

THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

*Bryn Siriol Reservoir, Pant Quarry, Halkyn,
Flintshire*

ARCHAEOLOGICAL EVALUATION



CPAT Report No 830

*Bryn Siriol Reservoir, Pant Quarry, Halkyn,
Flintshire*

ARCHAEOLOGICAL EVALUATION

I Grant
December 2006



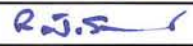
Report for Tarmac Ltd
Macclesfield

CPAT Report Record

Report and status

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1 INTRODUCTION

- 1.1 In November 2006, the Field Services Section of the Clwyd-Powys Archaeological Trust (hereafter CPAT) was asked by Mr Andrew Kent, Tarmac Ltd (Congleton Road, Gawsworth, Macclesfield, Cheshire, SK11 9ET) to provide a cost estimate for the archaeological examination of Bryn Siriol Reservoir at Pant Quarry, Halkyn, Flintshire. The evaluation, in connection with proposals for a modification to the western screening mound at the quarry along with a minor quarry extension, was the subject of a brief (INV 646) drawn up by Mr M Walters, from the Curatorial Section of the Clwyd-Powys Archaeological Trust, acting in his capacity as archaeological advisor to the local planning authority.
- 1.2 It was determined that an archaeological excavation should be undertaken to ensure the preservation by record of the reservoir and associated archaeological deposits.

2 LOCATION AND TOPOGRAPHY

- 2.1 The site of the proposed development is located 9km north-west of Mold, 1.5km south-west of the A55 trunk road and lies 750 metres west of the village of Halkyn. Bryn Siriol reservoir is centred at National Grid Reference SJ19537027 (Fig. 1). The site is currently open rough pasture, bounded to the south and south-east by the north-western limit of the existing quarry screen embankment. Eighty metres to the north are the remains of a mining shaft, quarry and associated single-storey building.

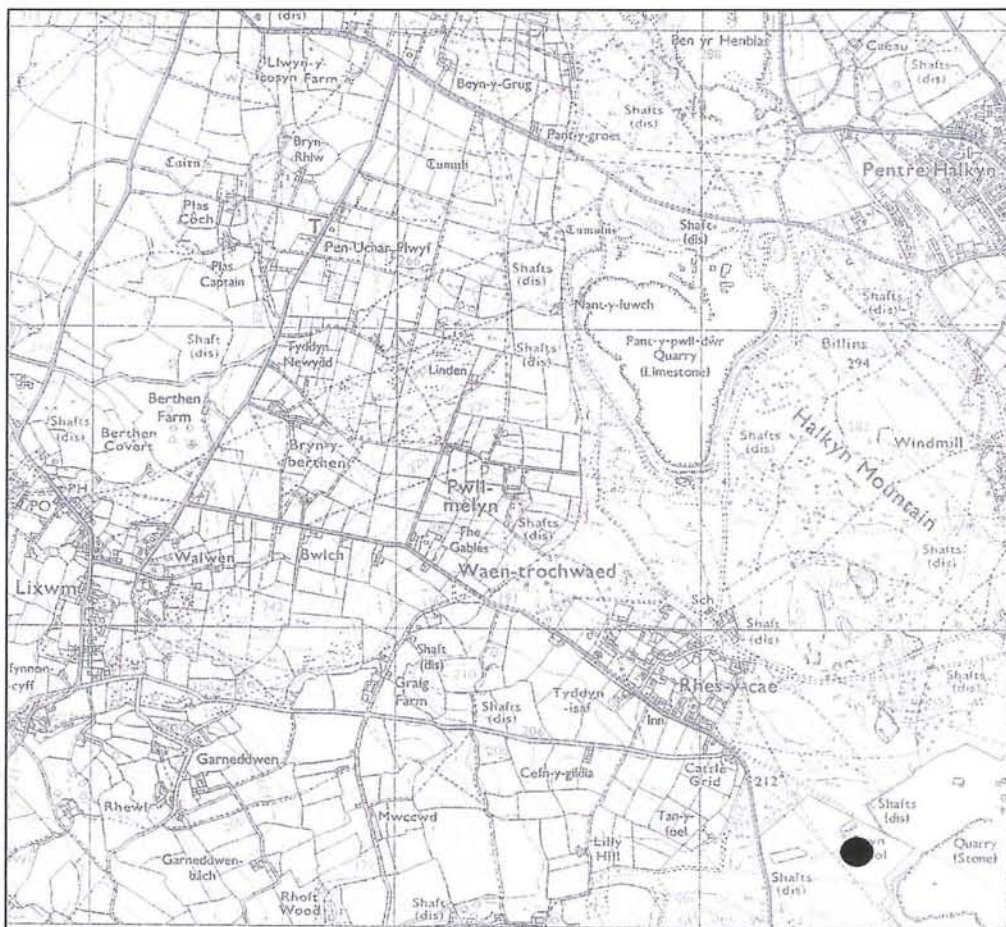


Fig. 1 Site location. Reproduced from the Ordnance Survey's 1:25,000 map of 1993 with the permission of the Controller of Her Majesty's Stationery Office © Crown copyright. Licence No. AL 50529A

- 2.2 Since the initial archaeological survey of the site, undertaken by CPAT in 2000 (Jones 2000), the south-eastern portion of the reservoir has been buried by the lower slopes of the quarry screen bund (see Fig. 3) and what now remains of the earthwork is bisected by a recently erected boundary fence, orientated north-east to south-west.

3 HISTORICAL BACKGROUND

- 3.1 There are no known written sources referring to the Bryn Siriol reservoir or associating it with any of the mining shafts within the immediate vicinity. The earliest edition of the Ordnance Survey 1:2500 map (1875) clearly shows no evidence of mine workings in the area and curiously while the shaft, quarry and buildings, to the north-west of the site, appear on the 2nd edition of the Ordnance Survey map (1899; Fig. 2) the reservoir is omitted. However, this does not mean that the site did not exist for it was sometimes common practice for cartographers not to include reservoirs that had fallen into disuse. Therefore the site could pre-date the original survey of 1875.
- 3.2 The site has been the subject of a detailed digital topographical survey and the following description of the reservoir (sections 3.3 and 3.4) has been adapted from that report (Jones 2000).
- 3.3 The reservoir, which was roughly square and aligned north-west to south-east, measured approximately 23m across externally and 16.5m internally. It had been built by excavating into the natural slope on the south and east sides and using the spoil to construct slight banks *c.* 3.6m wide on the south-east, south-west and north-east sides. On the north-west side, and around the northern corner, considerable dumps of spoil, presumably from the excavation of the reservoir, had been used to form the retaining banks. The general depth of the reservoir was 1.6m below the top of the bank.

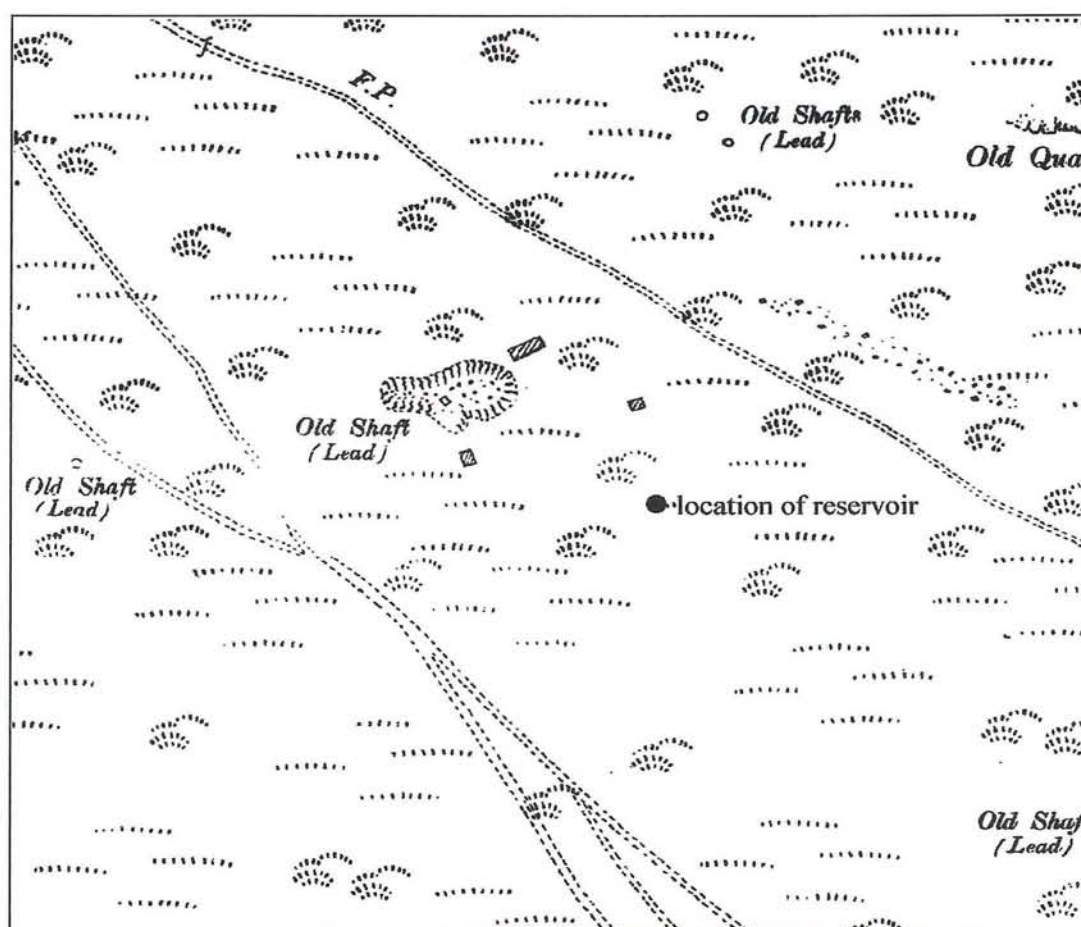


Fig. 2 Ordnance Survey 2nd edition 1:2500 map, 1899

- 3.4 Along the south-east side two areas of stonework were visible, one towards the east corner, and the other towards the south corner. It is possible that the latter may have been associated with an inlet sluice, although there is no surface evidence for a leat feeding the reservoir. At the west corner a slight channel 9m in length and 1.3m wide could be identified, aligned with the large shaft lying to the north-west. It is possible that this was the outlet channel and suggests that the reservoir may have been constructed in association with the shaft, although there is no indication of what the water was used for. A substantial break in the bank on the northern corner is likely to be the result of modern disturbance, probably associated with the placing of an agricultural shed within the abandoned reservoir, which has subsequently been removed.
- 3.5 The precise function of the reservoir is unknown. Smaller rectangular 'reservoirs' scattered across the Halkyn Mountain mining landscape are usually associated with lead processing and have been interpreted as ore washing or settlement tanks. None of these reservoirs has any nearby water source and the means of transporting water to them is not obvious. There are frequently no associated earthwork leats and this may indicate that water was transferred to them by above ground wooden troughs or launders.
- 3.6 The Bryn Siriol example is unusually large amongst the reservoirs recorded on Halkyn Mountain. It may be that water pumped out of the shaft was transferred to the reservoir by the leat and the water was then re-used in other processes. Normally one would only expect a reservoir in association with a shaft if there was an engine house boiler in the immediate proximity, which is clearly not the case here. The function of this reservoir is therefore somewhat enigmatic prompting the need for further archaeological investigation.

4 EVALUATION

- 4.1 The evaluation in December 2006 consisted of a single trench approximately 31m long and 2m wide, the position of which was determined following discussions with the Curator. The location of the trench was precisely recorded by means of total station surveying. Numbers in brackets in the following text refer to individual context records which were attributed at the time of excavation and are detailed in the site archive.
- 4.2 The initial groundworks were delayed owing to the recent intrusion of a wildlife habitation on the site. However, following specialist advice, work was allowed to commence and the evaluation trench was excavated by machine under close archaeological supervision, cutting through the retaining banks of the reservoir and removing the internal fill to the base of the reservoir (See Plate 1). Thereafter the trench base and sections were cleaned by hand. All of this work was carried out in extreme weather conditions. Contexts were recorded on individual record forms and drawn and photographed as appropriate. All photography undertaken on site was in digital format. A summary of the site archive is provided in Appendix 1.

Trench (31 x 2m; Figs. 3, 4; Plates 1 – 7)

- 4.3 The trench was aligned north-east to south-west, and was located along the south-eastern side of a recently erected boundary fence (see Fig. 3). Removal of the overburden and reservoir retaining banks, together with the surviving deposits within the limits of the known reservoir, revealed a varying surface of natural subsoils across the length of the trench, all of which overlay large fragmented blocks of limestone (04) (see Plates 2 and 3). At the north-eastern extent of the trench the subsoil consisted of a reddish-brown soft silty clay (03). A similar deposit (22), but more gritty and patchy, covered some of the central parts of the trench.



Plate 1. Excavation of the trench across the reservoir, viewed from the quarry screen bund in the south-east. Photo CPAT 2281.005



Plate 2. Trench viewed from the north-east, post initial cleaning. Photo CPAT 2281.015



Plate 3. Trench viewed from the south-west, post initial cleaning. Photo CPAT 2281.016

- 4.4 On removal of the internal fill within the reservoir it was possible to record, in section, the depth, width and nature of the tank. The overall width of the internal structure (20), north-east to south-west, was 17.5m, the edges of which were revetted with crude blocks of limestone (29, 30), approximately 0.4m in width. The revetment and base of the tank was clay-lined with a firm yellowish-grey clay (19), 0.2m thick. Overlying the clay deposit were the remains of the reservoir's primary settling deposit (18), a black, fine silty clay 0.1m thick. No dating evidence or industrial residues were recovered from this deposit. The overlying deposits (17,16 and 10) indicate the stage at which the reservoir fell into disuse. These were in turn, truncated by a number of post-holes (24,26 and 28), possibly associated with recent agricultural use of the site. The overall depth of the reservoir, including the 20th-century overburden, was no greater than 0.6m (see Plate 4).



Plate 4. Cross-section of the clay-lined reservoir tank, viewed from the south-west
Photo CPAT 2281.022

- 4.5 Both the north-eastern and south-western embankments were constructed from a series of earthen deposits excavated from the immediate vicinity. The north-eastern bank consisted of six deposits, the lower of which were characterised by soft orange-brown clay silts. The upper layers included fragmented blocks of limestone. When viewed in section the bank survived to a height of 1.1m, with a basal width of 6m and the upper width (above the present ground surface) being 4m (see Plates 5 and 6; Fig. 4).
- 4.6 The south-western embankment survived to approximately similar dimensions. The construction also paralleled that of the opposite embankment although the lower deposit, 15, was characterised by a greyish gritty clay containing fragmented limestone throughout. No dating evidence was recovered from any of these deposits (see Plate 7; Fig. 4).



Plate 5. South-east facing section through the reservoir embankment (north-east end).
Photo CPAT 2281.022



Plate 6. South-east facing section illustrating the clay-lined tank. Photo CPAT 2281.022



Plate 7. South-east facing section through the reservoir embankment (south-west end), illustrating the clay-lined reservoir tank. Photo CPAT 2281.022

5 CONCLUSIONS

- 5.1 No mineral or metal residues were identified within the primary deposits of the reservoir during the excavation. This suggests that the Bryn Siriol reservoir was a water-storage facility as opposed to an ore washing or settlement tank. The clay fabric used to line the reservoir tank was probably imported, as this form of clay does not occur naturally in the immediate locality.
- 5.2 The lack of dating evidence from within the primary deposits of the reservoir prevent a conclusive construction date from being attributed to the site. This is fairly unusual for a late post-medieval site and suggests the possibility that the site might pre-date the 1899 shaft at Bryn Siriol.
- 5.3 Of minor note, the initial survey of the reservoir (Jones 2000) indicated that the reservoir embankments were approximately 3.6m wide. The excavation has revealed that they have eroded considerably, and were originally at least 6m wide.

6 ACKNOWLEDGEMENTS

- 6.1 The author would like to thank the following for their assistance during the project: Nigel Jones, CPAT, for assistance with the report; Fiona Grant, CPAT, for assisting with the evaluation; David Jones Quarry Supervisor, Pant Quarry and Mr Andrew Kent, Estates Surveyor, Tarmac.

7 REFERENCES

Published sources

Jones, N W, 2000. Pant Quarry, Halkyn, Flintshire: Archaeological Survey and Watching Brief.
CPAT Report No 369

Cartographic sources

1875 Ordnance Survey 1st edition: 1:2,500, Flintshire

1899 Ordnance Survey 2nd edition: 1:2,500, Flintshire 9.6 and 9.10

1983 Soil Survey of England and Wales map (Sheet 2 – Wales) and Legend (1:250,000 scale).

1994 British Geological Survey map of Wales (Solid edition at 1:250,000 scale).

APPENDIX 1

PROJECT ARCHIVE

Site Archive

30 Context record forms

1 A1 site plan

25 digital photographs, CPAT film 2281

Photographic catalogue

Context Register

Drawings Register

EDM survey, Penmap3 pant.pts

APPENDIX 2

BRYN SIRIOL RESERVOIR, PANT QUARRY, FLINTSHIRE SPECIFICATION FOR AN ARCHAEOLOGICAL EVALUATION BY THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

1 Introduction

- 1.1 The Field Services Section of the Clwyd-Powys Archaeological Trust has been invited to prepare a specification of works for undertaking an archaeological evaluation in connection with proposals to modify the western screening mound at Pant Quarry, Halkyn, Flintshire. The Curatorial Section of the Clwyd-Powys Archaeological Trust, acting as archaeological advisors to the local planning authority, have determined that an archaeological evaluation should be undertaken to assess the potential impact of the proposals on the archaeological resource.
- 1.2 The reservoir measures 17 x 17m and is 1.5m deep with a small gully leading into the north-west corner. The source of water and function of the reservoir are unknown, but it may be associated with a nearby shaft and could have been constructed in connection with lead processing operations.

2 Objectives

- 2.1 The objectives of the evaluation are:
 - 2.1.1 to reveal by means of a field evaluation, the nature, condition, significance and, where possible, the chronology of the archaeology within the area of the proposed development in so far as these aims are possible;
 - 2.1.2 to ensure the preservation by record of the surviving remains of the reservoir;
 - 2.1.3 to prepare a report outlining the results of the evaluation.

3 Methods

- 3.1 The field evaluation will consist of a single trench measuring up to 21 x 3m, the location and dimensions of which will be determined through discussions with the curator.
- 3.2 All excavations will be undertaken using a machine excavator with a toothless bucket to excavate a trench across the reservoir, extending to its base and cutting through the retaining banks on either side. Thereafter, the trench sections and base will be cleaned by hand in order to allow a full drawn and photographic record to be made.
- 3.3 It has been assumed that the area in question has sufficient access for a JCB or other mechanical excavator. Excavated material will be temporarily stored adjacent to the trench, which will be reinstated with this material upon completion. No provision has been made for fencing during the excavation or stripping or relaying any surfaced areas or reseeded.
- 3.4 Contexts will be recorded on individual record forms and be drawn and photographed as appropriate. All photography will be in 35mm format black and white print and colour slide. All features 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, with the use of total station surveying.
- 3.5 All artefacts will be related to their contexts from which they were derived and treated in a manner appropriate to their composition and will be processed by trained CPAT staff.

- 3.6 Following the on-site work an illustrated and bound report will be prepared in A4 format, containing conventional sections on: Site location, Topography and Geology; Archaeological Background; Evaluation; Conclusions and References, together with appropriate appendices on archives and finds.
- 3.7 The site archive will be prepared to specifications laid out in Appendix 3 in the Management of Archaeological Projects (English Heritage, 1991), to be deposited with the regional Historic Environment Record (HER). All artefacts will, subject to the permission of the owner, be deposited with an appropriate museum.

4 Resources and Programming

- 4.1 The assessment will be undertaken by a small team of skilled archaeologists under the overall supervision of Mr RJ Silvester, a senior member of CPAT's staff who is also a member of the Institute of Field Archaeologists (IFA). CPAT is an IFA Registered Organisation.
- 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 evaluation will be completed within 5 days. The report will be completed within two weeks of the completion of on-site works. A draft copy of the report will be forwarded to the Curator for approval prior to the production of the final report. Copies of the final report will be provided to the client and the regional HER. The Curator will be informed of the timetable in order to arrange for monitoring if required. At present, CPAT would be in a position to undertake the work during December 2006, subject to sufficient advance notice.
- 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
14 November 2006

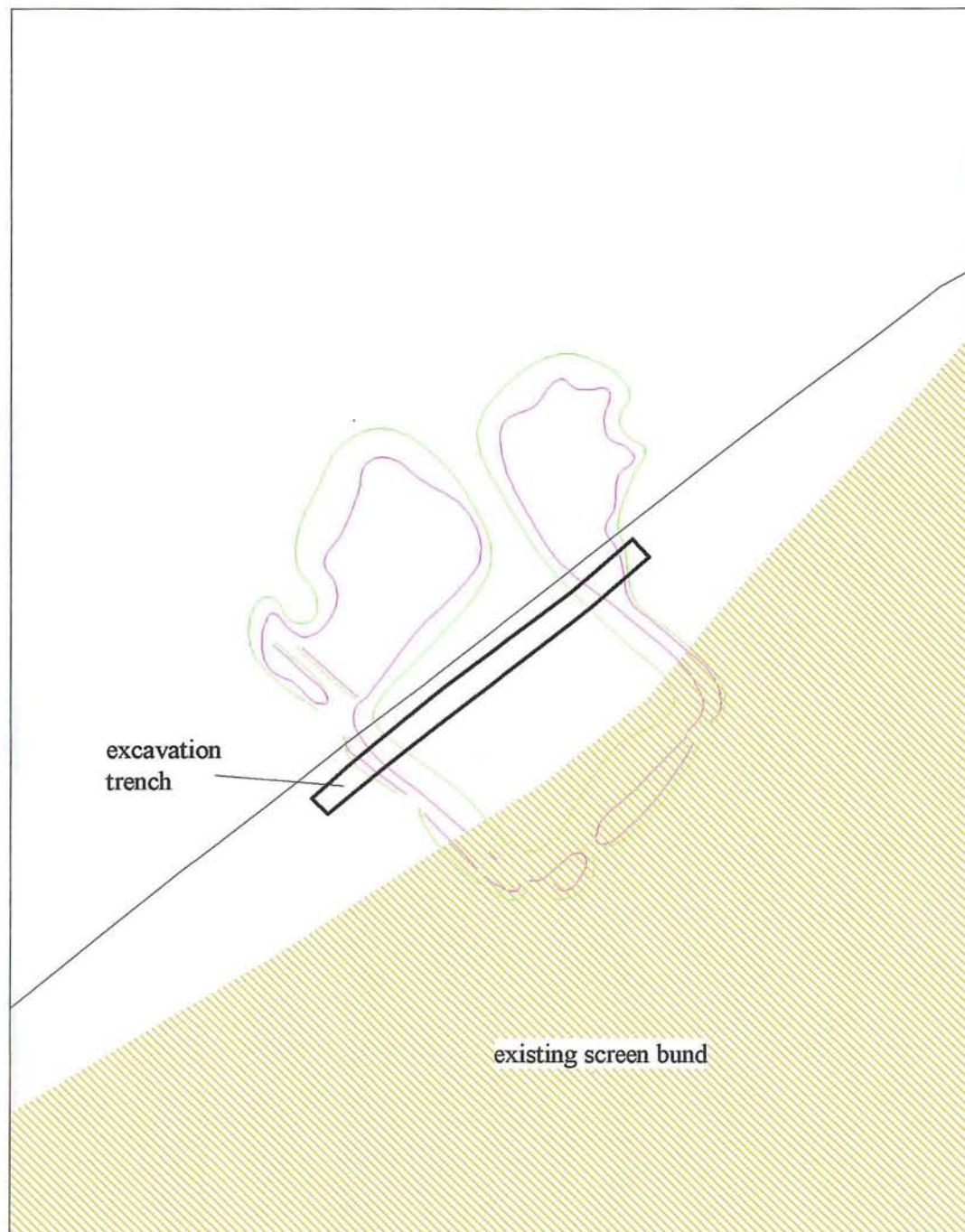


Fig. 3 Bryn Siriol Reservoir, trench location, 1:500

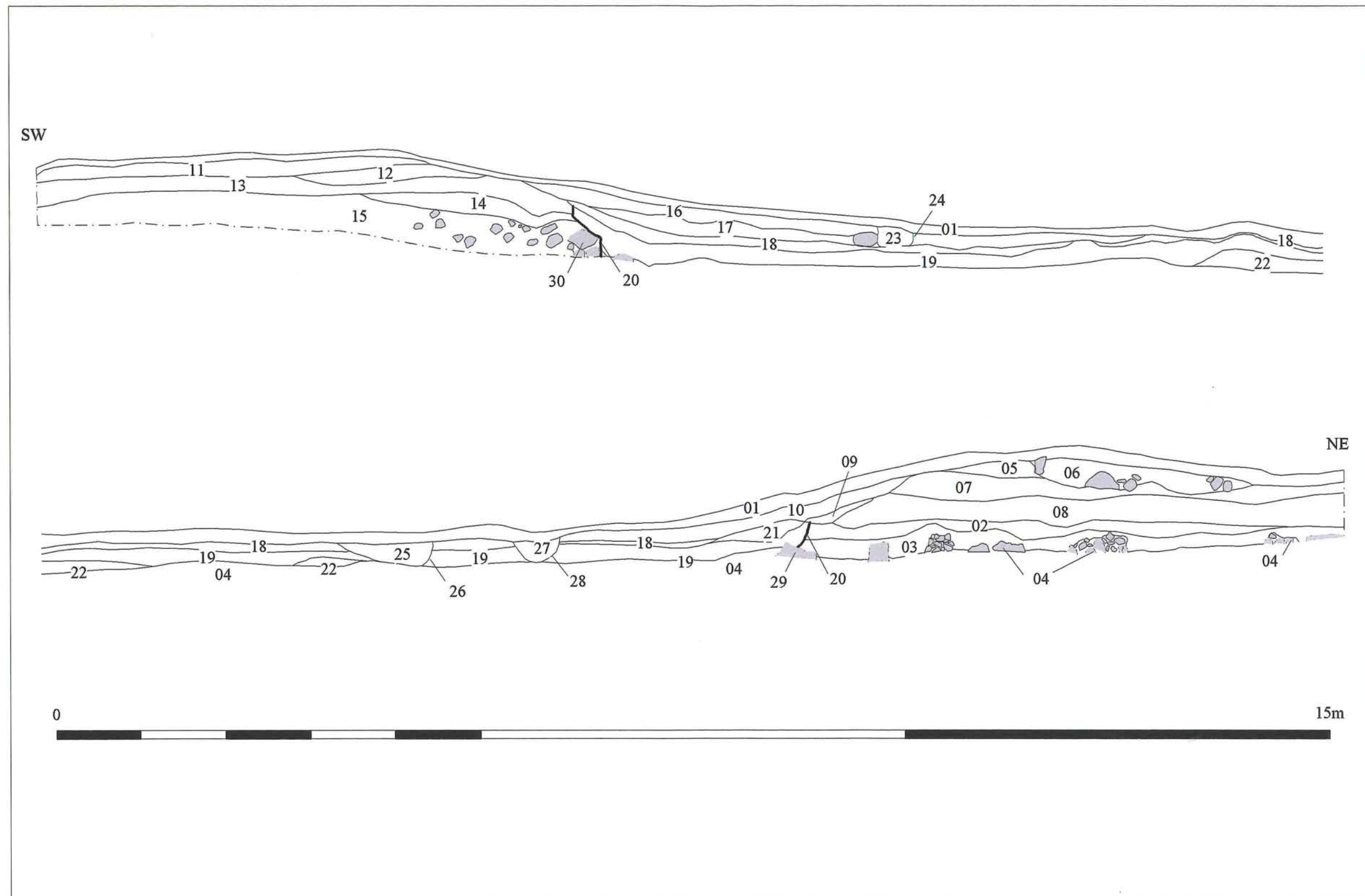


Fig. 4 Excavated section through Bryn Siriol Reservoir, scale 1:50