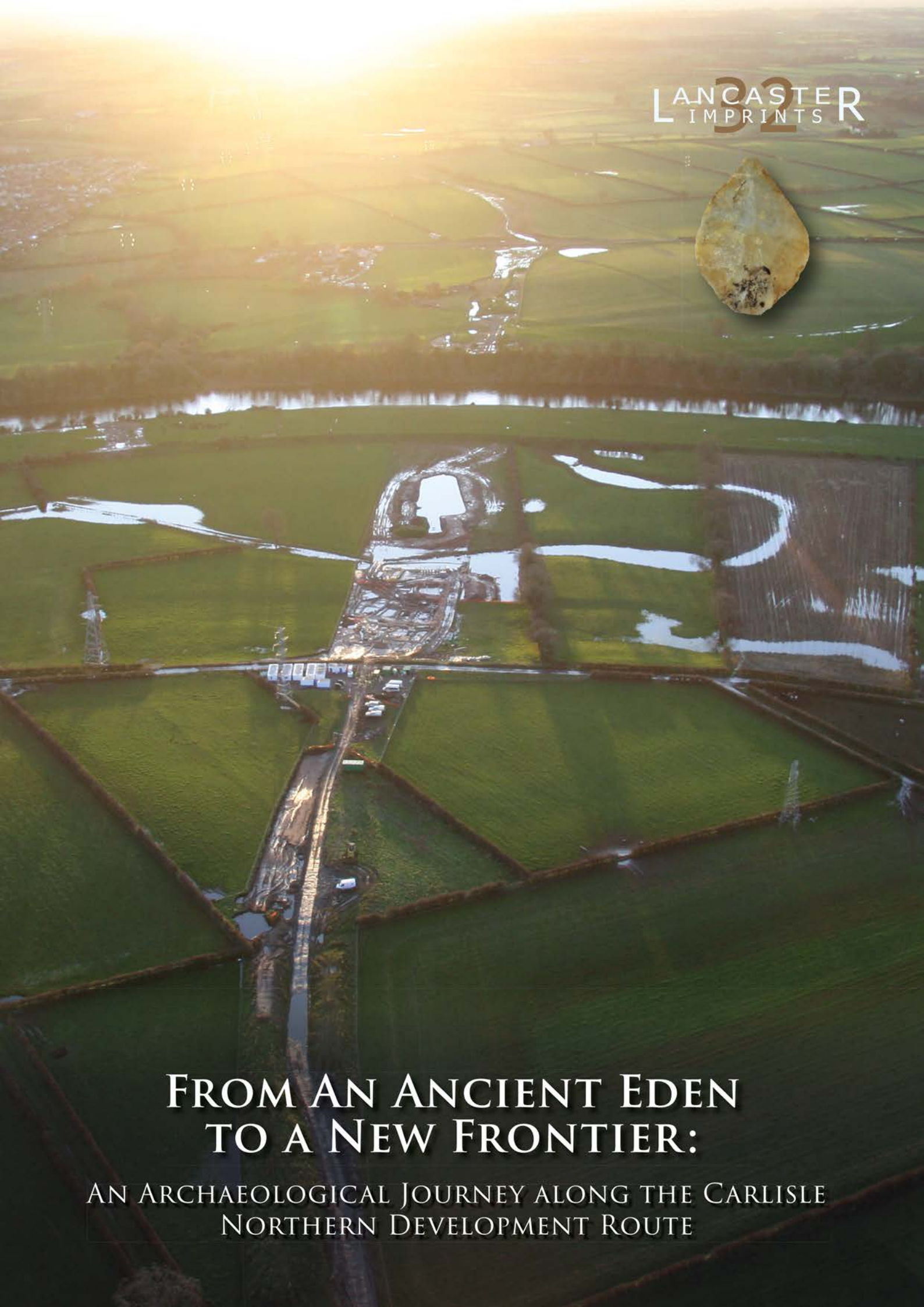

LANCASTER IMPRINTS 32

From An Ancient Eden to a New Frontier:

An Archaeological Journey along the Carlisle Northern Development Route

FROM AN ANCIENT EDEN TO A NEW FRONTIER:
AN ARCHAEOLOGICAL JOURNEY ALONG THE CARLISLE NORTHERN DEVELOPMENT ROUTE

Fraser Brown, Paul Clark, Antony Dickson, Richard A Gregory, and John Zant

PART 1

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LANCASTER IMPRINTS 32

Published by
Oxford Archaeology (Lancaster office)
Mill 3
Moor Lane Mills
Moor Lane
Lancaster
LA1 1QD
(*Phone:* 01524 541000)
(*website:* www.oxfordarchaeology.com)

Distributed by
Oxbow Books
The Old Music Hall
106-108 Cowley Road
Oxford
OX4 1JE
(*Phone:* 01865 241249; *Fax:* 01865 794449)

Printed by
Scantech Group, 17 Burgess Road, Ivyhouse Lane, Hastings, East Sussex, TN35 4NR

The appendices are available on the Oxford Archaeology Knowledge Hub at:
https://knowledge.oxfordarchaeology.com/7283/

ISBN 978-1-907686-39-9
ISSN 345-5205

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Front cover: *The CNDR under construction, looking south across Stainton West and the River Eden floodplain; Neolithic leaf-shaped arrowhead from Stainton West*
Rear Cover: *The palaeochannel at Stainton West under excavation (top); Hadrian's Wall (Stone Wall) at Knockupworth (middle); a possible Bronze Age sauna at Stainton West (bottom)*

LANCASTER IMPRINTS

Lancaster Imprints is the publication series of Oxford Archaeology's Lancaster office. The series covers work on major excavations and surveys of all periods undertaken by the organisation and associated bodies.

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Abbreviations

AHRC	Arts and Humanities Research Council
AMS	Accelerator Mass Spectrometry
ASDU	Archaeological Services Durham University
ASUD	Archaeological Services University of Durham
BL	Blue Light
BVG	Borrowdale Volcanic Group
CAU	Carlisle Archaeological Unit
CBM	Ceramic Building Material
CCCHES	Cumbria County Council's Historic Environment Service
CNDR	Carlisle Northern Development Route
CPR	Charred Plant Remains
DEFRA	Department for Environment, Food, and Rural Affairs
EBR	Ennerdale Banded Rhyolite
ED	Elm Decline
EDD	Elm Decline Demise
GC-MS	Gas Chromatography-Mass Spectrometry
GIS	Geographic Information System
GQB/chert	Good-quality brown/chert
HGL	Hunter-Gatherer Laboratory
ICP-MS	Inductively coupled plasma mass spectroscopy
ICP-OES	Inductively coupled plasma optical emission spectroscopy
IG	Initial Groups
IPG	Implement Petrology Group
LIDAR	Light Detection Aperture Radar
LMRL	Lithic Microwear Research Laboratory
LOI	Loss-on-Ignition
LUAU	Lancaster University Archaeological Unit
MFTs	Microfacies Types

MGC	Museums and Galleries Commission
MYA	Million Years Ago
NGR	National Grid Reference
NPP	Non-Pollen Palynomorph
NWWS	North West Wetlands Survey
OA	Oxford Archaeology
OD	Ordnance Datum
OIL	Oblique Incident Light
OS	Ordnance Survey
PCRG	Prehistoric Ceramic Research Group
PPL	Plane Polarised Light
PTS	Polished Thin Section
pXRF	Portable X-Ray fluorescence
QUB	Queen's University Belfast
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
REE	Rare Earth Elements
RSL	Relative Sea Level
SEM/EDS	Scanning Electron Microscopes/Energy-Dispersive X-Ray Spectrometry
ScARF	Scottish Archaeological Research Framework
SFF	Seathwaite Fell Formation
SMFTs	Soil-Microfabric Types
SPSS	Statistical Package for the Social Sciences
SSUC	Scottish Southern Uplands Chert
SUERC	Scottish Universities Environmental Research Centre
TIC	Total Ion Current
WCCHEAS	Worcestershire County Council Historic Environment and Archaeological Services
WPR	Waterlogged Plant Remains
XPL	Crossed Polarised Light
XRF	X-Ray Fluorescence

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Summary

The Carlisle Northern Development Route (CNDR) is a new road in the north-west of England, which extends for 8.5 km around the western and northern sides of Carlisle (between NY 3945 5990 and NY 3731 5365). During its construction, a major programme of archaeological excavation was undertaken by Oxford Archaeology between May 2008 and April 2011, focused on the archaeological remains along the scheme, dating from the Mesolithic to the early modern periods. These included a section of Hadrian's Wall and the Vallum, part of the *Frontiers of the Roman Empire: Hadrian's Wall World Heritage Site,* which had to be crossed to allow the construction of a new bridge carrying the road across the River Eden.

Almost all of the earliest evidence from the scheme (Mesolithic and Neolithic periods) came from Stainton West, a site situated on the floodplain north of the River Eden, where various later Mesolithic domestic features (pits, hearths, and stakehole structures) were preserved on an island between two palaeochannels. These were associated with an *in-situ* flaked-lithic assemblage of over 300,000 pieces, retrieved from an area of just under 900 m², mainly by wet sieving. The assemblage was dominated by geometric, narrow blade, or bladelet technology, microlithic in character.

Analysis of the lithic distribution identified various zones of activity, demonstrating the persistent and conservative use of space over repeated visitations. The site seems to have been the seasonal aggregation encampment of a hunter-gatherer band or clan, perhaps taking advantage of the spring salmon migration. Radiocarbon dating suggests that intermittent activity started *c* 6000 cal BC, intensified around the middle of the fifth millennium cal BC, and ended *c* 4300 cal BC, possibly coincident with a period of increased alluviation that buried the encampment.

A wide range of lithic raw-material types was utilised, including beach-pebble flint, from the beaches of the Solway Firth or the West Cumbrian coast, and cherts, from the Eden Valley or its tributary valleys. These dominated the assemblage, and their landscape distribution appears to equate with the habitual range of the hunter-gatherer community. There were also other raw-material types from more remote sources, pointing to a wider network of social connections, and perhaps further-ranging patterns of mobility. These included cherts, with probable sources in the Southern Scottish Uplands and the Pennines; flint from east Yorkshire, probably Flamborough Head; central Lake District tuff; and pitchstone from the Isle of Arran. There was also a large coarse-stone assemblage, including utilised ochre, an incised pebble, and tools, such as a fishing weight, hammerstones, grinding stones, and polished-stone adzes/axes. The latter included stratigraphically well-provenanced examples of Group VI tuff (*sensu stricto*), associated with fifth millennium cal BC radiocarbon dates, which hint at the direct exploitation of the central Lakeland fells for stone procurement at this early date, such as those surrounding Great Langdale.

Waterlogged deposits of organic sediment, in the main palaeochannel defining the western edge of the island, contained a wealth of palaeoenvironmental evidence and some cultural material, which radiocarbon dating suggested related to the earlier part of the period in which the encampment was occupied. Episodes of fluvial erosion had, however, seemingly removed any deposits contemporary with the later, more intensive, phases of settlement. Large quantities of waterlogged wood formed a beaver lodge and dam, which also made use of burnt wood, as well as a tree that had been girdled using a stone axe. Subsequently, human activity, represented by flaked lithics and wooden chips produced by stone axes, also focused on the beaver-built structures. Overall, the palaeoenvironmental remains suggested relatively undisturbed hazel, oak, and elm-dominated woodland.

The alluviation that buried the encampment during the final quarter of the fifth millennium cal BC also transported numerous large oak trunks and boughs into the main channel. Dendrochronological analysis suggested the last of these trees died in the autumn/winter of 4144 cal BC. There was some limited lithic and radiocarbon-dating evidence that the site may have been frequented during the latter part of the fifth millennium and earlier part of the fourth millennium cal BC, but it seems to have been marginal to activity elsewhere.

Between *c* 3800 cal BC and 3700 cal BC, when drier conditions had returned to the channel, there was a marked resumption in activity. Tree-throws indicated that large trees on, or adjacent to, its banks were felled, and a rudimentary wooden platform was constructed on the edge of the channel, along with other stake settings and fences, and various materials and objects were deposited into it. These included foundational deposits of the wooden debris associated with the felling, and splitting into planks, of ancient oak and elm trees, and crude coarse-stone tools, which could also have been associated with this practice. There were also numerous large pebbles of tuff, sometimes partially flaked, that were not native to the site. A paddle and a fork-like 'trident', both carved from oak planks, were also deposited in association with the platform. There may then have been

further secondary phases of deposition, including polished-stone axes and arrowheads, referencing the platform. Other implements, such as flake tools and blades, possibly for butchery or dismemberment, followed the line of the active stream, whereas hammers, anvils, and grinding stones lined the banks. These assemblages probably related to activities undertaken in association with the channel, rather than being in secondary depositional contexts, and provided some evidence for axehead polishing/sharpening. That deposition continued for at least a century or two was demonstrated by later radiocarbon dates retrieved from a second trident, associated with Carinated Bowl-ware pottery and a polished-stone axehead.

Palaeoenvironmental remains in the channel provided evidence for changes to the environment during the intervening period between the deposition of the two tridents. These included an elm decline, evidence for vegetational disturbance, the appearance of cereal-type pollen, and a sharp rise in the numbers of dung beetles. Together, these proxies suggest that herding and small-scale arable farming were practised locally for the first time.

After a period of several centuries where the evidence for activity was slight, during the first half of the third millennium cal BC, activity seems to have resumed, focused on the now-silted main channel, and two burnt mounds subsequently accumulated. Significantly, it is likely that this activity was linked to a henge monument some 150 m to the north-east of the Stainton West site, on a gravel terrace within the Eden's meander.

The burnt-mound activity continued until approximately 1600 cal BC. A small, presumably associated, structure nearby, defined by a ring-gully, with a central hearth, was radiocarbon dated to the latter part of the second millennium cal BC. Other pits in the area were associated with Middle Bronze Age Deverel Rimbury-type pottery.

Several other sites along the scheme provided evidence for settlement and agriculture, dating between the twenty-third and the ninth centuries cal BC. The earliest settlement (dating to the twenty-third to twentieth centuries cal BC) comprised two successively occupied oval post-built buildings, for which there are no parallels in the immediate area. Other, slightly later, Early- to Middle Bronze Age settlements in the scheme were also unenclosed, comprising one or two post-built roundhouses, the latter indicating a developing vernacular tradition. Several ditches appear to have formed boundaries, but there were no enclosed field systems. A single Late Bronze Age settlement, associated with post-Deverel Rimbury pottery and charred cereal grain, was dated to the eleventh to ninth centuries cal BC. No domestic structures were identified, but scatters of pits and postholes defined a palisaded enclosure, with a funnelling entrance, within which were pens for animals. Beyond the enclosure was a single four-post structure. Perhaps surprisingly, no Iron Age activity was identified.

Excavations at Knockupworth, where the road and bridge cut through the Roman frontier, identified the initial, Hadrianic, phase of Turf Wall, the subsequent slighting of both this and the Vallum earthworks to the south, and the creation of a causeway across the Vallum ditch, probably coinciding with the abandonment of the Hadrianic frontier and the advance to the Forth-Clyde isthmus in the reign of Antoninus Pius. Later, the Stone Wall was constructed, probably around AD 158-60, when the Hadrianic frontier was reoccupied. The Vallum ditch was also recut, destroying the causeway. Apart from the Hadrian's Wall frontier, surprisingly little evidence for Roman activity was identified in the rest of the CNDR. A buried pottery vessel was found at Stainton West, and also two possibly late Iron Age or Romano-British annular glass beads, perhaps suggesting that votive activity was still taking place there.

Five apparently near-contemporary rectangular posthole buildings were revealed near the Cargo road. These were dated to the early eighth- to the middle of the tenth century AD, and probably formed a small agricultural settlement. Repairs to the buildings suggest that occupation persisted for some time.

There was stratigraphic evidence for medieval agricultural activity, including boundary ditches, dated by pottery, and a single tenth- to mid-twelfth-century radiocarbon date. These formed elements of land-allotment systems associated with a settlement, known from aerial photographs, perhaps the antecedent of the present-day hamlet of Stainton. Radiocarbon dating suggests that the bank associated with the henge near Stainton West was either deliberately slighted, or was eroded and destabilised by ploughing during this period. The silted recut of the Vallum ditch also seems to have been used as a droveway for moving livestock.

Most of the post-medieval remains comprised ditches and drains connected with enclosure, crop cultivation, drainage, and other forms of land management. Land drains for an eighteenth-century formal garden were associated with Kingmoor House, and a fragment of statuary, and sherds of eighteenth-century pottery, also probably related to this. At Knockupworth, evidence for the Carlisle Canal and the later Carlisle and Silloth railway survived, and remnants of the 1847 railway that linked Carlisle with Glasgow and Edinburgh were also revealed.

Acknowledgements

The archaeological investigations undertaken along the CNDR owe their success to many individuals and also to the close cooperation of the different organisations involved with the project. Oxford Archaeology (OA) would like to thank Birse Civils Ltd for commissioning the archaeological work, Cumbria County Council, and Connect Roads: CNDR, which administered the PFI concession. A special debt of gratitude is extended to Steve Bullass (formerly of Birse Civils Ltd), Philip Bent (Connect Roads), and Martin Hardman (Cumbria County Council), who provided advice and immense support for the archaeological programme throughout its long gestation. Other Birse Civils Ltd staff who worked closely with OA throughout the project included Dave Curry, Andy Moore, Chris Smart, Wayne Foster, Bob Gibson, Dave Holding, Peter Barker, John Greensmith, Mark Wilkinson, Wendy Thompson, Chris Scurr, John Melia Senior, John Melia Junior, John Hart, and Mike Holt-Bains, whilst Malcolm Findlay and Nigel Blackbee from Connect Roads also provided assistance. Geoff Holden, formerly of Cumbria County Council, is thanked for his interest in the archaeological process and tolerance of the complications that occasionally arose from it.

Mark Brennand (Westmorland and Furness Council Historic Environment Service) monitored the work and provided archaeological advice, and his 'hands-on' approach was much valued. Mike Collins (Historic England) was similarly helpful and constructive in facilitating the work at Knockupworth. Sue Stallibrass and Jacqui Huntley, then Regional Science Advisors of English Heritage (now Historic England), provided support to the project and have enhanced the results with their insights.

ADC ArcheoProjecten are especially thanked for their generosity in providing the sieving apparatus and knowledge, without which the retrieval of the lithic assemblage at Stainton West would not have been possible; in particular, Peter Kuster, Henk van der Velde, Leo Kuit, Jan Willem Beestman, and Marieke Opbroek provided their time, advice, and support. Numerous academics from a variety of universities have also willingly shared their thoughts and advice on different aspects of the project. Many people have contributed their ideas to the project, and the valuable input of Mark Edmonds, Chantal Conneller, Dave Coward, Helen Evans, Andy Myers, Ian Paterson, Alison Sheridan, the late Caroline Wickham-Jones, and Tam Ward is gratefully acknowledged. The generous assistance of Gill Varndell of the British Museum in allowing access to the Ehenside Tarn artefacts is also gratefully recognised.

The project would not have been possible without the hard work of the fieldwork team, who braved some difficult conditions and some of the worst weather that Cumbria could throw at them. The fieldwork was managed by Fraser Brown, while Carl Champness provided geoarchaeological input and supervision, and, on site, Paul Clark, aided by Caroline Raynor, ably directed the fieldwork team, which comprised Peter Aherne, Gary Baddeley, Paul Beers, Steve Black, Dave Bonner, Bradley Brooker, Ric Buckle, Caroline Bulcock, Pete Burge, Clare Burke, Ged Callaghan, Sarah Cattell, Katy Chalmers, Mark Chesterman, Steve Clarke, Liz Collison, Steve Collison, Phil Cooke, Alistair Cross, Tim Christian, Paul Dunn, Claire Dunscombe, Catherine Edwards, Christina Elcok, Vicky Fackrell, Andrew Frudd, Diane Gorman, John Griffiths, Sam Grimmer, Katherine Hamilton, Anthony Haskins, Anna Hodgkinson, Dan Heale, Yvonne Heath, Vickie Jamieson, Nate Jepson, Sean Johnson, Gemma Jones, Mathilde Jourdan, Lindsey Kemp, Michal Kempski, Nadia Khalaf, Rupert Lotherington, Sarah Lynchehaun, Lisa McCaig, Clionadh McGarry, Iain Mcintyre, Sean McPhillips, Michelle Maguire, Dave Maron, David Molnar, Dennis Morgan, Sam Oates, Desmond O'Donoghue, Des O'Leary, Jon Onraet, Ken Owen, Aidan Parker, Kevin Paton, Christina Robinson, Dan Sausins, Carl Savage, Luke Severn, Dave Shaw, Katie Sludden, Rachel Stebbings, Fraser Stewart, Lewis Stitt, Marc Storey, Steve Tamburello, Julian Thorley, Toni Walford, Samantha Walsh, Liann Waring, Becky Wegiel, Matt Weightman, Ailsa Westgarth, Chris Wild, and Berber Wouda. Aidan Pratt undertook fieldwork on site as a volunteer. The translation of the fieldwork archive into a digital record was undertaken by Paul Clark, Caroline Bulcock, Andrew Frudd, Anthony Haskins, Anna Hodgkinson, and Gemma Jones.

The post-excavation analysis and publication was also managed by Fraser Brown, and has benefited from the work of many individuals. These include numerous members of OA, who undertook the analysis of the site stratigraphy, the plant and pollen remains, and unworked waterlogged wood, as well as several categories of artefacts, including the technological and typological classification of the massive assemblage of struck lithics, together with ceramics, and other miscellaneous objects. During this stage of work, the palaeoenvironmental samples from the archaeological excavations were processed by Rachel Fosberry, Ross Lilley, Graeme Clarke, James Fairbairn, Stephen Morgan, and Helen Stocks at Oxford Archaeology in Cambridge, whilst the struck lithics were initially characterised by Mike Donnelly, from the Oxford office, and then assessed and analysed by a team in Lancaster consisting of David Bonner, Pascal Eloy, Anthony Haskins, and Aidan Parker, supervised by

Antony Dickson and Ann Clarke. The palaeoecological analyses benefited from two seminars, which examined cross-discipline synergies, and were attended by Jeff Blackford, Mark Brennand, Fraser Brown, Paul Clark, Gordon Cook, Denise Druce, Seren Griffiths, Allan Hall, Elizabeth Huckerby, Jacqui Huntley, Jim Innes, Richard Macphail, Rachel Newman, Mairead Rutherford, David Smith, Sue Stallibrass, and Ian Tyers.

In addition to staff from OA, during the post-excavation process, a large team of external specialists, many based in UK universities and museums, has also been instrumental in the analysis of elements of the palaeoenvironmental and artefactual assemblages from Stainton West. These include study of the worked wood, insects, foraminifera, ostracods, and diatoms, lithic raw materials and lithic microwear, prehistoric ceramics, soil micromorphology and chemistry, as well as the chronometric data derived from an extensive programme of radiocarbon dating and dendrochronology. As part of this work, Kevin Reeves (University College London) is thanked for facilitating the scanning electron microscopy/energy-dispersive X-Ray spectrometry as part of the soil analyses; Torben Bjarke Ballin generously provided geological pitchstone samples from Arran; Morag Clement from Kendal Museum and Judith Clarke from Penrith and Eden Museum kindly lent samples from the museum collections for the pitchstone and chert raw-materials analysis, which also benefited from the assistance of Jennifer Readman in the use of the portable X-Ray fluorescence equipment (pXRF) at the University of Central Lancashire (UCLan); Connor McDermott (University College Dublin) provided details and references for several Irish wooden tridents; Historic Scotland kindly loaned the pXRF equipment used in the petrological identification of the volcaniclastic (tuff) axes; whilst English Heritage (now Historic England) generously funded the radiocarbon wiggle matching of four dendrochronological sequences.

Some of the historical maps used in this volume are held by the Carlisle Archive Centre (Figs 247-9 and 252) and the assistance of the staff at the centre is gratefully acknowledged. Other images in this volume have been supplied by the National Library of Australia (Pl 67), Peter Jordan (Pl 125), the Denver Museum of Nature and Science (Pl 168), Richard Gregory (Pl 174), and the Cumberland and Westmorland Antiquarian and Archaeological Society (Pl 193).

More generally, the post-excavation process has been greatly assisted by Rachel Newman (Oxford Archaeology's Senior Executive Officer: Research and Publication in Lancaster), who, with Richard Gregory, edited both the hard copy and digital volumes, and provided quality assurance. A draft of the hard-copy volume was also reviewed by Richard Bradley, David Breeze, Mark Brennand, Mike Collins, Chantal Conneller, Vicki Cummings, Gill Hey, and Don O'Meara, and their constructive comments are greatly valued.

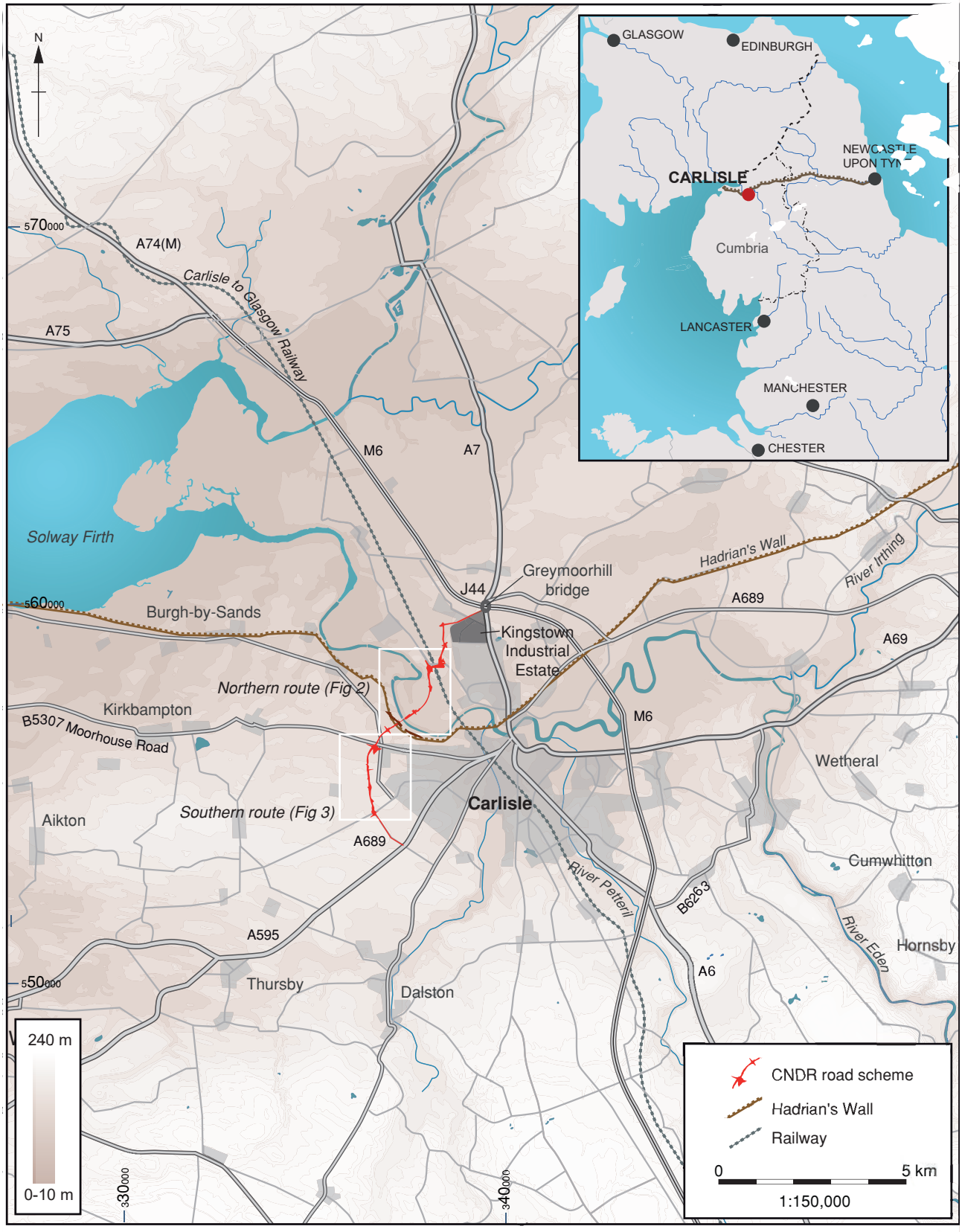

Figure 1: Location of the Carlisle Northern Development Route (CNDR) (Contains OS OpenData © Crown Copyright [and database right] (2022))