



The Orchard 3rd Auxiliary Military Hospital, Dartford

Archaeological Survey

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Report Number: 001

Site Name: Orchard 3rd Auxiliary Military Hospital, Dartford

HER Event No: TQ 57 NW 1064

Date of Works: April – July 2018

Grid Ref: TQ 5422 7640

Site Code: OMH2018

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Fig. 34 Eastern most visible point of Feature J



Summary

The Orchard Survey project was undertaken by Bexley Young Archaeologists' Club as part of the nationwide Home Front Legacies project that aims to record World War One sites in the UK.

We began with sessions in the archives at Bexleyheath, looking through the local newspaper archives for the First World War for references to the hospital and to the Australians in the area. We also studied historical maps of the area to understand the size of the hospital and the area in which it was situated.

We spent four sessions on site at the Orchard hospital. We identified any accessible building remains and walked over the accessible parts of the site in order to understand its scale. We measured, recorded, sketched and photographed the individual buildings and features that we could access, and chose one of the accessible ward block bases, and associated brick building, to be representative of the rest. GPS readings were taken for the majority of the buildings and features.

A short history of the site is included in this report, but a larger, more detailed history is detailed in a separate document, also submitted to the Home Front Legacies project and the local HER service.

1 Introduction

1.1 Location and scope of work

1.1.1 An archaeological survey was conducted at the site of the Orchard Military Hospital, which lies to the NW of Binnie Road, Dartford.

1.1.2 The work was designed to assist in defining the character and extent of any archaeological remains within the area, in accordance with the Jigsaw Cambridgeshire and Institute for Archaeologists' guidelines.

1.1.3 The site archive is currently held by the group and will be deposited with the Home Front Legacies Project in due course.

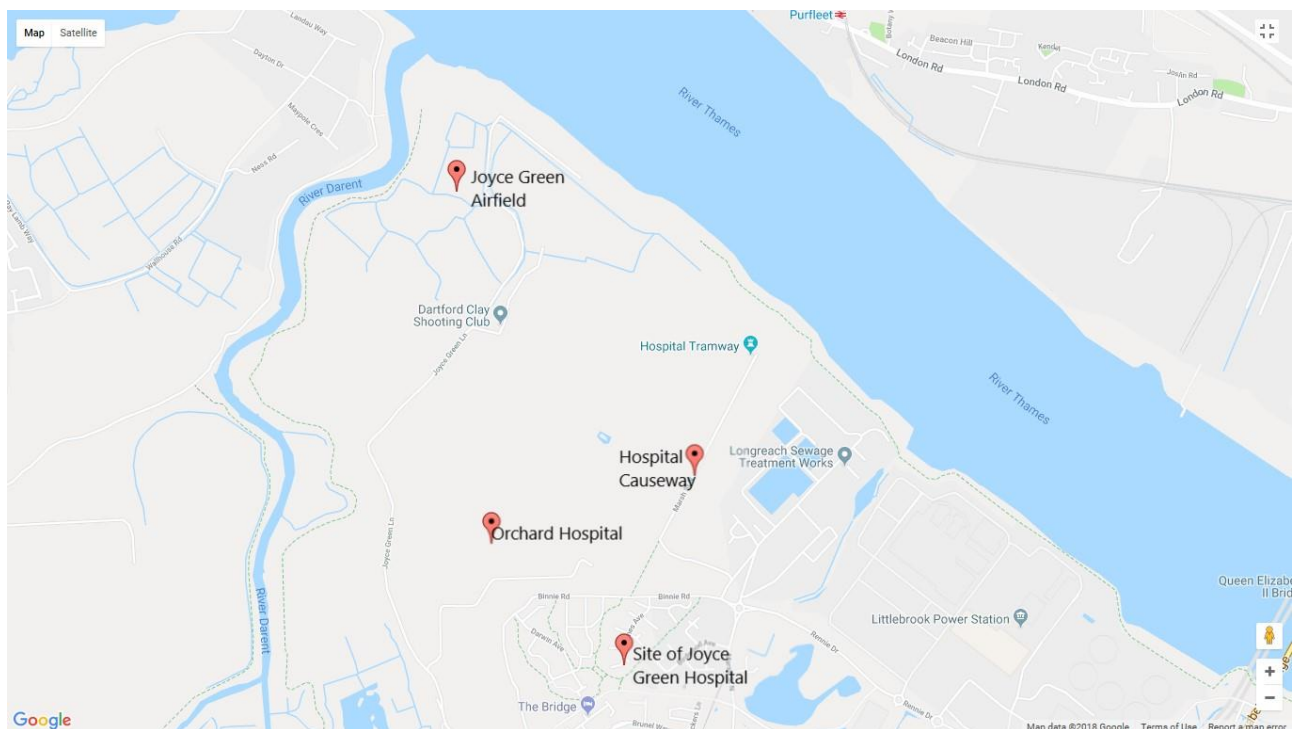


Figure 1 - Location of Orchard Hospital and associated sites.

1.2 Geology and topography

1.2.1 The site of the Orchard Military Hospital lies on the southern edge of the Dartford Marshes. The Dartford Marshes make up the outcrop of land on the southern side of where the Rivers Thames and Darent meet. The main body of the Marshes are formed of a chalk bedrock with alluvial layers on top, mainly clays, silts, sands and peats. The site of the Orchard Hospital lies on the northern edge of a geological outcrop that consists of chalk bedrock which is consistent with the Lewes Nodular Chalk Formation, the Seaford Chalk Formation and the Newhaven Chalk Formation. The superficial layer on top of this bedrock is Taplow Gravel Member, which is fluvial in origin and is consistent with the riverside location.

1.2.2 The site is low-lying and sits within the flat river valley of the Thames. The river valley extends nearly 1km on the southern side of the river, before rising rapidly. Ground level is around 1.5m AOD on the southern edge of the site. The site is part of what was once the Thames floodplain, though new river defences were installed in 1974 to try and prevent localised flooding.



1.3 Archaeological and historical background

1.3.1 There are no scheduled monuments or conservation areas on or around the site on the Kent HER database. There is a ring ditch to the north west of the site of unknown date and known Roman cremation burials lie to the south. To the NW of the site, along the north western edge of the marshes lies the Joyce Green Airfield. The remains of the old hospital tramway (HER no: TQ57 NW 102, covered in greater detail in Appendix B) lie to the east and is preserved under the modern day footpath to the river. The tramway lies further to the east than its HER marker suggests. To the north east of the site, and now partially under the river defences, is the site of the old Long Reach Hospital.

1.3.2 The Orchard Military Hospital was constructed in 1901/02 by the Metropolitan Asylums Board to increase the number of beds available to treat Smallpox patients during the epidemic of the time. The hospital originally accommodated 800 beds. After 1910, the Long Reach hospital was kept in reserve for Smallpox and the Orchard was used mostly for out breaks of fever (Scarlet Fever, Diphtheria etc). The site was turned over to the military in 1915 and was originally used as a British convalescent hospital, and on 9th October 1916 became the 3rd Australian Auxiliary Hospital, Dartford under the command of Lieutenant-Colonel H. Arthur Powell. The Australian Military left the Orchard on the 28th August, 1919, by which time significant improvements had been made to the site, including the grounds, cookhouse, staff and officers' quarters and the addition of an operating theatre. The capacity of the hospital had also increased to 1,200 beds.

Total number of admissions and deaths		
	Admissions	Deaths
1916	4,297	1
1917	25,000	5
1918	27,115	24
1919	10,170	
Totals	66,582	30

After the First World War the hospital was largely unused, occasionally opening for epidemics of infectious diseases such as scarlet fever and diphtheria. In 1939, the British Army took over the site, first turning it into an Officer Cadet Training Unit (constructing an assault course for this purpose) and later to house a battalion of the Green Howards and finally a contingent of anti-tank gunners. These units left after D-Day, and the following night a doodlebug partially demolished the site and it was eventually fully demolished a few years later.

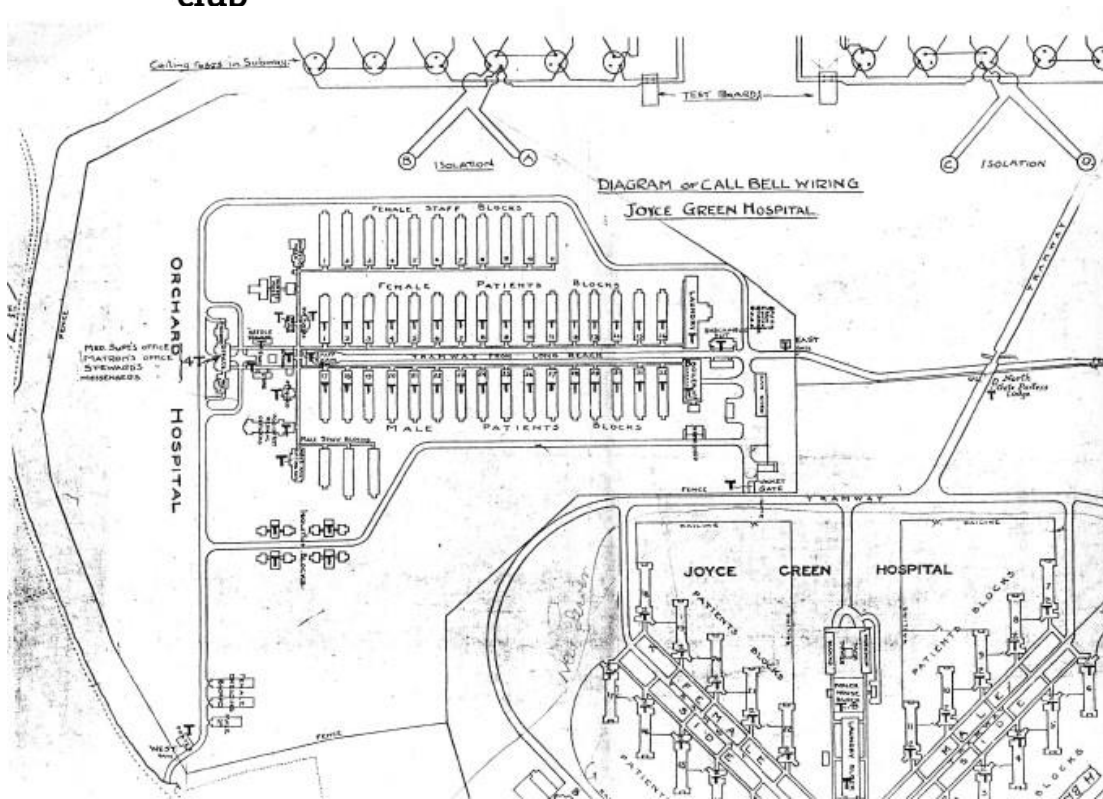


Figure 2 - Diagram of Call Bell Wiring from Joyce Green, showing the buildings present at the Orchard Hospital and some of their purposes.

1.4 Acknowledgements

1.4.1 We would like to thank the Bridge Estate, Dartford and Dartford Borough Council for allowing us permission to access and survey the site of the Orchard Hospital and its associated tramway.



2 Aims and Methodology

2.1 Aims

2.1.1 The objective of this site survey was to determine as far as reasonably possible the presence/absence, location, nature, extent, date, quality, condition and significance of any surviving archaeological deposits within the area.

2.1.2 Excavation was not allowed on site, so it was aimed to photograph and record any remaining key features of the site.

2.2 Methodology

2.2.1 Walkover survey conducted to identify accessible building remains and to identify locations of main buildings from the historic maps.

2.2.2 Buildings were measured, sketched and photographed using appropriate scales. GPS readings were taken for most buildings.

2.2.3 The tramway was measured as far as was accessible and key features were photographed. Multiple GPS readings were taken along its length.

2.2.4 The first session the site was cool with light rain. All follow up sessions the site was hot and dry.



3 Results

3.1 Introduction

3.1.1 The results of the site survey are discussed below. Each of the buildings/features recorded is discussed in separate sections below, with each building or feature being assigned a letter to identify it. Details of given of orientation, length, width, building materials and any visible remains. Discussion of their usage and how they match up to items on the surviving maps of the site can be found in section 4.

3.2 Building A (GPS Lat: 51.46526 Long: 0.22538)

3.2.1 Rectangular building to the east of Buildings B and E, just within the perimeter of the site. The floor of this building is largely composed square, red tiles. The building measures 4.26m N-S and 9.84m E-W. In the southeastern corner of the building is a 2m² concrete floored area with exposed pipework. No walls remain. An original telegraph or telephone pole stands to the south of this building (GPS Lat: 51.46524 Long: 0.22534).

3.3 Building B

3.3.1 The size of this building is undetermined as the area was too overgrown to find the edges, it sits directly to the south of Building E. The building appears to be reasonably large, with a compact metalled floor with the remains of wooden posts, now collapsed. No walls remain.

3.4 Building C (GPS Lat: 51.46524 Long: 0.22468)

3.4.1 This building sits to the west of Buildings B and E. It measured 10.87m N-S, though it was impossible to determine its length E-W as these ends were too overgrown. No standing walls for this building remain. The floor was possibly Linoleum originally, building rubble around the building shows it was a brick structure, and white tiles and sanitary ware are also visible.

3.5 Building D (GPS Lat: 51.46516 Long: 0.22434)

3.5.1 This building sits to the south of Building H. It measures 4.64m N-S and 13.11m E-W. The floor of this building is concrete and has a small wall (23cm wide) running around its perimeter. Pieces of metal and nails, broken window glass and broken mirror glass are all visible within the footings of this building.

3.6 Building E (GPS Lat: 51.46549 Long: 0.22500)

3.6.1 Rectangular building aligned N-S at eastern end of the site. The east wall measured approximately 29.4m N-S but was very overgrown and fragmentary at the southern end and as such may have extended further. The eastern wall is brick built, only 45cm of the height remains (4.5 courses) and it is capped with concrete. The north wall of the building measured 8m E-W. The western side of the building was open, with wooden posts set into concrete bases approximately every 2.5m. At the southern end of the building the posts and bases are completely missing, and the length of that side of the building is extrapolated from the length of the eastern wall. At the northern end of the western side some of the posts are missing, but the concrete bases survive. There are five posts that survive in their bases, all are badly damaged and missing approximately half to two thirds of their original height. The southern wall is completely missing.

3.6.2 The floor of the building is made of moulded concrete (scored to look like tiles), with a central walkway running north to south and an access slope in the centre of the western side. The eastern and western sides of the building are raised above this central walkway, with a gully running in front of both. The gully on the western side of the walkway to the south of the entrance slope appears to have been filled in with concrete at a later date. Metal post holes are set into the western platform to the north and south side of the



entrance slope. On the eastern platform metal post holes are set into the concrete, running N-S approximately 110cm apart. On the western platform, pairs of metal rails are set into the concrete between each pair of posts. Only three sets of these were fully exposed and the pairs were all set 4ft apart. Lots of broken window glass survives in this building. Unfortunately after our visit to record this building a fire was set on the north-western edge and the wooden posts are now largely lost and the concrete bases smashed up or otherwise moved.

3.7 Building F (GPS Lat: 51.46553 Long: 0.22081)

3.7.1 The footings of this building are one of many similar footings visible across the site. This one was recorded as it was the clearest and most easily accessible. It sits to the south of Feature J in the western part of the centre of the site. It measured c.433m N-S and c.8.4m E-W. It had a small spur on the southern end but this was not clearly visible and wasn't measured. Building rubble around the metallised footings suggest that there were some brick courses originally. Fragments of corrugated metal are also visible on the footings.

3.8 Building G (GPS Lat: 51.46569 Long: 0.22096)

3.8.1 This is one of several of this type of building. These are the only structures still standing on the site. This example was chosen as it was the most accessible. It stands directly to the east of Building F, approximately 3.86m away. It measured 9.34m N-S and 3.74m E-W. It is a brick structure with a reinforced concrete roof, above which some timber roof beams survive. Some fragments of corrugated metal are also visible. There are two openings with concrete lintels in the eastern wall, the northern opening measuring 1.23m across and the southern opening measuring 93cm across. In the western wall is one opening with a concrete lintel at the northern end, measuring 93cm. The walls measure 2.66m from the ground to the base of the roof.

3.9 Building H (GPS Lat: 51.4652 Long: 0.22435)

3.9.1 This building stands to the north of Building D. Accurate measurements were unable to be taken as the footings are very overgrown and the edges indiscernible. The building is largely rectangular and is aligned N-S. A substantial amount of building rubble surrounds these footings and these remains suggest that the walls were constructed from brick. The floor is made of reinforced concrete, with drains and water gullies still in situ. Fragments of corrugated metal are also visible.

3.10 Feature I

3.10.1 This feature is on the northern side of the hospital site. It is a brick lined gully between 76cm and 80cm deep. It measures 186cm wide and runs E-W. The retaining walls are two courses wide, measuring approximately 23cm.

3.11 Feature J

3.11.1 Feature J runs along the length of the site from E-W. Its length was not measured as in places it is overgrown. It is 3m N-S along most of the visible length. Approximately halfway along the site it widens to 4m, after 31m it narrows back to 3m (GPS Lat: 51.4657 Long: 0.22191). At the western most visible point the feature widens into a roughly circular shape approximately 14.3m N-S and 14.65m E-W (GPS Lat: 51.46572 Long: 0.21971). Building rubble lies to the western and northern sides of this circle, with reinforced glass, concrete slabs and bricks all visible. Just to the east of the circular shape is another wider portion of the feature, widening to approximately 4m, before returning to 3m (GPS Lat: 51.4657 Long: 0.21992).



4 Discussion and Conclusions

4.1 Building A

3.2.1 This building lies on the eastern most limit of the hospital site and on the line of the hospital tramway (Feature J). It is not marked on any of the maps of this site, though due to the presence of the telephone/telegraph pole it is possible that this building was a guard house on the eastern gate of the site. It is known that the Australian Military built new buildings and upgraded existing buildings throughout the length of their occupation in the First World War, so it is possible that this building may have been constructed then. The concrete area of this building may have been either a small kitchenette or bathroom, but it is impossible to say for certain.

4.2 Building B

3.3.1 The edges of this building are unclear, though some pieces of timber survive, suggesting that it may once have been a timber structure over a metal base. This building is also not marked on the surviving maps of the site. It is possible that it may have been a barn or shed-type building used for the storage of farm equipment after the site's destruction at the end of the Second World War to be used for farming for Joyce Green Hospital next door.

4.3 Building C

3.4.1 This building is not clearly visible on the existing maps of the site. It is possible that one of the buildings marked may match up to it, but its purpose is not listed. All the mess halls and staff/officers' accommodations are marked at the western end of the site on the existing maps. It is possible that it may have been a mortuary. An Australian military report of the site states that the mortuary, workshops and destructor are all in the southeastern part of the site.

4.4 Building D

3.5.1 This building appears on the existing maps of the site and is marked as a workshop, though it may also have doubled as a store building. The presence of mirror glass and nails would help corroborate its existence as a workshop.

4.5 Building E

3.6.1 This building is present on the existing maps of the site and is marked as the car shed. The three hospitals in the area were all served by a tramway that started at the river and led south, branching off into each of the hospitals (see Feature J and Appendix...). The western side of the building is open to allow the tram cars to be parked in the bays between the wooden posts. This tramway is known to be unique as the cars were specially designed and patented by the Metropolitan Asylums Board and the gauge is 4m wide. The slope on the western side of the building allowed access to the central walkway and the eastern side of the building for men and presumably also for horses. The tramway was horse-drawn for the whole of its use between c.1902 and the 1930s. The metal post holes to either side of the entrance slope are assumed to have once held a safety rail to separate the tram car bays from the entrance way. It is assumed that the gullies to either side of the walkway were present for drainage and cleaning, though it is unknown as to why part of one has later been filled with concrete. The concrete of the eastern platform is well worn and the scored faux-tile surface is largely worn away in places. It is suggested that this side of the building may have housed stalls for the horses pulling the trams, with the metal post holes being part of partitions between each of the stalls.



4.6 Building F

3.7.1 This building is one of many Ward Block footings still visible across the site. This building can be matched up to the existing maps of the site and is Ward Block 21. Photographic and documentary evidence shows that these ward blocks were wooden weatherboard huts built on small brick retaining walls and supported underneath by iron beams. The base beneath was compacted and metalled. The site is low-lying and was prone to flooding due to its proximity to the marshes and the Rivers Darent and Thames, which is why all of the blocks were raised off the ground on supports. Documentary evidence from the Australian occupation of the site in the First World War shows that each of these blocks housed 46 beds and that there were 32 blocks all together, though some of them were used as mess halls and recreational facilities. Each of the ward blocks had a toilet spur at the far end of the building, and a kitchen and bathroom by the entrance.

4.7 Building G

3.8.1 The purpose of these buildings is unknown, though there is one present every third ward block. The example recorded lies between Ward Block 21 and Ward Block 22, though all of the similar buildings along the central tramway are still standing. There are nine of them in total. It is possible that they may have been air raid shelters for the ward blocks, as they had reinforced concrete ceilings and door lintels, though as each ward housed up to 46 men and each of these building seemed to serve up to three wards, it is unlikely that they were constructed for this purpose. There are metal ventilation grills in each building and the remains of what appears to have been plumbing, suggesting that these may have been additional toilet blocks as each ward only had three toilets for 46 men and staff. The wooden roof timbers appear to have been added at a later date. These buildings are not marked or labelled on any existing map and are not referenced in the Australian military report from the First World War.

4.8 Building H

3.9.1 This building is marked on existing maps as the Boiler House. It is likely that it also held an incinerator for the destruction of waste materials. It powered the Laundry building to the north of it, though no trace of the Laundry survives due to undergrowth and dumps of building rubble.

4.9 Feature I

3.10.1 This gully runs along the south edge of the staff accommodation blocks on the northern side of the site. This part of the site is the lowest lying and the closest to the Dartford Marshes. As such it must have been prone to flooding and drainage issues. It is believed that this ditch was a drainage ditch and would have had boarding over the top with a roof to create a veranda for the staff accommodation as well as to hide and create a pathway over the ditch.

4.10 Feature J

3.11.1 This feature is the remains of the hospital tramway, that branched off from the main tramway that ran between Long Reach Pier and Joyce Green Hospital. No rails survive in situ, but the line of the tramway is marked on the maps and the metalled base, into which the rails would have been set, is still visible. A passing place is visible approximately halfway along the length of the hospital tramway, with a turning circle at the western end. The tramway would have run between the Laundry and Boiler House buildings, past the gatehouse and out onto the main tramway, however the only visible section runs from the turning circle (at the western end) and ends just before the Boiler House and Laundry.

Appendix A: Site Photographs

Building A:



Figure 3 - Telephone/Telegraph Pole from Building A



Figure 4 - Tiled floor and Telephone/Telegraph Pole to the south of the floor remains of Building A.



Figure 5 - Tiled floor of Building A (looking east).

Building B:



Figure 6 - Base of Building B, possible farm store.



Figure 7 - Building rubble from next to Building C



Figure 8 - Base of Building C



Figure 9 - Base of Building C.

Building D:



Figure 10 - Base of Building D.



Figure 11 - Tram Car bays on southern side of entrance slope on western side of the shed. (looking west).



Figure 12 - Entrance slopeway on western side of the tram shed. (looking west).



Figure 13 - Tram Car bays on northern side of entrance way on western side of the shed. (looking west).



Figure 14 - Eastern platform opposite the entrance way with gully in front. (looking east)



Figure 15 - Tram Shed looking south. Eastern platform visible on the left, with the central walkway with gullies on either side, and the tram car bays visible on the right.



Figure 16 - Outside face of the eastern wall of the tram shed. (looking west)



Figure 17 - Metalled base for Ward Block 21 (looking south).



Figure 18 - Wall courses from Ward Block 21 dumped beside the base footings.

Building G:



Figure 19 - Metal grill from the wall of Building G.



Figure 20 - The interior of Building G (with hole in the wall for the metal grill).



Figure 21 - Exterior of Building G (looking south).



Figure 22 - Interior ceiling of Building G made of reinforced concrete.



Figure 23 - Base of Building H (Boiler House). (looking north)



Figure 24 - Building rubble from Boiler House (building H).



Figure 25 - Brick edge of drain from Boiler House (building H)



Figure 26 - Building material from Boiler House (building H)



Figure 27 - Building rubble from Boiler House (building H)

Feature I:



Figure 28 - North retaining wall for gully (Feature I)



Figure 29 - Corrugated metal and timber posts - possibly from a roof over the covered drainage ditch (Feature I).

Feature J:



Figure 30 - Building rubble beside the turning circle at the western end of the hospital tramway.



Figure 31 - Fragments of reinforced glass found beside the turning circle the western end of the hospital tramway (glass designed by Pilkingtons in 1898)



Figure 32 - Passing point on the tramway approximately halfway along the hospital site.



Figure 33 - Tramway running through centre of hospital site.



Figure 34 - Eastern most visible point of the hospital tramway.

Appendix B: Report written by YAC member Sean Robinson



In the picture on the left, I am measuring the length of the base of building D (labelled as a workshop on the map). In the middle picture, I am helping to find the edge of the building. The picture on the right shows what it looked like once we had finished.



In this picture, I was measuring (in metres) the distance of a ward block base.



In this picture we are looking for traces of metal with metal detectors. We found the frame of a window and part of the wheel from a tram.

Appendix C: Map of GPS Locations

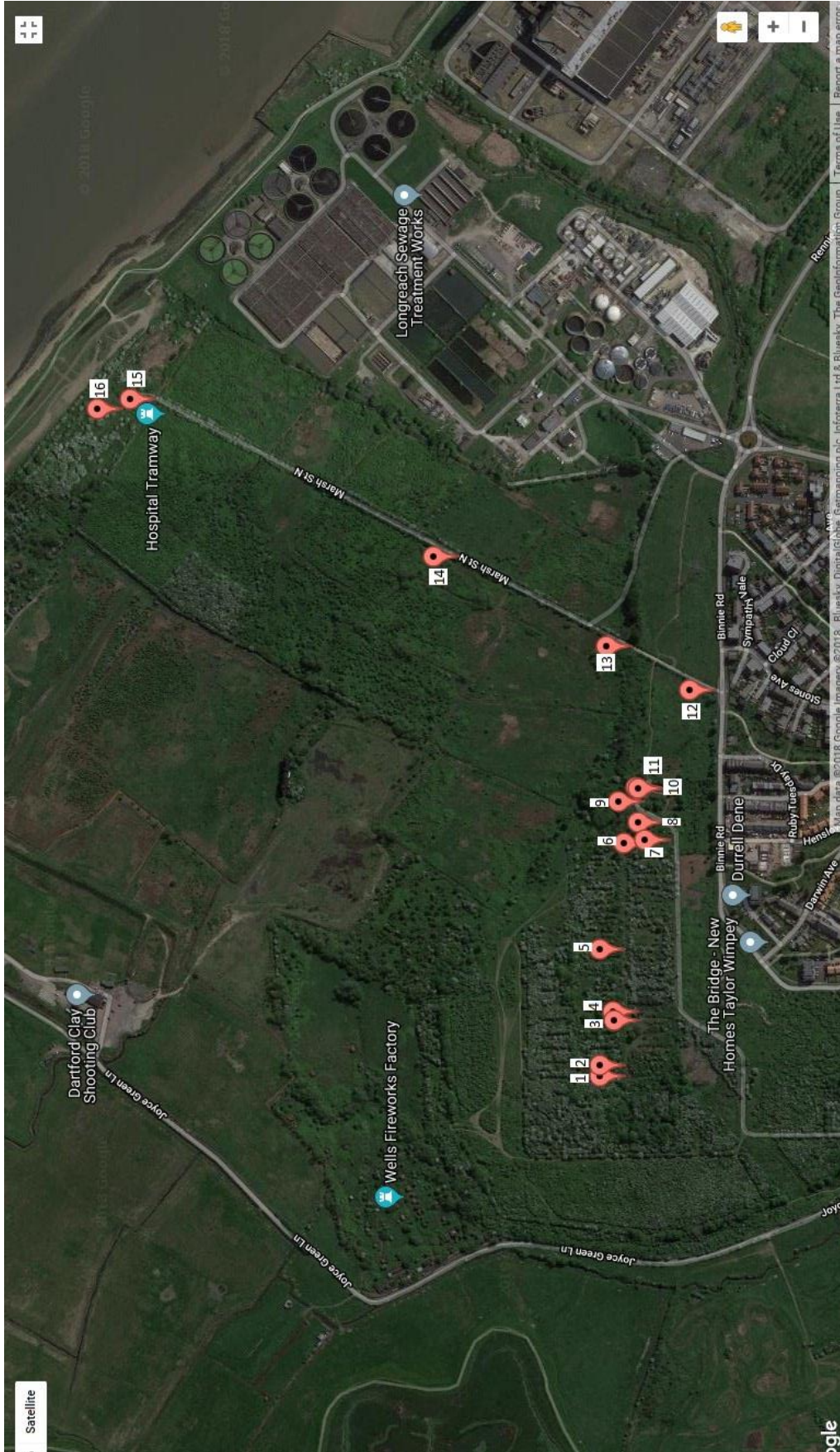


Figure 35 Satellite image of Orchard Hospital and Long Reach Causeway with GPS markers Report no. 001



List of GPS Markers (accurate to within 10m)

- 1) Western turning circle of Orchard Hospital tramway. (Lat: 51.46572 Long: 0.21971)
- 2) Western passing point of Orchard Hospital tramway. (Lat: 51.4657 Long: 0.21992)
- 3) Base of Ward Block (Building F) (Lat: 51.46553 Long: 0.22081)
- 4) Building G (Lat: 51.46569 Long: 0.22096)
- 5) Central passing point of Orchard Hospital tramway. (Lat: 51.4657 Long: 0.22191)
- 6) Boiler House (Building H). (Lat: 51.4652 Long: 0.22435)
- 7) Workshop (Building D). (Lat: 51.46516 Long: 0.22434)
- 8) Building C. (Lat: 51.46524 Long: 0.22468)
- 9) Tram Shed (Building E). (Lat: 51.46549 Long: 0.22500)
- 10) Telephone/Telegraph pole associated with Building A. (Lat: 51.46524 Long: 0.22534)
- 11) Building A. (Lat: 51.46526 Long: 0.22538)
- 12) Southern end of surviving Long Reach Causeway near Binnie Road. (Lat: 51.46441 Long: 0.22722)
- 13) Treeline on line of original E-W tramway to Orchard Hospital. (Lat: 51.46562 Long: 0.22813)
- 14) Passing place on Long Reach Causeway. (Lat: 51.46775 Long: 0.22981)
- 15) Long Reach Gates. (Lat: 51.47152 Long: 0.23293)
- 16) End of accessible causeway. (Lat: 51.47188 Long: 0.23265)

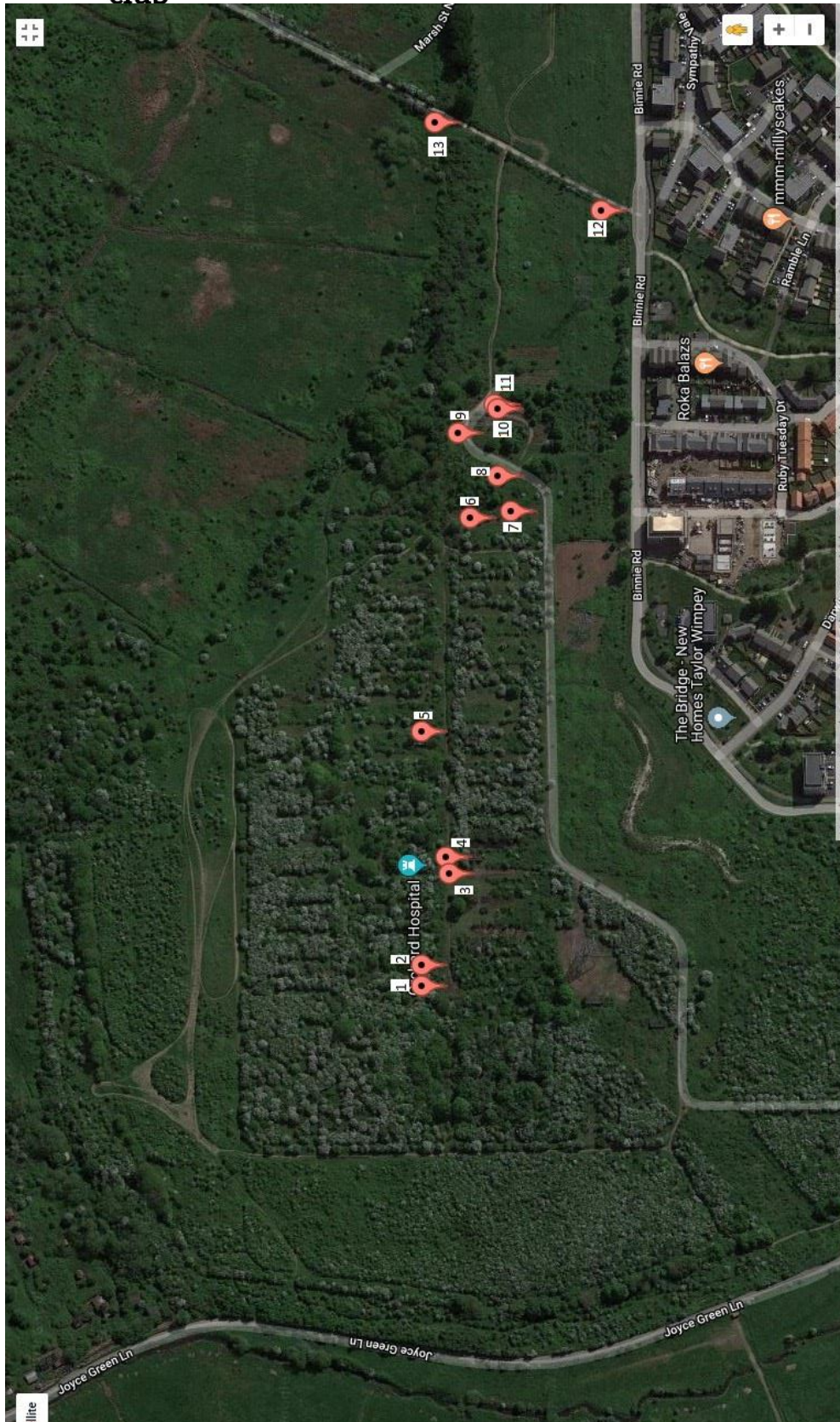


Figure 36 Satellite image of Orchard Hospital and part of Long Reach Causeway with GPS markers. The outline of the Orchard Hospital Site can be seen in the plant growth.



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