OAKFORD ARCHAEOLOGY

Archaeological evaluation at Knowle Battery, St Budeaux, Plymouth

on behalf of
Willmott Dixon Construction Ltd

Report No. 14-13

Project No. 1232

December 2014

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Archaeological Groundworks and Historic Buildings

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Summary

An archaeological evaluation was undertaken by Oakford Archaeology at Knowle Battery, St Budeaux, Plymouth (SX 4630 5960), during December 2014. The work comprised the excavation of 4 trenches totalling 27m in length, with each trench 1.6m wide. These targeted the now demolished western wall, the military road and the parade ground.

Excavation revealed remains of the massive western wall of the battery, while work in the southwest of the development area exposed made ground deposits relating to the construction of the military road in the late 19th century. No earlier features or deposits were found in the remaining trenches.

1. INTRODUCTION

This report has been prepared for Willmott Dixon Construction Ltd and sets out the results of an archaeological evaluation undertaken by Oakford Archaeology (OA) in December 2014 at Knowle Battery, St Budeaux, Plymouth (SX 4630 5960). The work was commissioned on the advice of English Heritage (EH) and Plymouth City Historic Environment Record (PCC HER).

1.1 **The site**

The site (Fig. 1) lies on the north-east side of the parish of St Budeaux, between Agaton fort to the west and Woodland fort to the east. It consists of a large, roughly triangular fortification, formerly known as Knowle Battery, with the main school building and temporary classrooms standing within the interior. The site lies at c. 49m AOD and the underlying geology consists of mudstone and siltstone from the Torpoint formation, formed approximately 359-385 million years ago in the Upper Devonian which gives rise to superficial deposits of clay (BGS 1998).

1.2 **Archaeological and historical background**

Knowle Battery is part of 11 forts and batteries built between the Tamar in the west and the Laira estuary in the east after Lord Palmerston set up a Royal Commission in 1859 to report on the defences of the United Kingdom. The Battery was built between 1863-1869 to a design by Captain du Cane, on open farmland overlooking the Forder Valley and Budshead Creek. The fortification consisted of a triangular-shaped fortification, protected to the north by a ditch and originally designed with an earthen rampart with embrasures for 14 cannons with three magazines and a reserve magazine in the guardhouse, while to the rear of the work was a wall with musket loops and a heavily defended gatehouse.

2. AIMS

The principal aim of the evaluation was to establish the presence or absence, character, extent, depth and date of archaeological features and deposits within the footprints of the proposed development. The results of the evaluation (this document) will inform the planning process and may be used to formulate a programme of further archaeological work either prior to and/or during groundworks.

3. METHODOLOGY

The work was undertaken in accordance with a brief provided by EH and the PCC HER Archaeology Officer in an e-mail (dated 19-11-2014) and a subsequent project design prepared by Oakford Archaeology (2014), submitted to and approved by EH and the PCC HER prior to commencement on site. This document is included as Appendix 1.

The work comprised the excavation of 5 trenches totalling 27m in length, with each trench 1.6m wide. They were positioned to provide information on the survival of the western wall, the parade ground and remains of the military road leading up to the works. Trench positions were agreed with EH and the PCC HER prior to commencement on site. Localised site constraints (eg. proximity of main footpath through school) subsequently required the abandonment of some of trench 1. The positions of trenches as excavated are shown on Fig.3.

Machine excavation was undertaken under archaeological control using a 360^{o} mechanical excavator fitted with a 1.6m wide toothless grading bucket. Topsoil and underlying deposits were removed to the level of either natural subsoil, or the top of archaeological deposits (whichever was higher). Areas of archaeological survival were then cleaned by hand, investigated and recorded.

The standard OA recording system was employed. Stratigraphic information was recorded on *pro-forma* context record sheets and individual trench recording forms, plans and sections for each trench were drawn at a scale of 1:10, 1:20 or 1:50 as appropriate and a detailed digital photographic record was made. Registers were maintained for photographs, drawings and context sheets on *pro forma* sheets.

4. RESULTS

Relevant detailed plans and sections are included as Fig 4 and context descriptions for the trenches are set out in Appendix 2.

4.1 **The trenches**

Trench 1 (Detailed plan and section Fig. 4, Plates 3-8)
This trench measured 10m x 1.6m, was orientated approximately N-S and was excavated to a maximum depth of 2.2m. The approximately E-W aligned wall foundation (105) was exposed at the centre of the trench. The foundation trench was cut into the natural shale subsoil (100) which was exposed at a depth of 0.75m below ground level, overlain by mid reddish brown silty clay subsoil (101). Deposits 102, 104, 108 and 109 may represent the remains of an embankment on the inside face of the wall. Modern deposits (111-14) were dumped against the southern face of the wall. The recorded layer sequence is set out in Table 1, Appendix 2.

Structure 105 was an E-W aligned wall foundation, consisting of large limestone rubble bonded with lime mortar. It was approximately 1.5m wide and at least 1.45m deep.

Trench 2 (Detailed section Fig. 4, Plates 9-10)
The trench measured 5m x 1.6m, was orientated approximately NW-SE, and was excavated to a maximum depth of 1.8m. A sequence of modern made ground was present, but no pre-modern archaeological features or finds. The recorded layer sequence is set out in Table 4, Appendix 2.

Trench 3 (Detailed plan and section Fig. 4, Plates 11-12)
This trench measured 10m x 1.6m, was orientated approximately NE-SW and was excavated to a maximum depth of 1.6m. Natural shale subsoil (306) was exposed at a depth of 1.6m below ground level, overlain by mid reddish brown silty clay (305), containing some animal bone and 19th century brick, and interpreted as a redeposited subsoil. This was in turn overlain by mid to dark reddish brown silty clay imported subsoil/topsoil (304) and may represent landscaping following the completion of the military road. Deposits (300-303) represent modern made ground. The recorded layer sequence is set out in Table 3, Appendix 2.

Trench 4 (Detailed section Fig. 4. Plate 13)
The trench measured 2m x 1.6m, was orientated approximately E-W, and was excavated to a maximum depth of 1.8m. A sequence of modern made ground was present, but no pre-modern archaeological features or finds. The recorded layer sequence is set out in Table 4, Appendix 2.

5. CONCLUSIONS

The archaeological trench evaluation constitutes a thorough examination of the site. Made ground deposits (up to 1.8m deep) have been confirmed across the eastern and southern area, but the total removal of this material within each trench has failed to reveal widespread evidence for buried archaeological features or deposits. The extensive deposits of modern made ground identified in trenches 1, 2 and 4 suggest that the site has been extensively remodelled since the construction of the school in the early 1950s.

Work in trench 1 has demonstrated that the wall remains exposed and recorded correspond to the south wall of the Battery shown on the 1933 OS map. The work has revealed the footings as they would have been left below ground following demolition and landscaping as part of the conversion of the area during the construction of the primary school.

The evaluation has also confirmed the presence in trench 3 of redeposited material which may be associated with landscaping following the construction of the military road.

6. PROJECT ARCHIVE

The site records have been compiled into a fully integrated site archive which is currently held at Oakford Archaeology's offices under project number 1232, pending deposition with the ADS. Details of the building recording, including a pdf copy of the final report will be submitted to the on-line archaeological database OASIS (oakforda1-197986).

ACKNOWLEDGMENTS

This work was commissioned by Willmott Dixon Construction Ltd. It was administered for the client by John Turk (Willmott Dixon Construction Ltd) and for Oakford Archaeology by Marc Steinmetzer. It was monitored for Plymouth City Council by the Historic Environment Archaeologist, Mike Daniells, and for English Heritage by the Ancient Monuments Inspector, Keith Miller. The fieldwork was carried out by Jonathan Martin and Marc Steinmetzer and the illustrations for the report were prepared by Marc Steinmetzer.

BIBLIOGRAPHY

Unpublished sources

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Pye, A. and Woodward, F. 1996: *The Historic Defences of Plymouth.*

Soil Survey of England and Wales. 1998. *Soils of England and Wales: Sheet 5 South West England.* Ordnance Survey, Southampton.

Appendix 1:

Written Scheme of Investigation for Archaeological works

1. INTRODUCTION

1.1 This document has been prepared by Oakford Archaeology (OA) for Willmott Dixon Construction Ltd to describe the methodology to be used during an archaeological evaluation at Knowle Battery, Plymouth, Devon (SX 4630 5960). This document represents the 'Written Scheme of Investigation' for archaeological work required as a condition of planning consent (14/01612/FUL) by Plymouth City Council, as advised by English Heritage (EH) and Plymouth Historic Environment Record (Plymouth HER).

1.2 The proposed development lies in an area of archaeological potential over the western defences and the military road leading up to Knowle Battery, part of a chain of Palmerstonian Fort surrounding Plymouth and built between 1860 and the early 1870s. It is likely therefore that the proposed groundworks have the potential to expose archaeological and artefactual deposits associated with the former defensive wall, parade ground and military road.

2. AIMS

2.1 The principal aims of the project are to establish the presence or absence, character, depth, extent and date of archaeological deposits within the site and to excavate and record them as necessary prior to and during the development; and to report the results of the project as appropriate.

3. METHOD

Liaison will be established with the client and their contractor prior to the works commencing, in order to obtain details of the works programme and to advise on OA requirements.

3.1 4 trenches, measuring 60m long and 1.6m wide will be excavated across the site (Fig. 1). The trenches have been adjusted in light of the results of the desk-based assessment.

This will inform the level of mitigation required before proceeding with the development:

Option 1 – no mitigation required.

Option 2 - monitoring and recording/limited excavation during construction groundworks, if necessary. Sufficient time will need to be allowed for the completion of any archaeological recording and limited excavation necessary within the construction groundworks. At times this may require a pause in the construction works, but the requirement for this will be kept to a minimum where possible. Where more substantial delays are envisaged, then a site meeting will be convened as necessary with EH, Plymouth HER and the Client to agree the way forward.

Option 3 - full archaeological excavation of certain areas prior to construction starting, if necessary.

The need for, and extent of options 2 and 3 will be reviewed and agreed at a site meeting with EH and Plymouth HER, once the trial trenches have been excavated and the results are evident. If required, option 3 will then be carried out and completed before the commencement of construction works, and option 2 will be undertaken during the latter. Should significant archaeological deposits or remains be present in the phase 1 trial trenches, then these will be left in situ and excavated as part of a larger area excavation under option 3.

In addition, there will be a further phase of off-site analysis and reporting work.

The method outlined below applies primarily to the phase 1 trenching work. Should options 2 or 3 be required, then the generic methods and provisions set out in sections 3.4 - 3.7, 3.9-10, and 4 - 6 below will apply, and a plan showing proposed areas of excavation and/or monitoring will be submitted to EH and Plymouth HER for approval prior to such works commencing.

3.2 Trenches will be opened using a tracked or wheeled machine fitted with a toothless grading bucket. Machining will proceed in spits, and will cease if archaeological deposits are exposed in order to allow those deposits to be investigated, excavated and recorded. If no such deposits are present then, once natural subsoil has been confirmed, or formation/invert level reached, across the whole of the development area, archaeological monitoring will be terminated. Similarly, if it can be demonstrated that there has been significant modern truncation, then archaeological monitoring will be terminated in these areas.

3.3 Plymouth HER has provided guidance on the scope of the archaeological excavation requirements to apply both to the trial trenches where no remains of archaeological significance are exposed, and to option 3. All archaeological deposits will be stratigraphically excavated by hand down to natural subsoil in the following manner, unless agreed otherwise with Plymouth HER:

- all significant deposits will be excavated and recorded by hand;
- some less significant and more bulky deposits may be carefully removed by machine with a toothless grading bucket, under direct archaeological supervision;
- substantial structural remains will be left in situ;
- fills of cut features will be excavated by hand as follows:-pits (50%), postholes (50 and then 100%), stakeholes (100%), wells (to be determined on site depending on depth and site conditions), linears (20%, targeted on interrelationships, terminals, etc). Variations to these may be required, for example to fully recover important finds and material, or to obtain secure dating evidence.

3.4 Health and Safety requirements will be observed at all times by archaeological staff working on site, particularly when machinery is operating nearby. Personal protective equipment (safety boots, helmets and high visibility vests) will be worn by staff when plant is operating on site. A risk assessment will be prepared prior to excavation.

3.5 As appropriate, the environmental deposits will be assessed on site by a suitably qualified archaeologist, with advice as necessary from Allen Environmental Archaeology and/or the English Heritage Regional Science Advisor, to determine the possible yield (if any) of environmental or microfaunal evidence, and its potential for radiocarbon dating. If deposits potential survive, these will be processed by AC Archaeology using the EH Guidelines for Environmental Archaeology (EH CfA Guidelines 2002/1), and outside specialists (AEA) organised to undertake further assessment and analysis as appropriate.

3.6 Initial cleaning, conservation, packaging and any stabilisation or longer term conservation measures will be undertaken in accordance with relevant professional guidance (including *Conservation guidelines No 1 (*UKIC, 2001); *First Aid for Finds (*UKIC & RESCUE, 1997) and on advice provided by Alison Hopper-Bishop, Specialist Services Officer, RAM Museum, Exeter.

3.7 On completion of investigations, trenches will be backfilled with the excavated material and made safe.

3.8 Should any human remains be exposed, these will initially be left *in situ.* If removal at either this or a later stage in the archaeological works is deemed necessary, these will then be fully excavated and removed from the site in accordance with Ministry of Justice guidelines. If required, the necessary license will be obtained by OA on behalf of the client. Any remains will be excavated in accordance with Institute of Field Archaeologist Technical Paper No. 13 (McKinley and Roberts 1993). Where appropriate bulk samples will be collected.

3.9 Should items be exposed that fall within the scope of the Treasure Act 1996, then these will be removed to a safe place and reported to the local coroner. Where removal cannot be effected on the same working day as the discovery, suitable security measures will be taken to protect the finds from theft.

3.10 EH and Plymouth HER will be informed of the start of the project, and will monitor progress throughout on behalf of the planning authority and will wish to inspect the works in progress. Any amendments to the trenching plan or to any subsequent excavation plan will be agreed with them prior to implementation and completion. A date of completion of all archaeological site work will be confirmed with EH and Plymouth HER and the timescale of the completion of items under section 5 will run from that date.

4. ARCHAEOLOGICAL RECORDING

4.1 The standard OA recording system will be employed, consisting of:

(i) standardised single context record sheets; survey drawings, plans and sections at scales 1:10,1:20, 1:50 as appropriate;

(ii) colour digital photography;

(iii) survey and location of finds, deposits or archaeological features, using EDM surveying equipment and software where appropriate;

(iv) labelling and bagging of finds on site from all excavated levels, post-1800 unstratified pottery may be discarded on site with a small sample retained for dating evidence as required.

5. REPORTING AND ARCHIVING

5.1 The reporting requirements will be confirmed with Plymouth HER on completion of the site work. If little or no significant archaeology is exposed then reporting will consist of a completed HER entry, including a plan showing location of groundworks and of any significant features found. The text entry and plan will be produced in an appropriate electronic format suitable for easy incorporation into the HER, and sent to Plymouth HER within 3 months of completion of all archaeological fieldwork.

5.2 Should significant deposits be exposed the results of all phases of archaeological work will be presented within one summary report within six months of the date of completion of all archaeological fieldwork. Any summary report will contain the following elements as appropriate:

- location plan and overall site plans showing the positions of the trenches and the distribution of archaeological features within them;
- a written description of the exposed features and deposits and a discussion and interpretation of their character and significance in the context of the known history of the site;
- plans and sections at appropriate scales showing the exact location and character of significant archaeological deposits and features;
- a selection of photographs illustrating the principal features and deposits found;
- specialist assessments and reports as appropriate.

5.3 One bound and illustrated hard colour copy and a .pdf version of the report will be produced and distributed to the Client, EH and Plymouth HER on completion of sitework. A copy of the report and .pdf version will also be deposited with the site archive.

5.4 An ordered and integrated site archive will be prepared with reference to *The Management of Archaeological Projects* (English Heritage, 1991 2nd edition) upon completion of the project.

The archive will consist of two elements, the artefactual and digital - the latter comprising all born-digital (data images, survey data, digital correspondence, site data collected digitally etc.) and digital copies of the primary site records and images.

The digital archive will be deposited with the Archaeology Data Service (ADS) within six months of the completion of site work, while the artefactual element will be deposited with Plymouth Museum (*ref. pending*). The

hardcopy of the archive will be offered to Plymouth Museum and if not required will be disposed of by OA

OA will notify Plymouth HER upon the deposition of the digital archive with the ADS, and the deposition of the material (finds) archive with the Plymouth Museum.

5.5 A .pdf copy of the updated summary report will be submitted, together with the site details, to the national OASIS (Online AccesS to the Index of Archaeological investigationS) database within three months of the completion of site work.

5.6 A short report summarising the results of the project will be prepared for inclusion within the "round up" section of an appropriate national journal, if merited, within 12 months of the completion of site work.

5.7 Should particularly significant remains, finds and/or deposits be encountered, then these, owing to their importance, are likely to merit wider publication in line with government planning guidance. If such remains are encountered, the publication requirements – including any further analysis that may be necessary – will be confirmed with EH and Plymouth HER, in consultation with the Client. OA, on behalf of the Client, will then implement publication in accordance with a timescale agreed with the Client, EH and the Plymouth HER. This will be within 12 months of the completion of all phases of archaeological site work unless otherwise agreed in writing.

6. CONFLICT WITH OTHER CONDITIONS AND STATUTORILY PROTECTED SPECIES

6.1 If topsoil stripping or groundworks are being undertaken under the direct control and supervision of the archaeological contractor then it is the archaeological contractor's responsibility - in consultation with the applicant or agent - to ensure that the required archaeological works do not conflict with any other conditions that have been imposed upon the consent granted and should also consider any biodiversity issues as covered by the NERC Act 2006. In particular, such conflicts may arise where archaeological investigations/excavations have the potential to have an impact upon protected species and/or natural habitats e.g. SSSIs, National Nature Reserves, Special Protection Areas, Special Areas of Conservation, Ramsar sites, County Wildlife Sites etc.

7. COPYRIGHT

7.1 OA shall retain full copyright of any commissioned reports, tender documents or other project documents, under the Copyright, Designs and Patents Act 1988 with all rights reserved, excepting that it hereby provides an exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in this document.

8. PROJECT ORGANISATION

8.1 The project will be undertaken by suitably qualified and experienced archaeologists, in accordance with the Code of Conduct and relevant standards and guidance of the Institute for Archaeologists (*Standards and Guidance for Archaeological Evaluation,* 1994, revised 2008, and *Standards and Guidance for an Archaeological Watching Brief,* 1994, revised 2008), plus *Standards and Guidance for Archaeological Excavation* 1994, revised 2008). The project will be managed by Marc Steinmetzer. Oakford Archaeology is managed by a Member of the Institute for Archaeologists.

Health & Safety

8.2 All monitoring works within this scheme will be carried out in accordance with current *Safe Working Practices (The Health and Safety at Work Act 1974*).

ADDITIONAL INFORMATION

Specialists contributors and advisors
The expertise of the following specialists can be called upon if required:

Bone artefact analysis: Ian Riddler;
Dating techniques: University of Waikato Radiocarbon Laboratory, NZ;
Building specialist: Richard Parker;
Illustrator: Sarnia Blackmore;
Charcoal identification: Dana Challinor;
Diatom analysis: Nigel Cameron (UCL);
Environmental data: Vanessa Straker (English Heritage);
Faunal remains: Lorraine Higbee (Wessex);
Finds conservation: Alison Hopper-Bishop (Exeter Museums);
Human remains: Louise Loe (Oxford Archaeology), Charlotte Coles;
Lithic analysis: Dr. Linda Hurcombe (Exeter University);
Medieval and post-medieval finds: John Allan;
Metallurgy: Gill Juleff (Exeter University);
Numismatics: Norman Shiel (Exeter);
Petrology/geology: Roger Taylor (RAM Museum), Imogen Morris;
Plant remains: Julie Jones (Bristol);
Prehistoric pottery: Henrietta Quinnell (Exeter);
Roman finds: Paul Bidwell & associates (Arbeia Roman Fort, South Shields);
Others: Wessex Archaeology Specialist Services Team

Appendix 2:

Context description by Trench

Table 1: Trench 1

Context No.	Depth (b.g.s.)	Description	Interpretation
100	0.75m+	Loose shale	Natural subsoil
101	0.65-0.75m	Mid reddish brown silty clay	Subsoil
102	0.55-0.65m	Mid to dark reddish brown silty clay	Bank material
103	0.2-1m+	E-W aligned linear	Construction cut
104	0.5-0.75m	Loose shale	Bank material
105	0.65-2.1m+	E-W aligned wall	South Battery wall
106	0.2-1m+	Loose shale	Construction trench fill
108	0.2-0.5m	Mid reddish brown silty clay	Bank material
109	0.15-0.2m	Loose shale	Bank material
110	0.2m+	E-W aligned linear	Robber trench
111	0.6m+	Loose shale	Modern made ground
112	0.2-0.65m	Loose shale and concrete	Modern made ground
113	0.2-0.65m	Mid reddish brown silty clay	Modern made ground
114	0.2-0.5m	Loose shale	Modern made ground
115	0-0.2m	Mid to dark reddish brown silty clay	Topsoil

Table 2: Trench 2

Context No.	Depth (b.g.s.)	Description	Interpretation
200	0-0.3m	Mid reddish brown silty clay	Topsoil
201	0.3-0.6m	Loose shale	Modern made ground
202	0.6-0.8m	Mid reddish brown silty clay	Modern made ground
203	0.8m+	Loose shale	Modern made ground

Table 3: Trench 3

Context No.	Depth (b.g.s.)	Description	Interpretation
301	0-0.25m	Dark to mid reddish brown silty clay	Topsoil
302	0.25-0.4m	Tarmac	Modern made ground
303	0.25-0.65m	Mid reddish brown silty clay	Modern made ground
304	0.65-0.95m	Mid to dark reddish brown silty clay	Landscaped topsoil
305	0.95-1.6m	Mid reddish brown silty clay	19th century made ground
306	1.6m+	Shale	Natural subsoil

Table 4: Trench 4

Context No.	Depth (b.g.s.)	Description	Interpretation
401	0-0.2m	Mid reddish brown silty clay	Topsoil
402	0.2m+	Loose shale	Modern made ground

Fig. 1 Location of site.

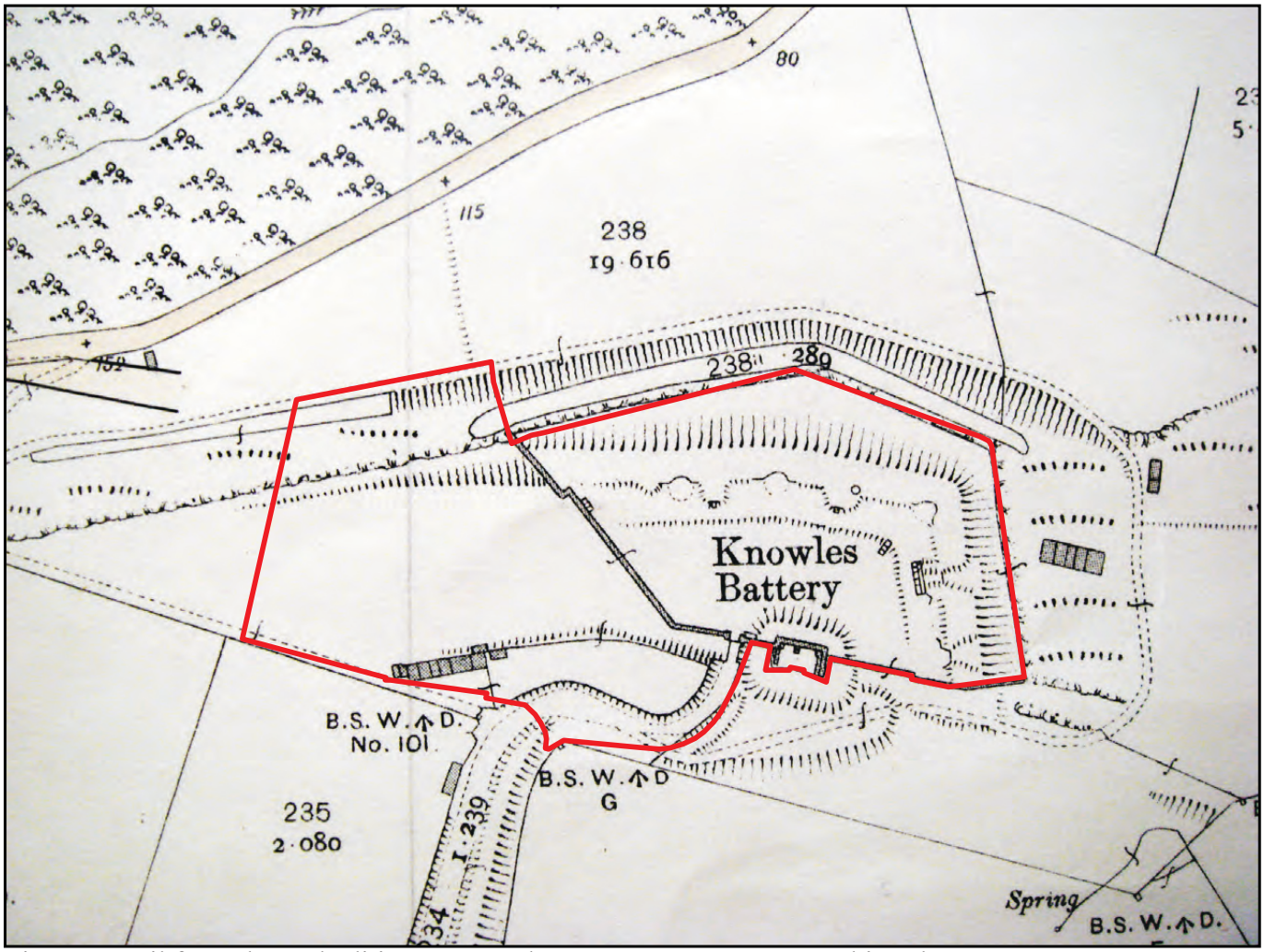


Fig. 2 Detail from the 2nd edition 1933 Ordnance Survey map Devonshire Sheet CXI.17.

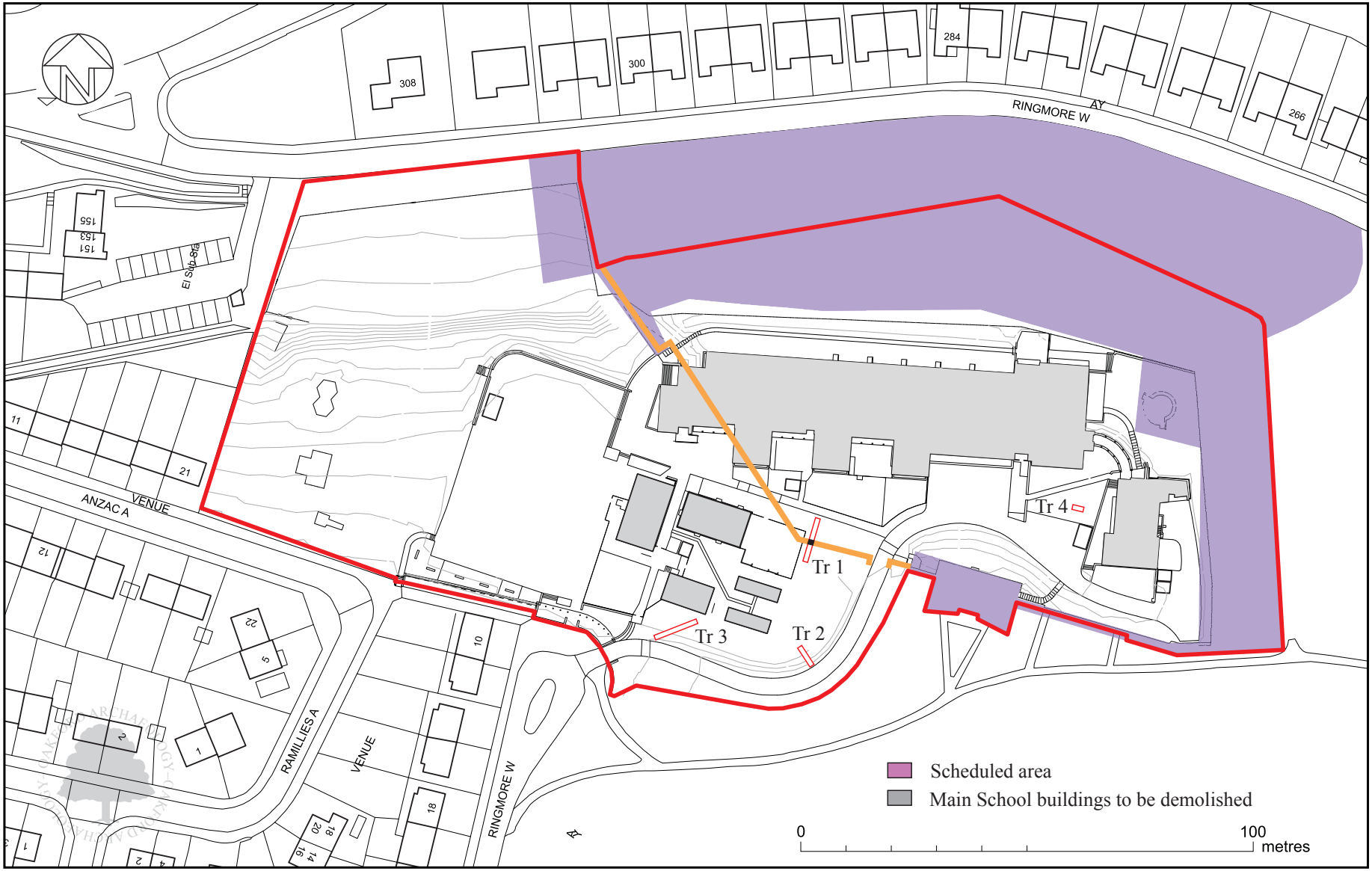
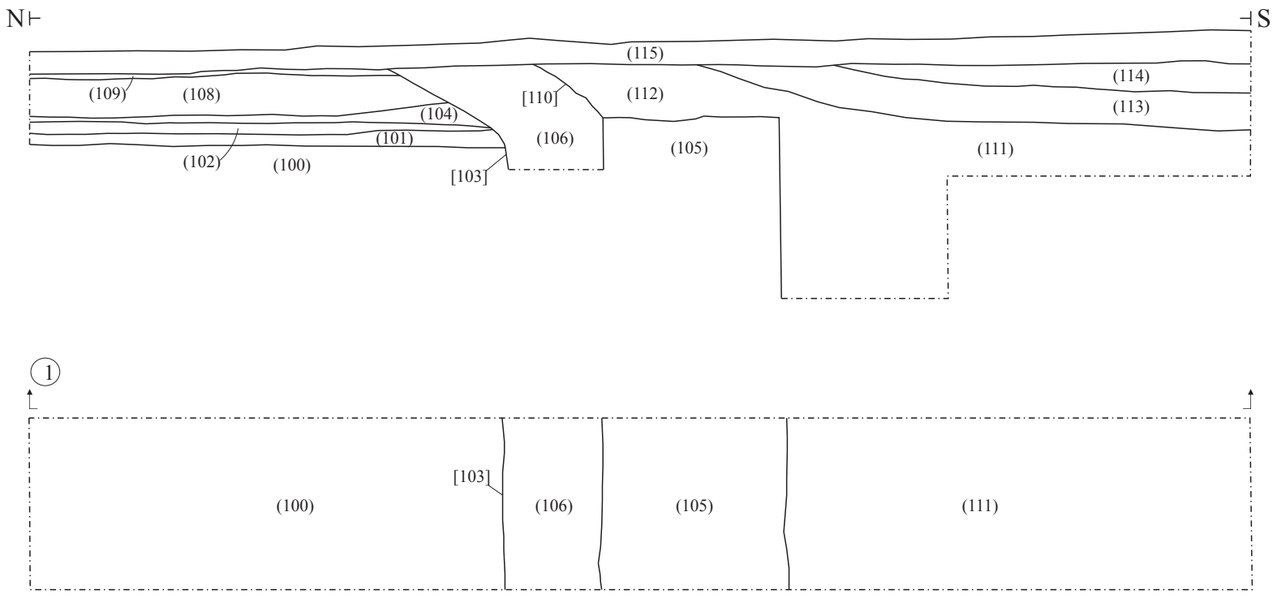
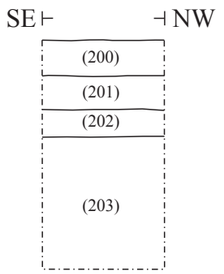


Fig. 3 Plan showing location of observations with principal features identified (black) and wall (orange) from 1933 OS map.

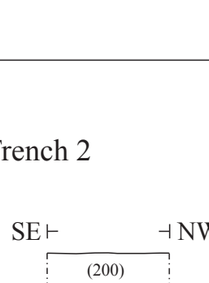
Trench 1



Trench 2



Trench 4



Trench 3

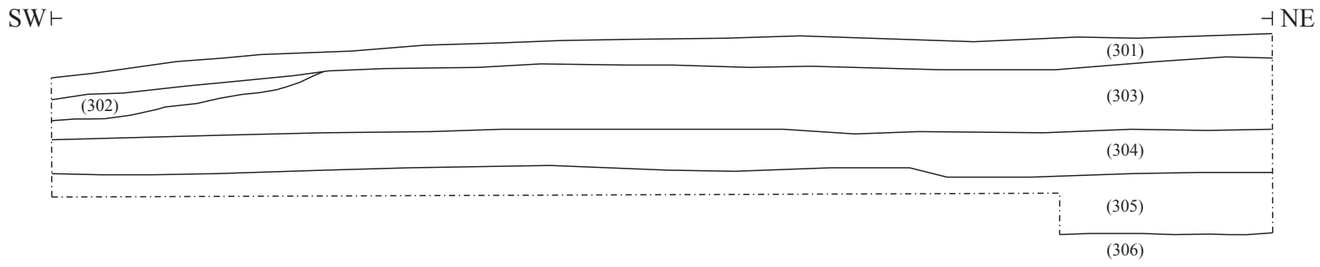


Fig. 4 Plans and sections trenches 1, 2, 3 and 4.

Pl. 1 General view of Knowle Battery. Looking northeast.

Pl. 2 Close-up of Guardhouse. Looking north.

Pl. 3 General view of trench 1 with wall (105) in background. 2m scale. Looking south.

Pl. 4 General view of trench 1 showing modern made ground (foreground) and wall (105). 1m scales. Looking northeast.

Pl. 5 Close-up section trench 1 showing modern made ground. 1m scale. Looking east.

Pl. 6 General view of trench 1 showing surviving soil sequence (background) and wall (105). 0.5m and 1m scales. Looking northeast.

Pl. 7 Close-up section trench 1 showing surviving soil sequence. 1m scale. Looking east.

Pl. 8 Close-up wall (105). 0.5m scale. Looking north.

Pl. 9 General view of trench 2. 1m scale. Looking northwest.

Pl. 10 Close-up section trench 2 showing modern made ground. 1m scale. Looking southwest.

Pl. 11 General view of trench 3. 1m and 1m scales. Looking southwest.

Pl. 12 Close-up section trench 3 showing modern made ground (303) above buried soil (304) and upcast (305). 1m scale. Looking northwest.

Pl. 13 Close-up section trench 4 showing modern made ground (401). 1m scale. Looking south.

Pl. 14 General view of guardhouse showing height of cannon embrasure relative to modern road levels. Looking northeast.