# The Adam Park Project

# Metal Detector Survey Report No.16

## 9 Adam Park
## 11th-16th Jan 2013

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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, 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'. In January 2013 the 'Big Dig 2' was carried out on site which included excavations, aerial surveys and metal detecting.

This report is best read in conjunction with Report 15 which detailed the findings of the survey at No.7 Adam Park. These findings suggested that there was a build up of WW2 artefacts along the fence line to the north west of the garden that bordered the property at No.9 Adam Park. Permission was sort from the tenant to survey the extremities of the front garden at No.9 to see if the concentration of finds expands into their property

No. 9 is not specifically mentioned in the diaries relating to the fighting at Adam Park. However comments are made to the detention of over 600 men in a tennis court at the time of the surrender. Lt Colonel Carpenter, OC the battalion, is said to have addressed his troops on the evening of the 15th February on the banking overlooking the back garden of No.7 Adam Park. That 'banking' was most likely the edge of the tennis court at the front of No.9. The troops said farewell to their commander before being rounded up and moved into a fenced tennis court. The closest and the most natural location for this court is in the front of No.9. The wounded were moved into an adjoining building, again most likely No.9.

During the period the estate was used as POW camp No. 9 was one of those buildings that may have housed a camp facility such as the 'Captain's Mess' (Australian Officer's Mess), the Camp Chapel or the Adjutant's Office. Alternatively it may simply have housed up to 250 men. It was also noted in various accounts that the tennis courts were used as Tenko yards and Rugby League pitches during that 9 months of POW occupation.

***Fig 1 – No 9 Adam is a Class 1 House built on the main ridgeline of the estate. This impressive two story building dominates the skyline and overlooks the bungalows around it.***

***Fig 2 – An aerial photograph of No.9 taken at an altitude of 30m show how the house overlooks the surrounding area and has views extending out across to the adjoining estates and hills.***

# The Survey Criteria and Area of Interest

Twenty eight transects each 2m wide of lengths between 18 and 30 metres long and were set out in five areas of the garden - Areas 1 to 5. A 'prospecting' survey was organised for space between the transects in which a number of artefacts were recovered.


***Fig 3 – The Google Earth image of the site showing the location of the five areas in the garden of 9 Adam Park that were surveyed by the metal detectorists. Areas 1 and 3 were abutting areas previously surveyed at No.7 Adam Park with the hope that concentrations of ordnance found there would continue into No.9's garden.***

A field walk was carried out across the site at the start of the survey but no pertinent items were found on the surface.

***Fig 4 – Area 1 was established directly alongside the fence bordering No.7 Adam Park. Transect 1 to the right of the picture ran under the hedgerow and gave up the most WW2 related artefacts.***

Typically for this urban environment 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. A full survey of all ferrous returns was deemed to be inappropriate given the time constraints and available manpower. It was assumed that the artefacts indicating the occupation and combat would primarily be made of non-ferrous metals.

Two White's Prizm Mk 6T metal detectors were used as the preferred machines. Both machines were set to maximum sensitivity but the discrimination function was set to exclude ferrous materials and smaller non ferrous items (1st two settings muted). The operators had difficulty discerning between non-ferrous and ferrous hits in close proximity 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 and annoyed the operators. 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 inaccurate. Large ferrous items 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. A further sweep was carried out after the item had been removed to check for other material masked by the first.

Good use was made of two hand held Garrett Pro-pointer pinpointers. As many of the artefacts were found to be on or 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. Having two pinpointers drastically speeded up the recovery of items. However having two detectors was somewhat limited by having only one skilled operator. Volunteers were shown how to operate the equipment but the effectiveness was somewhat curtailed by lack of experience.

***Fig 5 – Transect 5 in Area 2 looking north with the other transects shown to the right. Team of diggers worked steadily up each transect unearthing finds that lay within 15cms of the surface. Digging skills dramatically increased as the survey progressed and at times it was difficult for the metal detectorist to keep ahead of the excavations.***

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 especially under the hedgerows. 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. 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.

Prospecting Surveys were carried out to look for areas of high concentrations of pertinent returns. This process entailed field walking the site with the metal detector excavating only clear and notable hits. This allowed the team to get a feel for the typology of finds around the rest of the site and to sample them. It was hoped that this would reveal any overlooked concentrations of finds as discovered in earlier surveys at No.17 and 8 Adam Park. The drawback of this methodology is that the location of the artefacts recovered is not accurately recorded and only the approximate coordinates are taken. It was a prospecting survey that revealed a concentration of ordnance found at the northern end of the garden which was then subjected to a full survey as Areas 4 and 5

The survey areas were found to be intersected by subterranean utility pipes which left a significant magnetic signal on the surface which masked readings up to 50cms either side. These pipelines were marked with yellow flags and avoided.

Recovery of subsurface artefacts was done by trowel and as there was a need to restore the garden to its original condition. 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. Location of the finds was recorded to within 5cms by measuring tape.

The weather was fairly hot for most of the time on site with the chance of afternoon rain showers. The team worked from 9.30am until 4.00pm on weekdays only to ensure minimal disturbance for the tenants.

# The Location of Transects

Sketch maps of the site are at Appendices 2 – 4.

Areas 1, 2 and 3 were chosen in order to expose artefacts relates to the gathering of troops on the 15th February to hear Lt Col Carpenter's speech and possibly disposing of unwanted kit, ammunition and weapons in the immediate area at the same time. It was hoped concentrations of dumped kit would reveal the location of the trenches dug into the lawns as they would make handy trash pits. Similarly areas 4 and 5 at the northern end of the garden were chosen as a result of a prospecting survey which unearthed a collection of bullets.

Area 1 covered approximately 80$m^2$ over gently rising close cropped lawn at the foot of the banking that made up the southern edge of the tennis court platform. Transect 1immediately next to the chain linked fence line was scattered with ferrous waste and small bits of fencing as well as a significant collection of small arms ammunition.

***Fig 6 – T1 and T2 showing the state of the lawn at this point. Many of the bullets were found underneath the tree line and corresponded with a concentration of finds on the other side of the fence in No.7's garden. Clearly the boundary was not as established or impassable as it is today and the disposal of artefacts took place across the area as men gathered at the end of the fighting.***

Transects 5 to 13 (approximately 398 $m^2$) were set along the length of the foot of the bank that designated the eastern end of the tennis court and covered the slightly sloping ground down to the modern fence line. The war diaries suggested that the tennis court in which the prisoners were held was covered in tarmac[1]. It was noted that along the upper edge of the slope were a number of concrete standings for fence posts.

[1] Original tenders for the building of the courts stipulated grass playing surfaces. Whether tarmac or grass was present at the time of the fighting is still under investigation.

***Fig 7 – Area 2 consisted of 8 transects running along parallel to the bank of the tennis court terrace and down towards the fenceline. This picture shows Transects 5 – 8 from right to left looking south towards No.7.***

Transects 14 to 17 (80 $m^2$) were located at the southern side of No.9 along the fenceline boundary within a pineapple garden directly at the bottom of the bank which marked the westerly end of the tennis court platform. The area was regular interspersed with pineapple plants.

***Fig 8 – Area 3 was within an area dedicated to growing pineapples and bordered by the south easterly and south westerly fence line.***

Areas 4 and 5 were set at the northern end of the tennis court platform taking in the lawn up to the northern boundary of the property. The gently rising ground went up towards the terrace and time allowed for a number of transects to be surveyed on the tennis court itself. Area 5 was to the west of Area 4 and was enclosed on two sides by the main driveway.

***Fig 9 – Transects 18 to 25 in Area 4 showing the disposition of artefact across the area marked by flags and bags. It took two days to clear this area of artefacts. A concentration of ammunition was found down the bank towards the tree on the right hand side. Area 5 was a small section of lawn beyond the trampoline and up to the fence line.***


***Fig 10 – An aerial shot of the northern end of the garden looking towards the centre of the Adam Park estate and the neighbouring property at No.10 Adam Park. Areas 3, 4 and 5 have been highlighted. The volunteer diggers can be seen working on the concentration of bullets found in Area 4 down the bank and under the modern tree.***

# Summary of Artefact Catalogue

TAPP Finds Log for the survey is shown at Appendix 1

A fair proportion of the relevant finds was either bullets, cartridges, shell fragments or webbing accoutrements. 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.

269 artefacts were recovered across the site of which 79 could be immediately associated with the war years (29%). This included 12 bullets, 26 full rounds, 12 pieces of shell fragment, 2 cartridges and a collection of webbing accoutrements and buttons.

## The Cartridges

There were two cartridges found during the survey of which all were in some way deformed or broken.

| Transect | Item Number | Description | Location | Headstamp | Rim Dia | Base Dia | Manu |
|---|---|---|---|---|---|---|---|
| 001 | 007 | cartridge | 7.44m x 0.87m | CB(?) 1940 VII | 13.3mm | 11.6mm | Greenwood & Batley |
| 024 | 011 | cartridge | 12.18m x 0.51m | None Showing | 13.4mm | 11.4mm | Not Known |

26 full rounds were also found not including those found with charger units

| Transect | Item Number | Description | Location | Headstamp | Rim Dia | Base Dia | Manu |
|---|---|---|---|---|---|---|---|
| 1 | 16 | full round (webley) | 13.86m x 0.78m | 441 VI | 13.4mm | 12.1mm | Not Known |
| 1 | 18 | full round | 14.05m x 1.62m | R↑L VII | 13.6mm | 11.7mm | Woolwich Arsenal |
| 1 | 19 | full round | 14.50m x 0.85m | K39 | 13.4mm | 11.7mm | Kynoch & Co |
| 2 | 10 | full round | 12.65m x 1.69m | R↑L VII | 13.8mm | 11.8mm | Woolwich Arsenal |
| 2 | 11 | full round | 13.22m x 1.95m | R↑L VII | 13.7mm | 11.6mm | Woolwich Arsenal |
| 2 | 12 | full round | 13.70m x 1.98m | GB VII | 13.8mm | 11.6mm | Greenwood & Batley |
| 7 | 3 | full round (Granules) | 5.96m x 0.93m | 25 | 13.2mm | 11.5mm | Not Known |
| 18 | 9 | full round | 9.42m x 0.68m | None Showing | 13.4mm | 11.6mm | Not Known |
| 18 | 10 | full round | 9.63m x 0.45m | SAC (?) VII 41 | 13.3mm | 11.6mm | Not Known |
| 18 | 11 | full round | 9.92m x | None | 13.3mm | 11.7mm | Not Known |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | 0.74m | Showing | | | |
| 18 | 12 | full round | 10.33m x 0.62m | None Showing | 13.3mm | 11.6mm | Not Known |
| 18 | 17 | full round | 12.84m x 0.56m | None Showing | 13.5mm | 11.7mm | Not Known |
| 19 | 5 | full round | 8.27m x 0.93m | K | 13.3mm | 11.6mm | Kynoch & Co |
| 19 | 6 | full round | 8.91m x 0.25m | None Showing | 13.3mm | 11.6mm | Not Known |
| 19 | 7a | full round (granules) | 9.13m x 0.36m | DC 40 | 13.1mm | 11.5mm | Dominion Cartridges |
| 19 | 7b | full round | 9.13m x 0.36m | None Showing | 13.6mm | 11.6mm | Not Known |
| 19 | 8 | full round | 9.72m x 0.08m | M 31 | 13.4mm | 11.7mm | Not Known |
| 19 | 9 | full round | 9.90m x 0.30m | VII | 13.3mm | 11.6mm | Not Known |
| 19 | 10 | full round | 10.64m x 0.37m | K33 VII | 13.25mm | 11.6mm | Kynoch & Co |
| 20 | 6 | full round | 6.46m x 1.22m | R↑L 1941 VII | 13.2mm | 11.6mm | Woolwich Arsenal |
| 20 | 7 | full round | 6.88m x 2.00m | 3 | 13.3mm | 11.7mm | Not Known |
| 20 | 11 | full round | 10.64m x 0.14m | K 33 | 13.4mm | 11.6mm | Kynoch & Co |
| 21 | 3 | full round | 5.84m x 0.67m | CP 3 VII | 13.5mm | 11.6mm | Crompton & Parkinson Ltd |
| 25 | 16 | full round | 8.00m x 0.63m | GR (?) VII | 13.6mm | 12.0mm | Greenwood & Batley |
| 27 | 2 | full round (.45 ACP) | 5.10m x 1.88m | 45 ACC | 11.7mm | 11.8mm | Colt |

The cartridges were cleaned and the heads of each round were examined to ascertain details of the head stamp. The head stamps were in part only partially decipherable but it would appear that the .303 cartridges came from 5 separate arsenals[2]:

**Dominion Cartridge Company**, The headstamp for the military production was a simple D with a C and a broad arrow for the Brownsburg plant which later became the Dominion Ammunition Division of Canadian Industries Ltd. They operated factories in Brownsburg, Quebec and Montreal. The DOMINION headstamp was used on commercial ammunition from 1911 until 1955. They also produced .303 cartridges in Ball, Cordite Mk 2, 4, 6 and 7

**Crompton Parkinson Ltd**, was based in Guiseley, Yorkshire, UK, although filling took place at the Doncaster site. This factory set up as part of the 1939-1945 war emergency expansion plan. Produced .303 cartridges during the period 1940 - 1944.

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

**The Woolwich Arsenal in Kent**
Woolwich Arsenal, 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 being the Mk 7 Ball variant.

**Kynoch & Co, Witton, Birmingham, UK**. This firm was first formed by George Kynoch at Witton in 1862 as a manufacturer of percussion caps. It was changed to a limited company in 1884 as G. Kynoch & Co Ltd and by then was manufacturing metallic ammunition. A further reorganisation and expansion followed in 1889 when George Kynoch was ousted from the management and this then culminated in a further change of title to Kynoch Ltd in 1897. During the period ending with the 1914-18 war Kynoch, which by then was the largest of the British commercial ammunition manufacturers, owned rolling mills at Witton, Lodge Road, Birmingham and at Eyre Street, Birmingham. At various times it had propellant factories at Arklow, County Durham, making cordite, at Warsboro Dale, Yorkshire, making black powder and at Kynochtown, Stanford Le Hope, Essex, making smokeless powder. In addition to these plants the original cap production was maintained at Witton. Later, effective tracer and incendiary composition operations were also carried out at Witton. After the war in 1918 Kynoch Ltd, in common with most other British small arms ammunition manufacturers, was merged into Explosives Trades Ltd, later to become Nobel Industries. In 1926 when Nobel Industries became part of the new Imperial Chemical Industries, the old Kynoch factory at Witton was retained as the ammunition centre as part of the Metal Group within ICI. The propellant interests being concentrated mainly at Ardeer within the Nobel Division of ICI. In 1962 the Metals Division of ICI was reorganised as a separate company known as Imperial Metal Industries (Kynoch) Ltd. During WW1 Kynoch produced in excess of 2,373 million .303 cartridges.

**Greenwood and Batley, Leeds, UK.** This company manufactured Ammunition from an early stage, finally ceasing production in the late 1950s. They had a filling factory at Abbey Wood and later during the 1939-45 war, a filling factory at Farnham. The headstamp code G, denoting manufacturer, should not be confused with G as in GIV indicating a tracer cartridge. During WW1 Greenwood & Batley are known to have produced in excess of 705 million .303 Mk 7 cartridges. They also manufactured .303 cartridges in Ball, Black powder Mk 2

## Granular Charge

Two cartridges 9/7/003 and 9/19/007 were notably unusual in that they were found to be charged with powder granules. The vast majority of cartridges issued to the British forces in Singapore were packed with cordite which was believed to be more water resistant.

The original .303 service cartridge employed black powder as a propellant, and was adopted for the Lee-Metford rifle, which had rifling designed to lessen fouling from

this propellant. The Lee-Metford was used as a trial platform by the British Committee on Explosives to experiment with many different smokeless powders then coming to market, including *Ballistite*, *Cordite*, and *Rifleite*. *Ballistite* was a stick-type smokeless powder composed of soluble nitrocellulose and nitroglycerine. *Cordite* was a stick-type or 'chopped' smokeless gunpowder composed of nitroglycerine, gun-cotton, and mineral jelly, while *Rifleite* was a true nitrocellulose powder, composed of soluble and insoluble nitrocellulose, phenyl amidazobense, and volatiles similar to French smokeless powders. Unlike *Cordite, Riflelite* was a flake powder, and contained no nitroglycerine. Excessive wear of the shallow Lee-Metford rifling with all smokeless powders then available caused ordnance authorities to institute a new type of barrel rifling designed to increase barrel life; the rifle was referred to thereafter as the Lee-Enfield. After extensive testing, the Committee on Explosives selected *Cordite* for use in the Mark II .303 British service cartridge. (Wikipedia)

***Fig 11 – Cartridge 9/19/007 was revealed to be filled with black granules and not the usual 'cordite spaghetti' excavators were used to finding.***

Two rounds were of a different type to the common .303.

| Transect | Item Number | Description | Location | Headstamp | Rim Dia | Base Dia | Manu |
|---|---|---|---|---|---|---|---|
| 1 | 16 | full round (Webley) | 13.86m x 0.78m | 441 VI | 13.4mm | 12.1mm | Not Known |
| 27 | 2 | full round (.45 ACP) | 5.10m x 1.88m | 45 ACC | 11.7mm | 11.8mm | Colt |

***Fig 12 – The two 'oddball' rounds found on site at No.9 Adam Park were Items 09/01/16 – a Webley pistol round (right) and 09/27/02 – a Thompson Sub Machine Gun round (left)***

Junior officers and some NCO's were equipped with a **Thompson sub-machine 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[3]. It was however prone to jamming. (Brayley 2002: 38,39)

[3] Sgt Baynes noted in his correspondence that his Platoon CO took off with the sections Thompson early on in the fighting much to his disgust.

***Fig 13 – Thompson sub machine gun was used by the NCO's as a close quarters, people stopper.***

The official service pistol for the British military during the Second World War was the Enfield No. 2 Mk I .38/200 calibre revolver, but owing to a critical shortage of handguns, a number of other weapons were also adopted (first practically, then officially) to alleviate the shortage. As a result, both the Webley Mk IV in .38/200 and Webley Mk VI in .455 calibre were issued to personnel during the war. (http://en.wikipedia.org/wiki/Webley_Revolver)

***Fig 14 a -b - Webley MkVI and Mk IV revolvers***

## Chargers

The most notable collection of artefacts found at No.9 Adam Park were three charger units which were recovered in various states of repair.

| Line Number | Transit | Item Number | Description | Location | Notes |
|---|---|---|---|---|---|
| 163 | 18 | 13a | charger | 10.71m x 0.43m | 1 x round |
| 164 | 18 | 13b | charger | 10.71m x 0.43m | 2 rounds |
| 183 | 20 | 2 | charger | 1.76m x 1.44m | 3 full rounds |
| 205 | 22 | 4 | charger | 15.72m x 1.57m | with four rounds |

***Fig 15 – Three charger units were found on site L to R; 09/22/04, 09/20/02 and 09/18/13 that were initially recorded as two separate items but are in fact from the same charger***

The .303 charger held five bullets and was inserted into the breech mechanism during the loading process. An entry from the 1937 Small Arms Training Volume 1 Pamphlet No.3[4] provides more detail:

**1. To load.—**

i. Push forward safety-catch.
ii. Pull out cut-off.
iii. Open breech by pulling bolt back to its full extent.
iv. Take a charger between thumb and first two fingers of right hand, and place it vertically in guides.
v. Place ball of the thumb on top cartridge immediately in front of charger, hook forefinger under cut-off, force cartridges down with a firm and continuous pressure until top cartridge is clear of charger and has engaged in magazine. If there is no cut-off, hook fingers under woodwork.
vi. Force bolt sharply home with thumb and forefinger, turning knob fully down, and with forefinger of right hand turn safety-catch completely to rear, ensuring at the same time, by means of the remaining fingers, that bolt-lever is fully down. Button up pouch.

***Fig 16 – A modern day re-enactor displaying his ammunition pouch full of SMLE chargers***

An infantry section of 6 to 8 men would be expected to carry 800 rounds of .303 in 160 chargers either in their ammunition pouches on their webbing or in cotton bandoliers along with 21 x 30 round Bren gun magazines. This means each man would carry in access of 100 rounds (20 chargers) each.

***Fig 17 – A charger with 5x .303 rounds inserted.***

[4] http://www.weapons.org.uk/smallarmstraining/index.htm

The discovery of 8 similar charger units just along the road at No. 8 Adam Park (Survey Report 8) many with cartridges still held inside and a similar item at No.7 Adam Park (Survey Report 15) was believed to be indicative of the disposal of ammunition across the site after the fighting. The troops would have had pouches full of ammunition and charger units immediately before the surrender and the Japanese demanded that all ammunition was to be removed before the Cambridgeshires were marched into the tennis court for their initial period of captivity.

***Fig 18 – The charger unit (07/02/06) and rounds that were found on the other side of the fence to those at No. 9 but should be seen as part of a single collection indicative of the dumping of ammunition in the area at the end of hostilities.***

## Bullets

12 Bullets were found on the site outwith those found with the chargers.

| Line Number | Transit | Item Number | Description | Location | Weight | Length | Type |
|---|---|---|---|---|---|---|---|
| 21 | 1 | 21 | Bullet (collar) | 14.62m x 1.55m | 8.2g | 32.2mm | Arisaka |
| 116 | 7 | 22 | bullet | 20.56m x 0.82m | 9.0g | 35.9mm | .303* |
| 117 | 7 | 22a | Bullet (collar) | 20.56m x 0.82m | 10.4g | 33.1mm | .303 |
| 157 | 18 | 7 | Bullet (collar) | 7.20m x 3.15m | corroded | 33.1mm | .303 |
| 168 | 18 | 15 | bullet | 11.84m x 1.16m | 10.6g | 32.5mm | .303 |
| 169 | 18 | 16 | bullet | 11.84m x 1.40m | 9.8g | 32.2mm | .303 |
| 173 | 19 | 3 | bullet | 3.68m x 1.80m | 8.5g | deformed | .303 |
| 181 | 19 | 10 | bullet | 10.64m x 0.37m | | | .303 |
| 190 | 20 | 9 | bullet | 8.21m x 0.01m | 10.0g | 32.3mm | .303 |
| 194 | 20 | 13 | bullet | 12.63m x 1.33m | | | .303 |
| 197 | 21 | 2 | Bullet (collar) | 3.72m x 1.42m | 10.9g | 32.2mm | .303 |
| 210 | 23 | 5 | bullet | 9.54m x 1.90m | 10.3g | 32.5mm | .303 |

Four of the bullets still had traces of the brass collar of the cartridge still attached inferring the rounds were attached to the cartridge when they were dropped.

Item 9 /1/ 21 was of particular note as it appeared to be lighter and of smaller diameter. The best match would be an Arisaka Type 38 round. Interestingly the bullet also had the remains of the brass neck of the cartridge on it inferring it had been dropped as a full round.

The 6.5x50mm Semi-Rimmed (6.5x50SR) Japanese cartridge was adopted by the Imperial Japanese Army in 1897, along with the Type 30 Arisaka Infantry Rifle and Carbine. The new rifle and cartridge replaced the 8x52mm Murata round used in the Type 22 Murata Rifle. The Type 38 spitzer-bullet round fired a 9.0-gram (139 gr) bullet with a powder charge of 2.5 grams (39 gr) for a muzzle velocity of around 770 metres per second (2,500 ft/s).

The round was criticized for being underpowered compared to other, more powerful American and European cartridges such as the .30-06, 303 British, 7.92x57mm Mauser,and 7.62x54mmR. Due to this reason, it was later replaced by the more powerful 7.7x58mm cartridge (http://en.wikipedia.org/wiki/6.5x50mm_Arisaka)

***Fig 19 a-c The central image of Item 9/1/21 can be compared with the detailed images of the Type 38 round.***

The standard issue rifle for the Japanese soldier 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. 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 primarily used by the cavalry.

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

***Fig 20a - Japanese Arisaka Type 38 rifle, 6.5 mm calibre with forged steel bayonet and clip.***

***Fig 21 – Item 9/07/22 shown on the left when compared with 9/01/21, the Arisaka round and a standard .303 can be seen to be longer not heavier.***

Item 09/07/22 appears to be of a different round from the others. Although weighing in somewhat lighter than the standard .303 MkVII round it is about 3.7mm longer.

This maybe a rare MkVIII .303 round. In 1938 the Mark 8 (Mark VIII and Mark VIIIz) round was approved to obtain greater range from the Vickers machine gun. The round was slightly heavier than Mk VII bullet at 175 grains (11.3 g) but the primary

difference was the addition of a boat-tail and more propellant (41 grains of nitrocelluose powder in the case of the Mk VIIIz), giving a muzzle velocity of 2,525–2,900 ft/s (780–884 m/s).

As a result, the chamber pressure was significantly higher, at42,000–60,000 lbf/sq in (approximately 280–414 MPa), depending upon loading, compared to the 39,000 lbf/sq in of the Mark VII round. Cross-sectional images of Mk VIII ammunition indicate that its boat-tail bullet was long and gently tapered, providing a very high ballistic coefficient.

Mk VIII ammunition was described as being for "All suitably-sighted .303-inch small arms and machine guns" but caused significant bore erosion in weapons formerly using Mk VII cordite, ascribed to the channelling effect of the boat-tail projectile. As a result it was prohibited from general use with rifles and light machine guns except in emergency. As a consequence of the official prohibition, ordnance personnel reported that every man that could get his hands on Mk VIII ammunition promptly used it in his own rifle. (http://en.wikipedia.org/wiki/.303_British)

## Distribution of Ordnance

It was very clear from the distribution of the ordnance across the site that there had been a systematic dumping of items. The collection of bullets in Area 1 corresponded with a similar patterning over the boundary at No.7. Likewise the concentration of finds down the banking in Area 4 mimicked a similar distribution found at No.11 Adam Park (See Survey Report 12) where the banking and proximity of vegetation had prompted the soldiers to dispose of their bullets in the area.

However there may be another explanation for the concentration of finds down the banks and amidst the overgrown vegetation. The amount of bullets recovered across the site in no way makes up for the amount of ammunition that must have been disposed of by the hundreds of men left in the estate at the end of the fighting. Therefore a cleanup must have taken place either by the Japanese, POW's or the tenants. It is therefore possible that the concentration of ordnance is reflective on how effective that clean up was. Items hidden in the grass and down banks were less likely to have been discovered.

What we can say is that there is clear evidence of the dumping of unused rounds after the fighting across the site.

## Shell Fragments

Twelve recognisable shell fragments were recovered from across the site. The distribution of the fragments suggested the garden attracted enemy shell fire. The collection could be split into three distinct categories. Five items were found to be relatively flat pieces, grooved on both sides and typical of machining on the brass driving band from the shell casing. The second group of three items were found to be chunkier and machined with a distinct screw thread. This is typical of a fragment from the brass fuses used to arm the shell. The final group were indistinguishable.

| Line Number | Transit | Item Number | Description | Location | Typology |
|---|---|---|---|---|---|
| 71 | 5 | 24 | shell fragment | 16.05m x 1.72m | Fuse Fragment |
| 86 | 6 | 5 | shell fragment | 15.78m x 0.38m | Fuse Fragment |
| 95 | 7 | 1 | shell fragment | 0.90m x 0.59m | Driving band |
| 98 | 7 | 4 | shell fragment | 8.71m x 1.68m | Driving band |
| 102 | 7 | 8 | shell fragment | 16.06m x 1.45m | Not known |
| 125 | 8 | 5 | shell fragment | 17.61m x 1.38m | Fuse Fragment |
| 208 | 23 | 3 | shell fragment | 5.84m x 0.15m | Driving band |
| 223 | 24 | 10 | shell fragment | 11.93m x 0.95m | Driving band |
| 230 | 24 | 17 | shrapnel | 20.88m x 0.77m | Not known |
| 231 | 24 | 18 | shell fragment | 21.62m x 0.99m | Not known |
| 253 | 25 | 21 | shell fragment | 17.00m x 1.20m | Driving Band |
| 255 | 25 | 23 | shell fragment | 21.10m x 1.33m | ferrous |

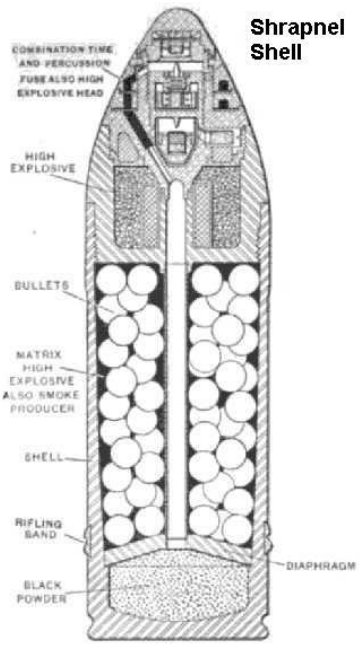

***Fig 22 Item 09/25/21 (left) is a typical piece of driving band showing broad diagonal grooves on one side and a narrow lateral grooving on the other. Item 09/06/05 (right) is heavily machined with a screw thread both on the internal and external curved surface. This is a good example of a fragment of fuse casing.***

It is possible to tell a fired from an unfired shell by whether the copper driving band is smooth or gouged. Many experts suggest that the patterns of feathering and the gouging caused during the firing of the shell are nationally distinctive and often different for different types of shells. Therefore they may provide more information about which side was firing into the garden at No.9. Unfortunately no data was available to the project at this time.

Notably three lead balls were found in close proximity to each other in Area 3

| Line Number | Transit | Item Number | Description | Location | Notes |
|---|---|---|---|---|---|
| 153 | 18 | 3 | lead ball | 2.78m x 1.24m | 31.3g<br>Dia 17.8mm |
| 182 | 20 | 1 | lead ball | 1.34m x 1.50m | 30.7g<br>Dia 17.5mm |
| 184 | 20 | 3 | lead ball | 3.75m x 0.33m | 30.4g<br>dia 17.6mm |

***Fig 23 – Three lead balls found in close proximity in Area 3 which are possibly shrapnel from Japanese rounds.***




It is possible that the three lead balls may simply be weights for curtains or from some kind of toy, however the most likely source is from Japanese shrapnel shells.

***Fig 34 – A cut away diagram shows the inner workings of a typical shrapnel shell designed as an anti personnel weapon.***

## Webbing Buckles

There were 10 buckles recovered of which 5 were definitely off the British Type 37 Webbing.

| Line Number | Transit | Item Number | Description | Location | Notes |
|---|---|---|---|---|---|
| 72 | 5 | 25 | webbing clip | 16.88m x 0.78m | Broken ammo pouch clip |
| 77 | 5 | 30 | buckle | 24.99m x 1.16m | |
| 111 | 7 | 17 | heavy duty buckle | 19.42m x 0.95m | 20mm with roller |
| 118 | 7 | 23 | webbing buckle | 24.06m x 0.08m | 25mm one bar closed |
| 143 | 15 | 2 | webbing buckle | 3.94m x 1.06m | 25mm one bar open |
| 167 | 18 | 14 | buckle | 11.60m x 1.23m | broken non military |
| 191 | 20 | 10 | webbing buckle | 10.50m x 0.16m | 25mm one bar closed |
| 211 | 23 | 6 | buckle | 11.49m x 0.77m | D shaped 20mm |
| 246 | 25 | 14 | webbing buckle | 6.02m x 0.01m | 25mm one bar open |
| 259 | 26 | 4 | buckle | 6.76m x 0.25m | non military |

***Fig 24a (left) – 9/07/17 is a heavy duty buckle with a piece of rolled metal allowing the leather belt to move freely when being adjusted. It is most likely not military. Fig 24b (right) – Item 09/33/06 is a 20mm D ring possibly off an Officer's Sam Browne belt.***

Although not found in any way near the great quantities found at other locations where soldiers had systematically abandoned kit, this collection is more reminiscent of other areas of the site where individuals have lost single items of webbing in association with the disposal of unused rounds during the surrender or in combat.

## Buttons

Three buttons were found on site. All three were military and were found Area 1. Two of the three buttons were annotated with the word ‘London’ on the reverse. Item 9/3/8 was also stamped with the word ‘FIRMIN’.

| Line Number | Transit | Item Number | Description | Location | Notes |
|---|---|---|---|---|---|
| 13 | 1 | 13 | button | 11.41m x 2.00m | 4 Holed 17mm Diameter ‘LONDON’ |
| 29 | 2 | 8 | button | 10.98m x 0.17m | 4 Holed Rim missing – no inscription |
| 42 | 3 | 8 | button | 21.74m x 0.64m | 4 Holed 17mm Diameter ‘FIRMIN’ ‘LONDON’ |

***Fig 25 – Item 9/03/08 was very similar to buttons found over the fence at No.7 Adam Park and two more found in the same area. The words FIRMIN and LONDON can be clearly seen***

Firmin & Sons was established in 1655 and an early note of the company name came with the reference to Thomas Firmin, the button maker; in the "List of Names of Merchants in London" for the year 1677. The company was known to have been established in 1655 from records in the accounts of the Girdlers Company (belt makers) that survived the Great Fire of London 1666. By 1754, the Company's ledgers and order books recorded purchases by King George II and various other members of the British Royal Family. The first known Royal Warrant as a button maker was granted by King George III in 1796. Thereafter Firmin has held Warrants for every successive British Sovereign to the present day.

From modest beginnings as button makers, Firmin became the leading supplier of every form of uniform, livery or badge, and the accessories and accoutrements to go with them. This achievement was recognised when Firmin exhibited at the Great Exhibition in London in 1851. Firmin's renown was international. Uniquely both sides wore Firmin buttons in the American Civil War. As one might expect the manufacture of military buttons on both sides of the Atlantic peaked during the war years and many British units fought with Firmin buttons adorning their battledress.

During the latter half of the 20th Century Firmin joined Kashket & Partners which have become the household name in fine uniform tailoring. In 2006 all of these very specialist and unique companies came together in a single Group, known today as the Kashket Group.

These particular buttons have most likely come off a khaki drill shirt. It has been noted that brass shirt buttons are notorious for being lost as the sharp brass edge tended to cut through the yarn allowing the button to fall away. This would often happen as webbing kit and equipment was removed.

## Coins

| Line Number | Transit | Item Number | Description | Location | Notes |
|---|---|---|---|---|---|
| 84 | 6 | 3 | coin | 13.60m x 0.68m | 1895 10 cents |
| 85 | 6 | 4 | coin | 15.55m x 0.96m | |
| 126 | 9 | 1 | coin | 4.22m x 1.48m | 20 cents 1919 |
| 141 | 14 | 3 | coin | 4.76m x 0.98m | |
| 172 | 19 | 2 | coin | 3.30m x 1.48m | 1 cent 1940 |
| 185 | 20 | 4 | coin | 3.90m x 1.89m | broken 5 cents 1948 |
| 267 | 28 | 5 | coin | 9.50m x 1.66m | |
| 268 | | | coin | outwith transects | 1945 1 cent coin |

Out of the small of collection of 8 coins a number were found to be of interest and dateable to the war years.


***Fig 26 –Item 09/06/03 was the oldest coin to be unearthed at No.9. It is an 1895 10 cents coin bearing the head of Queen Victoria***


***Fig 27 – The discovery of the 1945 Malayan 1 cent coin is indicative of the preparations that had been made for the eventual recovery of Malaya from the Japanese***


***Fig 28 – Item 09/09/01 is a twenty cents Straits Settlement coin dated 1919. It must be noted here that the POWs working on the Shrine would be paid 10 cents a day. This coin is worth two days wages.***


***Fig 29 – Item 09/19/02 is a 1 cent coin dated 1940***


***Fig 30 – Item 09/20/04 marks the return of the British to Malaya and the familiar face of George VI on the coinage once more.***

# Other Related Artifacts

## The Wirecutters

The largest and most impressive single item found during the survey at No.9 Adam Park was a set of military wirecutters. Although the item may have been used post war by the tenants or post battle by the POWs it has most likely been lost during the fighting by the Cambridgeshires.

Military cutters of this type were issued to British troops throughout the First World War and were still in the inventory at the beginning of the next. The Type 37 webbing included a special carrying case for the cutters that folded up in order to stow them in the holder.

The historic written record often refers to the Cambridgeshires Pioneer Platoon setting up barbed obstructions around the estate including a three coil dannert wire fence strung between No's 19 and 20 Adam Park, up between No.11 and No.12 and across onto the 'Back Road'. Other wire fences were set up round the perimeter of the estate. The Pioneer Platoon as part of the battalion HQ Company dug in around No.7 Adam Park. It is likely the item belonged to this unit.


***Fig 31 – British WW2 wirecutters found on the garden of No.9 Adam Park***


***Fig 32 – A more prestine version of the same item showing how the item folded down into the Type 37 webbing holder.***

## Meltonian Cleaning Product

Amongst the collection of the aluminium cans was a rather innocuous looking aluminium disc. This was cleaned and revealed to have been stamped with an inscription ‘USE THIS TRAY AS DIRECTED ON THE BOTTLE’. Around the outside edge of the disc was written ‘MELTONIAN LTD’ and ‘LONDON’.

Meltonian Limited are the makers of leather and shoe cleaning products. However during the war Meltonian were also the manufacturers of ‘Blanco’, used to colour webbing belts and canvas. This particular item appears to have been part of a set which included a bottle. Presumably the tray was used to mix the products prior to

application. Blanco usually comes in a round tablet and can be applied directly to the kit.


***Fig 33 – The Meltonian Tray – possibly 'Blanco' but more likely associated with a leather cleaning product.***

At some point between 1928 and 1942 the company changed its name from E. Brown & Son, Ltd. to Meltonian (E. Brown & Son) Ltd. This company was bought by Chiswick Products Ltd in 1928 bringing not only the Meltonian brand name and market share but also Fred Brown himself. The company continued to trade and manufacture at the Oxgate Lane works in Cricklewood as Meltonian (E. Brown & Son) Ltd until at least 1957 (referenced in London Gazette's from 1942 to 1957). Confusingly, the company name often appears as Meltonian Ltd without mention of the founder's name. In 1954 Chiswick Products Ltd merged into the newly-formed Reckitt & Colman Holdings Ltd and became integrated into the Reckitt empire, thereafter with production and offices moving from factory to factory as the company reorganised and consolidated production.

At some time between 1957 and 1964 a merger was made with the 1938 Chiswick acquisition of William Wren Ltd to form a new company Meltonian Wren Ltd and moving the production to the old Cobra works at Bushey, Watford, of erstwhile Blyth & Platt who were wound up in 1953.

Wrens were trading as William Wren Ltd in 1951 and the joint business was still trading as Meltonian Wren from the Bushey works in 1964. When the Watford works was shut down the manufacture of Meltonian products was transferred to Reckitt's site at Hull. In 1991 the Meltonian brand name was bought by Sara Lee along with Reckitt's entire UK shoe care product portfolio.

## Fuse Safety Cap

It was the discovery of a mortar fuse cap (07/01/32) in the back garden of No.7 Adam Park right near the fence line that encouraged the surveys team to look into the garden at No.9 Adam Park for similar items.

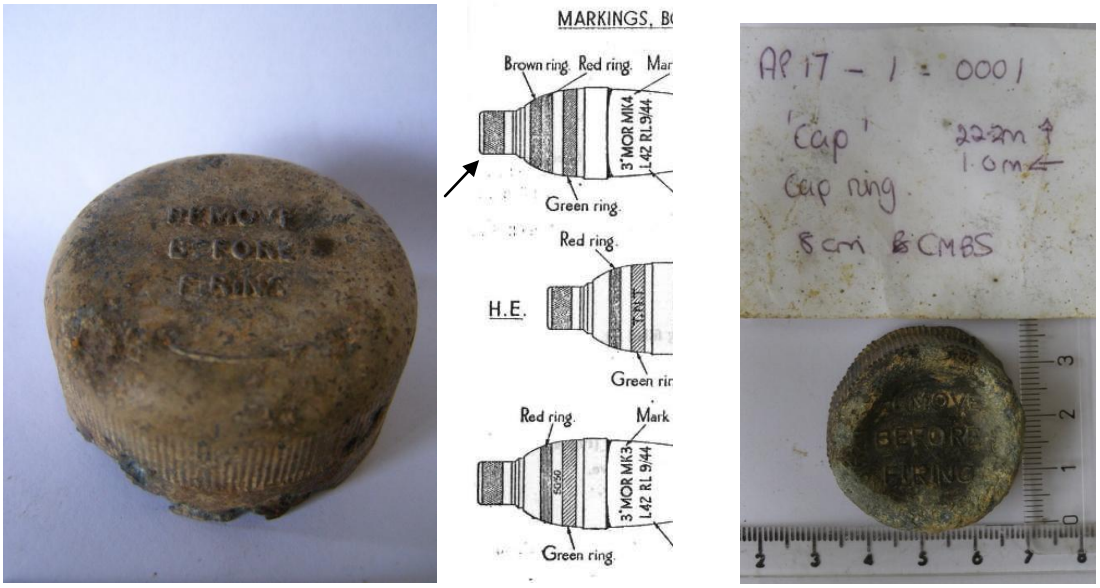



***Fig 34 - Item 07/01/32 (left) found at No.7 Adam Park is clearly annotated with the instructions 'Remove Before Firing' which is indicative of the military nature of the piece. It can be seen on the left of the images of primed 3" mortar rounds shown in the War Office instructions pamphlet (centre). A similar fuse cap for a 2" mortar was found at No. 17 Adam Park (right).***


***Fig 35 – Item 09/07/21 (left) is the best example of this artefact recovered to date. The item is clearly marked not only with the tell-tale instructions but also the fuse type number 'No 152' and the abbreviation 'PLO'. Item 09/24/08 (right) was in a worst state having been apparently exposed to extreme heat and has partially melted.***

Item 09/07/21 is 35mm in diameter and 30mm deep. It is annotated with the words 'REMOVE BEFORE FIRING' and 'N$^{o}$ 152'. Also stamped into the rim of the cap is the abbreviation 'P.L.C'. There is a machined twist grip on the exterior surface of the cap and an internal screw thread. Two holes 7mm in diameter have been drilled through the side of the cap.

The Type 152 fuze is a percussion fuze used on the 3" mortar. These facts tallies with the battalion history that states Sgt Pike and Sgt Reeves's mortars were located at No.7 on the 12$^{th}$ February and that the house was used as an ammunition store during the fighting where mortar rounds were made ready for firing. The mortar section was virtually wiped out in the bombardment of the RASC camp on the other side of the Adam Road on the 15$^{th}$ February. All the mortars were lost and much of their ammunition was set alight. This may account for the molten cap found at No.9.

## Type 36M Mills Grenade End Piece


***Fig 36 – Item 09/22/01 (left) is clearly annotated with the grenade type No 36M, a more complete example of which is shown on the right.***

The single letter 'Z' refers to the type of metal used in the cast, in this case Zinc or the Mazak alloy. In the early 1930s Morris Ashby in Britain had licensed the production of the New Jersey Zamak alloy[5]. The high-purity refluxer zinc was not available in Britain and so they acquired the right to manufacture the alloy using a locally available electrolytically refined zinc of 99.95% purity. This was given the name Mazak, partly to distinguish it from Zamak and partly from the initials of Morris Ashby. In 1933,National Smelting licensed the refluxer patent with the intent of using it to produce 99.99% zinc in their plant at Avonmouth.[5]

[5] The name zamak is an acronym of the German names for the metals of which the alloys are composed: Zink (zinc), Aluminium, Magnesium and Kupfer (copper)

The die cast stamp WDC refers to the Wolverhampton Die Cast Company who produced Mazak base plugs for a number of grenade manufacturers including both Josiah Parkes & Sons of Willenhall and John Pilling & Sons of Colne. As the production of components for the government was scattered across a range of manufacturers it was not uncommon for each company to add their own stamp to the item.

The No.36M grenade evolved from golf-club designer William Mills's Grenade No.5, the famous Mills Bomb of World War I. The No. 5 became the Grenade No.23 after obtaining a tail rod that allowed it to be fired from a rifle. In 1918, the grenade was modified to accept a 2.5in (63.5mm) detachable base plate that would let it be launched by a rifle discharger cup. Although this weapon was officially re-designated the Grenade No.36, popularly it was still called a Mills Bomb. A quantity were specially waterproofed and prepared for issue in Mesopotamia were designated No. 36M. While the No.5 and No.23 were removed from service in 1918 and the No.36 was declared obsolete in 1932, the No.36M remained in service as the British Army's standard grenade.

The No.36M anti-personnel fragmentation grenade had a cast-iron body weakened by longitudinal and transverse grooves to assist in fragmentation. It used the French *Bouchon* fusing mechanism that relied on an igniter set composed of a .22cal rimfire cartridge, a short length of safety fuse, and a detonator. Originally, the fuse provided the lengthy seven-second delay necessary for use as a rifle grenade but combat experience showed that seven seconds was too long a delay for thrown grenades and in 1940 a four-second igniter set was developed and issued. The seven second delay was retained for rifle launching.

The No.36M was a defensive pattern grenade whose shrapnel could kill within 80 yd (73 m) of the detonation point. The thrower had to be behind cover or immediately had to lie prone after throwing. In a bunker or other enclosed space, the Mills Bomb was lethal to the point of overkill. Despite its habit of erratic fragmentation - large pieces were often flung more than 100 yd (91 m) - the No. 36M gave sterling service throughout World War II and beyond. ( http://wiki.battlegroundeurope.com)

The base plug would be extracted as part of the fusing process of the grenade. This suggestive that the area was used as a supply dump during the fighting where the process of fusing the weapon was undertaken. This corresponds to the discovery of mortar fuse caps in the same area, again an artefact that would be discarded during the fusing of the mortar rounds.

## Japanese Fuse

This item is not officially part of the collection found at No.9 Adam Park but came to light when sifting through older collections. It has sat for a long time without further consideration under the mistaken premise that it was a domestic item. However, whilst carrying out research into Japanese fuses for this work, it was noted that the piece bears a great similarity to the Type 88 fuse.

In recollection the piece was thought to have been found on the surface during one of the guided tours of the estate and its exact location was not noted. On closer

inspection and cleaning it revealed a number of tell tale indentations and apertures in which the safety pin and spanner would have been located.

The fuse is 39.5mm tall and diameter at the top of 15.7mm. The length from the top to the first indentation is 31.2mm and the bottom base has an average diameter of 35.3mm. It must be noted that the bottom rim of the item is jagged and uneven suggesting that it is not the original surface and it has been split along this line by an explosion. There are two inner machined surfaces of which lower one has been threaded. The first has a radius of 25.5mm and the second nearer the apex 20mm. The hole at the top of the unit has a diameter of 10mm


***Fig 37 – The Japanese fuse is conical in appearance however the flaring of the bottom rim, the jagged bottom edge and the damage to the lip may have been caused by the detonation***

***Fig 38 – There appear to be two inscriptions on the fuse. Four symbols appear on the vertical inscription and can be translated as 'Field' 'Mountain' and Cannon. The symbols for 'zero' 'ten' and 'Tokyo Arsenal'can be seen.***


***Fig 39 – Pristine examples of the Type 88 Fuse showing the position of the safety pins and the inscriptions. The central inscription reads 'Type 88 Field Mountain Cannon' and appears identical to that found on the Adam Park item.***


***Fig 40 – Inscription on the reverse side of the same give the date code and arsenal markings in this case 'Showa 18.8 (August 1943) Tokyo Arsenal'***

The damage to the fuse appears to have removed half the bottom section of the fuse and flared out the remaining metal distorting the overall look of the piece. This item appears to be a multi-purpose Type 88 Instantaneous impact type artillery fuze. It Not to be confused with the "Small Type 88" fuze typically used with the 50mm "Knee Mortar". This fuze was used on antitank, tank, field artillery and howitzer ammunition. Sometimes mortar rounds will appear in collections with this fuze attached. While the term "Gun and Howitzer-Mortar" is used to describe this fuze in U.S. identification manuals, it requires centrifugal force (spin) to arm it, which a mortar does not provide.

## The Christening Spoon

Item 9/19/04 is an example of a particular fine piece of silver cutlery. Careful cleaning revealed a fine motif of a wise old bespectacled stork holding an infant child. The reverse of the piece showed the back of the bird with exquisite details in the plumage. Unfortunately the bowl of the spoon was not recovered. The spoon is made of silver with a 'S.L$^{D}$' hallmark over three symbols last of which is an 'm'.

The hallmark suggests the item has been made by William Suckling Ltd sometime between 1923 and 1962. They were based in Albion Street & Vyse Street, Birmingham. (http://www.silvermakersmarks.co.uk).

Similar spoons are still made today and are thought to be cast from the original dies.


***Fig 41 - The Christening spoon showed the motif of a stork and child***


***Fig 42 – A pristine version of the same spoon shows the intricate detail of the new item and the detail on the bowl of the spoon that would have identified the child it was presented to. This piece is hallmarked for Birmingham and dated 1938***

## Lord Derby's Coat of Arms

There is an old adage that suggests the best archaeological find always happens on the last day. It seemed this was born out in this survey as the last item to be unearthed proved to be yet another badge. However this one was not a military item but a representation of a coat of arms. The badge was 23mm x 23mm and a trace of the enamelling colouring was still in place. The design on the central shield was in technical terms: Argent on a bend Azure, three stags' heads caboshed Or, a crescent azure for difference.

The crest was a cap of maintenance Gules, turned up Ermine, an eagle wings extended Or, preying on an infant in its cradle proper swaddled Gules, the cradle laced Or

The supporter on the right is a griffin with wings elevated; on the left, a stag, each Or and ducally gorged with a line reflexed over the back and charged on the shoulder with a crescent Azure. The motto on the scroll beneath the shield read 'Sans Changer'

It was not too difficult to identify the heraldry as that of Lord Stanley the Earl of Derby and the crest bore all the details to link it to the later earls; 16th to 18th and dated to around the early to mid 20th Century. The rear of the badge showed the remains of the vertical pin that would have held the badge in place.


***Fig 43 – Item 9/28/001 (left) is clearly the representation of the Earl of Derby's coat of arms (right). The only omission is the crested helm that is indicative of an Earl.***

The curator of the Earl's collection has been contacted to find out if there is any known connection between Lord Stanley and Singapore.

## Metal Rings

| Line Number | Transit | Item Number | Description | Location | Notes |
|---|---|---|---|---|---|
| 6 | 1 | 6 | ring | 6.82m x 1.20m | nail |
| 264 | 28 | 2 | ring | 3.20m x 0.57m | 35mm brass ring inner thread with clips |

These two items may not have warranted a second look apart from the fact that they are brass and identical. Each ring has an external diameter of 33mm which is machined with vertical ridges for extra grip. The internal diameter is 25mm and the inner face of the ring is threaded. Two lugs are found protruding from the inner surface which suggests the rings were used to secure a fitting into leather or metalwork. Similar fittings of greater diameter are found in the top of oil drums for fitting hand pumps or taps into the pouring hole.

***Fig 44 – Two brass rings, machined and threaded, remain difficult to identify.***

## The Meter

A large piece of metal, item 09/25/004, was cleaned to reveal the intricate working of cogs, wheels and solenoids. The only markings visible on the piece was the code number ‘C28/N910’

***Fig 45– The intricate mechanical mechanism 9/25/004 has not been identified***.

The exact use of this item is still to be identified. The intricate cogs and wheels along the centre line of the piece and the stainless steel rim suggests it is some kind of dial such as a speedometer or clock which was meant to be presentable to the viewer. The

presence of what appears to be capacitor plates and terminals for wiring suggest it was electrically powered. Other than that its purpose is remains a mystery.

## Locker Tags

Two brass tags were discovered in Area two that were of particular note. Each brass tag is 45 mm in diameter, 2mm thick and annotated with the initials ‘P.K.’ under which is stamped the numbers ‘283’ and ‘277’. The lettering appears to have been applied using the same stamps and the format and font are identical.

Above the initial is a small hole 5mm in diameter. The items resemble a locker tag perhaps for the swimming pool or golf club. The unsunken small hole suggests that the tag was to be nailed onto its location.

It is possible that the ‘P.K.’ refers to a person but no one with those initials has turned up in the research on the Adam Park tenants to date. Likewise the abbreviations may refer to a location or society.


***Fig 46 – Two round ID or Locker tags found at No.9. They have come from the same source as the lettering and design are the same.***

# Conclusion

The results of this survey should be considered in conjunction with those of Survey 15 at No.7 Adam Park. It was this previous survey that suggested there was more to find at No.9 Adam Park and sure enough beyond the boundary lay a similar collection of finds. The prospecting surveys also came up trumps with the discovery of another concentration of pertinent artefacts. We were fortunate to have a large team of volunteers who were then able to survey a substantial area of the garden around these points of interest and therefore giving us a better understanding of the context of the finds.

No.9 Adam Park's front garden bears very similar traits to the front of No.11 (Survey Report 12) in so much that the area is dominated by a tennis court platform and that the concentrations of ordnance were found down the adjacent banking amidst areas of foliage. It was also evident that the tennis courts platforms were scattered with a number of artefacts that could be associated with the war years. This contradicts the written accounts that suggest these tennis courts were covered in asphalt (Baynes 1984 p20). An asphalt covering would not facilitate the deposition of artefacts in this area. There were however the remains of the foundations for the stanchions that had once supported the fence that surrounded the court. Likewise the location, overlooking the Battalion HQ (Baynes 1984 p20) and near the wooden shed that was by then being used as the temporary RAP after the first at No.17 had burnt down (Baynes 1984 p21), was in line with the accounts[6].

There may not have been any conclusive evidence as to the use of the tennis court as a temporary prison compound but there was growing evidence to say that area was used as a supply dump during the fighting. Located in the centre of the estate and near the Battalion HQ, the garden would have been an ideal meeting place for wayward personnel to regroup and rearm. A number of diarists describe heading down towards the Battalion HQ and stopping off to replenish ammunition. Cpl Jack Cosford recalls:

*'We reached the battalion HQ safely, things were a little quieter here, a hill on each side protected it from most of the fighting. There we hurriedly loaded more bombs and ammunition…'* (Cosford 1999 p16).

This idea of the area being a supply dump is tentatively born out in the archaeological record. Fuse caps and grenade plugs possibly discarded during the arming process were found and suggest that the lawn was a good place to prepare munitions for combat. The unusually high amount and distribution of rounds still found in their chargers was notably different from the other sites, again suggesting the preparation of chargers as bullets were taken from the ammunition boxes. The diversity of .303 rounds was also noteworthy. Rounds with granular chargers were found for the first time. As these rounds were thought to be unreliable and were not meant to be issued then it is likely these batches were held over at the central supply, only to be used in an emergency.

[6] Michael Moore in his book 'Battalion at War' has drawn the tennis court on his sketch map on page 32 outside No. 5 and 6 Adam Park. His premise for this is not given.

It was safe to say that the area was very active during the fighting. So much so that it attracted a fair degree of shell fire as evident from the number of shell fragments found in the area.

The survey was also a chance to consolidate more recently trialled methodologies. It was the second time two metal detectors and two pinpointers had been employed and there was a regular turn out of eight volunteer students to ensure the maximum acreage could be covered in the few days on site. The only drawback being the effort required for the one experienced metal detectorist to keep ahead of the dig teams and the 'tagger and baggers'.

Secondly it was the second occasion that aerial photography was carried out on site. An AR drone was used to take pictures from and altitude 30 metres[7]. The results were excellent in an area which was relatively free of overhanging foliage. Pictures of the garden and the immediate neighbourhood helped to understand the context of the site and to fix the location of the surveys in the landscape.

***Fig 47 – An aerial drone photograph of Area 4 from a height of 30 metre. The author can be seen in the foreground piloting the drone from the IPad***

Individual items continue to astonish and baffle the team. Badges, buttons, buckles, coins and bullet collections have all been enhanced after this survey with intriguing new additions. In reviewing this document it was noted that many items remain to be researched. There seems to be more questions than answers. It is hoped time and resource will allow us to follow up on these items and track down their story

Once again an Adam Park survey has turned up trumps. The archaeological record continues to inspire and amaze.

[7] A full report of this survey is available in the project library.

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# Appendix 1 - TAPP - Finds Log – 7 Adam Park

| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 1 | 1 | 1 | Toothpaste Tube | 1.53m x 1.12m | |
| 2 | 1 | 2 | Foil | 1.80m x 0.07m | |
| 3 | 1 | 3 | Tin can | 1.93m x 1.16m | |
| 4 | 1 | 4 | Bottle Cap | 2.53m x 0.36m | |
| 5 | 1 | 5 | tent peg | 6.25m x 0.15m | |
| 6 | 1 | 6 | ring | 6.82m x 1.20m | nail |
| 7 | 1 | 7 | cartridge | 7.44m x 0.87m | |
| 8 | 1 | 8 | Bottle Cap | 8.00m x 0.30m | |
| 9 | 1 | 9 | small piece of metal | 8.70m x 0.18m | |
| 10 | 1 | 10 | triangular metal plate | 9.70m x 0.50m | |
| 11 | 1 | 11 | door furniture | 10.01m x 0.30m | |
| 12 | 1 | 12 | large metal piece | 10.37m x 0.43m | |
| 13 | 1 | 13 | button | 11.41m x 2.00m | |
| 14 | 1 | 14 | shell fragment | 13.34m x 1.33m | |
| 15 | 1 | 15 | long metal piece | 13.77m x 1.05m | |
| 16 | 1 | 16 | full round | 13.86m x 0.78m | 0.45 |
| 17 | 1 | 17 | hinge | 13.90m x 0.19m | |
| 18 | 1 | 18 | full round | 14.05m x 1.62m | |
| 19 | 1 | 19 | full round | 14.50m x 0.85m | |
| 20 | 1 | 20 | long metal piece | 14.60m x 0.16m | |
| 21 | 1 | 21 | bullet | 14.62m x 1.55m | Japanese |
| 22 | 2 | 1 | Tin can | 2.02m x 1.92m | |
| 23 | 2 | 2 | Toothpaste Tube | 2.60m x 1.90m | |
| 24 | 2 | 3 | foil | 3.88m x 1.07m | |
| 25 | 2 | 4 | screw | 4.00m x 1.99m | |
| 26 | 2 | 5 | Tin can | 6.63m x 0.11m | |
| 27 | 2 | 6 | metal strip | 8.54m x 1.86m | |
| 28 | 2 | 7 | Bottle Cap | 9.58m x 1.57m | |
| 29 | 2 | 8 | button | 10.98m x 0.17m | |
| 30 | 2 | 9 | long metal piece | 12.30m x 1.35m | |
| 31 | 2 | 10 | full round | 12.65m x 1.69m | |
| 32 | 2 | 11 | full round | 13.22m x 1.95m | |
| 33 | 2 | 12 | full round | 13.70m x 1.98m | |
| 34 | 3 | 1 | large metal piece | 1.86m x 1.05m | Leaf shaped |
| 35 | 3 | 2 | small metal strip | 3.31m x 1.66m | |
| 36 | 3 | 3 | small piece of metal | 4.53m x 0.84m | |
| 38 | 3 | 4 | large spring | 6.16m x 1.39m | |
| 39 | 3 | 5 | tent peg | 7.80m x 1.38m | |
| 40 | 3 | 6 | door furniture | 8.94m x 0.86m | |
| 41 | 3 | 7 | leather | 19.20m x 1.79m | |

| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 42 | 3 | 8 | button | 21.74m x 0.64m | |
| 43 | 4 | 1 | flat metal piece | 3.63m x 1.35m | |
| 44 | 4 | 2 | long metal piece | 4.18m x 0.34m | |
| 45 | 4 | 3 | screw head | 5.80m x 1.40m | |
| 46 | 4 | 4 | tent peg | 6.70m x 0.84m | broken |
| 47 | 4 | 5 | tent peg | 15.50m x 0.65m | |
| 48 | 5 | 1 | triangular metal plate | 0.80m x 1.61m | |
| 49 | 5 | 2 | door hook | 0.95m x 1.70m | |
| 50 | 5 | 3 | Toothpaste Tube | 1.40m x 0.48m | |
| 51 | 5 | 4 | small metal strip | 6.93m x 0.37m | |
| 52 | 5 | 5 | stanley knife cover | 7.74m x 1.31m | |
| 53 | 5 | 6 | cylindrical metal rod | 7.80m x 0.72m | |
| 54 | 5 | 7 | semi circle shaped fragment | 7.95m x 1.16m | |
| 55 | 5 | 8 | stanley knife cover | 8.34m x 1.25m | |
| 56 | 5 | 9 | metal sheet unevenly shaped | 8.38m x 0.67m | |
| 57 | 5 | 10 | metal brackey | 8.63m x 1.04m | triangular piece |
| 58 | 5 | 11 | flimsy crushed metal scrap | 9.84m x 1.52m | |
| 59 | 5 | 12 | washer | 10.60m x 0.77m | |
| 60 | 5 | 13 | small metal scrap | 10.86m x 1.85m | |
| 61 | 5 | 14 | large circular metal piece | 11.00m x 0.36m | |
| 62 | 5 | 15 | bent metal piece | 11.15m x 0.96m | |
| 63 | 5 | 16 | flat metal piece | 11.49m x 1.64m | |
| 64 | 5 | 17 | thick squashed metal piece | 11.88m x 1.14m | |
| 65 | 5 | 18 | Bottle Cap | 12.93m x 1.87m | |
| 66 | 5 | 19 | protruding metal button | 13.18m x 1.18m | |
| 67 | 5 | 20 | protruding metal button | 13.40m x 0.37m | |
| 68 | 5 | 21 | small metal piece | 13.65m x 1.31m | |
| 69 | 5 | 22 | thin metal ring | 14.05m x 1.16m | |
| 70 | 5 | 23 | metal hook | 14.17m x 0.83m | |
| 71 | 5 | 24 | shell fragment | 16.05m x 1.72m | |
| 72 | 5 | 25 | webbing clip | 16.88m x 0.78m | broken |
| 73 | 5 | 26 | bracket | 20.33m x 1.23m | |
| 74 | 5 | 27 | twisted metal sheet | 20.55m x 1.31m | |
| 75 | 5 | 28 | Toothpaste Tube | 22.35m x 1.11m | |
| 76 | 5 | 29 | wire | 23.26m x 1.67m | |
| 77 | 5 | 30 | buckle | 24.99m x 1.16m | |

| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 78 | 5 | 31 | twisted blue metal fragment | 25.68m x 1.08m | |
| 79 | 5 | 32 | circular metal fragment | 30.17m x 1.81m | |
| 80 | 5 | 33 | large metal slab with thick base | 32.10m x 1.61m | |
| 81 | 5 | 34 | rectangular metal scrap | (-0.88m) x 0.44m | |
| 82 | 6 | 1 | large bolt | 0.65m x 0.88m | |
| 83 | 6 | 2 | metal biit | 8.23m x 0.75m | |
| 84 | 6 | 3 | coin | 13.60m x 0.68m | |
| 85 | 6 | 4 | coin | 15.55m x 0.96m | |
| 86 | 6 | 5 | shell fragment | 15.78m x 0.38m | |
| 87 | 6 | 6 | Bottle Cap | 16.43m x 1.22m | |
| 88 | 6 | 7 | Bottle Cap | 16.78m x 1.52m | |
| 89 | 6 | 8 | heavy metal brass washer | 17.54m x 1.23m | notable |
| 90 | 6 | 9 | stud | 19.55m x 1.69m | capsule an orange pellets |
| 91 | 6 | 10 | large rod and plate | 22.60m x 0.13m | |
| 92 | 6 | 11 | foil | 23.56m x 1.09m | |
| 93 | 6 | 12 | piece of iron | 26.36m x 0.76m | |
| 94 | 6 | 13 | spark plug | 30.99 x 0.57m | |
| 95 | 7 | 1 | shell fragment | 0.90m x 0.59m | |
| 96 | 7 | 2 | rivot | 3.95m x 1.49m | |
| 97 | 7 | 3 | full round | 5.96m x 0.93m | |
| 98 | 7 | 4 | shell fragment | 8.71m x 1.68m | |
| 99 | 7 | 5 | small piece of lead | 9.35m x 1.62m | |
| 100 | 7 | 6 | Locket tag | 14.42m x 1.27m | |
| 101 | 7 | 7 | tin lid | 15.00m x 1.66m | |
| 102 | 7 | 8 | shell fragment | 16.06m x 1.45m | |
| 103 | 7 | 9 | nail | 16.63m x 0.09m | large |
| 104 | 7 | 10 | two bottle caps | 16.86m x 0.70m | |
| 105 | 7 | 11 | metal dish | 17.19m x 0.32m | meltonian' 'london' 'use this tray as directed on the bottle' |
| 106 | 7 | 12 | Bottle Cap | 17.24m x 1.41m | glass |
| 107 | 7 | 13 | Bottle Cap | 17.24m x 1.86m | |
| 108 | 7 | 14 | small round canister | 17.76m x 0.25m | |
| 109 | 7 | 15 | small flake of metal | 18.26m x 0.41m | |
| 110 | 7 | 16 | Bottle Cap | 19.35m x 1.64m | |
| 111 | 7 | 17 | heavy duty buckle | 19.42m x 0.95m | notable |
| 112 | 7 | 18 | Toothpaste Tube | 19.55m x 0.69m | |
| 113 | 7 | 19 | measuring spoon | 19.59m x 1.48m | |

| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 114 | 7 | 20 | garden shears | 19.98m x 0.62m | |
| 115 | 7 | 21 | fuse cap | 20.08m x 1.10m | Remove Before Firing' No 152' 'PLC' |
| 116 | 7 | 22 | bullet | 20.56m x 0.82m | |
| 117 | 7 | 22a | bullet | 20.56m x 0.82m | |
| 118 | 7 | 23 | webbing buckle | 24.06m x 0.08m | |
| 119 | 7 | 24 | eyelet | 24.70m x 0.30m | |
| 120 | 7 | 25 | metal cables | 25.64m x 0.05m | |
| 121 | 8 | 1 | hinge | 10.60m x 1.00m | |
| 122 | 8 | 2 | large hollow circle | 15.77m x 1.70m | |
| 123 | 8 | 3 | Bottle Cap | 16.18m x 0.79m | |
| 124 | 8 | 4 | nail | 16.93m x 0.77m | |
| 125 | 8 | 5 | shell fragment | 17.61m x 1.38m | |
| 126 | 9 | 1 | coin | 4.22m x 1.48m | |
| 127 | 9 | 2 | foil | 8.45m x 1.05m | |
| 128 | 9 | 3 | Large Ferrous piece | 14.28m x 0.82m | curved |
| 129 | 11 | 1 | Large Ferrous piece | 0.52m x 1.22m | |
| 130 | 11 | 2 | Large screw | 7.54m x 0.80m | |
| 131 | 12 | 1 | small screw | 2.17m x 1.50m | |
| 132 | 12 | 2 | wire and nail | 2.40m x 1.72m | |
| 133 | 13 | 1 | small piece of metal | minus 0.03m x -0.17m | |
| 134 | 13 | 2 | Large Ferrous piece | minus 0.20m x -1.40m | |
| 135 | 13 | 3 | large metal slab | 1.57m x 0.10m | metal wires and foil |
| 136 | 13 | 4 | Tin circular container | 1.90m x 0.28m | length of wire |
| 137 | 13 | 5 | Battery terminal | 2.01m x 0.75m | |
| 138 | 13 | 6 | small ferrous rectangular piece | 2.77m x 0.10m | |
| 139 | 14 | 1 | fuse bakerlite fitting | 0.45m x 0.74m | |
| 140 | 14 | 2 | lock | 2.77m x 0.34m | |
| 141 | 14 | 3 | coin | 4.76m x 0.98m | |
| 142 | 15 | 1 | twisted tin foil | 0.70m x 1.62m | |
| 143 | 15 | 2 | webbing buckle | 3.94m x 1.06m | |
| 144 | 15 | 3 | twisted piece of lead | 5.57m x 0.13m | |
| 145 | 15 | 4 | metal fitting | 8.88m x 1.24m | |
| 146 | 16 | 1 | steel pipe end piece | 3.40m x 0.65m | |
| 147 | 16 | 2 | strip of tin | 6.68m x 0.53m | |
| 148 | 17 | 1 | light bulb stem | 1.09m x 0.07m | |
| 149 | 17 | 2 | foil | 1.83m x 0.58m | |
| 150 | 17 | 3 | Bottle Cap | 2.77m x 0.21m | |

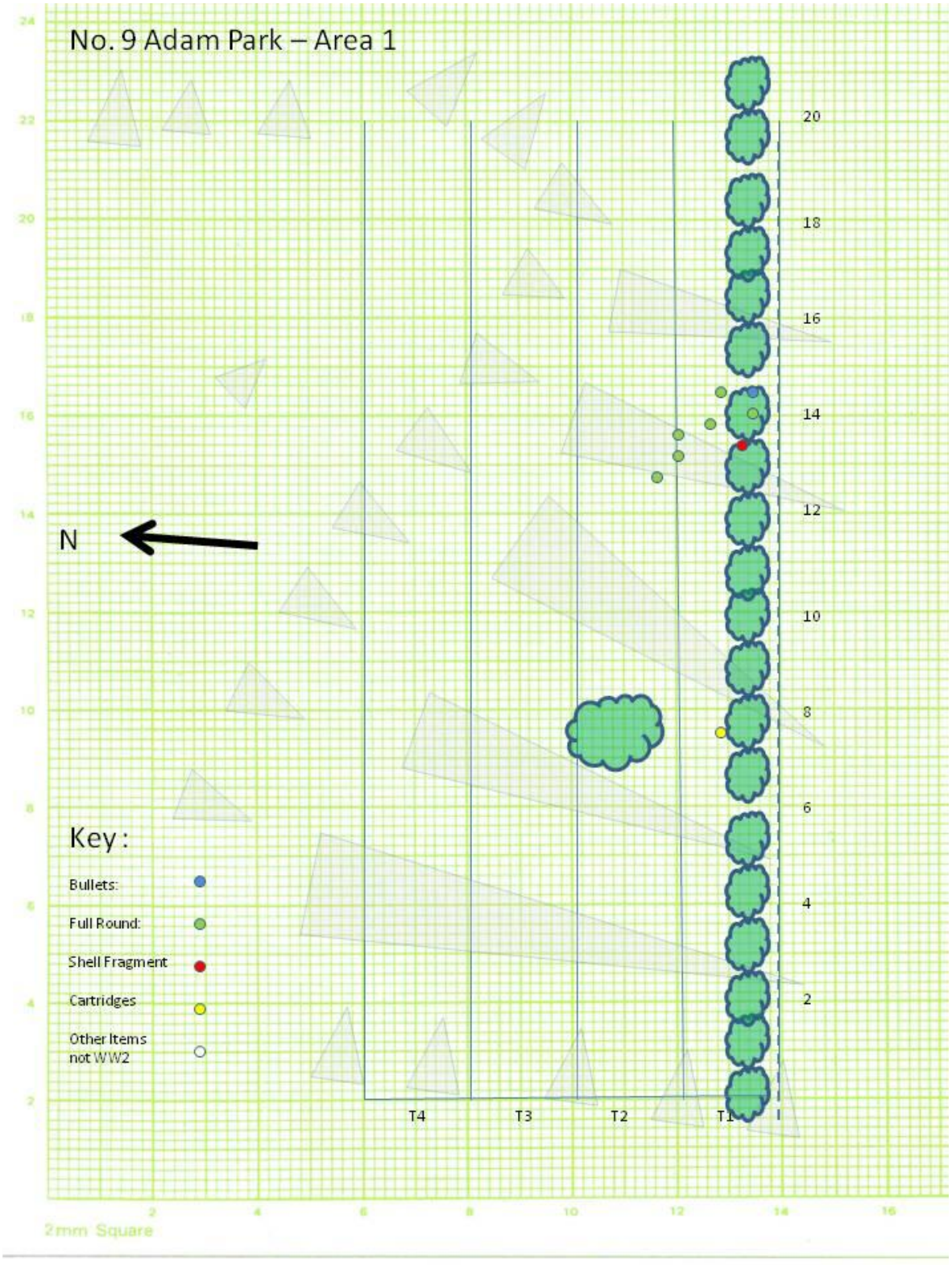
| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 151 | 18 | 1 | small piece of lead | 1.65m x 0.66m | |
| 152 | 18 | 2 | screw | 2.02m x 2.53m | |
| 153 | 18 | 3 | lead ball | 2.78m x 1.24m | |
| 154 | 18 | 4 | screw | 3.54m x 0.07m | |
| 155 | 18 | 5 | small piece of metal | 4.12m x 1.36m | |
| 156 | 18 | 6 | small metal piece | 6.95m x 2.12m | possible |
| 157 | 18 | 7 | Circular Pot lid | 7.20m x 3.15m | |
| 158 | 18 | 8 | ring pull | 7.85m x 0.72m | |
| 159 | 18 | 9 | full round | 9.42m x 0.68m | |
| 160 | 18 | 10 | full round | 9.63m x 0.45m | |
| 161 | 18 | 11 | full round | 9.92m x 0.74m | |
| 162 | 18 | 12 | full round | 10.33m x 0.62m | |
| 163 | 18 | 13a | charger | 10.71m x 0.43m | 1 x round |
| 164 | 18 | 13b | charger | 10.71m x 0.43m | 2 rounds |
| 165 | 18 | 13c | full round | 10.71m x 0.43m | |
| 166 | 18 | 13d | bullet | 10.71m x 0.43m | |
| 167 | 18 | 14 | buckle | 11.60m x 1.23m | broken non military |
| 168 | 18 | 15 | bullet | 11.84m x 1.16m | |
| 169 | 18 | 16 | bullet | 11.84m x 1.40m | |
| 170 | 18 | 17 | full round | 12.84m x 0.56m | |
| 171 | 19 | 1 | Small soft metal pieces | 0.56m x 1.23m | |
| 172 | 19 | 2 | coin | 3.30m x 1.48m | 1 cent 1940 |
| 173 | 19 | 3 | bullet | 3.68m x 1.80m | |
| 174 | 19 | 4 | Spoon | 6.03m x 0.41m | Silver Stork Design |
| 175 | 19 | 5 | full round | 8.27m x 0.93m | |
| 176 | 19 | 6 | full round | 8.91m x 0.25m | black powder |
| 177 | 19 | 7a | full round | 9.13m x 0.36m | |
| 178 | 19 | 7b | full round | 9.13m x 0.36m | |
| 179 | 19 | 8 | full round | 9.72m x 0.08m | |
| 180 | 19 | 9 | full round | 9.90m x 0.30m | |
| 181 | 19 | 10 | bullet | 10.64m x 0.37m | |
| 182 | 20 | 1 | lead ball | 1.34m x 1.50m | |
| 183 | 20 | 2 | charger | 1.76m x 1.44m | 3 full rounds |
| 184 | 20 | 3 | lead ball | 3.75m x 0.33m | |
| 185 | 20 | 4 | coin | 3.90m x 1.89m | broken 5 cents 1943 |
| 186 | 20 | 5 | lead moulding cast | 5.07m x 1.62m | |
| 187 | 20 | 6 | full round | 6.46m x 1.22m | |
| 188 | 20 | 7 | full round | 6.88m x 2.00m | |
| 189 | 20 | 8 | small piece of metal | 6.93m x 0.01m | |
| 190 | 20 | 9 | bullet | 8.21m x 0.01m | |
| 191 | 20 | 10 | webbing buckle | 10.50m x 0.16m | |
| 192 | 20 | 11 | full round | 10.64m x 0.14m | |

| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 193 | 20 | 12 | piece of wire | 12.21m x 0.65m | |
| 194 | 20 | 13 | bullet | 12.63m x 1.33m | unfired plus lump of iron |
| 195 | 20 | 14 | rectangular block of carbon | 13.75m x 0.66m | |
| 196 | 21 | 1 | oval disc | 1.04m x 1.02m | |
| 197 | 21 | 2 | bullet | 3.72m x 1.42m | |
| 198 | 21 | 3 | full round | 5.84m x 0.67m | |
| 199 | 21 | 4 | small piece of wire | 8.62m x 0.65m | |
| 200 | 21 | 5 | washer with filter mesh | 9.80m x 1.28m | |
| 201 | 21 | 6 | small pentagonal brass cap | 13.57m x 0.28m | |
| 202 | 22 | 1 | Mills grenade base plate | 2.12m x 0.68m | |
| 203 | 22 | 2 | large drainage plate | 8.57m x 0.91m | found in slight depression |
| 204 | 22 | 3 | nail | 11.30m x 0.26m | |
| 205 | 22 | 4 | charger | 15.72m x 1.57m | with four rounds |
| 206 | 23 | 1 | Cigarette packet | 1.67m x 0.86m | |
| 207 | 23 | 2 | small length of soft metal piping | 2.30m x 1.20m | |
| 208 | 23 | 3 | shell fragment | 5.84m x 0.15m | |
| 209 | 23 | 4 | nail | 9.54m x 1.12m | |
| 210 | 23 | 5 | bullet | 9.54m x 1.90m | |
| 211 | 23 | 6 | buckle | 11.49m x 0.77m | D shaped |
| 212 | 23 | 7 | screw | 14.42m x 0.67m | |
| 213 | 23 | 8 | nail | 17.85m x 0.24m | |
| 214 | 24 | 1 | switch | 4.26m x 1.10m | |
| 215 | 24 | 2 | stud | 6.02m x 0.89m | |
| 216 | 24 | 3 | tab | 7.30m x 0.39m | |
| 217 | 24 | 4 | water bottle stopper | 7.60m x 1.87m | |
| 218 | 24 | 5 | small metal rod | 8.32m x 2.00m | galvanised and machined - optical instruments? |
| 219 | 24 | 6 | head of a bolt | 8.90m x 0.16m | |
| 220 | 24 | 7 | key | 8.90m x 2.00m | |
| 221 | 24 | 8 | fuse cap | 9.41m x 1.26m | molten and deformed |
| 222 | 24 | 9 | small length of chain | 10.35m x 0.65m | possibly off water bottle stopper |
| 223 | 24 | 10 | shell fragment | 11.93m x 0.95m | |
| 224 | 24 | 11 | cartridge | 12.18m x 0.51m | |
| 225 | 24 | 12 | piece of ferrous | 12.61m x 0.17m | |
| 226 | 24 | 13 | piece of ferrous | 12.61m x 1.67m | |
| 227 | 24 | 14 | lengths of wire | 15.72m x 1.00m | |

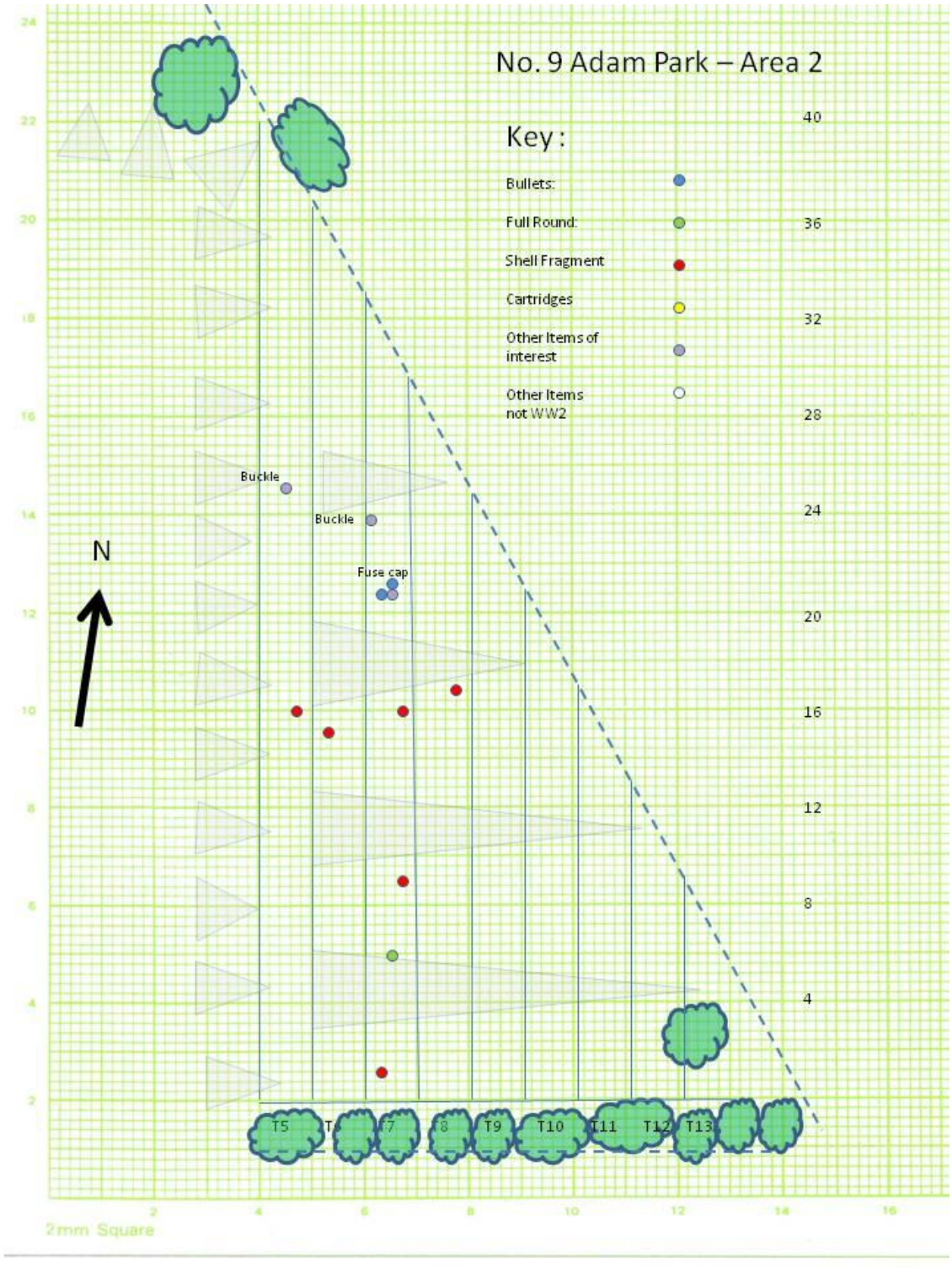
| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 228 | 24 | 15 | small piece of ferrous | 17.78m x 1.05m | |
| 229 | 24 | 16 | nail | 19.23m x 0.70m | |
| 230 | 24 | 17 | shrapnel | 20.88m x 0.77m | |
| 231 | 24 | 18 | shell fragment | 21.62m x 0.99m | |
| 232 | 25 | 1 | Toothpaste Tube | 0.01m x 0.28m | |
| 234 | 25 | 2 | foil | 0.30m x 1.10m | |
| 235 | 25 | 3 | Large piece of cast ferrous | 1.25m x 0.14m | |
| 236 | 25 | 4 | clockwork innards | 1.25m x 0.82m | C28 / N910 |
| 237 | 25 | 5 | Toothpaste Tube | 1.67m x 0.28m | |
| 238 | 25 | 6 | Toothpaste Tube | 2.15m x 1.66m | |
| 239 | 25 | 7 | ferrous sheet with a bras stud attached | 2.25m x 0.55m | |
| 240 | 25 | 8 | Toothpaste Tube | 3.06m x 1.46m | |
| 241 | 25 | 9 | Toothpaste Tube | 3.74m x 0.20m | |
| 242 | 25 | 10 | Toothpaste Tube | 3.74m x 2.00m | |
| 243 | 25 | 11 | pieces of metal can | 4.10m x 1.95m | green in colour |
| 244 | 25 | 12 | big metal plate | 4.10m x 2.18m | left in situ outside transect |
| 245 | 25 | 13 | Toothpaste Tube | 4.33m x 0.30m | |
| 246 | 25 | 14 | webbing buckle | 6.02m x 0.01m | |
| 247 | 25 | 15 | Bottle Cap | 6.20m x 0.30m | |
| 248 | 25 | 16 | full round | 8.00m x 0.63m | |
| 249 | 25 | 17 | small shard of metal | 8.36m x 0.92m | |
| 250 | 25 | 18 | nail | 11.88m x 1.40m | |
| 251 | 25 | 19 | small metal piece | 15.85m x 1.25m | |
| 252 | 25 | 20 | Large Ferrous piece | 16.25m x 2.00m | |
| 253 | 25 | 21 | shell fragment | 17.00m x 1.20m | notable |
| 254 | 25 | 22 | two circular metal pieces | 18.88m x 1.50m | |
| 255 | 25 | 23 | shell fragment | 21.10m x 1.33m | ferrous |
| 256 | 26 | 1 | metal nail | 2.15m x 1.23m | |
| 257 | 26 | 2 | bottle tube | 3.65m x 1.75m | |
| 258 | 26 | 3 | metal plate | 6.76m x 1.28m | blade like |
| 259 | 26 | 4 | buckle | 6.76m x 0.25m | non military |
| 260 | 27 | 1 | nail | 0.86m x 0.81m | |
| 261 | 27 | 2 | full round | 5.10m x 1.88m | .45 acp |
| 262 | 27 | 3 | broken cylindrical piec of metal | 8.25m x 1.05m | 20mm dia |
| 263 | 28 | 1 | badge | 0.00m x 1.30m | |
| 264 | 28 | 2 | thick metal ring | 3.20m x 0.57m | 35mm brass ring inner thread with clips |
| 265 | 28 | 3 | brass string pull | 4.20m x 0.42m | off a cord to a light stand? |

| Line No. | Transect | Item No. | Description | Location | Notes |
|---|---|---|---|---|---|
| 266 | 28 | 4 | terminal | 4.27m x 0.76m | 500 ohms to 300 ohms' |
| 267 | 28 | 5 | coin | 9.50m x 1.66m | |
| 268 | | | coin | outwith transects | 1945 1 cent coin |
| 269 | | | Bottle Cap | outwith transects | |

# Appendix 2 – Sketch Map Area 1



# Appendix 3 – Sketch Map Area 2



# Appendix 4 – Sketch Map Area 3