

**BUTTS HIDE**  
**RSPB RAINHAM MARSHES NATURE RESERVE**  
**PURFLEET**  
**ESSEX**

**ARCHAEOLOGICAL MONITORING & RECORDING**



Essex County Council  
Field Archaeology Unit

APRIL 2010

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As part of our desire to provide a quality service, we would welcome any comments you may have on the content or the presentation of this report.  
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**BUTTS HIDE**  
**RSPB RAINHAM MARSHES**  
**ARCHAEOLOGICAL MONITORING AND RECORDING**

**Client:** RSPB

**NGR:** TQ 54241, 79696 (site centred)

**Site Code:** THRN 10

**Oasis No:** essexcou1-75223

**ECC FAU Project No:** 2138

**Date of fieldwork:** 3-4 November 2009 and 1-4 March 2010

**SUMMARY**

*Archaeological monitoring was carried-out on two phases of intrusive groundworks associated with the geotechnical investigation and then construction of a new bird hide within the RSPB Nature Reserve at Rainham Marshes, Purfleet, Essex.*

*Observation of engineers' test-pits at the bird hide location, and of the excavation of an electricity cable trench across the middle of the reserve, revealed details of the construction and layout of elements of two of the three 20th-century shooting ranges that formerly occupied the marsh. No archaeologically-significant remains of earlier date were identified.*

*The relatively shallow depth of these groundworks was insufficient to ascertain whether or not prehistoric land-surface deposits or the Purfleet submerged forest were present. Engineers' borehole sampling at the bird hide site identified more deeply-buried peat bands which suggests that, if present, these remains are likely to be buried under at least 1.7m of later marshland deposits. Consequently, no further monitoring was undertaken of the construction of the new bird hide structure.*

*It is concluded that the construction of the bird hide has had minimal impact on the heritage resource at this location.*



## **1.0 INTRODUCTION**

This report presents the results of a programme of archaeological monitoring carried-out during the construction of a new bird hide at the RSPB Rainham Marshes, Purfleet, Essex. The work was commissioned by the RSPB.

Copies of this report will be supplied to the RSPB and the Essex Historic Environment Record (EHER). A copy of this report will form part of the OASIS on-line archaeological record (<http://ads.ahds.ac.uk/project/oasis>). The project archive will be deposited at Thurrock Museum.

## **2.0 SITE BACKGROUND**

### **2.1 Location and topography**

2.1.1 The RSPB Rainham Marshes Reserve is located off New Tank Hill Road, in Purfleet, in the south of the county of Essex. It lies between the Channel Tunnel Rail Link to the north and the River Thames to the south, and immediately west of Purfleet village (Fig.1). Within the reserve, toward its approximate centre, the new bird hide is located directly on the site of the northernmost of three former shooting butts of earlier 20th-century date (TQ 54241 79696).

2.1.2 Being marshland, the general vicinity is flat and low-lying, much of it under water at the time of visiting in early March 2010. The three shooting butts form a discontinuous and irregular line of remnant earthworks and concrete/brick-built structures (see section 2.2.1, below) that bisect the marsh, running roughly NNE-SSW for c.650m.

### **2.2 Archaeology and history**

The following archaeological and historical background is based information contained in the Essex Historic Environment Record (EHER), held by Essex County Council at County Hall, Chelmsford.

2.2.1 The Rainham Marshes Nature Reserve was formerly the site of the Purfleet Rifle Range which was established in 1909 and was used by the Territorial Forces to practice rifle shooting. The main features of the range were three lengths of stop butt with targets and protective mantlet, primarily constructed of concrete and brick. Associated buildings included a latrine block and a range control building (HER

19469). Archaeological monitoring and survey work undertaken between 2004 and 2006, during the creation of the nature reserve, revealed further military-related features (practice trenches, shelters, etc.) and a number of late medieval/post-medieval drainage features (HER 45894).

2.2.2 Prehistoric remains ranging in date from the Palaeolithic period to the Iron Age have previously been found in the Purfleet area. Of particular relevance to the Rainham Marshes are the remains of the Purfleet submerged Neolithic forest which are visible along the adjacent Thames foreshore at low tide. The remains, found in a 1m-thick band of peat, include the trunks and roots of trees such as alder, ash and yew. Neolithic pottery and flint tools have been recovered from former land surfaces beneath the peat (HER 5033). It is possible that such buried deposits extend northwards into the marsh, possibly as far as the location of the new bird hide.

### **3.0 AIMS AND OBJECTIVES**

The general aim of the archaeological monitoring was to determine the location, extent, date, character, condition and significance of any surviving remains that may be disturbed by the groundworks associated with the construction of the bird hide.

More specifically, the monitoring aimed to:

- Identify and record remains associated with the 20th-century shooting range
- Identify remains of prehistoric land surfaces and the Purfleet submerged forest

### **4.0 METHOD**

Archaeological monitoring was carried-out in two distinct stages, with observation of the geotechnical ground investigations being done in November 2009 and recording of the construction groundworks in March 2010.

The initial ground investigations comprised two narrow boreholes and two machine-excavated test-pits at the bird hide site, while observation of the construction works was confined to the excavation of a 280m-long electricity service trench to its south (Figs.1 and 3). No monitoring was carried-out on the piling of the hide foundations or on the excavation of its ring beam trench due to its shallow depth and to flooding of the vicinity at the time.

Intermittent visits to the site were made by an archaeologist to monitor the various groundworks in progress. Recording of observations was made on pro forma ECC FAU Monitoring Record Sheets, with further notes, sketches and scale drawings, and photographic record made as appropriate (ECC FAU 2006). Single context recording of exposed deposits and remains was not judged to be appropriate in this instance.

The monitoring was undertaken in accordance with the Institute of Field Archaeologists' *Standard and Guidance for an Archaeological Watching Brief* (IFA 1999), and the Association of Local Government Archaeological Officers' *Standards for Field Archaeology in the East of England* (Gurney 2003). The ECC FAU is a registered archaeological organisation with the Institute of Field Archaeologists.

## **5.0 FIELDWORK RESULTS**

The results of the two phases of archaeological monitoring work are described below. Locations of the various groundworks are indicated in Fig.1 at the end of the report. Further illustrative plans, sections (Figs 2-4) and photographs (Plates 1-6) are also to be found at the rear. No archaeologically-significant artefacts were retrieved from the various groundworks.

### **5.1 Ground investigation boreholes and test-pits**

- 5.1.1 Both boreholes were located to the east of the existing concrete shooting butt foundations and to the west of the mantlet and accompanying concrete channel of the northernmost of the rifle range structures, and on the site of the new bird hide (Fig.2). The overburden in this area was revealed as consisting of 0.30m of dark grey/brown topsoil above 0.40-0.50m of disturbed ground consisting of brown sandy clay with occasional brick. The underlying orange brown and grey clay, extending to a depth of 10.7m, is believed to be of natural origin. The borehole technique meant that samples were retained within a semi-transparent tube through which not all detail could be readily observed. The borehole report (ref. MRS/9340), produced by Herts & Essex Site Investigations, notes that bands of peat were encountered within the clay at a depth of between 1.5m and 10.7m.
- 5.1.2 The bird hide site test-pits were located to the immediate west of the extant concrete foundations of the northernmost of the shooting butts, as initial investigations had revealed the presence of a solid concrete raft underlying the vegetation between each foundation 'pier'. Both test-pits were approximately 3.5m long by 1.8m wide.



Test-pit 1 was located adjacent to concrete foundation 'pier' 1 and test-pit 2 adjacent to concrete foundation 'pier' 6 (as labelled on survey drawing 07.330 SK2).

- 5.1.3 Within Test-pit 1, the existing concrete foundation pier 6 was revealed to be c. 0.30m high and 1.4m wide with vertical sides. Immediately beneath was a solid raft of concrete 0.27-0.30m deep extending to north and south of the excavated area. The raft projected for 0.30m to the west of the existing foundation and had a vertical edge. Along the exposed side of the raft was a semi-decayed horizontal wooden plank presumed to be part of the original shuttering (Plate 1). The western edge of the raft was overlain by rooty dark grey brown clay mixed with brick rubble. Further disturbed ground containing occasional fragments of brick and buff sand was noted to the west of the raft. All of the larger brick fragments were frogged and clearly of modern date. Excavation was halted when natural grey clay was exposed at a depth of 0.80m.
- 5.1.4 Within Test-pit 2, the existing concrete foundation pier 1 was 0.24m high and 1.35m wide, with vertical sides. The underlying concrete raft had an irregular bottom edge that varied in thickness from 0.15m to 0.24m and was thinnest beyond the foundation to the south. The raft projected for 0.29m to the west of the foundation and had a mostly vertical side apart from a 0.04m high by 0.04m wide chamfered edge at its top (Plate 2). There was no evidence of surviving shuttering. The disturbed ground covering the edge of the raft and to its west contained numerous fragments of frogged brick and occasional chunks of mortar. This extended to the same depth of the concrete raft (c.0.5m) which appeared to be directly built onto firm natural grey clay.
- 5.1.5 No archaeological deposits or structures predating the rifle range remains were identified within either of the test-pits and no artefacts retrieved.

## **5.2 Construction groundworks**

- 5.2.1 The monitored construction groundworks comprised a 280m-long trench that extended from a brick building part-way along the middle shooting butt (cover photo) northwards to the new bird hide site (Figs.1 and 3). The 0.6m-wide trench was machine-excavated to a depth of approximately 0.7m. Typically, the deposit sequence observed comprised c.0.25m of loose organic soil over a firm greyish mid-brown clay that progressively became lighter and greyer with depth. However, a 0.1m-thick layer of yellowy sand or mortar, concrete rubble and frogged brick fragments was noted to occur intermittently between the topsoil and natural clay

deposits. This is presumed to be a general debris layer associated with the construction of the rifle ranges.

5.2.2 The southern part of the trench (Plate 3) was mostly located some 1.5-2.6m to the east of the remnant piers of the middle shooting butt, running broadly parallel to it. At its very southern end, where it began at the corner of the brick building, the underlying concrete foundation raft on which the shooting butt piers sit was exposed (similar to that underlying the northern shooting butt piers). This raft was 0.12m thick over a single layer brick-rubble base, the top of which was c.0.35m below the ground surface. Toward the northern end of this part of the trench, its alignment was such that it intersected with a further buried concrete structure that lies between the shooting butt and its mantlet structure (Plate 4). Located c.3.3m east of the shooting butt piers and running parallel to them (Fig.3), the function of this concrete sill is uncertain. Where crossed by the trench, a section of it was removed, so revealing detail of its form (Plate 5). Essentially square in section, the upper portion of the sill beam had a 45° bevel along its west side and a smaller, higher bevelled upper edge on the east side. In its top was a distinct V-shaped 'channel', c.0/19m deep, running along the length of the sill (Fig.4 and Plate 5). This channel and the whole of the flat top of the sill had subsequently been in-filled and capped with a 6cm-thick deposit of distinctly coarse and loose concrete. The presence of a narrow metal pipe, possibly copper, was noted at the base of the sill and presumably ran through and along the whole structure. Bands of loose concrete seen in the trench section further south are likely to be construction cut infill associated with this sill, the structure itself lying a short distance beyond the trench section face. It is presumed that this concrete sill/duct ran the full length of the middle rifle range and was in some way relevant to its functioning.

5.2.3 The northern section of the cable trench lay c.12m distant from the mantlet of the northern rifle range (Fig.1) and was flooded to a minimum of 0.25m below the ground surface when its monitoring took place (Plate 6). No archaeological remains, either relating to the rifle range or earlier periods of land-use, were identified.

## **6.0 CONCLUSIONS & ASSESSMENT**

The groundworks associated with the preliminary ground investigations have revealed further details of the nature of the construction of the former shooting butts. Of note is the presence of a seemingly continuous concrete raft underlying the foundation blocks which was laid directly onto natural clay and constructed with the aid of wooden shuttering. The identification of a seemingly previously unknown part of the middle shooting range, in the form of a concrete 'sill' between the shooting butt and mantlet is also potentially significant. However, its function is not readily apparent and may benefit from further research.

No remains pre-dating the 20th-century were identified and the machine excavation of the test-pits and electricity cable trench did not penetrate deep enough to reveal any potential buried prehistoric land surfaces. However, it remains possible that some of the bands of peat recorded in the borehole samples are associated with Neolithic-period forest and/or land surface remains buried at greater depth.

Other than the removal of a short section of the enigmatic concrete sill from the middle range, the construction groundworks have had a minimal adverse impact upon the known and potential heritage resource of the RSPB Rainham Marsh Reserve.

## **ACKNOWLEDGEMENTS**

The role of the RSPB in commissioning and funding the archaeological work is gratefully acknowledged. The assistance of Hettie Hurst of the RSPB is also appreciated.

Thanks are also due to Stuart Hobson and Phil Matson of Modular UK and to Hugh Pearl Ltd for facilitation and assisting our works.

Mark Atkinson, Trevor Ennis and Mark Germany of ECC FAU carried-out the monitoring and Andrew Lewsey produced the drawings.

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|------------|------|--|
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| IFA        | 1999 | <i>Standards and Guidance for an Archaeological Watching Brief (Revised)</i> . Institute of Field Archaeologists |

## **Appendices**

### **Appendix 1: Contents of Archive**

Contained in one A4 folder:

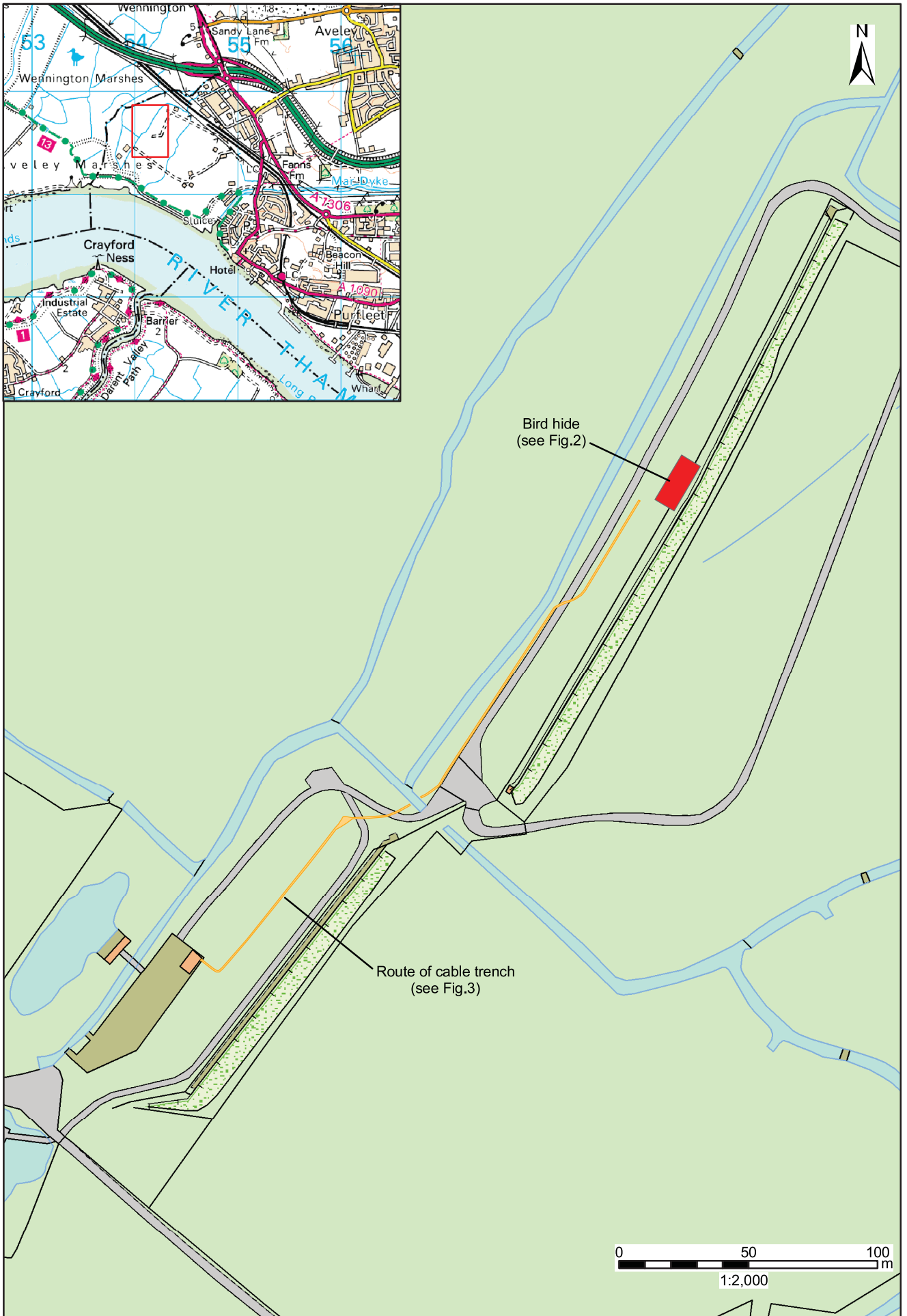
- 1 Copy of this report
- 1 Copy of the interim report (Dec 2009)
- 2 Monitoring recording sheets
- 1 Digital photograph register and thumbnail print sheet
- 1 CD containing pdf report and digital photographs
- 1 Herts & Essex Site Investigations report

Miscellaneous scheme drawings, field sketches and notes

No finds collected.

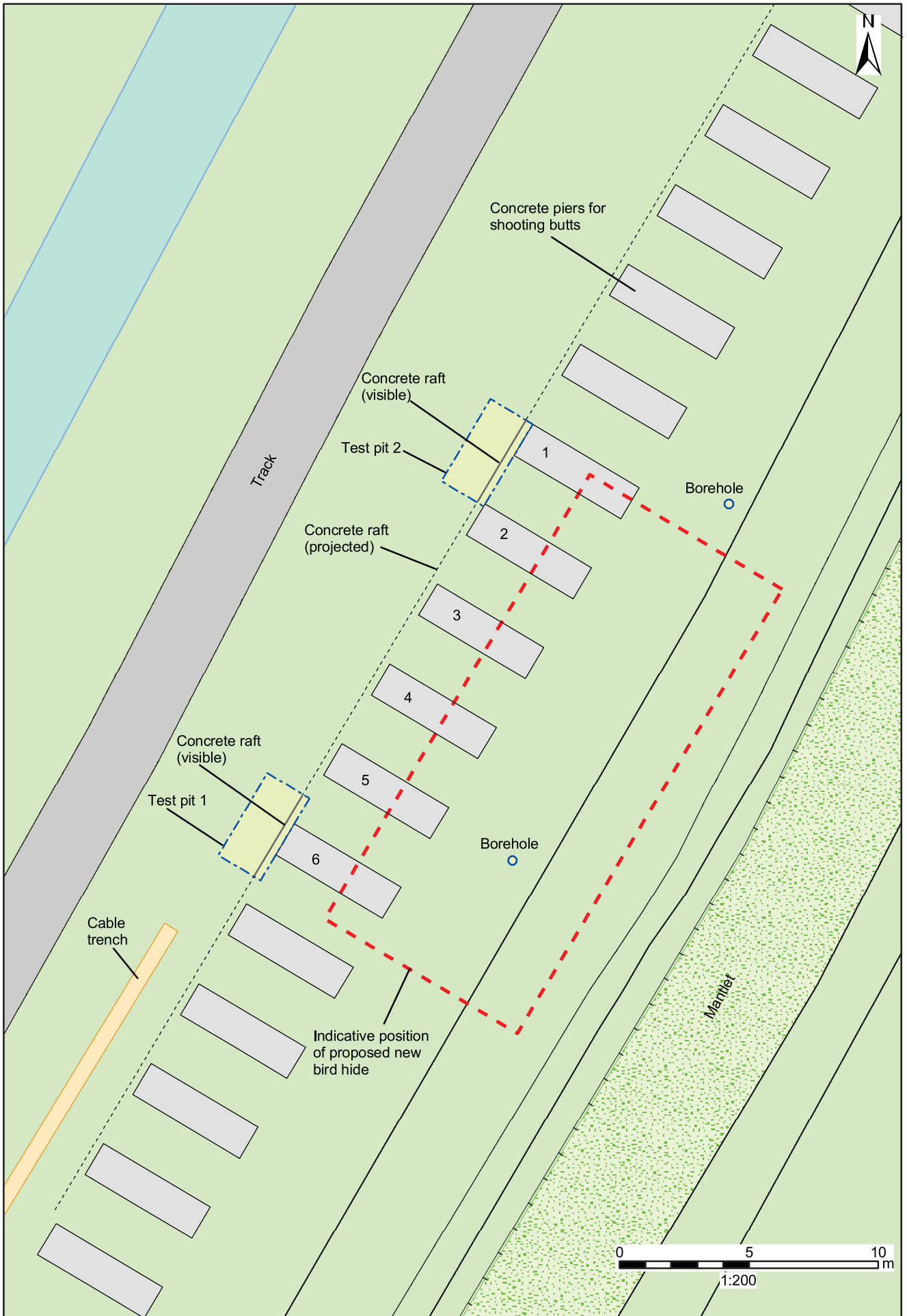
**Appendix 2: HER Summary Sheet**

Site name/Address: Butts Hide, RSPB Rainham Marshes, Purfleet, Essex	
Parish: Purfleet	District: Thurrock
NGR: TQ 54241 79696	Site Code:
Type of Work: Monitoring & Recording	Site Director/Group: M. Atkinson ECC FAU
Date of Work: 3-4 Nov 2009, 1-4 march 2010	Size of Area Investigated:
Location of Finds/Curating Museum: Thurrock	Funding source: Developer
Further Seasons Anticipated?	Related EHER Nos: 19469, 45894
Final Report: EAH annual round-up	OASIS ref:
Periods Represented: Modern	
<p>SUMMARY OF FIELDWORK RESULTS:</p> <p><i>Archaeological monitoring was carried-out on two phases of intrusive groundworks associated with the geotechnical investigation and then construction of a new bird hide within the RSPB Nature Reserve.</i></p> <p><i>Observation of Engineers test-pits at the bird hide location, and of the excavation of a 280m-long electricity cable trench across the middle of the reserve, revealed details of the construction and layout of elements of two of the three 20th-century shooting ranges that formerly occupied the marsh. No archaeologically-significant remains of earlier date were identified.</i></p> <p><i>The relatively shallow depth of these groundworks was insufficient to ascertain whether or not prehistoric land-surface deposits or the Purfleet submerged forest were present. Engineers borehole sampling at the bird hide site identified more deeply-buried peat bands which suggests that, if present, these remains are likely to be buried under at least 1.7m of later marshland deposits.</i></p>	
<p>Previous Summaries/Reports: None.</p>	
Author of Summary: M. Atkinson	Date of Summary: 29/03/2010



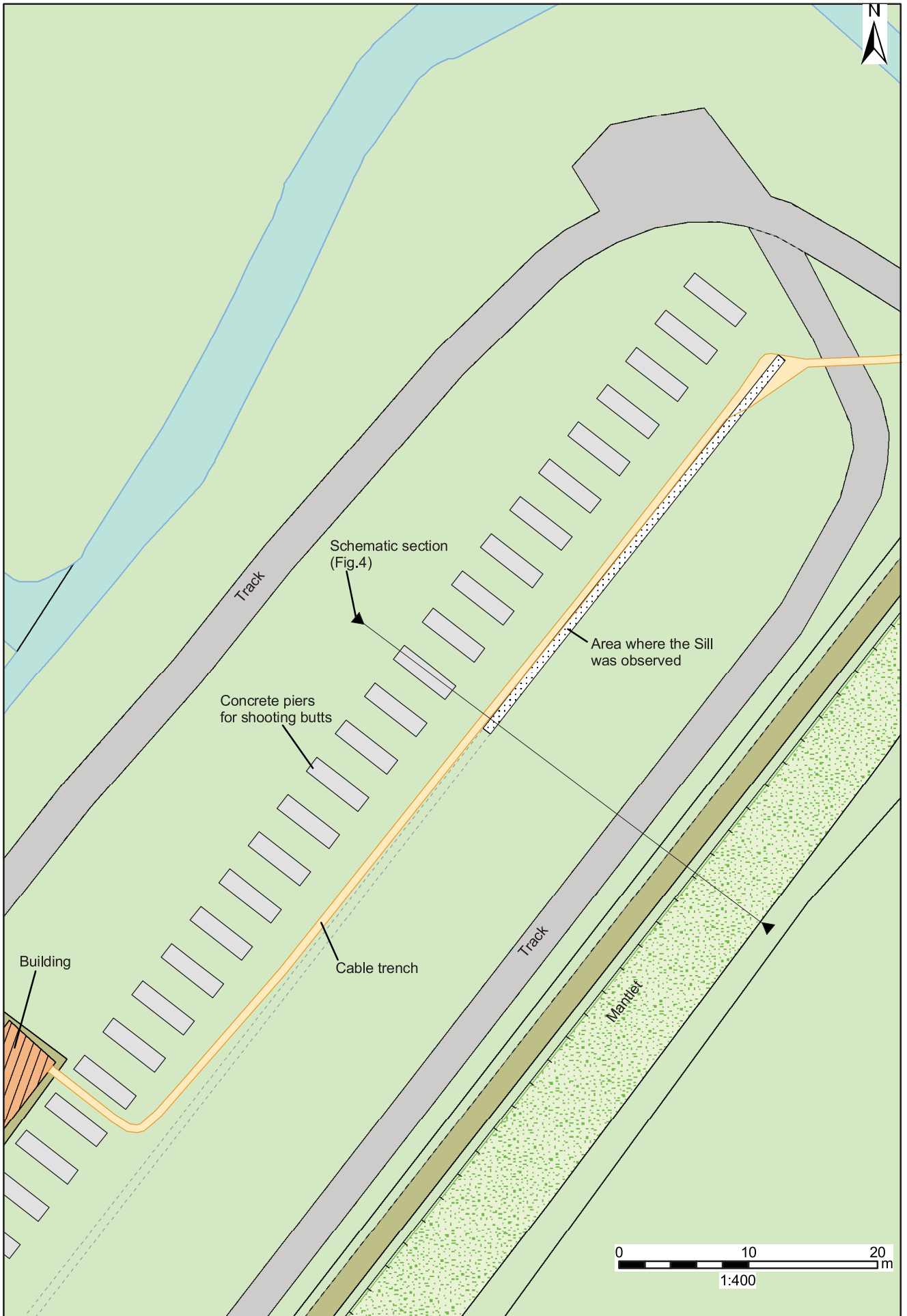
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Fig.1. Site location



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Fig.2. Test pit and borehole locations at bird hide site



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Fig.3. Cable trench route (south)



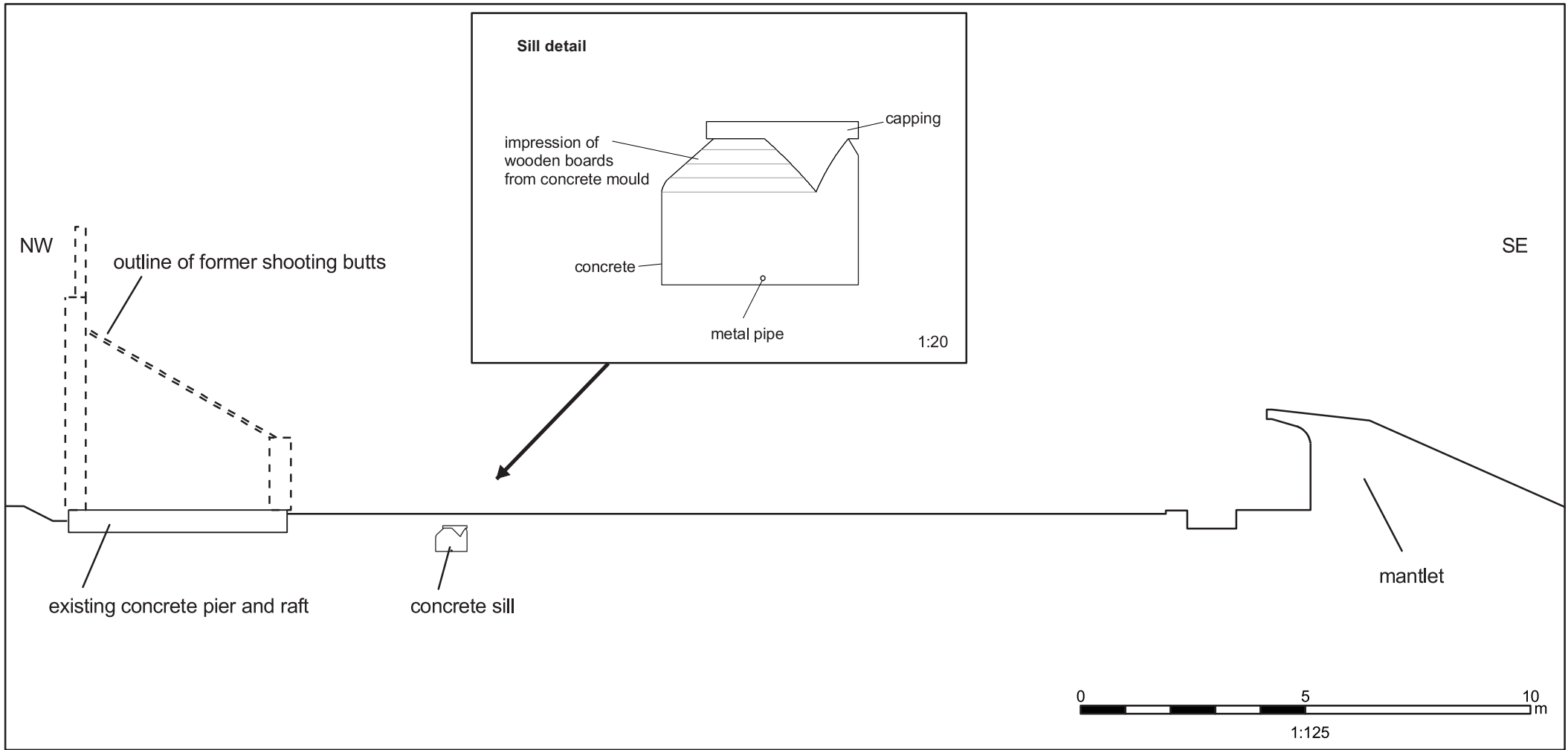


Fig.4. Schematic section through shooting range



Plate 1. Wooden shuttering in test-pit 1 (1m scale)



Plate 2. Chamfered edge of concrete raft in test-pit 2 (1m scale)



Plate 3. Southern end of electricity cable trench, looking north



Plate 4. In-situ section of concrete sill (0.5m scale)



Plate 5. Removed section of concrete sill (0.5m scale)



Plate 6. Northern end of electricity cable trench, looking south