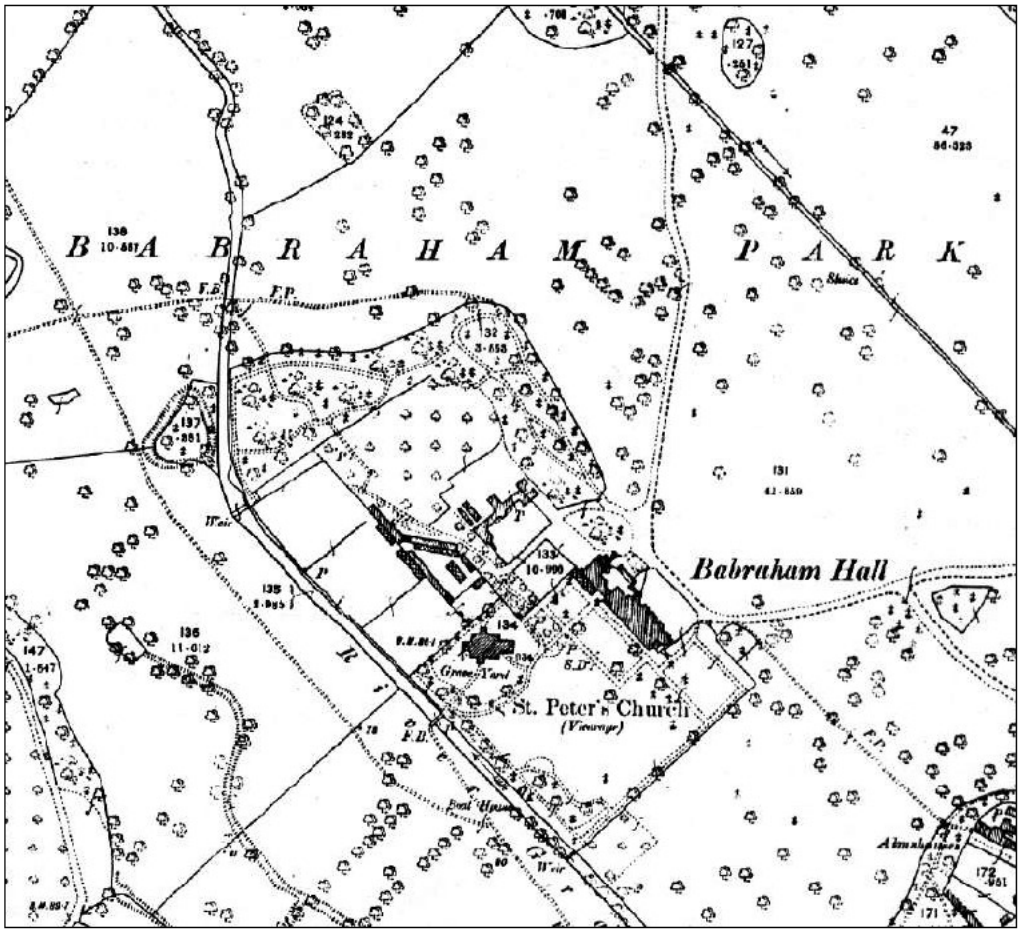
BIDWELLS

BABRAHAM RESEARCH CAMPUS
FIRST PROPOSALS CONSULTATION (REGULATION 18) – DEC 2021
PLANNING REPRESENTATIONS
APPENDIX 6 : ARCHAEOLOGICAL ASSESSMENT

Babraham Research Campus

Archaeological Assessment



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BABRAHAM RESEARCH CAMPUS

Archaeological Assessment

commissioned by Babraham Research Campus Ltd.

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CAMBRIDGE ARCHAEOLOGICAL UNIT

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1. INTRODUCTION

1.1.1 The Cambridge Archaeological Unit (CAU) has been commissioned by Babraham Research Campus Ltd to summarise the known archaeology within the Babraham Research Campus (BRC), and to establish its likely archaeological potential in accordance with the requirements of the National Planning Policy Framework (NPPF) and Local Planning Policy. In addition, this assessment identifies and assesses the constraints and opportunities posed by the archaeology and suggests responses to proposed development.

1.1.2 The CAU has undertaken the bulk of archaeological work on the campus and this chapter assessment is based primarily on the CAU's extensive excavation records and desk-based assessments.

1.1.3 This Archaeological Assessment has been prepared in support of representations to the First Proposals stage of the emerging Greater Cambridge Local Plan (Regulation 18 consultation) and in respect of Land at Babraham Research Campus.

1.1.4 An assessment of built heritage assets, including listed buildings and the Conservation Area, is made separately and is not covered within this Archaeological Assessment.

2. LEGISLATION AND PLANNING GUIDANCE

2.1.1 Legislation and policy relevant to this develop comprises:

- Ancient Monuments and Archaeological Areas Act 1979
- National Planning Policy Framework (NPPF, February 2019)
- South Cambridgeshire Local Plan.

2.1.2 The key provisions of each are summarised in Appendix 1.

3. LOCATION AND CURRENT LAND USE

3.1.1 The BRC lies northwest of the village of Babraham, Cambridgeshire, and is built on lands around Babraham Hall (TL 5106 5055) beside the River Granta (Figure 1)

3.1.2 Currently, the campus covers around twenty large buildings—most of them custom designed research facilities—and numerous smaller stores, workshops and other ancillary buildings. There is also a residential area, as well as roads, pathways, carparks and extensive landscaping.

4. SOURCES

4.1.1 The CAU has undertaken twenty-five archaeological investigations of various types on the Babraham Research Campus (Table 1), which form the data for this report. The locations are shown on Figures 2 and 3. Alongside the archaeological investigations, the CAU has an ongoing programme investigating the development of the landscape, modelling environmental changes in the valley, and understanding the impact of former land-use.

Table 1: CAU Investigations at the Babraham Research Campus

Research Campus area	*Site code*	*Investigation*	*Report*	*CAU report no.*
Car park extension	—	trenching	Butler 1994	99
Computer Centre	—	monitoring	Robinson 1995	123
Forum and Building 540	—	evaluation	Regan 1995	155
Research Campus	—	desk-based assessment	Hall 2003	567
Minerva Building	—	evaluation and excavation	Wills 2004	597
ARES Project Site, MRC	ARC05 EV	evaluation	Swaysland 2005	691
Access Roadway	RCB05 EV	evaluation	Armour 2006	725
Riverside Site	RCB06 EV	evaluation	Timberlake & Armour 2006	749
ARES Site	ARC05 EX	excavation	Armour 2007b	752
Roman Cemetery	RCB06 (2) EX	excavation	Timberlake et al. 2007	754
ARES Access Roadway	RCB05	excavation	Armour 2007a	763
Campus Road	RCB06 (2) RCB06 WB & EX	evaluation, excavation	Armour 2007a	763
Car Park	RCB06	excavation	Armour 2007a	763
Bridge Casements	RCB06 WB	watching brief	Armour 2007a	763
Soakaway	RCB06 WB	watching brief	Armour 2007a	763
Flood Compensation Scheme	RCB07 EV	evaluation	Collins 2007	779
Building B270	—	evaluation	Timberlake 2009	899
Nursery Building	—	excavation and monitoring	Timberlake 2010	966
Building 503	RCB11 (1)	evaluation and watching brief	Timberlake 2011a	1041
Car Park Extension	RCB11 (2)	evaluation	Collins 2011a	1008
Car Park Extension	RCB11 (2)	excavation and monitoring	Collins & Timberlake 2011	1044
Buildings B702 And B703	RCB11 (3)	evaluation and excavation	Timberlake 2011b	1042
The R&D Land	RCB11 (4)	evaluation	Collins 2011b	1046
Flood Compensation Scheme, Phase 2	RCB12	evaluation	Collins 2012a	1080
The R&D Land	RCB11 (4)	excavation	Collins 2012b	1130
Building B580	RCB13 (1)	evaluation	Collins 2013	1154
Flood Compensation Scheme, Phase 2 (Area B)	RCB13 (2)	monitoring	Timberlake 2012	1194
R&D2	RCB13 (1)	evaluation	Collins 2014	1230
Social Infrastructure Building	RCB15	monitoring	Timberlake 2016	1323
R&D2	RCB17	excavation	Wright forthcoming	—

5. TOPOGRAPHY AND GEOLOGY

5.1.1 BRC is set in the wide shallow valley of the River Granta. The research campus lies to the northeast of the River. To the northeast of the campus, the ground rises to Signal Hill. To the southeast of the river, the land rises to the higher ground around Sawston.

5.1.2 The campus sits on the junction of the Grey Chalk and White chalk bedrock (British Geological Survey Geology of Britain website). Along the base of the valley, this is overlain by River Terrace Gravels (River Terrace Gravels 1 and 2) which extend to around the contour of Babraham Hall. Overlying these glacially-deposited gravels is more recent alluvium close to the River.

5.1.3 Excavations on the site have demonstrated changing geomorphology of the site as a result of natural processes, shifting patterns of land use (e.g. tree clearance, ploughing), and deliberate alteration of various features (e.g. the canalisation of the River Granta near Babraham Hall in sometime in the early 18th century: Victoria County History 1978: 19). The site has seen extensive deposition of both colluvial and fluvial sediments. The River has changed course many times: apart from artificial straightening, historic documents record a change following floods in 1361, and the CAU's evaluations have identified relict channels east of the River's current course.

6. ARCHAEOLOGY OF THE OVERALL CAMPUS

6.1.1 The archaeology is set out below in chronological order and grouped by broad archaeological periods.

6.2 Mesolithic and Neolithic (10000–2350 BC)

6.2.1 From the start of the Holocene (c.11500 BC onwards), the floodplain of the Middle Cam and tributaries, including the River Granta, saw blanket peat formation (Jesus Green Member), and reflects a damp meadow environment with marshy area (Boreham and Leszczynska 2019).

6.2.2 Analysis of pollen from Research and Development Land 1 and 2 shows that, during the Mesolithic, Early Boreal pine-hazel woodland in the valley gave way to Lime-Oak dominated deciduous woodland conditions (Boreham in Collins 2012b; Wright, forthcoming).

6.2.3 Human activity at the BRC during the Mesolithic and Neolithic is represented by over 10,000 worked flints along with smaller quantities of pottery and bone. Worked flints have been recovered widely across the BRC, with major in situ accumulations recovered from buried soils preserved in periglacial hollows (RCB05, Armour 2007a; RCB13, Collins 2012b; RCB17 Wright, forthcoming). Productive hollows identified to date have generally been around the 25m contour, c.200-400m uphill from the prehistoric River Granta, just beyond the edge of the River Terrace gravels. (A hollow identified by the River in RCB12 Area A did not appear to contain in situ flint knapping, although worked flints had been washed into it from uphill)

6.2.4 Much of the material recovered belongs to the earlier Neolithic and comprises mostly working waste. Tools, tool blanks and prepared cores were largely absent, indicating they were removed from the site for use elsewhere. This would suggest that, despite the volume of material, activity was apparently brief and transitory, with people visiting the valley to exploit the abundant flint along the River Terrace Gravels (Wright, forthcoming).

6.3 Bronze Age and Iron Age (2350–800 BC)

6.3.1 Spreads of burnt stone have been found at several locations beside the River Granta (RCB06 EV, Timberlake and Armour 2006; RCB06 WB Bridge Casement, Armour 2007a; Riversides site RCB13(2), Timberlake 2012) They may be burnt mounds in which case, despite the lack of excavated dating evidence, they would most likely date to the Neolithic or Bronze Age. (Timberlake and Armour 2006; Armour 2007a).

6.3.2 A double Beaker burial was excavated in RCB17. The pit contained two crouched skeletons and was accompanied by a rare handled beaker vessel. This appears to be an isolated feature in the landscape, as no other evidence for Beaker activity has been excavated on the Research Campus (Wright forthcoming).

6.3.3 A few other stray finds dating to the Bronze Age have been found, but the general lack of material points to only occasional transitory use of the landscape in this period.

6.3.4 Land snails recovered from Grooved Ware pits and the Beaker burial would suggest clearance of trees from the landscape was underway at the start of the third millennium BC and complete by the start of the Bronze Age (Wright forthcoming).

6.4 Iron Age (c.800 BC–AD 43)

6.4.1 A single Middle Iron Age burial was uncovered in R&D2 (RCB17, Wright forthcoming), truncated by medieval pits (Wright forthcoming). It had been buried in a semi-crouched position in a purpose-dug grave (rather than a reused storage pit, which was a more common practice in the Cambridge area in the Middle Iron Age).

6.4.2 Otherwise, the only other objects dating to the Iron Age found within the BRC have been stray finds, and like the Bronze Age, points to only occasional transitory use of the landscape in this period.

6.5 Roman (AD 43–410)

6.5.1 Extensive Roman remains have been found at the BRC. A large Romano-British settlement was first established close to the time of the Roman Conquest (AD 43) and remained occupied through to the end of the Roman period (AD 410). The bulk of this settlement was centred around the ARES Building (excavations ARC05, Armour 2007b; RCB 11(4) EX, Collins 2011b; RCB 05 and RCB06 EX, Armour 2007a) with activity radiating out from it.

6.5.2 The settlement began with a large rectangular enclosure, surrounded by a field system of ditched enclosures. This subsequently expanded, peaking around AD 200–300, with the addition of house plots, and a new, expanded field system. Later, a substantial ditch was added around the boundary of the settlement, clearly defining its extent on its northern, eastern and western edges.

6.5.3 The settlement appears to have gone into a period of decline before peaking once again in the fourth century AD, and may have continued in use until the very end of the Roman period at the start of the fifth century AD. Although most of the earlier features were truncated by later Roman activity, the addition of a new enclosure by the River Granta, along with large areas of middening and quarrying indicates a thriving settlement at the end of the Roman period.

6.5.4 The excavations round the ARES building produced large quantities of building material, including wall and floor plaster, suggesting that a high-status building once stood in this part of the BRC. The quantity of artefacts, along with the high quality of many finds, suggests that the settlement was wealthier than most other rural settlements in Cambridgeshire. This wealth might have been derived from its proximity to the Granta, or the Via Devana and Icknield Way nearby, or the town of Great Chesterford 7.5km to the south and Cambridge 11km to the northwest.

6.5.5 Along the eastern edge of the settlement, excavations uncovered a road, which persisted into the Middle Ages (RCB06 EX, Armour 2007a). Immediately east of the road, a substantial Roman cemetery was excavated in 2006, close to the Campus Access Road (RCB06(2), Timberlake et al. 2007). It appeared to have begun with a Roman barrow built in the mid-first to second century AD, from which eight cremation burials were excavated. The barrow seems to have been the focus of later inhumation burials, with 42 individuals in 35 graves recovered. The cemetery may have extended beyond the excavated area. A small number of other roughly contemporary burials were excavated on the ARES site (ARC05 (2) EX, Armour 2007b) and Carpark Extension (RCB11(2), Collins and Timberlake 2011)

6.5.6 Outside the settlement area, evaluation trenches in the northwest of the Research Campus, as part of the Flood Compensation Scheme (RAC12 A&B: Collins 2012a, Timberlake 2012) uncovered further Romano-British activity—primarily ditches—running parallel to the River Granta. Roman era ditches have also been found close to the river on the Riverside site (RCB06 EV, Timberlake and Armour 2006), Forum and Building 540 (Regan 1995), and under Buildings B702 and B703 (RCB11(3), Timberlake 2011b)—although much of this part of the BRC has been heavily disturbed by latter landscaping around with Babraham Hall.

6.5.7 A substantial accumulation of colluvium loosely dated to the Roman-Saxon period, attests to widespread cultivation at this time (Wright, forthcoming).

6.6 Anglo-Saxon (AD 410–1066)

6.6.1 The Domesday Book of 1086 records Babraham as a settlement of 37 households, making it amongst of the largest in Cambridgeshire. The Domesday Book records no less than ten separate owners holding land in the parish. There is, however, only limited archaeological evidence for the Anglo-Saxon period on the BRC. One Early–Middle Saxon sunken feature building (SFB) was uncovered ahead of construction of the Minerva Building (Wills 2004). That excavation produced potsherds, animal bone fragments, a fine bone spindle whorl and the head of an early Saxon square-headed brooch. A second SFB was uncovered in association with a cluster of pits in the R&D Land excavations (Collins and Timberlake 2011). A further eight SFBs were also exposed in RCB17 (Wright forthcoming).

6.6.2 Settlement around the Minerva site continued into the Middle Saxon period, and eight pits containing material from the tenth and eleventh centuries were also found, suggesting a settlement persisted in the area throughout the Saxon period. However, very little else has been found on the rest of the BRC, suggesting Anglo-Saxon activity was probably concentred between St peter's Church and where the modern village is located.

6.7 Medieval (AD 1066–1540)

6.7.1 The earliest parts of St Peter's Church date to the 12th century, with most of the remainder built between the 13th and 16th centuries. Most medieval remains excavated within the BRC are located close to the river, and the bulk are related to agricultural activity.

6.7.2 Excavations on the Carpark Extension, close to Babraham Hall (RCB11(2), Collins and Timberlake 2011) produced evidence for medieval pits, animal burials, wells and a boundary ditch dated to between the 12th and 14th centuries.

6.7.3 Recent excavation on the R&D2 Land (RCB17; Wright forthcoming), uncovered a series of pits close to the river, along with ditches suggestive of paddocks or field enclosures.

6.7.4 Medieval disturbance was recorded on the Roman cemetery site and pointed to medieval cultivation or digging of postholes or rubbish pits in the area (RCB06 (2) EX; Timberlake *et al.* 2007).

6.7.5 Metal detecting during excavations has recovered finds of medieval metalwork across the Campus.

6.7.6 The modest assemblage of finds and the limited number of features found suggests medieval activity was concentrated between the church and toward the modern village of Babraham. Much of the BRC appears to have been peripheral to medieval settlement, and used primarily for cultivation fields and animal pasture.

6.8 Post-medieval (AD 1540 to 1900)

6.8.1 The chief post-medieval feature of the Research Campus is Babraham Hall, along with its ancillary buildings to the west and the landscaped park in which they were all set. This activity is reflected in the archaeological finds. Excavations close to the Hall (car park extension, Butler 2004; Building B270, Timberlake 2009) uncovered evidence for trackways and extensive landscaping. Further trackways, including a possible hollow-way, boundary ditches and quarrying activity were recovered in the PDA particularly close to the river (RCB13, Collins 2012b). Investigations to the west of the Hall have found many areas heavily truncated, as part of the landscaping, removing much of the potential for archaeological preservation in this part of the campus. s

7. ASSESSMENT OF ARCHAEOLOGICAL POTENTIAL

7.1.1 For the purpose of this assessment, the BRC has been divided into seven zones (Figure 4):

- Northwest 1 (R&D Building 1, Building 2 and associated carparks and landscaping)
- Northwest 2 (Building 960 and associated carparks and landscaping)
- Central 1 (B405/ B406 / B623/ B624 / B650 Replacement)
- Central 2 (B522 & B530 replacement and B501 plot)
- Southwest (B815/B816/B840/B847 replacement)
- Southeast (B101/B105/B106/B107 replacement and landscaping)
- East (residential housing, units, student flats, shop, landscaping)

7.2 Northwest 1 Zone

Figure 4

7.2.1 There has been no archaeological evaluation or excavation within the footprint of this development zone. Evaluation along the access road on the northeastern boundary (RCB05, Armour 2005) identified no archaeological features, and bucket sampling identified only a low density of abraded post-medieval ceramic building material (consistent with debris scattered when manuring fields).

7.2.2 To the southwest of the zone, on the flood compensation scheme, evaluation (RCB07 Collins 2007) and subsequent excavation (RCB12 Area A, Collins 2012a; RCB13(2) Area B, Timberlake 2012) identified:

- A palaeochannel, presumably a former course of the River Granta
- one large Roman ditch dug parallel to the river, and one smaller post-medieval ditch parallel to it but c.20m higher upslope.

7.2.3 Immediately to the southeast of the Northwest 1 zone, there was evaluation (RCB13(1), Collins 2014), followed by excavation (RCB17; Wright forthcoming). The evaluation identified periglacial silt hollows on the higher parts of the site, where soils overlay the chalk bedrock. Excavation of the southern part of the evaluation area demonstrated that Roman settlement activity ceased c.250m to the southeast. There was also a light scattering of Anglo-Saxon material, including eight SFBs. The main activity close to the Northwest 1 area was a large, undated boundary ditch, with two large rectangular enclosures. The boundary ditch is likely to extend underneath the carpark in the Northwest 1 zone.

7.2.4 Taken together, there is high potential for further periglacial hollows preserving Mesolithic and Neolithic material to be present in the Northwest 1 area. There is low potential for preserved archaeology in all later periods, beyond the large field boundary extending under the proposed carpark, and potentially occasional minor field boundaries and pits dating to the Roman and post-medieval periods.

7.3 Northwest 2 Zone

Figure 5

7.3.1 The Northwest 2 zone has been evaluated (RCB 13 (1), Collins 2014), and the central and southwestern portions subsequently excavated (RCB17; Wright forthcoming). Further to the northwest were investigations on the flood protection areas (RCB07 EV, Collins 2007; RCB12 Areas A & B, Collins 2012a; RCB 13(2), Timberlake 2102)

7.3.2 Both evaluation and excavation identified periglacial hollows containing buried soils, preserving Mesolithic and Neolithic material (mostly worked flint debris). As noted in 6.2.3, these assemblages tend to be upslope on the BRC, c.200 – 400m from the current river. They appear less likely to be found on the lower, unexcavated parts of the Northwest 2 zone, where the chalk is overlain by River Terrace gravel deposits.

7.3.3 The investigation of Area B in the flood protection area (RCB13(2), Timberlake 2012) identified a potential burnt mound, which would date broadly to the Neolithic or Bronze Age. Like the others also identified upstream by the Granta (Bridge Casement RCB06 WB, Armour 2007a), such features are usually found within a short distance of water. More are therefore unlikely to be found upslope in the Northwest 2 zone.

7.3.4 Evaluation on the eastern part of zone identified the western edge of the Roman settlement. This may extend under the proposed access road and eastern end of the carpark of the Northwest 2 area. Given the sharp drop-off in Roman activity beyond the settlement boundary ditch seen elsewhere on the BRC, it is unlikely that significant Roman activity will extend further into the Northwest 2 zone, and any features are likely to be of only low significance (e.g., occasional pits or minor ditches).

7.3.5 The excavation of flood compensation scheme identified medieval enclosures, ditches and a cluster or pits close to the river—the last may represent either quarrying or agricultural activity. Metal finds from the 12th–14th centuries in the flood protection area probably represent evidence for field manuring, spreading material collected in Babarham village to the southeast. While similar medieval activity probably extends into the unexcavated portion of the Northwest 2 zone, any features are likely to be of only low archaeological significance.

7.3.6 Aerial photographs show an L-shaped cropmark entering the Northwest 2 area from the east, then turning to the river. Its status is unclear: it may be a post-medieval trackway (although none is shown on any maps), but it is more likely to be a field boundary or for drainage.

7.3.7 Taken together, this evidence suggests:
- moderate to low potential for significant Mesolithic or Neolithic assemblages to be preserved in buried soils in the Northwest 2 Zone
- high potential for the edge of Roman settlement to be preserved in the eastern, unexcavated part of the Northwest 2 Zone
- low potential for significant archaeological remains in all other periods.

7.4 Central 1 Zone

Figure 6

7.4.1 There have been numerous major open areas excavations to the east, west and north of the proposed replacements to Building B405, B406, B623, B624 and B650 in the Central 1 Zone:
- immediately to the northwest, ARES site (ARC05 EV and EX, Swaysland 2005, Armour 2007b)
- further to the north and northwest, the R&D land (RCB11(4) EV and EX, Collins 2011b; RCB2013 Colins 2012b)
- to the northeast, the Campus Access Road (RCB06 WB, Armour 2007a) and ARES Access Road (RCB05, Armour 2007a)
- to the east, Carpark Extensions and the Roman Cemetery site (RCB06(2) EX, RCB11(2), Timberlake et al. 2007, Collins 2011a, Collins & Timberlake 2011).

7.4.2 While there is some modern disturbance and truncation caused by building foundations (ARC05 EX), nonetheless extensive archaeology had been preserved in all these areas.

7.4.3 The earliest phases comprised large areas of buried soils trapped in hollows within the underlying chalk bedrock. As discussed in Section 6.2, these buried soils preserved assemblages of Mesolithic and Neolithic worked flint, as well as small amounts of pottery. The hollows in the chalk lie slightly uphill from the 1st and 2nd Terrace Deposits (which are presumed to be the source of the flint).

7.4.4 Across all of the excavated areas is dense Roman settlement, described in Section 6.5. The northern, eastern and western boundaries are clearly delimited by a large ditch – the southern edge of the settlement is unclear however. Excavation of the Campus Access Road (RCB06 EX), east of the of the settlement uncovered a Roman-era barrow and inhumation cemetery. Excavations of the Carpark Extension (RCB11(2), Collins and Timberlake 2011), immediately east of the proposed new building uncovered one further burial. There were also two early Roman human burials recovered on the ARES site (ARC05 EX; Armour2007b).

7.4.5 A possible Late Anglo-Saxon building was excavated on the Carpark Extension (RCB11(2)). After this time, activity in the Central 1 Zone appears to have been largely given over to agricultural activity, with 12th-15th century ditches forming paddocks or enclosures, along with pits, wells, quarry pits and livestock burials excavated.

7.4.6 Evidence of postmedieval activity was limited in Central 1 Zone. A metalled road uncovered running roughly north-south in the Carpark Extension (RCB11(2) Collins 2011a) was provisionally dated to the 17th century. Another possible post medieval trackway may run west from the Hall through the ARES and R&D land (corresponding to cropmarks). Excavations have also identified a modest number of post-medieval pits. Most of the excavated areas appear to have escaped truncation related to landscaping around Babrham hall (which was pronounced in the Central 2 Zone immediately to the south).

7.4.7 Combining these results:

- As the location of the proposed new buildings lies on the edge of the River Terrace Gravels, there are unlikely to be chalk hollows in which Mesolithic/Neolithic buried soils might be preserved. The gravels themselves, however, may have been exploited for flint to make tools. The potential for early prehistoric activity in Central 1 Zone is therefore rated as moderate to low.
- The potential for substantial Roman activity is rated as very high. The footprint of the proposed buildings probably lies within the southern boundary of the Roman settlement.
- The potential for Anglo-Saxon, medieval and post-medieval activity is rated moderate.

7.5 Central 2 Zone

Figure 7

7.5.1 The Central 2 Zone lies in the midst of a several evaluation trenches and 'keyhole' excavations.

7.5.2 Immediately east of the B501 plot, monitoring of groundworks before construction of the Social Infrastructure Building (RCB15, Timberlake 2016) identified no archaeology. Truncation, along with deep foundations and modern made ground in this area, had combined to remove 0.75 – 1.0m of the original topsoil and subsoil. There was also no evidence for redeposition of artefacts, suggesting either that this part of the site was unused during the Roman, Anglo-Saxon and Medieval periods, or else that the soil had been completely replaced during landscaping. Immediately to the west of the B501 plot, on the Building 580 site (RCB13(1), Collins 2013), trial trenching also identified significant modern truncation, but a single Roman-era ditch and several medieval ditches were found, along with two Victorian-era pits.

7.5.3 To the southeast, and in the footprint of the proposed new Buildings B522 & B530, excavations for the Computer Centre (Building B530; Robinson 1995), much of the B soil

horizon appeared to be truncated by 19th landscaping around Babraham Hall, and only a few post-medieval features (including as a pebble surface) survived.

7.5.4 To the west of the proposed B522 & B530, evaluation for the Forum and Building 540 sites (Regan 1995) identified:

- Roman gravel extraction pits
- A medieval 'hard' surface beside the river, for loading boats
- former channels of the river containing post-medieval material – presumably the product of straightening the river and landscaping of the grounds.

7.5.5 Directly to the north of the proposed B522 & B530, evaluation and excavation of Buildings B702 and B703 (RCB11(3); Timberlake 2011b) uncovered a large ditch running parallel to the river, dating to the mid-1st to 2nd century AD. This may be related to other Roman ditches running parallel to the river, and mark a boundary of the floodplain at the time. There was also flint metalled Roman road orientated ENE–WSW, along with flanking roadside ditches. This appears to be slightly later than the boundary ditch, and presumably lead to a crossing of the River Granta. The road had been quarried in the post-medieval period to surface a wagon road.

7.5.6 Further west and north, on the Riverside site (RCB06; Armour & Timberlake 2006) evaluation recovered:

- Remains of a possible Neolithic/Early Bronze Age burnt mound by a relict channel of the River Granta, along with numerous worked flints, indicating exploitation of the river gravels for flint
- Roman ditches and a daub-filled beamslot presumably associated with a wooden building. A gravel causeway – more or less parallel to the flint surfaced road – also ran toward the river, until the area was submerged and abandoned in the 2nd century AD. There was, however, no evidence for a continuation northward of the Roman road found on the RCB11(3) excavation.
- There was evidence of recutting one of the river channels, possibly in an attempt to control flooding. This may have commenced in the Roman period, before being replaced in the medieval and post-medieval periods.
- A group of banks and ditches was found which appear to correspond to an estate boundary shown on historic maps of Babraham Hall.

7.5.7 Combining the evidence from these investigations, it seems likely that any archaeology will have been severely truncated in Plot 501 through landscaping works, and the potential for archaeological finds there is rated as low for all periods. Likewise, the level of truncation in The Forum (Building 530) also suggests low potential for finds in all periods. Closer to the river, in the footprint of the current Building B522, there is better potential for survival of Roman and medieval remains relating to the use of the river (e.g. Roman gravel extraction and ditches, and further evidence of medieval gravel 'hards') along with remains of former river channels – although there remains the strong possibility this material may all have been truncated by post-medieval landscaping.

7.6 Southwest Zone

Figure 8

7.6.1 The only intrusive investigations south of the River Granta have been a watching brief conducted during construction of bridge casements (RCB06 WB; Armour 2007a). This

identified two Roman-era ditches containing residual fire-cracked flint – possibly indicating a burnt mount close by the river.

7.6.2 A 2003 review of cropmarks visible in aerial photographs (Palmer in Hall 2003) show field boundaries and a possible trackway which will intersect with redeveloped building in the Southwest area.

7.6.3 The limited evidence available for this area, other than the undated cropmarks, prevents any detailed assessment of archaeological potential.

7.7 Southeast Zone

Figure 9

7.7.1 Around the Southeast area there has been one evaluation (Building B270, Timberlake 2009) and one combined evaluation/excavation (Minerva Building, Wills 2004).

7.7.2 The B270 evaluation reported very shallow soils over a chalk outcrop and gravels. Archaeological finds were uncommon. Features recorded included shallow post-medieval gullies, possibly associated with hedge planting, along with possible planting pits and a shallow well – all presumably associated with the gardens and landscaping around of Babraham Hall. A north-south aligned postmedieval road was also identified, overlying circular pits (one was lined with 17th/18th century bricks). A series of four eroded hollow ways were identified, running in parallel NNE-SSW toward the river. These coincided with a hollow in the field to the north identified in an aerial photograph from 1953. The hollow ways were undated – although its survival as a visible feature in photographs suggests a medieval date rather than earlier.

7.7.3 The excavation for the Minerva Building to the southwest (Wills 2004) uncovered a long sequence of activity:

- Two ditches running parallel to the river, tentatively identified as Roman
- A single Anglo-Saxon sunken feature building. Finds included a gilded great square-headed brooch, dating the feature to the 5th or 6th centuries AD.
- A possible medieval 'hard' for launching boats, dating to the 10th-11th centuries, found beside a possible relict river channel.
- Pits and gullies dating from between the 8th and 11th centuries
- Diches forming part of a medieval field system and enclosures. Finds recovered were consistent with manuring (rather than nearby medieval settlement)
- A terrace dating to the 17th century, presumably associated with the formal gardens and landscaping of Babraham Hall
- Later landscaping associated with the gardens, including paths and planting trenches.

7.7.4 Taken together, this evidence suggests low potential for significant prehistoric or Roman remains in the Southeast Zone. The presence of a single SFB suggests low-to-moderate potential for further Anglo-Saxon finds. There is moderate potential for medieval material, but it is likely to lie well outside of settlement, and be related to agricultural activity. There is high potential for recovering further remains of the formal gardens and landscaping associated with the grounds of Babraham Hall.

7.8 East Zone

Figure 10

7.8.1 The only intrusive investigation in the East Zone is a small excavation in the footprint of the Nursery (Timberlake 2010). This found a layer of colluvium overlaying chalk. Two ditches were encountered. Curiously, despite examples of flint working around hollows in the chalk elsewhere on the site, the colluvium did not contain worked flints, suggesting such activity was localised, or may have been limited to areas immediately beside the River Terrace gravels.

7.8.2 The line of the hollow way identified to the south (Building B270, Timberlake 2009) would run through the East Zone (See Timberlake 2010 Fig 3).

7.8.3 The East Zone is some 300m northeast of the Roman settlement, so significant Roman remains would appear unlikely. Despite the lack of worked flints in the Nursery site, it is possible buried soils are preserved in hollows beneath colluvium elsewhere in the East area. With such limited information available for this area, it is not possible to provide a firm assessment of the potential for archaeological remains.

8. IMPACT OF DEVELOPMENT AND MITIGATION

8.1.1 All the archaeological remains described above are 'undesignated heritage assets' in the meaning of the National Planning Policy Framework (February 2019). Based on the extensive archaeological investigations carried out on the site, there are unlikely to be further assets of substantially higher significance than those already found and excavated.

8.1.2 The main potential impact of development within the BRC lies primarily within the footprint of proposed new buildings along with any buried services. Intrusive groundworks and construction activity will lead to the truncation or complete loss any intact archaeology in these areas. Although carparks and landscaping do not usually involve intrusive groundworks to the same depth as buildings, they can nonetheless impact buried archaeology where the overlying soil is thin or has been removed by previous landscaping (as was noted in the Carpark Extension excavations, RCB11(2)). Once construction and landscaping have been completed, any on-going impact on the archaeological resource is likely to be minimal.

8.1.3 Decisions about treatment of archaeological remains – whether to preserve in situ or mitigate ahead of development – are the responsibility of the Cambridgeshire Historic Environment Team (CHET) acting as archaeological advisors to the Local Planning Authority, the South Cambridgeshire District Council. However, based on the present assessment of archaeological potential and CHET's past approaches to the archaeology within the BRC, there is no expectation that any future finds would have a significance which would warrant their preservation in situ or constrain potential future allocation and development of the Campus.

8.1.4 CHET's approach to the site to date has been to mitigate development through a programme of archaeological excavation and recording. This has involved a two-stage process of (a) trenching in development areas to evaluate archaeological potential, followed by (b) open area archaeological excavation of areas deemed significant by CHET. Open area excavations also provide the opportunity to engage members of the local community, so that they can see the past of the area first hand. Excavation would then be followed by

specialist analysis, including environment analysis and specialist dating as required, leading to formal publication of findings.

8.1.5 In conclusion, development of the nature presented in the Illustrative Master Plan could be undertaken in accordance with both National and Local Planning Policy. This assessment has not identified archaeological assets which might prevent the potential future allocation and development of the Campus.

9. APPENDIX 1: PLANNING POLICY

9.1 Ancient Monuments and Archaeological Areas Act 1979

9.1.1 The Ancient Monuments and Archaeological Areas Act (1979) allows an archaeological site or historic building of national of importance to be designated as a Scheduled Monument, and registered with the Department of Culture, Media and Sport (DCMS). Any development that could affect a Scheduled Monument or its setting requires Scheduled Monument Consent. Advice on Scheduled Monument Consent is provided to DCMS by Historic England, which also provides advice on the management of Scheduled Monuments.

9.2 National Planning Policy

9.2.1 The National Planning Policy Framework (February 2019) sets out the Government's planning policies on the historic environment.

> *189. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.*
>
> *190. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.*

9.3 Local Planning Policy

9.3.1 The South Cambridgeshire Local Plan includes the following policy on heritage, including archaeology:

> *Policy NH/14: Heritage Assets*
>
> *1. Development proposals will be supported when:*
>
> *a. They sustain and enhance the special character and distinctiveness of the district's historic environment including its villages and countryside and its building traditions and details;*
> *b. They create new high quality environments with a strong sense of place by responding to local heritage character including in innovatory ways.*
>
> *2. Development proposals will be supported when they sustain and enhance the significance of heritage assets, including their settings, as appropriate to their significance and in accordance with the National Planning Policy Framework, particularly:*
>
> *c. Designated heritage assets, i.e. listed buildings, conservation areas, scheduled monuments, registered parks and gardens; d. Non-designated heritage assets*

including those identified in conservation area appraisals, through the development process and through further supplementary planning documents;

e. The wider historic landscape of South Cambridgeshire including landscape and settlement patterns;

f. Designed and other landscapes including historic parks and gardens, churchyards, village greens and public parks;

g. Historic places;

h. Archaeological remains of all periods from the earliest human habitation to modern times.

6.43 A core planning principle of the NPPF (2012) is to conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations. 6.44 Heritage assets are buildings, monuments, sites, places, areas or landscapes which are significant because of their historic interest. They are irreplaceable but can be vulnerable to neglect or unsympathetic change.

6.45 The district's character is largely shaped by its heritage, including that of its much loved historic villages and countryside. Villages stand out in the landscape, with a variety of forms which respond to their locations such as at the edge of Fens or on hilltops or valley sides. Agricultural and food processing buildings are characteristic, and the varied geology is reflected in traditional materials such as brick, tile, clunch and clay batt. 6.46 Challenges facing the historic environment include preserving the district's special rural character and scale of building, the degree of change generated by prosperity, the impact of intensive agriculture on historic landscapes and archaeology, the need to find new uses for traditional farm, food-processing and industrial buildings, and securing the future of unoccupied buildings such as historic garden pavilions. Understanding, conserving and enhancing the historic environment will be an essential part of master planning the growth planned within the district helping to create a sense of place.

6.47 The distinctive character and quality of life given by the historic environment of the area has been key to its economic success. Many important Hi-Tech and Bio-Tech organisations and businesses are based in large historic houses and their parkland settings. Strategic management plans are an important tool for achieving successful growth. Historic farm and industrial buildings can provide a range of size and type of premises for smaller businesses. Retaining historic pubs in use is important for village life as well as conservation.

6.48 Heritage is an essential component of plans from a village or neighbourhood level to that of the district. A full understanding of the historic environment, including traditional materials as used in vernacular buildings, is needed to inform plans, identify opportunities for conservation and enhancement, and to be able to reinforce local identity and create a sense of place.

6.49 The conservation of heritage assets does not prevent all change but requires it to be managed in a way which does not compromise heritage significance and exploits opportunities for enhancement. Section 12 of the NPPF (2012) provides guidance regarding the consideration of development proposals on heritage assets. In summary the more important the asset, the greater the weight should be applied to its conservation. Where development would lead to the substantial harm or total loss of significance of a designated asset, the local planning authority should refuse consent unless demonstrated it is necessary to achieve substantial public benefit that outweigh the harm or loss. Proposals leading to less than substantial harm to the significance should also be weighed against public benefits of the proposal. For proposals affecting non-designated assets a balanced judgement will be made, having regard to the scale of any harm or loss and the significance of the heritage asset.

6.50 Non-designated heritage assets of archaeological interest which are of equal significance to scheduled monuments will be considered in the same way as designated heritage assets.

6.51 Finding viable uses which sustain rather than compromise the significance of historic buildings is fundamental to conservation (though not possible for all buildings). The need to secure the future of buildings may require a flexible approach to other policies or enabling development, Section 106 agreements and other planning contributions. Buildings at risk will be monitored and action taken to secure their repair and encourage sustaining uses. The Council is committed to ensuring the future viable uses of assets within the district.

6.52 Decisions on development proposals must be based on a good understanding of how the proposals will affect heritage. Applicants must describe the significance of any heritage assets, including any contribution from their setting. The level of detail must reflect the importance of the asset and clearly identify the potential impact of the proposal.

6.53 Where development is proposed for a site which includes or has the potential to include heritage assets with archaeological interest, developers must submit an appropriate desk-based assessment and, where necessary, a field evaluation.

6.54 Prospective developers should contact the County Council's Historic Environment Team for information to establish whether there is known or potential archaeological interest and the need for investigation and evaluation at an early stage.

6.55 Different levels of information are available on different types of heritage asset and parts of the district. For some development proposals, more research will be required. It will always be important to investigate sites and their context on the ground.

6.56 The Cambridgeshire Historic Environment Record, maintained by the County Council, provides information on heritage assets, including non-designated and designated heritage assets with archaeological interest. Other information on heritage assets and local heritage character is available on national websites, from the County Council's Historic Environment Team, and in District Council Conservation Area Appraisals and SPDs. The Council's web site and officers will give advice on sources of information. 6.57 Where development resulting in the loss of a heritage asset is permitted, the developer will be required to record and advance the understanding of the heritage asset to be lost. The results of assessments and investigations which are required and collected as part of development management are of public interest and will be made accessible, normally through the Cambridgeshire Historic Environment Record.

6.58 The Council encourages people to be involved with and enjoy local heritage and, where appropriate, developers will be required to support public understanding and engagement, and interpretation.

10. REFERENCES

ALGAO East of England (2021) East of England Regional Research Framework. https://researchframeworks.org/eoe/

Armour, N., 2006. Babraham Research Centre Access Roadway. An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 725.

Armour, N., 2007a. Archaeological Investigations at Babraham Research Campus, Cambridgeshire 2005-2007. Unpublished Cambridge Archaeological Unit report no. 763.

Armour, N., 2007b. The ARES Site, Babraham Research Campus, Cambridgeshire: An Archaeological Excavation. Unpublished Cambridge Archaeological Unit report no. 752.

Boreham, S. and Leszczynska, K. 2019. Geology of the Middle Cam Valley, Cambridgeshire UK. *Quaternary* 2: 24. (https://doi.org/10.3390/quat2030024)

British Geological Survey. Geology of Britain website. http://mapapps.bgs.ac.uk/geologyofbritain/home.html? Accessed 13 July 2021.

Butcher, D.W. 1954. *A short history of Babraham Hall and Estate*. Cambridge.

Butler, R., 1994. Archaeological Investigations at Babraham Hall Institute, Babraham, Cambridgeshire. Unpublished Cambridge Archaeological Unit report no. 99.

Collins, M. and Timberlake, S., 2011. Babraham Research Campus. The Car Park Extension: An Open Area Excavation Monitoring. Excavation and recording Exercise. Interim Assessment. Unpublished Cambridge Archaeological Unit report no. 1044.

Collins, M., 2007. Flood Compensation Scheme, Babraham Research Institute, Cambridgeshire. An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 779.

Collins, M., 2011a. Babraham Research Campus: Car Park Extension. An Evaluation Interim Assessment. Unpublished Cambridge Archaeological Unit report no. 1008

Collins, M., 2011b. Babraham Research Campus: The Research and Development Land. An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 1046.

Collins, M., 2012a. Babraham Research Campus: Flood Compensation Scheme, Phase 2. An Archaeological Evaluation Assessment. Unpublished Cambridge Archaeological Unit report no. 1080.

Collins, M., 2012b. Babraham Research Campus: The R&D Land. An Archaeological Excavation Assessment. Unpublished Cambridge Archaeological Unit report no. 1130.

Collins, M., 2013. Babraham Research Campus: Building B580. An Archaeological Evaluation Assessment. Unpublished Cambridge Archaeological Unit report no. 1154

Collins, M., 2014. Babraham Research Campus, Cambridge: R and D 2. An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 1230

Department of Environment, Food and Rural Affairs. *Magic* http://www.magic.gov.uk/MagicMap.aspx. Accessed 13 July 2021.

Hall, A., 2003. An Archaeological Desk Based Assessment of the Babraham Research Campus, Babraham, Cambridgeshire. Unpublished Cambridge Archaeological Unit report no. 567.

Historic England Listed Building database. https://historicengland.org.uk/listing/the-list/ Accessed 13 July 2021.

LandIS (Cranfield University). www.landis.org.uk. Accessed 13 July 2021.

Ministry of Housing, Communities and Local Government (2019). National Planning Policy Framework.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

Palmer, R. 2003. Babraham Hall, Area TL510505, Cambridgeshire. Aera; Photographic Appraisal. Air Photo Services Report 2003/12. In Hall 2003 (Appendix 1)

Regan, R., 1995. Archaeological Investigations at Babraham Hall Institute, Babraham, Cambridgeshire. Unpublished Cambridge Archaeological Unit report no. 155.

Robinson, M., 1995. Archaeological Investigations at Babraham Hall, Babraham, Cambridgeshire. Unpublished Cambridge Archaeological Unit report no. 123.

Swaysland, C., 2005. ARES Project Site, MRC, Babraham Institute, Cambridgeshire: An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 691.

Timberlake, S. and Armour, N. 2006. The Riverside Site. Babraham Research Institute, Cambridgeshire. An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 749.

Timberlake, S., 2009. Babraham Research Campus, Proposed Building B270. An Archaeological Evaluation. Unpublished Cambridge Archaeological Unit report no. 899.

Timberlake, S., 2010. Babraham Research Campus, Nursery Building. Archaeological Monitoring and Excavation. Unpublished Cambridge Archaeological Unit report no. 966

Timberlake, S., 2011a. Babraham Research Campus: Proposed Building B570. An Archaeological Trench Evaluation and Watching Brief. Unpublished Cambridge Archaeological Unit report no. 1041

Timberlake, S., 2011b. Babraham Research Campus, Proposed Stores Goods-In Yard and B562 Storage. An Archaeological Trench Evaluation and Excavation. Unpublished Cambridge Archaeological Unit report no. 1042.

Timberlake, S., 2012. Babraham Research Campus: Flood Compensation Scheme Phase 2. Archaeological Monitoring & Recording. Unpublished Cambridge Archaeological Unit report no. 1194.

Timberlake, S., 2016. Social Infrastructure Building, Babraham Research Campus, Cambridge. Archaeological Evaluation and Monitoring. Unpublished Cambridge Archaeological Unit report no. 1323.

Timberlake, S., Dodwell, N. and Armour, N., 2007. Roman Cemetery, The Babraham Institute, Cambridgeshire: An Archaeological Excavation. Unpublished Cambridge Archaeological Unit report no. 754.

UK Soils Observatory website (British Geological Survey) http://mapapps2.bgs.ac.uk/ukso/home.html . Accessed 13 July 2021.

Victoria County History, 1978. *Cambridgeshire* (Vol. VI). Cambridge.

Wills, J., 2004. Babraham Research Campus, Babraham, Cambridgeshire: An Archaeological Excavation. Unpublished Cambridge Archaeological Unit report no. 597.

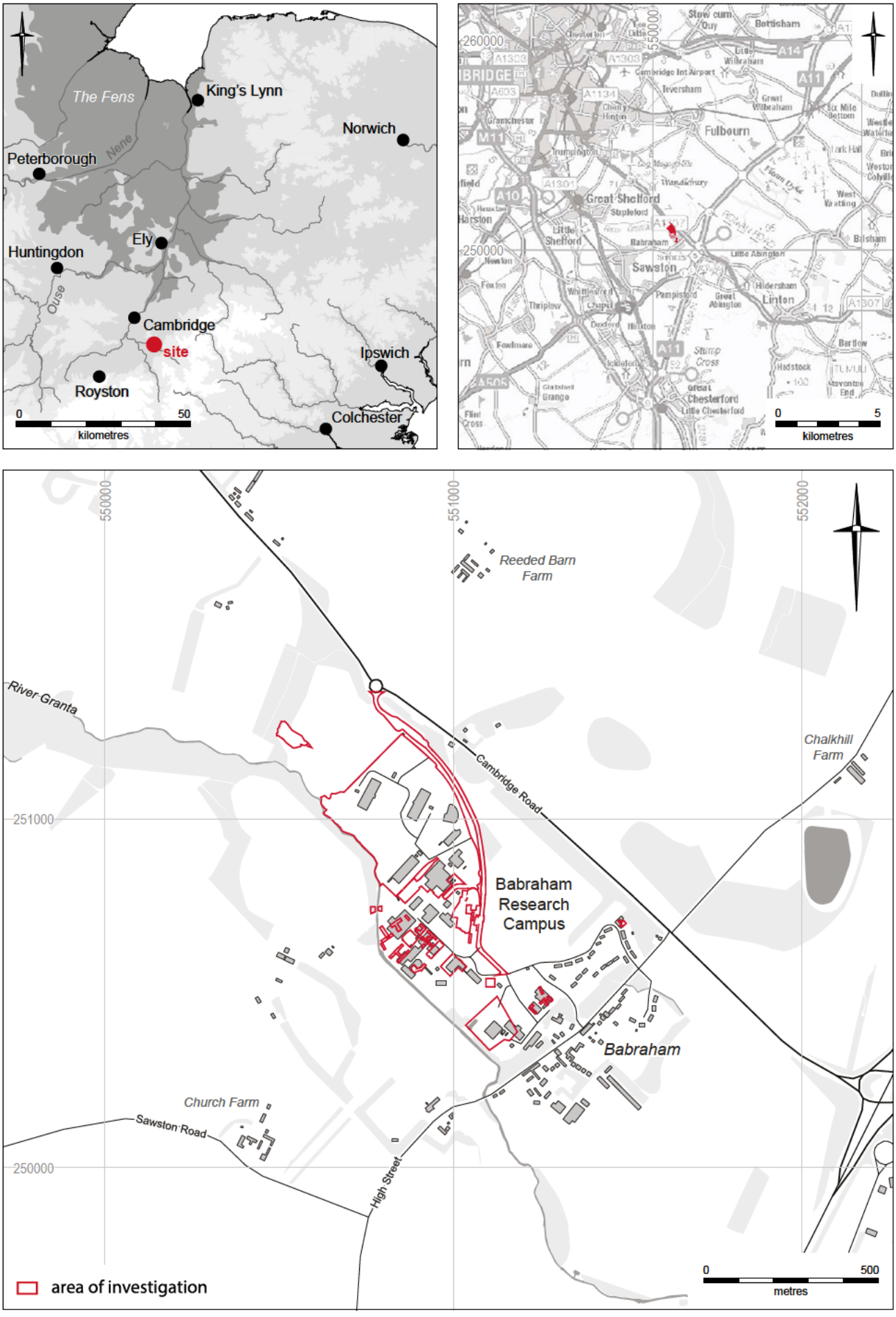

Figure 1. Site location

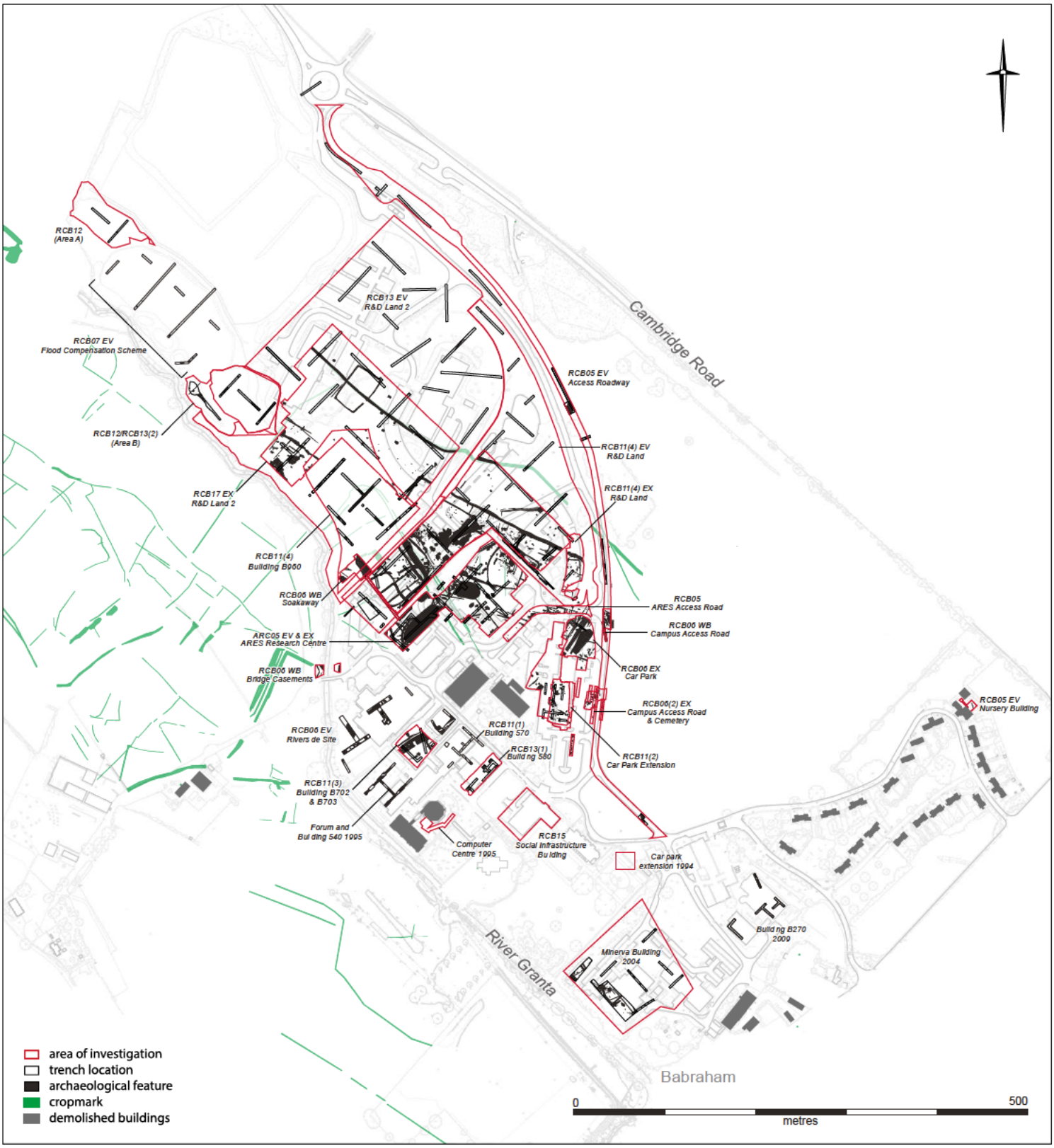

Figure 2. Babraham Research Campus showing buildings to be demolished, with archaeological investigations overlain

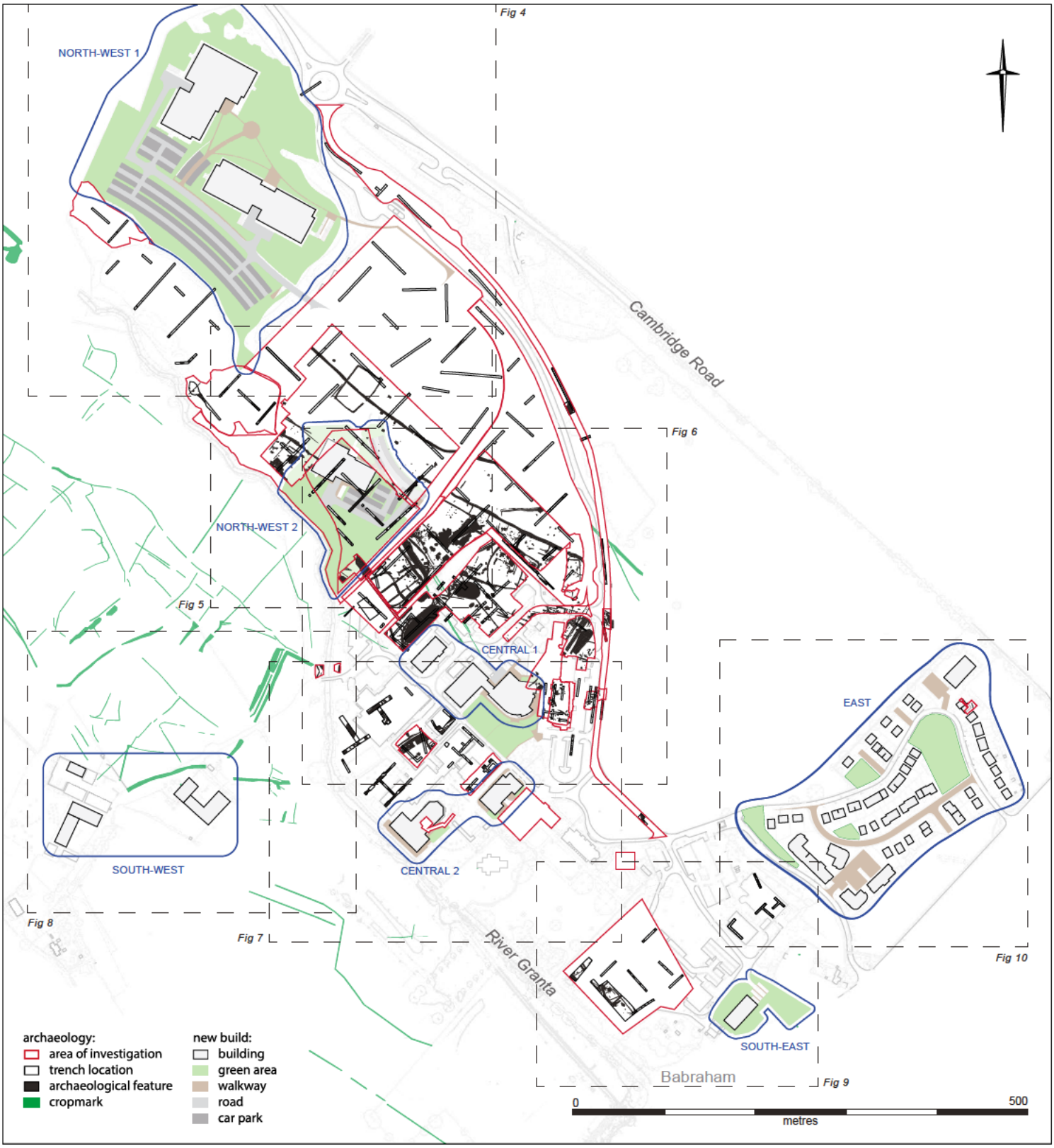

Figure 3. Babraham Research Campus showing areas to be developed, with archaeological investigations overlain

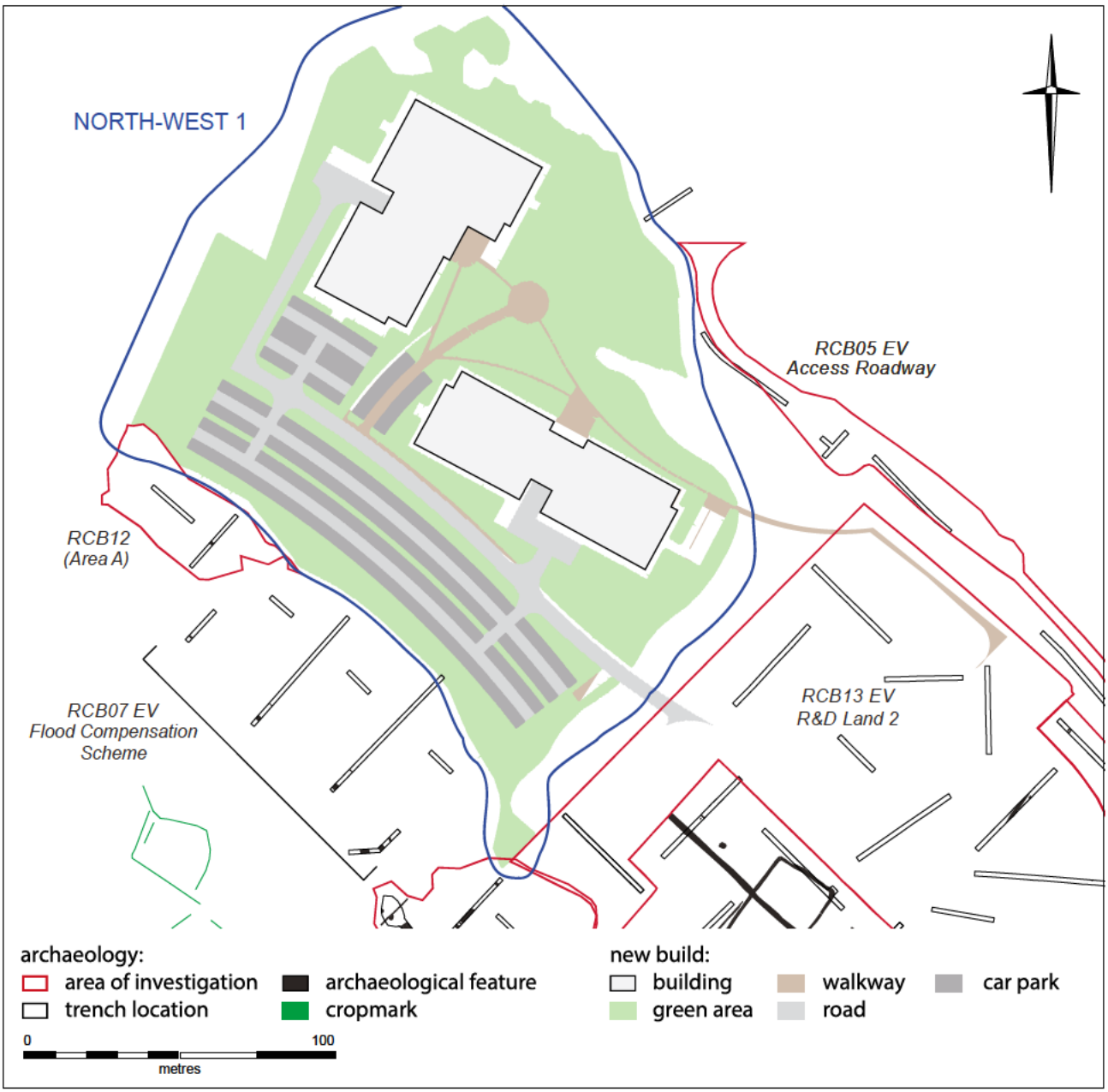

Figure 4. North-West 1 Zone with nearby archaeological investigations

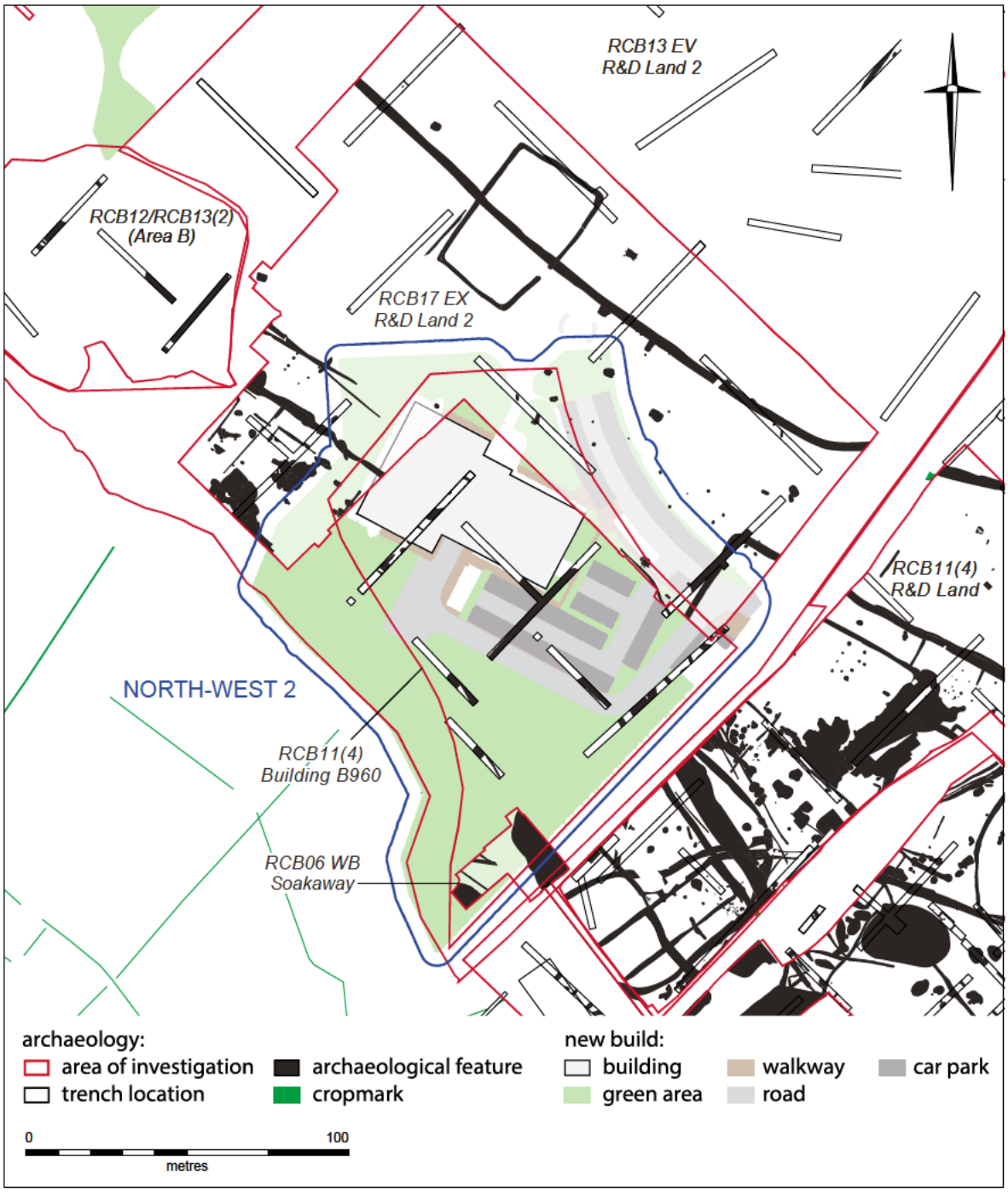

Figure 5. North-West 2 Zone with nearby archaeological investigations

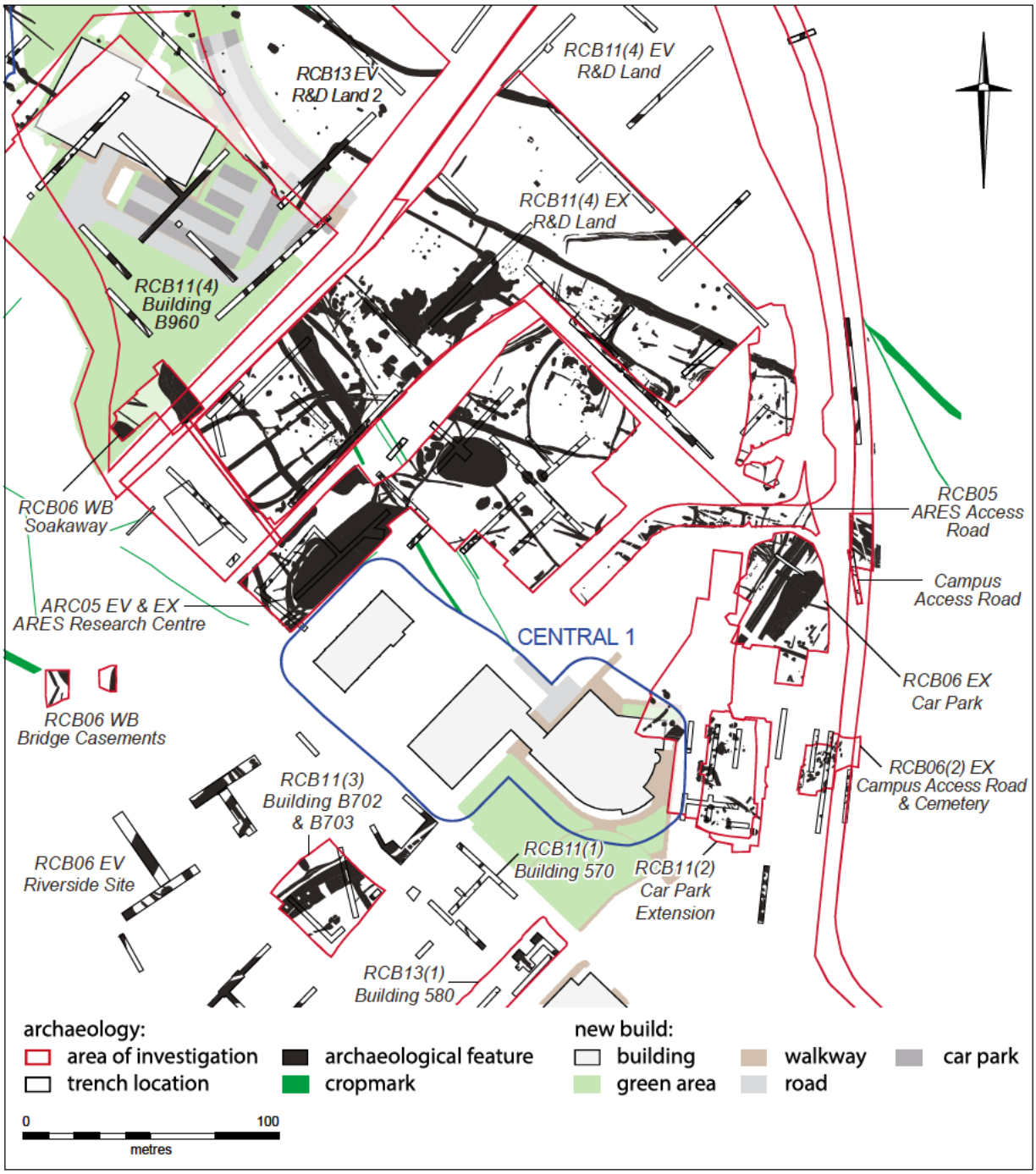

Figure 6. Central 1 Zone with nearby archaeological investigations

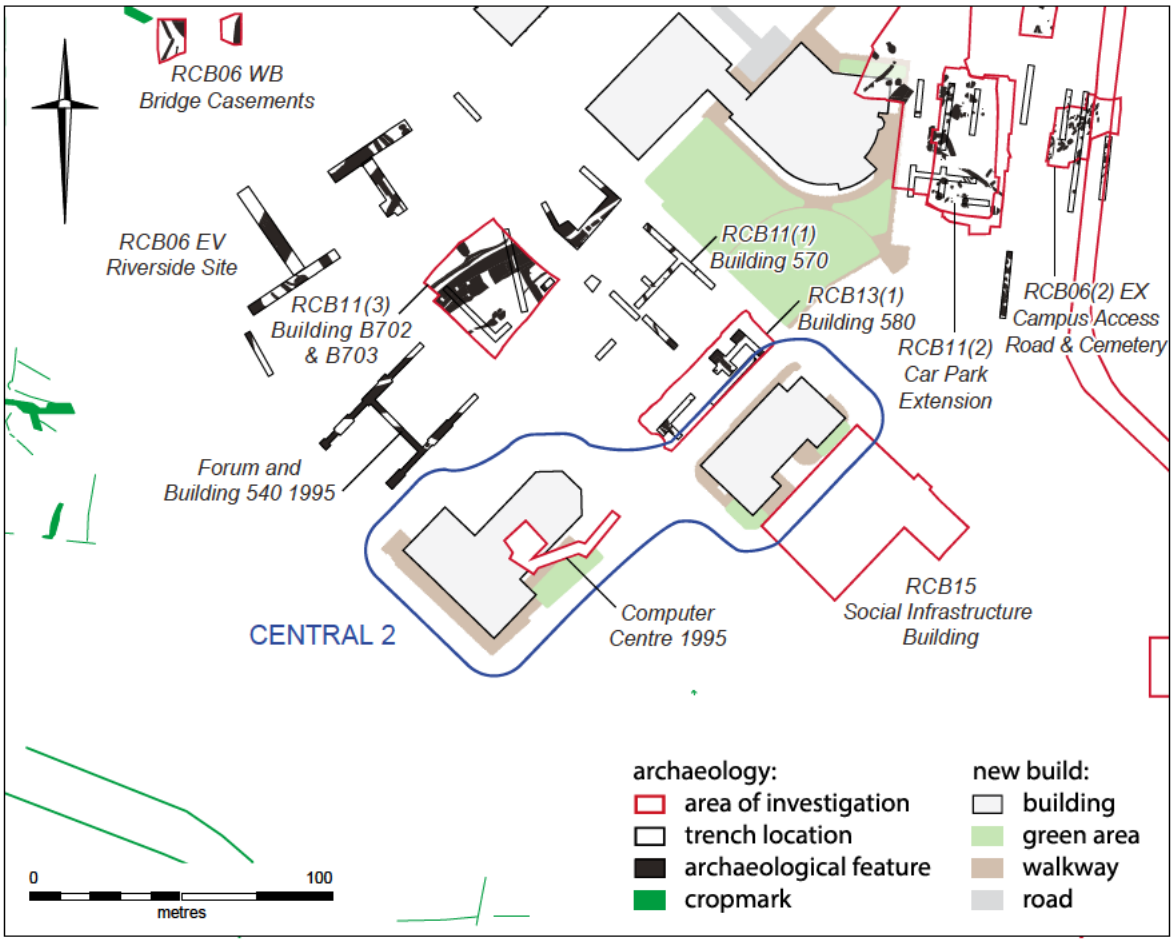

Figure 7. Central 2 Zone with nearby archaeological investigations

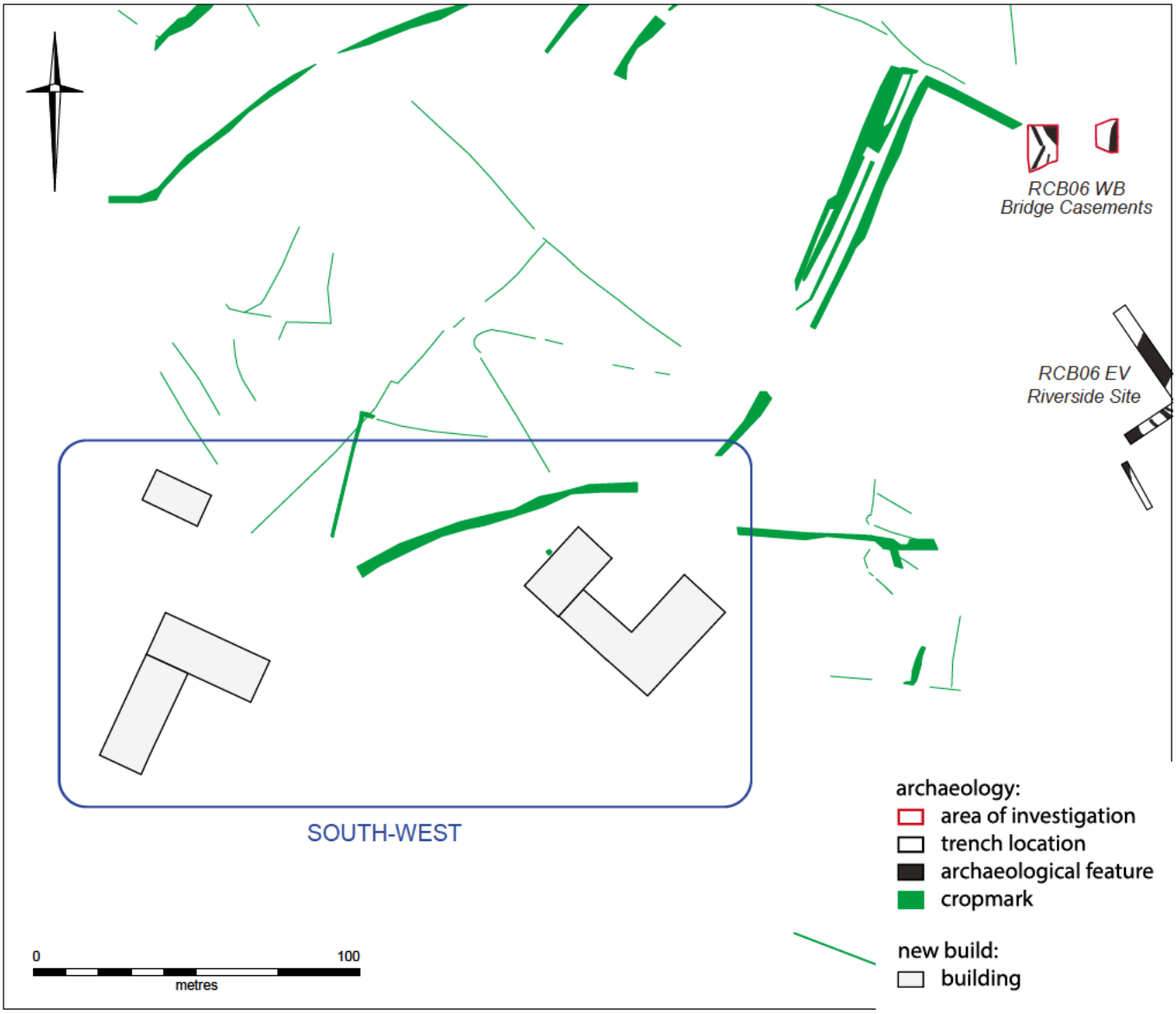

Figure 8. South-West Zone with nearby archaeological investigations

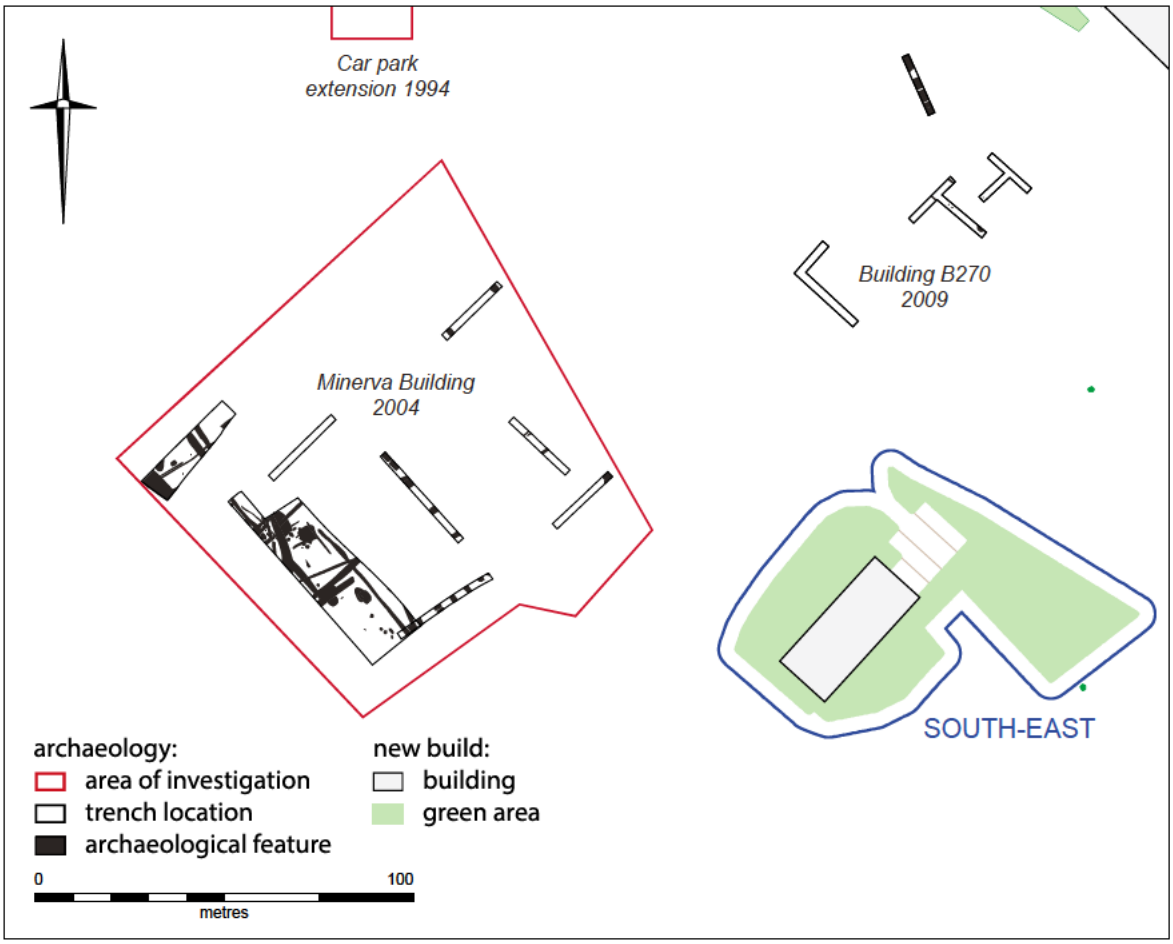

Figure 9. South-East Zone with nearby archaeological investigations

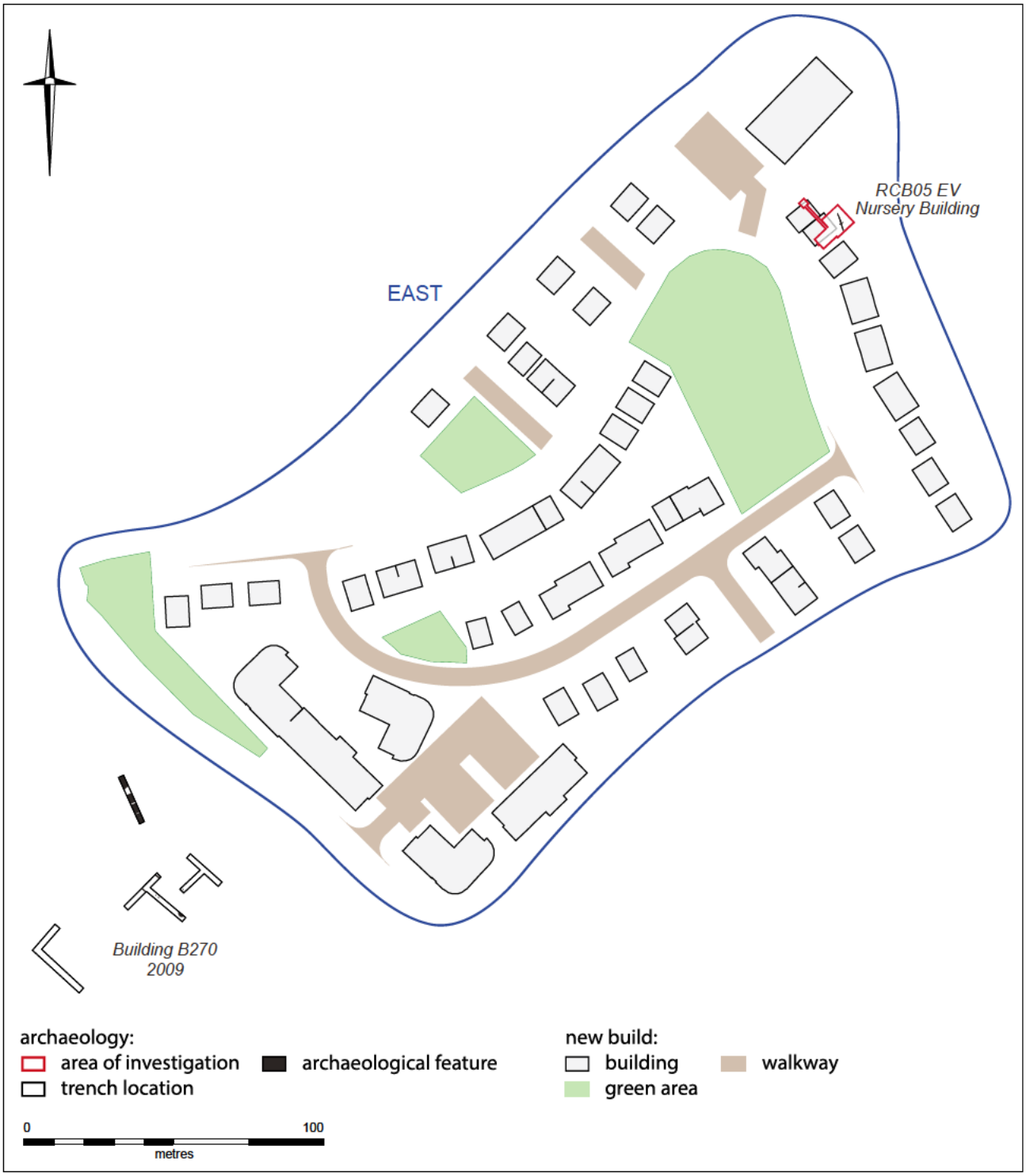

Figure 10. East Zone with nearby archaeological investigations