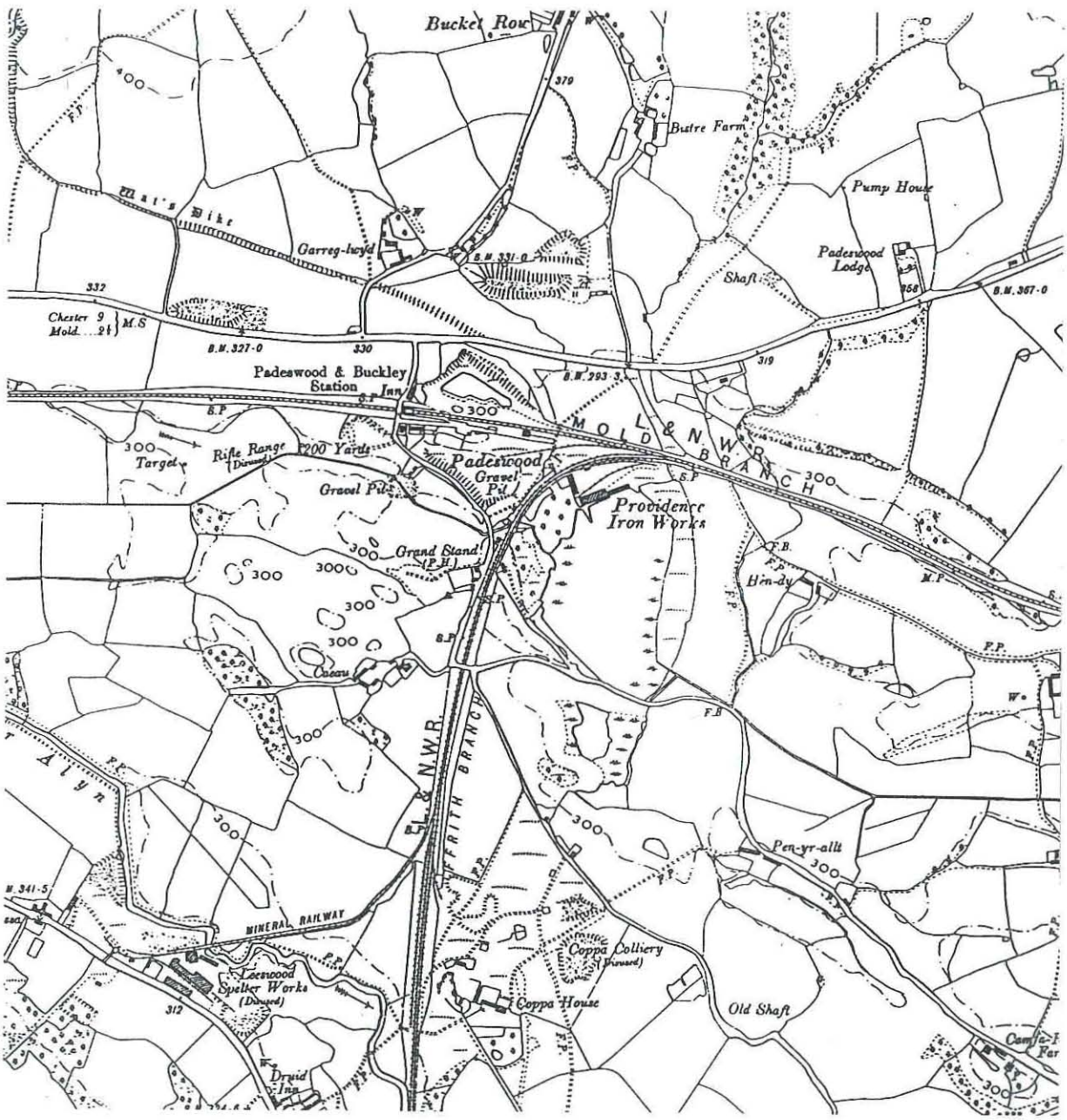
THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

Wat's Dyke, Padeswood, Flintshire

ARCHAEOLOGICAL EVALUATION



CPAT Report No 435

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ARCHAEOLOGICAL EVALUATION

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October 2001

Report for Gallifords Northern

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CPAT Report Record

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1 INTRODUCTION

1.1 In February 2001 the Contracts Section of the Clwyd-Powys Archaeological Trust (CPAT) was invited by Bullen Consultants, acting as consultants to Galliford Northern and on behalf of Welsh Water, to prepare a specification and quotation for undertaking an archaeological excavation on the scheduled ancient monument of Wat's Dyke, at the point where it would be crossed by the line of a proposed new waste watermain, within the Ty-Gwyn Treatment Works near Buckley in Flintshire. In addition to this CPAT was asked to provide a further specification and quotation for the excavation of two small-scale evaluation trenches to examine the nature of soil dumping and earthmoving which was believed to have affected the edge of the dyke during previous construction activities related to the treatment works.

1.2 The scope of the excavations was considered during an initial site meeting between the developer and representatives of CADW: Welsh Historic Monuments, and this resulted in an application from the former for scheduled monument consent for the works to cross the scheduled area of Wat's Dyke (dated 2nd March 2001). The CPAT quotations were accepted by Galliford Northern on 13th March 2001, and interim scheduled monument consent for the works was subsequently granted by CADW on the 27th April 2001, subject to the fulfillment of certain conditions, among which it was specified that the excavation and evaluation work, mentioned above in paragraph 1.1, was to be carried out. The conditions were agreed to by the developer and scheduled monument consent was granted by CADW, but, mainly as a result of the foot and mouth outbreak, work on the implementation of the scheme was delayed until September 2001.

1.3 The excavation (Section 4) and evaluations (Section 5) were carried out between the 17th and 27th of September 2001, and this report compiled at the beginning of the following month, October.

2 LOCATION, TOPOGRAPHY AND GEOLOGY

2.1 The Ty-Gwyn Treatment Works is located approximately 1km to the south of the outskirts of Buckley in Flintshire at SJ 28326232 (Fig 1). It lies on the southern edge of higher ground overlooking the valley of the River Alyn, which, at this point, flows in a south-eastward direction before eventually joining the River Dee.

2.2 The soils of the area generally consist of Cambric stagnoglays of the Brickfield 3 Association, while the underlying geology consists of rocks belonging to the Westphalian division of the Upper Carboniferous period, generally known as the 'Coal Measures' (Jones and Hankinson, 2001).

3 HISTORICAL BACKGROUND

3.1 The scheduled ancient monument of Wat's Dyke (PRN 17774) is considered to represent a boundary of early medieval origin, separating the Anglo-Saxon kingdoms to the east from the British (Welsh) to the west. Because of its condition the surviving section (PRN 106645), which will be crossed by the proposed pipeline, has been scheduled by CADW: Welsh Historic Monuments as a monument of national importance (SAM Flintshire 088).

3.2 This section of the dyke would most probably have been subject to some sort of agricultural use following its abandonment as a boundary, but almost inevitably nothing is known of its history until relatively recent times. The second edition Ordnance Survey 1:10,560 map of 1900 shows the dyke passing through a group of fields, and a trackway, following the same approximate course as the present main site access road, leading to an apparent gap in the dyke at the point where Trench 1 was excavated. This pattern of agricultural land-use would only have changed when the Ty-Gwyn Treatment Works was constructed, probably in the later 20th century.

4 EXCAVATION (Trench 1: 25m x 1m; Figs 3-4)

4.1 The methodology required by CADW in granting scheduled monument consent for the pipeline specified that the dimensions of the pipe trench within the scheduled area would be limited to a maximum of 1.5m wide x 1m deep; the length of the pipeline so affected would be approximately 25m. At this point the dyke had already been breached by an access road serving the treatment works, and the proposed line was therefore located within this road to minimise disturbance to extant features of the dyke (Fig 2).

4.2 The road in which the trench was excavated adopted a curving course, and the trench was angled to follow this; it was not possible to excavate a straight line owing to the need to maintain access for tankers moving between the two sections of the treatment works. A section of the road surface, 25m long, was marked out to a width of 1.5m from the kerb, and the tarmac (1), 0.10m in depth, which had evidently been resurfaced in the past, was then cut and removed by machine prior to further excavation.

4.3 The width of the cut for the pipeline installation elsewhere was 1m, and accordingly the trench was limited to this width, within the area stripped of tarmac, to minimise disturbance to the monument. This restriction was also necessitated by the presence of a drainage grid within the marked out area. Underlying the tarmac was a layer of grey limestone rubble (2), which varied between 0.4m and 0.7m in thickness, and was also removed by machine.

4.4 At the north end of the trench (Plate 1), removal of the road makeup revealed the surface of the variegated brown to yellow natural clay subsoil (3). Owing to its variable colour a further 0.3m was removed to the maximum permitted depth of 1m below the road surface, and this confirmed that the layer was of natural origin. The surface of the subsoil was found to be comparatively level, with no sign of the bank which forms the north side of the dyke in adjacent areas.

4.5 Two linear pipe trenches were found to have been cut into the natural subsoil near the northern end of the trench. The earliest of these (11) was 0.35m wide by over 0.4m deep and ran from north-east to south-west; it contained a ceramic drainage pipe within the base of its fill (12), though the pipe appeared to have been abandoned and broken when the access road was constructed. Overlying pipe trench (11), and partially cutting it, was a second pipe trench (9), 0.6m wide by at least 0.4m deep, running north-north-west/south-south-east towards a modern drainage grid. The trench had been filled with concrete (10), undoubtedly covering a pipe serving the drainage grid. The concrete was left undisturbed as the pipe was evidently still active and its removal would most probably have resulted in the excavations becoming flooded.

4.6 Overlying the natural subsoil (3), and commencing immediately to the south-west of the concrete filled pipe trench (9), was a layer of mixed grey-brown clay (4). This was beneath the limestone rubble (2), and was clearly a modern dumped layer as it was found to contain brick, slag and ceramic drainage pipe fragments. The clay was accordingly removed by machine and was found to increase in thickness up to the central point of the trench where its base dropped more than 1m below the level of the road surface and it was consequently not investigated. A post-hole (13; Plate 2) with an angular plan, cut into the natural subsoil, was found beneath a thin covering of layer 4; it contained the stub of a wooden post in its fill (14) and this would seem to suggest that prior to the dumping of layer 4 there was a fenced boundary or gate on the line of the dyke. At the south-west end of the trench (Plates 3 & 4), the top of a layer of dark grey gleyed silty soil (5) was revealed beneath layer 4 as it thinned in this direction. The surface of the layer contained grass and humic material and it was evident that this represented the old ground surface prior to the dumping of layer 4.

4.7 Once layer 4 had been removed by machine to the maximum permitted depth (Plate 5), the remainder of the excavations were carried out by hand. A sequence of three deposits (Plate 6) was investigated that were found to overlie the natural subsoil as it dipped southwards from its highest point adjacent to the most recent pipe trench (9). The most recent layer of the sequence was a lens of compact yellow-brown clay (6). Only a small amount of layer 6 was evident, very close to the maximum permitted depth of the trench, but it was nevertheless possible to determine that it overlay a more substantial deposit of stiff brown, mixed silty clay (7) which had first become visible when layer 4 was removed. Layer 7 was removed by hand and was found to be a maximum of 0.2m thick, but no datable material was found within it. Layer 7 overlay the natural subsoil, which dipped to the south, but, at very near to the maximum depth of 1m below the road surface, a narrow lens of wet grey clayey silt (8) appeared which lay between layer 7 and the subsoil.

5 EVALUATION (Trenches 2 and 3; Fig 5)

5.1 It had originally been proposed by CADW that the evaluation would take the form of two 2m x 1m trenches, excavated by hand down to the level of the old ground surface which had been covered by spoil from earthmoving associated with the treatment works. Examination of the area and comparison with nearby sections of dyke suggested that considerable amounts of spoil might have to be removed, so permission was sought from Dr Sian Rees, the regional Inspector of Ancient Monuments who had recommended the work, to use a machine to remove the overburden under close archaeological supervision and to utilise this as an opportunity to examine a greater area than would otherwise have been possible. Having been given approval to use this approach, two trenches were each excavated using a toothless ditching bucket, 1.5m wide, for an approximate length of 5m. Each trench was excavated northwards from the fence which surrounds Wat's Dyke (Fig 2), with the intention of identifying and then following the old ground surface once its depth below the present ground level was determined.

5.2 Trench 2 (4.55m x 1.5m; Plates 7 & 8)

5.2.1 The initial machining of this trench removed the surface deposit of wet sticky clay loam (15), 0.2m thick. Beneath this was a layer of limestone rubble (16), up to 0.18m thick and approximately 2m wide, deposited within a cut (23); this might represent a recent path. The cut had truncated a layer of brown powdery loam (17), 0.18m thick, which was only found in the south end of the trench. These upper layers appear to represent recent surface deposits.

5.2.2 Underlying the surface deposits was a substantial dumped layer of mixed brown, yellow, red and grey clay (18). At the south end of the trench 0.45m of this layer was removed revealing the top of the old ground surface which consisted of a dark grey crumbly loam topsoil (19). At between 1.5m and 1.8m from the south end of the trench a sloping cut (22) truncated layer 19; the line of this cut was followed while removing layer 18 and it was found to reach a depth of 1.5m below the present ground surface, where, at 3.5m from the south end of the trench a modern plastic water pipe (21) was encountered. On cleaning the surface of the cut (22) it became apparent that layer 19 was 0.14m thick and overlay a layer of yellow-brown gritty silt (20) containing some fragments of coal; this is likely to represent the associated subsoil layer.

5.3 Trench 3 (5.4m x 1.5m; Plates 9 & 10)

5.3.1 Initial machining of this trench removed a surface layer of brown clay loam (24) which represented the present topsoil. Beneath this was a mixed layer of brown, yellow, red and grey clay (25) with some pockets of sand and occasional stones, probably resulting from earthmoving associated with the treatment works. Removal of a 0.3m thickness of layer 25 at the south end of the trench revealed the top of the old ground surface which consisted of a dark grey-brown friable loam topsoil (27). At between 2.1m and 2.4m from the south end of the trench a sloping cut (26) truncated layer 27; cleaning the line of this cut revealed that the topsoil had been 0.12m thick above a layer of sticky brownish-yellow clay (28). To the north of the cut layer 25 was removed by machine to a depth of between 0.7m and 0.9m below the existing ground surface, but the base of the cut was not found.

5.4 The excavation of Trenches 2 and 3 consisted of the removal of modern dumped material associated with the sewage treatment works; no finds were recovered from either trench.

6 CONCLUSIONS

6.1 Observation of the form of the dyke in the pasture field to the east of the treatment works demonstrated that the ground level on the south side of the dyke was much lower than that on its north side. It appears from this extant section that the dyke was built to utilise a natural south facing scarp, which was enhanced with a low bank on its upslope side and a ditch on its downslope side.

6.2 The southern part of Trench 1 was almost entirely excavated through material related to the construction of the road. The mixed clay forming layer 4 had evidently been dumped directly on the old ground surface (layer 5) on the south side of the dyke, with the intention of providing a level base for road construction. This would have compensated for the difference in levels between the north and south sides of the dyke.

6.3 Within the northern part of Trench 1 it was evident that there was no surviving trace of the bank of the dyke, which had been entirely removed down to the level of the natural subsoil. While it is possible that this was partly due to the construction of the access road, the presence of a post-hole (13), which was cut into the natural subsoil but was sealed by the layer of dumped clay (4) associated with the construction of the road, suggests that there was already a gap in the dyke at this point which had been fenced or perhaps gated, prior to the construction of the road. This hypothesis is supported by the sequence of deposits (layers 6, 7 and 8) overlying the southward dipping subsoil near the centre of Trench 1, which might relate to previous attempts to level the dyke with a view to maintaining an access route between its north and south sides. In addition, a trackway which runs towards an apparent gap in the dyke at this point is depicted on the second edition 1:10,560 Ordnance Survey map (Flintshire 14SW) of 1900.

6.4 The only evidence that was revealed in Trench 1 which could be directly related to the dyke itself was provided by the southward dip of the subsoil (layer 3) to the south of pipe trench (9). The surface of the subsoil at this point is likely to represent the remains of the scarp between the bank and ditch, but its relationship with any potential ditch deposits that may survive is unclear as these appear to lie beneath the base of the excavation. Only layer 8 has any potential as a ditch deposit, but an insufficient amount of the layer was revealed for this possibility to be confirmed.

6.5 The evaluation trenches (Nos 2 and 3), which were excavated to the west of Trench 1, demonstrated that the former ground surface on the north side of the dyke had been preserved beneath 0.4m to 0.6m of dumped material related to construction work at the sewage treatment works. No evidence of the dyke was revealed in either trench, as the ground surface was level and showed no trace of the bank which once formed the north side of the earthwork. As a result of this and observation of a section of dyke to the east of the treatment works, it seems likely that the bank was never more than about 1m high on this side and that its crest is that which is still visible to the south of the fence which forms the boundary between the treatment works and the dyke. Evidence revealed by the evaluation trenches suggests that the ground disturbance associated with the treatment works commences between 2m and 2.5m to the north of this fence.

7 ACKNOWLEDGEMENTS

7.1 The writer would like to thank the following people for their assistance during the project:
Mr Glyn Owen, Ms Wendy Owen and Mr Nigel Jones of CPAT, Mr Simon Lewis, Gallifords Site Agent, and Mr John Salisbury Gallifords Project Manager.

8 REFERENCES

Jones, N W, and Hankinson, R, 2001, *Leeswood to Buckley Wastewater Mains Transfer Scheme, Flintshire*, Welshpool: CPAT Report No 431.

Ordnance Survey 1:10,560 second edition map (Flintshire 14SW) of 1900.

APPENDIX 1

LEESWOOD TRANSFER SCHEME
SPECIFICATION FOR AN ARCHAEOLOGICAL EXCAVATION ON WAT'S DYKE
BY THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

1 Introduction

1.1 The proposed construction of a new wastewater main between Buckley and Leeswood, Flintshire, involves crossing a section of Wat's Dyke, a Scheduled Ancient Monument. As a condition of granting Scheduled Monument Consent (SMC), Cadw: Welsh Historic Monuments, acting as archaeological advisors to the National Assembly, have determined that an archaeological excavation should be undertaken along the line of the pipeline where it impacts upon the scheduled area. The following specification provides a method statement for undertaking the required archaeological excavation.

1.2 Within the area concerned the Dyke no longer survives as an upstanding feature, surface evidence having been removed during the construction of an access road. Buried archaeological deposits relating to the bank and in particular the ditch are, however, likely to survive beneath the road make-up.

2 Objectives

2.1 The objectives are:

2.1.1 to undertake an archaeological excavation along the pipeline route within the area defined by Cadw: Welsh Historic Monuments;

2.1.2 to record any archaeology identified during the excavation;

2.1.3 to prepare a report outlining the results of the excavation.

3 Methods

3.1 The excavation will consist of a single trench cut through the access road, the approximate location of which is indicated on the accompanying map. The final location and size will be determined by Cadw: Welsh Historic Monuments as part of SMC. The trench will be approximately 25m in length, 1.5m wide (subject to sufficent room being available to allow continued use of the access road), and to a maximum depth of 0.95m.

3.2 The excavation will be undertaken using a mechanical excavator to remove the road surface and formation, together with any other overburden beneath the formation across the full width of the trench down to the level of the first recognisable archaeological horizon. Thereafter, all excavation will be conducted by hand, commencing with cleaning the excavated surface to identify any potential remains of the bank and the position of the ditch. Deposits will then be excavated by hand within a trench 0.75m wide to the maximum depth of 0.95m below ground level, or the surface of natural deposits, whichever is encountered first.

3.3 Contexts will be recorded on individual record forms and drawn in plan and section as appropriate. All significant features will be photographed in 35mm format black and white print and colour slide, with additional general views showing the overall nature of the trench and its location. The trench will be located as accurately as possible with respect to buildings and boundaries identified on modern Ordnance Survey maps and levels will be related to Ordnance Datum where possible.

3.4 All archaeological artefacts and environmental samples will be recorded and processed in a manner appropriate to the material involved. Those requiring conservation or other specialist treatment will be stored in a stable environment until such times as they can examined by a specialist. All finds, except those deemed to be Treasure Trove, are the property of the landowner. It is anticipated that they will

be donated to the appropriate local or regional museum, subject to agreement being reached with the landowner and the museum curator.

3.5 Following the on-site work an illustrated and bound report will be prepared. This will be in A4 format and contain conventional sections on: Site location, Topography and Geology; Historic Background; Excavation; Conclusions and References, together with appropriate appendices on archives and finds.

3.6 The site archive will be prepared to specifications laid out in Appendix 3 in the Management of Archaeological Projects (English Heritage, 1991).

4 Resources and Programming

4.1 The assessment will be undertaken by a small team of skilled archaeologists under the direct supervision of Mr RJ Silvester, a senior member of CPAT's staff who is also a member of the Institute of Field Archaeologists.

4.2 All report preparation will be completed by or with the assistance of the same field archaeologist who conducted the evaluation.

4.3 It is anticipated that the excavation will be completed within 5 days and the report will be completed within 3 days. The timing of the excavation has yet to be determined, although CPAT would not be in a position to commence works until April 2001. Cadw: Welsh Historic Monuments will be informed of the timetable once agreement has been reached.

4.4 Requirements relating to Health and Safety regulations will be adhered to by CPAT and its staff.

4.5 CPAT is covered by appropriate Public and Employer's Liability insurance.

N.W. Jones
1st March 2001

APPENDIX 2

LEESWOOD TRANSFER SCHEME
SPECIFICATION FOR AN ARCHAEOLOGICAL EVALUATION ON WAT'S DYKE
BY THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

1 Introduction

1.1 The proposed construction of a new wastewater main between Buckley and Leeswood, Flintshire, involves crossing a section of Wat's Dyke, a Scheduled Ancient Monument. As a condition of granting Scheduled Monument Consent (SMC), Cadw: Welsh Historic Monuments, acting as archaeological advisors to the National Assembly, have determined that an archaeological evaluation should be undertaken within the existing works compound in order to investigate the nature of archaeological deposits relating to the Dyke. The following specification provides a method statement for undertaking the required archaeological excavation.

1.2 Along the proposed line of the pipeline the Dyke no longer survives as an upstanding feature, surface evidence having been removed during the construction of an access road. Adjacent to this, however, the Dyke survives as an earthwork bank and ditch.

2 Objectives

2.1 The objectives of the evaluation are:

2.1.1 to undertake an archaeological evaluation within the area defined by Cadw: Welsh Historic Monuments;

2.1.2 to record any archaeology identified during the evaluation;

2.1.3 to prepare a report outlining the results of the evaluation.

3 Methods

3.1 The excavation will consist of two small trenches measuring approximately 2.0 x 1.0m, the approximate location of which is given on the accompanying plan, the final position and size to be determined by Cadw: Welsh Historic Monuments as part of SMC. It is assumed that this work will be undertaken in conjunction with a an excavation along the proposed pipeline where it crosses the line of Wat's Dyke.

3.2 All excavation will be undertaken by hand to remove overburden down to the level of the first recognisable archaeological horizon, at which point the trenches will be fully recorded and no further excavation undertaken unless requested by Cadw: Welsh Historic Monuments.

3.3 Contexts will be recorded on individual record forms and drawn in plan and section as appropriate. All significant features will be photographed in 35mm format black and white print and colour slide, with additional general views showing the overall nature of the trench and its location. The trench will be located as accurately as possible with respect to buildings and boundaries identified on modern Ordnance Survey maps and levels will be related to Ordnance Datum where possible.

3.4 All archaeological artefacts and environmental samples will be recorded and processed in a manner appropriate to the material involved. Those requiring conservation or other specialist treatment will be stored in a stable environment until such times as they can examined by a specialist. All finds, except those deemed to be Treasure Trove, are the property of the landowner. It is anticipated that they will be donated to the appropriate local or regional museum, subject to agreement being reached with the landowner and the museum curator.

3.5 It is assumed that the results from the excavation will be included with those from the excavations in an adjacent area (see 3.1) in a single report.

3.6 The site archive will be prepared to specifications laid out in Appendix 3 in the Management of Archaeological Projects (English Heritage, 1991).

4 Resources and Programming

4.1 The assessment will be undertaken by a small team of skilled archaeologists under the direct supervision of Mr RJ Silvester, a senior member of CPAT's staff who is also a member of the Institute of Field Archaeologists.

4.2 All report preparation will be completed by or with the assistance of the same field archaeologist who conducted the evaluation.

4.3 It is anticipated that the excavation will be completed within 2 days and the report will be completed immediately thereafter. The timing of the excavation has yet to be determined, although CPAT would not be in a position to commence works until April 2001. Cadw: Welsh Historic Monuments will be informed of the timetable once agreement has been reached.

4.4 Requirements relating to Health and Safety regulations will be adhered to by CPAT and its staff.

4.5 CPAT is covered by appropriate Public and Employer's Liability insurance.

N.W. Jones
1st March 2001

APPENDIX 3

PROJECT ARCHIVE

Site archive
28 Context record forms
2 black and white negative films
1 colour slide film
1 colour print film
Photographic catalogue
1 A1 site drawing (Trench 2 and 3 sections)

Finds

Context 4
3 ceramic drainage pipe fragments (612g)
2 slag lumps (138g)

Context 5
1 sherd of Buckley Coarse Ware (18g)

Digital survey archive

Penmap survey data:
leeswood.pts
leeswood.dxf

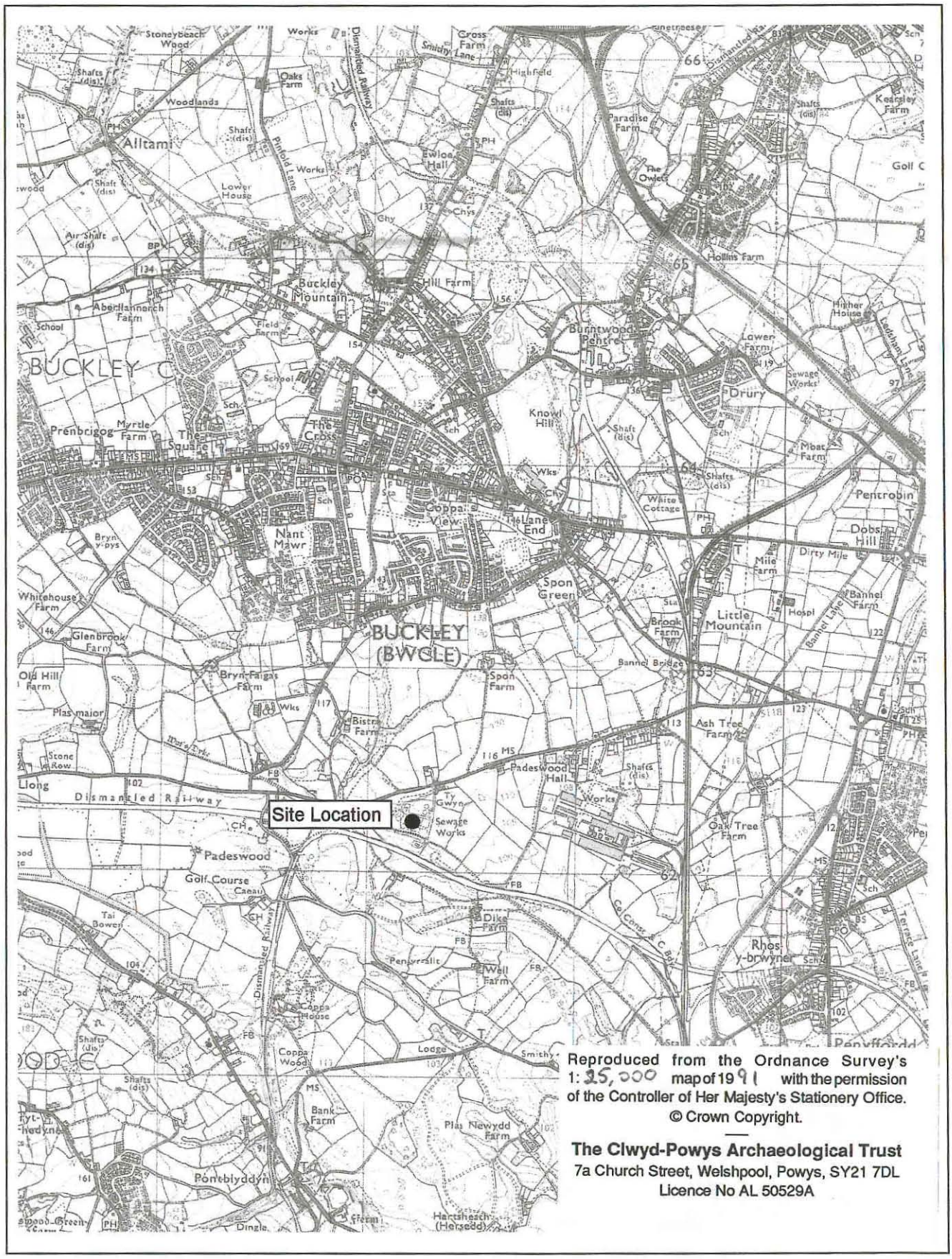

Fig. 1 Site location.

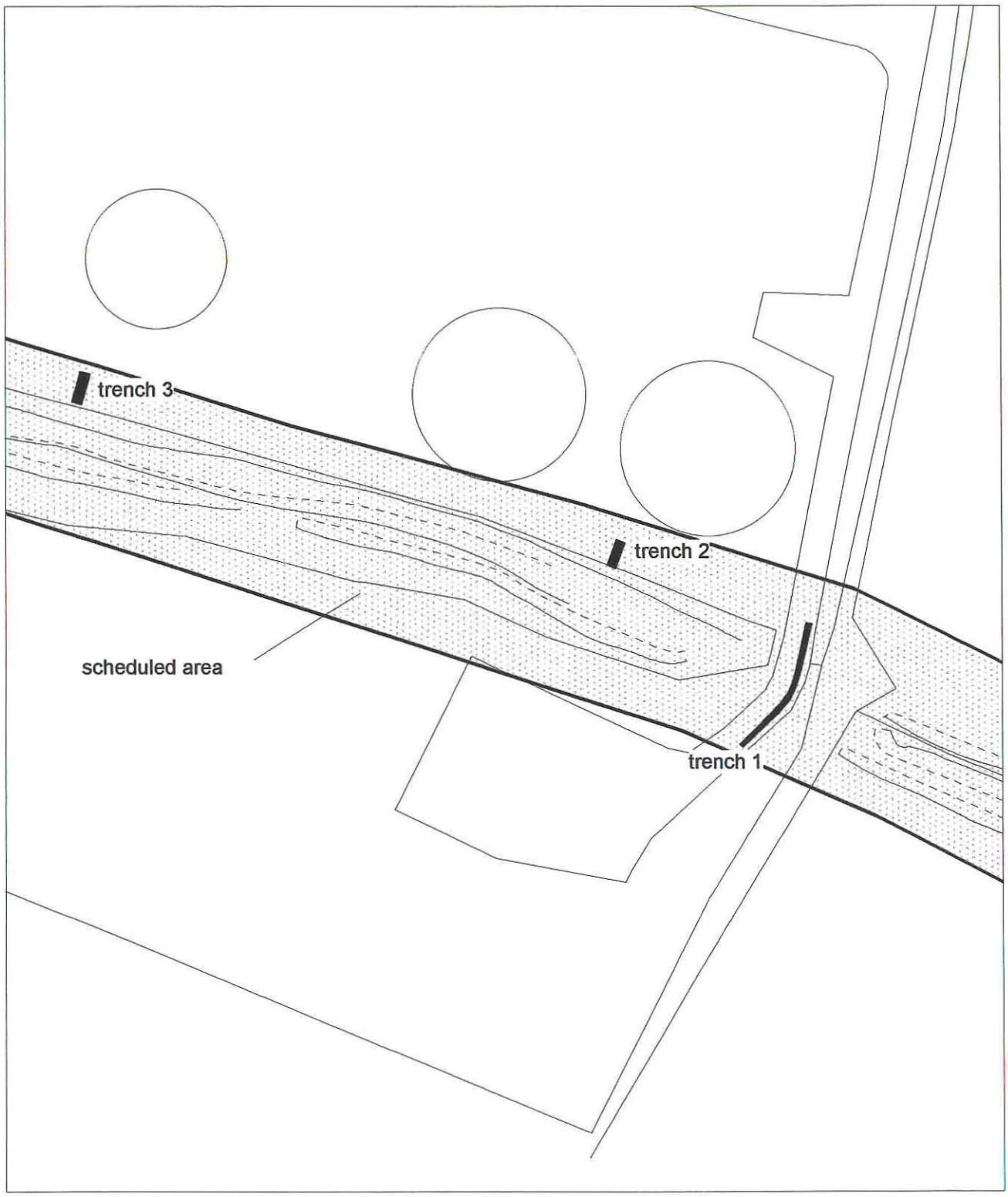

Fig. 2 Location of trenches, scale 1:1000

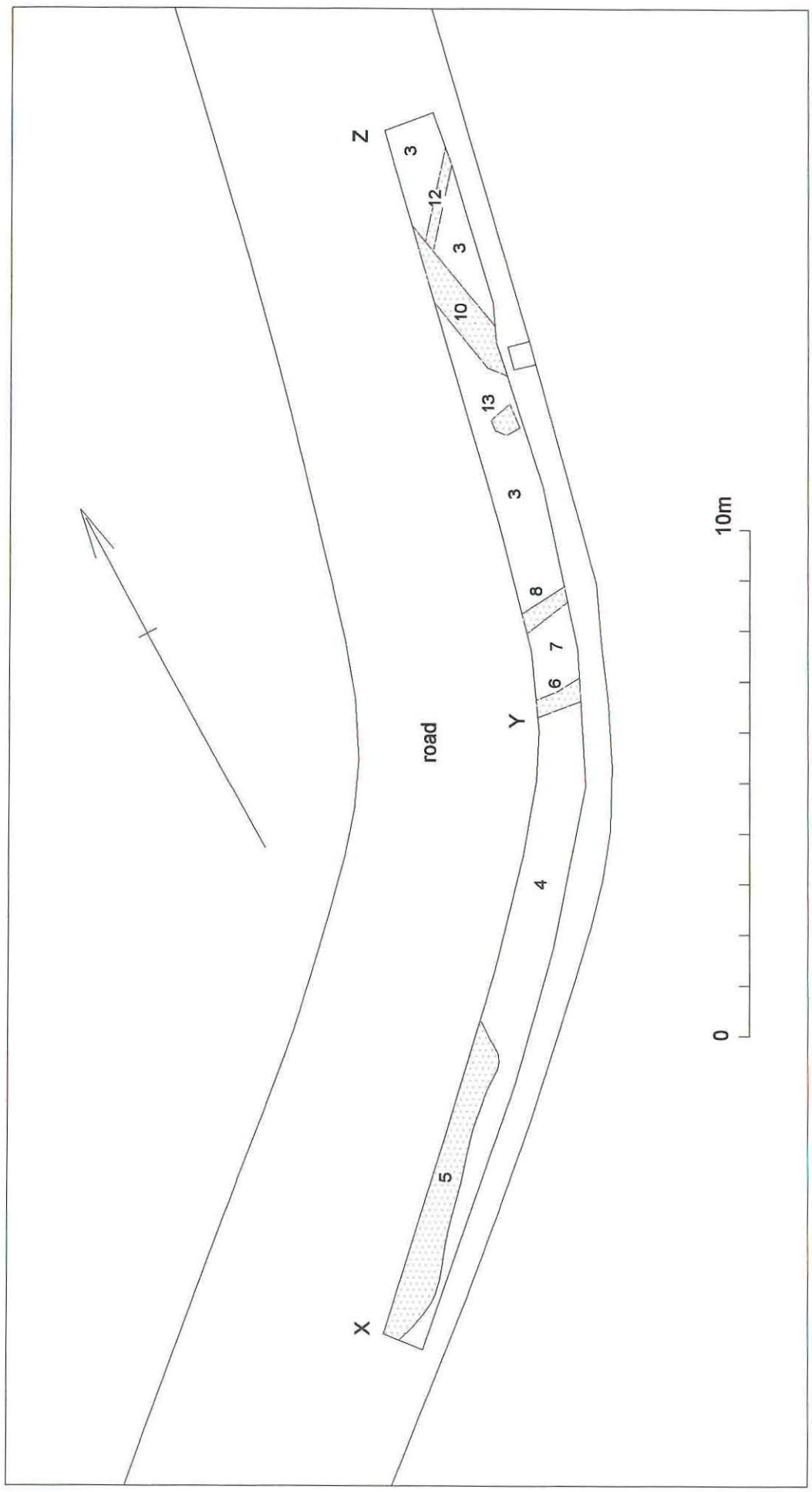

Fig. 3 Trench 1 plan, scale 1:100

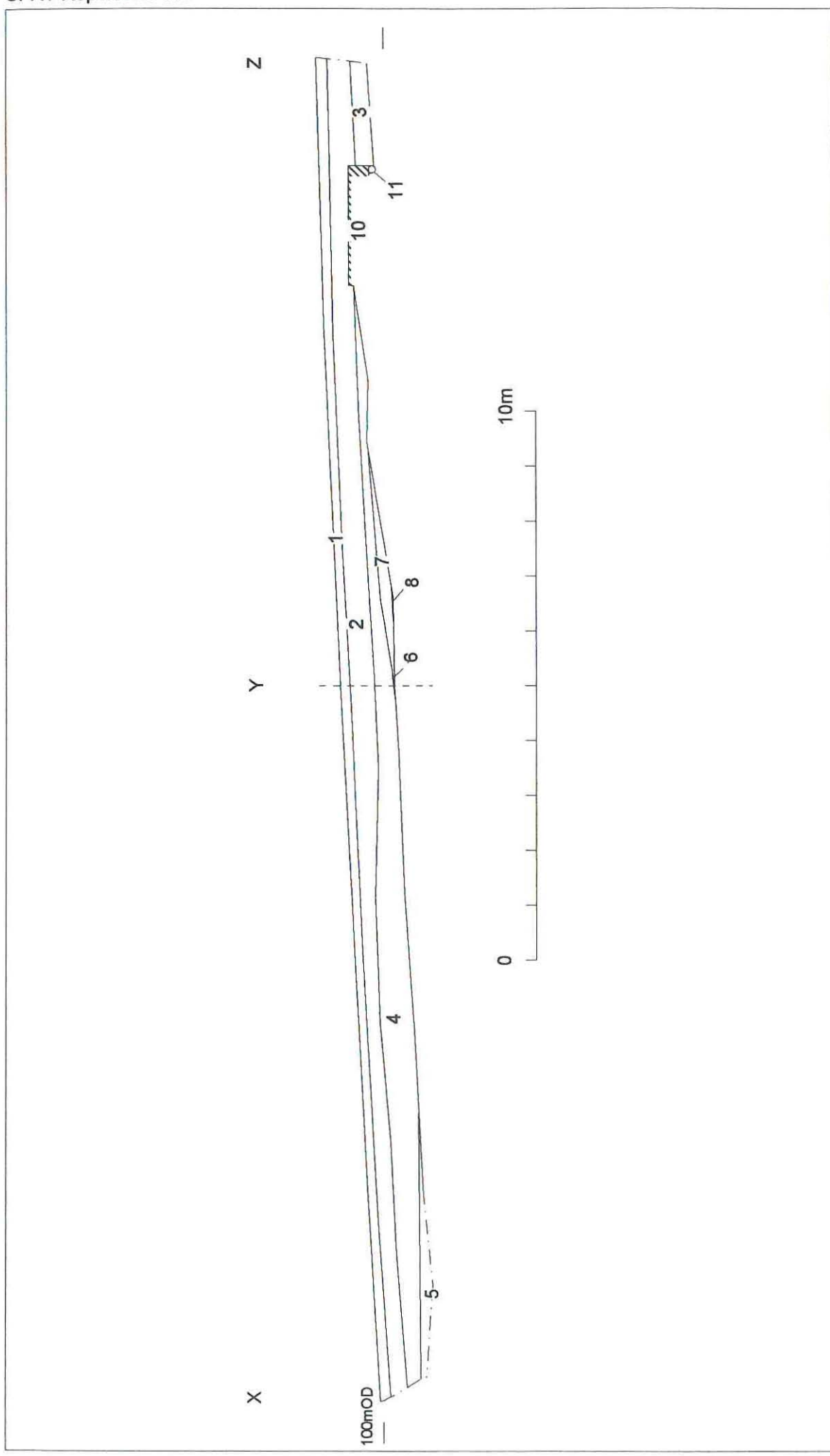

Fig. 4 Trench 1 section, scale 1:100

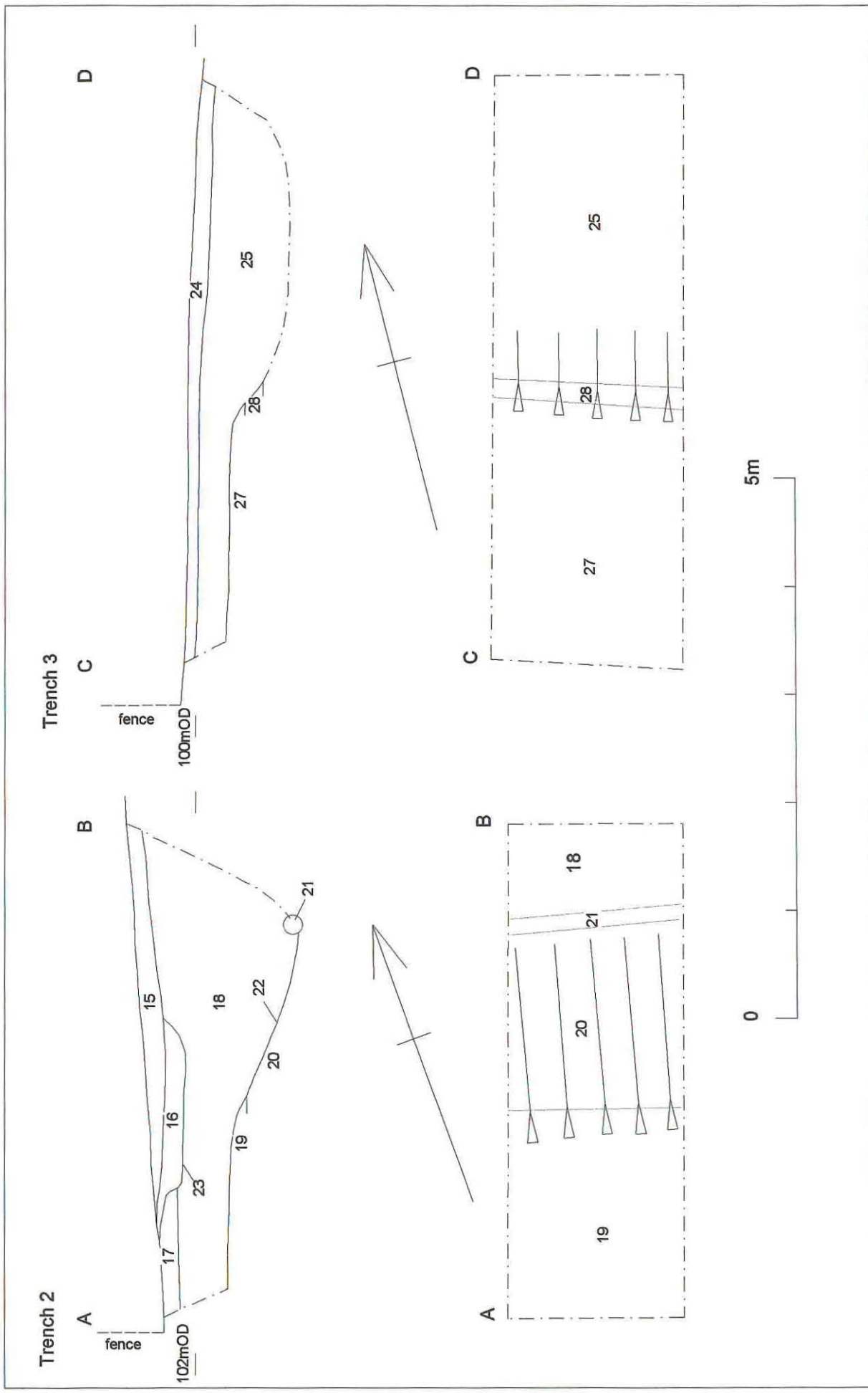

Fig. 5 Trenches 2 and 3 plan and section, scale 1:50

Plate 1 North end of Trench 1, from E. Photo CPAT 1102.05

Plate 2 North end of trench 1 showing post-hole (13) in foreground, from S. Photo CPAT 1102.07

Plate 3 South end of Trench 1, from NE. Photo CPAT 1102.10

Plate 4 South end of trench 1, from SW. Photo CPAT 1102.09

Plate 5 Layers 6 and 7 prior to excavation, from SSW. Photo CPAT 1102.11

Plate 6 Layers 6, 7 and 8 after excavation showing their relationship to the dip of the natural subsoil, from SSW. Photo CPAT 1102.19

Plate 7 Former ground surface in Trench 2, from N. Photo CPAT 1102.21

Plate 8 Trench 2 section, from E. Photo CPAT 1102.22

Plate 9 Former ground surface in Trench 3, from N. Photo CPAT 1102.23

Plate 10 Trench 3 section, from E. Photo CPAT 1102.24