

Archaeological Excavation

Clavering Road

Hartlepool



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Summary

This report describes the methodology and results of an archaeological excavation undertaken by Tees Archaeology at Clavering Road, Hartlepool. The site is centred on National Grid Reference NZ 485 354. The fieldwork was undertaken in October 2022 as part of the Heritage Lottery Funded, Seascapes Project.

The site is an area of maintained open space within the Clavering housing estate. Public footpaths run along the west and south of the site while housing forms part of the eastern boundary.

A geophysical survey was carried out on the site in May 2022. A subsequent excavation followed in October 2022 in order to identify any surviving remains of the First World War Sound Mirror. This would also raise awareness of the former presence of the Sound Mirror and its significance to the area whilst also providing an opportunity for local people and local schools to be involved.

The archaeological works comprised the excavation of two trenches, with a third trench excavated to be used by school children.

The excavations demonstrated that much of the area had been levelled. Although concrete fragments were recorded during the excavation, it was not possible to determine if they had previously formed part of the sound mirror or derived elsewhere. Glass and pottery from the 19th and 20th centuries was recovered; the nature of the finds on site suggests that much of it could be debris relating to the demolition of the nearby 'chalets' observed on the 1948 and 1952 aerial photos.

Acknowledgements

Tees Archaeology would like to thank the ten volunteers who took part in the excavation and made it such a success.

The project could not have taken place without the permission and support of Hartlepool Borough Council and we would like to thank all those involved. We would also like to thank the Gillen Arms allowing us to use the pub as a tool store and base.

The project was part of the Seascape, Tyne to Tees Shores to Seas project, funded by the Heritage Lottery Fund and we would like to thank Karen DGLISH, Seascape Project Manager and Vicky Wade, Seascape Volunteer Co-ordinator for their help and support.

1. Introduction

An archaeological excavation of land in an area of open space on the Clavering Estate, Hartlepool (Figure 1) was undertaken between 17th October 2022 and 21st October 2022 as part of the Heritage Lottery Funded, Seascapes project. The fieldwork was led by Rosemary Banens and Robin Daniels of Tees Archaeology and supported by Seascope staff and OASES who are the education provider to the Seascope Project and was carried out with the help of local volunteers.

A geophysical survey had previously taken place across the site. Excavation trenches were targeted on anomalies from the survey results. The project was carried out in order to assess the archaeological remains in the area, involve local people and to raise awareness of the heritage of the area.

The excavation was designed to look for evidence of the WWI sound mirror, which was situated in the area, or any associated activity. The exact location of the sound mirror was unknown, and the excavation hoped to address this.

The excavation involved 10 volunteers, between whom were on site for 27 days.

The excavation was conducted in collaboration with a sound artist, Rob Smith, who undertook workshop sessions with classes at Clavering Primary school. Students from the school also visited the site; the older classes were given the opportunity take part in their own excavation and were given a site tour, while the younger classes observed the trenches through the fencing. All classes took part in on-site listening activities with the sound artist.

The site was also visited by members of the Battlefield Trust. Throughout the project volunteers and staff engaged with the general public, from whom there was a high level of interest.

There was strong media coverage of the project with BBC Radio Tees and the Hartlepool Mail running pieces.

2. Location and Geology

The site is an area of maintained open space within the Clavering housing estate, with views out to sea to the east (Figure 1). Housing bounds the site to the north and partially to the east (Figure 2).

The highest point of site is 40.80m above sea level (OD), with the ground sloping down to 39.49m OD to the east. The underlying geology of the site comprises limestone bedrock overlain by superficial till deposits.

3. Historical and Archaeological Background

In 1916, in response to Zeppelin attacks on the north-east, the Northern Defence Area Board run by the Army decided to build a chain of 'acoustic mirrors' along the north eastern coast of Britain.

These 'acoustic mirrors' were manned by No.8 Observer Corps, who reported any

intrusion of Zeppelins by telephone to their H.Q., which was based at the 'Poplars' in Woodlands Road, Middlesbrough. It was hoped that an early warning of attack would be disseminated via the police to the local civilian population, anti-aircraft guns, and local airfields.

The actual acoustic detection range of the Zeppelins engines was limited to about 6.5 miles out to sea, subject to weather conditions and extraneous noises. With the average speed an attacking Zeppelin being approximately 45mph, the early warning time was roughly 8 to 10 minutes. By cross referencing two sound source directions from two sound mirrors, it was hoped that the direction and distance of a Zeppelin could be determined. Six coastal mirrors were built on the North-East coast; unfortunately, only three survive today. These surviving mirrors are located at Boulby, Redcar and Fulwell near Sunderland (Figure 20). The north-eastern mirrors consist of vertically mounted concrete slabs with a central shallow dish, 4.6m (15ft) in diameter and frontal plinth mountings for microphones, though they are not a uniform group and variations are present (Dobinson 2000).

The concave surface of the sound mirror was designed to reflect sound to a central point about 3m away from the mirror. A conical trumpet was mounted on an arm set on a pole at this point and could be swung around to pick up the strongest sound from the mirror. On the mirror, a reverse compass rose would be painted; this allowed the direction of the origin of the noise to be plotted. The arm would be moved by one person, while another would listen through a stethoscope connected to the trumpet (Figure 19).

Historic mapping indicates that the excavation site was undeveloped until the 20th century, with a bridle road running adjacent. The sound mirror is depicted on the 1939-1946 Ordnance Survey map (Figure 17). Some mirrors, such as the Boulby, Redcar, and Fulwell ones, had frontally projecting side walls on either side, turning them into 'U' shaped structures; the 1939 Ordnance Survey map as well as aerial photographs of the Clavering sound mirror in 1948 and 1952 show that it also had wing walls (Figures 17 & 18). Only the earthworks of the sound mirror are shown on the 1952-1958 OS map. The land surrounding it was developed into the Clavering Estate in the 1960s, and the sound mirror was subsequently demolished.

4. Aims and Objectives

There were four primary aims of the project:-

- to locate and excavate as much of the sound mirror complex as possible
- to provide a range of interpretative material to mark the location of the sound mirror and provide the local community with a lasting resource
- to raise awareness of local people and involve them in the project
- to work with the local school and involve them in the project

The results of the project will form part of a permanent archive of the site. The archive will be deposited with Tees Archaeology under the site code CSM22.

5. Methodology

Three trenches were excavated using a 180-degree mechanical excavator fitted with a 1.8m wide 'toothless' ditching bucket (Figure 2). The excavation of the trenches was carried out under the direct guidance of the supervising archaeologist.

Subsequent excavation and recording was undertaken following the methodology set out in Tees Archaeology Fieldwork recording manual. Following machine excavation, the sections and the base of each trench were cleaned using the appropriate hand tools. Sections within each trench were drawn at a scale of 1:10 and plans were drawn at a scale of 1:20. The location of each trench was surveyed using GPS.

Deposits were recorded using pro forma context recording sheets. A photographic record of the investigations was compiled using digital cameras. All photographs include a graduated metric scale. The photographic record forms part of the project archive. A temporary benchmark was established on the site using established survey information.

6. Results

Excavation Descriptions

Trench 1 (Figures 2 – 4, 7 – 10)

Trench 1 was 'L' shaped, measuring 16.69m along the long axis and 7.95m along the short axis. The trench width ranged between 2.53m and 2.68m. It was sited to the east of Clavering Road, on ground that sloped down to the east, towards the sea.

The earliest deposit observed in this trench was layer [107]/[104]. Recorded in two separate slots, this made ground layer was a light orange-brown clayey-silt, measuring between 0.08m and 0.2m thick, containing fragments of concrete, chalk, brick, and nearly intact kerb stones. It is possible that some of the concrete from this layer is associated with the sound mirror; however, there is no way to confirm this.

Partially overlying [107] was a small tip layer, [108], which comprised primarily of small sub-angular stones in a mid-brown sandy-silt matrix; an unidentified iron object and a brick fragment were observed in this deposit.

An historic topsoil layer, [103], sealed [104]. This layer 0.17m thick layer was a dark greyish- brown friable silty sandy clay, with very occasional flecks of charcoal and small stones.

A similar historic topsoil layer, [101], was observed at the northernmost end of the trench, measuring 0.1m thick. This mid-brown friable sandy-silt contained a variety of finds including 19th/early 20th century pottery and a stamped tobacco pipe stem. Layer [101] was sealed by 0.15m thick made ground deposit [102], a reddish brown clay layer with stone and brick inclusions that contained fragments of glass, tile, moulded concrete and 19th/early 20th century pottery. This layer is considered to be the same as layer [106], which was observed at the southern end of the trench. Made-ground layer, [106] was 0.1m thick with occasional fragments of brick and limestone. Glass and slag, were recovered from this dark brown sandy-silt layer as well as 19th/early 20th century pottery that demonstrated evidence of burning.

Overlying [106] was layer [105], a 0.06m thick mid-yellowish brown clayey-silt with rubble inclusions.

The trench was sealed by a 0.1m thick layer of topsoil, [100].

Trench 2 (Figures 2, 5, 6, 11 & 12)

A 20th century layer of made-ground, [201] extended across the entire trench. This was the earliest encountered deposit in this trench. This compact dark-grey sandy-silt deposit was at least 0.24m thick, and contained frequent fragments of brick and demolition material. Pottery, glass, moulded concrete, CTP, and iron nails were all recovered from this layer.

Sealing this layer and capping the trench was a 0.1m thick layer of topsoil, [200].

Phasing

Trench 1

Although several deposits were recorded in Trench 1, the finds do not offer any clear distinction in phasing. The finds were primarily dated to the 19th/early-20th century and have been interpreted as demolition debris, with the deposits acting as levelling layers for the site.

Trench 2

Only one deposit was observed below the topsoil. The material recovered from this layer dated between the 19th century and the modern period; this deposit has been interpreted as modern made-ground due to its mixed nature.

7. Finds

Introduction

Although three trenches are represented in the excavation record, Trench 3 was just stripped of topsoil and used for school parties. While unstratified, the finds from this trench are still of some interest, and include pottery, glass, tiles, and metalwork.

Pottery

There were 149 sherds of pottery recovered from the excavations. All were of 19th or 20th century date. There was evidence of quite intensive burning on a number of sherds and this was true of the material from north Trenches 1 and 2. The probability is that the material from all three trenches came from the same source and the material has been brought to site rather than is 'in situ'.

Fabrics

Ten fabrics were defined, these are grouped below into their loose types:

Tablewares

This covers the pottery used at the table, for eating, drinking and serving food.

Fabric 4: These are the standard cream/white 19th and early 20th century tablewares. Some of these have blue or green transfers and the former include willow pattern.

Fabric 5: A hard white fabric, this is a soft paste porcelain. While the creamwares of fabric 4 are mass produced attempts to copy porcelain using china clays, soft paste porcelain. This is a better quality attempt to create hard paste porcelain which is the original material.

Fabric 6: A fine red brown fabric. This redware is commonly associated with teapots and tea services. It is not as common as the creamwares of Fabric 4 but it does appear regularly in 19th century assemblages.

Fabric 9: This appears to be a particularly coarse attempt to copy porcelain, with a hard light grey fabric with white and red grog inclusions and some iron staining.

Kitchenwares

These are fabrics that are generally used for storing food.

Fabric 2: A hard red/brown fabric usually with an internal cream slip and clear glaze. The exterior is often unglazed. This is the typical 19th and early 20th century storage and food processing pottery.

Fabric 7: This is a hard, gritty, light grey fabric with small dark inclusions and is a type known as stoneware. These are usually containers such as jars and bottles and in some case will have moulded decoration.

Miscellaneous

Pottery used for a range of domestic purposes

Fabric 1: A hard, light grey/buff fabric, this had an overall light blue glaze with a spiral foliage pattern and is a possible bowl from a washbasin and pitcher set (Figure 13).

Fabric 3: This is a hard, buff fabric with numerous small dark grey inclusions & a few large iron rich ones, it has an external clear glaze and internal white slip with a clear glaze over (Figure 14). This is probably sanitary ware, possibly a sink.

Fabric 8: This is a hard, white/light grey fabric all glazed externally and some internally as well. This also has the appearance of sanitaryware. The material used for sinks, cisterns and toilets.

Fabric 10: Hard red/brown fabric with grog and large grit inclusions, plant pot.

Frequency

The table below shows the amount of each fabric present on the site, grouped by their

usage and with cumulative figures for each usage.

	Sherds	%	Weight	%	Vessels	%
Tablewares						
Fabric 4	104	70	378	31	25	47
Fabric 5	2	1	2	1	1	2
Fabric 6	5	3	29	2	4	8
Fabric 9	3	2	17	1	2	4
Sub Totals	114	76	426	35	32	61
Kitchenwares						
Fabric 2	6	4	52	4	4	8
Fabric 7	13	9	136	11	8	15
Sub Totals	19	13	188	15	12	23
Miscellaneous						
Fabric 1	5	3	35	3	1	2
Fabric 3	3	2	91	8	2	4
Fabric 8	7	5	443	37	5	9
Fabric 10	1	1	19	2	1	2
Sub Totals	16	11	588	50	9	17
Totals	149	100	1202	100	53	101

The table clearly shows the prevalence of tablewares in the assemblage. While the weights of Fabrics 3 and 8, the sanitary ware given the small number of pieces, shows the different construction and function of this ceramic.

Discussion

This is clearly a domestic assemblage skewed towards the tablewares, there is normally a more even distribution between table and kitchen but this is not the case here. The presence of the sanitary ware is a surprise as this is rarely encountered and this suggests that this is debris from demolition of a structure. This may be borne out by the presence of burning as it was often the practice to burn timber that had not been salvaged 'in situ'. The absence of more substantial building elements such as brickwork on site may indicate that the buildings themselves were of timber. The pottery may have come from the 'chalets' at the other side of the hedge.

Clay Pipes

Only two pieces of clay pipe were found, one each in Trenches 1 and 2. Both were

fragments of stem, however that from trench 1 had part of a maker's stamp and location in cartouches either side of the stem. One side is 'STOCKTON', the other possible 'F PRIOR' but it is incomplete and indistinct in parts. Farrell Prior manufactured clay pipes in Stockton in 1881 (Figure 15).

(http://www.pipearchive.co.uk/pdfs/howto/makers/LIVNP_2012_03_02_OSWALD%20DU RHAM.pdf)

Ceramic Building Material (CBM)

This category covers material such as brick, clay roof tile and clay drains. A total of 19 pieces of CBM were recovered, of which 10 were modern (20th century) clay drains with a buff fabric and brown glaze and two had a grey fabric and were black externally, one with bunt on accretions. The remaining material included four pieces of 19th century brick and three pieces of floor tile, of which one fragment is decorative with a glaze over yellow and brown. The other two are 20th century and unglazed. There are also three pieces of 19th century field drain.

The presence of modern drainage material is notable and indicates a mixed deposit of material.

Concrete / Cement

Trench 1 had 15 pieces of moulded concrete/cement, which all appeared to be from the same object. This may well have been a fireback.

Plaster

A single piece of plaster about 25mm square with traces of green paint, Trench 2, [201].

Glass

Glass falls into two categories, window glass and bottle glass, or more properly vessel glass as there are remains of vases present in the assemblage. As with the pottery there was evidence of heat damage on some of the items.

Window Glass

Window glass was recovered from each trench. There were five different window glass types,

- Modern clear glass
- Green tinted
- Semi-opaque
- Very thick
- Thick with wire reinforcing

The range of types suggests that they came from different structures and there was clearly some 19th century glass present.

Vessel Glass

This covers a total of about 21 bottles and 3 vases. The bottles were of a range of different glass types:

- Modern clear glass, including one with the moulded letters 'CO'
- Modern yellow-brown glass
- 19th century green tinted glass
- 19th century semi-opaque green tinted glass

The three vases were all moulded with decorative patterns and a substantial part of the rim of one survived (Figure 16).

Slag

Slag was recovered from Trenches 1 and 2. This is not very metalliferous and may be the product of a hot fire rather than industrial processes.

Metalwork

Copper Alloy

Three coins were found.

- 1979 penny of Elizabeth II
- 1989 two pence piece of Elizabeth II
- 2000 penny of Elizabeth II

These are unremarkable and probably the product of normal loss.

Iron

In total 17 pieces of iron were recovered, these comprised:

- Narrow iron strap, 8mm wide (3 pieces), Trench 1, [101]
- Iron rod 90mm long, 15mm diameter, Trench 1, [102]
- An unidentified, heavily corroded piece of iron, Trench 2, [201]
- A curved iron bracket, Trench 3
- Five round nails
- Six square nails

The round nails came from all three trenches, the square ones from Trench 2 only. Round or wire nails only came into widespread use in the 20th century, replacing the square shank nail. This assemblage therefore contains material of 19th and 20th century date.

Ecofacts

Bone

One piece of chicken bone,

Shell

One whelk and one oyster shell.

General Discussion of Finds

The nature of the finds on site implies that much of it could be debris relating to the demolition of the 'chalets' observed on the 1948 aerial photo. The absence of more substantial building elements such as brickwork on site may indicate that the buildings were constructed of timber; this might also explain their absence on any OS mapping. It was often the practice to burn timber that had not been salvaged 'in situ', which may explain the evidence of heat damage on some of the glass and pottery.

It is likely that the material from all three trenches came from the same source and the material has been brought to site rather than is 'in situ'. The material was likely introduced to the site as a levelling material

8. Discussion

The excavations have shed light on the 20th use and occupation of land at the Clavering Estate, Hartlepool.

First World War

Although the sound mirror was constructed during the First World War, the excavation uncovered no definitive evidence associated with it. The remains of concrete fragments on site may be the results of the structure's demolition, but this cannot be confirmed.

Mid-Late 20th Century

Aerial photographs from 1948 (Figure 18) and 1952 shows what appear to be 'chalets' on the opposite side of the hedgerow to the sound mirror. These are not depicted on any OS maps, and a lack of more substantial building elements, such as brickwork, on site may indicate that the buildings were constructed of timber. The surrounding land was developed into the Clavering Estate in the 1960s, and the sound mirror was subsequently demolished. It is likely that the 'chalets' were also demolished around this time, with the demolition debris used to level the site.

Conclusion

Despite not finding any remains of the sound mirror, the project was successful in engaging local people and volunteers with archaeology and the history of the area. The

collaboration with the sound artist and local school groups was also exceedingly positive.

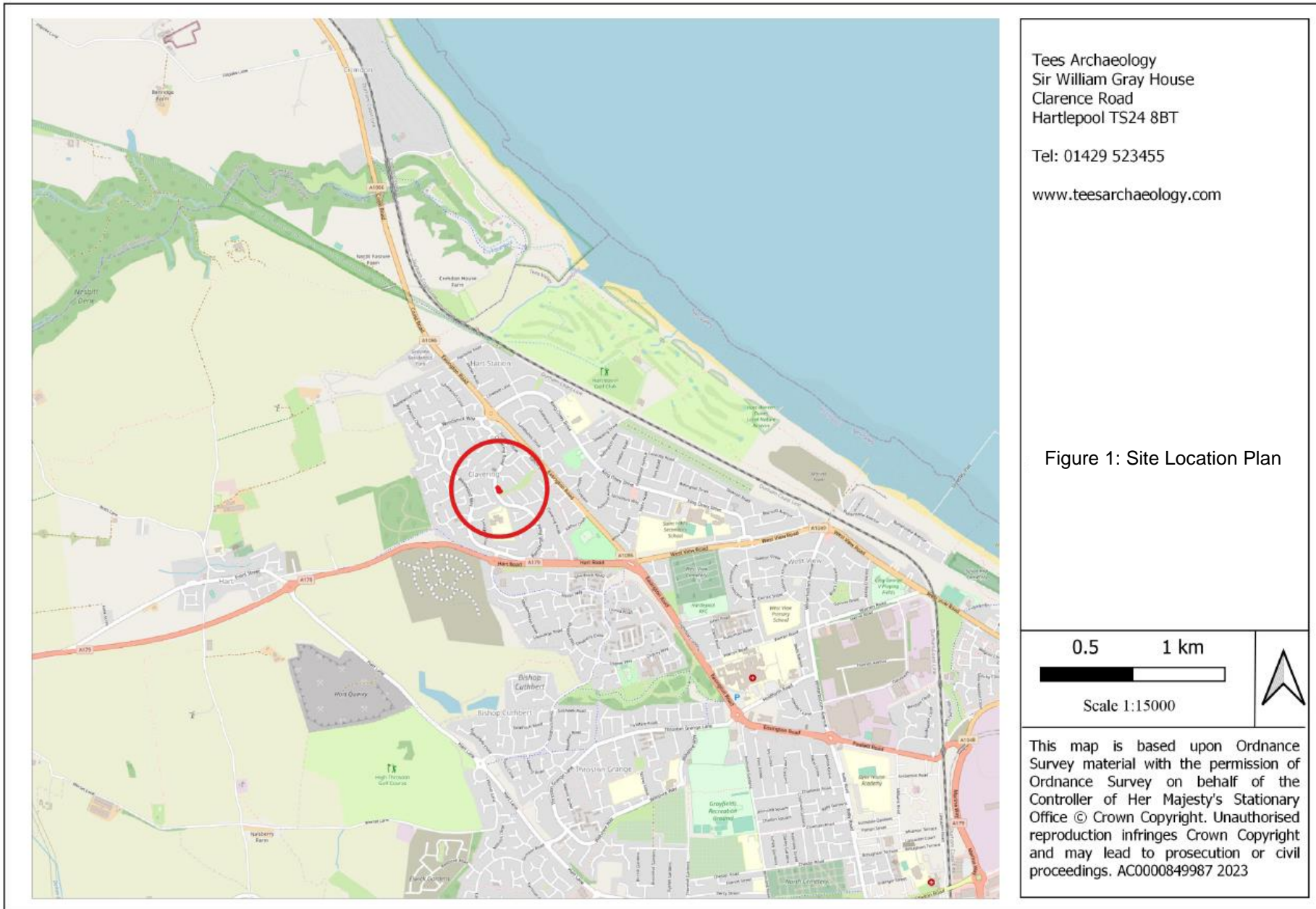
9. Bibliography and Sources

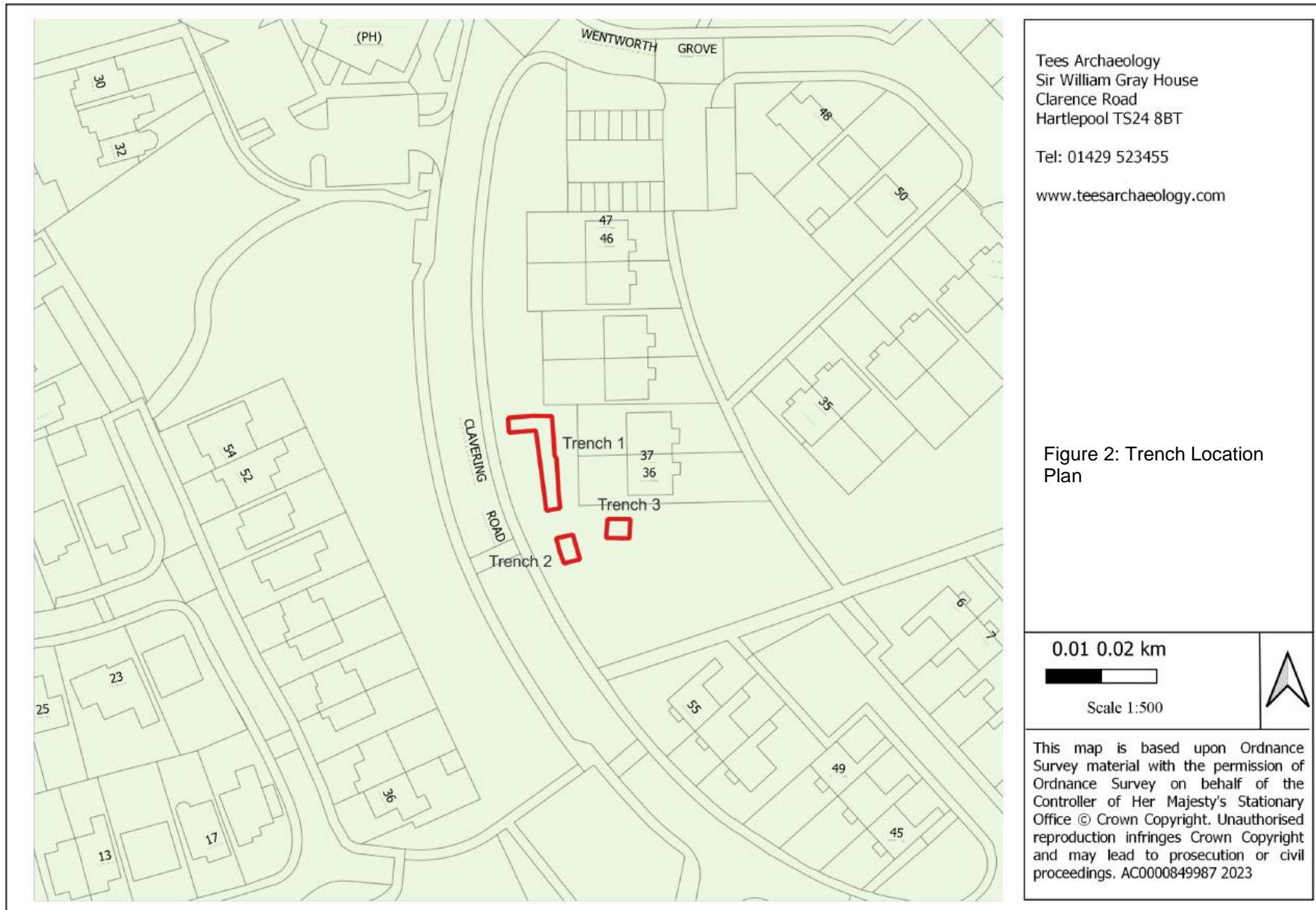
Dobinson, C S 2000 *Twentieth Century Fortifications in England Vol VII 'Acoustics and Radar: England's Early Warning Systems 1915-1945'*, Council for British Archaeology

Lowry, B., ed. 1996 *20th Century Defences in Britain: An introductory guide*.

Tees Archaeology Historic Environment Record

Ordnance Survey Map revised 1939, published 1946, 25 inches to 1 mile, Durham Sheet XXXVII.2





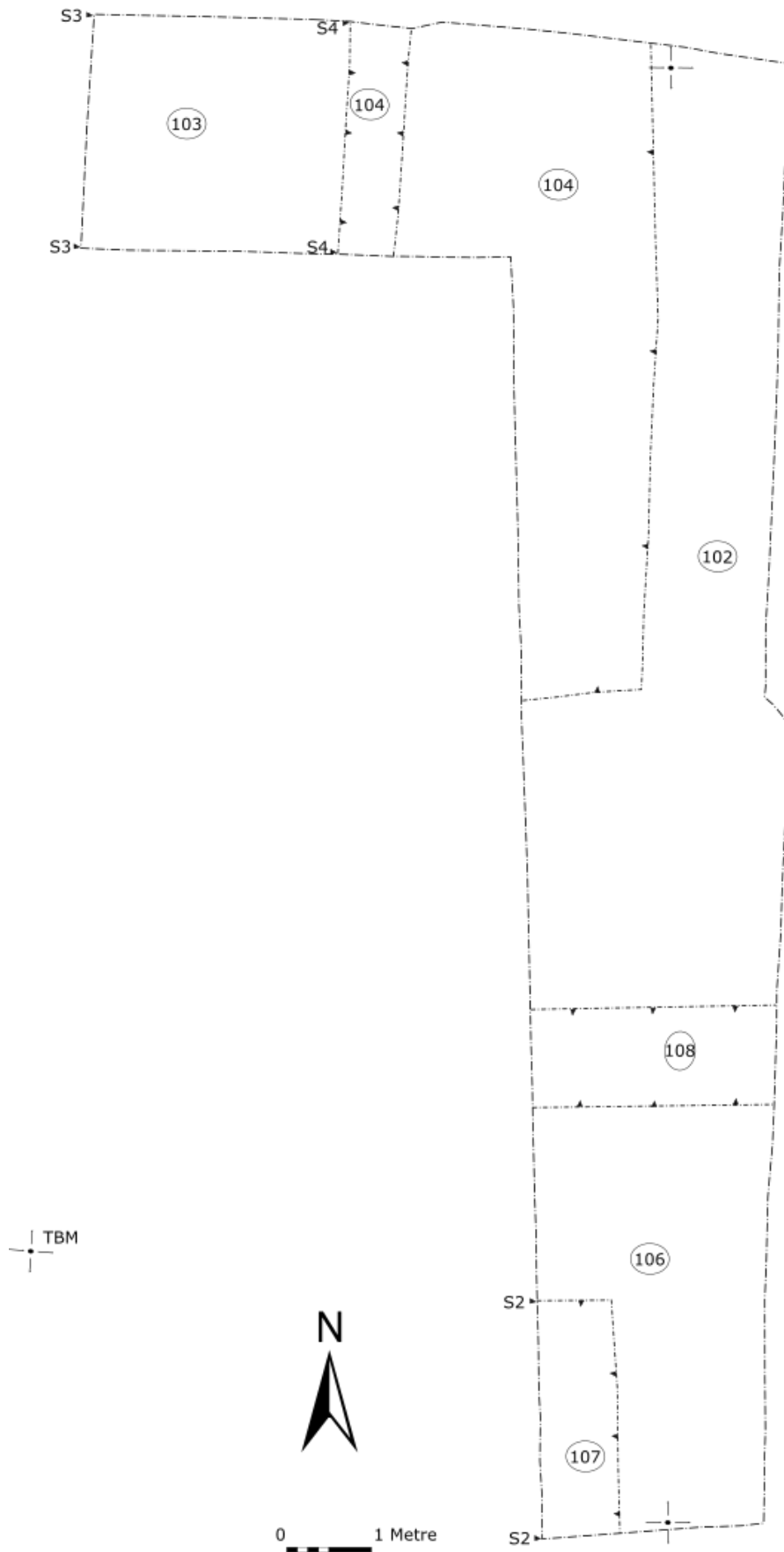


Figure 3: Trench 1 Plan

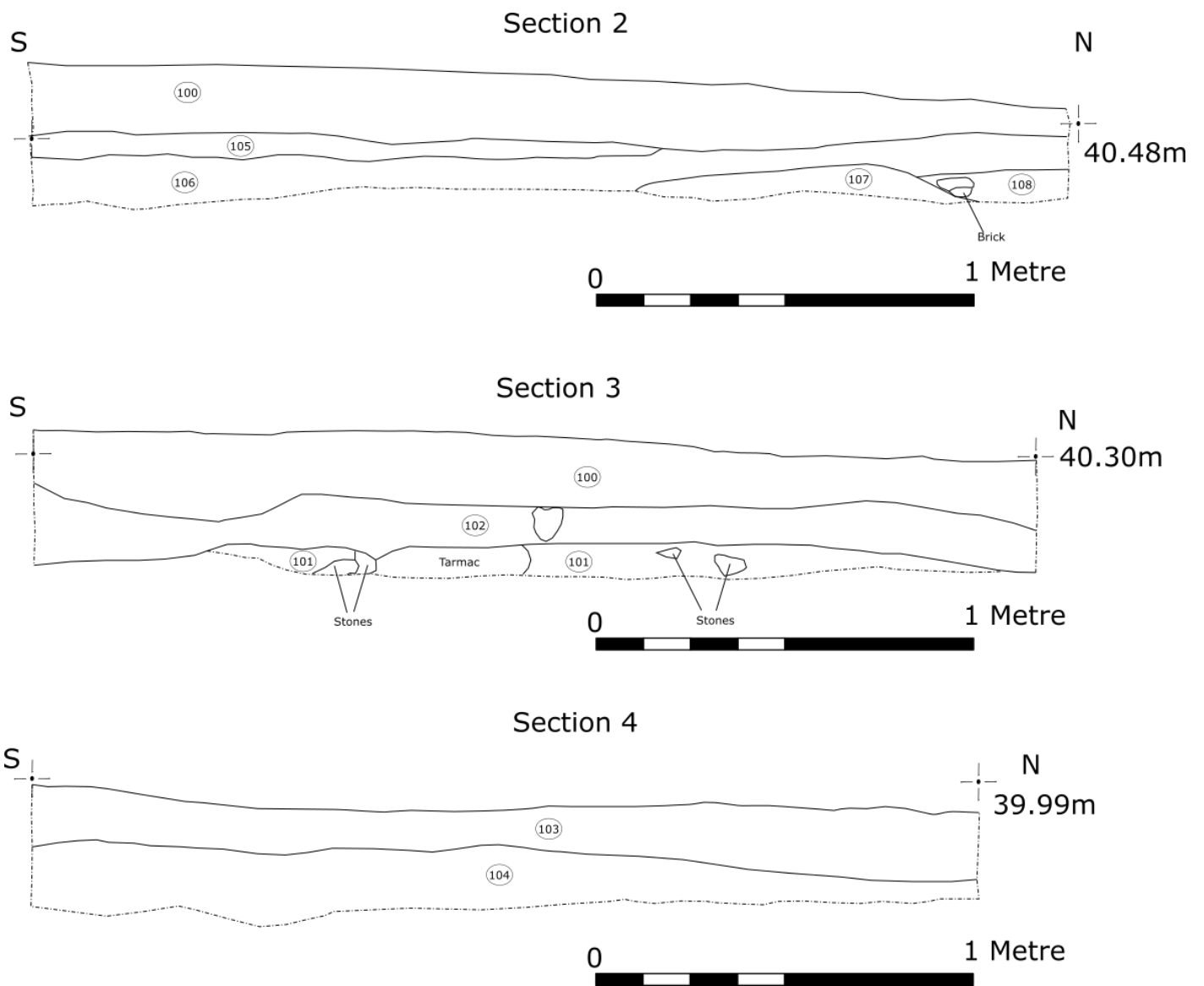


Figure 4: Trench 1 Sections

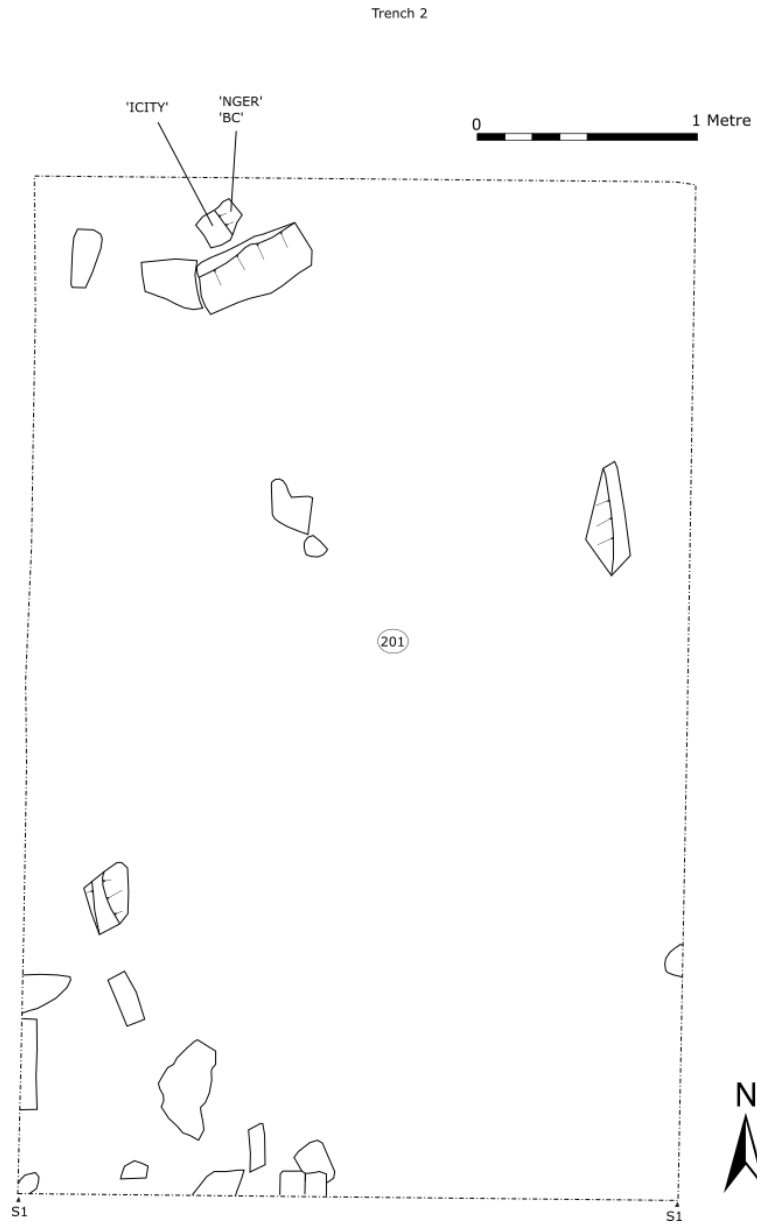


Figure 5: Trench 2 Plan

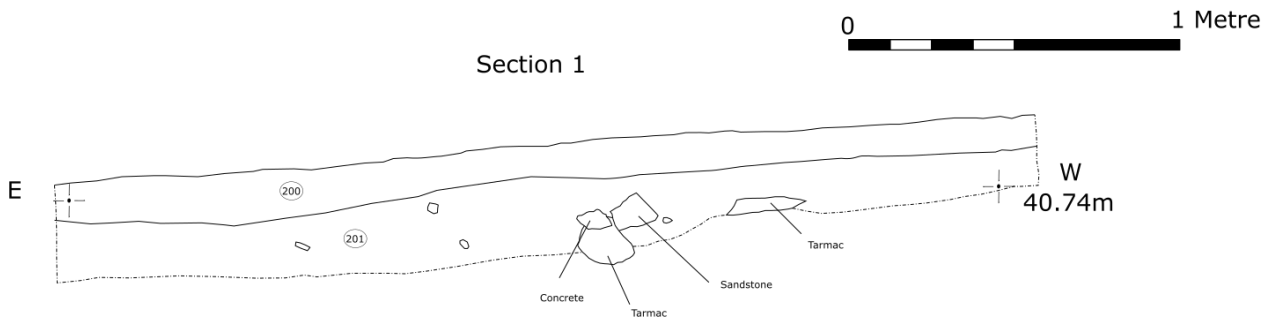


Figure 6: Trench 2 Section



Figure 7: Trench 1, Section 2



Figure 8: Trench 1, Section 3



Figure 9: Trench 1, Section 4, showing kerbstones



Figure 10: Trench 1, working shot



Figure 11: Trench 2, looking south



Figure 12: Trench 2, working shot



Figure 13: Fabric 1, Trench 1, Context [100]. Wash basin?



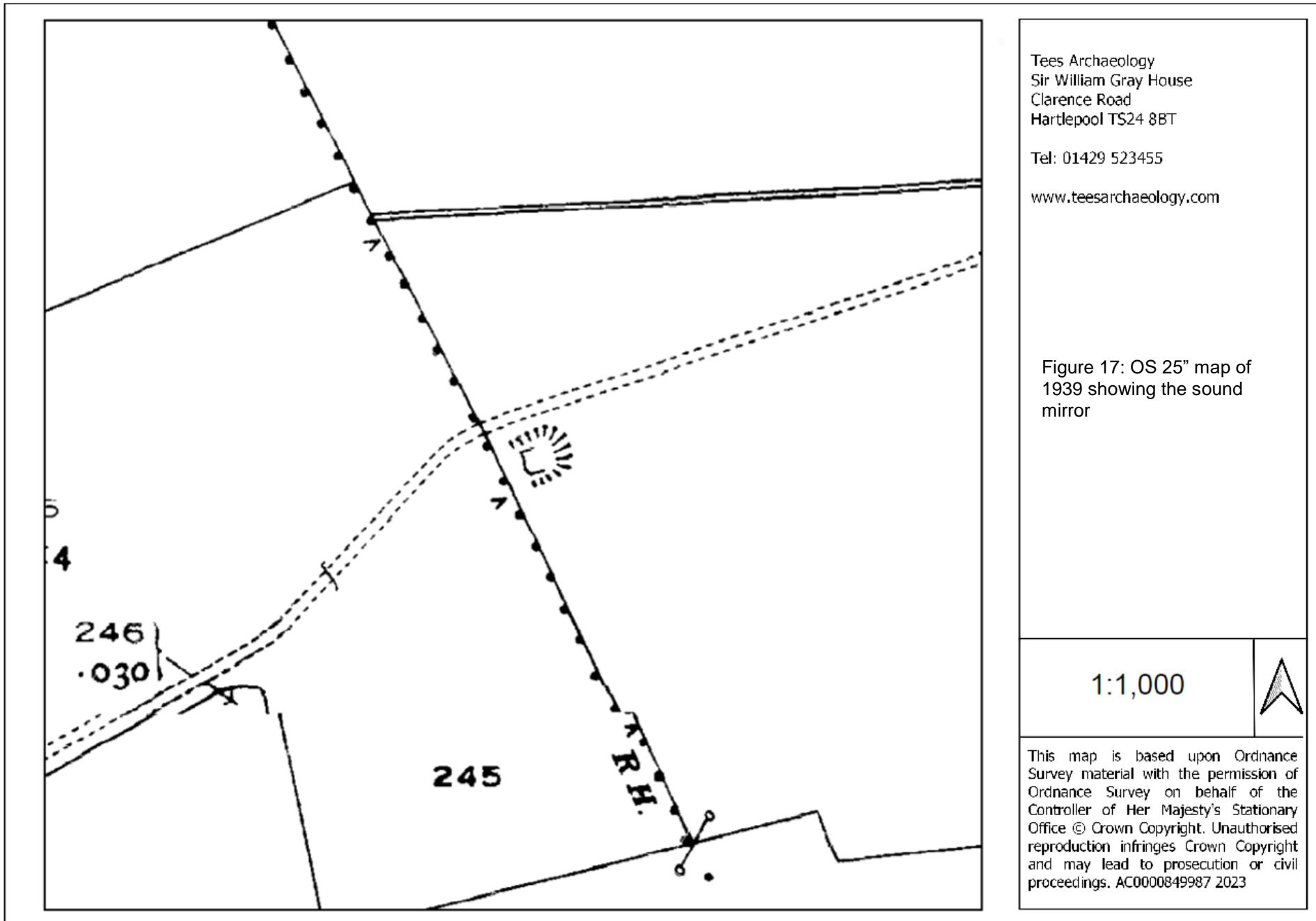
Figure 14: Fabric 3, Trench 1, Context [100]. Sanitary ware?



Figure 15: Clay pipe with maker's location (STOCKTON), Trench 1, Context [101]



Figure 16: Glass vase rim, Trench 2, Context [200]



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Figure 17: OS 25" map of 1939 showing the sound mirror

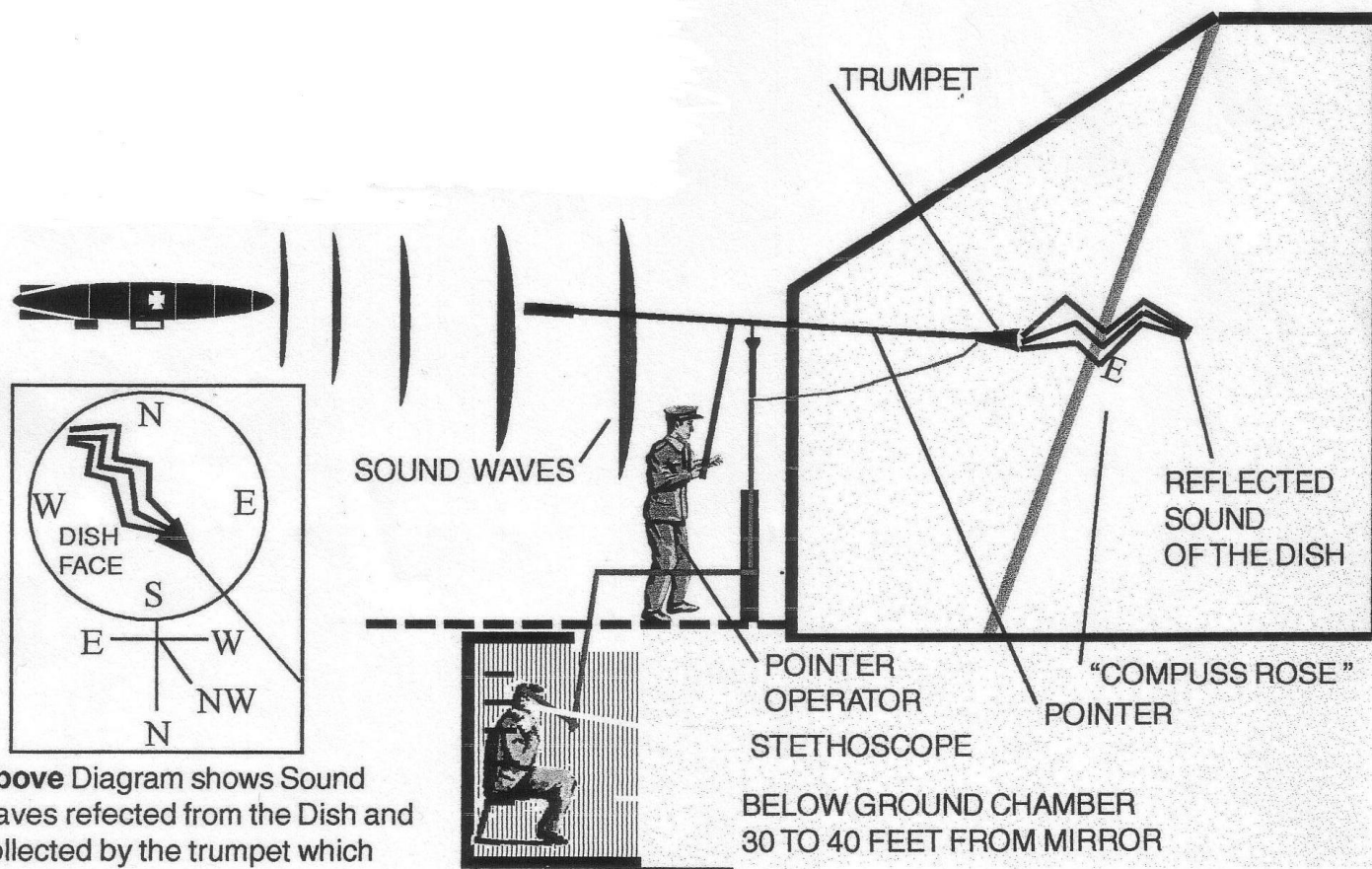
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Figure 18: Aerial photograph of the site in 1948 © Historic England



Above Diagram shows Sound waves refected from the Dish and collected by the trumpet which points to the direction of sound source, but is mirrored by the dish the direction of the source noise, in this case is shown from the North West.

Above a illustration of the Redcar Sound Mirror. in operation.

Figure 19: Illustration demonstrating how sound mirrors work



Figure 20: Restored Sound Mirror at Fulwell, Sunderland