

# A geoarchaeological approach to evaluating large land parcels

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Finding rapid, cost-effective ways to evaluate large land parcels for archaeological and palaeoenvironmental remains has always been a key challenge for archaeologists. The need for this has come into sharper focus with the advent of commercial archaeology undertaken in advance of development. Various methodologies have been utilised over the years with some such as aerial photograph transcription, and now remote sensing more generally, together with geophysical survey, making huge contributions to the number and location of new sites. For those areas where there is little pre-existing remote sensing data, or which have geologies, soils or ground conditions unfavourable to crop or soil mark formation, and/or which have restricted scope for geophysical survey, other approaches to drive evaluation of these areas need to be found. Following an in-depth study in the Till–Tweed basin (Passmore and Waddington 2009, 2012) a geoarchaeological methodology has been devised, termed the ‘Landform Element’ approach, whereby the evaluation of a given land parcel is initially mapped, cored and surveyed in order to partition the landscape parcel into a series of discrete

landforms. For each of these landforms the archaeological potential and the types of methods most appropriate to their evaluation are identified and this is then used to drive the subsequent evaluation of the area. The case study from Killerby Quarry, North Yorkshire was approached in this way. Here, as part of the desk-based assessment for this new quarry, a detailed geoarchaeological landform element map for the land parcel was created. This was followed by a phased programme of evaluation that included targeted sediment coring, range finder dating and assessment of palaeoenvironmental proxies on a range of deglaciation features that included enclosed basins and kettle holes as well as palaeochannels on the Holocene floodplain. An extensive fieldwalking survey was undertaken at close-spaced intervals to maximise finds recovery, with a particular emphasis on chipped stone artefact recovery. Following on from these studies targeted geophysical survey and evaluation trenching were undertaken. Once this site received planning permission archaeological mitigation took place based around a scalable watching brief–strip, map and sample condition, together with

the targeted sample excavation of specific kettle hole and enclosed wetland basin features.

This approach was selected for use on this project as it provided an appropriate method for rapidly and accurately assessing a large land parcel in advance of large-scale development that required a high level of information to inform the planning decision and to give confidence to the developer of the scale and cost of the post-permission mitigation that might be required. This approach allowed what was considered to be significant about this landscape and the type of archaeological and geoarchaeological records it contained to be targeted from the outset while avoiding the need for digging several hundred evaluation trenches across this landscape. This meant that there was virtually no impact on surviving sub-surface archaeology during the evaluation phase; large scars in the field surface were avoided; speed of work and results was high and the cost of the works was considered good value for money. This meant that the approach by which the greater bulk of the financial resource could be spent on creating new and significant



*Aerial view of the wetland basin after soil stripping where two pond-side Early Mesolithic camps were discovered.  
Credit: Archaeological Research Services Ltd*



*Excavation of one of the Early Mesolithic tepee-type structures with the hearth from its final burning visible in the foreground.  
Credit: Archaeological Research Services Ltd*

information gain during mitigation was achieved rather than expending large amounts on pre-determination evaluation, which would have reduced how much significant information could have been gained during mitigation.

The technique proved highly successful as, during mitigation, a kettle hole and enclosed wetland basins were targeted for their archaeological remains as well as their palaeoenvironmental sequence for one of the first times in British commercial archaeology. The results have been stunning and have added genuinely new knowledge and data to our understanding of the Late Glacial and Early Holocene. This has included the discovery of two Early Mesolithic pond-side camps, with the structural timbers and hearth of the tepee-like dwellings surviving in remarkable condition despite dating to c 9000 cal BC. A substantial Late Mesolithic timber platform dating to c 5500 cal BC was discovered extending out into a small pond inside the kettle hole along with finds of cattle teeth, chipped flints and a

stone rubbing tool, as well as posts, postholes and other features that have led to its interpretation as a platform for processing animal skins and potentially curing hides in the pond. This site also had successive occupation in the Neolithic and Bronze Age stratified above the Mesolithic remains. In both cases these well-preserved archaeological remains also had preserved alongside them a continuous palaeoenvironmental sequence of deposits rich in environmental proxies that could be linked to landscape development and human activity in the immediate landscape surrounds. Although other archaeological remains have been found as well, these are remarkable discoveries that have been found as a result of the application of a specific evaluation technique and not by chance. It has ground-tested the approach in a real-world setting on a large scale and has proved effective in recovering what is significant about the archaeology of this area as well as in directing the best use of spend, at the right times, in the discharge of the planning system.

### Clive Waddington

Clive has worked as a field archaeologist, consultant, lecturer and since 2004 the founder and Managing Director of Archaeological Research Services Ltd, amongst other things. With a wide range of specialisms, he continues to contribute to national archaeological initiatives, publish books and papers, develop innovative approaches, liaise with sectoral partners and lead the development and growth of ARS Ltd.



Clive next to a mosaic of the company logo at the ARS Ltd Bakewell HQ. Credit: Archaeological Research Services Ltd

### References

Passmore, D G and Waddington, C, 2009 *Managing Archaeological Landscapes. Till–Tweed Studies Volume 1*. Oxford: Oxbow Books and English Heritage

Passmore, D G and Waddington, C, 2012 *Archaeology and Environment in Northumberland. Till–Tweed Studies Volume 2*. Oxford, Oxbow Books and English Heritage



Aerial view of excavations following initial stripping and sampling works on one of the kettle holes. Credit: Archaeological Research Services Ltd



View across the Late Mesolithic timber platform built out into the kettle hole pond, where chipped flints were found amongst the timbers as well as timber posts. Credit: Archaeological Research Services Ltd