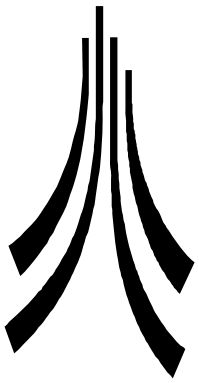
LANCASTER
UNIVERSITY
ARCHAEOLOGICAL
UNIT



November 1999

SHOULTHWAITE HILLFORT
THIRLMERE
CUMBRIA

Stratigraphic Survey Report

Commissioned by: Lake District National Park Authority and North West Water Ltd

Shoulthwaite Hillfort
Thirlmere
Cumbria

Archaeological Stratigraphic Survey

Report no 1999-2000/022/AUA8789

Checked by Project Manager. ..... Date
Passed for submission to client. ..... Date

Storey Institute
Meeting House Lane
Lancaster
LA1 1TH

November 1999

CONTENTS

ACKNOWLEDGEMENTS

Lancaster University Archaeological Unit (LUAU) wish to thank Paul Philips and Edward Holt of North West Water for arranging access to the estate. We would particularly like to thank Rod Grimshaw for his local knowledge, his enthusiasm and for assistance during the project.

The project was funded by North West Water and the Lake District National Park Authority (LDNPA). Special thanks are due to John Hodgson (LDNPA) for his help and support throughout the project.

The field work was undertaken by Elizabeth Huckerby and Peter Redmayne and the analysis was by Elizabeth Huckerby. The C14 dating was by the Scottish Universities Research and Reactor Centre at East Kilbride. The CAD drawings were generated by Jamie Quartermaine. The report was written by Elizabeth Huckerby and was edited by Jamie Quartermaine and Richard Newman. Overall project management was undertaken by Jamie Quartermaine.

SUMMARY

In 1998 LUAU undertook a detailed survey of Shoulthwaite Hillfort (NY 2998 1884) as part of a wider survey of the Thirlmere Estate, on behalf of Lake District National Park Authority (LDNPA) and North West Water Limited (NWW). Shoulthwaite Hillfort is a promontory fort with substantial multivallate defences on the eastern side, but the western side of the fort relies solely on its natural defences. The entrance of the fort is to the east and the external defences immediately to the south of the entrance are seemingly non-existent; the area presently being occupied by a substantial mire. It was believed that this mire obscured earthwork evidence of further ramparts.

In the light of the survey it was recommended (LUAU 1998) that a stratigraphic survey be undertaken through the area of mire at the entrance in order to investigate the possibility of buried ramparts and to assess the potential for further environmental investigation. As a consequence LUAU was commissioned to implement the study.

A series of core transects were taken with a gouge auger across the mire, which recorded the depth of the predominantly humified material. A core was also taken with a Russian Auger to examine the pollen content and from which samples were taken for C14 dating. The locations of the cores were recorded using a total station and the survey data was digitally superimposed with earlier mapping.

The transect profile across the mire was steep edged, but essentially flat bottomed; this contrasts with the adjacent 'V' shaped rampart ditches to the south. The evidence would suggest that the linear hollow was water filled from the outset, and may have served as a moat, as such contrast with the adjacent dry rampart ditches elsewhere.

Two C14 samples, taken from near the base of the mire, were submitted for accelerator dating and produced dates of cal AD 538-676 and cal AD 560-690. These indicate a post-Roman filling of the basin, and may be an indication of the date of the cutting of the basin; however, it was not possible to determine if this was the primary cut of the basin or was a recut of an earlier (Iron Age?) defensive feature.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 In 1998 Lancaster University Archaeological Unit (LUAU) undertook a detailed survey of Shoulthwaite Hillfort (NY 2998 1884) as part of a wider survey of the North West Water Limited (NWW) Thirlmere Estate on behalf of the Lake District National Park Authority (LDNPA) and NWW (LUAU 1998). Shoulthwaite Hillfort is a promontory fort with substantial multivallate defences on the eastern side, but the western side of the fort relies solely on its natural defences. The entrance of the fort is to the east and the external defences immediately to the south of the entrance are seemingly non-existent; the area presently being occupied by a linear shaped mire.

1.1.2 It was believed that this mire obscured earthwork evidence of further ramparts and the report (LUAU 1998) recommended that a gross stratigraphic survey be undertaken through an area of mire at the entrance. This was intended to obtain a profile of the basin, to assess the suitability of the sediments for palaeoecological study, to assess if they were contemporary with the fort, and to retrieve material from the base of the deposits for radiocarbon assay.

1.1.3 LUAU was commissioned by LDNPA and NWW to undertake the stratigraphic survey and the fieldwork was undertaken in December 1998 in accordance with a verbal brief from the Lake District National Park Archaeologist and a project proposal prepared by LUAU (*Appendix 1*). The work was funded by North West Water Authority and LDNPA.

1.1.4 This report presents the results of this work as a stratigraphic gazetteer (*Appendix 2*), plans and basin profiles in conjunction with a methodology statement and an assessment of the palaeoecological potential of the study area.

1.2 ARCHAEOLOGICAL BACKGROUND

1.2.1 ***History of Exploration:*** although the existence of the site has been known for a considerable period of time, no intensive archaeological work has ever been undertaken. It was first shown on the OS first edition 6" to 1 mile map 1867 and in 1877 a brief description was incorporated within a gazetteer of Cumbrian sites (Clifton Ward 1877, 247). Collingwood (1924) mentioned the discovery at the hillfort of a thin slab of red sandstone lying on the surface, which was comparable with fragments of worked sandstone found at Peel Wyke (Bassenthwaite) and Castle Crag hillfort (Borrowdale). He argued, on the basis of this find and its associated parallels, that Shoulthwaite could have had Roman-British occupation.

1.2.2 ***Description:*** Shoulthwaite hillfort lies on a small natural craggy promontory overlooking the remote valley of Shoulthwaite Gill; it has very steep sheer sides to the west, north and south, but a relatively gentle sloping approach from the east. The modern footpath leads along this gentle sloped approach and into the former entrance of the fort. On the northern side of the promontory is a very prominent sub-circular knoll which is edged by steep crags on three sides. To the south of the knoll is a lower, undulating broad terrace, which is edged by both ramparts and further crags. Although the basic knoll and terrace is mainly of natural origin, it has a topographic

appearance similar to a medieval motte and bailey. On both the 'bailey' and 'motte' areas is a haphazard arrangement of internally levelled areas. Overall the site measures 140m by 90m and is up to 15m in height and covers an area of *c* 0.85ha; it is at an altitude of c 390m AOD.

1.2.3 *Ramparts:* the north and west sides of the hillfort are edged by very steep sided, or vertical slopes, too steep to allow for the construction of ramparts and too steep to warrant additional defences. Consequently the artificial defences are ranged around the south and eastern side of the fort and in these directions there are further crag edges which have been enhanced by the cutting back of the outcrop. Despite the sites natural defences a series of very prominent ramparts were constructed beyond the southern and eastern sides of the promontory.

1.2.4 On the eastern side, adjacent to the entrance, there are no obvious ramparts, instead there is a linear expanse of mire extending up to the edge of the crag. Considering the very considerable artificial defences constructed around other parts of the fort, which are also well covered by natural topography, it would seem inconsistent to have only limited defences here. on close examination, however, it was evident that the upstanding external ramparts visibly terminate at the southernmost edge of this mire, and the line is continued as a descending break of slope which defines the eastern edge of a slightly raised plateau, within which the mire sits. The mire is retained by the artificial bank around the eastern extent of this area, which was apparently related to the fort defences. The eastern side of the crag (western side of mire) has been deliberately cut back to reinforce the defences in this area, and similarly a ramp leading up to the fort entrance has been formed by cutting back its southern face, and would indicate an attempt to provide defences for the area adjacent to the entrance.

1.2.5 While the mire feature was evidently of artificial origin, its form and precise function are uncertain. It was possible that the eastern break of slope of the mire was a rampart and the area between it and the promontory was a large quarry ditch which has subsequently become filled by mire. Alternatively the outer bank, of the present mire, was constructed to deliberately create a section of 'moat' which would have been filled with water or bog as a defensive barrier. In this latter scenario the moat has now become filled with mire.

1.2.6 ***Regional Context:*** Shoulthwaite Gill hillfort is similar in size and sophistication of construction to other examples encountered within the upland terrain of the Cumbrian fells. Carrock Fell hillfort at Mungrisdale (NY 343337) (Turner 1987), whilst having a larger internal area, is constructed from stone and is characterised by a simple defensive enhancement to the natural topography. Castle How, Bassenthwaite (NY 202308) (Collingwood 1924), is similarly built around enhancements to natural terrain and is, at 0.5ha, of similar size to Shoulthwaite Gill (0.85ha). Enhancements at Castle How include artificial scarping to the adjacent hillside and the construction of up to four ditches.

1.2.7 It can be suggested that the multivallate form of the Shoulthwaite fort is a fairly sophisticated defensive system. However to a great extent the generic form of the fort reflects the characteristics of the topography; the sites of the hillforts in this mountainous area incorporate impressive natural defences and thereby negate the need for full encircling artificial defences. There are often only limited areas of vulnerability within the natural defences and these 'holes' are invariably strengthened by substantial but incomplete ramparts. They can afford to be 'multivallate' as there is only a need to defend part of the sites circumference.

1.2.8 This generalised form of the Lake District hillforts contrasts with that outside the Cumbrian uplands, but within the North-West, which have a tendency to be more substantial, as characterised by Ingleborough, North Yorks and Warton Crag, Carnforth which enclose a large area, are very well defended with stone walls in place and, on the present evidence, were permanently occupied. The latter example is up to *c* 6.1ha in extent, has a relatively flat settlement area and was defended by three long ramparts defining two sides of a promontory fort (Haselgrove 1996). The other forts of Lancashire (eg Portfield Camp and Caster Cliff) for the most part reinforce this tendency to larger forts (Beswick and Coombs 1986).

2. METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 An outline proposal (*Appendix 1)* was submitted by LUAU in response to a request from LDNPA, for a stratigraphic survey across an area of mire at the entrance of the Shoulthwaite hillfort. Subsequent to the coring, a variation was agreed for processing additional C14 dates taken from the core. The work has been undertaken in accordance with the project proposal (*Appendix 1*) and this written report presents the data collated during the project.

2.2 STRATIGRAPHIC CORING

2.2.1 The deposits were sampled with a 30 mm bore Eijkelkamp gouge auger to record the peat by rapid field description. Three transverse transects were carried out from the outer edge of the area to the fort (Figs 2 and 3; Appendix 2).

2.2.2 In addition an oversized Russian-type auger was used to obtain a basal sample of peat for radiometric analysis of AMS-type (Core A1) and to assess the preservation of the pollen and macrofossils. A little of this material was mounted in water and examined under an Olympus BH-2 microscope with x400 magnification.

2.2.3 The transect cores were surveyed using a Zeiss ELTA 3 total station and data-logger. The digital survey data was transferred, via DXF file format, into a CAD system. The archaeological digital data was subsequently superimposed onto the detail CAD map of Shoulthwaite (Figs 2 and 3).

2.3 RADIOCARBON DATING

2.3.1 Two samples of organic mud from the base of core A1, at depths of 2.79-2.80m and 2.77-2.78m, were submitted to the Scottish Universities Research and Reactor Centre at East Kilbride for radiocarbon assay. These samples were prepared by SURRC and then measured by AMS techniques at the University of Arizona.

2.4 PRESENTATION OF RESULTS

2.4.1 The data obtained from the stratigraphic transects are presented as transect diagrams; Figs 2 and 3 show the position of the cores and Fig 4 shows the broad profiles across the basin. An assessment has been given of the interpretation and palaeoecological potential of the site.

2.5 ARCHIVE

2.5.1 A full archive of the survey has been produced to a professional standard in accordance with current English Heritage guidelines (English Heritage 1991). The archive will be deposited with the County Record Office and a copy of the report will be given to the SMR. A summary of the results will be available for deposition with the National Monuments Record in Swindon.

3. PALAEOECOLOGICAL ASSESSMENT RESULTS

3.1 STRATIGRAPHIC CHARACTER

3.1.1 Because the deposits were so unconsolidated it was not possible to record the peat stratigraphy in any detail with a gouge auger, however the depth of organic material above the inorganic substrate was obtained, and it proved possible to reconstruct profiles through the basin (Fig 4). From some of the cores a little material was retrieved, from a layer generally near the base of the cores, and would indicate that the peats were unhumified with lenses of more fibrous material of *Polytrichum* moss with wood fragments. This suggests a drier phase in the development of the mire with the formation of a carr-type woodland in close proximity. The base of cores 2.6 and A1 (sampled with the Russian-type auger) had a layer of organic mud above the mineral ground suggesting that it was laid down in water and this was confirmed by the presence of colonial algae *Pediastrum,* which is normally found in base rich water. The cores from the outer edge of the area (cores 1.2, 2.1, 2.2, 2.3, and 3.2) had an amorphous sandy peat above the inorganic substrate. The unhumified nature of the deposits and the very high water table suggests that the accumulation rate was extremely rapid, which is often indicative that the preservation of plant macrofossils and pollen is good. Although no samples were prepared chemically for pollen analysis the material examined under the microscope confirmed that pollen was fairly abundant and well preserved in the deposits. Pollen of birch, hazel, grass and herbs were the most abundant types with some alder and oak. The initial indications were that the deposits were formed at some time after the Bronze Age, as any earlier deposits would have contained more oak and alder and even older deposits would have had considerably more birch, hazel and pine.

3.2 CARBON 14 DATES

3.2.1 The results of the two samples from core A1 that were submitted for radiocarbon assay are as follows: that from 2.79-2.80m gave a date of cal AD 538-676, (AA-33591, Gu-8251, 1435±50 BP) and the one from 2.77-2.78m cal AD 560-690, (AA-33592, Gu-8250, 1400±50 BP). The two dates are calibrated to the 2δ level or 95% confidence limit. This places the date of the deposits at these depths to the Early Medieval period. It needs to be stressed that there are limitations to the collection of the samples for these dates. The Russian-type peat corer, which was used, is constructed with a solid cone of 0.145m at the base to enable the penetration of sediments, however this inhibits the collecting of samples from the very base of the organic deposits if the mineral substate is either bedrock or consolidated. This was not a problem with the gross stratigraphic transects as the gouge auger penetrated to the very base of the deposits. The peat samples for radiocarbon dating were retrieved from as deep as was possible. The residual 0.145m may have formed in less than 100 years, if the accumulation rate has remained relatively constant to the present day. This would suggest that the ditch began to be infilled in the post-Roman period. The two radiocarbon dates also only provide evidence for the date of the primary fill and not that at which the ditch was cut.

4. DISCUSSION

4.1 DITCH PROFILE

4.1.1 The shape of the ditch profile is shown in the three transverse transects in Fig 4, and is very revealing about the form and origin of the mire basin. The hollow is linear in shape and has sharp, steep sides, particularly on the western side, against the rock face which has been visibly cut back. The form is most clearly depicted within Transect 1 where there is a uniform, near vertical, descent to the base of the mire, from the top of the crag/rampart. The base of the basin is relatively flat before it rises more gradually towards the outer edge of the mire, and at the eastern side there is a further steep gradient leading up to the lip of the broad outer bank. Samples taken at the northern entrance of the fort suggests that the depth of organic material increases rapidly at the entrance to the fort then remains relatively constant before it decreases more gradually towards the ramparts and ditches. The profile clearly indicates anthropogenic intervention, and the spoil from the excavation of the hollow has been deposited along the broad outer bank on the eastern side. This broad bank served to retain the mire/standing water and would have enhanced

4.1.2 The profile of this basin is essentially flat bottomed, with steep sides and is generally very broad, as such it contrasts with the adjacent rampart ditches, which have finely modelled 'V' shaped profiles and are relatively narrow. The difference in form would suggest different functions, and may indicate that this mire area was intended as a water filled moat, hence the flat bottom, and is in contrast to the dry-defensive steep sided rampart ditches. This would appear to be supported by the palaeoecological evidence, which has highlighted colonial algae Pediastrum at the base of the mire, which is normally found within base rich water (*Section 3.1*) and would suggest that the basin was water filled shortly after it was last cut. The base rock in this locale is an impervious volcanic rock of the Borrowdale Volcanic series and the basin would have retained water without need for any lining. The capacity of the moat feature was enhanced by the build up of the broad bank defining the eastern edge of the mire which served to retain the mire/standing water.

4.1.3 The location of the mire is to an extent dependant upon its location. The pathway / track leading to the fort entrance inevitably ran along the natural hause between two hills and consequently this area of mire edging the path is on the highest point of the hause. Because of the falling gradient to the north and south of the mire, this was the only place where a 'moat' like feature could have been established, and may explain why there was evidently a difference in defensive design from different parts of the site.

4.1.4 The most typical defensive feature for hillfort in the highland zone was a dry-ditch and associated rampart bank, although there is also significant evidence for walls (eg Carrock Fell). The use of a wet defensive structure is extremely unusual and it is not clear why a dry-rampart ditch was not used in this location. One possibility is that, being within a flat locale, any sub-surface feature was liable to fill with water and it may have been easier to leave it as a wet defence than try and drain adequately for use as a dry-ditch. It is unlikely to have been established as a water supply for the fort, as the water would have had no flow through and would have become stagnant, and in any case, by virtue of the normally abundant rainfall within the Lake District, the fort would probably have been adequately supplied by precipitation.

4.2 CHRONOLOGY

4.2.1 This preliminary survey has confirmed the presence of organic deposits, with well preserved pollen, of early medieval age. This deposit was recovered by augering close to the base of the artificially cut basin, and if it can be assumed that there was a uniform rate of silting following the cutting, then this would suggest that the cutting took place only a hundred years before the C14 dates; this would indicate an immediately post-Roman date for the cutting of the ditch. While it is reasonable to conclude, however, that there would have been a uniform build up of peat once the humification of organic silts occurred, it is possible that this was preceded by a period of largely inorganic silting, which would have occurred at a much slower rate and would make it very difficult to reliably date the cutting of the basin. If this were the case then it would be expected that there would be a deposit of inorganic material (gravels or silts) at the base of the ditch, but no silts were recorded with the gouge auger, and it is probable that the organic silting occurred immediately following the ditch cutting. The C14 dates would therefore suggest the post-Roman cutting / clearance of the basin and would imply a defended occupation of the hillfort during this period, although it is not possible to surmise whether it was a permanent occupation or established as a refuge.

4.2.2 Hillforts with early medieval occupation are becoming increasingly common, and it has been estimated that of the 60 hillforts in Somerset, 12 have evidence of late Roman or Post-Roman occupation (Fowler 1971, 209). However, there is relatively limited evidence for the construction of defences during the post-Roman period, and these include Castle Dore, South Cadbury, Cadbury Congresbury and Cissbury all from south-west England, an area which has seen a significant amount of exploration (Fowler 1971). South Cadbury, in particular, was refortified around its inner rampart with a flat topped bank and associated timber superstructure, but this did not involve the remodelling of the earlier ramparts. By contrast Cadbury Congresbury had a large new flat-topped rampart constructed along a new line and as such reflects a significant development of the earlier defences. At present the evidence would suggest that in most instances the first millennium AD activity reflects reoccupation of Iron Age forts; in only a very limited number of cases were they wholly constructed during this period, for example Garn Boduan, and Dinas Emrys, both near Caernarfon, have been demonstrated by excavation to be of late or post-Roman date (Hogg 1975).

4.2.3 The C14 dates in the basin indicate the working of the sites defences and by implication occupation of the site. But though the transect across the mire has been able to reconstruct the profile of the basin, it can not determine if this basin has been recut at any stage; it therefore can not define as to whether this basin was newly cut in the post-Roman period or whether it was a recut earlier (Iron Age ?) feature. On the basis of parallels outside the region, the most likely scenario is that this was an Iron Age hillfort that was reoccupied and the defences enhanced in the early medieval period. However, only limited amounts of intensive excavation have been undertaken of the hillforts in this particular highland zone, and very few C14 dates have been obtained from ditch fills, hence it is possible that significant Post-Roman / Early Medieval hillfort defences may exist but not have been recognised as such.

5. BIBLIOGRAPHY

Association of County Archaeological Officers (ACAO) 1993. *Model briefs and specifications for Archaeological Assessments and Field Evaluations*, Bedford.

Beswick, P and Coombs, DG, 1986 Excavations at Portfield Hillfort, 1960, 1970 and 1972, in Manby and Turnbull (eds) *Archaeology in the Pennines*, BAR Brit Ser **158**, 137-180

Burrow, I, 1981 Hillforts after the Iron Age, the relevance of surface fieldwork, in Guilbert (ed) *Hillfort Studies*, Leicester

Clifton Ward, J, 1877 Notes on archaeological remains in the Lake District, *Trans Cumberland Westmorland Antiq Archaeol Soc III*, 241-265

Collingwood, RG, 1924 Castle How, Peel Wyke, *Trans Cumberland Westmorland Antiq Archaeol Soc n ser* **24**, 78-87

Collingwood, WG, 1923 An inventory of the ancient monuments of Cumberland, *Trans Cumberland Westmorland Antiq Archaeol Soc n ser* **23**, 206-331

Fowler, PJ, 1971 Hillforts, AD 400-700, in Hill and Jesson (eds), *The Iron Age and its Hill-forts*, Southampton

Haslegrove, C 1996, The Iron Age, in R Newman (ed) *The Archaeology of Lancashire*, Lancaster

Higham, N, 1986 *The Northern Counties to AD 1000*, London

Hogg, AHA, 1975 *The hillforts of Britain*, London

Lancaster University Archaeological Unit (LUAU), 1997 *Thirlmere Estate, Archaeological Survey*, unpubl rep

Lancaster University Archaeological Unit (LUAU), 1998 *Thirlmere Estate, Detailed Survey*, unpubl rep

Nicholson, J, and Burn, R, 1777 *The history and antiquities of the counties of Westmorland and Cumberland*, London, repr 1976, 2 vols

Pearsall and Pennington, W. (1973) The Lake District. New Naturalist. Collins, London

Quartermaine, J and Leech, R (forthcoming), *Upland Settlement of the Lake District; the results of recent surveys*

Turner, V E, 1987 Results of survey work carried out in the Caldbeck Fells, Cumbria, *Trans Cumberland Westmorland Antiq Archaeol Soc n ser*, **87**, 19-26

APPENDIX 1

PROJECT SPECIFICATION

APPENDIX 2
STRATIGRAPHIC DATA

Core Number	Depth in m	Description
1.1	0-0.44	Unsampled sloppy peat
	0.44-0.75	Amorphous peat
	0.75	Amorphous peat + stones
1.2	0-1.15	Unsampled sloppy peat
1.3	0-0.79	Unsampled sloppy peat
	0.79-0.89	Amorphous peat
	0.89-1.38	Unsampled sloppy peat
1.4	0-1.95	Unsampled sloppy peat
1.5	0-2.40	Unsampled sloppy peat
1.6	0-2.80	Unsampled sloppy peat
1.7	0-2.90	Unsampled sloppy peat
1.8	0-2.80	Unsampled sloppy peat
1.9	0-1.0	Unsampled sloppy peat
	1.0-1.10	Fibrous moss peat
	1.10-2.50	Unsampled sloppy peat
	2.50-2.74	Unconsolidated moss peat
	2.74-2.84	*Polytrichum*/wood peat
1.10	0-2.25	Unsampled sloppy peat
1.11	0-2.50	Unsampled sloppy peat
1.12	0-0.30	Unsampled sloppy peat

Table 1 Transect 1 stratigraphic data

Core Number	Depth in m	Description
2.1	0-0.25	Unsampled sloppy peat
2.2	0-0.25	Unsampled sloppy peat
2.3	0-0.50	Unsampled sloppy peat
2.4	0-0.89	Unsampled sloppy peat
2.5	0-0.83	Unsampled sloppy peat
	0.83-1.0	Fibrous moss peat H3
	1.0-1.34	As above with wood
	1.34-1.75	Unsampled sloppy peat
2.6	0-2.81	Unsampled sloppy peat
2.7	0-3.0	Unsampled sloppy peat
2.8	0-0.-2.81	Unsampled sloppy peat
2.9	0-2.82	Unsampled sloppy peat
2.10	0-2.61	Unsampled sloppy peat
2.11	0-3.0	Unsampled sloppy peat
2.12	0-1.28	Unsampled sloppy peat
2.13	0-0.50	Unsampled sloppy peat
	0.50-0.79	Moss peat
	0.79-0.86	Clay with sand

Table 2 Transect 2 stratigraphic data

Core Number	Depth in m	Description
3.1		No organic sediments
3.2	0-0.20	Fibrous peat H3
	0.20-0.25	Sandy clay
3.3	0-0.94	Unsampled sloppy peat
	0.94-1.19	Wood peat H4
	1.19-1.44	Sandy organic material + Borrowdale volcanic pebbles
3.4	0-1.86	Unsampled sloppy peat
3.5	0-2.2	Unsampled sloppy peat
3.6	0-1.0	Unsampled sloppy peat
	1.0-1.50	*Polytrichum*/monocot peat with some *Calluna*
	1.50-2.02	Unsampled sloppy peat
3.7	0-1.85	Unsampled sloppy peat
3.8	0-0.05	Unsampled sloppy peat
3.9		No organic material

Table 3 Transect 3 stratigraphic data

Core Number	Depth in m	Description
A1	0-1.50	Unsampled sloppy peat
	1.50-2.00	Unhumified sloppy moss peat
	2.00-2.27	Unsampled sloppy peat with wood at base
	2.27-2.70	*Sphagnum* peat H3
	2.70-2.77	Organic mud
	2.77-2.78	Organic mud C^{14}sample
	2.79-2.80	Organic mud C^{14}sample

Table 4 Russian Auger Core A1

APPENDIX 3
RADIOCARBON DATING CERTIFICATE

ILLUSTRATIONS

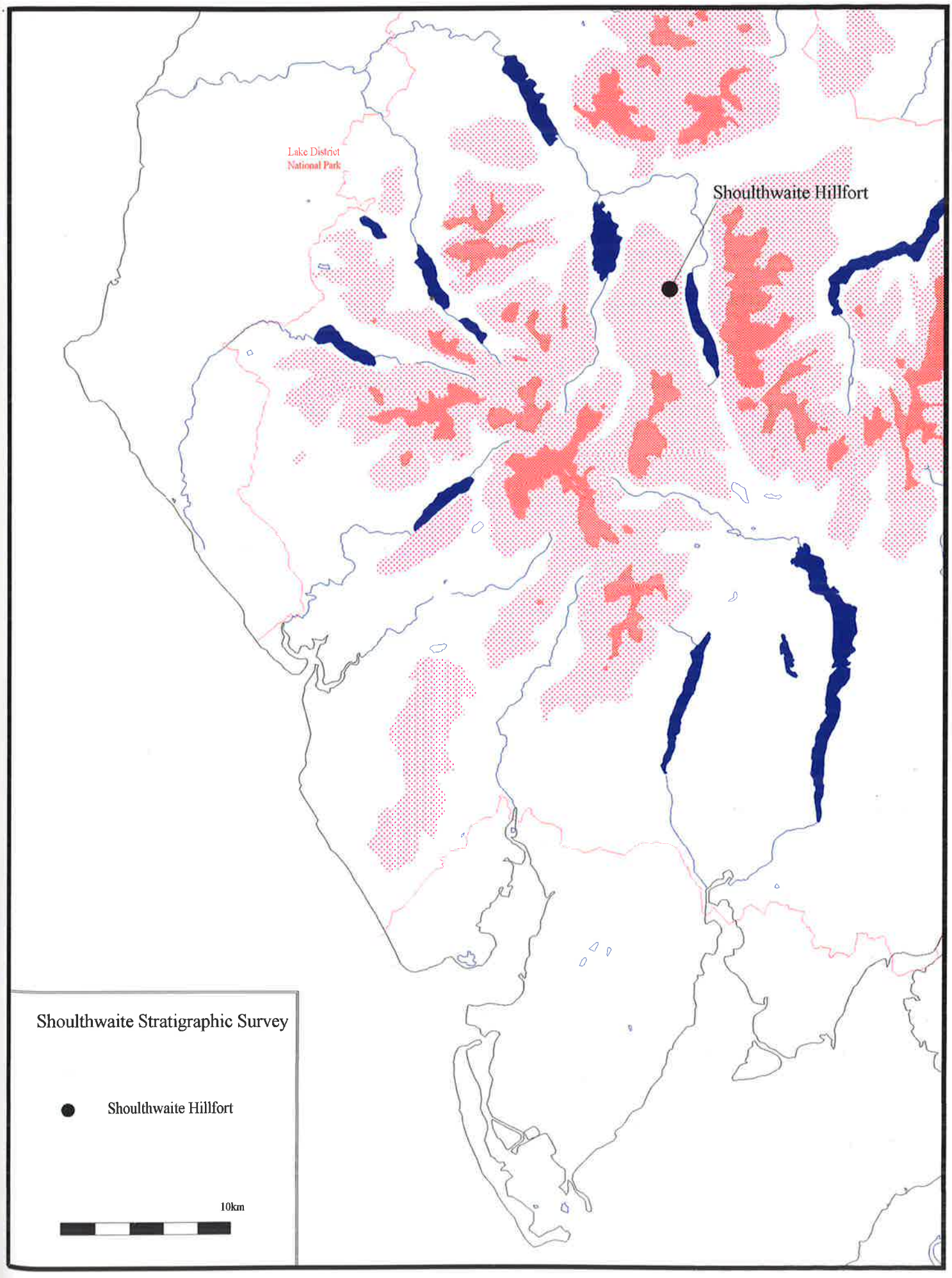


Fig. 1 Site Location Plan

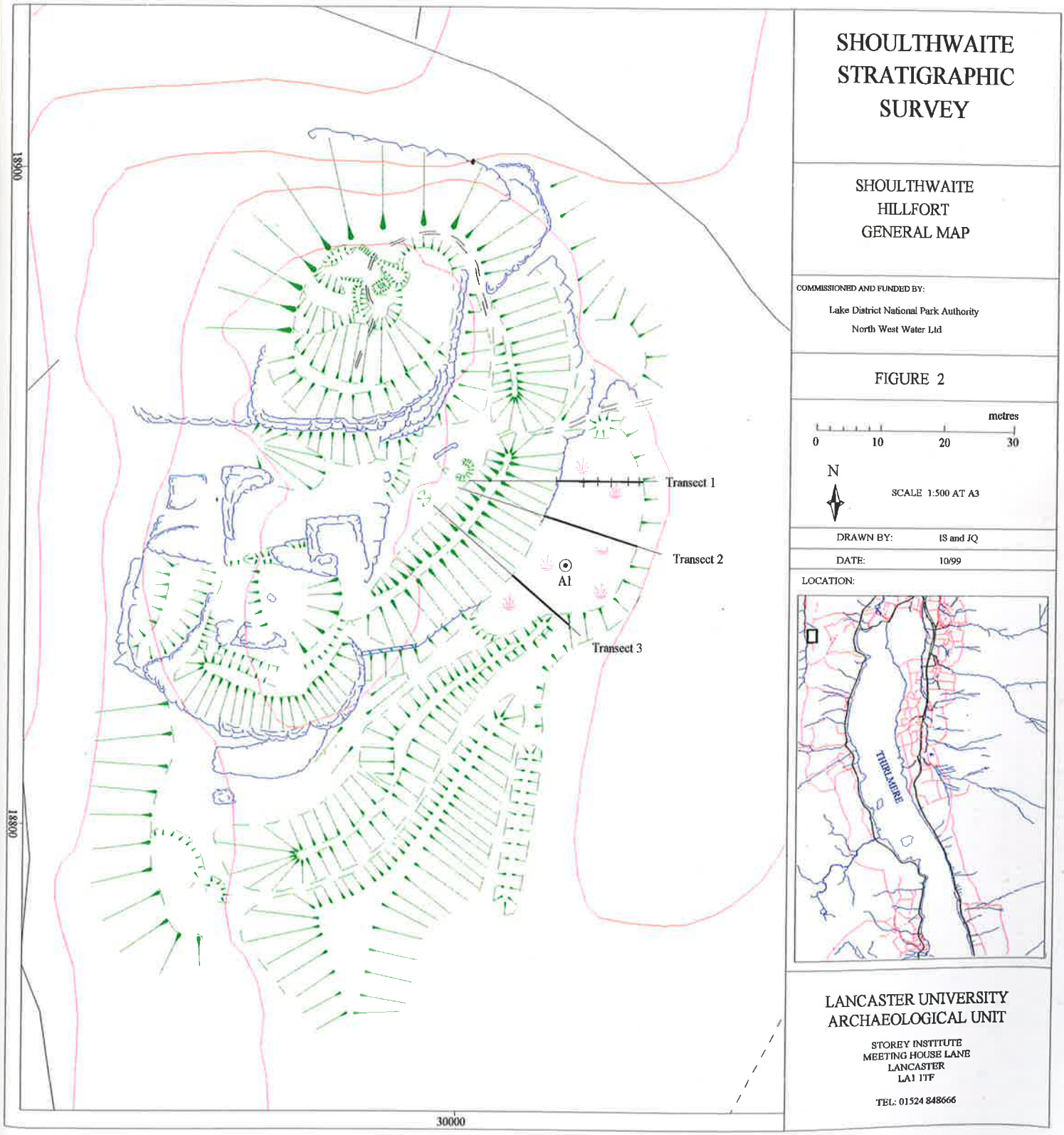


Fig 2 Shoulthwaite Hillfort General Map

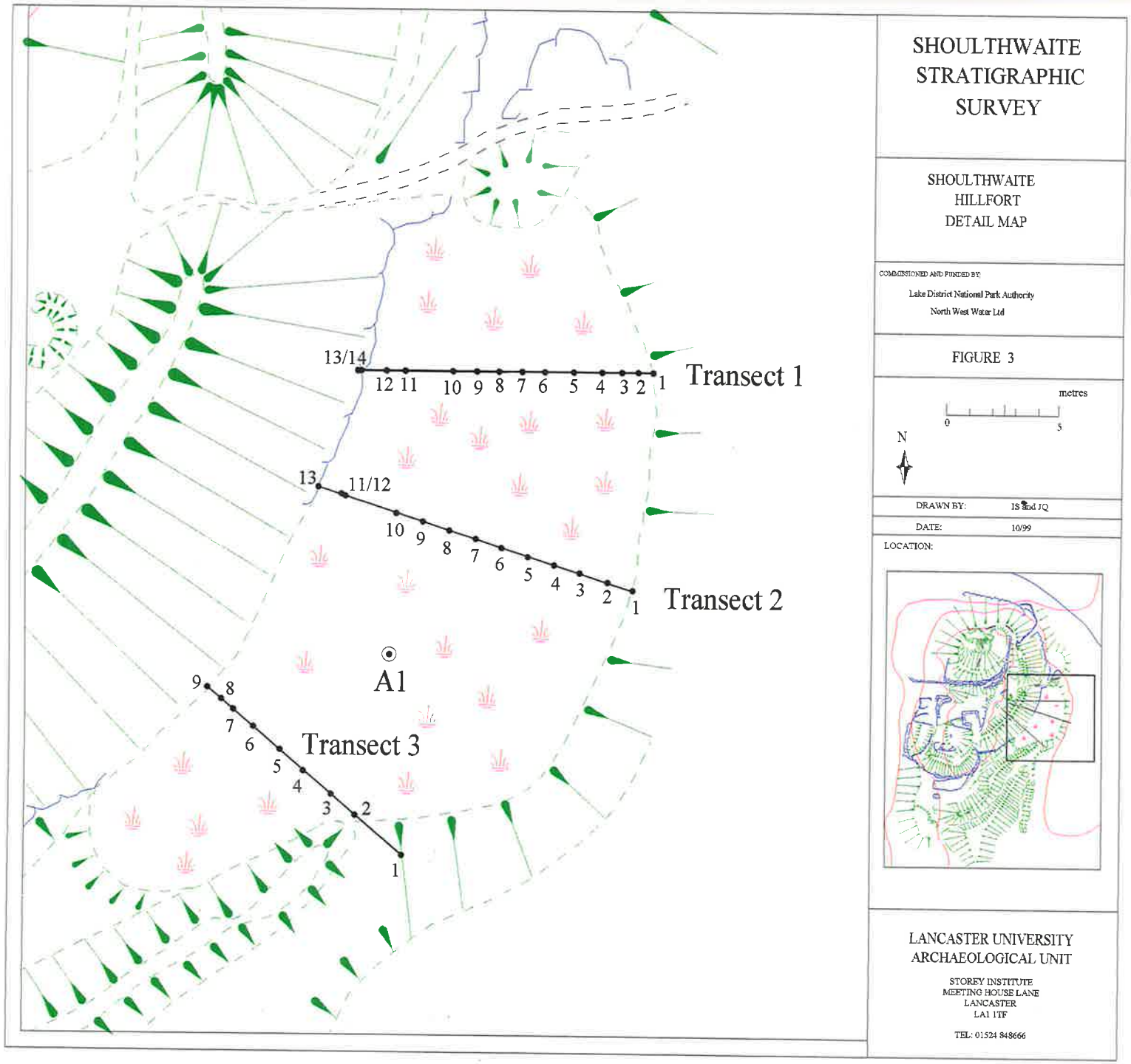


Fig 3 Detailed Transect Plan

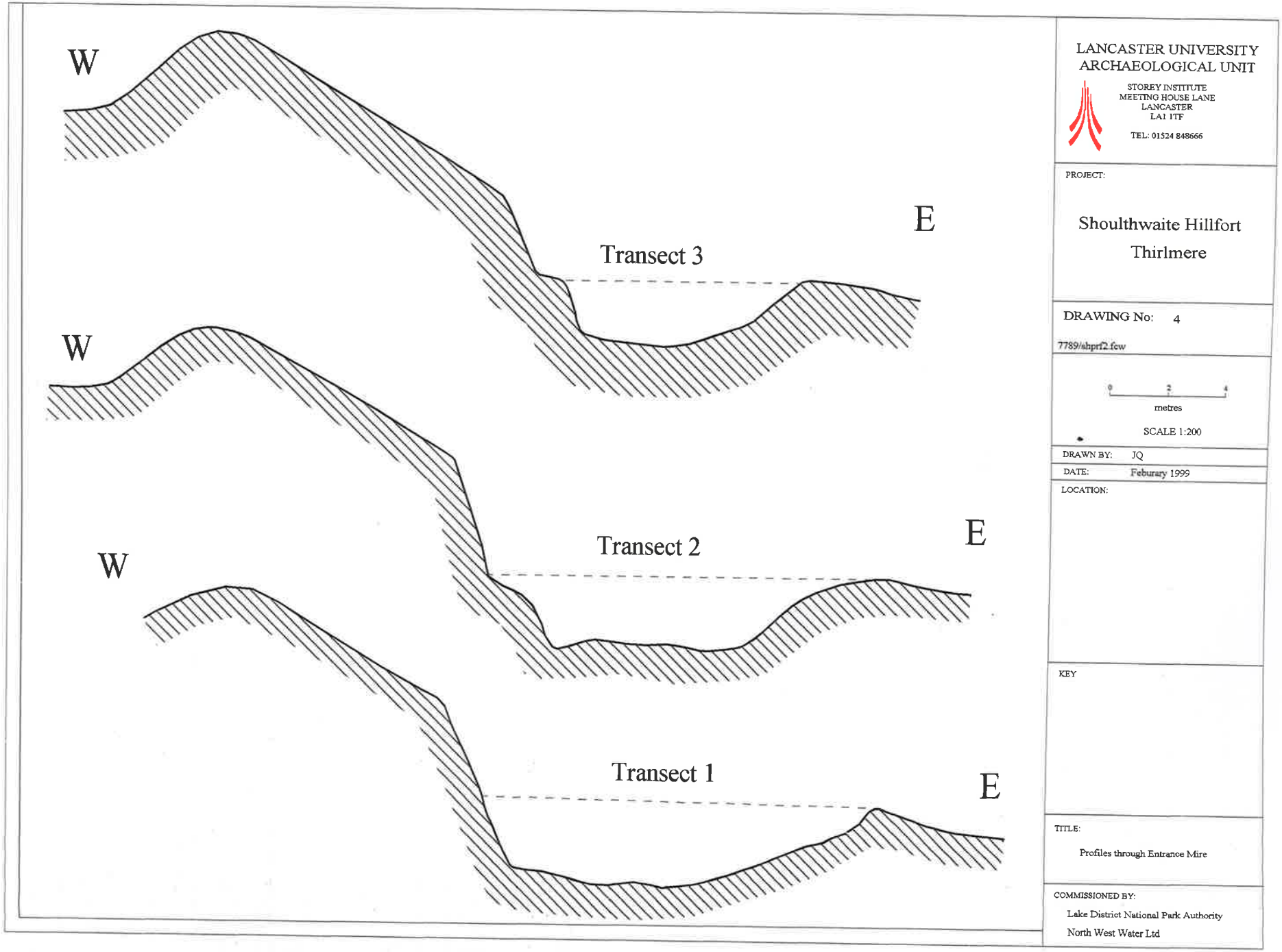


Fig 4 Profiles through the Entrance Mire