.45m x 0.86m		11.50mm	13.30mm x 1.60mm	0.303		VII
101	7	4	Cartridge	7.85m x 1.00m		11.50mm	13.30mm x 1.60mm	0.303	A lot of indiscernible characters	CA..&13 I 3 .. HG
107	7a	2	Cartridge	9.20m x 12.10m		11.50mm	13.40mm x 1.35mm	0.303	Greenwood and Batley, Leeds, UK.	VII, GD(B),19,
109	7a	4	Cartridge	10.22m x 12.42m		11.50mm	13.40mm x 1.40mm	0.303?		possible japanese symbol
111	7a	6	Cartridge	12.10m x 13.88m		11.50mm	13.35mm x 1.40mm	0.303		VII, R/N, 28.,
115	7a	10	Cartridge	21.00m x 12.85m	Outside grid	11.40mm	13.10mm x 1.20mm	0.303		VII, 39
117	7a	2a	Cartridge	12.50m x 12.53m		11.90mm	13.40mm x 1.20mm	0.303	Royal Laboratory, Woolwich Arsenal, Kent, UK	VII, R AL, 1938
136	10	5	Cartridge	11.20m x 16.20m		11.25mm	13.50mm x 1.45mm	0.303	traces of Cordite still inside - corroded	VII
142	10	11	Cartridge	17.60m x 18.75m		11.45mm	13.50mm x 1.40mm	0.303		VII, , 1
146	11	2	Cartridge 2 x Bullets, Perfume Bottle	7.03m x 1.44m		11.60mm	13.25mm x 1.65mm	0.303		Possible headstamp lettering 'RV'

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152	11	8	Cartridge	11.38m x 1.97m		11.30mm	13.00mm x 1.45mm	0.303	Dominion Cartridge Company Brownsburg Quebec	.303, DC , 41, NSEZ11 symbol.
168	12	2	Bullet and Cartridge	1.90m x 4.49m		11.35mm	13.00mm x 1.2mm	0.303		12 with a possible further character

Appendix 4 – Sketch Map of Survey Area



Appendix 5 – Specification of Bullets

6.5x50mm SR Arisaka - Specifications	
Case type	Semi-rimmed, bottlenecked
Bullet diameter	6.705 mm (0.2640 in)
Neck diameter	7.34 mm (0.289 in)
Shoulder diameter	10.59 mm (0.417 in)
Base diameter	11.35 mm (0.447 in)
Rim diameter	11.84 mm (0.466 in)
Rim thickness	1.143 mm (0.0450 in)
Case length	50.39 mm (1.984 in)
Overall length	75.69 mm (2.980 in)
Primer type	Large rifle

Type 99 7.7 mm rimless – Specifications	
Parent case	.303 British
Bullet diameter	7.87 mm (0.31 in)
Neck diameter	8.6 mm (0.34 in)
Shoulder diameter	10.9 mm (0.43 in)
Base diameter	11.9 mm (0.47 in)
Rim diameter	11.9 mm (0.47 in)
Rim thickness	1.0 mm (0.039 in)
Case length	57 mm (2.2 in)
Overall length	75 mm (3.0 in)



.303 British (7.7x56mm Rimmed)

.303 Cartridge (Mk VII), manufactured by [CAC](#) in 1945

Type	Rifle
Place of origin	United Kingdom
Specifications	
Case type	Rimmed, bottleneck
Bullet diameter	0.311 in (7.9 mm)
Neck diameter	0.338 in (8.6 mm)
Shoulder diameter	0.401 in (10.2 mm)
Base diameter	0.460 in (11.7 mm)
Rim diameter	0.540 in (13.7 mm)
Rim thickness	.064 in (1.6 mm)
Case length	2.222 in (56.4 mm)
Overall length	3.075 in (78.1 mm)
Case capacity	55.7 gr H ₂ O (3.621 cm ³)
Rifling twist	1-10 inches (250 mm)
Primer type	Large rifle
Maximum pressure	49,000
Maximum CUP	45,000 CUP