The Adam Park Project

Metal Detector Survey Report No.12

11 Adam Park
28th August - 5th September 2012

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Introduction

The Adam Park Project (TAPP) officially finished in February 2012 with an exhibition of artefacts entitled 'Four Days in February' staged at the National Library of Singapore . The display introduced the Singaporean public to the wartime heritage of the estate and in particular its defence in 1942 by the 1st Battalion, Cambridgeshire Regiment. However there were a number of important areas of the estate's wartime story still to be investigated and presented. This ongoing work has been collectively packaged under the colloquial title 'TAPP 2'.

No.11 Adam Park played an important role in both the fighting and as part of the POW facilities on the estate. No.11 is one of five Class 1 houses set along the ridge line and can be considered as standing in the heart of the park. It still retains one of the lawns and gardens of all the houses. The property once had notable views of the surrounding hills before the post war urban development and flourishing flora enclosed the site. Notably the property is not fenced in at the front and retains its original boundaries. Tactically speaking it occupies the vital high ground in the middle of the estate and could be considered as part of the central citadel.

During the night of the 13th to 14th February 1942 the front garden of the property became the focus of a great deal of activity. The histories and diaries suggest that Lt Colonel Carpenter, OC 1st battalion Cambridgeshires, decided to concentrate his forces amongst the houses. He began by pulling his men off the exposed positions on Water Tower Hill and Hill 95 and deploying his reinforcements into the estate to strengthen positions manned up until then by D Company and the battered remains of the Reinforcement Company.

In the early hours of 14th February, C Company 1st Battalion moved into the estate to take up positions vacated by D Company and to strengthen the northern perimeter. On entering the estate, in the pitch black and their way lit only by the glow of fires from adjacent burning buildings, C Company came upon a triple dannert wire fence that ran across the estate between houses 19 and 20 and along the west side of No.11 before descending to join up with wire along the Back Road. Thinking this was the front line 14 and 15 Platoon occupied No.19 Adam Park and 13 Platoon took up positions in the back garden and across the road on the front lawns of No.11.

Unfortunately D Company had expected them to take up positions at No.20 Adam Park as well. This vacant house was soon occupied by a Japanese patrol. The following morning the newly arrived C Coy awoke to find that they had new neighbours and the rest of the day was spent trying the clear the house of the enemy.

This aim of this survey was to find traces of the 13 Platoon's position on the front lawns of No.11 and evidence of the existence of the dannert wire fence. It was also expected that there would also be evidence of the bitter struggle to take house No.20 which lies a mere 40 yds from the lawn.

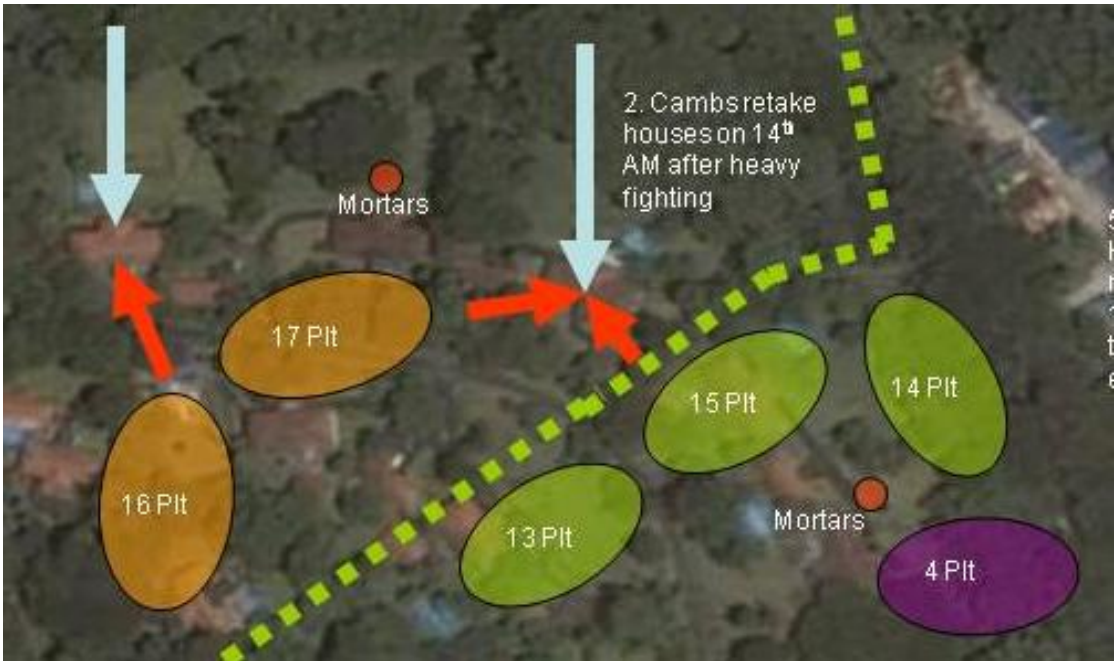


Fig 1 – Disposition of Cambridgeshire Platoons on the 14th February 1942

Fig 2 – Looking from the platform at No.11 Adam Park into the back yard of No.20 Adam and the buildings occupied by the Japanese on the 14th February 1942.

In addition No.11 Adam Park remains one of the prime candidates for the location of the POW Chapel and Canteen that supplied the needs of the 2,000 Australian POWs at Adam Park Camp. The flat tennis court in front of the house was reputedly used by the POWs as their recreation yard hosting games of soccer and Rugby League. It was hoped some evidence of POW life may be found on the site.

Fig 3 – No 11 Adam Park looking up from the foot of the terrace used by the POWs for sport and recreation. The dannert wire fence most likely ran along the top of the bank in the foreground. The old tree stump in the near foreground was found to be a collection point for WW2 artefacts.

The Survey Criteria and Area of Interest

15 transects, each 2m wide of lengths varying between 18 to 24 metres long, were set out in two distinct areas of the garden.

Fig 4 – The Google Earth image of the site showing the location of the two areas in the front garden of 11 Adam Park that were surveyed by the metal detectorists.

A field walk and 'prospecting survey'[1] was carried out across the site at the start of the week but no pertinent items were found on the surface although it was noted that there were concentrations of building material and detector readings in the back garden. The initial metal detector sweep of the front garden suggested there was a build up of notable finds along the foot of the terracing. The initial sweep also identified the path of the utility lines which were duly marked. It was decided that a 0.5m zone either side of the pipelines was not to be surveyed as their presence tended to mask pertinent readings.

[1] 'Prospecting Survey' involves using the metal detector to cover large areas of ground quickly noting the type and distribution of 'hits' but not necessarily excavating them. In this way areas of concentrated relevant finds can be identified for further detailed surveys.

Fig 5 a & b– The initial walk around the estate covered both the front and rear of the property. Participants were spread across the lawn in a search line and advanced methodically up and down the site until all the area was covered. The volunteers were asked to mark with flags any unusual features including the post holes for the old tennis court and evidence of subsurface utility pipe work. Unlike other sites there appeared to be no concentration of pertinent finds on the surface.

Two areas for surveying were identified. Area 1 to the west end of the garden was selected as it was thought this would be in front of the British positions in what was to become on the 14th February 1942, the 'No Man's Land' between the two sides.

Area 2 along the foot and the crest of the terrace banking was selected as the number of pertinent hits suggested a clear build up of material in this area. Each area was then split into a number of transects 2 metres wide.

An initial metal detector sweep of the transects was carried out using the 'all ferrous' setting on the metal detector and a multitude of returns were registered. An excavation of all ferrous returns was deemed to be inappropriate given the time constraints and available manpower. It was thought that the artefacts indicating the POW occupation and combat would primarily be made of non-ferrous metals.

A White's Prizm Mk 6T metal detector was used as the preferred machine. It was set to maximum sensitivity but the discrimination function was set to exclude ferrous materials and smaller non ferrous items (1st two settings muted). The operator had difficulty discerning between non-ferrous and ferrous hits as the artefacts were often masked by the presence of larger ferrous material. Tonal ID was not used as the constant pitch changes across a small area confused the operator. Depth indicator was checked against the first isolated finds but as most artefacts were found in the unstable topsoil and interference by abundant ferrous material meant that the depth readings became superfluous. Large ferrous items or utility pipelines lying deeper in the earth tended to return a cluster of 'non ferrous' readings or masked the returns from smaller

non ferrous material on the surface. This meant that a number of sweeps of the areas were undertaken, laterally along the transect, in both directions and then across the transects to ensure as many of the relevant artefacts as possible were recovered. It was noticeable that items in Area 2 were generally found to be a deeper depth (10 – 20cms) than Area 1. Readings tentatively suggested that there were more items at even deeper depths along the edge of the platform and within an area at the foot of the bank in T9 and T10 which became known as 'Feature 1'. However excavating to such depths causes unacceptable damage to the lawn and was therefore not encouraged. One notable exception was the digging of a test pit in Feature 1 that subsequently exposed a number of large WW2 items (See **Test Pit on Feature 1**).

Good use was made of a hand held pinpointer; a Garrett Pro-pointer. As many of the artefacts were found to be very near the surface excavators found it easier to follow the signals given on the hand held pinpointer rather than using the larger and bulkier Prizm 6T. This however did mean that a number of ferrous items were recovered as the pinpointer does not discern between metals.

Fig 6 – Transects 1 – 7 marked out in Area 1. 'Hits' marked by the orange and yellow flags were fairly well scattered around the area. No particular areas of concentration were noted. This can be contrasted with the intensity of flags in the foreground in Area 2. Even at the early stage of surveying this transect the intensity of flags is notable. Most of the finds in this area were related to WW2 in some way.

The survey areas were in an urban garden with a covering of 'tropical broad leaved grass' which was easy to uproot. In some places the grass had been washed away by the rain runoff. The turf covered a layer of black / dark brown topsoil up to 15cms deep in parts. There was some ingress of roots from neighbouring plants and trees

especially in Area 3. The topsoil was laid on top of an orange clay layer. Notably the vast majority of the finds were in the topsoil although not stratified within this layer.

It was noted during the field walking and 'prospecting' survey that the ground in the garden immediately to the rear of the house and the sloping ground to the south of the property were strewn with small pieces of building debris in particular broken 'Marseille' tile and brick work. The ground was also scattered with heavy concentrations of ferrous material and domestic metallic waste making the detecting and the recovery of pertinent material very difficult. However it was noted that there was also a significant presence of non ferrous material across the site that may have been military in nature.

Fig 7 – The area immediately behind the house seems to have been a dumping ground for building material for some time.

Recovery of subsurface artefacts was done by trowel and as there was a need to restore the garden to its original condition where possible after each recovery, care was taken to remove the sod of turf on the surface and return it after the artefact had been removed. However some of the area was devoid of turf. This made restoring the ground problematical. The location of the finds was recorded to within 5cms by measuring tape within each transect.

The weather was fairly hot for most of the time on site however the first three days were disrupted by occasional showers. The team worked from 9.30am until 5.00pm on weekdays only to ensure minimal disturbance for the tenants.

The Location of Transects

TAPP Finds Log for the survey is shown at Appendix 1 and a Sketch Map of the Site at Appendices 2 and 3.

The two areas were chosen with the intention to reflect a degree of change in the archaeology across the site. The theory being that the nearer one gets to the positions occupied by 13 Platoon the denser the concentration of artefacts. As these positions were manned during the house to house fighting on the 14th February 1942 it was hoped that the artefacts would include British cartridges and Japanese bullets, indicative of firing onto British trenches. Previous work on other sites suggests that British trenches can also be identified through the presence of dropped artefacts. The Cambridgeshires tended to fill the trenches after the fighting with equipment they no longer required for captivity. Although much of the material and fabric would have rotted away concentrations of webbing buckles and accoutrements would be indicative of abandoned field works.

Fig 8 – Area 1 showing the 7 transects set out and the scattering of finds. The string laid out at angle between T7 and T8 shows the line of a subterranean pipe which interfered with the detector's signal.

Area 1 was enclosed within the north-western end of the garden. It was bordered by a drainage ditch at the bottom of a shallow trench. The unusual shape meant that T1 was an awkward semi circular area. The area immediately adjacent to the drain lining

was affected by iron reinforcements in the concrete. Area 1 covered approximately 238m^2

Two utility pipes ran across the lawn in what would have been T8. This effectively negated any effective detecting in this area. It was therefore decided to start T8 further along the garden at the 16m mark on the base line. This ensured three more transects could be surveyed before reaching the embankment.

As in other gardens the bank was surveyed in the hope of finding ordnance that had been fired into the slope. However the bank had very few items embedded into it. The transects resumed at the top of the bank and ran parallel to it.

Transect 13 was selected to the northeast of the main area in order to assess the extent of the concentration of finds found at the base of the bank in the immediate proximity of Feature 1. It ran along the base line from the 16m mark up to the 22m mark and was over 3m in breadth. Transects 8 to 15 covered approximately 254 m^2.

Fig 9 – Volunteer Matt Paul excavating in Transect 13. The drainage ditch can be seen in the background. The two excavations immediately to his front and either side of the base line yielded a cornucopia of artefacts as well as exposing a considerable amount of other metalwork which warranted the digging of a test trench.

Summary of the Artefact Catalogue

The great proportion of the relevant finds was made up of bullets, cartridges, full rounds or webbing accoutrements. In contrast to other sites there were only a few shell fragments unearthed. Other items which may have seemed unrelated when excavated have proven to be dateable to the 1940's. There follows a summary of the items revealed and a full **Finds Log** can be found at Appendix 1.

Approximately 230 individual artefacts were recovered across the site of which approximately 95 could be at first site associated with the war years (41%). This included 10 bullets, 4 pieces of shell fragment, 26 full rounds and cartridges and a notable collection of webbing accoutrements and buttons.

Unfortunately in the process of clearing the site a bag of artefacts from Transect 9,10 and 11went missing. This included some ammunition, webbing buckles and studs and most importantly a pair of gasmask eyepieces and filter plate. Luckily these last three items had been photographed and all the lost items had been plotted onto the plan.

The Cartridges and Full Rounds

There were 10 cartridges and 16 full rounds found during the survey. The vast majority of the cartridges were in some way deformed or broken. One cartridge and one full round were found to be Japanese.

Transit	Item Number	Description	Notes	Rim	Width	Headstamp	Manufacturer
1	8	Cartridge (Unfired)	.303	13.75mm	11.4mm	VII BAE	Possibly the Royal Ordnance factory Blackpole Worcester
2	7	Full Round	.303	13.5mm	11.5mm	VII K 8	Possibly Kirkee Arsenal near Poona
4	3	Full Round	Japanese	12.0mm	11.4mm	3 Notches	Not Known Length 50.5mm cartridge Width at shoulder 7.5mm Weight 18.9g
7	1	Cartridge (Unfired)	Japanese	11.6mm	11.9mm	3 Notches	Not Known
8	2	Cartridge	.303				
8	7	Full Round	.303	13.35mm	11.6mm	VII R 4	Woolwich Arsenal
8	16	Cartridge (Unfired	.303	13.5mm	11.6mm	VII CP 1941	Crompton & Parkinson Ltd
9	1a	Full Round (Unfired)	.303	13.5mm	11.5mm	No Marks	Not Known

Transit	Item Number	Description	Notes	Rim	Width	Headstamp	Manufacturer
9	4a	Cartridge	.303	13.6mm	11.6mm	VII 1940	Not Known
9	6a	Cartridge (Unfired)	.303	13.6mm	11.7mm	R↑L VII 1941	Woolwich Arsenal
9	9	Full Round	.303	13.7mm	11.6mm	R↑L VII 27	Woolwich Arsenal
9	10	Full Round	.38 / 200 S&W 19.3mm in length	11.0mm	9.8mm	RE	
9	14	Full Round	.303	13.4mm	11.6mm	R	Woolwich Arsenal
11	2	Cartridge	Missing				Not Known
11	13	Full Round	0.45 acp	12mm	12.1mm	0	Remington Union Metallic Cartridge
11	24	Full Round	.303	13.3mm	11.7mm		Not Known
11	28	Full Round	.303	13.4mm	11.6mm	VII	Not Known
12	6	Cartridge	Possible Webley Flare Pistol	30.0mm	27.2mm	No Marks	Not Known
12	17	Full Round	.45 ACP	12.0mm	12.0mm	45 ACP REM UMC	Remington Union Metallic Cartridge,
12	18	Cartridge	Very badly corroded and deformed	13.0mm	11.6mm	No Marks	Not Known
12	19	Full Round	.303	13.3mm	11.6mm	No Marks	Not Known
14	21	Full Round	.303	13.2mm	11.6mm	No Marks	Not Known
14	27	Full Round	.303	13.5mm	11.6mm	VII	Not Known
15	7	Full Round	.303	13.5mm	11.6mm	R↑L VII 41	Woolwich Arsenal
15	9	Cartridge (Fired)	.303	13.3mm	11.6mm	No Marks	Not Known
15	11	Full Round	.45 ACP	12.0mm	12.0mm	ACP REM	Remington Union Metallic Cartridge,

The cartridges were cleaned and the heads of each round were examined to ascertain details of the head stamp. The head stamps were, in most cases only partially decipherable but it would appear that the .303 cartridges came from 4 separate arsenals[2]:

> *The Woolwich Arsenal in Kent, of which the Royal Laboratory was only a part, is situated in South East London on the River Thames. The Arsenal dates from 1670 and has manufactured many different items of warlike stores for the armed forces. Ammunition was made at Woolwich long before the adoption of the .303 cartridge in 1889. Ammunition production ceased completely at Woolwich in 1957, the last known production of .303 Ammunition there being Mk 7 Ball.*
>
> *Crompton Parkinson Ltd of Guisley North Yorkshire was set up as part of the 1939 – 1945 war emergency expansion plan. It produced cartridges from 1940 to 1944. Filling of the cartridges was carried out in Doncaster.*
>
> *The Royal Ordnance factory at Blackpole near Worcester was also a part of the same emergency build up of armouries and was founded on the site of an earlier Government cartridge Factory No.3 of 1916. Initially ICI were contracted to operate this factory but in 1940 the Ministry of Supply ran the site as a Royal Ordnance Factory in its own right. Cases were filled at ROF Swynnerton in Staffordshire*
>
> *The Indian Government factory at Kirkee (or The Kirkee Arsenal) was located near Poona, India. In WW1 this factory had the capacity of producing 5.4 million rounds a month.*

This large variation of suppliers within a small sample of rounds is indicative of the sporadic and haphazard issuing of ammunition to the Cambridgeshire troops. It is conceivable the British rounds were brought with them from the UK. The Kirkee rounds may have been picked up during their stopover in India en route to Singapore. Alternatively the Cambridgeshire may have been resupplied in theatre from a number of lots or batches of ammunition in the two weeks after landing and before their fight began. If nothing else it suggests the Cambridgeshires were resupplied from various sources during their time in Singapore.

Notably the Allied .303 rounds were packed with cordite. Cordite was thought to be more resistant to moisture and therefore more suitable for the hot and humid Far East climate.

[2] All information on the arsenals has been taken from http://www.dave-cushman.net/shot/303headstamps.html

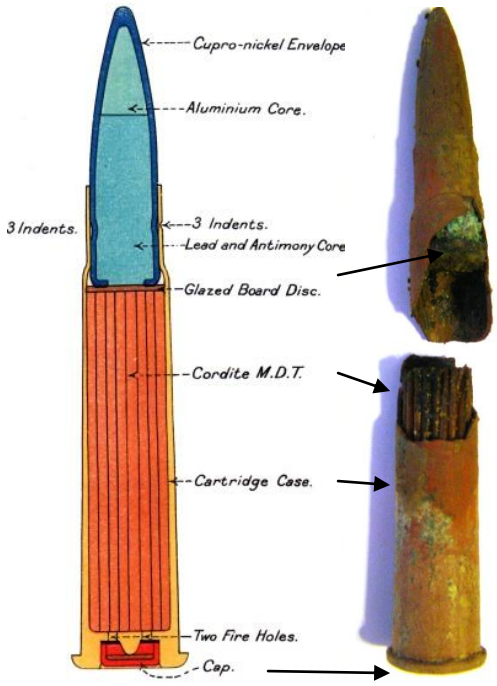


Fig 10 – This full round (11/12/19) (right) clearly shows the internal workings of the bullet. The projectile is held in position by the neck of the cartridge case. A small round piece of glazed cardboard, still to be seen in this example is placed between the projectile and the explosive cordite. The percussion cap is usually still in position on unfired rounds.

The .38/200 Round

One particular round of interest was item 11/09/10. This small cartridge still encased the rotting remains of lead bullet. Its dimensions suggested that it was a pistol round and the nearest match was the .38-200. This is a British military revolver cartridge identical to Smith & Wesson's .38 S&W cartridge but with specific loadings for military service. The .38 S&W was modified for use by the British military and called the .38/200 (also known as 380/200 Revolver Mk I) in 1922 for .38 calibre pistols and revolvers such as the Enfield No. 2 Mk I and Webley Mk IV. These pistols replaced the larger .455 and .476 inch handguns used in the First World War. British authorities later issued a different .38 S&W military cartridge with a lighter, 178–180-grain (12 g) jacketed bullet, known as the .380 Revolver Mk IIz.

The demise of so many experienced regular officers in WW1 persuaded the Ministry of War to adapt a smaller lighter pistol that would make pistol shooting an easier skill to acquire. The solution was to opt for a smaller calibre of bullet and weapon and Webley offered up a lighter version of their Mk III revolver firing the modified .38 S&W ammunition. It received favourable reports from the Army and the revolver was accepted in principle.

Fig 11 – Item 11/09/10 on the right has the same dimensions and appearance as the .38/200 seen on the left.

However rather than adopting the Webley revolver, the British authorities took the design to the Government-run Royal Small Arms Factory at Enfield, and the Enfield factory came up with a revolver that was very similar to the Webley Mk IV .38, but internally slightly different. The Enfield-designed pistol was quickly accepted under the designation *Revolver, No 2 Mk I*, and was adopted in 1931, followed in 1938 by the Mk I* (spurless hammer, double action only) and finally the Mk I** (simplified for wartime production) in 1942.

Fig 12 a & b – the Webley Mk IV .38/200 revolver on the left and the Enfield equivalent on the right. The similarities between the Webley and Enfield designs were so obvious that Webley sued the British Ministry of Supply and won. Both weapons used .38/200 ammunition

The Enfield revolver was the common issue for the 18th Division Officers including men of the 1st Battalion Cambridgeshires.

Flare Pistol Round

A similar story can be told for item 11/12/06. This cartridge measured a whopping 30mm in base diameter and was initially thought to be an aircraft machine gun shell scattered during a strafing run. However the nearest equivalent piece was found to be a round from the Webley & Scott No.1 MkIII Flare pistol.

Fig- 13 a& b Item 11/12/06 is thought to be the base of a 30mm shell probably for the Webley & Scott flare gun, an example of which is shown on the left.

Webley & Scott produced a number of single-shot, break open signal flare gun devices used by Commonwealth Military Forces during the First and Second World Wars. Perhaps the most prolific of these was the No.1 MkIII, produced in 1918 at the company's Birmingham facility.

The No.1 Mk III produced in the 1940's had a squared grips made out of black bakelite and carry a lanyard ring on the butt. This flare gun saw action in many theatres throughout the war and was intended to throw light over the fighting zone across a 1 km^2 area. It must be remembered that much of the manoeuvring and fighting at Adam Park took place at night and in complete darkness. Sgt Pony Moore remembers the night patrols being lit only by the glow of burning buildings in their sector. Undoubtedly as the Japanese incursions into the estate were discovered flares from these weapons were sent up to help spot the intruders.

Fig 14 a & b – The original Webley & Scott Flare Pistol, on the left, was the most common of its type in the First World War. The No.3 Mk1 (this one is dated 1940) is the most likely candidate for the type of weapon that fired the cartridge found at 11 Adam Park.

.45 ACP Thomson Sub Machine Gun Bullets

There was also a small collection of .45ACP rounds most likely for use with a Thompson Sub machine gun. Junior officers and some NCO's from the Cambridgeshires are known to have been equipped with a 'Tommie Gun'.

There were two military types of Thompson SMG by the outbreak of the war. The M1928A1 had provisions for box magazines and drums (the drums were disliked because of their tendency to rattle). It had a Cutts compensator, cooling fins on the barrel, and its charging handle was on the top of the receiver. The M1 and M1A1 had a barrel without cooling fins, a simplified rear sight, provisions only for box magazines, and the charging handle was on the side of the receiver. Because the option to use drums was not included in the M1 and M1A1, the 30 round box magazine was designed for use with this model. The .45in Thompson Sub machine was issued in large quantities to allied troops in the Far East and its stopping power was welcomed by those who used it[2]. It was however prone to jamming.

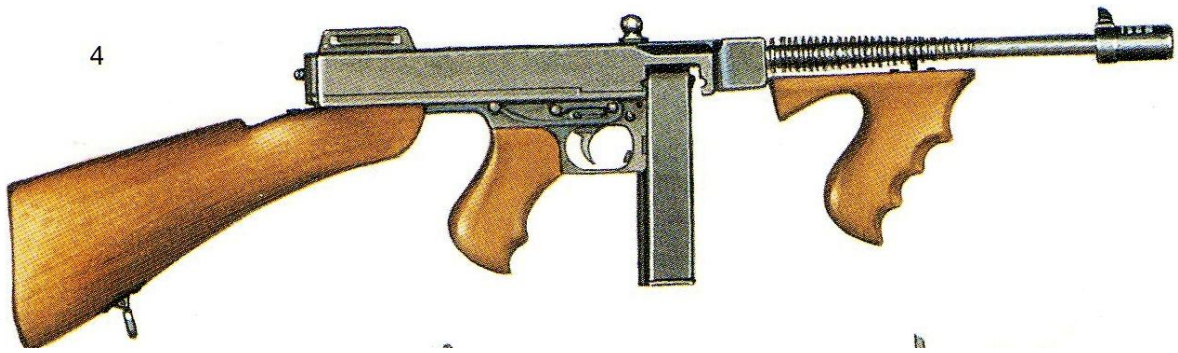


Fig 15 - The M1928A1with Cutts compensator and cooling fins

The fact that these bullets were found in the vicinity of the house to house fight is notable as the Thompson was a favoured weapon for the job of house clearing. The ability to fire off a full clip of ammunition in rapid succession and the stopping power of the .45 ACP bullet meant that the Cambridgeshire would send in the Tommy gunner first to clear the room of enemy.

Fig 16 – A pre invasion picture of a member of the Argyll & Sutherland Highlanders on exercise in Singapore sporting the M1928A1 with a 'gangsteresque' round drum alongside the four .45ACP rounds found at 11 Adam Park.

6.5x50mm SR Arisaka Rounds

The survey at No.11 Adam Park did yield a notable first for the project; the recovery of a complete 6.5mm Arisaka round. To date a large number of Arisaka projectiles have been discovered on various sites and 3 expended cartridge cases have been found (See Survey Report 11 & 8 for details), but this is the first 'full' or 'dropped round' found in the estate.

The presence of Japanese cartridges on the periphery of the estate is not surprising as the histories suggest that the Japanese were only able to occupy one or two of the remoter estate houses during the fighting but to find a dropped round (11/04/03) so near to the centre of the estate is unusual. The most obvious answer is that the round was dropped during the immediate aftermath of the fighting when the two protagonists were milling around together sorting out the captives from the guards Alternatively it could be connected to the POW camp phase.

The mystery was compounded by the discovery of another Arisaka cartridge casing (11/07/01) in the same area but this time it had been fired. It would appear on this tentative evidence that the Japanese attack had at sometime made it as far up into the estate as the garden of No.11.

The project team were able to directly compare Allied and Japanese rounds to aid identification for future surveys. The following table compares the rifle bullets most commonly found on site at Adam Park.

	Japanese 6.5x50mm SR Arisaka	.303 British (7.7x56mm Rimmed)	Japanese Type 99 7.7 mm rimless
Case type	Semi-rimmed, bottlenecked	Rimmed, bottleneck	Rimless, bottleneck
Bullet diameter	6.705 mm (0.2640 in)	0.311 in (7.9 mm)	7.87 mm (0.31 in)
Neck diameter	7.34 mm (0.289 in)	0.338 in (8.6 mm)	8.6 mm (0.34 in)
Shoulder diameter	10.59 mm (0.417 in)	0.401 in (10.2 mm)	10.9 mm (0.43 in)
Base diameter	11.35 mm (0.447 in)	0.460 in (11.7 mm)	11.9 mm (0.47 in)
Rim diameter	11.84 mm (0.466 in)	0.540 in (13.7 mm)	11.9 mm (0.47 in)
Rim thickness	1.143 mm (0.0450 in)	.064 in (1.6 mm)	1.0 mm (0.039 in)
Case length	50.39 mm (1.984 in)	2.222 in (56.4 mm)	57 mm (2.2 in)
Overall length	75.69 mm (2.980 in)	3.075 in (78.1 mm)	75 mm (3.0 in)

Fig 17 - The Arisaka round (11/04/03) on the left can be compared directly with a .303 round found nearby. Note the rim configuration is different; it is the most obvious discriminating feature between the two cartridges. Once the base is cleaned up it will be clear that the .303 round has a headstamp. The Arisaka round does not and has three radiating notches in the base.

The standard issue rifle for the 41st Regiment IJA was **the Arisaka 6.5mm Type 38** known to the soldiers as the '*sanpachiju*'. This was a five shot bolt action rifle that first saw service in the 1930's and was based on the German Mauser rifle that dated back to the Russo Japanese war. It was a reliable and hardy weapon but at 50.2 inches in length it often proved too long for the average Japanese soldier who found it difficult to reach the bolt when the rifle was in the firing position. Sniper sites were developed that had to be mounted further back for the same reason. The rifle despite the reputation of the Japanese sniper, was poor at long ranges. The sniper made up for this deficiency by mastering the art of concealment and getting in close before taking their shot. The rifle went on to be developed in a shorter 'carbine' version. In addition a type 44 carbine was introduced that had a permanently attached fold down bayonet. This was primarily used by the cavalry.

Fig 18 - The Arisaka Type 38 Rifle

In 1939 the Japanese army introduced a more powerful 7.7mm bullet which in turn saw the introduction of the new **Type 99 rifle**. This also came in a long, short and sniper version.

Bullets

Notwithstanding the projectiles associated with the dropped rounds only ten more bullets were found on site.

Line Number	Transit	Item Number	Description	Location	Weight	Length	Width	Notes
52	8	1	Bullet	3.06m x 1.90m	10.5g	32.2mm	7.7mm	
54	8	3	Bullet	4.40m x 0.72m				.45 ACP
58	8	1a	Bullet	0.36m x 0.15m	10.5g	32.2mm	7.8mm	
59	8	2	Bullet	- 0.30 x 1.48m	9.0g	32.2mm	7.9mm	Deformed at base
63	8	6	Bullet	1.65m x 0.50m	10.2g	32.2mm	7.8mm	
66	8	9	Bullet	3.16m x 0.94m	10.1g	32.45	7.8mm	
95	9	10a	Bullet	3.26m x 0.04m	9.0g	35.6mm	8.2mm	Heavily corroded

143	12	10	Bullet	4.00m x 0.80m	9.5g	35.7mm	8.05mm	
164	14	4	Bullet	3.19m x 0.34m	11.7g	34.4mm	7.4mm	Base narrows to 6.5mm
176	14	16	Bullet	12.16m x 1.74m	14.1g	16.5mm	11.7mm	.45ACP

Yet again we face the problem of discerning between Japanese Type 99 bullets fired at British positions from the more modern Japanese machine guns and rifles and the .303 rounds dropped or lost by Allied servicemen.

It has proven almost impossible to distinguish between the British .303 round and the Type 92 and Type 99 Japanese bullets by weight and dimensions as the latter two rounds were based on the design of the former and have almost identical characteristics. The effects of 70 years of corrosion on the error in measurements make it impossible to say for certain whether a bullet of this calibre is Japanese or Allied.

The location of the rounds is also inconclusive. Although there is certainly an increase in numbers centring on likely positions dug by 13 Platoon (See Appendix 3) at the foot of the embankment and along the edge of the upper platform, it is impossible to draw any conclusion as to the nationality of the bullet. The round is as likely to have been fired at British positions on the platform as much as being dropped or discarded at a later date. It must be noted however that there are no 6.5mm Arisaka rounds in the mix as found at other combat sites and known to have been used by the 41st Regiment during the battle. This fact alone infers this is not a scene of intense combat but more likely a dumping ground for Allied equipment after the fighting.

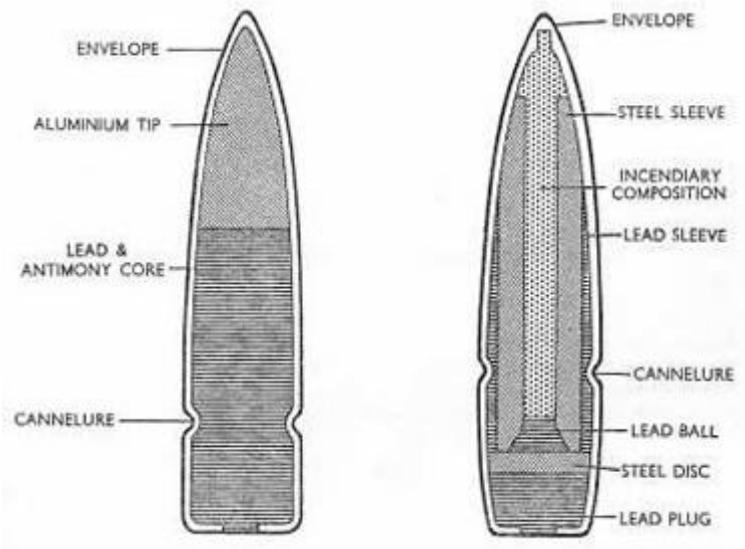


Fig 19 – A diagram detailing the difference between ball and incendiary .303 rounds

Fig 20 - What was notable amongst the bullet collection was a distinct difference in appearance between .303 ball and incendiary rounds. The latter tend to have a smaller crimped base as seen in the example of the right.

Distribution of British Cartridges, Bullets and Full Rounds

There were very few rounds found in Area 1. However this collection markedly included two unfired Japanese rounds.

The plans at Appendix 2 and 3 however clearly show a build up in the concentration of bullets and cartridges the closer we got to 'Feature 1' at the base of the embankment. This patterning corresponded to the distribution of the webbing buckles (See **Webbing Buckles** below). However in contrast, the majority of full rounds were spread evenly along the western edge of the platform and the foot of the embankment.

This may have been due to the fact that the soil along the crest of the embankment was on the whole drier and well drained. The soil down at the base of the slope and around Feature 1 was notably darker, wetter and easier to dig. This apparent difference in moisture content may account for the increase in bullets and cartridges. A full round that is deposited into a moist environment will tend to deteriorate faster as the damp will encourage the breakdown of the metal through galvanic corrosion. Alternatively rounds left to rot inside the ammunition pouch may have broken down more quickly than rounds simply thrown on the floor again in part due to the collection of moisture within the webbing pouch.

The distribution pattern does however suggest that the Cambridgeshires had systematically thrown away unused rounds along the crest of the embankment and into the area around Feature 1. This may have been part of the search carried out by the Japanese a the time of the surrender.

Shell Fragments

There were only four identifiable pieces of shell fragment found on the site. This should be seen in contrast to the 23 pieces found in a similar area at 16 Adam Park. This would infer the garden at No.11 came under less artillery and mortar barrage than the 'no man's land' at the front of No.16.

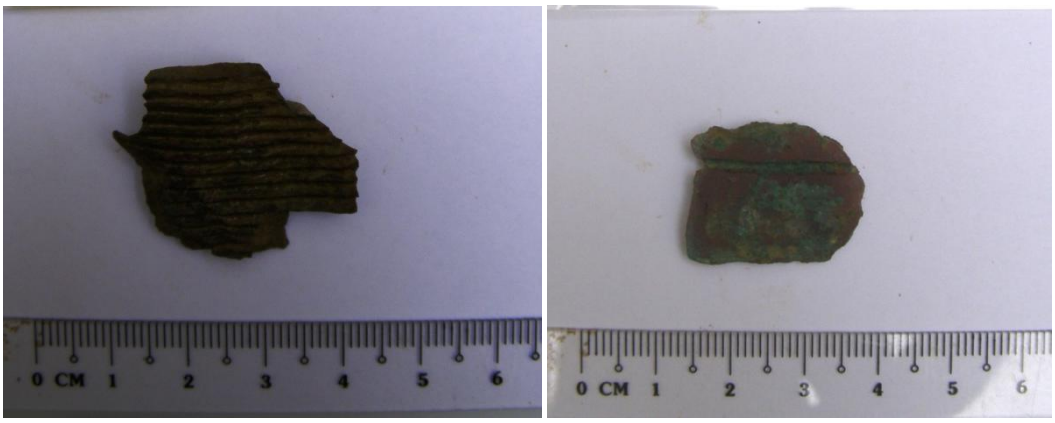


Fig 21 – Shell Fragments found at No.11 Adam Park clearly showing the telltale machine working and grooving associated with the typology.

Webbing Buckles

Transit	Item Number	Description	Location	Typology	Notes
2	8	Webbing Buckle	15.19m x 1.47m	Ornate 10mm Single bar closed	
6	2	Webbing Buckle	7.04m x 2.09m	Ornate Silver	
8	4	Webbing Buckle	5.36m x 1.50m	50mm	Missing
8	12	Webbing Buckle	4.76m x 0.32m	Two bar open 25mm	Type 37 – braces buckle
8	17	Webbing Buckle	12.96m x 0.88m	One bar open	Type 37
9	2	Webbing Buckle	0.51m x 1.75m		Missing
9	4	Webbing Buckle	1.47m x 0.95m		Missing
9	5	Webbing Buckle	1.82m x 1.50m		Missing
9	8	Webbing Buckle	2.15m x 1.40m		Missing
9	12	Webbing Buckle	3.67m x 0.34m	Two bar open 25mm	Type 37 – braces buckle
10	1	Webbing Buckle	1.44m x 0.15m		Missing
10	3	Webbing Buckle	2.40m x 0.05m		Missing
10	4	Webbing Buckle	3.00m x 0.60m		Missing
11	7	Webbing Buckle	2.75m x 0.96m		Missing
11	12	Webbing Buckle	3.80m x 1.42m		Missing
11	17	Webbing Buckle	11.10m x 1.91m	Two bar open 25mm	Type 37 – braces buckle
11	22	Webbing Buckle	13.20m x 1.20m	One bar 35mm	Type 37
11	27	Webbing Buckle	5.60m x 2.30m	One bar closed 25mm	Type 37
12	2	Webbing Buckle	1.97m x 1.82m	belt end 2 hole 20mm	Type 37

12	5	Webbing Buckle	3.30m x 0.80m	Two bar open 25mm	Type 37 – braces buckle
13	2	Webbing Buckle	20.82m x 0.25m	Two bar open 25mm	Type 37 – braces buckle
13	3	Webbing Buckle	21.00m x 2.35m	One bar open 25mm	
13	6	Webbing Buckle	21.39m x 0.53m	Two bar open 25mm	Type 37 – braces buckle
14	5	Webbing Buckle	3.48m x 1.65m	One bar open 25mm	Type 37
14	11	Webbing Buckle	8.85m x 1.37m	One bar closed 25mm	Type 37
14	12	Webbing Buckle	9.60m x 1.50m	One bar closed 25mm	Type 37
14	14	Buckle	0.20m x 0.90m	ornate	
15	10	Webbing Buckle	11.02m x 1.84m	One bar closed 25mm	Type 37
15	13	Webbing Buckle	15.0m x 1.56m	Ornate 20mm	
15	14	Webbing Buckle	20.68m x 0.92m	One bar closed 25mm	Type 37
T1	8	Webbing Buckle	Not Applicable	Not Applicable	
T1	Test Pit	Respirator	Not Applicable	20mm D Ring	
T1	8	Webbing Clip	Not Applicable	50mm	Type 37
T1	10	Webbing Clip	Not Applicable	50mm	Type 37

Fig 22 – The typology of the buckles found at 11 Adam Park; 'two bar open 25mm' (left), webbing clip 50mm (centre top), 'one bar closed 25mm' (centre middle), 'one bar open 25mm', 'one bar open 35mm' (right)

The loss of the bag of artefacts from Transects 9, 10 and11 seriously impacted the webbing buckle collection. 10 buckles went missing. Although their locations were recorded there type was not. All we can deduce from the location is that there was a considerable dropping of Type 37 webbing equipment in the vicinity of the Feature 1 at the base of the embankment.

A review of the typology of the remaining buckles would suggest the soldiers dumped particular items of kit. The presence of the 'two bar open 25mm' buckles and the close proximity of quick release studs suggest the allied soldiers were taking off and disposing of their ammunition pouches.

A similar collection was found at No.8 Adam Park in February 2011 (See Survey Report 8). However at No.8 the pouches had been dropped along with the 50mm waist belts. There were no signs of waist belt accoutrements at No.11.The lack of the characteristic 'D Buckles' used for securing the backpack to the braces also suggests these men did not dispose of their backpacks in this area.

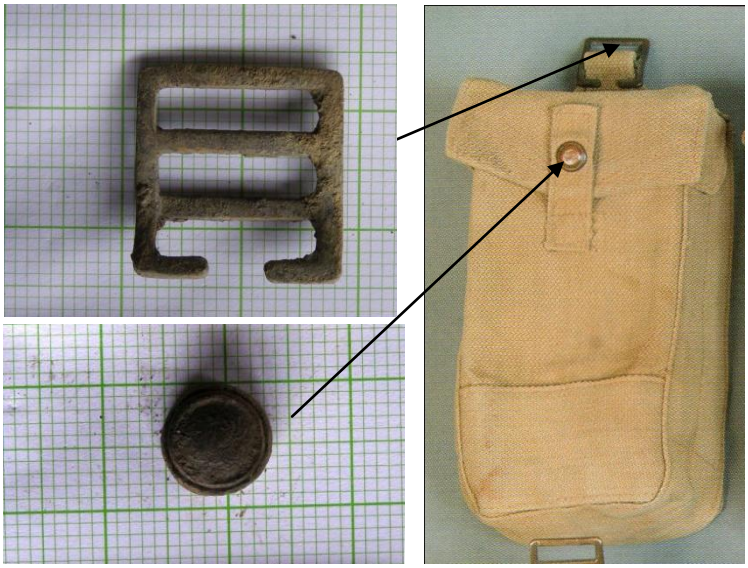


Fig 23 – The Mk1 ammunition pouch shown on the right is fitted with the two bar brass webbing buckle that attaches to the braces and the quick release stud mounted on the lip of the pocket cover.

Buttons & Studs

Transit	Item Number	Description	Location	Notes	Type
4	1	Stud for leather belt	11.65m x 0.16m	Notable	E
9	6	Stud	1.82m x 1.80m	missing	
9	10	Stud	3.03m x 1.84m	missing	
10	5	Button	3.50m x 0.27m	Shirt button / missing	
11	3	Stud	1.42m x 1.67m	missing	
11	4	Button	2.44m x 1.58m	missing	
11	5	Stud	2.44m x 1.40m	missing	

11	6	Button	2.65m x 1.38m	small / notable missing	
11	9	Stud	3.26m x 0.04m	F 15mm	A
11	11	Stud	3.50m x 0.86m	missing	
12	05	Stud	3.30m x 0.80m	F 15.3mm B 18mm	A
13	2	Stud	20.82m x 0.25m	F 15.4mm B 18mm	A
13	5	Stud	21.80m x 1.80m	F 15.8mm	A
13	8	Stud	22.62m x 0.50m	F 15.2mm B16.6mm	A
14	2	Stud	1.60m x 1.52m	F 15.1mm B 15.3mm	A
14	3	Stud	2.46m x 1.51m	F 17.2mm B 17.2mm	B
T1	4	Stud	Not Applicable	F 12.7mm	C
T1	7	Stud & Nail	Not Applicable	F15.5mm B 17.2mm	A
T1	Test Pit	Stud	Not Applicable	F 15.6mm B17.3mm	A
T1	Test Pit	Small studs x 3	Not Applicable	F 11.5mm	D
T1	Test Pit	Two shirt buttons			

Studs could be categorised into 5 types:

Type A – this was the most common press stud found. The front face of the stud was made of brass and was about 15mm in diameter. The female bottom plate was on average 17mm in diameter. This type was most commonly found on the Type 37 webbing ammunition pouches.

Type B – this was of similar design to the Type A but a little larger with a front brass face 17.2mm in diameter, most likely from a respirator haversack

Type C – Smaller stud with a face diameter of 12.7mm

Type D – Small studs no more than 11.5mm wide associated with the respirator

Type E – Unusual stud was found at the west end of the garden approximately four metres from the full Arisaka round. This was most likely used to attach an adjustable leather belt or strap. It resembles the stud found on the side of Japanese soldiers ammunition boxes.

Again the loss of one of the bags of artefacts seriously impacted the stud collection with six studs going missing. However the position of each missing stud had been recorded and it is assumed they were mainly Type A.

Fig 24 – Item 11/04/01 is similar to studs found on Japanese ammunition pouches.

Items 11/10/5 and the buttons found in the Test Pit on Feature 1 were noted as being very similar to British military buttons found in previous surveys. Two similar general issue stamped brass buttons were found on site at 8 Adam Park. Item 8/2/75b was engraved with the letters 'BHAM' most likely referring to the place of manufacture in Birmingham. However no date was noted on the buttons retrieved at No 11

Fig 25 – The shirt buttons found in the test pit at No.11 Adam Park are similar to that found at 8 Adam Park.

Coins

Transit	Item Number	Description	Location	Notes
6	3	Coin	8.10m x 0.76m	
8	18	Coin	16.15m x 1.04m	
14	22	Coin	16.66m x 0.19m	
15	12	Coin	13.29m x 1.66m	Chinese

Out of the small collection of coins one in particular caught the eye, item 11/15/12 The coin is from the Qing Dynasty and has the reign mark of Emperor Kangxi (AD 1662-1722). It is a common enough coin to be found scattered about Southeast Asia, also plentiful for the tourist market. It is also commonly used in various Chinese rituals. Its antiquity that predates the building of the estate and discovery on the surface at 11 Adam Park suggests this may have been a memento or token carried for luck lost by accident or part of a ceremonial scattering of coins.

Fig 26 – The Chinese Coin - Item 11/15/12

Test Pit on Feature 1

Excavation of two gas mask lenses in T9 would be in itself a remarkable find especially as the items were in pristine condition. However excitement mounted as more metal was detected at a lower level. The next objects unearthed were the back plate for the respirator's exhalation valve and a number of buckles, webbing clips and studs. Even more contacts were noted beneath the 20cm depth the metal detectors were usually detecting items at. The pinpointer was sounding off wildly across the base of the small excavation. There were clearly bigger metal objects buried below the topsoil.

The decision was then made to stop digging. The size of the excavation was at the limit agreed with the tenants. Checks were made to ensure that the mystery items were not new utility lines. The extremities of the objects were defined and it was clear this was not a pipe or cabling. The hole was covered over for the night and the dilemma discussed with the tenant. They agreed to the digging of a limited test pit no more than 50cm by 50cm and as deep as required to identify the objects and to determine the extent of the deposit of material.

Fortunately for the project team, Miss Jingyi Zhang, a student of archaeology at Durham University was on hand to volunteer to carry out the dig. The excavation of the test pit started on Monday 3rd September and took a further two days to complete.

Fig 27 – The initial excavation of the metal detector 'hit' revealed lenses and the valve back plate. However once these were removed it was clear there were larger metal artefacts lying deeper in the ground. The orange deposit just above the tree root in this picture was found to be metal. At this point it the extremities of the item were still to be defined and the size of the object was unknown.

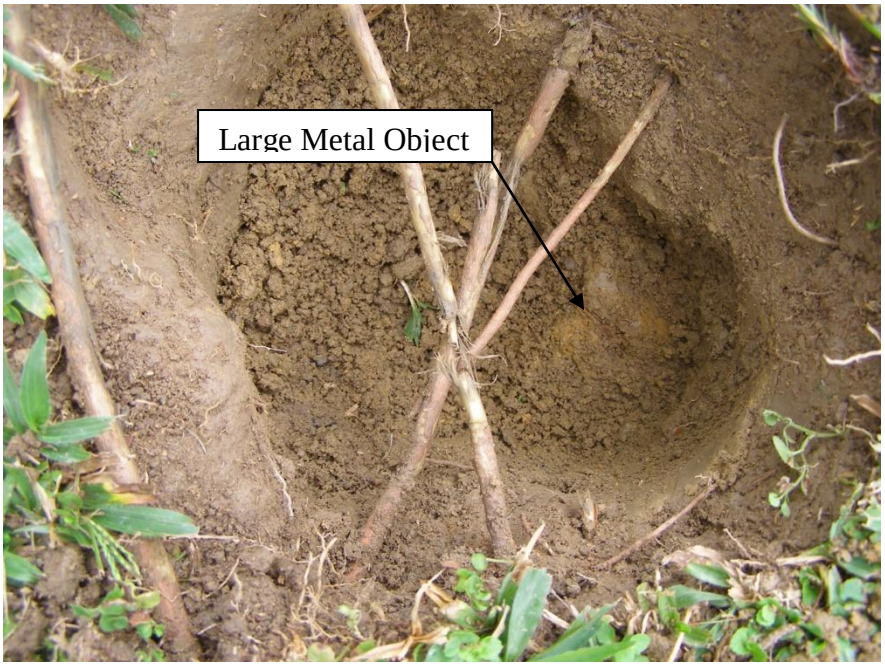


Fig 28 – A similar story was found in the hole for item 11/13/2; a webbing buckle. Below it was found more large pieces of metal work. It was decided not to excavate these items at this time.

The area at the base of the bank between a living tree and an old tree stump was named Feature 1. It appeared the centre of a collection of artefacts which resembled the archaeology found at No8 and No.17 Adam Park where military equipment had been apparently dumped into man-made holes or into natural depressions and hidden by foliage. The existing tree appeared too young to have been present in 1942 but the rotting tree stump nearby certainly bore all the hallmarks of being in situ at the time of the fighting with contemporary artefacts scattered under, above and within its root system.

Fig 29 – 1950's Aerial photographs tentatively suggest there was some build up of foliage in the area just after the war. There may well have been a temporary building built on the platform overlooking 'Feature 1'.

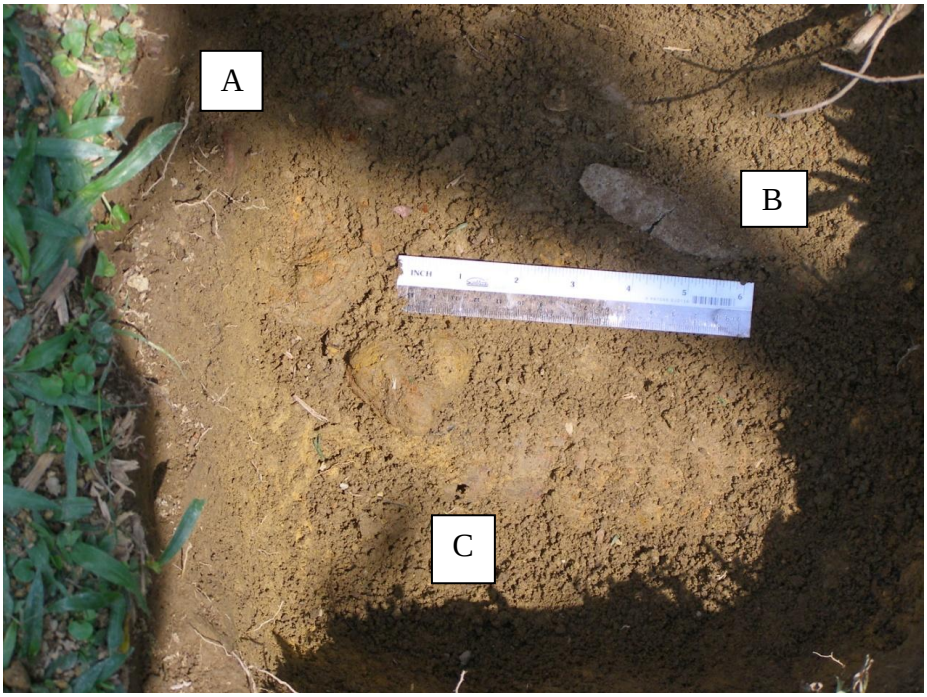


Fig 30 - The Test Pit was initially squared off and lowered to the top of the known artefacts. Note the lens of white sand (B) just above the ruler. This was approximately 12cm in length and 2cm across. A webbing clip (A) can be seen in the top wall of the trench. The area to the bottom of the trench (C) is devoid of metal work.

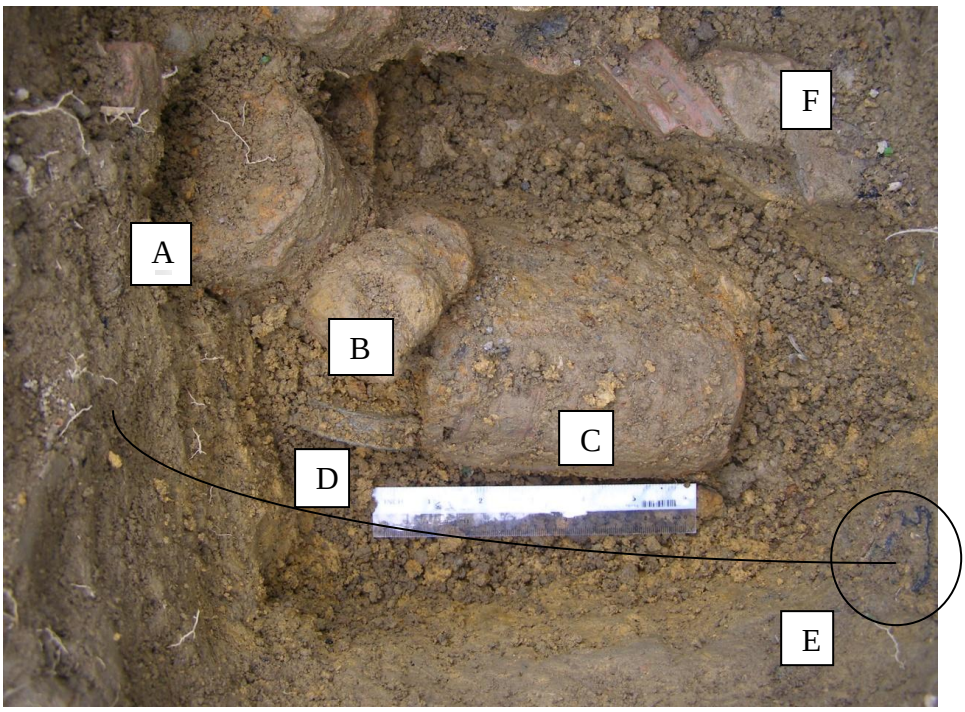


Fig 31 – This image shows the first layer of artefacts exposed. Object A and C are respirator filter canisters. Object B is a top locket to a bayonet scabbard. Object D is a tinted eyepiece. Object E are the remains of the gas mask hose. The face mask

lenses and exhalation valve were found above this. The building debris at F lay over the artefacts within the cut. This debris layer included 'Marseille' red tiles used on the houses. There is a distinct edge to the deposit of artefacts that suggests they were thrown into a well defined cut.

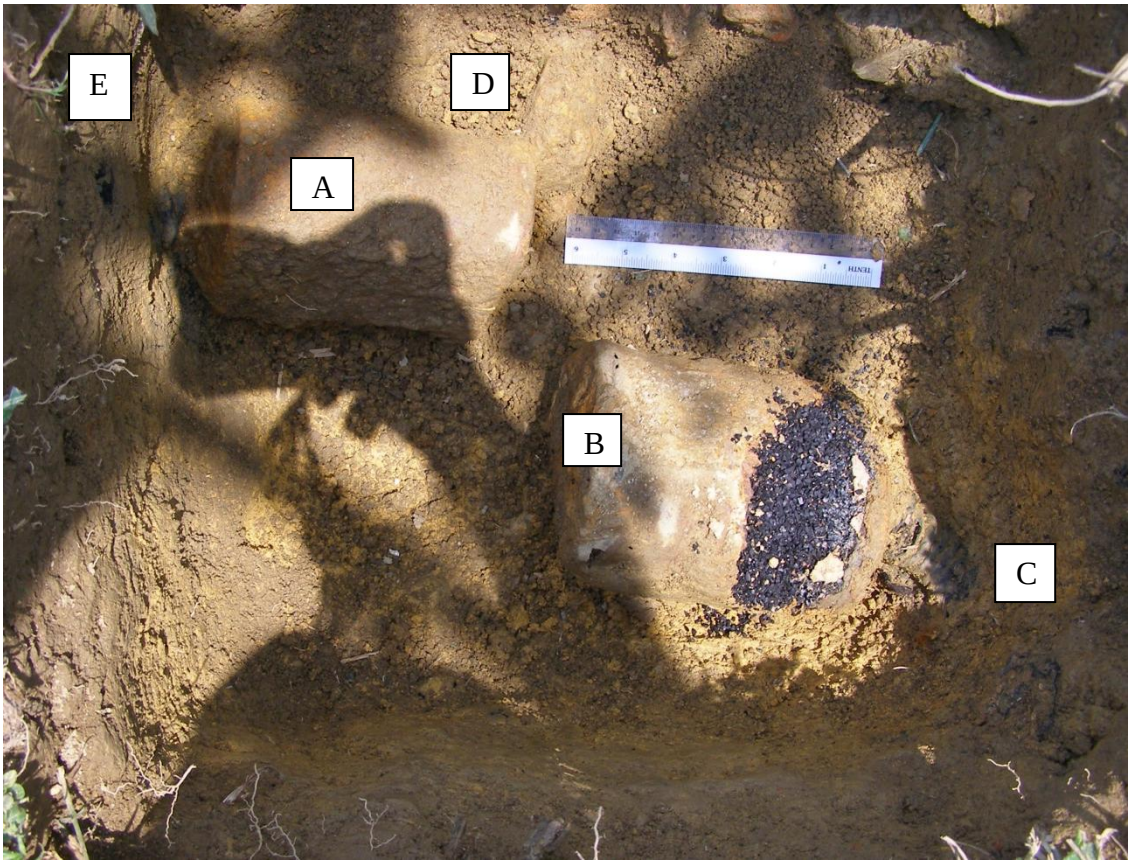


Fig 32 – A shadowy view of the final state of the Test Trench before it was filled in. Neither of the respirator canisters (A and B) was lifted. The fragile skin of Canister B fractured revealing the inner carbon filter. The gas mask hose (C) was clearly visible but was extremely fragile. More subsurface metal work was detected at area D and another face mask hose can be seen embedded into the trench at point E

The excavation of the test pit proved that there are large pertinent finds still waiting to be recovered beneath the surface. The positioning of the artefacts suggests that the items were deposited into a well defined 'trench' however the exact dimensions of the feature could not be determined from the one test trench. The line of the trench cut does suggest it was dug facing due north towards known Japanese positions. The fact that the trench is placed at the foot of a bank means that the occupants would not be silhouetted against the sky when viewed from afar.

The discovery of similar large metal objects less than a meter away at the excavation of 11/13/2 suggests the artefact trail extends to the north. The presence of the old tree stump and the aerial photography suggest the trench was dug to the east of the tree and benefitted from the overhead foliage making it difficult to spot from the air. A deposit of surface items also suggests personal kit and webbing was deposited about

the site probably at the time of surrender, some of it intended to be dropped into the trench.

The discovery of this feature and collection of artefacts suggests that metal detecting surveys can identify the presence of military structures even when there are no visible signs on the surface. However, only a full archaeological excavation will determine the extent and nature of the feature and its contents.

The Respirators

The discovery of the facemask fittings in T11 indirectly led to the discovery of the respirator canisters at a greater depth. The finds suggest at least three respirator canisters were deposited into the feature. At least two facemasks are present. The collection of webbing buckle also suggests at least one ammunition pouch was also placed into the hole.

Fig 33 - The lenses and non return exhalation valve recovered in T11. All three items subsequently went missing as part of the lost bag of artefacts.

The lenses were cleaned and found to be engraved with a makers mark and product details. The meaning of the abbreviation ‘S.M.S’ remains unknown. The ‘40’ refers to

the date of manufacture and the Roman numeric ‘III’ probably the mark of the gas mask.

Fig 34 – The rim of the lenses were engraved with the characters ‘S.M.S 2 40 III’

Fig 35 - The most likely candidate for the type of respirator found at 11 Adam Park is the No.4 Mk III. This example held by the Imperial War Museum is dated 1940

Fig 36 – Other items found in Trench 1 include the tinted lens cover (left), the respirator exhalation valve (centre top), a bayonet scabbard frog stud and top locket (right middle) and two 50mm Type 37 webbing clips usually found on the back of ammunition pouches (front centre)

Fig - 37 Contemporary photographs of British reinforcements landing in Singapore during the build up to the fighting clearly show the troops were issued and carried the respirators but their bulkiness, weight and the lack of threat of gas attack meant that the soldiers were quick to ditch the kit.

Other Significant Artifacts

The Cambridgeshire's Cap Badge

The single most provocative and iconic artefact to be recovered to date from Adam Park was found at No.8 just metres away from the front porch of the house. Sitting 6cm under the surface, just under the turf layer, was an item which was instantly recognisable as a collar badge belonging to the Cambridgeshire Regiment.

It was thought at the time that it could not be easily surpassed. However the discovery of another Cambridgeshire badge at No.11 Adam Park did indeed go one better. This badge was found halfway along the platform somewhat separated from the gathering collection of artefacts around Feature 1. It too was found just a few centimetres under the surface and looked at first to be perhaps a part of a toy. After careful cleaning it was revealed to have the distinctive design of the keep[3] with the shield with three crowns in the middle. However unlike the collar badge the keep was mounted on a scroll emblazoned with the words 'The Cambridgeshire Regt'

The regimental cap badge is a tangible symbol of a regiment's traditions and pride. It would be held as treasured possession and not be given up lightly. Part of the slider that secured this badge to the side cap or peaked cap was recovered alongside and appeared to have been broken off after it was lost.

[3] This is actually a stylised image of the keep in Bury St Edmunds which was the mustering point for the first Cambridgeshire Regiment.

Fig 38 – The Cambridgeshire Hat Badge

Fig 39 – Sgt Pony Moore, Capt Stagg and Pte Knibbs all proudly wearing their Cambridgeshire cap badges on different headgear.

The Wedding Ring

On a more personal note, not more than 3.5 metres away from the cap badge, a man's wedding ring was unearthed. The ring has an inner diameter of 21.8mm and external

measurement of 26.6mm. The width varies from 5.2mm to 2.7mm. It is 1.9mm thick at its narrowest point. It appears to be made of gilded brass and there is no visible hallmark. Engraved very faintly on the inside appears to be the letters ‘Bo ANN 3*4 One can only assume the ‘34’ refers to the year of the marriage.

Fig 40 – The wedding ring is a poignant reminder of the personal side of the fighting.

It is easy to speculate that the ring and badge being found in near proximity that they are related in some way. The diarists for the action noted that after the fighting the Cambridgeshires were lined up and searched. Valuables such as rings, watches and jewellery were taken by the Japanese. It is feasible that the dropped rounds and these two personal items may have been deposited as part of this search.

Another explanation for the collection of artefacts is that they belonged to one man who was buried in the garden during or after the fighting

Eyelets

Four eyelets were discovered in close proximity in T6 and T7 in Area 1. It was speculated that these items had come from the same piece of equipment. Eyelets are commonly found on various parts of type 37 webbing as well as service issue groundsheets and ponchos.

The theory about the possible burial of bodies in the front garden of 11 Adam Park is based upon a number of reports written by POWs housed on the estate which state that corpses found during the initial clearup of the estate were laid to rest in various peaceful spots in the gardens of various properties.

The process of interring bodies involved the retrieval of the corpse and its transportation to the proposed grave site. One method of doing this was to use the groundsheets and gas capes of the individual as a shroud and makeshift stretcher. The body wrapped in the groundsheet was then lowered into the ground.

Fig 41 – The eyelets collected on site

The transfer of bodies in this manner may also leave a tell tale trace of metallic finds on the surface especially if the bodies were in an advanced state of decomposition. It is feasible that personal items such as cap badges, wedding rings, uniform buttons and eyelets may have fallen to the floor during the burial process. Likewise it was not uncommon for grave markers to be adorned with personal items such as regimental badges as means of identifying and honouring the occupant. It is therefore feasible that the collection of eyelets, dropped rounds, badge and ring found in the vicinity may have been lost during this process.

The Lion Toothpaste Tube

Item 11/08/13, a toothpaste tube was found near the foot of the embankment somewhat away from the Japanese cartridge and stud. Careful cleaning revealed that it is a tube of Lion toothpaste made by T.Kobayashi & Co Ltd of Tokyo.

In October 1891, founder Tomijiro Kobayashi established T. Kobayashi & Co. in Kanda, Tokyo, to trade in the raw materials for soap and matches. Thereafter, T. Kobayashi & Co. began specialising in the manufacturing of soaps and toothpaste. However, the toothpaste and soap businesses had diverging operations that gradually became more pronounced, prompting T. Kobayashi & Co. to specialize in toothpaste alone. This company became the Lion Dentifrice Co., Ltd in 1949 in the post war shake up of Japanese industries. The soap business was segregated to form the Lion Soap Co., Ltd., which later became Lion Fat and Oil Co. Ltd in 1941 in order to support the war effort. The two companies continued to expand their businesses independently, and merged in 1980 to give rise to Lion Corporation

This production of this particular tube of Lion Toothpaste must have therefore predated the 1949 change of name.

Fig 42 – The tube of Lion Toothpaste; item 11/08/013

It is easy to conclude that this must have been dropped by a Japanese soldier possibly during the fighting. However it must be remembered that not only is there a chance that the toothpaste was dropped by a Japanese soldier guarding the POWs , the houses were also occupied by Japanese government officials and Army officers from 1943 to 1945 and the tube is more likely to relate to this occupation of the site.

The Lion brand however was associated with the Japanese infantry men. Many men carried the Lion brand toothpowder and tooth brushes.

Fig 43 – A bag of Lion tooth powder issued to Japanese infantrymen during the war.

Lee Enfield Cleaning Kit Pull Through

Sometimes the simplest of object may not be seen for what they are. Item 11/15/02 is a 7.5cm brass tube. It may have been simply discarded as another piece of building material but a number of volunteers who had seen military service and endured hours

of rifle cleaning recognised it as the weight for a ‘pull through’ from a rifle cleaning kit.

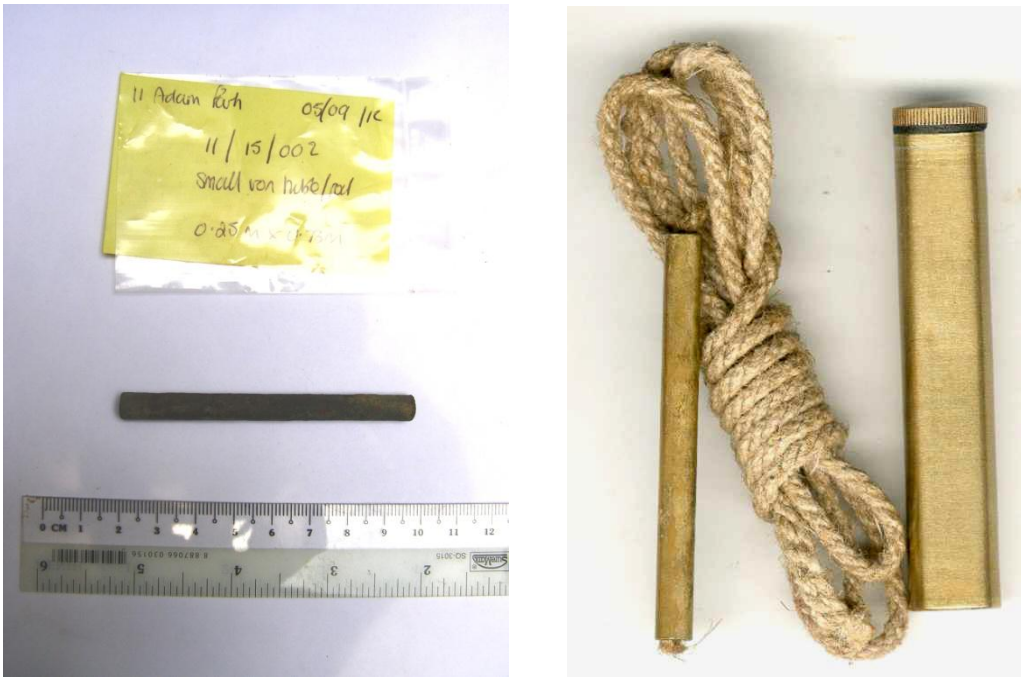


Fig 44 – The brass pull through on the left was found on the platform at No.11 Adam Park belongs to a SMLE cleaning kit as shown in the pristine example of the right.

Square Washers

The final collection of items which were deemed worthy of further review was a number of square iron washers.

Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
3	1	3	Scaffolding Plate	2.57m x 0.07m	Square washer with round hole in centre	Left
68	8	11	Scaffolding Plate	4.04m x 0.88m		Left
72	8	15	Scaffolding Plate	10.14m x 0.01m	5 x 5 cm	Left
140	12	7	Scaffolding Plate	3.52m x 1.50m		Left
148	12	15	Scaffolding Plate	9.58m x 0.95m		Left
156	13	4	Scaffolding Plate	20.60m x 3.27m		right

The items came in two sizes; 4cm x 4cm and 5cm x 5cm. They are made of ferrous material and have a 15mm hole in the centre. They were found primarily along the crest and foot of the embankment which hastened speculation that they were in some way connected to the construction of the triple dannert wire fence however no other example of this usage has been found to date. Most likely use is with some form of scaffolding. Their presence in such numbers remains a mystery.

Fig 45 - The use of the collection of square washers remains a mystery.

Conclusion

Yet again the archaeology at Adam Park has not failed to amaze and excite the team. Each survey continues to bring in new important finds to the collection, whether they are poignant and fascinating individual items such as the cap badge and wedding ring or a continuance and expansion of existing collections. As one volunteer remarked 'You can never have too many bullets!!'

No.11 Adam Park, on first review, appeared to be a bland uninspiring location devoid of any meaningful WW2 features however the written history did suggest something dramatic might have played out across the lawns. Sure enough the metal detecting survey and pattern analysis not only affirmed the written history but also led to the discovery of what may turn out to be an unique and exceptional feature directly associated to the defence of the estate; an example of the all illusive 'slit trench'. Never has a metal detecting survey at Adam Park led directly to the discovery of such a notable feature in what appeared such a barren landscape. There was no indication as to the presence of the subterranean collection of WW2 equipment on the surface. There was no change in vegetation colouration, no depression and no explicit written testimony to give away the location. The only clue as to the presence of the feature was a concentration of pertinent and significant metal detector finds.

Experience on other sites certainly helped in the interpretation of the clues. The concentration of a certain type of webbing buckle, bullets, cartridges and studs and the experience of the surveyors to know when to persist in digging deeper all helped in revealing what may turn out to be the all important horde of WW2 material on the estate. Unlike the ARP trench found by accident on the Padang in 2009, the historical context of this particular feature is well understood which will ultimately enhance the heritage significance of any artefact subsequently recovered from it. We look forward the having the opportunity to excavate the site in detail at a later date.

In addition, the discovery of the Cambridgeshire Cap badge is arguably the most profound and important single item to be recovered at Adam Park to date. The badge, which stands for so much to the men of the regiment, emphatically links them and their sacrifice to the very heart of the heritage site. All we can ask for now is more of the same and perhaps a Japanese regimental badge to compliment the find.

There was however no direct evidence to the construction of the dannert wire fence, the presence of the Chapel or of the use of the platform as a recreation yard for the POWs but there was plenty more fascinating items to ponder over.

Contrary to the expression of relief and excitement by the author at the time the badge was found ('That's it we can pack up and go home now!!') there was a real sense that this was just the start of the search for the hidden secrets held under No.11's manicured lawns.

Fig 27 – The Cambridgeshire Cap Badge being displayed by its finder Mr Azyure D. Hikari (Azy)

Appendix 1 - TAPP - Finds Log – 11 Adam Park

Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
1	1	1	Ring Pull	1.95m x 1.33m		Left
2	1	2	Angular Bar	2.54m x 1.96m		Left
3	1	3	Scaffolding Plate	2.57m x 0.07m	Square washer with round hole in centre	Left
4	1	4	Large Washer	2.89m x 0.82m		Left
5	1	5	Ring Pull	3.55m x 1.06m		Left
6	1	6	Small Brass plate	3.41m x 3.41m		Left
7	1	7	Small length of wire	4.69m x 3.03m		Left
8	1	8	Cartridge	5.16m x 2.21m		Left
9	1	9	Aluminium cap	5.86m x 2.82m		Left
10	1	10	Tin lid	6.55m x 2.14m		Left
11	1	11	Brass perfume bottle cap	7.40m x 3.32m	Chanel	Left
12	1	12	Aluminium Bottle Top	7.62m x 1.71m		Left
13	1	13	Handle	7.92m x 0.78m		Left
14	1	14	Battery Terminal	10.02m x 0.91		Left
15	1	15	Section of Tin Lid	10.55m x 1.25m		Left
16	1	16	Piece of lead	11.63m x 1.48m		Left
17	1	17	Piece of lead	13.10m x 0.83m		Left
18	2	1	Brass cap	0.38m x 1.00m		Left
19	2	2	Toothpaste Tube	0.68m x 1.62m		Left
20	2	3	Ring Pull	2.90m x 1.04m		Left

Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
21	2	4	Shell Fragment	9.23m x 0.66m		Left
22	2	5	Stud	10.37m x 1.12m		Left
23	2	6	Shell Fragment	11.65m x 1.38m		Left
24	2	7	Full Round	13.90m x 0.01m		Left
25	2	8	Webbing Buckle	15.19m x 1.47m		Left
26	3	1	Wire	2.33m x 1.85m		Left
27	3	2	Large aluminium cap	4.82m x 0.83m		Left
28	3	3	foil	9.88m x 1.70m		Left
29	3	4	Electrical terminal	13.60m x 1.08m		Left
30	3	5	large piece of lead	15.00m x 1.27m		Left
31	3	6	bottle top	16.20m x 0.96m		Left
32	4	1	Stud for leather belt	11.65m x 0.16m	Notable	Left
33	4	2	Rivot	11.34m x 2.00		Left
34	4	3	Full Round	11.65m x 0.16m	Japanese	Left
35	4	4	Brass fitting	13.24m x 1.32m		Left
36	5	1	Shell Fragment	2.58m x 0.96m		Left
37	5	2	Pencil cap	11.88m x 1.04m		Left
38	6	1	Lump of Metal	3.81m x 1.13m		Left
39	6	2	Webbing Buckle	7.04m x 2.09m		Left
40	6	3	Coin	8.10m x 0.76m		Left
41	6	4	Stud	9.32m x 0.88m		Left
42	6	5	Eyelet	10.92m x 1.10m		Left
43	6	6	Piece of lead	13.42m x 1.19m		Left
44	6	7	Jack Plug	13.74m x 0.19m		Left

Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
45	6	8	Rivet	15.70m x 1.81m		Left
46	6	9	Iron bar	18.27m x 1.51m		Left
47	6	10	bottle top	20.87m x 2.00m		Left
48	7	1	Cartridge	3.00m x 1.27m		Left
49	7	2	Eyelet	13.45m x 1.66m		Left
50	7	3	Eyelet	13.80m x 1.60m		Left
51	7	4	Eyelet	13.72m x 2.00m		Left
52	8	1	Bullet	3.06m x 1.90m		Left
53	8	2	Cartridge	4.33m x 1.31m		Left
54	8	3	Bullet	4.40m x 0.72m	.045 ACP	Left
55	8	4	Webbing Buckle	5.36m x 1.50m	50mm	Left
56	8	5	bottle top	7.42m x 1.42m		Left
57	8	6	Key	7.63m x 1.02m		Left
58	8	1a	Bullet	0.36m x 0.15m		Left
59	8	2a	Bullet	- 0.30 x 1.48m	Out of Transect	Left
60	8	3a	Key	1.12m x 1.20m		Left
61	8	4a	small piece of brass	1.30m x 0.26m		Left
62	8	5a	Nail	1.56m x 0.17m		Left
63	8	6a	Bullet	1.65m x 0.50m		Left
64	8	7	Full Round	1.90m x 1.67m		Left
65	8	8	small piece of brass	2.00m x 0.38m		Left
66	8	9	Bullet	3.16m x 0.94m		Left
67	8	10	Lump of Metal	2.00m x 1.86m		Left
68	8	11	Scaffolding Plate	4.04m x 0.88m		Left

	Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
	69	8	12	Webbing Buckle	4.76m x 0.32m		Left
	70	8	13	Toothpaste Tube	6.71m x 0.77m		Left
	71	8	14	Nail	7.72m x 0.21m		Left
	72	8	15	Scaffolding Plate	10.14m x 0.01m		Left
	73	8	16	Full Round	10.92m x 0.64m		Left
	74	8	17	Webbing Buckle	12.96m x 0.88m		Left
	75	8	18	Coin	16.15m x 1.04m		Left
	76	9	1	Gas mask Lenses	0.32m x 7.13m		Left
	77	9	2	Webbing Buckle	0.51m x 1.75m		Left
	78	9	3	Zip Fastner	1.32m x 1.70m		Left
	79	9	4	Webbing Buckle	1.47m x 0.95m		Left
	80	9	5	Webbing Buckle	1.82m x 1.50m		Left
	81	9	6	stud	1.82m x 1.80m		Left
	82	9	7	bolt	1.93m x 2.00m		Left
	83	9	8	Webbing Buckle	2.15m x 1.40m		Left
	84	9	9	Nail	2.54m x .2.00m		Left
	85	9	10	Stud	3.03m x 1.84m		Left
	86	9	1a	Full Round	2.24m x 2.00m		Left
	87	9	2a	Nail	0.90m x 1.40m		Left
	88	9	3a	Nail	0.95m x 1.00m		Left
	89	9	4a	Cartridge	1.40m x 1.63m		Left
	90	9	5a	bracket	2.17m x 1.60m		Left
	91	9	6a	Cartridge	2.24m x 2.0m		Left
	92	9	7a	Thin circular fragments	2.49m x 0.60m		Left

Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
93	9	8a	large Round fitting	2.73m x 1.00m		Left
94	9	9a	Full Round	2.88m x 0.40m		Left
95	9	10a	Bullet	3.26m x 0.04m		Left
96	9	11	lead cable tie	3.56m x 1.96m		Left
97	9	12	Webbing Buckle	3.67m x 0.34m		Left
98	9	13	Nail	3.78m x 1.10m		Left
99	9	14	Full Round	4.04m x 0.28m		Left
100	10	1	Webbing Buckle	1.44m x 0.15m		Left
101	10	2	Nail	2.10m x 0.16m		Left
102	10	3	Webbing Buckle	2.40m x 0.05m		Left
103	10	4	Webbing Buckle	3.00m x 0.60m		Left
104	10	5	Button	3.50m x 0.27m	Shirt button	Left
105	11	1	Collection of nails and building debris	0.50m x 0.65m	Not recovered	Left
106	11	2	Cartridge	0.95m x 1.75m		Left
107	11	3	stud	1.42m x 1.67m		Left
108	11	4	Button	2.44m x 1.58m		Left
109	11	5	stud	2.44m x 1.40m		Left
110	11	6	Button	2.65m x 1.38m	small / notable	Left
111	11	7	Webbing Buckle	2.75m x 0.96m		Left
112	11	8	Nail	2.73m x 0.37m		Left
113	11	9	Piece of lead	3.09m x 1.77m		Left
114	11	10	Piece of lead	3.40m x 0.07m	V thick roofing ??	Left
115	11	11	stud	3.50m x 0.86m		Left

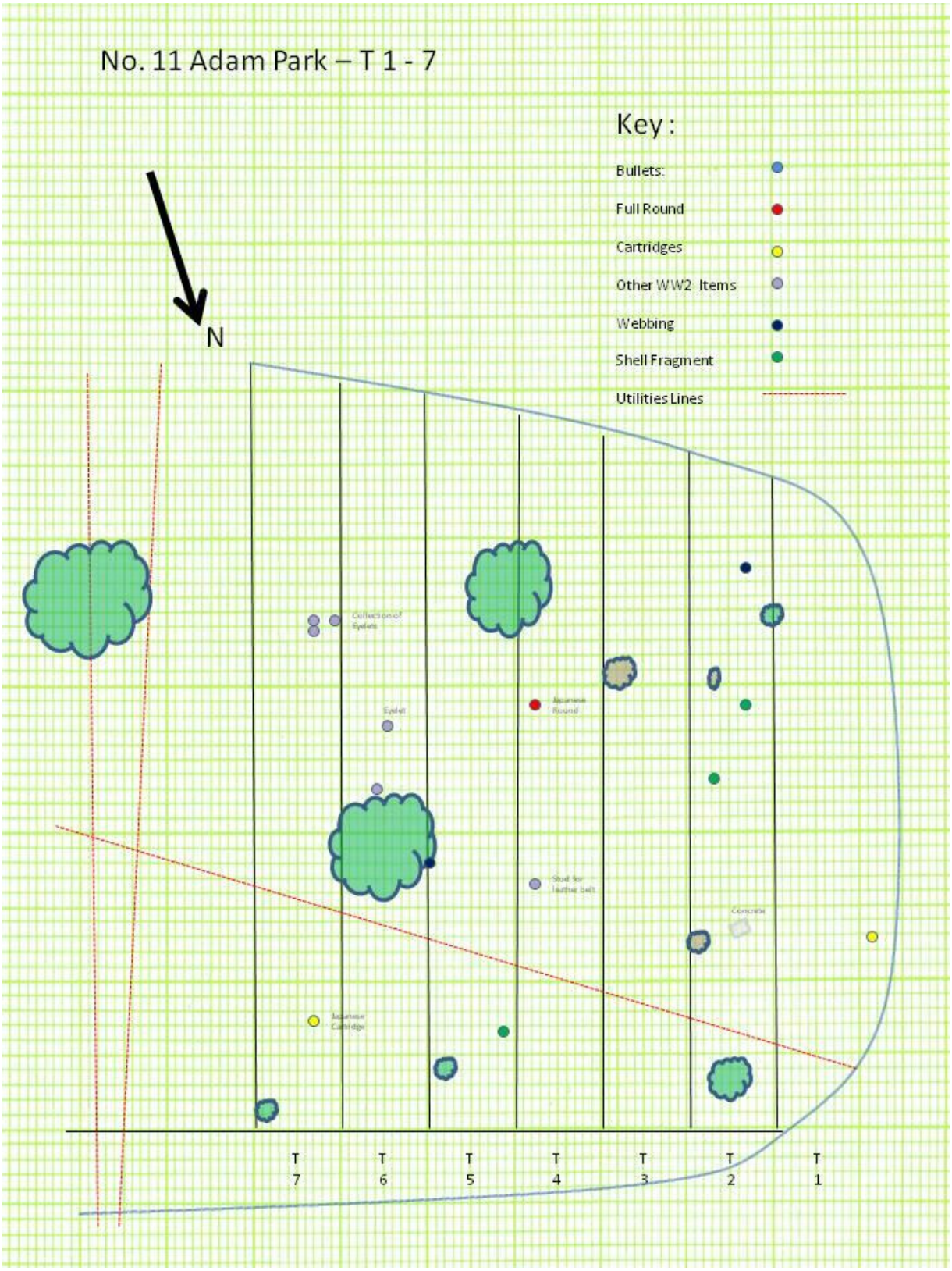
Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
116	11	12	Webbing Buckle	3.80m x 1.42m		Left
117	11	13	Full Round	5.20m x 0.72m	0.45 acp	Left
118	11	14	Nail	6.20m x 0.14m		Left
119	11	15	Nail	6.53m x 1.78m		Left
120	11	16	Nail	6.90m x 1.73m		Left
121	11	17	Webbing Buckle	11.10m x 1.91m		Left
123	11	18	painted tin	11.67m x 2.0m	notable	Left
124	11	19	small hinge	11.82m x 0.00m		Left
125	11	20	Key	12.94m x 1.60m		Left
126	11	21	Nail	12.42m x 1.69m		Left
127	11	22	Webbing Buckle	13.20m x 1.20m		Left
128	11	23	Nail	16.69m x 1.14m		Left
129	11	24	Full Round	17.95m x 1.00m	Beyond 18m remained unsurveyed	Left
130	11	25	Toothpaste Tube	18.00m x 1.85m		Left
131	11	26	Rivot	18.00m x 2.00m		Left
132	11	27	Webbing Buckle	5.60m x 2.30m		Left
133	11	28	Full Round	9.35m x 3.20m		Left
134	12	1	Nail	0.92m x 1.50m		Left
135	12	2	Webbing Buckle	1.97m x 1.82m	belt end	Left
136	12	3	screw head	2.28m x 0.90m		Left
137	12	4	Nail	2.48m x 0.40m		Left
138	12	5	Webbing Buckle	3.30m x 0.80m		Left
139	12	6	Cartridge	3.24m x 1.20m	large Cal - v notable	Left

	Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
	140	12	7	Scaffolding Plate	3.52m x 1.50m		Left
	141	12	8	Nail	3.80m x 0.70m	large	Left
	142	12	9	strip of ferrous metal	3.86m x 0.19m		Left
	143	12	10	Bullet	4.00m x 0.80m		Left
	144	12	11	Shell Fragment	5.27m x 1.32m		Left
	145	12	12	Nail	5.55m x 0.33m		Left
	146	12	13	Nail	8.95m x 1.00m		Left
	147	12	14	Forked Iron Rod	9.22m x 1.65m	Notable	Left
	148	12	15	Scaffolding Plate	9.58m x 0.95m		Left
	149	12	16	Cap Badge	12.62m x 0.28m	Notable	Left
	150	12	17	Full Round	13.37m x 0.50m		Left
	151	12	18	Cartridge	14.72m x 0.90m		Left
	152	12	19	Full Round	21.56m x 1.95m		Left
	153	13	1	molten piece of metal	18.75m x 3.00m	distances up start at 17.00	right
	154	13	2	Webbing Buckle	20.82m x 0.25m		right
	155	13	3	Webbing Buckle	21.00m x 2.35m		right
	156	13	4	Scaffolding Plate	20.60m x 3.27m		right
	157	13	5	stud	21.80m x 1.80m		right
	158	13	6	Webbing Buckle	21.39m x 0.53m		right
	159	13	7	Nail	21.80m x 0.19m		right
	160	13	8	stud	22.62m x 0.50m		right
	161	14	1	small piece of piping	0.90m x 1.36m		Left
	162	14	2	stud	1.60m x 1.52m		Left

Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
163	14	3	stud	2.46m x 1.51m		Left
164	14	4	Bullet	3.19m x 0.34m		Left
165	14	5	Webbing Buckle	3.48m x 1.65m		Left
166	14	6	drumstick ??	3.87m x 1.76m	notable	Left
167	14	7	tin lid	4.73m x 0.25m		Left
168	14	8	small piec of metal	6.07m x 1.65m		Left
169	14	9	plug terminal	7.77m x 0.61m		Left
170	14	10	Shell Fragment	8.54m x 1.00m	possible	Left
171	14	11	Webbing Buckle	8.85m x 1.37m		Left
172	14	12	Webbing Buckle	9.60m x 1.50m		Left
173	14	13	Nail	9.85m x 1.43m		Left
174	14	14	Buckle	10.20m x 0.90m	ornate	Left
175	14	15	small piece of lead	11.95m x 0.40m		Left
176	14	16	Bullet	12.16m x 1.74m	.45ACP	Left
177	14	17	nail	12.47m x 0.70m		Left
178	14	18	key	14.93m x 1.30m		Left
179	14	19	ring	15m x 0.67m		Left
180	14	20	nail	16.10m x 1.64m		Left
181	14	21	Full Round	16.48m x 0.62m		Left
182	14	22	Coin	16.66m x 0.19m		Left
183	14	23	spoon	17.22m x 18.90m		Left
184	14	24	pin	20.15m x 0.81m		Left
185	14	25	piece of lead	20.15m x 1.42m		Left
186	14	26	nail	21.99m x 1.28m		Left

	Line Number	Transit	Item Number	Description	Location	Notes	lateral measurement from
	187	14	27	Full Round	22.60m x 0.87m	plus ferrous bits	Left
	188	14	28	nail	22.77m x 0.65m		Left
	189	14	29	2 nails	23.33m x 1.37m		Left
	190	15	1	Nail	0.22m x 0.13m		right
	191	15	2	small iron rod	0.25m x 0.73m		right
	192	15	3	door furniture	3.54m x 0.64m		right
	193	15	4	Nail	5.35m x 0.83m		right
	194	15	5	small brass rod	6.50m x 1.83m	winding up a clock ??	right
	195	15	6	Nail	7.95m x 3.26m		right
	196	15	7	Full Round	8.09m x 0.60m	plus two forks	right
	197	15	8	small piece of iron	9.95m x 1.32m		right
	198	15	9	Cartridge	10.68m x 1.00m		right
	199	15	10	Webbing Buckle	11.02m x 1.84m		right
	200	15	11	Bullet	12.72m x 1.17m	.45ACP	right
	201	15	12	Coin	13.29m x 1.66m	Chinese	right
	202	15	13	Webbing Buckle	15.0m x 1.56m		right
	203	15	14	Webbing Buckle	20.68m x 0.92m		right

Appendix 2 – Sketch Map Area 1



Appendix 3 – Sketch Map Area 2