ARCHAEOLOGICAL MONITORING AND RECORDING ON THE TOPSHAM TO EXMINSTER REPLACEMENT WATER MAIN, DEVON

Prepared on behalf of
Balfour Beatty Utility Solutions Ltd.
for South West Water

by
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and P. Pearce with a contribution by T.Gent

Exeter Archaeology

Report No. 10.71

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Summary

Archaeological monitoring and recording was carried out during groundworks associated with a replacement water main between Topsham (SX 9542 8924) and Exminster (SX 9401 8849), Devon. The work was required by Teignbridge District Council and Exeter City Council, and undertaken by Exeter Archaeology between April and May 2009.

Approximately 0.5km of the 1.5km total length of the pipeline was tunnelled beneath the River Exe and was therefore not monitored. The use of an existing roadway (B3123) for much of the course of the narrow pipeline trench south of the River Exe coupled with the high water table of the floodplain meant that meaningful observations were largely restricted to north of the river where, in a wider area of easement exposure, two features, representing the remains of a brick kiln and an associated quarry pit, were investigated. .

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1. INTRODUCTION

This report has been prepared for Balfour Beatty Utility Solutions Ltd. (BBUSL) for South West Water (SWW) and presents the results of archaeological monitoring and recording undertaken by Exeter Archaeology (EA) between April and May 2009 during the installation of a replacement water main between Topsham and Exminster Devon. The work was required by Teignbridge District Council, (as advised by Devon County Council's Historic Environment Service (DCCHES)), and by Exeter City Council (as advised by Exeter City Council's Archaeology Officer (ECCAO)).

1.1 **The site**

The pipeline (Fig. 1) extends a distance of 1.5km from a point just south of Topsham Road (SX 9542 8924) to a connection point close to Redaway Drive (SX 9401 8849) on the southern edge of the river Exe floodplain. Groundworks entailed directional drilling beneath the river Exe from a launch pit in Newport Park to a receptor pit in Exminster marshes. To the north of the river a 15m wide access corridor was stripped leading down to the edge of the floodplain. At the end of this a 40m x 30m area was stripped to accommodate the compound and drilling equipment. To the south of the river, where the pipeline followed the course of a narrow track, only the pipe trench (not corridor) was excavated.

1.2 **Geology**

The underlying geology consists of Heavitree Breccia (Bristow *et al*. 1985). Soils are loamy, well-drained river terrace deposits of the Rudway series (Clayden 1971, 63).

2. AIMS

The principal aim of the project was to ensure the adequate identification, investigation and recording of all archaeological deposits likely to be disturbed by the groundworks.

3. PROJECT BRIEF

No specific brief for the project was supplied. The scope of the archaeological work was determined following consultation with the ECCAO and DCCHES and entailed a staged programme of investigation comprising desk-based assessment, geophysical survey and excavation (Topsham side of the river) and monitoring and recording during groundworks.

4. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Prehistoric remains have been discovered in the immediate vicinity of the site, in the field opposite Seabrook Nurseries on the northern side of Topsham Road. Topsham Road is known to follow the line of the route between the Roman fortress and later town at Exeter and the Roman military port at Topsham so sites and activity of this period may be anticipated along its length. Indeed, a first century Roman farmstead was revealed during the construction of the bridge carrying the M5 across the Exe, only 400m away (Jarvis and Maxfield 1975). As such, the site had the potential to yield important archaeological remains of prehistoric and Roman date.

Part of the site north of the river Exe once stood alongside or within the wider grounds of Newport House, a residence of probable 18th-century origin with a large walled garden. Ordnance Survey first edition mapping, dated 1890, shows that at that time the southern half of the site, outside of the walled garden, was occupied by woodland. It is possible that the woodland will have caused general ground disturbance, and that the levelling of Newport House, around 1980, may have resulted in significant amounts of debris being spread across the area.

The part of the site south of the river lies within the floodplain of the river Exe in Exminster Marshes, an area reclaimed for agriculture in the 18th century. The early OS maps and the Tithe map show a number of former field boundaries in the area (Fig. 3), although almost all within the area of interest had been cut through by the construction of the B3123 road which was chosen to carry much of the pipeline route south of the river. To the west of the B3123, at Milbury Farm, evidence of a Bronze Age enclosure, other prehistoric features and Roman artefacts were found in 2008 (Steinmetzer and Valentin 2008).

5. METHODOLOGY

This is set out within a written scheme of investigation, prepared by EA and approved by ECCAO and DCCHES. This document is included as Appendix 1. A preliminary geophysical survey was also undertaken in order to determine any areas of likely archaeological interest prior to topsoil stripping – this is included as Appendix 2.

The pipeline crossed through 2 fields in the area north of the river (Topsham section). Visits were made during or immediately after topsoil stripping and included the checking of all spoil heaps for finds recovery purposes. All stripping was carried out using a toothless grading bucket. In areas where the topsoil stripping was insufficiently deep to expose natural subsoil, return visits were made during subsequent trenching operations. In the areas to the south of the river (Exminster section) site constraints were such that only the monitoring of the trenching operations was required. The pipe trench measured approximately 600mm wide by 1.5m deep. Where archaeological deposits were exposed, the area was cleared back by hand and deposits investigated and recorded.

The standard Exeter Archaeology 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 black and white print and colour (digital) photographic record was made. Registers were maintained for photographs, drawings and context sheets on *pro forma* sheets. Finds and samples were labelled and bagged on site and taken to the EA offices for processing and cataloguing.

6. RESULTS

6.1 **Introduction**

Relevant detailed plans and sections are included as Figs 2-5. A generally uniform sequence was recorded across the study area with topsoil, which had been subject to agricultural activity, above deposits which are almost certainly alluvial and which will have derived from the proximity of the area to the river Exe. Where exposed, the

subsoil contained patches of naturally occurring river gravels and silts which would appear to confirm periodic flooding of the area in antiquity. The depth of the overlying deposits above natural subsoil was on average 300-800mm.

6.2 Observations south of the river Exe (Fig. 3)
The opportunities for meaningful observation south of the river Exe were restricted due to the routing of the pipeline within a narrow trench along an existing track where no easement or advance topsoil stripping was feasible. Where observations were possible at the eastern end of Milbury Lane in a trench exposure immediately prior to the tunnelled section of the pipeline (Fig.3) and firmly within the floodplain of the river; no archaeology was recorded. The trench was 1.5m deep and the sequence seen in section was as follows:

0-300mm topsoil
300mm-1.2m firm yellowish/brown sillty clay
1.2-1.5m+ blue/grey gleyed clays

6.3 Observations north of the River Exe (Fig, 2)
Greater opportunity for observation occurred north of the river where the pipeline required a 15m wide easement in order to facilitate the laying of the pipe within an area of rough pasture. Geophysical survey of this area (Appendix 2) had not provided results suggestive of any significant archaeological features although a 5m wide anomaly, potentially a ditch, was identified aligned NW-SE on the riverside of Field 1; this was later observed to be a modern services drain or sewer.

6.3.1 Topsoil stripping and other recording
An assemblage of worked stone was recovered from the topsoil stripping of the easement and these were examined by Tim Gent of Exeter Archaeology. Of the 54 pieces recovered, all but five are represented by the pale to mid grey mottled flint that so often dominates assemblages in Devon. The remaining items have been struck from brown, mostly dark brown, Greensand chert. Five pieces of the flint have been burnt. Two of the flakes have been utilised and one has been used to produce a rather poor scraper. Perhaps the most striking aspect of the assemblage is the high proportion of flints with cortex. 27 pieces, or 50% of the total, retain at least some cortex, with 21 representing flakes from the primary or secondary reduction of nodules, a small example of which was recovered along with two small cores. This activity is evidently taking place at the site. Of the 22 pieces of flint with cortex, only one displayed an abraded surface, with the rest appearing to represent material from a primary rather than a river or beach context.
In addition, a pipeline connection pit at the junction with Topsham Road was observed. This pit was in a position where it might have produced evidence for the known Roman road between Exeter and Topsham. However, the pit revealed only modern trench infill above water main and electricity ducts although in the NW corner was a dense yellowish-red gravel (possibly the natural geological deposit) which was recorded as unlikely to be a Roman road surface. The trench subsequently became flooded and then infilled as a rapid measure with no further opportunity for observation.

6.3.2 Field 1 (Figs. 4-5)

The initial topsoil strip exposed a deposit of brick wasters (102, Plate 2) which covered the remains of a small brick clamp kiln (103). The kiln consisted of four linear brick structures, composed of deliberately placed brick wasters (Fig.4). It contained three NNE-SSW aligned firing tunnels measuring on average 500mm wide and 180mm deep. The lack of charcoal and ash would suggest that this kiln was short lived, and it might even be the case that only one firing took place before the structure was dismantled. The proximity of the brick kiln to the site of the former Newport House suggest that the kiln is associated with the construction of Newport House and/or its walled garden during the late 18th century.

A large pit (106) was uncovered adjacent to the brick kiln during the subsequent trenching operations (Fig.5). This appears to be associated with the brick kiln and is likely to have been dug for the extraction of clay. The pit measured *c*. 10.4m long and 1.5m deep. The edges were gradually inclined with a flat base. The pit contained ten separate clay-based fills.

The 5m wide anomaly identified by geophysical survey in the south of Field 1 was observed to be due to modern services, either a sewer or large drain.

6.3.3 Field 2

The geophysical survey of Field 2 identified no features of archaeological interest (see Appendix 2). The lack of archaeological activity was confirmed by subsequent excavation. River terrace gravels were observed to a maximum depth of 1.1m above dark red breccia. Some modern service trenches were noted.

7. DISCUSSION

Whilst there is considerable evidence for both prehistoric activity (dating from the Middle Bronze Age to Middle Iron Age) and late Roman activity on higher ground south of the River Exe at Milbury Farm (Steinmetzer and Valentin, 2008), none was forthcoming during the course of the pipeline observations on that side of the river. This may not necessarily be unexpected on the low-lying floodplain through which the pipeline was routed. North of the River Exe little can be ascertained from the worked stone assemblage with regard to a date, although Neolithic or Early Bronze Age activity is most likely whilst a single crude blade-like and slightly abraded flint may date from the Palaeolithic period.

In the event the principal features recorded were the remains of a post-medieval brick kiln (103) and associated clay extraction pit (105) were exposed. These seem to represent small scale brick making - the use of brick clamps being the oldest and most rudimentary method of firing brick. They are cheap and straightforward to build, with no permanent structure to install and maintain (Jones 1995). They are usually constructed on a level surface of pre-fired bricks and have large tunnels placed at regular intervals to allow for the woodfuel and heat circulation. These clamps can be up to 40 bricks high and contain anything between 5000 and 100,000 bricks (Beamish 1989). They can either be open or scoved kilns; scoved kilns are those plastered on the outside to retain the heat more effectively. The kiln uncovered during the groundworks had been comprehensively dismantled making it unclear whether it had ever been scoved.

8. CONCLUSION

Monitoring of groundworks undertaken as part of the Topsham to Exminster water mains upgrade failed to record any archaeological features or deposits on the southern side of the river Exe. This was based on observations from both the trenching, and visual examination of the spoil heaps and exposed natural subsoil. The evidence for archaeological activity recorded on the north side of the river resulted from observations made during the topsoil stripping for the easement corridor. The exposed remains were those of a brick making venture probably, although not definitely, associated with the construction of the walled garden of the nearby Newport House. Newport House was built in 1798 and demolished in the late 20th century although much of the circuit of its walled garden still stands to full height (over 3m) and it is clear that significant numbers of bricks would have been required for its construction.

SITE ARCHIVE

The site records have been compiled into a fully integrated site archive which is currently held at Exeter Archaeology's offices under project number 6775, pending deposition at the Royal Albert Memorial Museum (416/2009). Details of the watching brief, including a pdf copy of this report have been submitted to the on-line archaeological database OASIS (exeterar1-66526).

ACKNOWLEDGMENTS

The project was commissioned by BBUSL on behalf of South West Water and administered for Exeter Archaeology by P. Stead. The scope of the archaeological work was discussed and agreed with S. Reed of DCCHES and A. Pye of ECC. The groundworks were carried out by BBUSL. Fieldwork was undertaken by P. Pearce and A. West. The illustrations were prepared by S. Blackmore and M. Leverett. Additional material by J. P. Salvatore.

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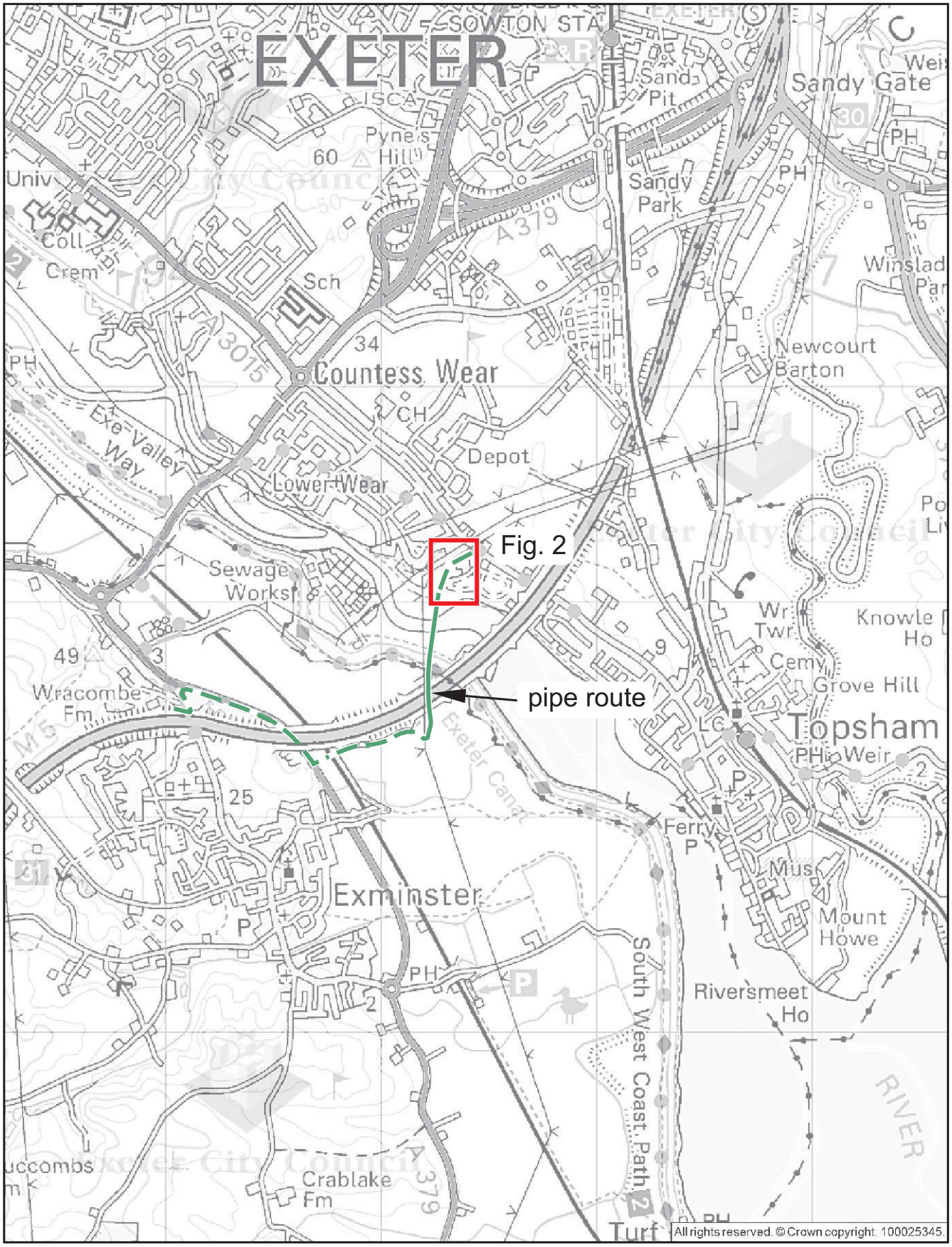

Fig. 1 The pipeline route..

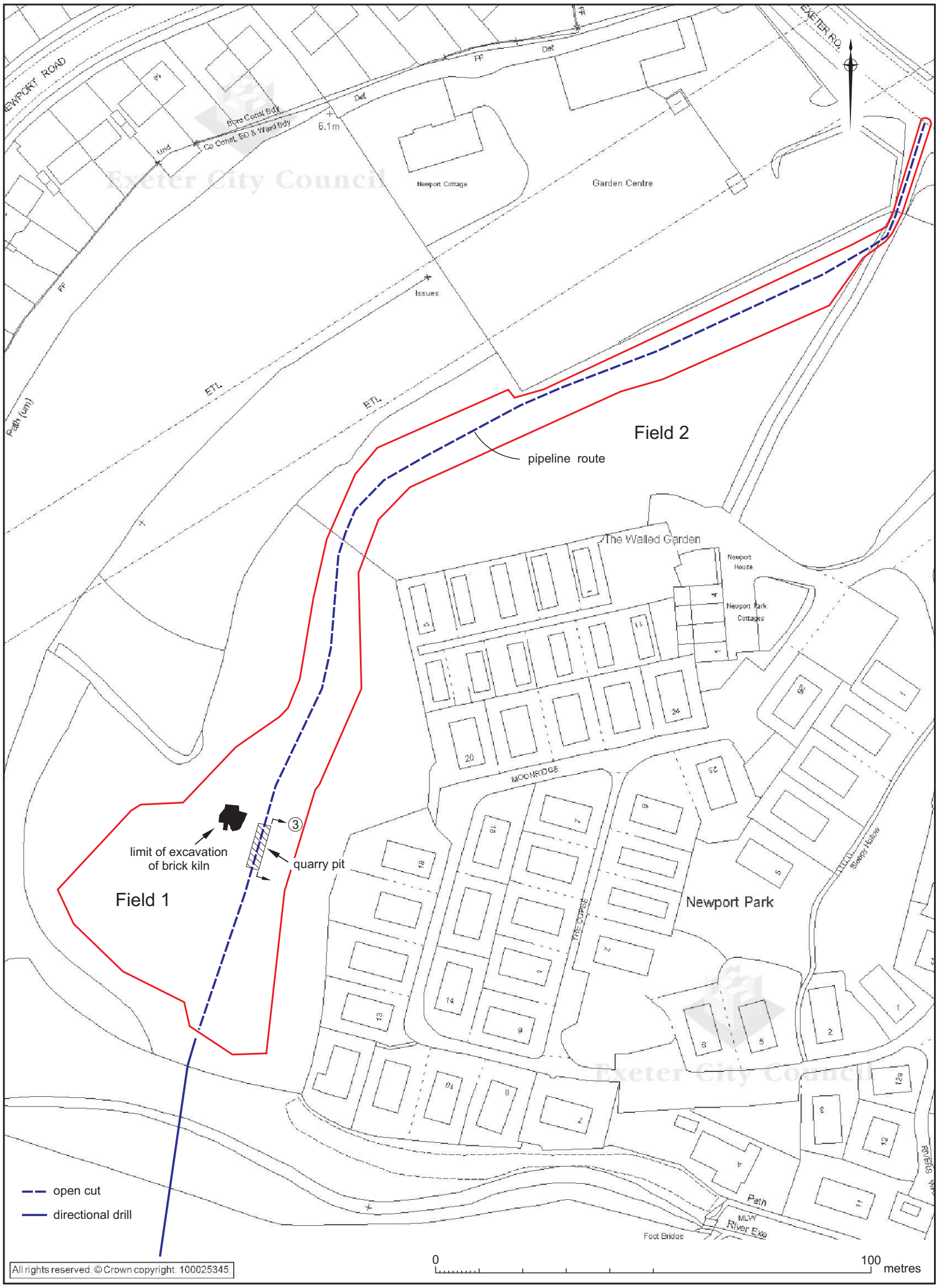

Fig. 2 The pipeline route with location of archaeological observations. Scale 1:1000.

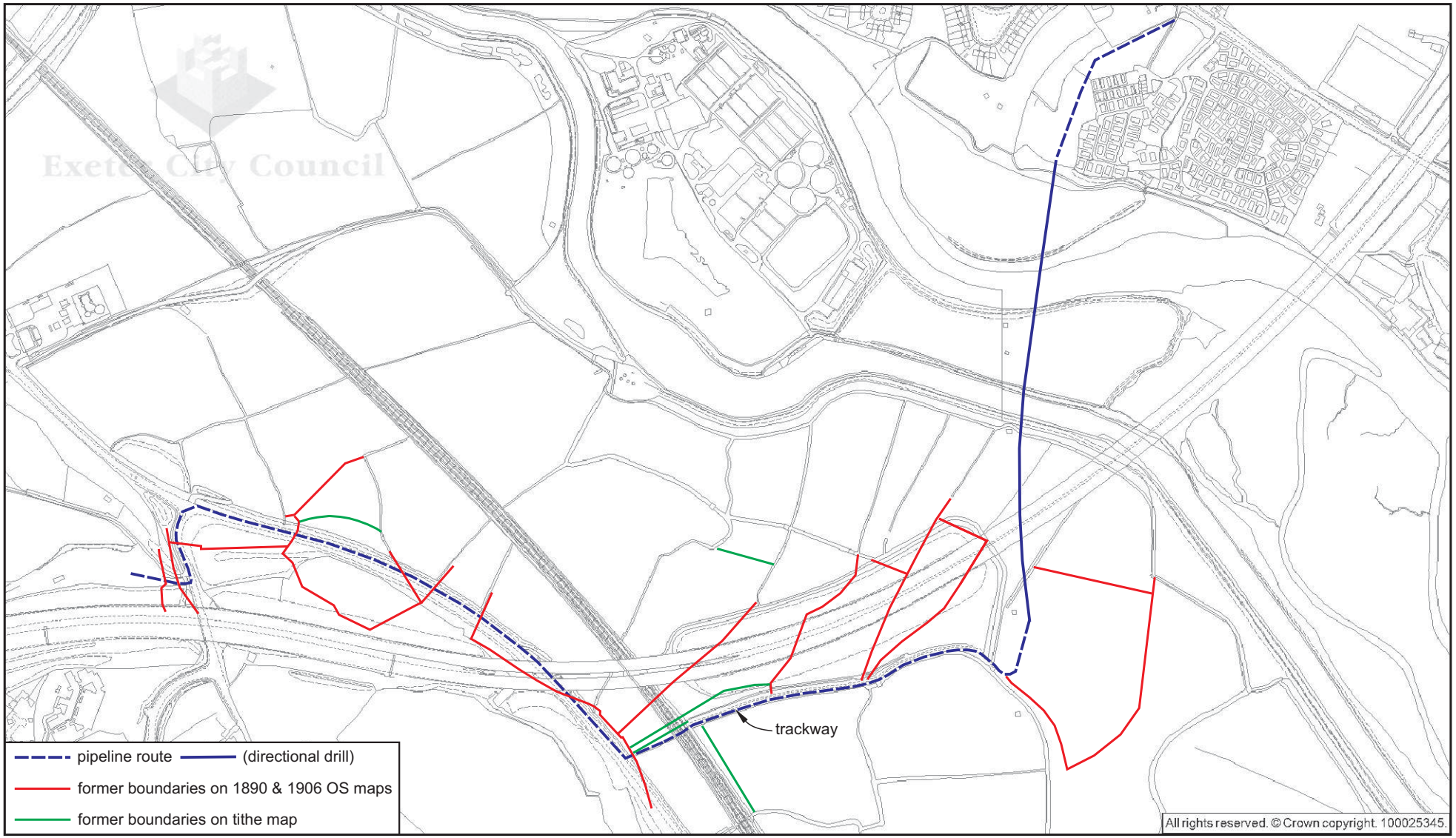

Fig. 3 The pipeline route with historic field boundaries. Scale 1:7500.

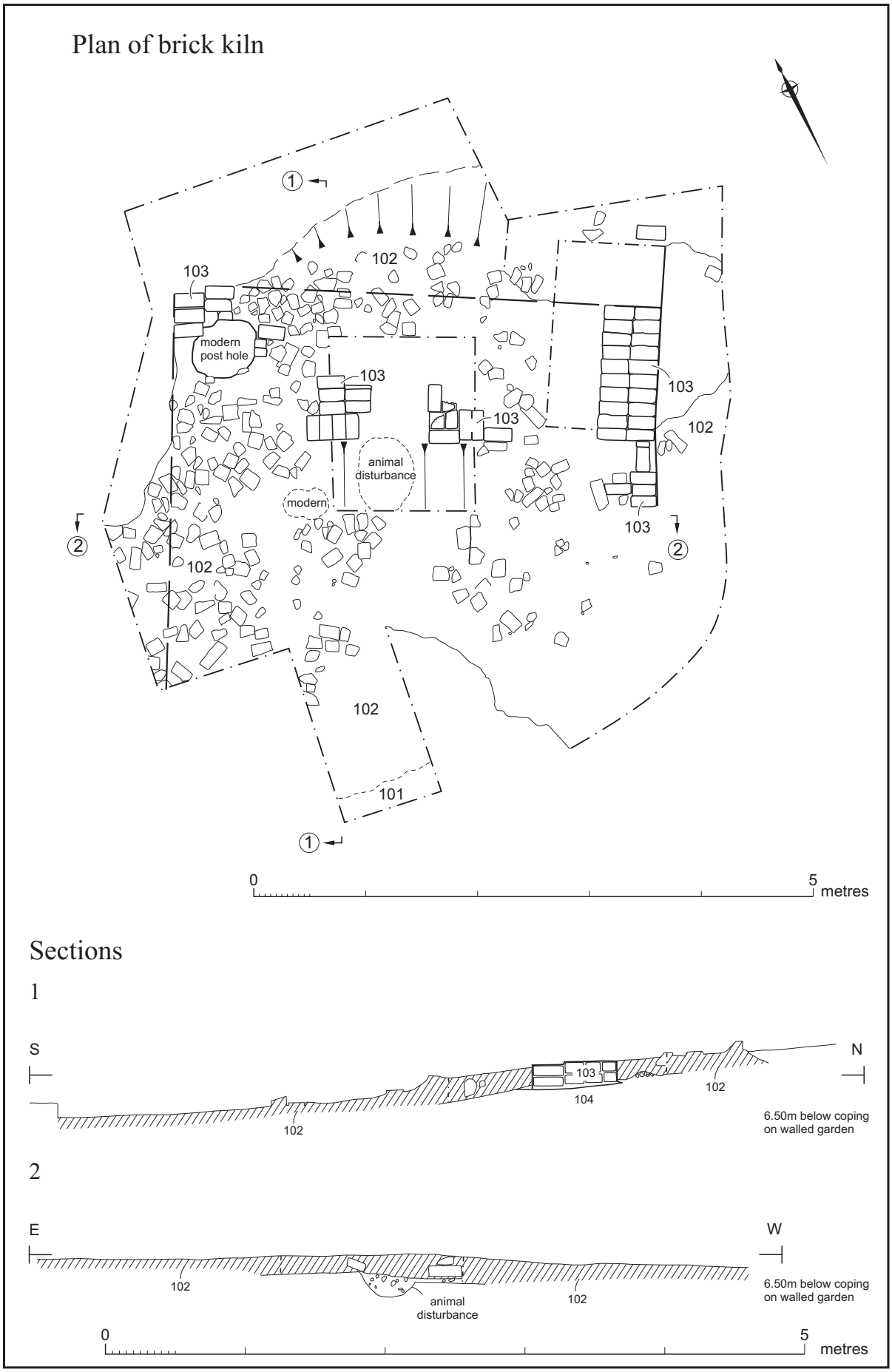

Fig. 4 Brick kiln: plan and sections.

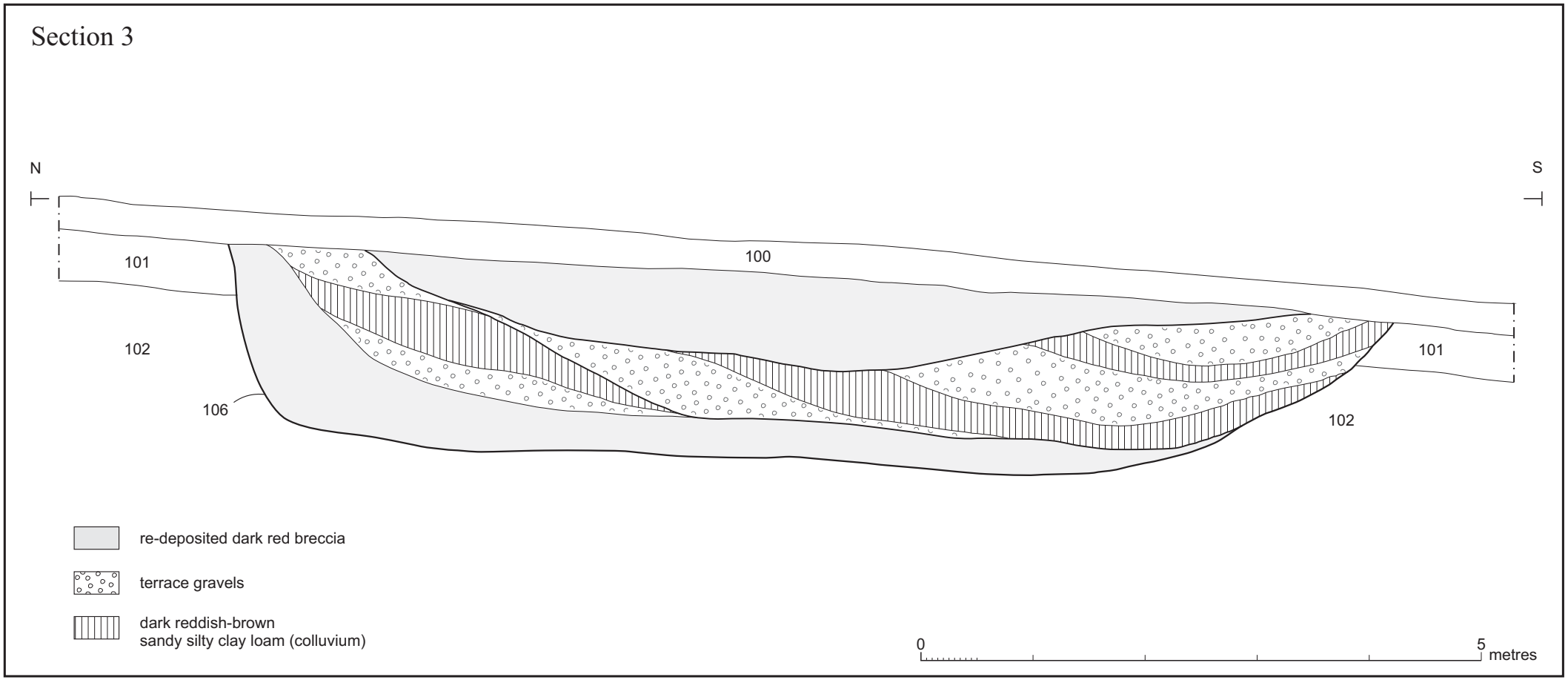

Fig. 5 Section across quarry pit. Scale 1:50.

Pl. 1 General view of site. Looking southwest.

Pl. 2 General view of brick kiln. Looking east. 2m scale.

Pl. 3 Close-up of brick kiln. Looking north-east. 2m scale.

Pl. 4 Section through brick kiln. Looking north-west. 0.25m scale.

APPENDIX 1:
METHOD STATEMENT

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL WORKS IN ADVANCE OF THE INSTALLATION OF A NEW WATER MAIN BETWEEN EXMINSTER AND TOPSHAM

Prepared by Exeter Archaeology
for Balfour Beatty Utility Solutions Ltd

1. INTRODUCTION

1.1 This document has been prepared for Balfour Beatty Utility Solutions Ltd and sets out a staged programme of archaeological works to be undertaken prior to and during groundworks associated with the installation of a new water main between Exminster and Topsham. The scope of the archaeological works has been determined in consultation with the Exeter City Council's Archaeology Officer (ECCAO), and Devon County Council's Historic Environment Service (HES).

1.2 The site area to the north of the river is of significant archaeological potential. Topsham is believed to have served as a Roman port and features and pottery of Roman and prehistoric date have been found throughout the wider Topsham area. Of particular note are the extensive Roman and prehistoric remains recently exposed adjacent to the site, to the north of Topsham Road, and remains of Roman settlement under and to the south of the motorway. Topsham Road itself is either on or close to the line of the Roman road to Exeter. The site may have been considered suitable for settlement in the prehistoric and Roman periods as it lies on the south side of the road and has a south-westerly aspect with river frontage.

1.3 That part of the site to the south of the river lies entirely within the floodplain of the river Exe. Early settlement activity is not expected, but it is possible that excavation may expose relict palaeochannels (ancient watercourses) which have the potential for preserving significant environmental information and may even contain waterlogged organic deposits or even preserved organic artefacts such as worked wood, leather etc.

1.4 The groundworks will entail directional drilling beneath the river Exe from a launch pit in Newport Park to a receptor pit in Exminster marshes. Open cut trenching will be take place between Topsham Road and the launch pit, and from the receptor pit to a connection point close to Redaway Drive, on the edge of the floodplain. To the north of the river (Topsham section) excavation of the pipe trench will be preceded by topsoil stripping to provide a 15m wide working corridor. Within the southern half of the Topsham section all topsoil will be removed and significant areas of the existing slope reduced to create a level area for the site compound, spoil storage and the drilling launch pit. To the south of the river (Exminster marshes) site constraints are such that no

topsoil stripping wider than the pipe trench will be carried out. Stripping will however be required to form a receptor pit and compound area, and deep pits will be excavated to either side of the railway line.

2. AIMS

2.1 The principal aim of the project is to ensure the adequate identification, investigation and recording of all archaeological deposits which will disturbed by the groundworks. This will be achieved via a staged programme of archaeological investigation comprising desk-based assessment, geophysical survey and excavation and/or monitoring and recording during groundworks.

3. METHOD:

3.1 **Area to north of river (Topsham area)**

3.1.1 ***Geophysical survey***
Geophysical (magnetometry) survey will be carried out across that part of the site lying to the north of the river (Topsham area), prior to topsoil stripping. The survey results will be assessed and will inform the extent of subsequent archaeological works.

3.1.2 ***Excavation***
Should the geophysical survey indicate the presence of significant archaeological survival, then these areas will, following consultation with the ECCAO, be subject to archaeological excavation in advance of groundworks. The main contractor will ensure that sufficient time is built into the works programme to allow for such excavation.

3.1.3 Hand-excavation of archaeological deposits will normally comprise:

- The full excavation of small discrete features;
- half-sectioning (50% excavation) of larger discrete features; and,
- excavation of long linear features to sample 20% of their length - with hand-investigations distributed along the exposed length of any such features, specifically targeting any intersections, terminals or overlaps.

Spoil will also be examined for the recovery of artefacts.

Should the above percentage excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined full excavation of such features/deposits will be required. Additional excavation may also be required for the taking of palaeoenvironmental samples and recovery of artefacts.

3.1.4 ***Watching brief***
Should the geophysical survey suggest limited archaeological survival and it is decided by the ECCAO that advance excavation is not required, a watching brief will be maintained during topsoil stripping within the 15m corridor and the wider area to the south (launch pit/compound/storage etc.). The topsoil strip will be carried out under direct archaeological control using a machine

fitted with a toothless grading bucket. Any archaeological deposits or features will be exposed, but not removed, by machine. Hand excavation and recording will then take place in accordance with the methods outlined above (under excavation) and below (section 4). The main contractor will ensure that the topsoil strip will be carried out sufficiently in advance of trenching/terracing operations as to ensure sufficient time for the investigation and recording of any archaeological deposits that may be exposed.

Depending on the results of the watching brief on the topsoil strip, a further watching brief may be required on some of the deeper ground works for the trenching or benching where there is potential for remains to survive at a greater depth than is exposed by the topsoil strip. This will be assessed on site immediately after the topsoil strip is completed.

A watching brief will also be maintained on the excavations within the pathway adjoining Topsham Road, to identify and record any remains of the Roman road for example.

3.1.5 A desk top study of existing archaeological and historical information for the site and adjoining area will be carried out in parallel with the above, to help interpret any remains found and place them in context.

3.2 **Area to south of river (Exminster marshes)**

3.2.1 ***Desk-based assessment***
A rapid assessment will be made of readily available documentary sources This will comprise examination of Ordnance Survey and early 19th-century mapping and information held at the county Historic Environment Record (HER). The purpose of the assessment will be to provide a context for the results of the fieldwork.

3.2.2 All groundworks with the potential to disturb archaeological deposits will be carried out with an archaeologist in attendance. With regard to the open cut trench, the watching brief will initially be intensive, but may be scaled down (with the agreement of the HES) to more infrequent but regular visits should it be demonstrated that the archaeological potential is limited.

3.3 Should archaeological deposits be exposed during excavation or watching brief, excavations will cease (in that area) and features will be cleaned by hand, excavated and recorded as per EA standard recording procedures (see below) and in accordance with the *Standards* of the Institute *for* Archaeologists.

4 RECORDING

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

- watching brief record sheets, standardised single context record sheets, survey drawings at scales of 1:10, 1:20, 1:50 and 1:100 as appropriate, and black-and-white print and colour digital photography.

- survey and location of features or structures, and artefacts as appropriate.

- labelling and bagging of finds on site, unstratified post-1800 pottery may be discarded on site.

- the assessment on site of deposits, as appropriate, by the EA Scientific Officer regarding the potential yield (if any) of environmental or microfaunal evidence. Should this assessment prove positive he would then initiate appropriate sampling procedures in accordance with the guidelines on *Environmental Archaeology* (English Heritage, 2002/01) and organise liaison with outside specialists, including English Heritage's Regional Science Advisor.

4.2 The project will be organised so that specialist consultants who might be required to conserve or report on other aspects of the investigations can be called upon.

4.3 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) and *First Aid for Finds (*UKIC & RESCUE, 1997), and on advice provided by A. Hopper-Bishop, Specialist Services Officer, RAM Museum, Exeter.

4.4 Should artefacts be discovered which are classed as treasure or potential treasure (including precious metals, groups of coins or prehistoric metalwork) these will be removed to a safe place and reported to the local coroner, according to the procedures stipulated in the *Treasure Act 1996*. 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.

4.5 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 subject to the compliance with the relevant Ministry of Justice Licence, which will be obtained by EA on behalf of the client. Any remains will be excavated in accordance with Institute of Field Archaeologist Technical Paper No. 13. Where appropriate bulk samples will be collected.

4.6 The project will be monitored throughout by the ECCAO, and HES. Site meetings will be convened as necessary to confirm what approach is required in certain areas of the site, and to sign off as complete any areas of full excavation. A date of completion of archaeological site works will be agreed.

4.7 The project will be undertaken in accordance with the Institute *for* Archaeology's (I*f*A) Code of Conduct (Oct 2006) and the Standards and Guidance for Archaeological Excavation and for an Archaeological Watching Brief (both Sept 2001). The project will be managed by Peter Stead. EA is managed by a full Member of I*f*A.

5. REPORTING AND ARCHIVING

5.1 The reporting requirements depend on the results of the work, and will be confirmed with the ECCAO and HES on the completion of site work. These will include (as a minimum) a completed HER entry or entries. Should significant deposits be found a summary report will be produced. This will contain the following elements as appropriate:

- location plan/s.
- plans, sections and profiles at appropriate scales of significant archaeological features and deposits revealed during the project.
- a description of the remains and deposits identified and of artefacts, environmental samples recovered and a discussion and interpretation of their character and significance in the context of any locally available historical evidence.
- specialist reports as appropriate.
- representative site photographs and any relevant extracts from historic plans.

5.2 Copies of the summary report will be produced for distribution to the Client, the ECCAO and HES within 6 months of the completion of site work. If a summary report is produced then it will be attached as a pdf to an online OASIS entry, within 6 months of completion of site work.

5.3 Separate HER entries will be produced for the Topsham and Exminster marshes works in a digital format (MS Access and Autocad compatible), and hard copies sent to the ECCAO and HES, within 6 months of the completion of site work.

5.4 An ordered and integrated site archive will be prepared in accordance with *The Management of Archaeological Projects* (English Heritage, 1991 2nd edition) upon completion of the entire project. This will be deposited with the RAM Museum, Exeter, under a museum allocated accession number (pending) in consultation with the Curator of Antiquities, within one year of the completion of site work. The guidelines in the *Procedures for the Deposit of Archaeological Archives from Developer Funded Fieldwork to Exeter City Museum (2006)* will be followed.

5.5 A short 'round-up' report summarising the results of the project will be prepared for inclusion within an appropriate national journal *if merited* (to be confirmed with the ECC Archaeology Officer), within 12 months of the completion of site work.

5.6 Should particularly significant archaeological remains, finds and/or deposits be encountered, then these, because of 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 the ECCAO and HES, in consultation with the Client. EA will then, on behalf of the Client, implement publication within 2 years of the completion of site work.

6. COPYRIGHT

6.1 EA 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.

7. ADDITIONAL INFORMATION

Specialist 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; Alex Bayliss (EH);
Charcoal identification: Dana Challinor
Diatom analysis: Nigel Cameron (UCL)
Environmental data: Vanessa Straker (English Heritage) University of Bristol;
Faunal remains: Southampton University Faunal Remains Unit and sub-consultants, Dale Seargantson, Polydora Baker (EH); Lorraine Higbee (Taunton);
Fish bone identification: Alison Locker
Foraminifera analysis: Mike Godwin; Nigel Cameron (UCL);
Finds conservation: Alison Hopper-Bishop (Exeter Museums); Salisbury Conservation Centre;
Human remains: Louise Loe (Oxford Archaeology); Dr Mary Lewis (Bournemouth University); Dr. James Steele (Centre for Human Ecology, Southampton);
Lithic analysis: Dr. Linda Hurcombe (Exeter University); John Newberry (Paignton);
Medieval and post-medieval finds: John Allan (EA) and sub-consultants;
Metallurgy: Chris Salter (Oxford University); Ancient Monuments Laboratory (English Heritage) Peter Crew (Snowdonia National Park), Gill Juleff (Exeter University);
Molluscan analysis: Terrestrial-Paul Davis (Bristol); Marine-Jan Light (Godalming);
Numismatics: Norman Shiel (Exeter);
Petrology/geology: Roger Taylor (RAM Museum); Dr R. Scrivener (British Geological Survey);
Plant remains: Julie Jones (Bristol); Wendy Carruthers (Llantrisant)
Pollen: Dr Heather Tinsley (Bristol); Elizabeth Huckerby (Lancaster University Archaeological Unit); Dr Rob Scaife (Southampton University,
Prehistoric pottery: Henrietta Quinnell (Exeter);
Roman finds: Paul Bidwell & associates (Arbeia Roman Fort, South Shields);

Soil Science: Matthew Canti (EH) and sub-consultants.
Textiles: Penelope Rogers (York)

Health & Safety

Exeter Archaeology operations are subject to Health & Safety policies prepared by Exeter City Council, which include all aspects of work covered by the *Health and Safety at Work Act* (1974) and *The Management of Health and Safety Regulations* (1992). A *Statement of General Policy in respect of Health and Safety at Work* can be provided. Because of the specialised nature of archaeological work Exeter Archaeology also applies the guidelines set out in the manual of the Standing Conference of Archaeological Unit Managers *Health and Safety in Field Archaeology*, which deals with the more specific requirements, associated with this type of work. Professional advice and training on health and safety is provided by Exeter City Council's Assistant Principal Environmental Health Officer (Health & Safety). Exeter Archaeology has a minimum of two staff trained in Risk Assessment, three qualified First Aiders and five Appointed Persons.

APPENDIX 2:
GEOPHYSICAL SURVEY

Summary

Name of site: Land adjacent to Newport Park, Topsham
Grid reference: SX 9529 8915
Client: South West Water
Project number: EA6775
Date(s) of survey: 30.03.2009
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Site:
The site consists of a single tract of rough pasture situated between Newport Park retirement village and a steam that runs southwest into the River Exe. The northern limit of the site lays immediately south of the main Exeter to Topsham road, and the southern limit borders the floodplain of the Exe. Geophysical survey has the potential to reveal features associated with prehistoric, Roman, medieval and post-medieval activity.

Geology and soils:
The site is situated upon Heavitree Breccia. Soils are loamy 3rd river terrace deposits of the Rudway series.

Survey type: Magnetometer (gradiometer) survey
Equipment: Bartington Instruments Ltd. Grad601-2
Area surveyed: 0.5ha ***Grid size:*** 30m by 30m
Traverse interval: 1m ***Sample interval:*** 0.25m

Results:
A magnetometer (gradiometer) survey was undertaken in advance of a new water main in order to assess the potential for archaeological remains. Features associated with recent land use, including modern services, were most prominent. A general scatter of magnetic debris was observed across the site, and probably relates to minor ground disturbance and spreads of weakly magnetic material. Strong magnetic readings in Field 1 are likely to be a result of modern activity. A five-mete wide positive linear anomaly indicates the presence of a substantial ditch, but the age and purpose of this feature is open to question. Several isolated positive point anomalies may be indicative of natural hollows, tree holes, or pits of archaeological derivation but these cannot be ascribed to a single feature class with certainty.

1. INTRODUCTION

This report has been commissioned by South West Water to present the results of a geophysical survey of land adjacent to Newport Park SX 95290 89157), Topsham. The survey was undertaken by Exeter Archaeology (EA) in March 2009. The work described in this report forms one part of a staged programme of works to mitigate the impact of the new Topsham to Exminster water main upon any surviving archaeological deposits.

1.1 **Site description**

The site (see main report Fig. 2) consists of a single irregular-shaped tract of land extending northeast-southwest from the Exeter Road to the edge of the Exe marshes. Until recent times the land was subdivided into two fields, though this boundary has now been erased. The site is confined to the west by a tributary of the River Exe and to the east by Newport Park retirement village. Newport Park retirement village was, until its demolition in the second half of the 20th century, the site of Newport House. The boundary of the original walled garden survives today, though it now contains eleven park homes.

1.2 **Land use**

The land is currently unkempt, with rough grass and weed-growth covering much of the site. The area outside of the walled garden of Newport Park contains a large amount of ferrous scrap and building debris. This is consistent with the area being used by the site maintenance staff for a compound and general dumping-ground. There are several places across the site where it is clear that substantial bonfires have been lit. The southwest boundary of the site, adjacent to the stream entering the Exe, is composed of a large amount of brick rubble that may have derived from the levelling of Newport House, which raises the possibility of significant disturbance across the whole area.

1.3 **Geology and soils**

The underlying geology consists of Heavitree Breccia (Bristow *et al*. 1985). Soils are loamy, well-drained river terrace deposits of the Rudway series (Clayden 1971, 63).

2. AIMS

The aim of the geophysical survey is to assess the archaeological potential of the site using suitable geophysical techniques. The results are intended to inform decisions regarding further archaeological investigation at the site.

3. METHOD

An area of approximately 0.5ha was subject to magnetometer (gradiometer) survey. Magnetometer survey was selected as a proven method of accurately and rapidly detecting archaeological features (Appendix A). Ten complete and partial 30m x 30m survey grids were surveyed. Their position was measured and recorded relative to the site boundaries using tapes, and positioned ‘best fit’ on digital OS mapping. The magnetic survey was undertaken using a Bartington Instruments Ltd. Grad601-2 dual sensor gradiometer sampling four readings per metre at 1m traverse intervals in the 1nT range.

4. RESULTS

The survey (Figs. 1-4) has revealed a considerable amount of modern ferrous interference and the courses of a number of modern services. At the northern end of Field 1 there are two concentrations of modern ferrous interference, indicated by significant dipolar responses. It was noted that in places there were the remnants of barbed wire fencing entangled within the long grass. A large ferrous anomaly was identified adjacent to the boundary of the walled garden, and it is likely that this relates to a buried manhole. The courses of two boundaries shown on Ordnance Survey First Edition mapping dated 1890 were identified in the lower half of Field 1, represented by closely-spaced dipolar anomalies. It is probable that these boundaries consisted of iron railings or similar that has left behind ferrous material in the ground. A significant ferrous anomaly was identified in the southeast corner of Field 1, coincidental with a large sunken area and a concrete manhole. It is thought that this is the location of a service junction or of a septic tank. There is a general background scatter of low magnitude magnetic debris represented by low magnitude dipolar readings, which probably derive from general ground disturbance. There are also numerous stronger dipolar responses, which may represent weak ferrous or thermoremnant material, such as brick, fired clay and other heat-affected debris.

There are a number of positive point anomalies in the northern half of Field 1. Positive point responses may indicate natural hollows, tree holes, or pits of archaeological derivation for example, but the anomalies seen here cannot be ascribed to a single feature class with certainty. However, many of the anomalies are of amorphous, which, along with the known presence of woodland here in the 19th century, may suggest that the majority are due to tree holes. There is a significant positive linear anomaly running approximately northwest-southeast across the bottom of Field 1. This anomaly is about five metres across and represents a substantial cut feature, such as a ditch. There are diffuse negative linear anomalies running alongside the positive anomaly, which is likely to represent a spread of material cast from the cut feature. The date and purpose of the feature are not known, but it broadly follows the orientation of the stream that issues into the Exe, and so may be an earlier, man-made channel associated with drainage into the river or flood prevention. It is possible, however, that the feature represents a ditch dug to enclose the low spur now occupied by Newport Park.

The survey of Field 2 revealed nothing of archaeological significance. A large proportion of the area shown on modern mapping has been utilised for a car park. This area has been levelled and a significant bank created, which is the cause of magnetic disturbance on the southern edge of the survey. The northern boundary with Seabrook Nursery consists of a wire fence, which has caused the interference shown on the survey. The survey 'corridor' between this fence and the car park was less than 7m in width. A service trench runs north-south at the top of Field 2, with a second running southwest-southeast across its midpoint, and these are represented by bipolar linear anomalies.

5. CONCLUSION

Detailed magnetometer (gradiometer) survey of land adjacent to Newport Park did not reveal a significant level of archaeological potential. Field 1 showed evidence for magnetic disturbance caused by weakly ferrous and thermoremnant material. Much of this probably derives from the levelling of Newport House and the subsequent use of

the area as a general dumping ground and place for bonfires by the grounds staff of Newport Park retirement village. A spread of positive point anomalies may represent pits of archaeological origin, but they may also be a result of tree holes. The lines of two boundaries shown on mapping of the late nineteenth century were identified. A five-metre wide ditch was identified running northwest-southeast at the bottom of Field 1. The date and purpose of this feature is not known but it is suggested that it may be linked to an early episode of flood prevention and/or canalisation of the adjacent stream. It is possible, however, that it is part of a former enclosure on the low spur. The magnetic survey of Field 2 revealed no features of archaeological interest.

ACKNOWLEDGEMENTS

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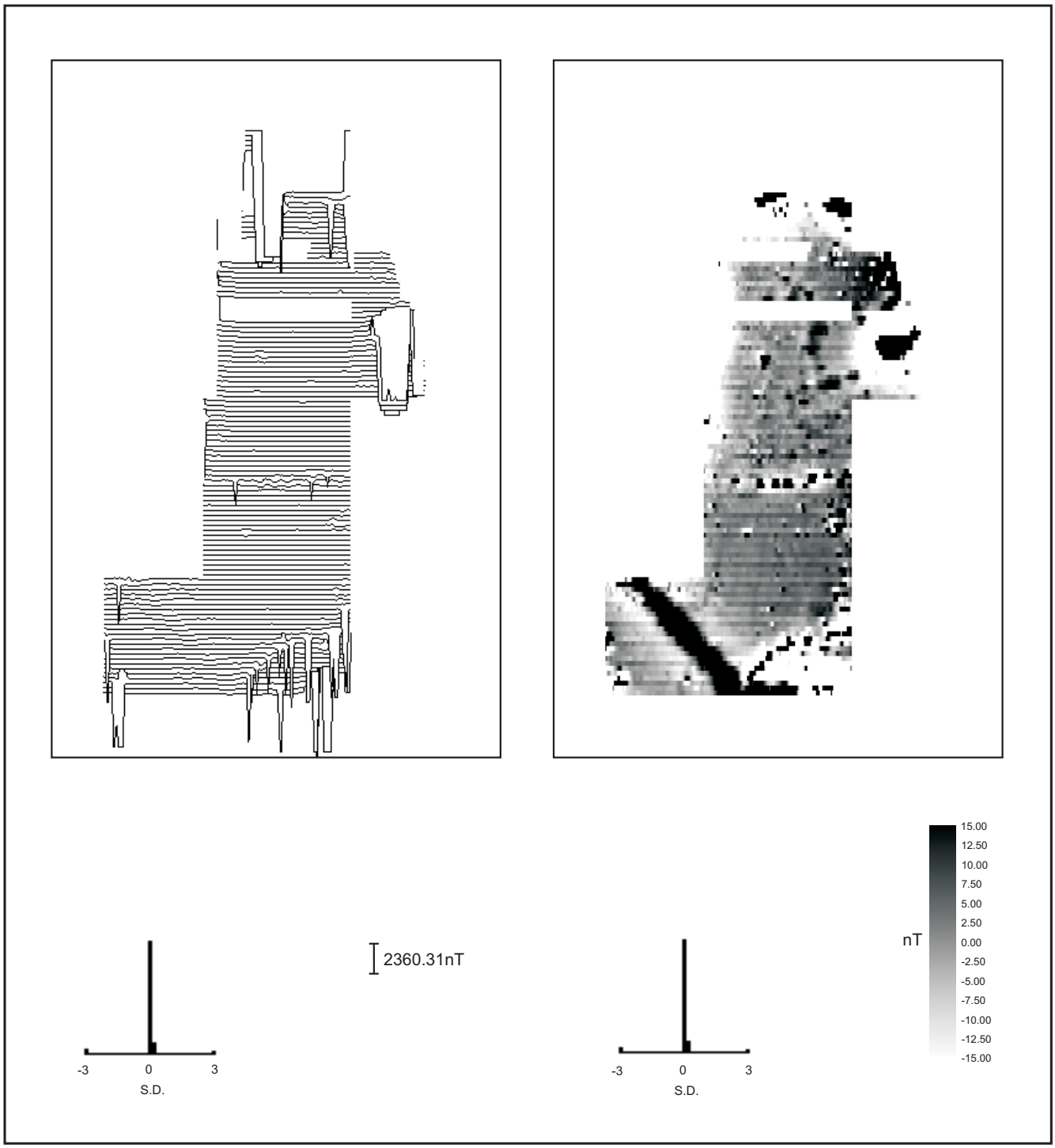

Fig. 1 Field 1, raw data.

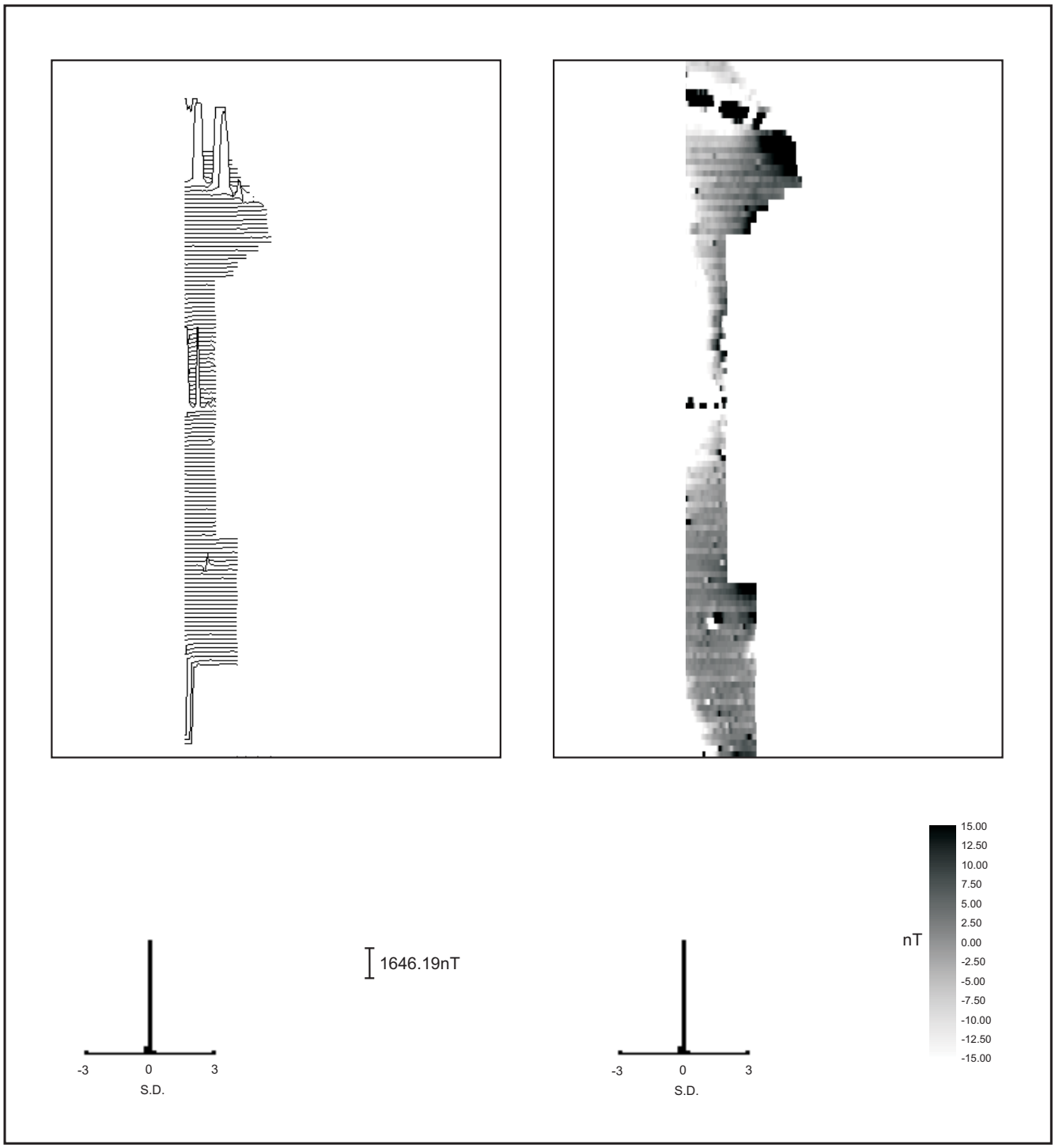

Fig. 2 Field 2, raw data.

Fig. 3 Gradiometer survey. Scale 1:1000 @ A3.

Fig. 4 Interpretation of gradiometer survey results. Scale 1:1000 @ A3.