Mud, blood, and green fields beyond: Exercise Joan of Arc, Bullecourt 2018

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Archaeological Excavation Report

For DRAC Hauts-de-France

Breaking Ground Heritage

Cranfield University

wessex archaeology

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SUMMARY

In 2017 an application was made to the Directions régionales des affaires culturelles (DRAC) Hauts de France for permission to carry out a field excavation at Bullecourt to examine the possible final locations of nine Mark II tanks destroyed on the morning of 11 April 1917 as part of the First Battle of Bullecourt. This work, following geophysical and walkover survey, comprised one 11.6x23m trench to try to discover further parts of tank 796 (following discoveries in 2017) and to contextualise both this item and also the largely complete remains of two German soldiers were unearthed. This report presents the findings of the team.

Location plan Fig. 1

Fig 1 – Trench 3 sondage locations 2018

RESEARCH OBJECTIVES

The main objective of the project was to examine and search the battlefield fought by the Tank Corps and the Australian infantry on April 11, 1917. The excavations concentrated on German defensive characteristics (typically trenches) which formed the objectives of the Allied attack and specifically the destruction point of the Mark II tanks used in the attack. Research questions included:

- Are there still elements of Mark II tank (796) in the zone?
- Did material that specifically reflects the activity (combat) of the first Battle of Bullecourt survive?
- What is the state of conservation of the battlefield?
- To what extent do trenches and other battlefield features respond to geophysical prospecting, in particular magnetometry?
- Can the project provide the first accurate map of the final positions of the Mark II tanks in this battle with the methods described above? How accurate was the historian Charles Bean with his cartography?
- Can some of the recovered items be scanned with those in various museums to produce a plan?
- Can artifacts present in museums such as Bullecourt and be cataloged with the Australian War Memorial (AWM) in Canberra?
- Can we locate the junction of the two Allied trenches (Tank Avenue and Horseshoe Trench), how well do they survive, and are there any traces of the tank that appears in German postcards at this location?

SCOPE

The aspiration of the team is that this project will last for 4 to 5 years and that the first will consist of a week of survey in the spring and fieldwork on site over a period of up to two weeks in the late summer, with an on-site team of up to 20 archaeologists and surveyors. It was hoped that during this year it will be possible to carry out a series of areas of geophysical survey in arable fields around Bullecourt, and then on the basis of the results of these surveys, to mechanically strip two small areas for archaeological excavation. Small scale fieldwork would be conducted on the areas where two of the nine tanks were destroyed in April 1917 in an attempt to fulfil the research questions detailed within this report. It is acknowledged that many elements of the tanks have already been retrieved for le Musée Jean et Denise Letaille and also for the Australian War Memorial in Canberra amongst other collections. This work was to build on the archaeological findings of 2017.

INTRODUCTION

By the spring of 1917, the German field army had retreated eastwards to a stronger defensive position which became known by the Allies as the ‘Hindenburg Line’. The First battle of Bullecourt in April of that year as part of the Arras offensive marked just one attempt to breach this network of trenches and defensive obstacles. The focus of our project was the fate of the tanks engaged in this operation.

HISTORICAL BACKGROUND

In the aftermath of the Somme campaign a number of new tactical ideas were developed. The majority of the debates related to the coordination of artillery barrages and infantry attacks. After the first use of tanks in September 1916 their tactics were also added to the debate. The attack at Bullecourt was potentially revolutionary as it attempted use tanks to crush the enemy's defensive wire rather than by artillery bombardment.

Sixty Mk I and Mk II tanks were allocated for the opening attack of the Arras offensive on 9 Apr 17 (the battles of Arras were the first time that Mk II tanks were used in action). Of these 60, 8 were allocated to the 1st Army, 40 to 3rd Army, and 12 to 5th Army. The 62nd (West Riding) Division was ordered to attack the western side of Bullecourt. The 4th Australian Division, part of 1 Anzac Corps, was tasked with attacking the village's eastern side. The 12 tanks would support both attacks.

The Commander of 5th Army, General Gough, was taken by the idea put forward by Major Watson, one of the tank Company Commanders. Watson believed that a large concentration of tanks could move up to the German positions at Bullecourt with infantry following, and that the general confusion of battle would mean that the tanks could advance without an artillery barrage. When they reached the German lines the tanks could cross and destroy the barbed wire with the infantry following behind. Gough was taken by the idea but senior Australian commanders were not. Their two biggest concerns were the sheer lack of time they had to plan the attack and the fact that they did not believe that tanks could move en masse to the Hindenburg Line without being noticed by the Germans.

On April 9th the 1st and 3rd Armies attacked the Germans at Arras and Vimy. The initial attacks were successful and it was partly as a result of this success that Gough brought forward by 24 hours the date for the attack on Bullecourt to April 10th. The plan was for 12 tanks to advance to the east of Bullecourt with men from the 4th Australian Division following on behind. Once the tanks had breached the Hindenburg Line the Australians would move into the village and take it while the 62nd Division attacked the village from the west.

The attack commenced at 0430 on 10 April despite last minute attempts by the Australians to postpone it. They feared that the plan was too hastily put together and that too many assumptions about the German positions in the Hindenburg Line had been made. The Australians fears proved correct. The tanks got lost advancing to the front which delayed the attack by 30 minutes. At 0500, with the tanks still not in the right place, the attack was postponed for 24 hours. Gough ordered for the same plan to be executed on 11 Apr. Once again some of the tanks were late and fewer than 12 arrived because of mechanical faults. Further, their approach was detected by the Germans. The attack started 15 minutes late and the Australians attacked with just 3 tanks in support.

The attack cost the Australians 3000 men including 1,142 captured. Of the tanks that took part, only one reached Bullecourt and out of a total of 103 men in the tank crews, 52 were killed or wounded.

Bullecourt was a very complex and controversial battle which also included an often forgotten and costly tank action in support of 62nd Division which resulted in many casualties and decorations for the tank crews. The issue of artillery support is a complex one well covered in Falls and Bean. Artillery should have been able to cut the wire since the 106 fuze, a then new impact fuze, had been used with some success to cut the wire prior to the 9 April attack at Arras. A key problem was

that unlike the Arras attack the Bullecourt attack support had to be brought up through the countryside devastated by the Germans during their withdrawal. As a result the guns probably could not provide the best possible support hence the need for tanks. A well implemented and thought out artillery barrage could enable infantry to penetrate German defences as demonstrated by 4th and 9th Divisions' attack on 9 April. In this case the artillery plan was conceived by Tudor, a gunner who also came up with the artillery plan for Cambrai which included tanks to crush the wire and eliminate the need for a preliminary barrage and registration.

After the battle it was accepted that Gough's plan, to advance infantry behind tanks through a narrow sector and then fan out east and west along the Hindenburg Line, was sound on paper but that the lack of preparation was a fatal weakness. Although the battle of Bullecourt was a failure from the point of view of tanks, it was also one of those turning points that often prove decisive in the development of new weapons/capabilities. The plan was hastily thought up, poorly developed, and executed in an uncoordinated way. The use of too few tanks in such an unprepared way to some extent vindicated the cries from the Tank Corps (as it would become that summer) that tanks would be best used en masse, in echelon, and with adequate reserves, as laid down in Tank Training Note No 16. After Bullecourt they had the evidence to support their theory.

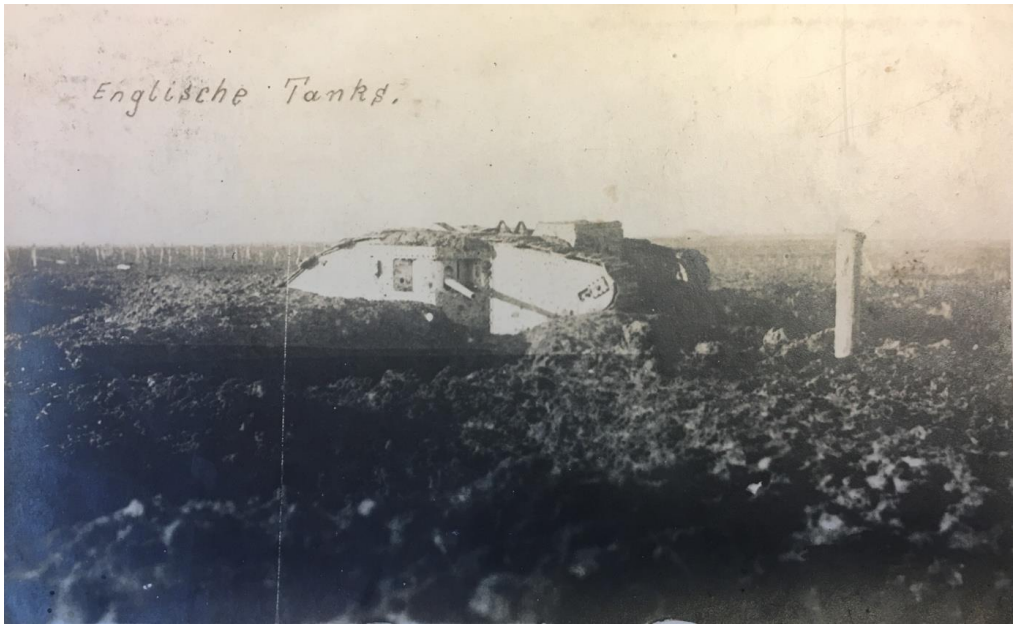
Lt-Colonel Gareth Davies, also of the Royal Tank Regiment and member of the research team concurs with these thoughts: 'The failure of the tanks at Bullecourt was critical to the development of the tank tactics leading to the victories of Cambrai, Amiens and the subsequent battles'.

Philippe Gorczynski, discoverer of the 'Deborah' and one of the foremost experts on the tanks of the Great War has already assisted our work and felt that "the weakness of the Heavy artillery was the consequence of transportation problems. At Bullecourt, the artillery has done a terrific job and there was an important artillery barrage. The problem was that shells were unable to achieve the breaching of the barbed wire belts. The importance of Bullecourt is also how the tanks were unjustified blamed and how their reputation was altered. The Australians gave the responsibility of their failure and their losses to the use of tanks as they have put too much hope in the new war weapon. Tanks & Anzac troops had to progress in 1500 yards open ground and by day light before reaching enemy with no surprise for the enemy. It appears also that there were some serious problems of coordination".

All these historical debates illustrate the importance of Bullecourt and how there is an important academic study to be undertaken. This combined with the relatively unspoilt and contained area of the battlefield, with a small number of tanks to be examined and a series of museums which have a major interest in the Mark II tank make Bullecourt the perfect site for a very important, multi-national and scientific study of a set-piece battle of the Great War.

Major Watson, a tank officer who wrote about the actions of the tanks involved at the battle of Bullecourt wrote the following about the tank that this project was endeavouring to locate.

Tank 796 (commanded by 2nd Lt Skinner):



A German photograph of Tank 796 in Situ after the battle (Image Author Collection)

"Skinner, after his tank had been towed over the railway embankment by Morris, made straight for Bullecourt, thinking that as the battle had now been in progress for more than two hours the Australians must have fought their way down the trenches into the village. Immediately he entered the village machine-guns played upon his tank, and several of his crew were slightly wounded by the little flakes of metal that fly about inside a Mk I. tank when it is subjected to really concentrated machine-gun fire. No Australians could be seen. Suddenly he came right to the edge of an enormous crater, and as suddenly stopped. He tried to reverse, but he could not change gear. The tank was absolutely motionless. He held out for some time, and then the Germans brought up a gun and began to shell the tank. Against field-guns he was defenceless so long as his tank could not move. His ammunition was nearly exhausted. There were no signs of the Australians or of British troops. He decided quite properly to withdraw. With great skill he evacuated his crew, taking his guns with him and the little ammunition that remained. Slowly and carefully they worked their way back, and reached the railway embankment without further casualty" (Ibid, 59).

Our excavation trenches were located over the final noted points of this tank - Trench 3.

LOCATION AND TOPOGRAPHY

The site is located within the Commune of Bullecourt, a small town to the south of Arras in the Hauts-de-France Departement of Northern France. The excavation trenches are located to the south east of the village, north of the railway embankment but south of the sunken lane which was present in 1917. The excavation trenches fall within cadastral plan parcel numbers 58 and at the time of this report were in the ownership of Mnr Delambre.

Trench 3 lies on higher ground at the edge of the village – some c 94m above sea level within a field of permanent pasture. The local geology consists of clay 'Liman' overlying chalk, although only clay was encountered in the course of the excavations of 2018, with no deep features being excavated.

Trench	Tank	Commune	Groupe	Parcelle	Grille de Réf (Centre)	Propriétaire
3	796	Bullecourt	AB	58	31N 481840 5539980	Mnr Thierry Delambre, 13 Rue de Fontaine, 62128 CHERISY

AIMS AND OBJECTIVES

The main objectives for the excavations of June 2018 were to place a trench over the area where the team believed the best chances for locating evidence for the fate of the tank 2nd Lt Skinner (796), and also to see if we would locate the junction of 'Tank Avenue' and 'Horseshoe Trench' with the associated destroyed 'Female' tank adjacent to this location, tank 593.

Tank 593 – 2nd Lt Morris – by Tank Avenue and Horseshoe Trench

METHODOLOGY

Prior to any excavation work, and as part of the application sent to DRAC for the permission to dig, the project undertook desktop assessment of the area and subsequent non-intrusive survey work (Masters, 2017 unpublished). This work consisted initially of a cartographic study not only of published maps (Bean 1941, Kendall 2010) but also examination of maps held by the Imperial War Museum (London) and the Australian War Memorial (Canberra). In addition to this assessment,

aerial photographic work was undertaken by Dr Birger Stichelbaut of the University of Ghent, by Nick Yeomans and by the author in order to compare the imagery of 1917 (and later) with written records and accounts. Diaries and contemporary postcards showing the wreck of tank 796 and the junction of 'Tank Avenue' and 'Horseshoe Trench' were also scrutinised.

The results of the desktop survey facilitated the subsequent remote sensing and non-intrusive fieldwork accomplished in the spring of 2017 with the permission of landowners and DRAC. Selected areas were surveyed - with a series of 30mx30m grid squares over which fluxgate gradiometry (magnetometer) was be undertaken. This data was correlated in order to produce the excavation strategy proposal to DRAC, with two 30x30m excavation squares proposed.

After having been surveyed, only one trench was opened by the team in June 2018 because the proposed location with Horseshoe Trench and Tank Avenue was still under crop. The decision was thus taken by the Director to keep the entire excavation team in one location and to concentrate on tank 796 with an aspiration to examine the other location in 2019. Trench 3 was thus stripped by a mechanical excavator (using a toothless bucket) to the horizon of the subsoil with subsequent trowel cleaning of the exposed surface. All subsequent work was undertaken by hand.

The excavation trench after removal of topsoil. Note the sondages cut across various shell craters.

The trench was planned and recorded in accordance with normal UK practices and as per the permission from DRAC, including the allocation of unique single context numbers to deposits and cuts. Artefacts were catalogued with their contextual associations, and photographed where deemed to be of interest. All artefacts were retained in France.

As in 2017, human remains were uncovered in Trench 3 and this was reported immediately both to the local Mayoress and also to the French police (who contacted the commonwealth War Graves Commission - CWGC). Work stopped until the latter gave their permission to continue – as per French legal procedures. The human remains were planned at 1:10 and their artefactual association documented. They were then photographed *in situ*. The remains were removed and subsequently collected by the CWGC. The CWGC retained possession of the Allied boot which still contained human foot bones whilst the remains of the German soldier were delivered to the French authorities and ultimately the German War Graves authority; the VDK. These remains can now undergo full pathological assessment prior to their re-interment in a German war cemetery. Initial inspection of these remains by the osteoarchaeologist in the archaeology team indicated that the soldier was probably in his forties. A 3-D scan of the soldier's skull was accomplished leading to a facial reconstruction of the individual by Liverpool John Moores University (FACELAB).

All work was supervised by professionally qualified Explosives Ordnance Disposal (EOD) staff that both scanned excavation areas during fieldwork and also removed any potentially dangerous items. The EOD staff, led by Mnr David Moutter as per the application made in 2016, reported all explosive material to the French Demineurs who then collected artefacts for disposal. The spoilheaps were also scanned by metal detector (under DRAC License (2018-09-02) 30 May 2018 issued by Mnr Philippe Hanois) to maximise artefact recovery from topsoil stripped from site by the mechanical excavator.

The site was visited by Drs Alain Jacques, Yves Defsosses and Luc Vallin and we were able to demonstrate adherence to the permission afforded by DRAC. This work was under the Autorisation de fouille programmée Arrêté number 2018-09. Permission given by Mnr Philippe Hanois Pour le Préfet de la Région Hauts-de-France et par delegation, Le directeur regional des affaires culturelles on the 28 May 2017.

RESULTS

General

One 11.6x23m area was excavated as shown on Fig 1. Individual features are described in the following sections with artefacts recovered detailed in Appendix 1.

Trench 3

One 11.6x23m area was excavated in the pasture field to the immediate south east of the village of Bullecourt, over the potential area of the destruction of Tank 796 and adjacent to 'Bullecourt Avenue' trench. Within this area six small shell craters were investigated ([1003], [1007], [1013], [1015], [1017] and [1020]) as well as the German corrugated iron (known colloquially as 'elephant iron') seen at the south east of the excavation area in 2017. This area was in close proximity to major structural trench elements of the Hindenburg Line but none were present within our excavation trench

Images of the Corrugated iron of the German troop shelter under excavation

The excavation of 2018 illustrated the pock-marked nature of this battlefield. Shell craters were the only archaeological features encountered, and many of these bore traces of post war land reclamation and clearance with materiel being used to fill them. Indeed, the feature partially excavated in 2017 and thought to represent a German troops shelter composed of 'elephant iron' did not in fact show many traces of German occupation on excavation. Instead, it covered several boxed of live, primed British rifle grenades alongside other detritus of the war. It is possible that this was a German shelter used as post-war clearance dump and then backfilled, but it just as easily could be a single phase of dumping which included the corrugated iron sheets. No intact German trench structures were excavated.

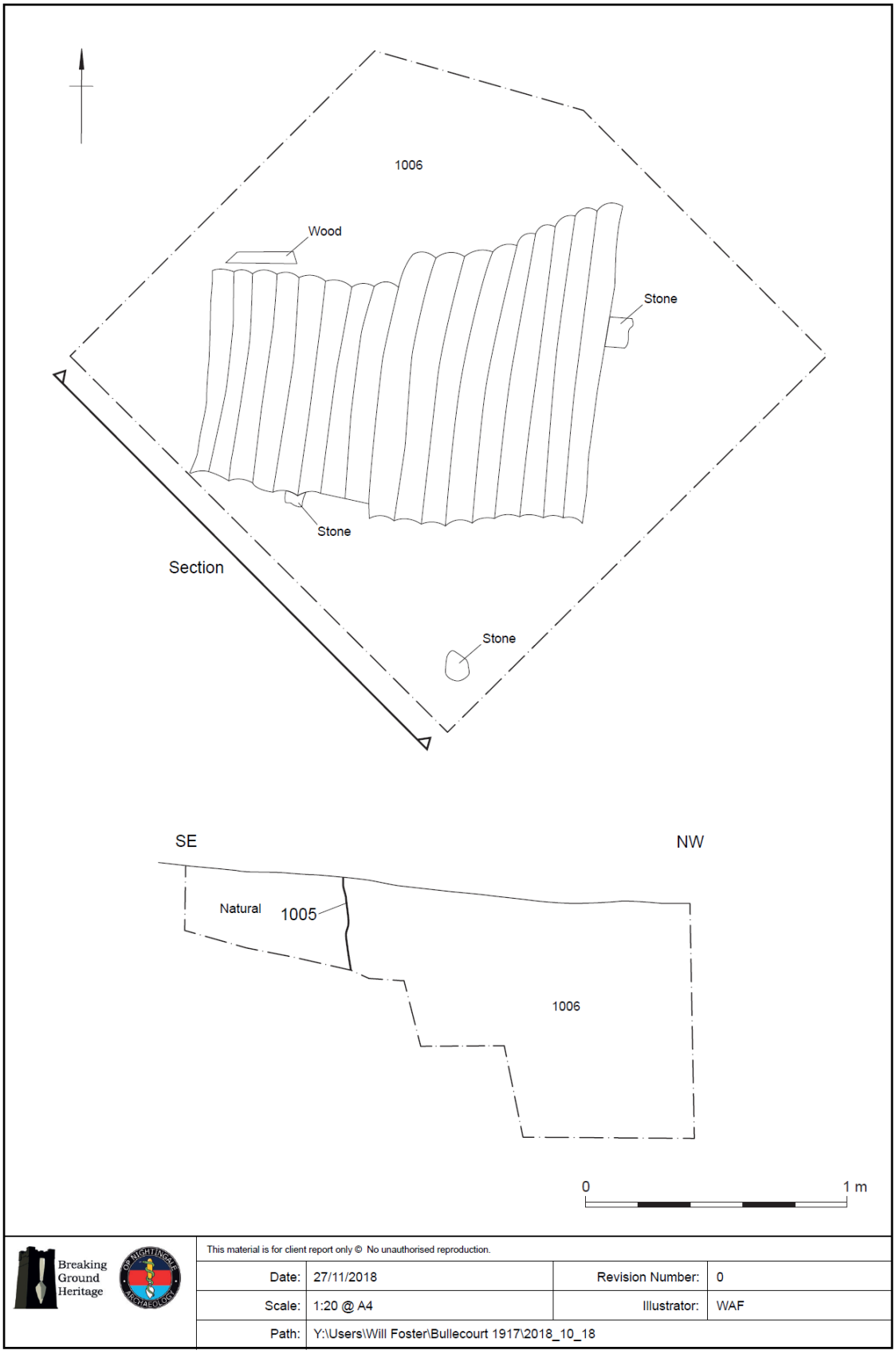


Fig 2: Plan and Section of Sondage 1005

Sondage 1007. The fill of intercutting shell craters. Note the line of stones indicating the edges of one crater – this was filled with much post-war battlefield clearance. The rectangular strip which runs diagonally across the base of the cutting, above the Northing arrow, is German revetting mesh.

With a larger excavation trench opened in 2018, the team was also able to examine the context which held the remains of the two German soldiers in 2017 in greater depth. Immediately below the location of these two soldiers (SK1 and SK2) were the remains of a further individual, SK3. More details of this are in Appendix **6**. The remains were found on a rectangular sheet of revetting mesh and were missing forearms, and legs. Shrapnel balls and a fired tank six pounder round were also present in this context [1004].

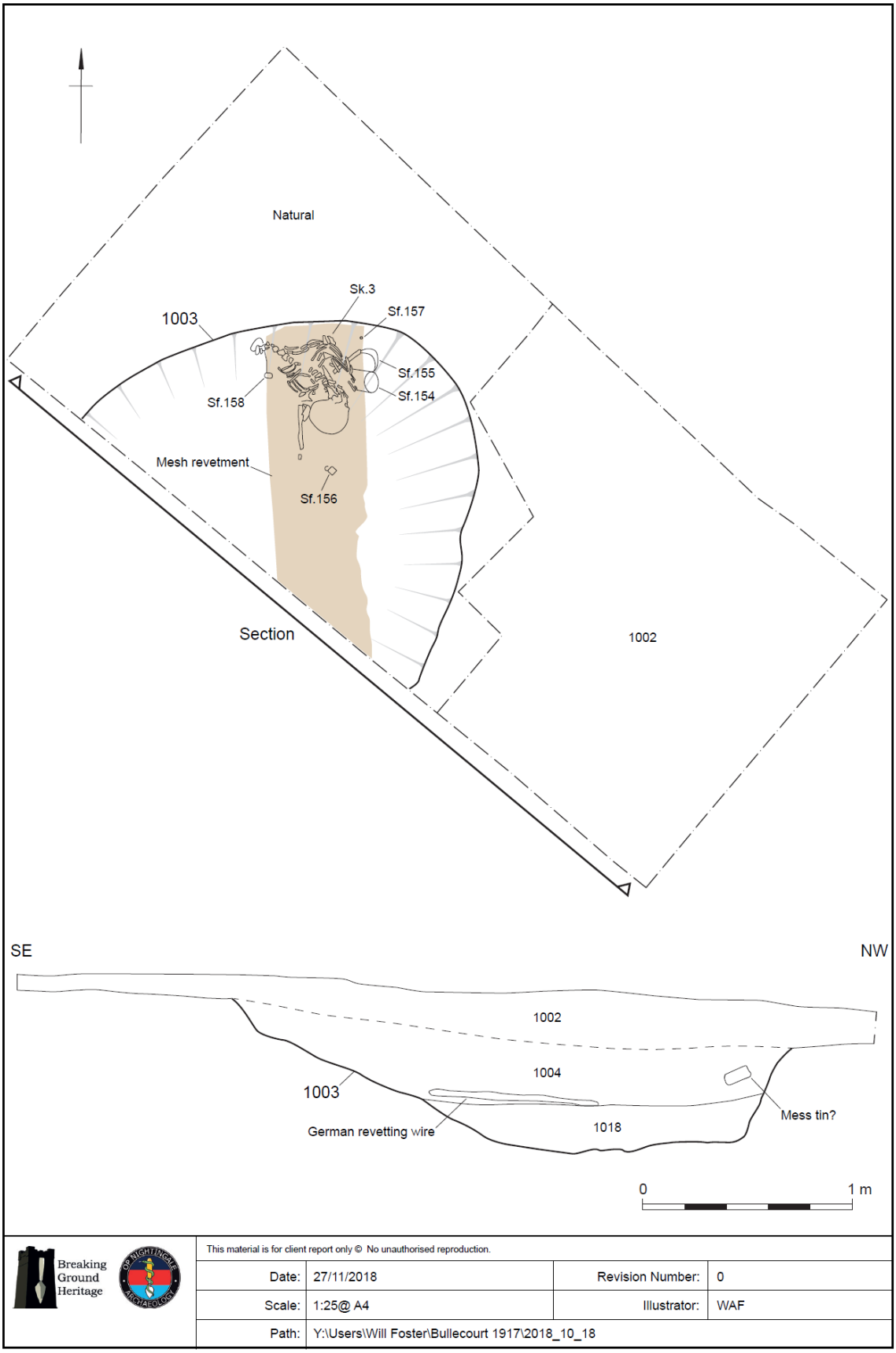


Fig 3: Plan and Section of Sondage 1003

The shell crater which held the remains of SK3

There were many tank components recovered – from the shell case and the percussion cap protectors through to cogs that drove the chains and the chains themselves. Furthermore, armour plate was recovered along with numerous rivets that both illustrated the thickness of the armour protection of the vehicle and also the post-war destruction of what was left of the tank either by villagers who had returned to Bullecourt, or by members of the Chinese Labour Corps who undertook such tasks. The concentration of material connected with the tank in the south east corner of our excavation hinted that there may well be further opportunities for recovering tank components in future seasons.

The fact that many strands of German barbed wire were excavated and that our excavation with components of destroyed tank was located at the edges of the 1917 footprint of the village of Bullecourt also serves to confirm the belief that this one tank, 796, had indeed reached the village of Bullecourt in 1917 before it was destroyed. The discovery of several fired tank rounds and the (fired) shell case only served to augment this story of fighting. A single fired 6 pounder shell was recovered from the context of the burial of the German soldier. There is thus the possibility that the German soldiers found in 2017 and 2018 were killed by tank fire. The Research Questions and our results are itemised in the table below:

Question	Conclusion
Are there still 796 Mark II tank elements still in the zone?	Yes – we recovered large components in 2017 and even greater quantities of tank in 2018. There remains a HIGH potential for additional elements.

Did material that specifically reflects the activity (combat) of the first Battle of Bullecourt survive?	Yes – the tank (including components of its wooden flooring) being the main element. The remains of the soldiers we found MAY have been killed in First Bullecourt but there is no categorical proof. There are also some small arms cases from 1918 which are clearly later.
What is the state of conservation of the battlefield?	The area of Trench 3 showed the high level of shell damage and we have yet to encounter other structural features. The area also reflects the post-war clearance story well and preservation here is good
To what extent do trenches and other battlefield features respond to geophysical prospecting, in particular magnetometry?	Reasonably though confirmation will be required in trenches being examined, hopefully in 2019. It seems that Tank Avenue is particularly clear on survey plots, perhaps reflecting the potential that the trench is still lined with corrugated iron
Can the project provide the first accurate map of the final positions of the Mark II tanks in this battle with the methods described above? How accurate was the historian Charles Bean with his cartography?	One tank is plotted thus far. Bean was broadly correct with this though our location is much more precise. Where our fieldwork is unable to locate tank components, triangulation of contemporary air photography is the best methodology for a final tank plot
Can some of the recovered items be scanned with those in various museums to produce a plan?	Yes – we have a 3d model of the tank track and can directly place some of our items in cut-through model of the Mark II tank which will appear in the ultimate report and at a local museum. Some artefacts recovered are either unique or only held in the tank museum in Bovington
Can artifacts present in museums such as Bullecourt and be cataloged with the Australian War Memorial (AWM) in Canberra?	No start has been made with this although members of our project team have visited both and used the former to help identify components found in 2018
Can we locate the junction of the two Allied trenches (Tank Avenue and Horseshoe Trench), how well do they survive, and are there any traces of the tank that appears in German postcards at this location?	The trace of this on geophysical survey seems very clear and perhaps hints that the trenches still retain some of the corrugated iron revetting visible on the German postcard of the site in 1918. This would bode well for future excavation. We were unable to excavate here in 2018 as crops were still present in the field

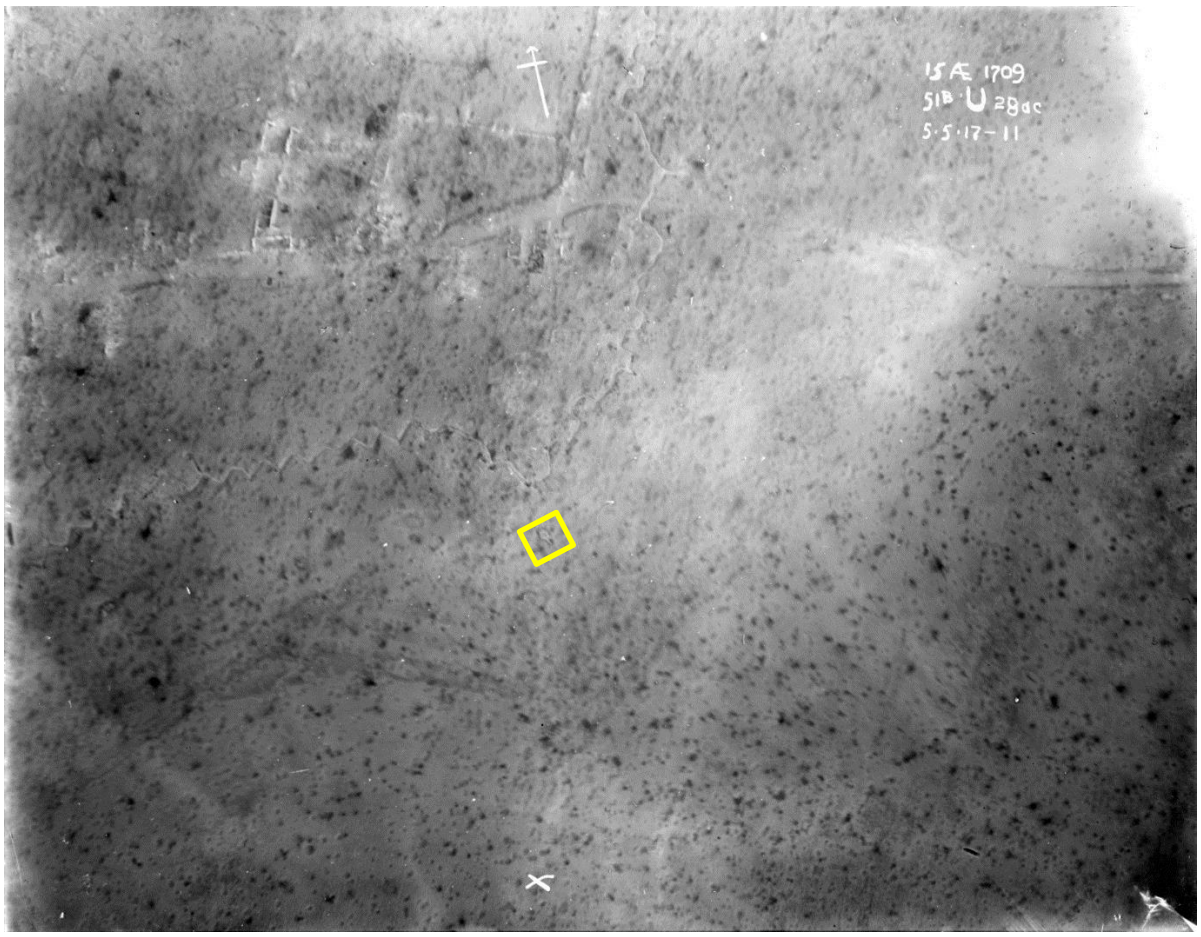
DISCUSSION

General

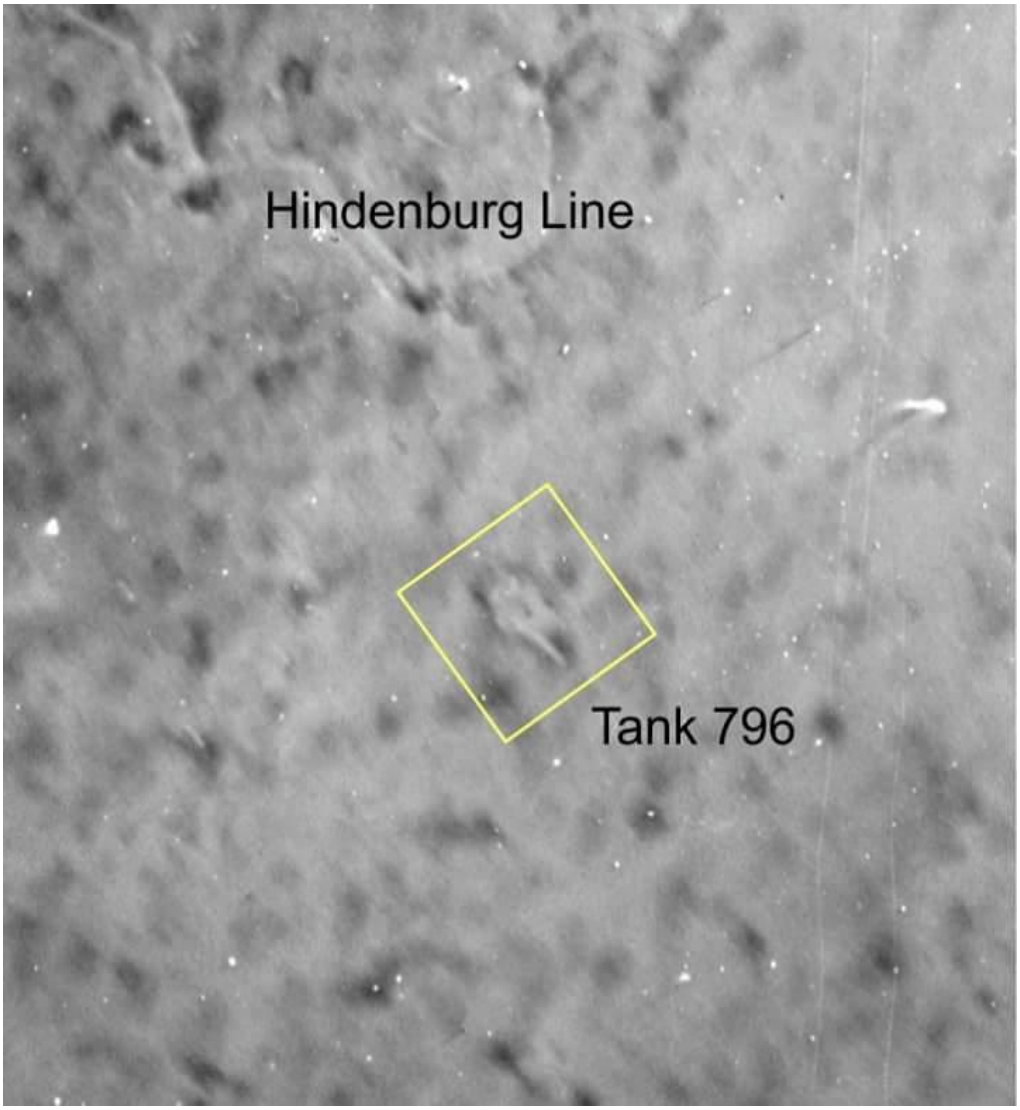
Trench 3 built on the results of 2017 and provided much more evidence for an armoured vehicle. This excavation area examined the German troop shelter with substantial corrugated iron sheeting found in 2017. The sheets (two of which were still joined) were filled with materiel of both German

and Allied armies and may either represent clearance at the end of the war, or reutilisation of a German shelter position by Allied troops following capture of this portion of the Hindenburg Line.

No cut elements of the Hindenburg Line trench system were encountered although the potential for such features surviving in the locality is high. Furthermore, if, as seems to be the case, the excavation Trench 3 was sited over the destruction area of Tank 796, there also remains a high potential for other components of this destroyed tank being located nearby, and also for more information on the nature of the large crater to be found.



1917 Air photograph of the destroyed tank 796 and its proximity to the Hindenburg Line



Close Up of above photograph to show the remains of the tank and its proximity to the Hindenburg Line © Imperial War Museum, BOX_644_1709_15AE_51bU_1917

Although there are many images of the destroyed tanks in German archives and on postcards (indicating that large portions survived this battles and hence could easily have been retrieved post-war as scrap material) the fieldwork has shown that tank components do still survive. The number (and scale) of elements found would indicate that there is a strong likelihood that one can discern a good approximate last location for the tanks of 1917 through destroyed elements left in situ and not retrieved post-war. The fieldwork certainly illustrated the post-war clearance operations in Bullecourt – with the filling of shell craters and the German shelter with materiel, and also the large number of tank rivets which seemed to show the recovery of larger metal tank plates by either villagers or the Chinese Labour Corps who were detailed to accomplish such tasks.

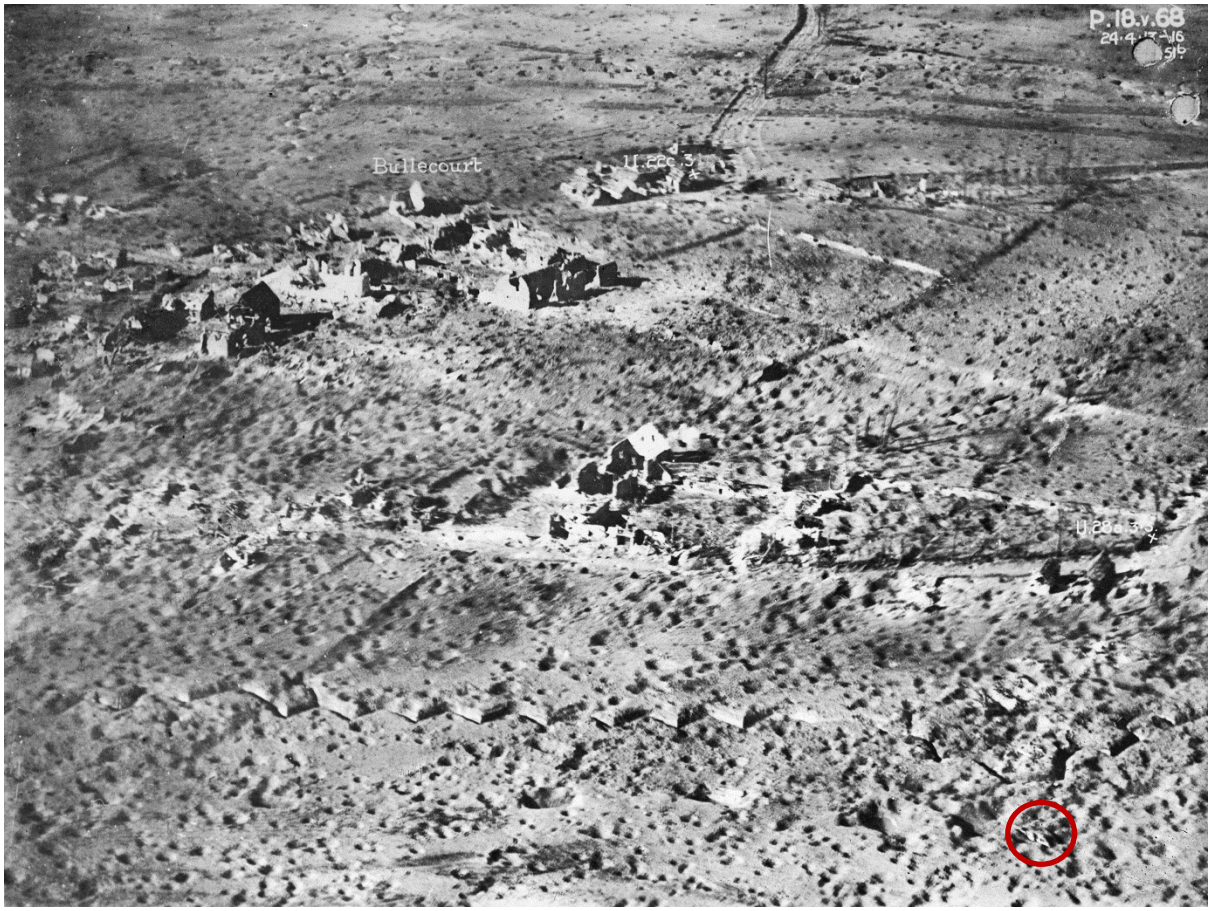


Image of the destroyed village of Bullecourt in 1917, and the remains of tank 796 (Australian War Memorial A00664)

Tank components excavated (see Appendix 1 in bold and selected images in Appendix 2) included parts of track, armour plate, fired 6 pounder shells, a fired six pounder shell case, rivets, nuts, bolts, wooden flooring boards, an exhaust manifold, gear cogs, a port handle, and perhaps even the engineer's hammer.

Human remains

The remains of one German soldier (skeleton 3) provides some evidence for the fierce fighting on this part of the western front. He lay directly beneath (and as probably associated with) the two German soldiers recovered in 2017. His lower legs and forearms were absent – perhaps indicating death in an explosion. An expended 6lb tank round was contextually associated with his remains and may indicate a cause of death. He retained his respirator tin, several shirt and trouser buttons and a tunic button with a crown motif, and was placed on a rectangular length of German revetting mesh. NO identification disc was present and thus any attempts to identify the men would be dependent on osteological, isotopic (and potential DNA) assessments undertaken on behalf of the VDK. All artefacts associated with the human remains formed part of the archive returned to the VDK.

No formal assessments were made for traumatic injuries as this was left to the VDK but there did appear to be some clear impact damage. The skeleton was missing around 50% of its components –

forearms and legs being absent. The evidence from 2018 combined with the result of 2017 to illustrate that the three soldiers recovered at this location lay in a shell crater where they had been killed as none displayed any degree of formality about their field burial other than the possible presence of a groundsheet (indicated by several metal eyelets) above the bodies. The team's osteologist believed that this individual was in his later thirties or his forties. He also had a pipe notch to his teeth indicating long-term pipe smoking.

CONCLUSIONS

This second archaeological season examining the traces of the First World War in Bullecourt was a great success. Much information relating to the War was recovered from the excavation trench. The main focus for the endeavours – to consider the tanks of the Great War – met the research requirements. Building on the discoveries of 2017, we have now recovered a fair proportion of tank 796 but are also convinced that there will be additional components present in the pasture. With the aspiration of the project not only to pinpoint the location of the tanks of April 1917, but also to recover as many elements of individual vehicles as possible, we feel further fieldwork is essential

Geophysical survey was successful in spite of the large amount of metallic contamination of the soil and played a role in the siting of both of the excavation trenches. It was not possible to answer questions on the survival conditions of battlefield as the only cut features encountered, apart from the potential troop shelter, were shell craters. Future work should be able to discern more – especially with regards the Hindenburg Line. Walkover studies conducted in the autumn of 2016 alongside the field season of 2017 highlighted the fact that much still survives of the conflict landscape here – from railway embankment to sunken lane and with clear surface expression of battlefield components in pasture fields. The material recovered from the ground was in a relatively good condition.

The 2018 season recovered good evidence for the location of tank 796 but we were unable to search for other tanks as most of the fields were still under crop. Thus we aim to accomplish further excavation work in 2019 when these fields have more accessibility. We should therefore be able to produce a final comparative map of tank positions relative to that of Charles Bean but this must be with the caveat that some of the decisions will be the results of aerial photographic rectification not corroborated by presence still in situ. Already we are able to state that, although roughly accurate, Bean's model can be refined.

Our work intends to scan items and provide models of components for inclusion, potentially, in a Bullecourt Mark II tank plan in association with the Australian War Memorial in Canberra. Whilst this is a long-term goal, we have successfully demonstrated the efficacy of photogrammetric survey of components (Photographer Harvey Mills – see link https://sketchfab.com/models/f33f5cce8dc040259f4da46d08d6036d). This could be expanded for all artefacts of tank association. We have catalogued our own findings and are aware that a similar process for the artefacts held in Bullecourt and Canberra (of out of context material) would be a major undertaking.

RECOMMENDATIONS FOR FUTURE WORK

The initial project design was for an examination of the potential locations of the nine tanks destroyed on 11 April 1917. Thus far, two locations have been examined and thus there is potential to consider a further seven vehicles. In addition, the survival of the tank components (and the material visible on old postcards) would suggest that there is huge potential for finding other components of tank 796 and also in establishing more about its final context; the large shell crater which had proved such a major obstacle. Linking these tanks to the defensive architecture of the Hindenburg Line would also be advantageous. All such work would be subject to future approval both of the landowners and also the DRAC. Our project will propose to revisit the pasture field from which the tank track was recovered and to extend our initial trench to the south east, in addition we will look to consider part of the Hindenburg Line which was renamed 'Tank Avenue' by the Allies – something that crop regimes prohibited in 2018. In December 2018, The project will look to lodge an application for permission for a three year project starting in 2019.

ACKNOWLEDGEMENTS

The project would not have been possible without the help of a large number of groups and individuals – to them our thanks. We are aware that gaining the relevant permissions was a significant show of trust from the DRAC Hauts-de-France and we are hugely grateful for this. The fact that Drs Yves Desfosses and Alain Jacques, pioneers in the archaeology of the Great War – were able to visit the site with their colleague Luc Vallin was a huge honour. Help for Heroes provided both a good focal point for the project in the UK and also assisted with both recruitment and also welfare support. The Trusthouse Foundation gave a very generous grant to the project – without this we would not have had an excavation.

Help for Heroes provided a generous grant to enable veterans to attend this project. The work was filmed by the team and also by Karen Kirk of 360 Productions in readiness for possible inclusion in an episode of BBC 'Digging for Britain'.

Before we even got to France, the team were helped in all the pre-excavation research. Dr Birger Stichelbaut of the University of Ghent and Nick Yeomans were instrumental in air photographic assessment. Paul Kendall kindly shared his thoughts and his extensive knowledge of this battlefield. Aurélie le Cadet et le Musée Jean et Denise Letaille, Bullecourt, gave valuable access to the museum both before and during the programme. The irrepressible Philippe Gorczynski provided invaluable support with regards the minutiae of tank parts, previous explorations and latterly drone photography! Mr Carl Johnson kindly gave Australian datasets to support tank location searches. The Royal Tank Regiment and the Tank Museum at Bovington, UK, enabled us to gain valuable insights into the Mark II tanks and their crews.

Peter Masters of Cranfield Forensics Institute led the geophysical survey and mapping components of this project.

Alex Sotheran and Alex Caples were the main fieldwork supervisors for the programme

Richard Bennett and Breaking Ground Heritage (http://www.breakinggroundheritage.org.uk/) was integral to the success of the project. He provided and organised the project logistics and military veterans

Project Photography was undertaken by Harvey Mills (www.harveymills.com)

All fieldwork was accomplished under the scrutiny of professional Explosives Ordnance Disposal staff – Mr David Moutter and Florian Duchatelle.

The excellent excavation team was composed of archaeologists, Help for Heroes professionals, and military veterans/service personnel: Sarah Ashbridge, Paul Barnsley, Mike Bennett, Steuart Bowman, Isabel Burton (who also led osteological elements and the facial reconstruction), James Galvin, Stuart Gray, John Hughes, Carl Johnson, Victor Kalkowski, Len Kelly, Andy MacDonald, Ivan Machin, Rich Machin, John Mason, Peter Masters, Christin McIntyre, Graham Moore, An Osborne, Janine Peck, Peter Purves, Jack Robson, Carlos Rocha, Matt Smith, Dave Spencer, Rob Steel, and Jan Walter.

Post excavation work included essential input from Wessex archaeology (Will Foster - graphics)

Something that struck the team during our work in France was the generosity and kindness shown by all the locals of Bullecourt, and also in their interest in our work. They could not have been more helpful. Of course, within this group are those that gave the permission for us to be in their village and on their land. So to the Mayoress - Mme Gladys Watson; to the owner of the resting place of 796 - Mnr Thierry Delambre and of course the inimitable Mnr Didier Guerle the project salutes you.

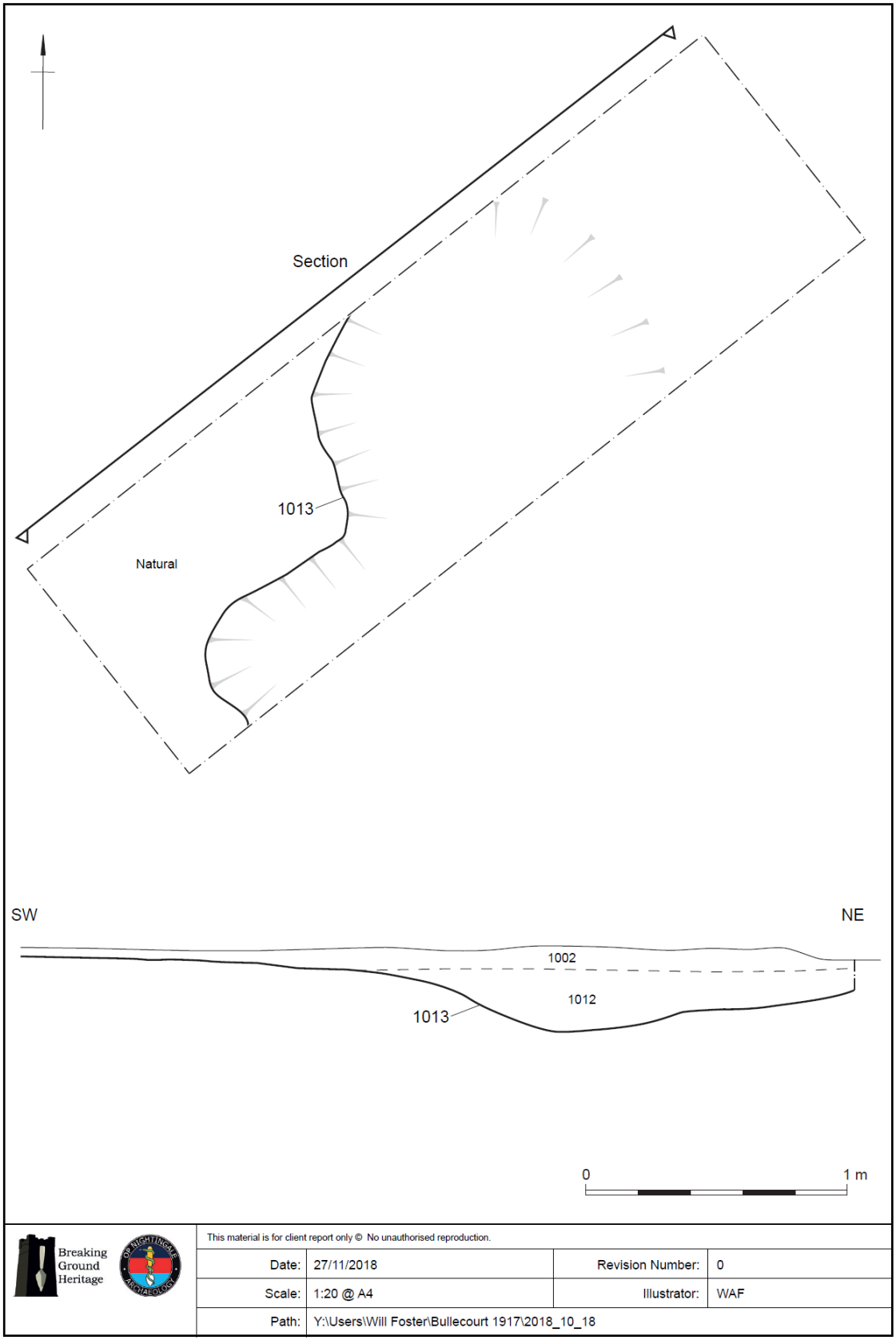


Fig 4: Plan and Section of Sondage 1013

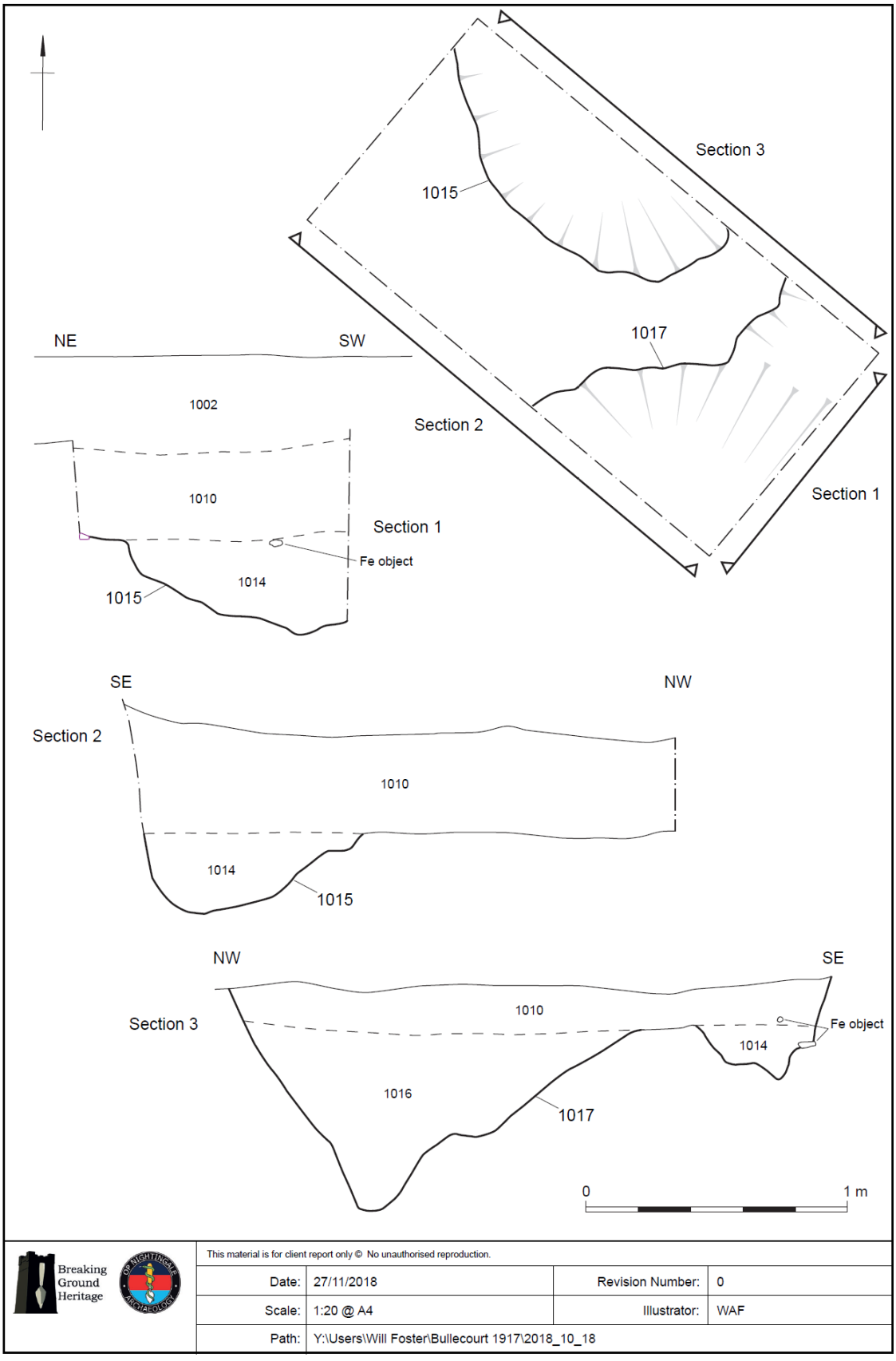


Fig 5: Plan and Section of Sondage 1015 and 1017

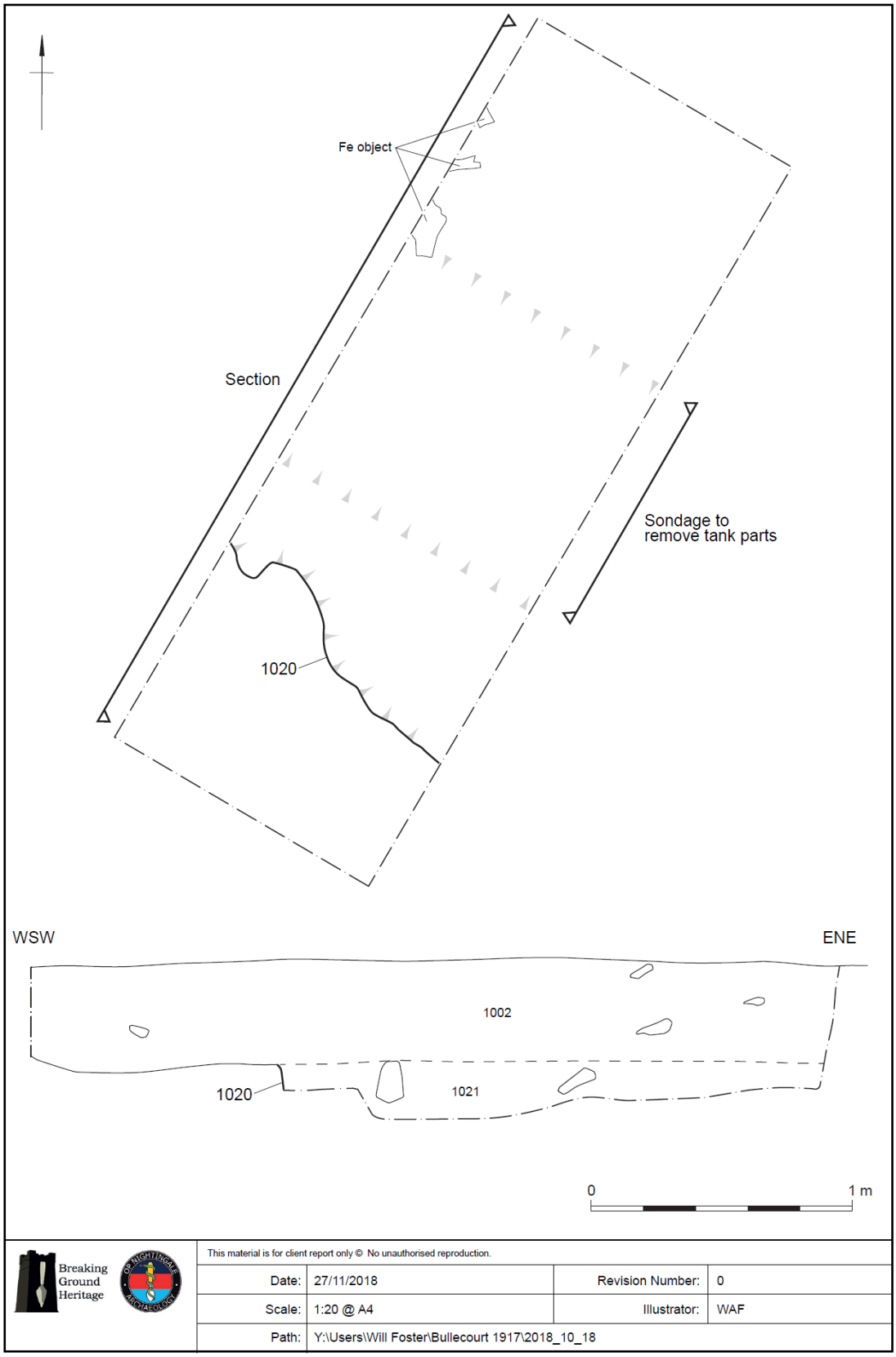


Fig 6: Plan and Section of Sondage 1020

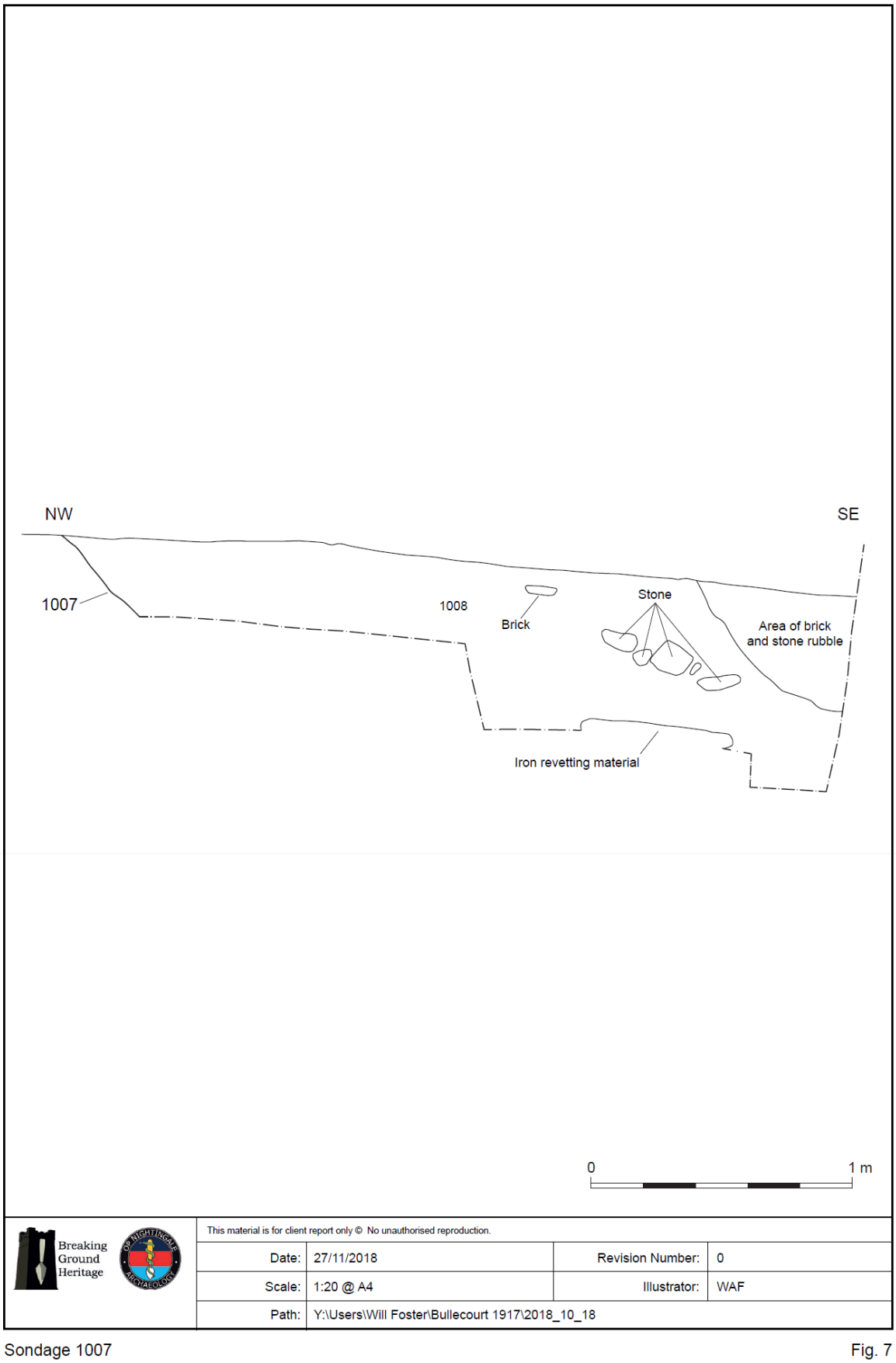


Fig 7: Plan and Section of Sondage 1007

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APPENDICES

Appendix 1: Finds (NB all retained by landowner, Mnr Delambre)

SF Number	Category	Description	Trench	Context	Comments
1	FE obj	Button	3	1002	3 holed
2	FE obj	Button	3	1002	3 holed
3	**FE obj**	**6lb Gun Plate**	**3**	**1002**	**'EWC' from 'Newcastle - Armstrong Whitworth**
4	FE obj	Fork	3	1002	
5	Ceramic	Pottery Sherd	3	1002	
6	Ceramic	Pottery Sherd	3	1002	
7	FE obj	Threaded Cap	3	1002	
8	FE obj	Spoon	3	1002	
9	FE obj	Eyelet	3	1002	

10	FE obj	Stick Grenade	3	1002	
11	FE obj	Bracket	3	1002	90° Angle
12	CuA	Plate	3	1002	Brass Plate
13	Bone	Fragment	3	1002	
14	**FE obj**	**Track Plate**	**3**	**1002**	**GPS15**
15	**FE obj**	**6lb Shell**	**3**	**1002**	**GPS16**
16	Bone	Foot bones	3	1002	Human foot in boot - taken by CWGC GPS17
17	**FE obj**	**Tank Frag**	**3**	**1002**	**GPS18**
18	**FE obj**	**Drive Chain**	**3**	**1002**	**GPS19**
19	**FE obj**	**6lb Shell**	**3**	**1002**	**GPS20**
20	FE obj	8” Shell	3	1002	GPS21
21	**FE obj**	**Armour Plate**	**3**	**1002**	**Large Bearing Cover GPS22**
22	**FE obj**	**UBolt**	**3**	**1002**	**GPS30**
23	FE obj	Knife	3	1002	Clasp Knife GPS31
24	**FE obj**	**Tank Frag**	**3**	**1002**	**GPS32**
25	**FE obj**	**Drive Chain**	**3**	**1002**	**GPS33**
26	**FE obj**	**Drive Chain**	**3**	**1002**	**GPS34**
27	Metal	Eyelet	3	1002	GPS35
28	Metal	Button	3	1002	GPS36
29	Metal	Button	3	1002	GPS37
30	Metal	Fork	3	1002	GPS38
31	Graphite	Pencil Lead	3	1002	GPS39
32	FE obj	Fragment	3	1002	GPS40
33	**FE obj**	**Tank Fragment**	**3**	**1002**	**GPS41**
34	Metal	Bayonet Fragment	3	1002	British Bayonet GPS42
35	**FE obj**	**Tank Fragment**	**3**	**1002**	**GPS43**
36	**Metal**	**Oil Tap from Tank**	**3**	**1002**	**GPS44**
37	Number Not Used				
38	Number Not Used				
39	Number Not Used				
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91	Number Not Used				
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93	Number Not Used				
94	Number Not Used				
95	Number Not Used				
96	Number Not Used				
97	Number Not Used				
98	Number Not Used				
99	Number Not Used				
100	**FE obj**	**Tank Frag**	**3**	**1002**	**?Tank Grouser Frag GPS45**
101	**FE obj**	**Tank Frag**	**3**	**1002**	**Nut**
102	CuA	Eyelet	3	1004	German Groundsheet eyelet
103	CuA	Shirt Button	3	1004	German shirt button
104	CuA	Shirt Button	3	1004	German shirt button
105	CuA	Shirt Button	3	1004	German shirt button
106	CuA	Shirt Button	3	1004	German shirt button
107	CuA	Eyelet	3	1004	German Groundsheet eyelet
108	CuA	Eyelet	3	1004	German Groundsheet eyelet
108	CuA	Eyelet	3	1004	German Groundsheet eyelet
109	CuA	Eyelet	3	1004	German Groundsheet eyelet
110	Pb	Shrapnel Ball	3	1004	
111	**FE obj**	**Drive Chain**	**3**	**1002**	
112	Leather	Fragment	3	1002	
113	CuA	Button	3	1004	German shirt button
114	CuA	Button	3	1004	German shirt button
115	Bone	Phalange	3	1004	
116	Bone	Phalange	3	1004	

117	Bone	Phalange	3	1004	
118	**FE obj**	**Cylinder**	**3**	**1002**	**6lb Shell Port**
119	Pb	Shrapnel Ball	3	1004	
120	**FE obj**	**Tank Frag**	**3**	**1002**	**Large Frag**
121	**FE obj**	**Tank Frag**	**3**	**1002**	**Large Frag with Bolt**
122	**FE obj**	**Rivets**	**3**	**1002**	
123	**FE obj**	**Large Circular Obj**	**3**	**1002**	
124	Metal	?Battery	3	1002	
125	**FE obj**	**Can**	**3**	**1002**	
126	**FE obj**	**Internal Oil Lubricant Container**	**3**	**1002**	
127	Leather	Boot Frag	3	1004	
128	Leather	Belt Frag	3	1004	
129	Metal	Button	3	1008	
130	**FE obj**	**Tank Frag**	**3**	**1002**	**Bolt and Rounded Frag**
131	**FE obj**	**Tank Frag**	**3**	**1002**	**Bracket**
132	**FE obj**	**Tank Frag**	**3**	**1002**	**Angle Iron**
133	**FE obj**	**Tank Frag**	**3**	**1002**	**Bolt**
134	Number Not Used				
135	**FE obj**	**Tank Frag**	**3**	**1003**	
136	Al/Pb	Tube	3	1009	?Shaving Stick
137	CuA	Fuse	3	1009	
138	Metal	Respirator	3	1009	
139	Number Not Used				
140	**FE obj**	**Tank Exhaust Manifold**	**3**	**1002**	
141	**FE obj**	**Tank Frag**	**3**	**1002**	**Nuts**
142	**Wood**	**Plank from Tank Floor**	**3**	**1002**	**1st**
143	**Wood**	**Plank from Tank Floor**	**3**	**1002**	**2nd**
144	**FE obj**	**Tank Frag**	**3**	**1002**	**Circular Tank Part**
145	**FE obj**	**Tank Frag**	**3**	**1002**	**3 Pronged Tank part**
146	**FE obj**	**Tank Frag**	**3**	**1002**	**Tank Nut**
147	**FE obj**	**Tank Frag**	**3**	**1002**	**Circular Tank Part**
148	**FE obj**	**Tank Frag**	**3**	**1002**	**Trak U Bolt**
149	Asbestos	Board	3	1002	
150	**FE obj**	**Tank Frag**	**3**	**1002**	**Tank Mounting**
151	Asbestos	Board	3	1002	
152	**FE obj**	**Tank Frag**	**3**	**1002**	**Engine Casing**

153	**FE obj**	**Tank Frag**	**3**	**1002**	**Rivets**
154	FE obj	Respirator	3	1004	
155	FE obj	Metal Object	3	1004	Lid of respirator tin
156	FE obj	Padlock	3	1004	
157	Metal	Shirt Button	3	1004	German Shirt Button
158	FE obj	Tin	3	1004	Small Round Tin
159	Glass	Circular Glass	3	1004	Respirator Eyepiece
160	CuA	Brass Cap	3	1002	
161	**CuA**	**Fuse Protector**	**3**	**1002**	
162	**Steel**	**Fuse Protector**	**3**	**1002**	
163	CuA	Screw	3	1012	With wood adhering
164	Organic	String	3	1002	Found near tank build
165	**CuA**	**Ring**	**3**	**1002**	**Brass Tank ?Ring**
166	Metal	Button	3	1004	Tunic Button
167	Metal	Eyelet	3	1008	
168	Metal	Buckle	3	1008	
169	Metal	Buckle	3	1008	
170	**FE obj**	**Tank Frag**	**3**	**1008**	**Bearing**
171	Organic	buckle with fabric	3	1008	
172	Organic	buckle with fabric	3	1008	
173	Organic	buckle with fabric	3	1008	
174	Organic	buckle with fabric	3	1008	
175	CuA	Button Polisher	3	1008	British Button Polisher
176	**FE obj**	**Tank Frag**	**3**	**1012**	**Tank Reduction Gear**
177	**FE obj**	**Tank Frag**	**3**	**1002**	**Tank Bracket**
178	**FE obj**	**Tank Frag**	**3**	**1002**	
179	Wood	Fragment	3	1002	
180	**FE obj**	**Tank Fragment**	**3**	**1002**	**?Belt Pulley**
181	Organic	Fabric with Button	3	1002	
182	**FE obj**	**Tank Frag**	**3**	**1002**	**Rivet**
183	**FE obj**	**Tank Frag**	**3**	**1002**	
184	**Metal**	**?Brass**	**3**	**1002**	**?Tank Piece**

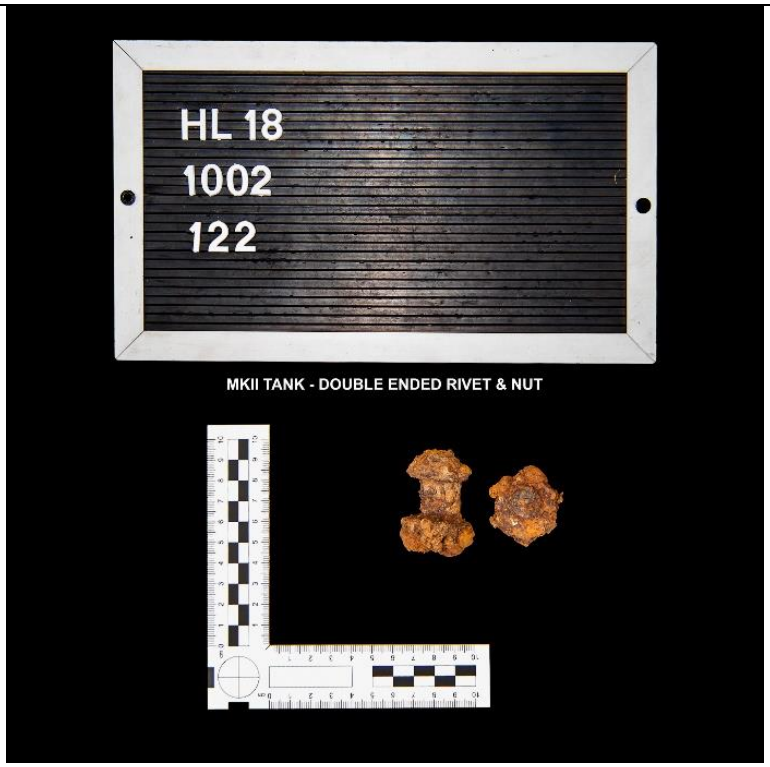
185	Metal	Button	3	1009	
186	**FE obj**	**Tank Frag**	**3**	**1002**	
187	**FE obj**	**Tank Frag**	**3**	**1002**	
188	**CuA**	**Tank Frag**	**3**	**1002**	
189	**FE obj**	**6Lb Frag**	**3**	**1002**	
190	**FE obj**	**Tank Frag**	**3**	**1002**	
191	**FE obj**	**Tank Frag**	**3**	**1002**	
192	**FE obj**	**Tank Frag**	**3**	**1002**	
193	**FE obj**	**Tank Frag**	**3**	**1002**	
194	**FE obj**	**Tank Frag**	**3**	**1002**	
195	**FE obj**	**Tank Frag**	**3**	**1002**	**Roller**
196	**FE obj**	**Tank Frag**	**3**	**1002**	
197	**CuA**	**Tank Frag**	**3**	**1002**	**Mount**
198	**FE obj**	**Tank Frag**	**3**	**1002**	
199	**FE obj**	**Tank Frag**	**3**	**1002**	**Bracket**
200	**FE obj**	**Tank Frag**	**3**	**1002**	
201	**FE obj**	**Tank Frag**	**3**	**1002**	**Bolt**
202	**FE obj**	**Tank Frag**	**3**	**1002**	**Nut**
203	CuA	Trench Art	3	1009	
204	**FE obj**	**Tank Frag**	**3**	**1002**	**Bracket**
205	Metal	Unidentified	3	1002	Metal with Leather
206	**Wood**	**Board**	**3**	**1002**	**Tank Floor**
207	**FE obj**	**Cog**	**3**	**1019**	**Tank Engine Cog**
208	Organic	Stick Grenade	3	1002	
209	Organic	Stick Grenade	3	1002	
210	**FE obj**	**Hammer Head**	**3**	**1002**	**From ?Tank engineer**
211	FE obj	Button	3	1002	
212	FE obj	Object	3	1002	Bracket
213	FE obj	Button	3	1002	
214	FE obj	Trench Art	3	1002	Small Arms Cartridge
215	FE obj	Fuel Cap	3	1002	
216	CuA	Metal Clip	3	1002	
217	FE obj	Bolt	3	1008	
218	CuA	Buckle	3	1002	German Buckle
219	Ceramic	Tobacco Pipe	3	1002	
220	Metal	Pocket Knife	3	1008	
221	FE obj	Small Lever	3	1012	
222	FE obj	Webley Round	3	1002	
223	**FE obj**	**Second Tap**	**3**	**1002**	
224	**CuA**	**6lb Percussion Cap Protector**	**3**	**1002**	
225	CuA	Brass Plate	3	1002	
226	CuA	Fuel Cap	3	1002	

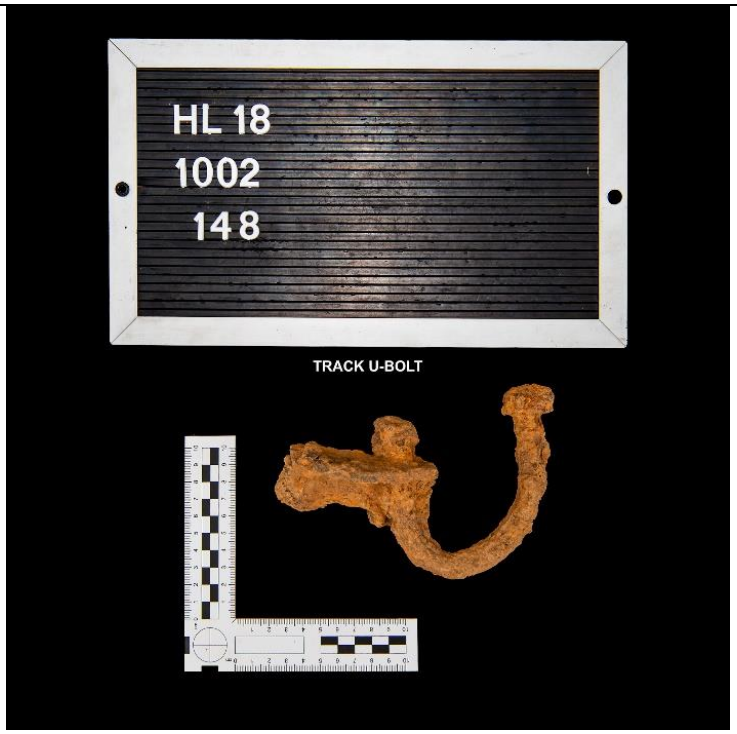
227	**CuA**	**6Lb Shell Case**	**3**	**1002**	**Stamped 4/1917**
228	**Fe Obj**	**Tank Frag**	**3**	**1002**	**Roller**
229	**FE obj**	**Tank Frag**	**3**	**1002**	
230	**FE obj**	**Tank Frag**	**3**	**1021**	**Cast Track Link**
231	FE obj	British Mills Bomb Base plugs	3	1008	
232	CuA	Brass Plate	3	1002	
233	CuA	Badge	3	1002	
234	CuA	Plate	3	1008	
235	CuA	Buckle	3	1002	
236	CuA	Buckle	3	1008	
237	**FE obj**	**Tank Frag**	**3**	**1008**	**Bolts**
238	CuA	Fuse	3	1008	
239	**FE obj**	**Tank Frag**	**3**	**1002**	**6lb Port**
240	**FE obj**	**Tank Frag**	**3**	**1002**	
241	**FE obj**	**Tank Frag**	**3**	**1021**	
242	**FE obj**	**Tank Frag**	**3**	**1008**	
243	**FE obj**	**Tank Frag**	**3**	**1021**	**?Engine Part**
244	**FE obj**	**Tank Frag**	**3**	**1002**	
245	Organic	Respirator	3	1002	Gauze
246	CuA	Buttons	3	1002	15 Buttons
247	FE obj	Fuel Can	3	1021	
248	**FE obj**	**6lb Percussion Cap Protector**	**3**	**1002**	
249	**FE obj**	**Self-Lubricating Shaft**	**3**	**1002**	
250	**FE obj**	**Tank Frag**	**3**	**1002**	**Roller**
251	**FE obj**	**Tank Frag**	**3**	**1019**	**Crank Shaft Bearing Cap**
252	**FE obj**	**Tank Frag**	**3**	**1002**	**Track Plate**

Appendix 2: Selected Tank Small Finds

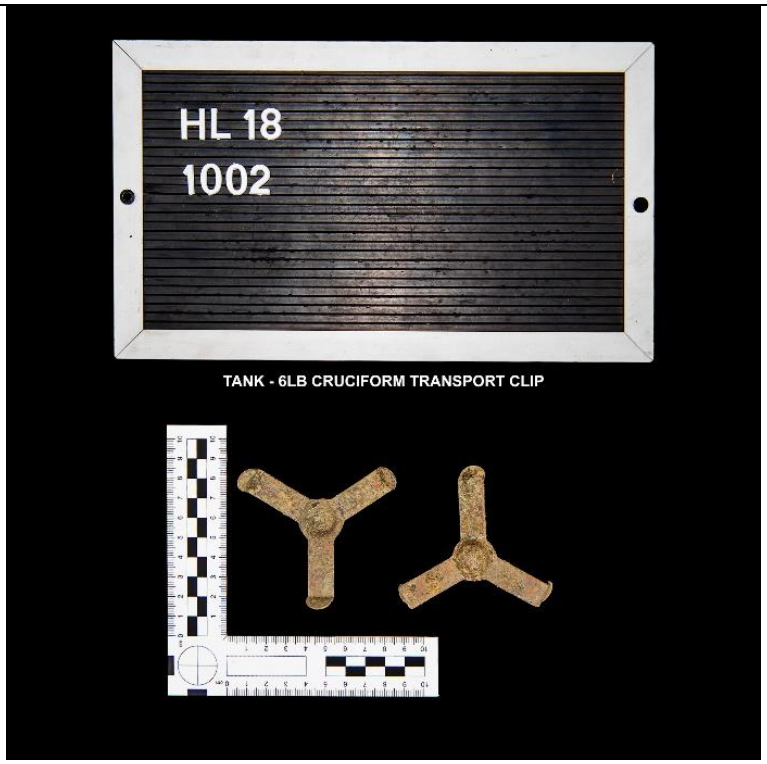
SF Number (for information on the SF see above	Image
21	

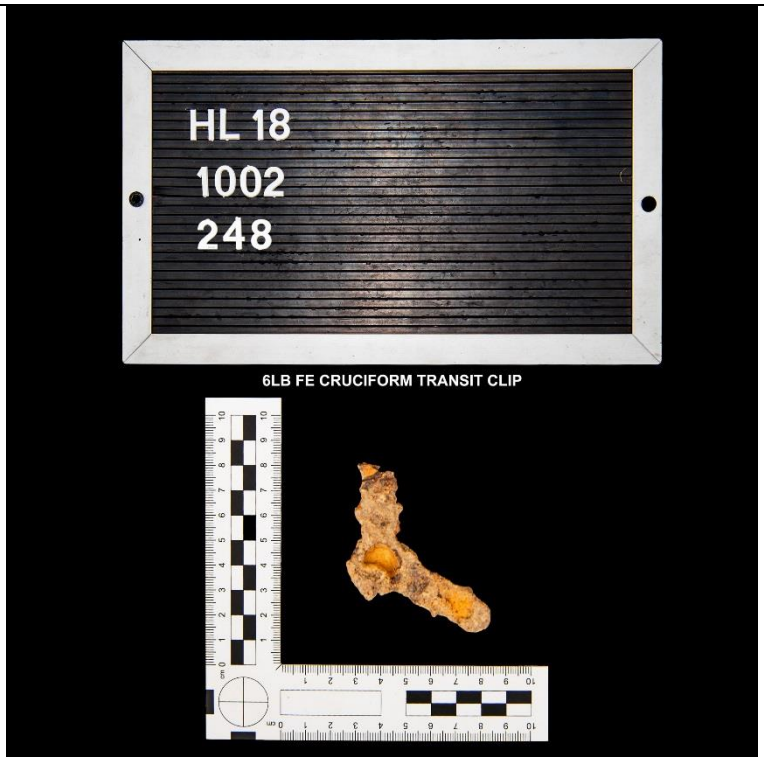
	 HL 18 1002 22 MKII TANK - LARGE BEARING COVER
25	 HL 18 1002 33 MKII TANK DRIVE CHAIN LINKAGE

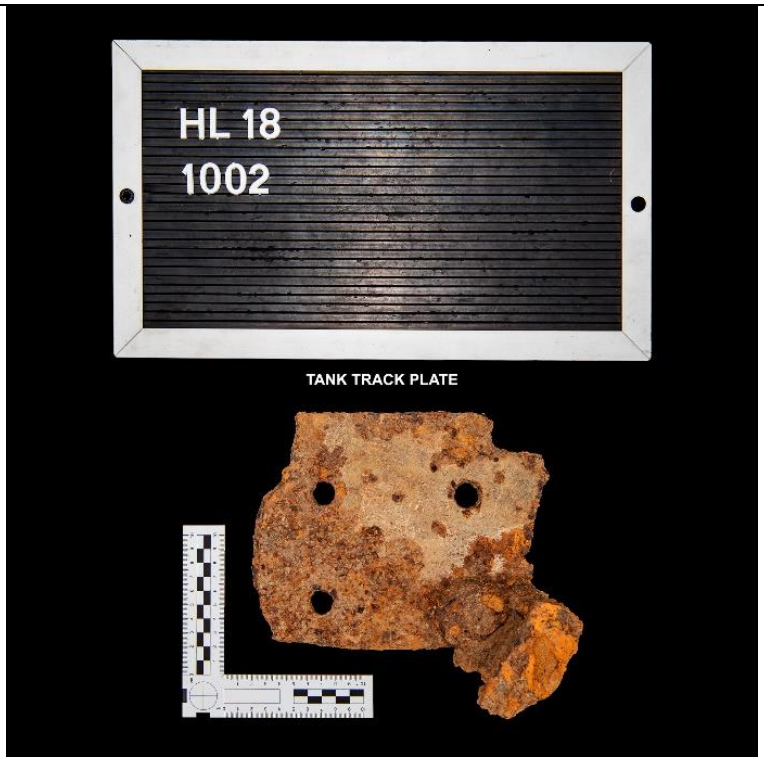
36	 HL 18 1008 44 MKII TANK - OIL TAP [GEAR INDICATOR PANEL] cm
122	 HL 18 1002 122 MKII TANK - DOUBLE ENDED RIVET & NUT

126	 HL 18 1002 126 MKII TANK - OIL CAN
148	 HL 18 1002 148 TRACK U-BOLT

177	 HL 18 1002 177 TANK - HATCH FRAME
210	 HL 18 1002 210 MKII TANK - ENGINEERS HAMMER [HEAD]

249	 HL 18 1002 249 MKII TANK SELF-LUBRICATING ROLLER
224	 HL 18 1002 TANK - 6LB CRUCIFORM TRANSPORT CLIP

248	 HL 18 1002 248 6LB FE CRUCIFORM TRANSIT CLIP
118	 HL 18 1002 118 MKII TANK - FE CYLINDER - 6LB SHELL PORT

14	 HL 18 1002 TANK TRACK PLATE
3	 HL 18 1003 MKII TANK - PART OF 6LB ARMSTRONG WHITWORTH GUN ID PLATE WC cm

176	 HL 18 10 12 176 TANK - REDUCTION GEAR
207	 HL 18 1019 207 MKII TANK - TRACK COG

251	 HL 18 1019 251 MKII TANK - CON ROD + SHRAPNEL BALL
227	 HL 18 1021 227 MKII TANK - 6LB CARTRIDGE

229	 HL 18 1021 229 MKII TANK - TRACK LINK
230	 HL 18 1021 230 MKII TANK - TRACK PLATE MOUNT

228	 HL 18 1002 228 MKII TANK HEAVY ROLLER
N/A	 HL 18 1002 TANK - CON ROD & BEARING

Some of the tank components in situ in Trench 3 – including exhaust manifold, roller, nuts, and wooden flooring board	
Some of the tank components in situ in Trench 3 – including exhaust manifold, roller, nuts, and wooden flooring board	
A Collection of some of the tank components recovered in 2018	

Appendix 3: Small Arms Ammunition found

No.	Quantity	Component	Fired?	Calibre	Nation	Year	Context	Stamp
1	1	case	UF	7.92	Ger	1916	U/S	s67/11/16/c
2	1	case	F	7.92	Ger	1915	U/S	DM/8/15/c
3	1	round	UF			1916	U/S	g.16.Viii
4	1	case	F	7.92	Ger	1916	U/S	s67/s/6/16
5	1	round	UF			1915	U/S	10/15/?/12
6	1	round	UF	7.92	Ger	1916	U/S	s67/sb/12/16
7	1	round	UF			1915	U/S	w/15
8	1	round	UF	7.92	Ger	1917	1002	10/17/S67/WD
9	1	case	F	7.92	Ger	?	1016	?/?/?/?
10	1	round	UF	7.92	Ger	?	1016	?/?/?/?
11	1	round	UF	7.92	Ger	?	1016	?/?/?/?
12	1	case	F	7.92	Ger	1917	1002	S67/DM/17/15
13	1	round	UF	0.303	Br	1916	1002	G16/VII
14	1	round	UF	7.92	Ger	1916	1002	SB/12/16/S67
15	1	round	UF	7.92	Ger	1916	1002	11/16/U/S95
16	1	round	UF	0.303	Br	?	1002	J15/VII
17	1	case	F	7.92	Ger	1916	1002	S/6/16/S95
18	1	case	F	0.303	Br	?	1002	?/VII
19	1	case	F	7.92	Ger	1916	1002	S67/P/16/11
20	1	round	UF	7.92	Ger	1915	1002	15/DM/8/?
21	1	case	F	7.92	Ger	1915	1002	10/15/P/?
22	1	case	UF	7.92	Ger	?	1002	S67/?/?/?
23	1	case	UF			?	1002	6/?/?/?
24	1	case	UF			?	1002	?/?/?/?

25	1	case	F	7.92	Ger	1916	1002	7/16/P/L95
26	1	round	F	7.92	Ger	1916	1004	16/K67/YY/5
27	1	case	F	7.92	Ger	1917	1002	17/S67/D1/QMF
28	1	round	UF	0.303	Br	?	1002	?/?/VII
29	1	case	F	7.92	Ger	1916	1002	S67/P/16/4
30	1	case	?	7.92	Ger	1914	1016	S/S/6/14
31	1	case	UF			?	1016	?/?/?/?
32	1	head	F			?	1016	NA
33	1	round	UF	0.303	Br	?	1016	?/?/?/?
34	1	case	F	7.92	Ger	1916	1009	?/s67/?/16
35	1	case	F	7.92	Ger	1915	1009	P/6/15/6
36	1	case	F	7.92	Ger	1916	1006	S67/11/16/?
37	1	case	F	7.92	Ger	1917	1006	GM/12/17/S67
38	1	case	F	7.92	Ger	1915	1006	P/8/15/S67
39	1	case	F	7.92	Ger	1918	1008	?/?/?/18
40	1	case	F	7.92	Ger	?	1008	?/?/?/P
41	1	round	UF	0.303	Br	?	1008	?/?/?/? In Charger
42	1	case	UF	0.303	Br	?	1008	IIA/?/?/9
43	1	case	?	7.62	Ger	1916	1008	S67/MW/11/16
44	1	round	UF	0.303	Br	?	1008	KN/VII
45	1	round	UF	0.303	Br	1916	1008	J16/VII
46	1	round	UF	0.303	Br	?	1008	?/VII
47	1	round	UF	0.303	Br	1915	1008	J15/VI
48	1	round	UF	0.303	Br	?	1008	?/?
49	1	round	UF	0.303	Br	?	1014	?
50	1	case	UF	0.303	Br	?	1014	?
51	1	round	UF	0.303	Br	?	1014	?

52	1	round	UF	0.303	Br	?	1014	?
53	1	case	UF	0.303	Br	?	1014	?
54	1	round	UF	0.303	Br	?	1010	?
55	1	round	UF	0.303	Br	?	1010	?
56	1	head	UF	?	?	?	1010	?
57	1	case	UF	0.303	Br	1918	1010	18/?
58	4	case	UF	0.303	Br	?	1010	?
59	1	round	UF	0.303	Br	?	1010	K16/VII
60	1	round	UF	0.303	Br	?	1010	?/VII
61	1	round	UF	0.303	Br	?	1010	K16/VII
62	15	round	UF	0.303	Br	?	1010	?
63	1	case	?	?	?	?	1002	Crushed
64	1	case	F	0.303	Br	1915	1002	?/15/VII
65	1	case	F	7.92	Ger	1915	1002	DM/10/15/S67
66	1	case	F	0.303	Br	?	1002	?
67	1	case	F	0.303	Br	?	1002	?/VII
68	1	case	UF	0.303	Br	?	1002	?
69	1	case	UF	7.92	Ger	?	1002	S67/3/?/g
70	1	case	UF	0.303	Br	?	1002	J/?/VII
71	1	case	UF	0.303	Br	?	1002	R/?/VII
72	1	case	UF	0.303	Br	?	1002	VII
73	1	case	UF	0.303	Br	1914	1002	?/14/VII
74	3	case	UF	0.303	Br	1916	1002	J16/VII
75	5	case	UF	0.303	Br	?	1002	?
76	1	round	UF	0.303	Br	1915	1002	J15/VII
77	1	round	UF	0.303	Br	?	1002	J/?/VII
78	2	round	UF	0.303	Br	?	1002	?
79	1	round	UF	0.303	Br	1915	1002	w/15
80	5	round	UF	0.303	Br	1915	1002	J15/VII
81	1	round	UF	0.303	Br	1916	1002	G16/VII
82	1	round	UF	0.303	Br	1915	1002	R15/VII

83	1	round	UF	0.303	Br	?	1002	G?/VII
84	1	round	UF	0.303	Br	1918	1002	R18/VII/L
85	1	round	UF	0.303	Br	1916	1002	K16/VII
86	1	round	UF	0.303	Br	1915	1002	J15/?
87	1	round	UF	0.303	Br	1916	1002	16/VII
88	1	round	UF	0.303	Br	1915	1002	?15/VII
89	9	round	UF	0.303	Br	?	1002	?
90	2	round	UF	0.303	Br	?	1002	?
91	1	case	F	9MM WEBLEY	Br	?	1002	17/S/3
92	1	case	?	7.92	Ger	1916	1002	S67/11/16/C
93	1	case	F	7.92	Ger	1913	1002	7/13/S/S
94	1	case	F	7.92	Ger	1916	1002	4/16/S67/P
95	1	case	F	7.92	Ger	1916	1002	7/16/S67/P
96	1	case	F	7.92	Ger	1917	1002	6/17/S67/P
97	1	case	F	7.92	Ger	1916	1002	11/16/?/S67
98	1	round	?	7.92	Ger	?	1002	S67
99	1	case	F	7.92	Ger	1917	1002	10/17/S67/MF
100	1	case	F	7.92	Ger	1915	1002	15/S67/P/?
101	1	case	F	7.92	Ger	1916	1002	6/16/S67/S
102	2	case	F	7.92	Ger	1916	1002	4/16/S67/P
103	1	case	F	7.92	Ger	1917	1002	2/17/S67/S
104	1	case	F	7.92	Ger	1917	1002	7/17/S67/DM
105	3	case	F	7.92	Ger	1915	1002	11/16/K67/S
106	1	case	F	7.92	Ger	1915	1002	11/15/S67/S
107	1	case	F	7.92	Ger	1917	1002	1/17/S67/P
108	1	case	F	7.92	Ger	1916	1002	10/16/C/S67
109	1	case	F	7.92	Ger	1912	1002	S/12/01/?

110	1	case	F	7.92	Ger	1916	1002	16/S67/DM/?
111	1	case	F	7.92	Ger	1916	1002	10/16/S67/S
112	1	case	F	7.92	Ger	?	1002	6/?/S67/S
113	1	case	F	7.92	Ger	1916	1002	S/16/S67/S
114	1	case	F	7.92	Ger	1915	1002	15/S67/11/DM
115	1	case	F	7.92	Ger	1916	1002	11/16/S67/P
116	1	case	F	7.92	Ger	?	1002	S67/?/10/mp
117	1	case	F	7.92	Ger	1915	1002	15/S67/12/DM
118	1	case	F	7.92	Ger	1916	1002	SB/12/16/S67
119	1	case	F	7.92	Ger	1915	1002	?/DM/S/15
120	2	case	F	7.92	Ger	1916	1002	11/16/C/S67
121	2	case	F	7.92	Ger	1915	1002	15/10/S67/P
122	1	case	F	7.92	Ger	1918	1002	1/18/S67/CM
123	1	case	F	7.92	Ger	1915	1002	15/S67
124	1	case	F	7.92	Ger	1916	1002	16/S67/P/3
125	1	case	F	7.92	Ger	1917	1002	S67/MP/10/17
126	1	case	F	7.92	Ger	1917	1002	17/S67
127	1	case	UF	7.92	Ger	1917	1002	17/S67/S
128	1	case	F	7.92	Ger	1917	1002	9/S67/UN/17
129	1	case	F	7.92	Ger	1916	1002	16/S67/S/4
130	4	case	F	7.92	Ger	1918	1002	18/S67/GM/1
131	1	case	F	7.92	Ger	1916	1002	10/16/S67/C
132	1	case	F	7.92	Ger	?	1002	12/S67/?/M
133	1	case	F	7.92	Ger	1917	1002	10/17/S67/DM
134	1	round	UF	7.92	Ger	1915	1002	DM/8/15/C
135	1	case	UF	7.92	Ger	1917	1002	17/S67/S/3

136	1	round	UF	7.92	Ger	1917	1002	M/10/17/S67
137	1	round	F	7.92	Ger	1916	1002	7/16/S67/P
138	1	round	UF	7.92	Ger	1915	1002	M/15/S67/?
139	1	case	F	7.92	Ger	1917	1002	DM/15/17/S67
140	1	round	UF	7.92	Ger	1916	1002	16/M/2/S67
141	1	round	UF	7.92	Ger	?	1002	S67/?/?/?
142	1	round	UF	7.92	Ger	?	1002	S67/S/?/?
143	2	case	F	7.92	Ger	?	1002	?
144	1	round	UF	7.92	Ger	?	1002	?
145	5	round	?	?	?	?	1002	Loose Bullets
146	4	round	?	?	?	?	1002	Loose Bullets
147	18	round	UF	0.303	Br	?	1002	Charger
148	2	case	UF	0.303	Br	?	1002	Round in charger
149	2	case	UF	0.303	Br	?	1002	Round in charger
150	1	case	UF	0.303	Br	?	1002	Round in charger
151	1	case	f	7.92	Ger	1916	1002	
153	3	case	UF	0.303	Br	?	1002	Round in charger
154	1	case	UF	0.303	Br	?	1008	Round in charger
155	1	case	UF	0.303	Br	?	1002	Round in charger
156	3	round	UF	0.303	Br	?	1002	Round in charger
157	1	case	?	0.303	Br	?	1008	?
158	1	round	?	0.303	Br	?	1002	Round in charger
159	1	round	F	?	?	?	1002	Bullet Bent Over
160	1	round	F	0.303	Br	?	1002	15/?/?/?

Appendix 4: Contexts

Context Number	Trench	Cut/Fill Type	Description
(1001)	3	Topsoil/Ploughsoil	Mid greyish brown silty clay, gritty and firm in texture, and with occasional stone inclusions. Having had

			the turf removed, the upper element of this layer was removed by machining. Many shell fragments and other war materiel in this layer. Across all of Tr 3. Lay above Layer 1002
(1002)	3	Subsoil	Mid Greyish brown silty clay, gritty and firm in texture, and with occasional stone inclusions. This layer lay below Layer 1001 and was the subsoil directly below the topsoil, covering the entire trench. In part removed my initial machining, in part by hand. All Features were covered by this. Above 1004, 1006, 1008, 1012
[1003]	3	Cut of a Shell Crater	Possible crater. This cut was a large shell crater which contained the remains of the two Germans found in 2017 (SK1 and Sk2) and the German soldier recovered in 1018 (SK3). This area was clear as a result of a larger excavation area in 2018 – the cuts of last years Tr1 were visible on machining and hand cleaning and thus the feature more easily discerned. Supervisor believed shell perhaps fired from the SW Below 1002, Filled by (1004) and (1018)
(1004)	3	Upper fill of a Shell Crater	Mid reddish brown with frequent yellow flecks – occasional small stones and charcoal fleck The layer had a large quantity of iron fragments and materiel.

			This layer was possibly battlefield clearance and the upper fill of shell crater [1003], it contained the remains of three German soldiers and a large section of German trench revetting material. The layer, as fill of a crater, was roughly circular in plan. Within [1003], above (1018), below (1002)
[1005]	3	Cut for a Possible Dugout	[1005] was the cut of a rectangular feature, possibly a dugout. It contained two pieces of 'elephant iron' which covered a piece of a tank, and other ordnance including two boxes of live, primed British Rifle grenades. This was close to the Hindenburg Line. The cut had a steep northern side. Filled by (1006) and (1019), below (1002). Cuts the Natural.
(1006)	3	Upper Fill of a Possible Dugout	This layer was above two sheets of German 'elephant iron within [1005]. It was a dark mid-greyish brown silty clay layer, firm in texture and with occasional small stones and charcoal fragments. Much battlefield debris within the layer. Rectangular in shape and around 1.6x2.0m in size, 0.5m deep. Fill of [1005], below (1002), above (1019)
[1007]	3	Possible Cut of a Crater or Trench	A possible cut for a crater or trench which was not completed due to its depth – this was

			over 1.2m deep. The feature was at least 4.8x1m in size and was a steep-sided cut. There was a large piece of German revetting material in the base, and battlefield debris within it. Below (1002), filled by (1008), cuts natural.
(1008)	3	Fill of a Possible Crater or Trench	(1008) was a sandy clay layer, dark yellowish brown in colour and with some stone and charcoal inclusions, and with much backfill within – war materiel, building components. This was the fill of a shallow shell crater to the SSE of the ?trench to the NWW. The shell crater was drawn into a possible trench with a section of metal walkway place on the bottom of the 'dugout'. Below (1002), within [1007].
(1009)	3	Possible base of Subsoil	Layer was possibly the subsoil base of layer (1002), not fully excavated but finds kept separate to indicate depth. This was 0.3m deep. The layer was a dark greyish brown silty clay, firm in texture with small stones, charcoal flecks and some battlefield debris within Below (1002)
(1010)	3	Possible base of Subsoil	Layer was possibly the subsoil base of layer (1002), not fully excavated but finds kept separate to indicate depth. This was 0.22m deep. The layer

			was a light yellowish brown silty clay, firm in texture with small stones, charcoal flecks and some battlefield debris within. Below (1002), Above [1015], (1014), (1016), [1017]
(1012)	3	Fill of a Shell Crater	(1012) was the single fill of a possible shell crater [1013], a dark reddish brown silty clay with some charcoal flecks and chalk fragments, the layer was .2m deep. The layer included numerous tank parts. Below (1002), fills [1013].
[1013]	3	Cut of a Shell Crater	Cut [1013] was a shallow shell crater, some 0.2m deep, with shallow sloping sides. 2.1x1.00m in size. Below (1002), filled with (1012)
(1014)	3	Fill of a Shell Crater	(1014) was the fill of a shell crater close to the Hindenburg Line. This was a mid orange brown silty clay layer with the occasional stone within it. Much war materiel too – including .303 unfired rounds and German barbed wire. This layer was c .58m in depth and .9x.7m in size. Below (1010), within [1015]
[1015]	3	Cut of a Shell Crater	An irregular circular feature, probably a shell crater which was concave in shape and with steep irregular sides. The feature was not fully excavated but was at least .58m deep.

			Perhaps cut by another shell crater. Below (1010), filled by (1014)
(1016)	3	Fill of a Shell Crater	(1016) was the fill of a shell crater close to the Hindenburg Line. This was an orangey brown silty clay layer with rare chalk and charcoal fragments and including much war materiel – shell fragments, and at least 1 screw/rivet head from tank. The layer was c0.62m deep and 1.26x.48m in size. Below (1010), fill of [1017]
[1017]	3	Cut of a Shell Crater	An irregular circular feature, probably a shell crater which was concave in shape and with steep irregular sides. The feature was not fully excavated but was at least .62m deep and with a flat base. One of many shell holes created by the Allied bombardment of the Hindenburg Line. Below (1002), filled by (1016)
(1018)	3	Fill of a Shell Crater	(1018) was the lower fill of shell crater [1003], possibly representative of standing water or a fill during the war. 0.24m in depth and 1.64x0.8m in size. The layer was smooth in texture, and light reddish brown in colour with an occasional charcoal fleck. Some Fe objects within too. Below (1004), fill of [1003]
(1019)	3	Layer Within a Possible Dugout/Crater	A layer within [1005], below the 'elephant

			iron' and not fully excavated as live ordnance was discovered, this layer also contained tank parts. The later was a dark greyish brown silty clay with occasional charcoal and small stones. At least 0.4m in depth and 1.6x2.0m in size. Fill of [1005], below (1006)
[1020]	3	Edge of a Shell Crater	An irregular shell crater with steep sides but not fully excavated. This may have been a shell crater but the feature was not completely excavated, at least .22m deep. Below (1002), filled by (1021)
(1021)	3	Fill of a Shell Crater	Part of a layer (not completely excavated) which filled a possible shell crater. This layer was at least .22m deep and was a mid-greyish brown clay mottled sand. With infrequent organic inclusions. There was a fair amount of materiel within the layer with infrequent pieces of CBM throughout, the remains of at least four stick grenades were found, numerous Fe fragments, a fired 6lb shell and several tank parts at the top of the fill. The sandy components may have been the remnants of sandbags. This fill was significantly churned and likely deposited on or days following the

			first battle of Bullecourt.

Appendix 5: Human Remains

The remains of the German soldier in Trench 3 (Harvey Mills)

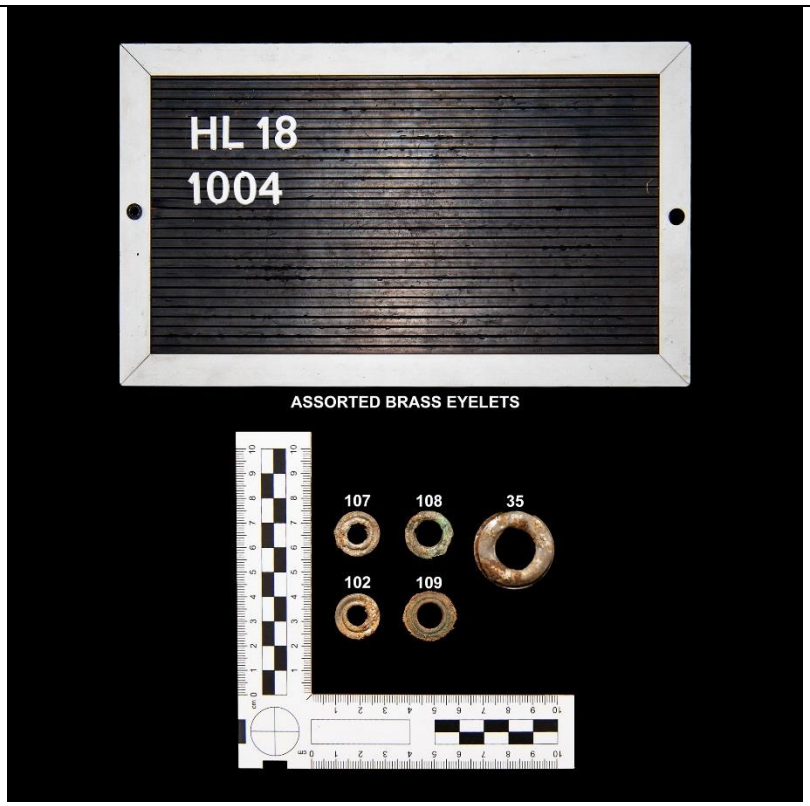
Skeleton 3 (S3)

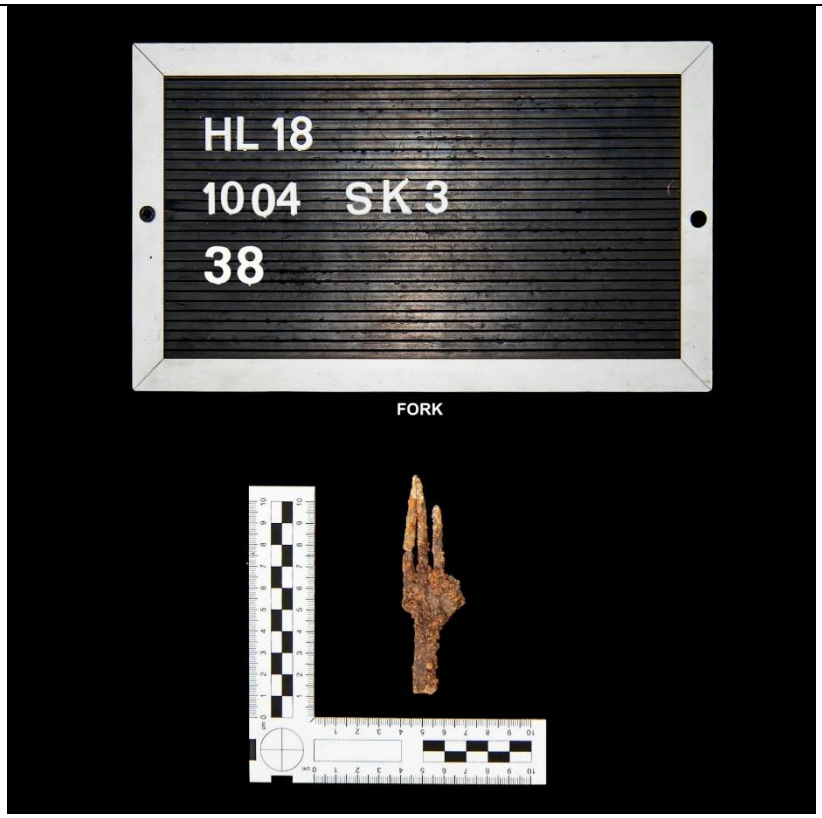
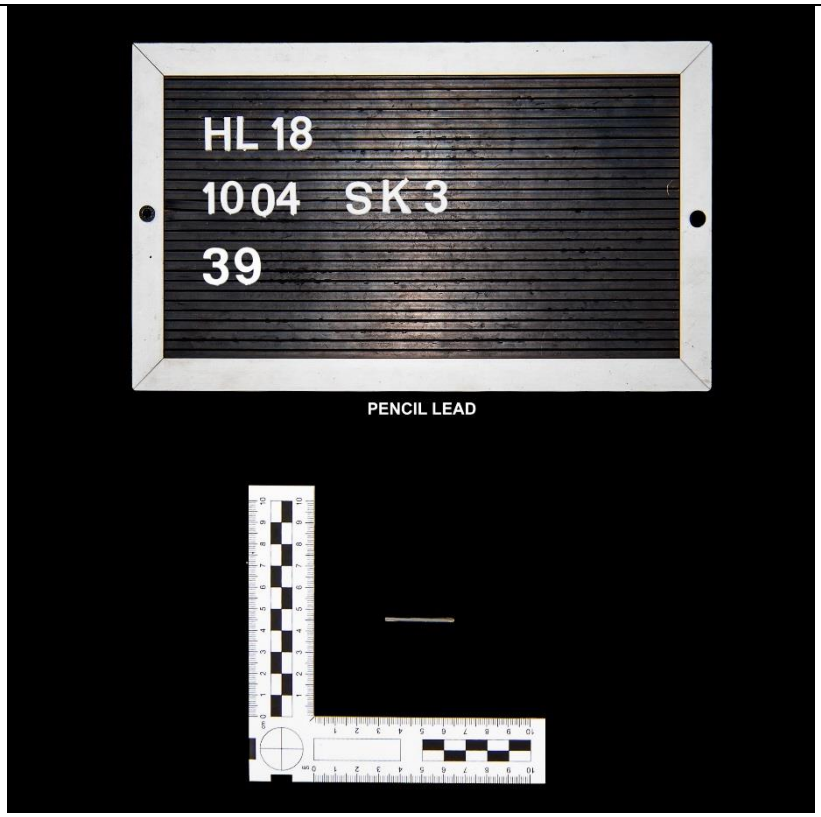
This body lay directly below skeletons 1 and 2 (and thus the tank track of 2017 SF 3009) and was discovered during the initial cleaning of the site in 2018. The body lay face down and was missing both forearms and both legs. He appeared to have been placed on a rectangular sheet of German revetting mesh. The individual was in his later 30s-40s in age but further analysis was not attempted. The remains were fully recovered and collected by the relevant authorities.

Find Region	Item	Comment
Back area	Sf 158 circular tin	
Shoulder area		
Neck Area	Sf 159 Gasmask eyepiece	
Skull Area	Sf 156 Padlock	20cm to the south of skull

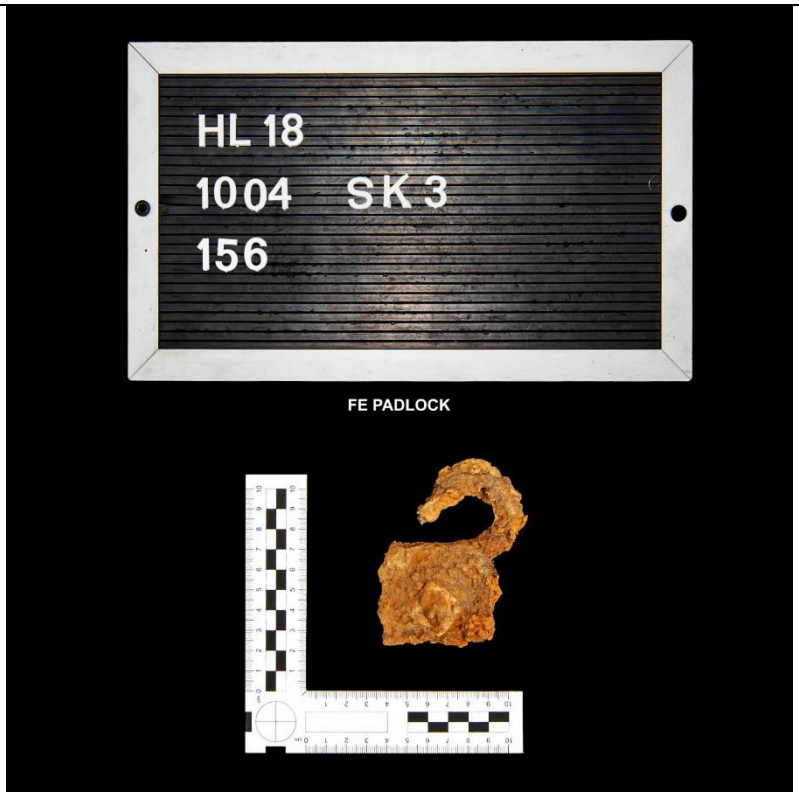
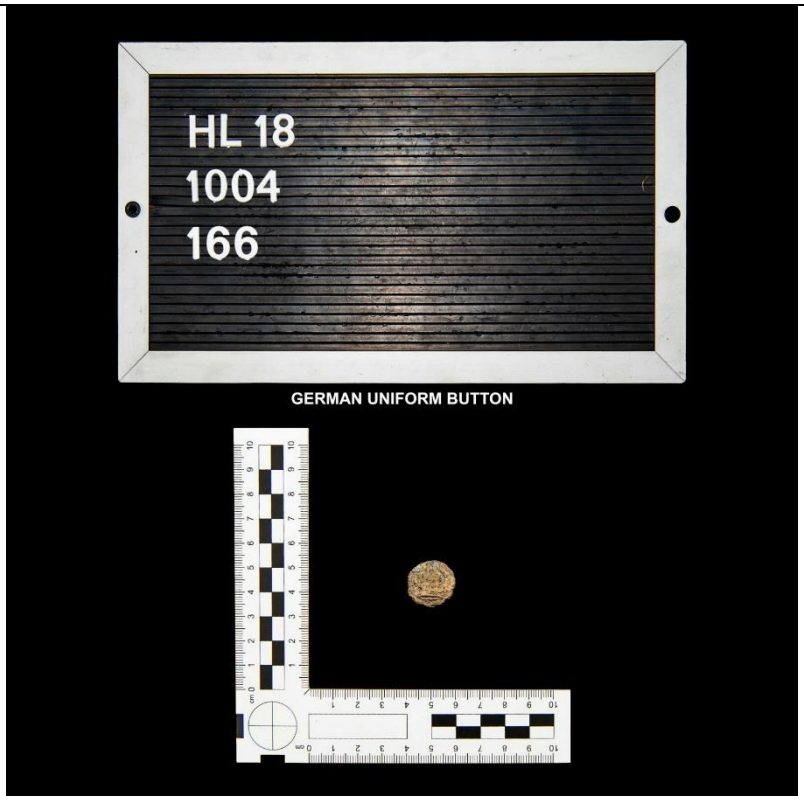
Chest Area	Sf 154 Gasmask canister and Sf 155 Gasmask canister lid, Sf 157 Shirt Button	
Right Arm	Absent	
Waist Area	Absent	
Pelvis Area	Absent	
Feet Area	Absent	

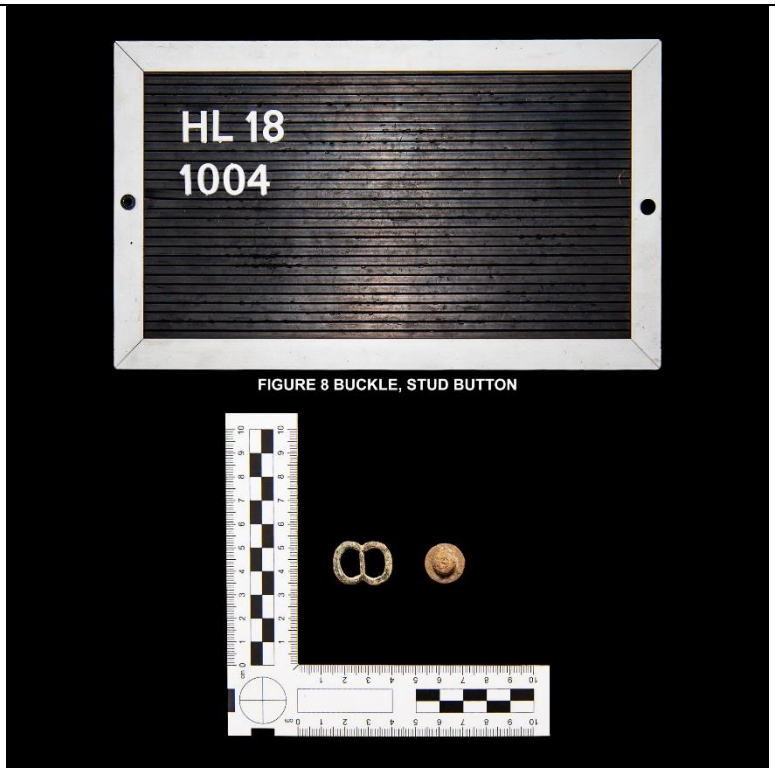
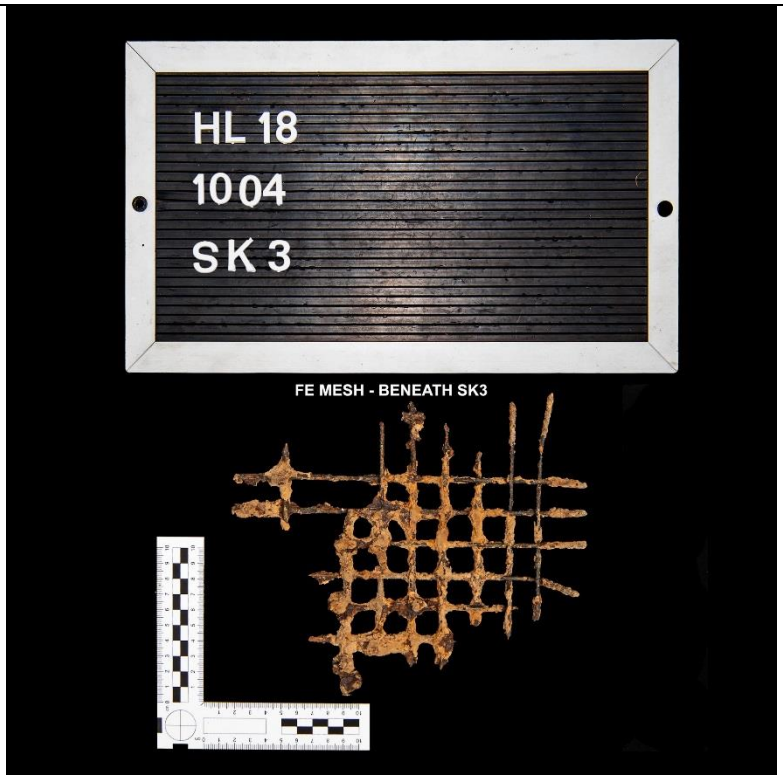
Item (Sf Number if allocated)	**Image**
Six Pounder shell Fragment	

Tunic Buttons **Including Sf157**	
Eyelets – possibly from groundsheet	

Fork (SF 38)	
Pencil Lead (SF 39)	

Elements of Uniform – material and belt clip (SF 128)	
Respirator (SF 154)	

Padlock (SF 156)	
German Uniform Button with Crown motif (SF 166)	

Buckle and Stud	
Mesh sample – the soldier's remains were placed on a rectangular section of this revetting material	

In situ eyelets from the presumed groundsheet which seems to have covered SK3	

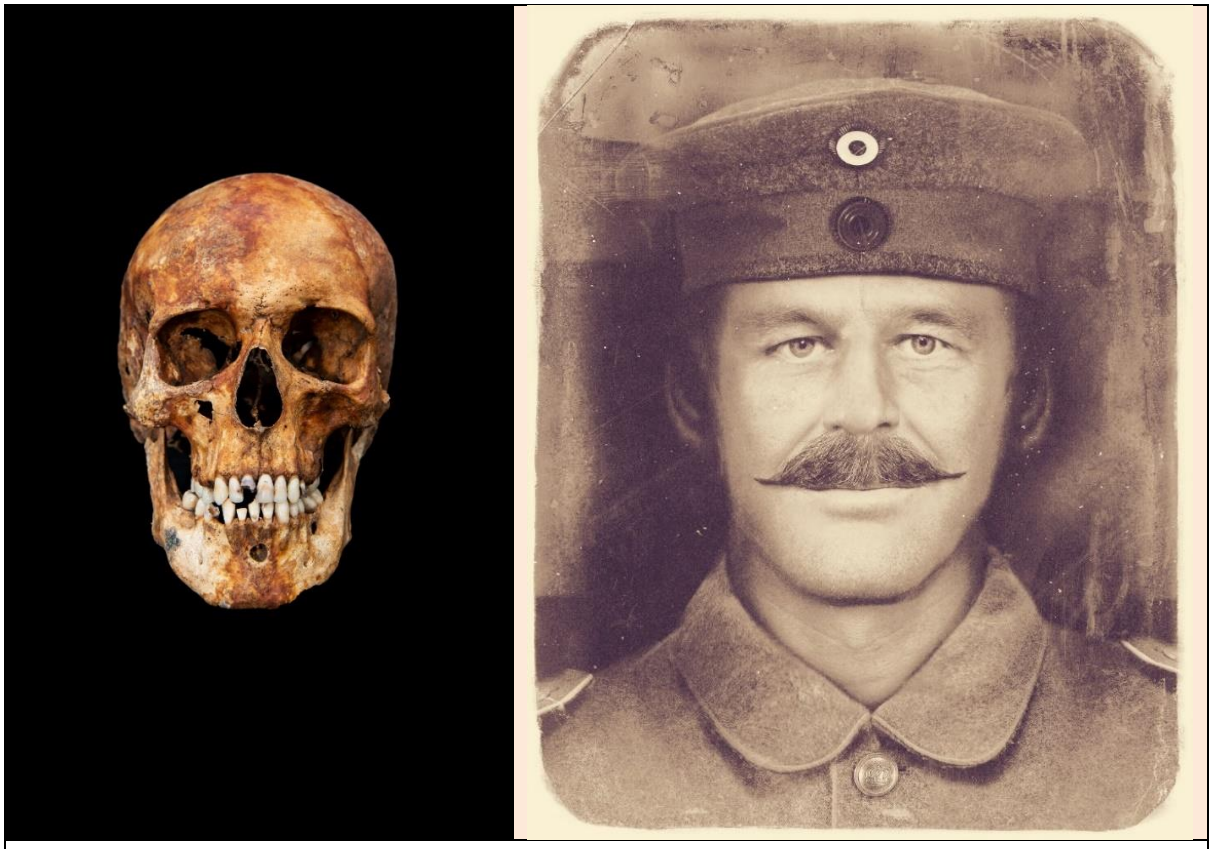
General Comment

The body lay directly below skeletons 1 and 2 and would perhaps have been interred in the same incident. The eyelets of a zeltbahn (groundsheet) lay around the individual as per skeletons 1 and 2 from 2017. This suggested that the bodies, although not deposited with much formality, may well have been covered – their articulation levels would also suggest that they were not left exposed for any length of time. The tank track was partially above all three soldiers but SK3 had not been driven over or crushed by the tank. No identification elements were found with this body and most of the useful equipment had been recovered. No helmet or belt buckle was present and only one button with design (a crown) was excavated as well as one uniform belt loop button.

The only elements of personal equipment found with Sk3 were the remains of a fork, and a pencil lead (the wood having rotted away).

It seems as though all three bodies had either been tipped into a shell crater and then covered rapidly or still lay precisely where they had been killed. The tank track may have been part of a deliberate covering process but this was not certain. The body was associated with a fired tank shell and the individual seemed to have been killed by explosion – it is tempting to link the two but this is far from certain. One possible interpretation is that the Trench revetting material was being used as an in-promptu ‘stretcher’ for SK3 to recover his remains from the battlefield (the remains seemed to respect this alignment) by SK1 and SK2 when they in turn were hit and killed. All three lay in a shell crater.

The remains were fully recovered and collected by the relevant authorities. No immediate identification of the soldier was possible.



The Skull of SK3 with the Facial reconstuction subsequently underaken by FACELAB of Liverpool John Moore University and adapted to plate camera aproximation by Harvey Mills

In addition to the revetting material, a small length of communication wire was recovered from below the body.

Human Foot

In a shallow scoop to the south of the excavation area, a single Allied-pattern boot was uncovered. This boot still contained the bones of the foot that had been in it. The area was carefully excavated and photographed. Further investigation of the immediate area revealed NO further human remains. This might be an episode of battlefield clearance or evidence for traumatic injury remains which were retained in a small shell crater. The boot and its contents were retained by the Commonwealth War Graves Commission.

Allied Boot with foot bones visible (left of scale)