ALSF Assessment

Assessment of the Archaeology on the Cambridgeshire Gravels

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Assessment of the Archaeology on the Cambridgeshire Gravels

Identification and Quantification of projects arising from Aggregates Extraction

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Summary

Cambridgeshire has been subject to widespread gravel (aggregates) extraction throughout the 20th century and, like much of the rest of the country, intensively since World War 2. The county is crossed by three great river valleys – the Cam, the Great Ouse and the Nene – that produced large swathes of river gravels thus creating the local resource for extraction.

A considerable amount of archaeological records have been generated by this extraction activity and collectively these records provide details of human habitation and impact on the Cambridgeshire landscape from the Palaeolithic through, unbroken and often in great detail, to the modern day. An investigation of this material affords an opportunity to chronicle the landscape history of great swathes of Cambridgeshire and to contribute to both the archaeological and palaeontological records.

A study by Oxford Archaeology East has been carried out as part of an Aggregates Levy Sustainability Fund (ALSF) commission to identify and assess the full spectrum of archaeological records and interventions on the Cambridgeshire Gravels, and subsequently to identify the degree to which backlogs of analysis and publications exist.

The proposed project is in a number of stages. Stage 1, dealt with in this report, comprised a rapid desk-based assessment of existing records with the aim of identifying archaeological backlogs and projects with insufficient dissemination within the county of Cambridgeshire. Stage 1 followed the methodology and database devised by ARCUS for the Identification and Quantification of Projects Arising From Aggregates Extraction: Pilot Study; ALSF project 4767.

The main findings of the project are as follows:

- *125 projects were recorded in the database, of which 55 (44%) were considered to have incomplete or inappropriate levels of dissemination.*
- *Soft aggregates extraction sites (sand and gravel) account for 92% of the projects in the database.*
- *The vast majority (77%) of projects were carried out since PPG 16/15. The majority of inappropriately disseminated projects (69%) also took place since PPG 16/15.*
- *A significant majority of the incomplete or inappropriately disseminated sites are associated with long-running aggregates extraction sites with multiple fieldwork interventions, regarded as 'active' by the relevant archaeological organisations, despite fieldwork running back to the early 1990s. Many have been identified for publication by the relevant archaeological unit involved, leaving 11 interventions which are still seen as having inappropriate dissemination.*

1 Introduction and background

1.1.1 Oxford Archaeology East has been commissioned by English Heritage through the Aggregates Levy Sustainability Fund (ALSF) to carry out an assessment of all archaeological records and interventions arising from hard and soft aggregates extraction within the county of Cambridgeshire. This document forms Stage 1a of the project; a rapid desk-based assessment of these records which will aim to identify archaeological backlogs and projects with insufficient dissemination.

1.1.2 The Backlogs Project methodology and database was initially developed by ARCUS for a pilot project of this type encompassing the counties of Derbyshire, Nottinghamshire and Oxfordshire (ARCUS 2007). Museum of London Archaeology have subsequently refined the methodology and database (MOLA 2009). Much of the methodology in Section 2 of this document is based on the MOLA methodology which is itself a revision of the ARCUS methodology.

2 Research Methodology

2.1 Introduction

2.1.1 The project comprised a rapid desk-based assessment of existing information only, and therefore excluded fieldwork and site visits to assess primary archives. The assessment included locating projects through the review of published articles and notes in local journals, examination of publicly available databases of archaeological projects, and consultation with the HER and HER advisor. Sources consulted included:

- Cambridgeshire Historic Environment Record
- An Archaeological Survey of the Cambridgeshire River Gravels (French & Wait 1988)
- *Antiquity*
- *Proceedings of the Cambridge Antiquarian Society* (PCAS)
- Victoria County History

2.2 Identification of areas of geology containing aggregates resources

2.2.1 The British Geological Survey's 1:50,000 scale drift geology maps were used to identify areas containing aggregates resources. This was used in conjunction with GIS data supplied by the County Council showing all quarry applications granted since 1945.

2.3 Collation of data and consultation with relevant parties

2.3.1 Once areas affected by aggregates extraction had been identified the Historic Environment Record (HER) was consulted to determine which archaeological interventions and projects had taken place in these areas and to undertake a further search for additional investigations resulting from aggregates extraction. The HER

comprises the primary repository of archaeological information and includes information from past investigations, local knowledge, find spots, and documentary and cartographic sources.

2.3.2 Articles and notes in relevant local, regional and national journals were also consulted, many of which appear as references in HER records.

2.3.3 Where archaeological investigations resulting from aggregates extraction are identified from the HER and journals, they will be incorporated into the project Access database. Information on publication and archiving of the investigation will be obtained, where available, through consultation with archaeological units and voluntary groups a later stage.

2.4 Methodology for assessing levels of project completeness

2.4.1 Fieldwork projects considered during the project included all kinds of archaeological fieldwork (geophysics, evaluation, fieldwalking, building recording, etc) associated with both the buried and built historic environment, carried out in association with and/or in preparation for aggregates extraction from 1900 up to the present day. Fieldwork carried out for other kinds of development was excluded from the brief. In accordance with the recommendations of the pilot project (ARCUS 2007, 38), 'Archaeological fieldwork' in this instance does not include desk-based assessment even when it involved rapid walkover survey. Reports of isolated artefact finds from quarries were omitted unless they occurred alongside the recording of archaeological features or as part of a wider artefact collection strategy.

2.4.2 The tag of incomplete or inappropriate archive completion, assessment, analysis and/ or dissemination, is intended to:

- flag up the need to consider the project(s) within any strategy devised by English Heritage to improve the completion of the work and dissemination of Historic Environment information to an appropriate level and to the widest possible audience;
- help ensure that all stakeholders involved in the planning process have easy access to all information derived from fieldwork within the Historic Environment with a view to enabling informed decisions to be made regarding the management and regulation of heritage assets.

2.4.3 Incomplete archive completion, assessment, analysis and/or dissemination is typically where a project has stalled or been terminated before its results have been made available to the various constituencies, both public and professional, that make up the Historic Environment and development control sectors.

2.4.4 It is recognised that projects that produced only negative results may be regarded as complete providing they have a suitable HER entry. However, other projects which are disseminated only as interim note(s) or where HER entry has not taken place are, for the purposes of this project, regarded as incomplete.

2.4.5 Inappropriate archive completion, assessment, analysis and/or dissemination, for the purposes of this project, is where it is believed that further work on the project archive and/or further dissemination of the existing results of a project may be desirable. This could include cases where a project may benefit from wider circulation of grey literature

reports and/or further formal publication or where there is potential for popular presentation of the outcomes.

2.4.6 Appropriate levels of dissemination, for the purposes of this project, are deemed to have been reached when:

- the data retrieved from any fieldwork is publicly accessible;
- the results have been disseminated and are publicly accessible to a level commensurate with the significance of the results; and
- the archive has been deposited as appropriate.

2.4.7 For projects completed after 1991 this is guided by a Management of Archaeological Projects 2 (MAP2) assessment if it exists, supplemented by documents which follow the guidelines of MoRPHE. For projects undertaken prior to this date, or those without MAP2 assessments, professional judgement will be used about the appropriateness of work and dissemination undertaken.

2.4.8 As a guide, an appropriately completed and disseminated project should have as a minimum:

- a publicly accessible archive;
- a completed HER entry;
- a publicly accessible report written to the appropriate level in digital and/or hard copy format, summarising and interpreting the date.

2.4.9 A limited print run grey matter report available only through the HER or originating archaeological unit is regarded as inappropriate dissemination. This is because there are examples where work carried out in the last 10 years and reported on is effectively unavailable because the limited copies of the reports have been lost or are no longer available from the originating unit.

2.4.10 In addition, a final report may be deemed inappropriate where it is believed that it:

- does not cover (without good reason) all elements of the archive;
- is too summary in form;
- the data covered would benefit from further analysis.

2.4.11 This judgement is by definition subjective, and will be based on an understanding of the level of knowledge at the time the report was written as well as the significance of the data retrieved from the project (including statutory protection or other formal designation; date; rarity; state of preservation; diversity/complexity; collective, group value and comparative potential; and educational, social or economic value).

2.4.12 Where it is unclear to what level work and/or dissemination has taken place a project is regarded as inappropriately disseminated. This is designed to flag up the need for further work at a later date, outside the scope of this brief, to determine the actual status of the project in question.

2.4.13 Projects regarded as active by unit managers are included in the study.

2.5 Software and Structure of the database

2.5.1 The project used the database developed by ARCUS for a similar project in Derbyshire, Nottinghamshire and Oxfordshire (ARCUS 2007), and subsequently refined by MOLA. The data will be presented as a database file (.mdb) in Microsoft Access 2003 format. Each known archaeological intervention will be presented as a single record (when Site Code and/or Grid Coordinates match). Where multiple interventions (no matching on Site Code and Grid Coordinates) have taken place over time within a single quarry, these will be presented as multiple records.

2.5.2 The data input layout is subdivided into sections based on the type of data contained. This is designed for ease of use and does not affect the database structure. The layout on the form is followed in the description of field below. Each record contains 37 fields, detailed below:

1. National ID (AutoNumber): a unique record number.

2. [ALSF] Project ID (AutoNumber): A unique record number that is auto generate and consists of a 4 digit name as a prefix for the research project, with a continuous number sequence following (i.e. ARC1XXXX for the pilot project and IW09XXXX for the Isle of Wight project).

3. Name of project (free text): an individual project name, where this is known. Not necessarily the same as the quarry name (e.g. Fleak Close, recorded within Swarkestone Quarry).

4. Region (glossary): English Heritage regions. (The region is usually set to the appropriate region for each Backlogs project during the modification of the database)

5. County (glossary): Geographical counties, not unitary authority names.

6. Valley system (glossary): Major valley systems or drainage basins within the project area.

N/A (to be used for hard stone extraction or other cases where the valley system and associated geologies are not relevant)

7. Name(s) of quarry(ies) (free text)

8. Aggregate deposit type (glossary):

- Soft (i.e. drift geology)
- Hard (i.e. solid geology)
- Unknown

9. Grid reference easting (world co-ordinates) (number): constrained to a six-figure integer.

10. Grid reference northing (world co-ordinates) (number): constrained to a six-figure integer

11. HER location (glossary): Location of HER/SMR records relating to the site.

12. HER number (free text): Site, event or report numbers, blank if HER record was not located

13. Scheduled Monument number (free text): if applicable

14. Listed building, battlefield or garden numbers (free text): if applicable

15. Funding body (glossary)

- Department of Environment (DoE)
- Ministry of Works (MoW)
- Local authority
- Manpower Services
- Aggregates Industry
- Individual
- Other
- Unknown

16. **Archaeological organisation undertaking the work** (glossary): The following abbreviations will be used for archaeological organisations:

- ASL Archaeological Solutions Ltd
- ALBION Albion Archaeology
- BCC Bedfordshire County Council Archaeological Service
- BUFAU Birmingham University Field Archaeology Unit and Birmingham Archaeology
- CCC AFU Cambridgeshire County Council Archaeological Field Unit
- CAU Cambridge Archaeological Unit
- HAT Hertfordshire Archaeological Trust
- NA Northamptonshire Archaeology
- OAU Oxford Archaeology Unit and Oxford Archaeology
- SLRC SLR Consulting
- TR Tempus Reparatum
- UN Unaffiliated

17. Year or year range of intervention (free text).

18. Period (number): Period allocation for the project. The pilot study in Derbyshire, Nottinghamshire and Oxfordshire made use of four periods

- 0 = Period 0 (pre-1900)
- 1 = Period 1 (1900–1945)
- 2 = Period 2 (1946–1971)
- 3 = Period 3 (1972–1990)
- 4 = Period 4 (1991–present)

The allocation will be made on the recorded start date of the project, e.g. a project with year range 1942–1955 would be assigned to Period 1.

The allocation will be made on the recorded start date of the project, e.g. a project with year range 1942–1955 would be assigned to Period 1.

19. Size of project (glossary). This will be used as a broad assessment of the relative scope of the project, as judged from the available documentation. The following terms will be used:

- Small: Minor and/or non-intrusive works, e.g. test-pitting, a small-scale watching brief or geophysical survey
- Medium: Intervention involving a significant excavation element, such as evaluation trenching, or more extensive landscape survey work
- Large: A large-scale set-piece excavation, or multi-stranded investigations over a larger area
- Very large: Long term and spatially extensive investigations including possibly numerous large-scale excavations and/or extensive landscape survey/environmental sampling.

20. Nature of fieldwork (primary) (glossary). An assessment of the primary type of fieldwork undertaken.

Survey/geophysics

- Fieldwalking
- Evaluation
- Excavation (used for pre-PPG16 rescue excavation in addition to post-PPG 16 mitigations)
- Building recording
- Environmental
- Antiquarian/amateur observation and finds collection
- Watching brief
- Unknown

21. Site code (primary) (free text). Site codes associated with the primary fieldwork.

22. Nature of fieldwork (secondary) (glossary). As the previous field, to allow for secondary fieldwork elements, for example an excavation stemming from discoveries during a watching brief.

23. Site code (secondary) (free text). Site code associated with the secondary fieldwork,

24. Fieldwork required by regulatory conditions (glossary)

- Scheduled monument consent
- Planning condition
- Not required
- Unknown

25. Period (tick box). Terms will be drawn from the RCHME Archaeological Periods List. It was not considered necessary for the purposes of this database to distinguish sub-periods such as Early, Middle and Late Iron Age, so these terms were removed to produce a shorter list of 15 terms.

- Palaeolithic (500,000–100,000 BC)
- Mesolithic (10,000–4,000 BC)
- Neolithic (4,000–2,200 BC)
- Bronze Age (2,600–700 BC)
- Iron Age (800 BC– AD 43)
- Roman (AD 43–410)
- Early medieval (AD 410–1066)
- Medieval (AD 1066–1540)
- Post-medieval (AD 1540–1901)
- Modern (AD 1901–2000)
- Undated Prehistoric (500,000 BC– AD 43)
- Early prehistoric (500,000–4,000 BC)
- Later prehistoric (4,000 BC– AD 43)
- Prehistoric or Roman (500,000 BC– AD 410)
- Uncertain
- Multi-period (*note: individual periods and associated site type should also be selected*)

26. Site type class (glossary associated with each **Period**). For ease of reference each period will have an associated **Site type** class. NMR Monument Class descriptors will be used, with the addition of 'Hoard' and 'Palaeoenvironmental' which were found to be valuable additions during the Isle of Wight Project. The site type class will adhere to the conclusions drawn by the author of the article from which the project was known:

- Agriculture and subsistence
- Civil
- Commemorative
- Commercial
- Defence
- Domestic
- Gardens and parks
- Hoard
- Industrial
- Maritime
- Object
- Palaeoenvironmental
- Recreation

- Religious, ritual or funerary
- Transport
- Unassigned
- Water and drainage
- Multiple

27. Nature of discoveries (free text). A summary of the project results, where available, based on the conclusions drawn by the author of the relevant original article or HER entry.

28. Current project status (glossary). Older projects were considered complete by definition. The status of more recent projects was determined where possible in consultation with the organisations responsible.

- **Active** – Multi-stage projects where more fieldwork is expected, or projects where post-excavation work is ongoing
- **Stalled** – Multi-stage projects where more fieldwork is expected, but a significant time-lapse has occurred
- **Complete** – Completion of all anticipated fieldwork, with post-excavation complete and a client report submitted
- Not known

29. Most recent project stage (glossary).The following MAP2 stages will be used.

- Evaluation
- Excavation
- Site archive completion
- Assessment
- Analysis
- Dissemination
- Archive deposition

These stages were found to be too limiting during the pilot study (ARCUS 2007, 38) and so they will be supplemented by the addition of the following terms:

- Ongoing fieldwork
- Fieldwork complete
- Post-excavation in progress
- Developer report submitted
- Publication work in progress
- Publication complete

30. Archive location known/unknown (glossary)

- Known

- Unknown

31. Archive details (free text). Location and accession numbers, where available. Includes developer reports where submitted to HER/SMR.

32. Published references (free text). Journal titles and newsletters will be abbreviated where necessary and the abbreviation detailed in the Project report. The abbreviations will include the following:

- A *Antiquity*
- PCAS *Proceedings of the Cambridge Antiquarian Society*
- PPS *Proceedings of the Prehistoric Society*
- TCHAS *Transactions of the Cambridge and Huntingdon Archaeological Society*
- VCH *Victoria County History*

33. Significance of data retrieved from project (glossary).

Local: Negative or limited archaeological evidence, meriting a grey literature report or a brief note in a local journal and an HER entry.

- Regional: Significant archaeological evidence, meriting a longer report in a local journal.
- National: A major archaeological site, meriting full publication in a national journal or in monograph form
- International: A major archaeological site of international importance meriting full publication in national or international journals and monograph form.
- In cases where an organisation has carried out a number of interventions over time within a single quarry, the assessment of importance will be made on the evidence *in toto*, rather than on a single season's work.

34. Dissemination complete (glossary). Is dissemination of the project complete and of an appropriate level?

- Yes
- No
- Not known

This assessment was based on the significance of data retrieved from project attribute described above, as follows:

Projects with local significance should have a grey literature report available in a local HER/SMR if results were negative or negligible, and a brief local journal note in addition, if small-scale archaeological evidence was recovered.

Projects with regional significance should have a full treatment in a local/county journal.

Projects with national and international significance should have full publication in a national journal, or full monograph publication.

35. Suggested level of dissemination (glossary). Only to be completed if dissemination is regarded as incomplete or inappropriate.

Assessment (for projects which require further review or identification of the archive to determine scope for further work) to include:

- Completion of the archive
- Preliminary review to determine scope for further analysis and subsequent publication (if appropriate).

Analysis (for projects with existing MAP2 'Post Excavation Assessment' or equivalent) to include:

- Full analysis of assessed material with a view to subsequent publication
- Deposition of archive

Publication (for projects which have been subject to previous assessment and analysis, where the scope for further work is understood or which require further publication of existing reports) to potentially include:

- Brief journal article
- Short journal note
- Inclusion in synthetic regional/national study
- Monograph of major journal article
- Wider dissemination of grey literature report
- Popular publication/dissemination

36. Proposed type of work and dissemination (tick boxes). To allow elaboration of **34.**

- Completion of archive
- Full assessment and appropriate analysis
- Analysis of assessed material
- Deposition of archive
- Brief journal note
- Short journal article
- Monograph or major journal article
- Wider dissemination of grey literature report
- Popular publication/dissemination

37. **Associated projects** (free text): For any related interventions with different site codes or grid co-ordinates, but part of the same quarry or the same research.

3 A BRIEF OVERVIEW OF THE DATA

3.1 Initial Quantification

3.1.1 The database contains 125 records, relating to archaeological interventions on 22 separate quarries or areas of quarrying, ranging from the 1920s to 2008. The sites are listed in Appendix A and are illustrated with relevant project ID in Figure 15. Only those projects considered to represent primary archaeological fieldwork were included. Reports of isolated artefact finds from quarries were therefore omitted, unless they occurred alongside recording of archaeological features, or as part of a wider artefact collection strategy. Desk-based assessment work, occurring in the post PPG 16 environment, was also omitted.

3.1.2 The primary source of data was the HER, supplemented by grey literature reports and publications where necessary. Using the HER was the quickest way to carry out a rapid scan of all the available records. This proved to have advantages and disadvantages (see section 3.2).

3.1.3 While modern quarries tend to be single bounded entities owned by a single company, the historical situation is more complex, with many smaller pits in different ownerships operating within the same broad area. When determining which quarry an intervention relates to, the HER records often give nothing more specific than a grid reference and parish. For example, in Little Paxton, there were five interventions between 1944 and 1962. There is no individual quarry pit name recorded for each of these, and therefore the parish name has been used. Even with modern quarries, it is not always clear from the HER records what the name of a quarry is. This problem is reflected in the relatively small number of individual quarries (22). In reality there may be more than this, although certainly not enough to radically change the picture.

3.1.4 Little Paxton has the largest number of entries with 16, followed by Earith with 14, Block Fen, Mepal with 11 and Barleycroft Farm, Bluntisham with 10. These figures do not necessarily reflect the largest projects in terms of areas investigated. Little Paxton has the highest number of entries because it reflects quarrying over a significant period of time, the earliest entry being 1944, the latest 2006. At Block Fen, Mepal, 6 entries are evaluations and 2 are fieldwalking surveys, so the majority of interventions are not large scale.

3.2 Identification of gaps in our knowledge regarding archaeological projects in aggregates areas carried out since 1900

3.2.1 Cambridgeshire HER is an accurate and relatively complete record of all archaeological work in the county. The advantages of the Cambridgeshire HER are the fact that it is so complete and that it contains detailed and relevant information. It also holds a fairly complete and well catalogued collection of grey literature reports which can be cross-referenced against the HER records.

3.2.2 The disadvantage of the HER, in terms of this project at least, is that its structure is not geared towards a search of this nature. No rapid means of collecting information specifically on sites arising from aggregate extraction could be found, as the reason for archaeological intervention is not recorded as a searchable field. The data is mainly designed to be accessed by criteria such as grid reference data, parish, monument type or period. The HER officer was able to gain access to map data showing all areas given planning permission for quarrying in the county since 1945, which narrowed down the search area significantly. However, a manual search of areas along the river valleys

still had to be carried out be make sure nothing had been missed. Following this, all HER records within the relevant areas had be searched to determine whether or not they were related to aggregate extraction.

3.2.3 Local journals and grey literature provided extra detail where necessary but on the whole there were no additional sites identified through these sources that were not already listed in the HER. Even records relating to interventions before Cambridgeshire SMR (Sites and Monuments Record, the old name for the HER) was set up in the 1970s (e.g. sites in Periods 1, 2 and some of 3), are all referenced in the current HER. This again reflects the completeness of the Cambridgeshire HER. This is in contrast to the ARCUS pilot study, which covered the counties of Derbyshire, Nottinghamshire and Oxfordshire. Derbyshire had the highest number of interventions with an HER entry, but this was still low at 37%

3.2.4 At this stage it has not been possible to locate archives or comment on their completeness due to the amount of time taken in compiling the database. This will be carried out in due course by finding out firstly, which ones are held in the County Store, then by consulting archaeological units and possibly local museums.

3.3 Chronological and spatial trends

General Overview

3.3.1 There are three main river systems in Cambridgeshire; the Cam, the Ouse and the Nene. Of the total 125 records, 115 come from the three river systems, the remaining 10 relating to hard aggregate sites. These are summarised in Figure 1. The majority of interventions, 94, are within the Ouse Valley. This is partly because of a bias to do with county boundaries. The Nene Valley has been intensively quarried but many of the sites fall within the Peterborough area and are therefore outside the study area. The Cam, while having extensive gravel terraces, does not appear to have been as intensively exploited by the aggregates industry.

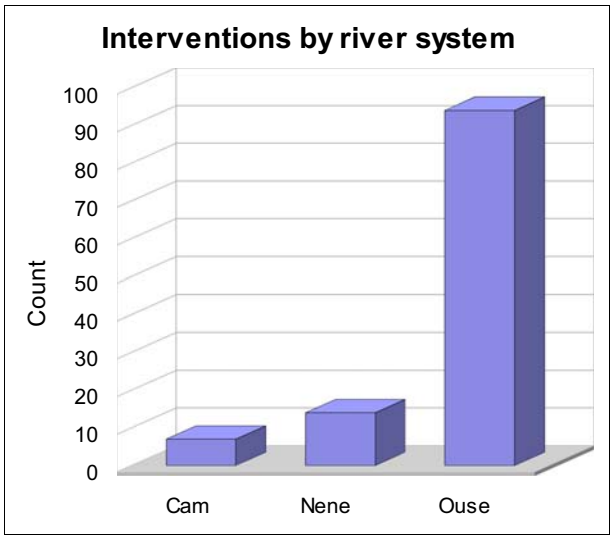

Figure 1: Interventions by river system

3.3.2 To facilitate a broad discussion of chronological trends within the database, the data was considered under four broad periods, corresponding to changes within planning legislation.

Period 1 1900-1946 Pre Town and Country Planning Act

Period 2 1946-1972 Post Town and Country Planning Act

Period 3 Pre PPG 16/15 fieldwork from 1972 to 1990

Period 4 PPG 16/15 fieldwork from 1991 to present

3.3.3 Each project was assigned to one of the four periods, on the basis of start date. Projects overlapping two periods are therefore assigned to the earlier period for the purposes of analysis.

3.3.4 The total number of projects assigned to each period is summarised in Table 1 and Figure 2 below, with an indication of project sizes. The raw number of projects in each period can be seen to remain relatively stable until PPG 16/15, with an explosion in project numbers in Period 4. There are no Very Large projects until Period 4. Even then, 6 of these come from one multi-intervention project, at Over/Needingworth. By this criteria, other projects carried out over several years could also be considered Very Large.

Size of project	Period 1	Period 2	Period 3	Period 4
Small	4	4	4	8
Medium	4	7	4	38
Large		1	1	43
Very Large				7
Total	**8**	**12**	**9**	**96**

Table 1: Recorded interventions by size and period

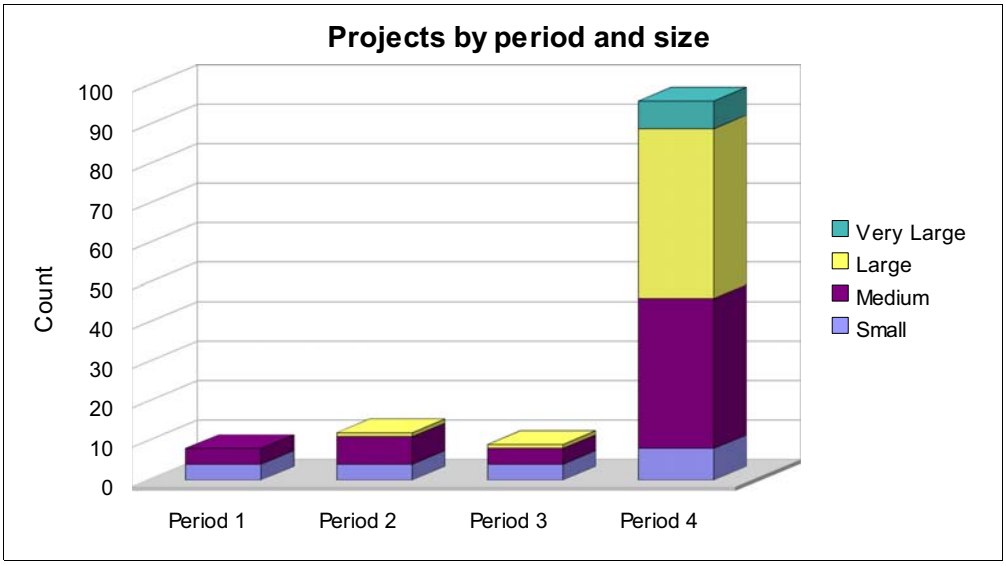

Figure 2: Recorded interventions by size and period

3.3.5 The apparent dip in project numbers within Period 3 may be due to the slightly shorter time-span represented by this period. A calculation of average number of projects per year across the four periods (Figure 3) confirms this suggestion. Projects per year can be seen to rise in Period 2 and remain the same in Period 3, before a dramatic increase in Period 4. In fact, Period 4 accounts for 77% of the total number of interventions.

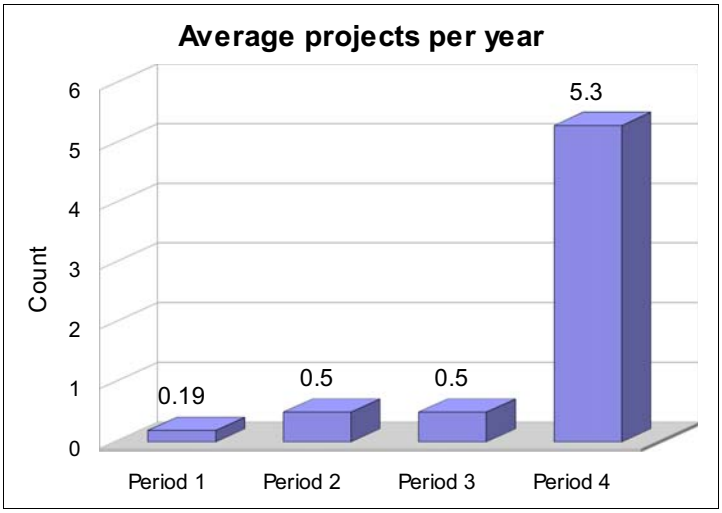

Figure 3: Average number of projects per year

3.3.6 An assessment of the archaeological significance of projects was made, and is summarised in table 2 and Figure 4. Significance was purely a judgement based on the basic information available. It was particularly difficult to judge which were nationally important. In general, those projects which have exceptional archaeological remains and which have been able to study large blocks of a particular landscape have been termed nationally significant. With the more historic projects it was difficult to determine which were of national significance without looking more closely at the archives. Also, many were rescue excavations where archaeological remains had already been severely damaged or destroyed. Many of the pre PPG 16/15 interventions are therefore of only local or regional significance.

3.3.7 Looking at the totals, 54% of sites were of regional significance, 37% were of local significance and 9% were of national importance. Of the largest group, sites of regional significance, 82% were projects in Period 4. Looking at Period 4 alone, it is interesting to note that over 60% of the Period 4 entries are of regional or national significance, which reflects not only the importance of remains along the river valleys, but also how large-scale developer funded projects since the incept of PPG 16 have led to the discovery of significant archaeological sites.

Significance	Period 1	Period 2	Period 3	Period 4	Total
Local	7	4	4	31	**46**
Regional	1	7	4	56	**68**
National		1	1	9	**11**

Table 2: Perceived archaeological significance, by period

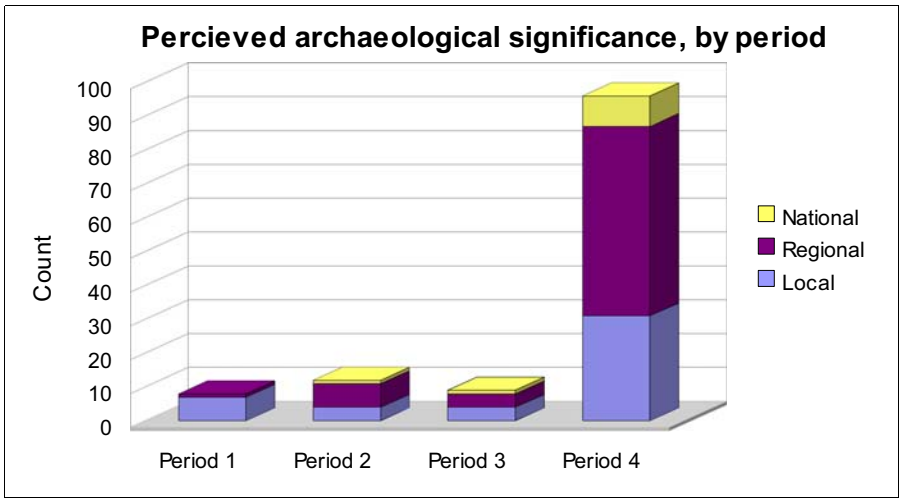

Figure 4: Perceived archaeological significance, by period

3.3.8 Figure 5 illustrates the range of archaeological periods represented in the records, along with the significance of those sites. Many sites have multi-period remains and in these cases have been counted more than once. For example, a site with Neolithic and Bronze Age remains has been counted twice for the purposes of Figure 5. The most noticeable trend is that archaeology of regional significance predominates, which correlates with the results of Table 2 and Figure 4.

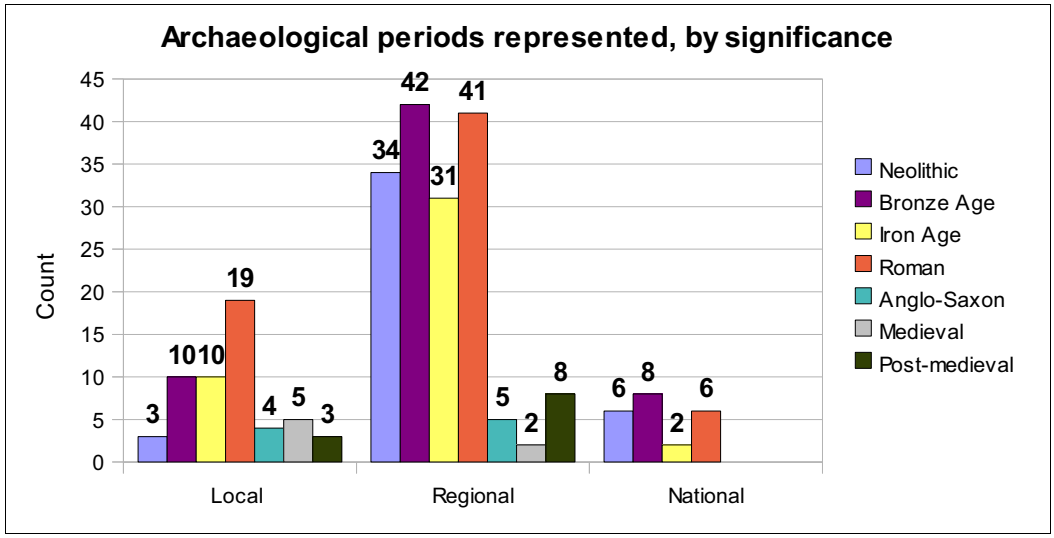

Figure 5: Archaeological periods represented, by significance

3.3.9 In terms of periods represented Roman remains were encountered on 66 sites, followed by Bronze Age on 60 sites, with Neolithic and Iron Age archaeology on an equal number of sites, 43. Figure 5 illustrates successfully the fact that many sites had multi-period remains. The problem with presenting the data in this form is that it makes no distinction between the nature of the remains. A site could be predominantly Bronze Age and of regional significance, but also have a single Roman feature. The Roman feature will be part of the same entry in the database and will also be termed of regional significance. Figure 6 addresses this problem by counting each project once based on the predominant or most significant archaeology represented. The Bronze Age is the best represented, predominant on 42 sites, followed by Roman on 35, Iron Age on 22

and Neolithic on 10. Prehistoric sites form 59% of the total and earlier prehistoric sites (Neolithic and Bronze Age) represent 42%. This illustrates how intensively the river valleys were exploited, particularly the Middle Ouse, during prehistory.

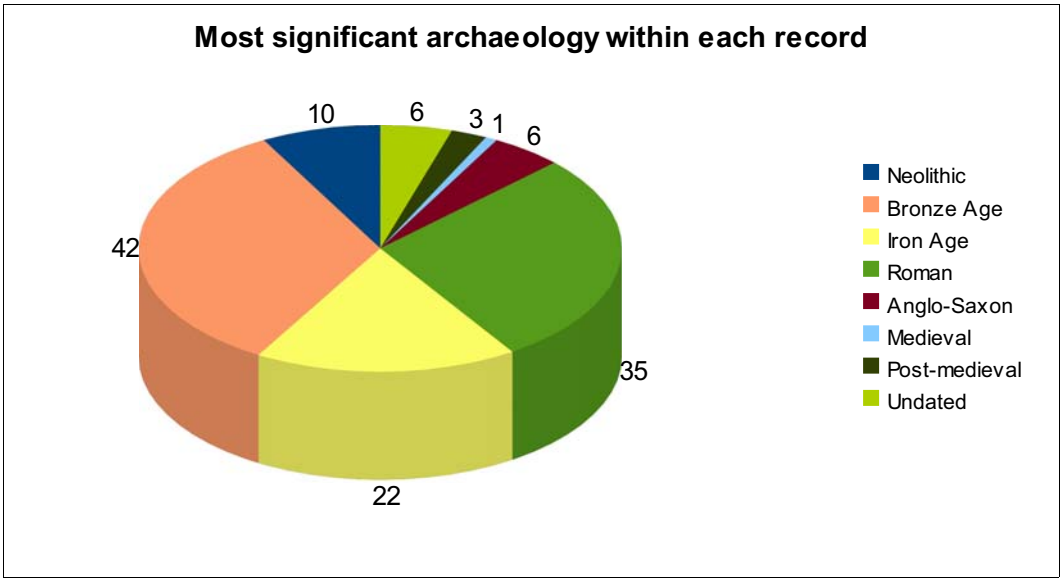

Figure 6: Predominant or most significant archaeology within each record

3.3.10 The vast majority of projects within Cambridgeshire (115 records in the database; 92%) relate to soft aggregates, reflecting the importance of sand and gravel extraction. Only 10 entries come from hard aggregate extraction, all of which are in Period 4 and relate to 3 quarries; Barrington (chalk), Steeple Morden (chalk) and Wicken (limestone). This is not surprising given the relative lack of hard aggregate sources within the county.

3.4 Period 1: pre Town and Country Planning Act: 1900 – 1946

3.4.1 A total of 9 records fall within Period 1, summarised in Figure 7. This period saw the commencement of major gravel extraction. All 9 records are from the Ouse Valley. There is an equal number of small and medium sized projects with all of the interventions being of local significance apart from one medium sized project which was considered of regional significance, an excavation at Knobb's Farm, Somersham. The HER summary for this intervention illustrates the problem with some of the early records. It mentions a 'rectilinear cluster of medium-sized enclosures' of Roman date, which could be interpreted as a large site, but there is no indication of the size.

3.4.2 Breaking down the Period 1 results further, 3 took place in the 1920s, 1 in the 1930s and 4 in the 1940s. Three of the records were the result of antiquarian/amateur observation and finds collection. All Period 1 interventions had a Cambridgeshire HER entry and six were published in local journals or synthetic studies.

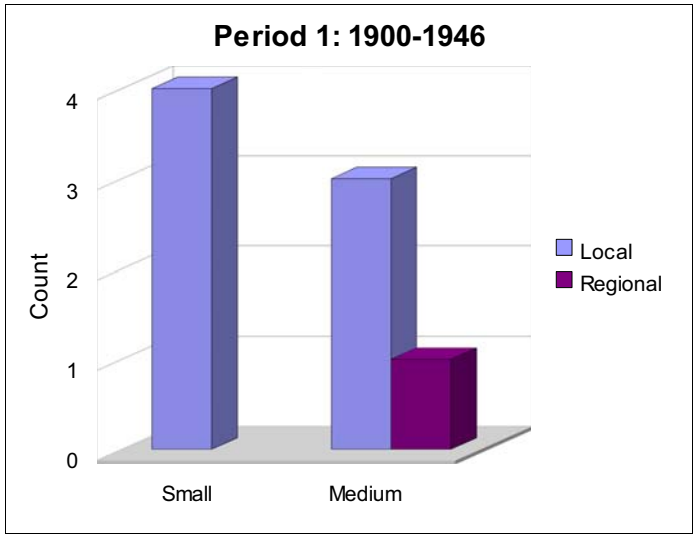

Figure 7: Period 1, size and significance of project

3.5 Period 2: Town and Country Planning Act 1946-1972

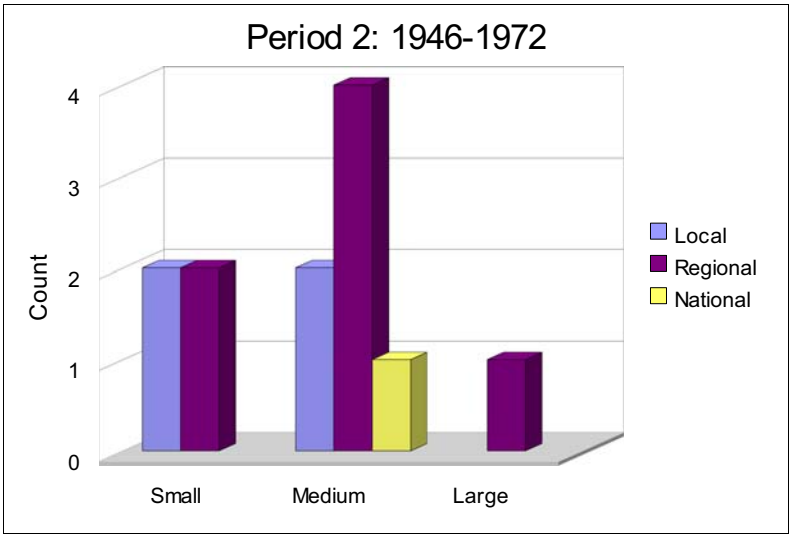

Figure 8: Period 2, size and significance of project

3.5.1 There is an increase in the number of interventions in Period 2, compared to Period 1, even though it was a shorter time span, these are summarised in Figure 8. There are 12 records in total, 83% of which were from the Ouse Valley and 17% from the Nene Valley. During this period, improvements in techniques such as aerial photography meant many sites with complex cropmarks were identified. When areas with known cropmarks began to be quarried, rescue excavations often took place. All but one of the entries in this period are excavations.

3.5.2 Medium-sized projects made up the largest group in terms of size of project with 58% of the entries. The majority of work, 92%, was still of local or regional significance, although there was a single medium-sized project of national significance, a Roman villa site at Rectory Farm, Godmanchester.

3.5.3 All Period 2 interventions had a Cambridgeshire HER entry and all but one were published in local journals, mainly PCAS.

3.6 Period 3: Pre PPG 16/15 1972-1991

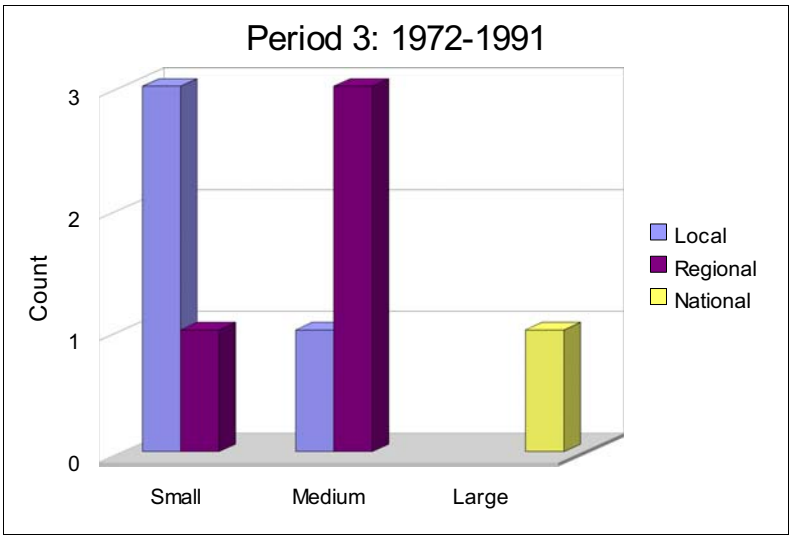

Figure 9: Period 3, size and significance of project

3.6.1 There was a decrease in the number of projects in Period 3, which is illustrated in Figure 9. There were a total of 9 interventions, all of which were within the Ouse Valley. There were an equal number of small and medium-sized projects, making up 88% of the total. A single large project was of national significance, a Neolithic monument complex at Godmanchester. Only 2 of the projects took place in the 1970s, the rest in the 1980s.

3.6.2 Given that this was the period immediately before PPG 16/15, it is perhaps surprising that there was a decrease in the number of projects. However, this period covers an even shorter time-span and as Figure 3 illustrates the average number of projects per year remains the same throughout Periods 2 and 3. There are also a number of long-running projects which have been classified as Period 4 but which may have started in Period 3, even though this was not necessarily clear from the sources. Some of these may have been directed outside of PPG 16 because of when they started and the permissions granted for extraction will not have been subject to PPG16.

3.7 Period 4: Post PPG16/15. 1991-present

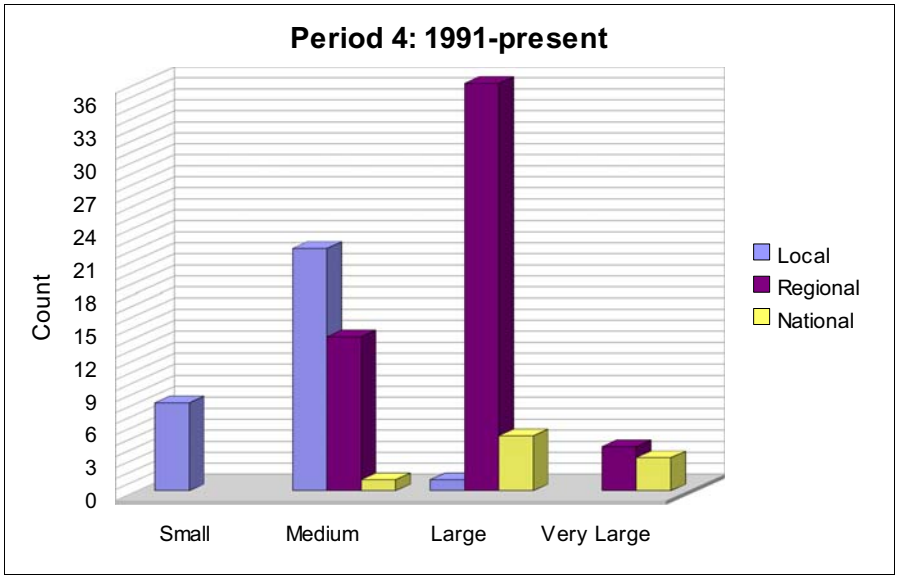

Figure 10: Period 4, size and significance of project

3.7.1 The explosion in the raw numbers of archaeological projects in the period following PPG16/15 is the main feature of the Period 4 data, with 96 projects recorded, in comparison to 9 in Period 3. The magnitude of the increase may be partly explained by the separate recording of different phases of work within single quarries, but it is clear nonetheless that PPG16/15 initiated a major increase in the frequency and scale of archaeological interventions on aggregates sites. As mentioned in 3.6.2 some of these larger projects may have started in Period 3, even though this was not always clear from the sources.

3.7.2 The majority of the projects, 66, were within the Ouse Valley, 12 were from the Nene Valley, 7 from the Cam Valley and 10 designated as 'N/A', those entries from hard aggregate sites. Small projects accounted for only 8% of the total, all of which were deemed of local significance. There was a higher proportion of medium-sized projects, 39% and of these the majority were of local significance. This may reflect the number of evaluations of medium size, which encountered little or no archaeology. The highest proportion in Period 4 is large projects, accounting for 45% of the total. This reflects the increase in large-scale developer funded excavations. As a natural consequence of extensive areas being opened due to the archaeological remains buried there, it is not surprising that virtually all of those sites were of regional or national significance. 7% of interventions in Period 4 have been termed very large, consisting of the multi-phase excavations at Over and the excavation at Bradley Fen. In reality some of the large projects which include more than one intervention, such as Earith and Barleycroft Farm could also be considered very large. The very large sites were deemed to be of regional and national significance.

3.7.3 A study of the significance of sites in Period 4 alone (Figure 11) shows the majority to be of regional significance, with 9% deemed to be of national significance. These include sites at Must Farm, Kings Dyke Pit, Over, Barleycroft Farm and Colne Camp Ground.

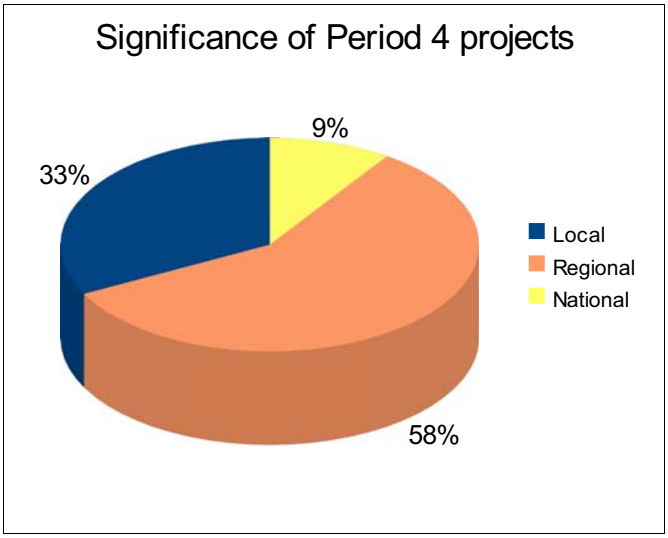

Figure 11: Significance of Period 4 projects

3.7.4 The PPG16 environment has resulted in almost complete professionalisation of archaeological fieldwork, with very little involvement from amateur groups or individuals. The increased quantity of work generated through the planning process has led to the proliferation of professional archaeological units and consultancies undertaking such work, and a considerable number of these organisations are represented within the database. A corresponding proliferation in the range of archaeological fieldwork undertaken has also occurred with higher numbers of evaluations, watching briefs, fieldwalking surveys and geophysical surveys. This is illustrated in Figure 12.

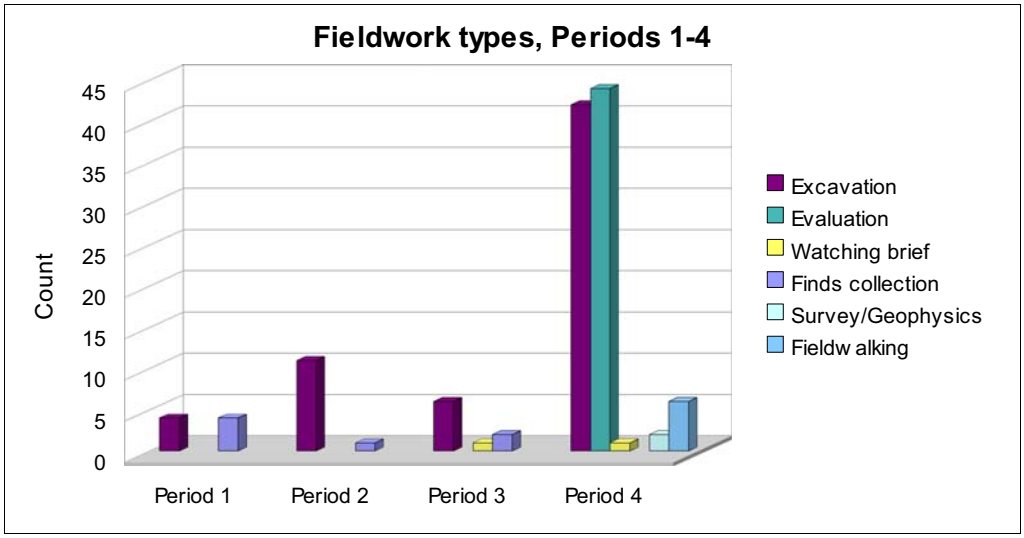

Figure 12: Fieldwork types recorded in Period 1-4

3.8 Potential of incomplete or inappropriately disseminated projects

3.8.1 There are 55 projects (44%) identified as incomplete or inappropriately disseminated projects. However, this includes 24 'active' projects and 12 'stalled' projects. Active and stalled projects indicate that work is on-going in some form, whether it be further fieldwork, post-excavation analysis or publication.

3.8.2 The numbers of projects considered incomplete or inappropriately disseminated in each of Periods 1-4 is shown in Figure 13. In total there are 55 projects. The 8 projects shown as 'Not Known' relate to minor PPG16/15 projects where developer reports could not be traced. There are only 5 projects identified as inappropriately disseminated prior to PPG 16/15, four of which were the result of rescue excavations in the same quarry area to the north of Godmanchester and one Department of the Environment excavation at Colne.

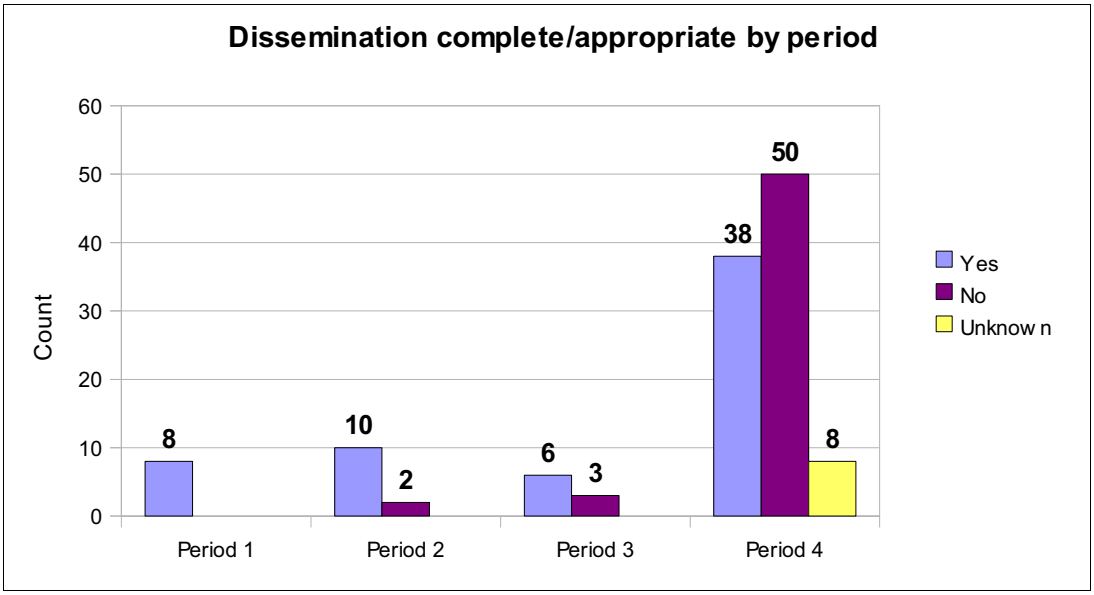

Figure 13: Numbers of incomplete/inappropriately disseminated projects by period.

3.8.3 The vast majority of projects (69%) considered incomplete or inappropriately disseminated are therefore within Period 4, post-PPG16, even though some may have been initiated in Period 3. As stated in 3.8.1 there were 24 'active' projects and 12 'stalled' projects. All these fall within the 50 projects in Period 4 determined as inappropriately disseminated.

3.8.4 Post-PPG16 fieldwork has resulted in multiple interventions over time within the same quarries, as extraction proceeds each year from area to area. The 55 projects recorded as incomplete represent only 17 separate quarries or quarry areas, with up to 11 interventions in a single quarry. This is significant as multiple intervention projects within the same quarry are likely to be published together and therefore greatly reduces the number of inappropriately disseminated projects.

3.8.5 Figure 14 shows recommendations for those projects with inappropriate dissemination. For projects with multiple interventions the recommendation was typically a major journal article or monograph which would encompass all the stages of work. This accounts for the majority of the projects.

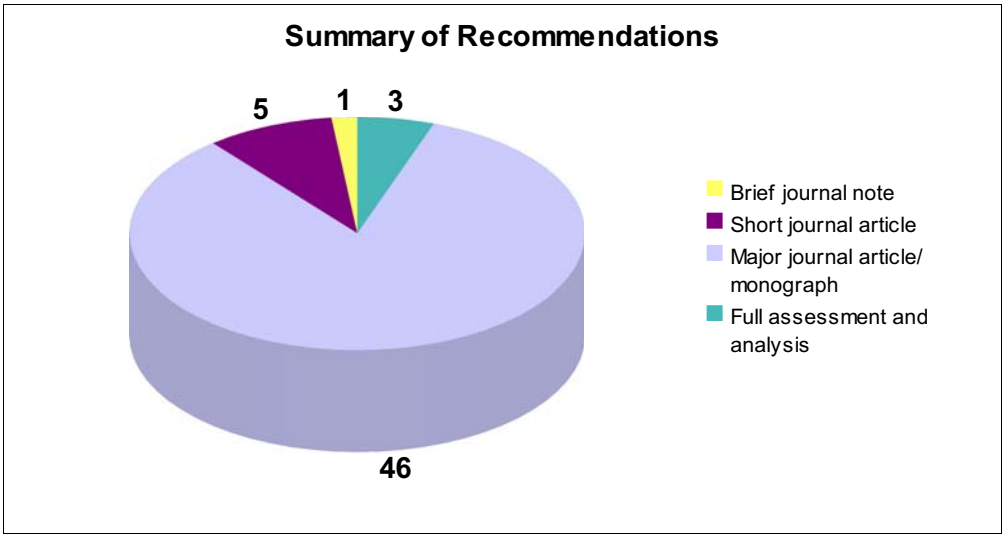

Figure 14: Recommendations for sites with inappropriate dissemination

3.8.6 Perhaps most significant is the number of projects which although not published at the present time, will be published by the relevant archaeological unit in due course. There are 36 projects out of the 55 which were investigated by Cambridge Archaeological Unit (CAU) and fall into this category because of the nature of the investigations. Many of these are long-term projects with several interventions in the same quarry, stretching back, in some cases, to before PPG 16. A further 3 were excavated by Birmingham University (BUFAU) at Little Paxton, the publication of which is imminent, while another 2 relate to archaeological work carried out by Archaeological Solutions between 2006 and 2008, which is likely to be published in some form. This leaves 11 projects which are still seen as having inappropriate dissemination. These projects are discussed in the Stage 1b Project Design (Macaulay & Shepherd Popescu 2010).

Appendix A. Gazetteer of Sites

ID	Name of project	Name(s) of quarry(ies)	Grid ref easting	Grid ref northing	Dissemination complete?
1	Buckden gravel pits	Buckden	520200	268000	Yes
2	Buckden gravel pit	Buckden	521000	268900	Yes
3	Little Paxton	Little Paxton	519200	262400	Yes
4	Little Paxton	Little Paxton	519500	262500	Yes
5	Wray House Farm, Little Paxton	Little Paxton	519800	263200	Yes
6	Little Paxton	Little Paxton	520200	263200	Yes
7	Diddington	Diddington	520800	265900	Yes
8	Little Paxton quarry	Little Paxton	520100	265000	No
9	Buckden	Buckden	520070	266870	Yes
10	Margett's Farm	Buckden	520300	266600	No
11	Diddington	Little Paxton	519300	265400	No
12	Little Paxton Quarry (field 7)	Little Paxton	520100	266100	Not known
13	Little Paxton Quarry	Little Paxton	519900	265300	No
14	Little Paxton	Little Paxton	519800	263000	Yes
15	Little Paxton Quarry	Little Paxton	520200	265300	No
16	Diddington	Little Paxton	520900	265900	Yes
17	Little Paxton Quarry (Field 2)	Little Paxton	520330	265620	Yes
18	Margett's Farm	Buckden	521032	266724	Yes
19	Little Paxton Quarry (Field 5)	Little Paxton	520100	265810	Yes
20	Little Paxton Quarry (Fields 8 and 9)	Little Paxton	520570	266340	Yes
21	Little Paxton Quarry (Field 10)	Little Paxton	520170	266420	Yes
22	Little Paxton quarry	Little Paxton	519540	263770	Yes
23	Margett's Farm	Buckden	520800	267100	Yes
24	Weybridge Farm	Weybridge Farm	517950	272100	Yes
25	Weybridge Farm	Weybridge Farm	519200	270600	Yes
26	Huntingdon Racecourse (Area A)	Huntingdon Racecourse	520600	272000	No
27	Huntingdon Racecourse (Area B)	Huntingdon Racecourse	520000	272300	No
28	Godmanchester	Godmanchester	525900	272100	No
29	Cow Lane	Godmanchester	525900	271400	No
30	Rectory Farm	Godmanchester	525660	271310	No
31	Rectory Farm	Godmanchester	525764	271378	No

ID	Name of project	Name(s) of quarry(ies)	Grid ref easting	Grid ref northing	Dissemination complete?
32	Rectory Farm	Godmanchester	525480	270930	Yes
33	Meadow Lane South	Meadow Lane, St Ives	532400	270300	Yes
34	Fen Drayton	Fen Drayton	533500	270300	Yes
35	Meadow Lane	Meadow Lane, St Ives	532900	270600	Yes
36	Meadow Lane	Meadow Lane, St Ives	532900	270600	No
37	Meadow Lane	Meadow Lane, St Ives	532900	270600	Yes
38	Meadow Lane	Meadow Lane, St Ives	532930	270420	Yes
39	Low Fen	Fen Drayton	533802	269021	No
40	Fen Drayton Reservoir	Fen Drayton	533037	269221	Not known
41	Fen Drayton Reservoir	Fen Drayton	533037	269221	Not known
42	Barleycroft Farm	Barleycroft Farm, Bluntisham	536500	273400	Yes
43	Over Lowland Investigations (III)	Over/Needingworth	538880	274060	No
44	Over Lowland Investigations (I)	Over/Needingworth	537330	271980	No
45	Over (Sites 3 and 4)	Over/Needingworth	537453	271933	No
46	Chain Bridge Terrace	Over/Needingworth	537540	272210	No
47	Over Lowland Investigations (II)	Over/Needingworth	537237	273290	No
48	Church's Rise	Over/Needingworth	537387	272558	No
49	Barleycroft Farm	Barleycroft Farm, Bluntisham	535990	272850	Yes
50	Barleycroft Farm	Barleycroft Farm, Bluntisham	535700	272300	No
51	Barleycroft Farm	Barleycroft Farm, Bluntisham	535100	272200	Not known
52	Barleycroft Farm	Barleycroft Farm, Bluntisham	535100	272200	No
53	Barleycroft Farm Floodplain	Barleycroft Farm, Bluntisham	535520	272060	Not known
54	Butcher's Rise	Barleycroft Farm, Bluntisham	535600	271990	No
55	Barleycroft Farm	Barleycroft Farm, Bluntisham	535780	272440	No
56	Barleycroft Farm	Barleycroft Farm, Bluntisham	536447	272771	Not known

ID	Name of project	Name(s) of quarry(ies)	Grid ref easting	Grid ref northing	Dissemination complete?
57	Fen Drove	Earith	539170	275980	Yes
58	Knobb's Farm	Knobb's Farm, Somersham	536800	279500	Yes
59	Colne Camp Ground	Earith	537600	278300	No
60	Colne Camp Ground	Earith	537600	278300	No
61	Earith Fen	Earith	539100	276600	Yes
62	Colne	Colne	538700	277800	No
63	Earith	Earith	539000	276000	Yes
64	Knobb's Farm	Knobb's Farm, Somersham	537100	279300	Yes
65	Knobb's Farm	Knobb's Farm, Somersham	536410	278783	Yes
66	Knobb's Farm	Knobb's Farm, Somersham	536642	278839	Yes
67	Colne Fen	Earith	538557	276635	No
68	Colne Fen	Earith	538557	276635	No
69	Colne Fen Site VI	Earith	538118	277442	No
70	Colne Fen, Sites V and VI	Earith	538390	277500	No
71	Rhee Lakeside	Earith	538650	277100	No
72	Rhee Lakeside	Earith	538560	277100	No
73	Rhee Lakeside	Earith	538370	277340	No
74	Earith Camp Ground	Earith	537620	278330	No
75	Knobb's Farm	Knobb's Farm, Somersham	536610	279350	Yes
76	Knobb's Farm	Knobb's Farm, Somersham	536710	279290	No
77	Knobb's Farm	Knobb's Farm, Somersham	536710	279290	No
78	Knobb's Farm	Knobb's Farm, Somersham	536610	279370	Yes
79	Colne Fen, Site I	Earith	538170	278230	No
80	Knobb's Farm	Knobb's Farm, Somersham	536730	279160	Yes
81	Knobb's Farm	Knobb's Farm, Somersham	536890	279340	No
82	Block Fen	Block Fen, Mepal	544350	284080	Yes
83	Block Fen	Block Fen, Mepal	543700	283700	Yes
84	Block Fen	Block Fen, Mepal	543700	283700	No
85	Block Fen	Block Fen, Mepal	542800	283900	Yes
86	Block Fen	Block Fen, Mepal	544800	284200	Yes

ID	Name of project	Name(s) of quarry(ies)	Grid ref easting	Grid ref northing	Dissemination complete?
87	Block Fen, Meadlands	Block Fen, Mepal	544520	283970	Yes
88	Block Fen, Meadlands	Block Fen, Mepal	544520	283970	Yes
89	Block Fen, Meadlands Phase II	Block Fen, Mepal	544000	284000	Yes
90	Block Fen, Meadlands Phase II	Block Fen, Mepal	544050	284220	Yes
91	Block Fen, Meadlands Phase II	Block Fen, Mepal	543920	284080	No
92	Block Fen	Block Fen, Mepal	545140	284585	Yes
93	Funtham's Lane	Whittlesey	523900	297500	Yes
94	Itter Farm	Whittlesey	524600	297700	Yes
95	King's Dyke Pit (Area A)	King's Dyke Pit, Whittlesey	524120	298050	Yes
96	King's Dyke West	King's Dyke Pit, Whittlesey	524120	298050	No
97	King's Dyke Pit, Stonald Field	King's Dyke Pit, Whittlesey	524500	297900	Yes
98	King's Dyke West	King's Dyke Pit, Whittlesey	524306	298130	No
99	King's Dyke Pit, Stonald Field	King's Dyke Pit, Whittlesey	524529	298031	No
100	King's Dyke Pit (Area A)	King's Dyke Pit, Whittlesey	524300	298086	Yes
101	Bradley Fen	Whittlesey	523593	297894	No
102	Bradley Fen	Whittlesey	523595	297893	No
103	Star Pit	Star Pit, Whittlesey	524571	296818	Yes
104	Must Farm	Must Farm, Whittlesey	523690	296830	No
105	Must Farm	Must Farm, Whittlesey	522690	296940	No
106	Must Farm	Must Farm, Whittlesey	523000	297190	No
107	Steeple Morden	Station Quarry, Steeple Morden	530500	239300	Yes
108	Steeple Morden	Station Quarry, Steeple Morden	530296	239125	Yes
109	Steeple Morden	Station Quarry, Steeple Morden	530467	239159	Yes
110	Hinxton	Hinxton Quarry	548800	246400	Yes

ID	Name of project	Name(s) of quarry(ies)	Grid ref easting	Grid ref northing	Dissemination complete?
111	Hinxton	Hinxton Quarry	548600	246700	No
112	Hinxton	Hinxton Quarry	548700	246700	Yes
113	Hinxton	Hinxton Quarry	548640	246260	Yes
114	Hinxton	Hinxton Quarry	548860	246580	Yes
115	Hinxton	Hinxton Quarry	548860	246580	Yes
116	Hinxton Quarry North Field	Hinxton Quarry	548700	246800	Not known
117	Barrington	Barrington Cement Quarry	538500	250900	Not known
118	Barrington	Barrington Cement Quarry	539900	251400	Yes
119	Barrington	Barrington Cement Quarry	539800	251500	Yes
120	Dimmocks Cote Road	Dimmocks Cote Quarry, Wicken	554490	272390	Yes
121	Dimmocks Cote Road	Dimmocks Cote Quarry, Wicken	554500	272300	No
122	Dimmocks Cote Road	Dimmocks Cote Quarry, Wicken	554550	272400	No
123	Dimmocks Cote Road	Dimmocks Cote Quarry, Wicken	554689	272421	No
125	Over Narrows (II), Godwin Ridge East-Central	Over/Needingworth	538500	273800	No
126	Over Narrows (III), The O'Connell Ridge	Over/Needingworth	538500	273600	No

Appendix B. Bibliography

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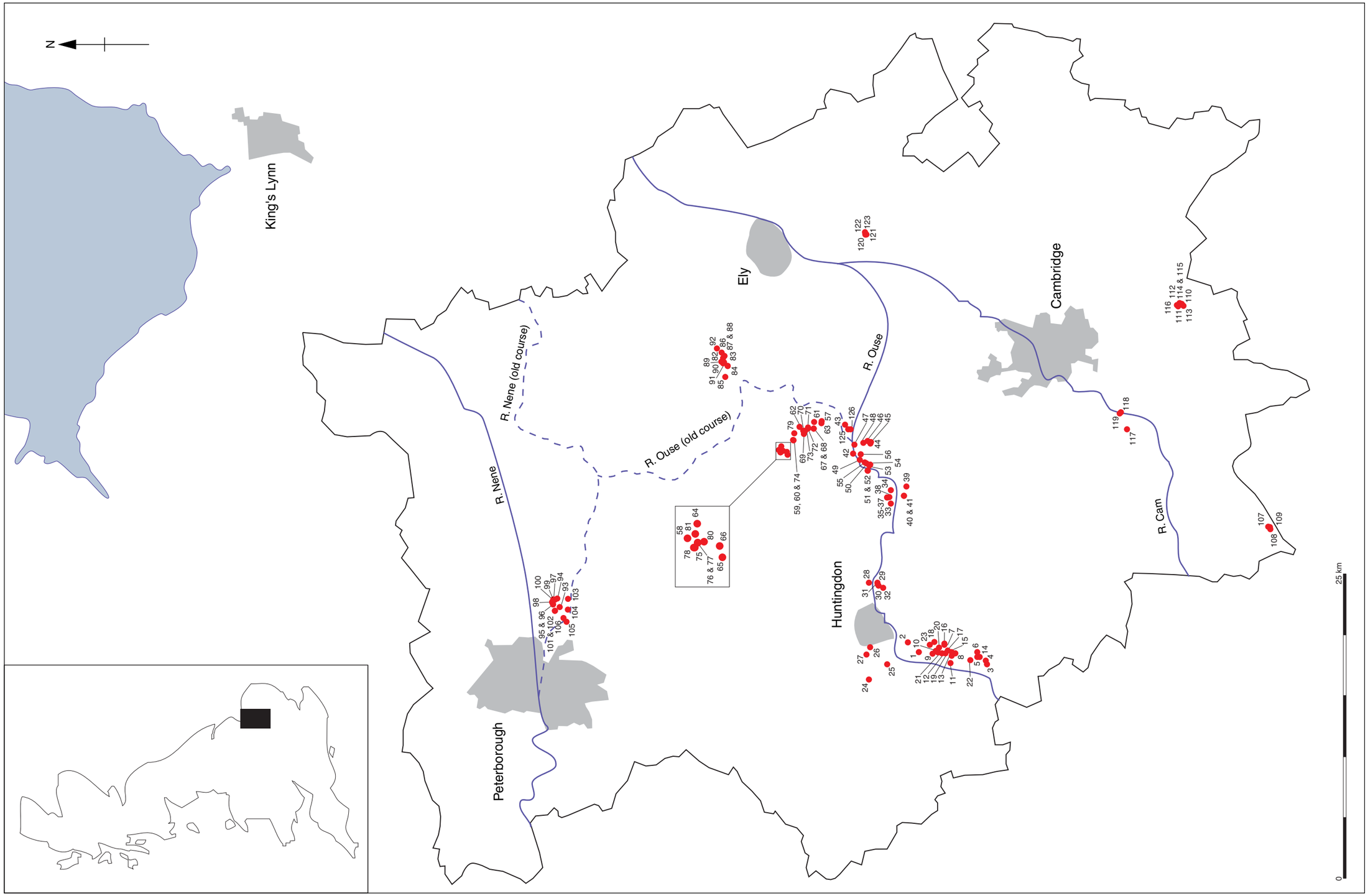

Figure 15: Map of Cambridgeshire showing distribution of sites

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