City of York Council

Review of 1991 York Development and Archaeology Study

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			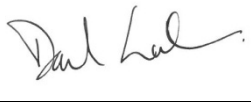		
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1 Non-Technical Summary

This review of the 1991 Ove Arup and Partners York Development and Archaeology Study has been commissioned by City of York Council, supported by English Heritage. The purpose of the review was to assess the extent to which the 1991 report's aim to allow development to go ahead in York whilst conserving the city's outstanding archaeological resources has been achieved.

The 1991 study provided a snapshot of how development and archaeology interacted at a particular point in time. Many of the topic areas in the original document have seen considerable change over the intervening decades and the assessment commences with an overview of these changes in order to allow an appreciation of how far practice has moved on.

Through a mixture of analysis of existing data sources and stakeholder engagement, comprising questionnaires, interviews and workshop discussion, the review has shown that application of the recommendations of the 1991 study have met with variable degrees of success:

- Development in York has not been 'unduly hindered by archaeological constraints'[1]. The 5% threshold on developments within the historic core is understood and accepted by developers and should be seen to have successfully achieved the intended aim to allow development to proceed. (However attempts to monitor the long term effects of development on remains left in situ have generally failed for lack of resources and therefore the success of the 5% threshold in preserving archaeological deposits must be considered 'unproven').

- The framework for development of sites and managing archaeological resources has seen some progress in the development of the Historic Environment Record, however the Research Framework and Deposit Model established in 1991 are essentially unchanged. Both the Deposit Model and Research Framework would be of much greater utility as tools with which to manage the historic environment if brought up to date.

- The procedural framework recommended in the 1991 study required the finds and documentation resulting from archaeological interventions to be deposited in a public archive in York and published at an appropriate level. Publication has seen progress with a recent trend towards on-line access to contractor reports providing a positive step towards wider dissemination of information. However almost no progress has been made in the area of archive deposition with the overwhelming majority of the material generated remaining in the care of the excavating bodies..

However, any judgement of the success or otherwise of the 1991 study should take into account that the context in which the study was undertaken – the relationship between development and archaeology was in a state of flux and concerns about affordability were at the forefront of the debate. The resulting

[1] YDAS guiding principle 2 Pare 3.1 p6.

report was ground-breaking and many of its recommendations prefigured what was to become standard practice in heritage management over the following years.

The 1991 study was not without its flaws however and the chief of these was arguably the failure to include in its remit the resourcing required to take forward its recommendations - had the issue of resourcing been more explicitly addressed it is possible that both the Deposit Model and Research Framework would have been maintained and revised on the regular basis which the authors of the report envisaged.

The scope of the 1991 study as commissioned also imposed limitations which restricted its utility at the time and in hindsight were questionable. The built environment, a key element of York's heritage, was not to be considered and the interplay between development and the continuum of below ground and above ground archaeology was not therefore explored. Similarly the chronological remit of the study was confined to a core of Roman through to late medieval activity which failed to represent the much wider time spectrum of York's archaeology.

Changes to the city boundary with the creation of a unitary authority in 1996 rendered the geographical remit of the 1991 study redundant as substantial areas of the adjacent districts of North Yorkshire were absorbed into the City of York. This change also had a significant effect on the balance of heritage resources in the city which had hitherto been concentrated within the historic urban core and now acquired a rural hinterland. An unintended consequence of the change was to produce a 'two-track' approach to mitigation with the 5% threshold being applied only within the historic core.

Notwithstanding these limitations the essential robustness of the study has been demonstrated by the extent to which the arguments it put forward and the recommendations it made remain relevant.

The review concludes that a thoroughgoing renewal of the 1991 study is not necessary in view of the degree to which the development/archaeology relationship has moved on and the intellectual context has matured in the intervening decades. However certain elements of the study still have value, indeed are essential, to the effective management of the historic environment in York and it is recommended that these be taken forward as stand-alone projects.

The suggested projects are:

- Overarching Heritage Management Strategy;
- Updating of the Deposit Model and enhancement of the HER (including a sub-proposal to assess the waterlogged deposits of the historic core);
- Revision of the Research Framework and;
- Development of an Archive Deposition Programme

2 Introduction

Background

In 1990 York City Council and English Heritage commissioned a study of Development and Archaeology in York from Ove Arup and Partners. The primary purpose of the report was:

"To update knowledge of the City's archaeological resource and to provide a framework for ensuring the development of sites is secured in a way which can conserve the most outstanding archaeological resources."[2]

The study assessed the location, character and meaning of archaeological deposits within the study area and how archaeologists went about their business. In parallel the study also considered building construction and development procedures in order to analyse the inter-relationship between development and archaeology.

The study area comprised the majority, approximately 65%, of the Area of Archaeological Importance designated under Part 2 of the Ancient Monuments and Archaeological Areas Act 1979[3]. The terms of reference for the study confined consideration of the archaeological resources to the Roman, Anglian, Anglo-Scandinavian and Medieval periods.

The study resulted in a deposit model which divided the city into 20 zones with the quality of archaeological deposits within each zone assessed. Ten of the zones were insufficiently known to be assessed and the report, as a result, recommended that on-site evaluation of all sites be carried out as part of the planning process. This was intended to overcome the perceived inadequacies of knowledge about the quality of deposits likely to be encountered on any particular site, even in zones where the deposits could be predicted in general terms.

In addition to the deposit model, a research framework was developed which was expected to increase the research yield for York whilst decreasing the frequency and intensity of archaeological intervention.

In 1992 York City Council adopted the document "Conservation Policies for York: Archaeology" which together with the Ove Arup Study and successive guidance documents issued by national government has underpinned York's approach to archaeology and planning to date.

In 1996 York became a Unitary Authority within much-expanded boundaries. One of the effects of this expansion was to adjust the balance between the historic core, as represented by the 1991 study area, and its previously detached hinterland.

[2] York Development and Archaeology Study (YDAS), 1991 p1
[3] See Figure 1

Purpose and Scope of Review

The purpose of this document is to review the effectiveness of the 1991 Development and Archaeology Study in achieving its aim, "to update knowledge of the City's archaeological resource and to provide a framework for ensuring the development of sites is secured in a way which can conserve the most outstanding archaeological resources."

The effectiveness of the 1991 study was assessed as follows:

• By interrogating existing datasets to identify archaeological interventions since the issue of the 1991 study;

• By examining the results of interventions in the study area to establish the nature and extent of publication and the state of the archives generated;

• By examining the results of all interventions since 1991 against the research framework;

• By examining progress made on maintaining and enhancing the deposit model;

• By examining post-1991 developments within the study area and assessing the success of the 5% preservation rule, while identifying any monitoring information that might exist.

The review has a larger geographical remit than the 1991 study, in that it considered all archaeological interventions within the present CYC boundary, and does not restrict itself to looking only at interventions within the historic core as represented in the 1991 study.

The study , in common with the 1991 study, did not address built heritage matters in detail.

The review has additionally been extended to include a statement of the significance of the waterlogged deposits in the historic core of York which is presented as Appendix E.

Analysis of the data held by City of York Council, York Archaeological Trust and other organisations was supported by interviews with key stakeholders[4] which captured the views of developers, archaeologists and curators who have been intimately involved with the practice of archaeology and development in York since 1991. A workshop discussion of the initial findings of the review formed part of the evidence gathering[5].

Having established the strengths and weaknesses of the 1991 study, the review suggests four projects, derived from elements of the 1991 study, which should be taken forward in order to enable the management of York's historic environment.

[4] See Appendix A for list of key stakeholders consulted.
[5] See Appendix B for key points from this workshop

3 Decades of Change

The 1991 study was undertaken at a time when the relationship between development and archaeology was in a state of flux and concerns about affordability were at the forefront of the debate. In the decades since the debate has moved on from one of 'conflict and dilemma' to one of 'balance and opportunity' as the intellectual and legislative context of development led archaeology has matured (see timeline below).

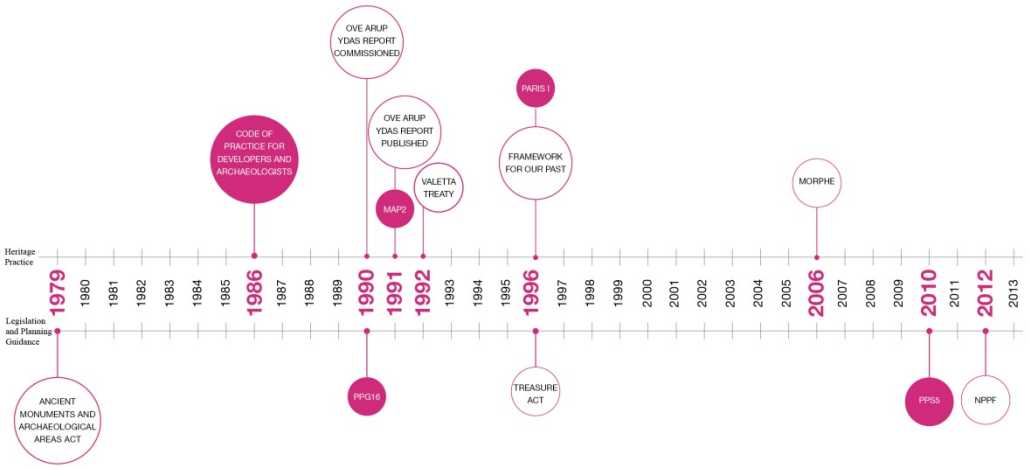

Figure 1: Timeline showing development of historic environment conceptual and legislative landscape

The purpose of this section is to review how the major topic areas within the 1991 study have moved on in the intervening period.

Planning and Archaeology Policy

Overview

The purpose of this review is to re-cap on the original policy context which informed the 1991 Development and Archaeology Study, to outline subsequent national policy reform, and to understand the implications for future archaeology policy in York.

The review will therefore consider national and local policy, including heritage and historic environment policies where relevant. York was designated as an Area of Archaeological Importance (AAI) through Part 2 of the Ancient Monument and Archaeological Act 1979. Therefore the review of local policy has also had regard to the guidance and legislation related to AAIs.

National Policy

The 1991 Development and Archaeology Study was largely founded on Planning Policy Guidance 16: Archaeology and Planning (PPG16), and to a lesser degree, on Planning Policy Guidance15: Planning and the Historic Environment (PPG15). Since that time, national planning policy has been the subject of a number of changes.

PPG16 paved the future of archaeology in planning, presenting a dedicated document which promoted the reconciliation between development and the interests of conservation in archaeology. It required local planning authorities to undertake early engagement, required field evaluations to be submitted alongside development plans and considered the desirability of preserving an ancient monument and its setting, whether scheduled or unscheduled, as a material consideration. PPG16 also sought to preserve the intrinsic value of the setting of archaeological remains by instigating a presumption in favour of their physical preservation in situ, or a presumption against proposals which would result in significant alteration or cause damage.

In 2010, the PPG16 was replaced by Planning Policy Statement 5: Planning and the Historic Environment (PPS5). Whereas guidance was originally divided, PPS5 considered archaeological assets alongside built heritage assets, including assets which are not designated, but are of interest. PPS5 confirmed the central role of the planning process in conserving heritage assets. It required development frameworks to demonstrate a positive strategy for the management and enjoyment of the historic environment. However, the guidance did not require a presumption in favour of physical preservation in situ and allowed for the loss of an archaeological feature providing clear and convincing justification existed. As a result local authorities were required to consider the positive contribution that conservation and preservation could make, against the public benefits which could be delivered through development of the site.

In March 2012, the National Planning Policy Framework (NPPF) became the primary source of national policy, replacing PPG16 and PPS5. The NPPF is founded on the principle of achieving sustainable development, which involves pursuing positive improvements in the quality of the built, natural and historic environments.

Conservation and enhancement of the historic environment features as one of 12 ‘Core planning principles’ and should therefore be a priority, for which local planning authorities must set out a positive strategy in their Local Plan.

The NPPF addresses matters of archaeology within the “Conserving and Enhancing the Historic Environment” chapter. The majority of this chapter is written in relation to the widest definition of the historic environment, which the NPPF categorises as:

> *“All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora.”* (NPPF Glossary, page 52).

Clearly, the component “buried or submerged” can be seen to directly relate to archaeological deposits, and it is clear that the NPPF considers archaeological

deposits as a fundamental part in the overall objective of protecting and enhancing the historic environment.

Furthermore, the City of York's recent Heritage Topic Paper Update (2013) identifies that the historic environment of the City of York is a complex mixture of landscape, buried archaeological remains, buildings and structures representing almost 2000 years of urban growth that underpins the significance of the contemporary city. As such, it is considered that the majority of heritage assets within the City Of York would have 'archaeological interest' and therefore the NPPF's consideration of the historic environment is pertinent to matters of archaeology.

For development applications, the NPPF states that the local planning authority should require the applicant to appraise the significance of any heritage assets affected. The relationship between 'heritage assets' and archaeology is set out, with the NPPF defining archaeological interest in heritage assets as: *"if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them"* (NPPF Glossary, page 50).

Significance is also defined, with the NPPF noting: In seeking to understand the notion of 'significance' in relation to heritage policy, the NPPF states that 'significance can be defines as: *"the value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting."* (NPPF Glossary, page 56).

To supplement this definition, the NPPF states that non-designated heritage assets of archaeological interest that are demonstrably of equal significance to scheduled ancient monuments should be subject to those policies established for designated heritage assets – i.e. treated the same. It is interesting to reflect on the difference between the NPPF's interpretation of significance of a heritage asset (including the treatment of designated and non-designated assets), and that set out in the previous PPG16, which made the case that not all archaeological remains were of equal importance.

When considering a development application the NPPF requires the local planning authority to request an assessment of impact which is appropriate to the scale of works, with the applicant's assessments being proportionate to the heritage assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance.

Of particular note for archaeological issues is the requirements that *"as a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary"*…and that *"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."* (NPPF, page 30). This continues the principles established in PPG16.

Where a proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, the NPPF stipulates that local planning

authorities should refuse consent. This is unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial public benefits, or the nature of the heritage assets prevent all reasonable uses of the site, or no viable use of the heritage can be found and no grant-funding is available (NPPF, page 31).

Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use and enabling development.

Unlike PPG16 and PPS5, the NPPF states that local planning authorities should make information about the significance of the historic environment gathered as part of plan-making or development management publicly accessible. This reinforces the requirement for developers to record and improve the understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence publicly accessible.

In taking this stance, it is clear that the NPPF is aiming to ensure that local planning authorities take account of the desirability of sustaining and enhancing the heritage asset, the positive contribution that conservation of the asset can make to a community, and the desirability of new development making a positive contribution to local character and distinctiveness (NPPF, page 31). In many respects this represents a clear change in policy emphasis from that envisaged in PPG16 and the 1991 Arup study.

Regional Planning Policy

On the 22nd February 2013, the Regional Strategy for Yorkshire and Humber was partially revoked except for the policies which seek to define the extent of the York Green Belt (specifically, policies Y1C1 and YH9C). It remains important therefore that any future development proposals within the York Green Belt which materially affect the historic environment, including archaeological remains, continue to have regard to these extant policies.

Local Planning Policy

The changes in policy at the national level have influenced reforms of planning policy at the local level. Since 1991, the evolution of local planning and archaeology policy in York has been complex, with a series of plans and policies prepared and examined over time. To provide some context to the policy progression, a number of important milestones are summarised in chronological order below:

- In 1996, Government reorganised some local authority administrative areas, this resulted in the creation of the current City of York local authority area.
- The Deposit Draft of the City of York Local Plan is produced in 1998. It is the first Local Plan created specifically for the new City of York area. Draft policy HE10 was written, which recognised a different approach was required to manage the impact of development on archaeological deposits depending on whether it was inside or outside the AAI. It made specific reference to the

1991 York Development and Archaeology Study in relation to the preservation target of ensuring *"less than 5% of any archaeological deposits will be disturbed or destroyed"* inside the AAI. Deposits of national significance found outside the AAI, should be preserved in situ wherever possible. If not, mitigation should ensure that deposits are excavated and recorded in accordance with a defined scheme of works.

- In 2005, The City of York Draft Local Plan Incorporating the 4th Set of Changes is approved. It represents an amended version of the Deposit Draft Local Plan (1998). The City of York Draft Local Plan (2005) also includes a suite of Development Control policies for making decisions on planning applications. The City of York Draft Local Plan (2005) repeats Policy HE10 and includes identical wording to that found in the Deposit Draft Local Plan (1998). As such, it reinforces the different approaches for inside and outside the AAI, and the *"less than 5%"* preservation target for works inside the AAI.
- Between 2006 and 2011 – Government reforms of the local planning system through the Planning and Compulsory Purchase Act (2004) saw the introduction of the Local Development Framework process. From 2006 onwards City of York Council began to establish a new policy framework, including producing a Core Strategy, which is the central, strategic policy document setting out the overall vision for the city.
- In 2011, the City of York Core Strategy Submission (Publication) (2011) is published after three previous rounds of consultation. The Core Strategy Submission (Publication) created Policy CS5, which took a strategic perspective to protecting, preserving and enhancing York's historic environment. The policy only makes limited reference to archaeology, and does not go in to the same level of detail as previous policies in 1998 or 2005. There is no mention of the 1991 York Development and Archaeology Study. This change in emphasis is due to the expectation that more specific policies would be created through additional supporting policy documents, namely Allocation Development Plan Documents, Area Action Plan Development Plan Documents, or Supplementary Planning Documents.
- July 2012 – During the Examination of the City of York Core Strategy Submission (Publication) (2011), the Inspector in charge of the Examination made the recommendation that the Core Strategy be withdrawal due to the fact that he did not feel that it was fully compliant with the new NPPF. The decision to withdraw the Core Strategy was ratified by the City of York Council in July 2012. The ramification is that Policy CS5 was withdrawn and no support, more specific policy was produced.
- June 2013 – City of York Local Plan Preferred Options (June 2013). As a consequence of the withdrawal of the Core Strategy and changes brought about by the Localism Act (2011), the partial revocation of the Regional Strategy, and the adoption of the NPPF, City of York Council is now preparing a new Local Plan.

  The Local Plan Preferred Options (June 2013) has created Policies DHE12 and DHE 14. Policy DHE12, in part, reverts back to the emphasis created by the policies in 1998 and 2005 insofar as it re-engages with the need to differentiate between archaeological deposits inside and outside the AAI; and re-states the role of the 1991 York Development and Archaeology Study in defining substantial harm as greater than 5% of buried deposits being disturbed or destroyed.

The wording of Policy DHE12 is more proactive, recognising the complexity and dynamism of York's historic environment and of the values and significances attached to it. It seeks to facilitate sustainable development, as advocated in the NPPF, but is careful to avoid substantial harm and to mitigate harm through appropriate solutions. Policy DHE12 formalises the need to produce a Heritage Statement, and creates a closer link between the Heritage Statement and reports on archaeological interventions and the City of York's Historic Environment Record.

Policy DHE14 establishes the HER as a key part of CYC activity in the future and in particular emphasises the role the HER has to play in enabling developers and their agents to " *become active partners in better revealing the significances of York's historic environment*."

- June 2013 – To support the production of the Local Plan Preferred Options a Heritage Topic Paper Update (2013) has been written. The Topic Paper highlights two key challenges which are pertinent to this study - that *"Heritage assets and evidence can also be intangible, relating to aesthetics and interests which are hard to quantify and therefore difficult to manage and monitor"* (page 29); and that the City of York Council does not have *"evidence of all the undesignated historically valuable and architecturally interesting buildings, streets and urban landscapes because that data does not exist"* (page 29). This therefore reinforces the importance of not only having a clear policy that is consistently applied, but the need to forge a closer link between policy implementation and the upkeep of the Historic Environment Record to ensure that the process is smarter and more efficient each time.

This local planning and archaeology policy timeline shows that the emerging Local Plan policy retains the basis and overall philosophy as defined in the 1991 York Development and Archaeology Study. It can also be argued that the latest policy wording in the emerging Local Plan is the most progressive in terms of seeking to balance the need for future development, avoiding substantial harm, whilst utilising mitigation measures to overcome harm to deposits as a means to improve knowledge and awareness both within the archaeological sector (through better utilisation of the Historic Environment Record) and also the local community.

Engineering design and mitigation options

The purpose of the 1991 study was 'to update knowledge from the City's archaeological resource and to provide a framework for ensuring the development of sites is secured in a way which can conserve the most outstanding archaeological resources'.

One of the elements of the study was a review of experience with novel foundation options, which minimise archaeological damage, recognising that any new underground work will carry the possible penalty of destroying archaeological resources.

Both the archaeological deposits and soil immediately below them were found not to be suitable for carrying building loads in York. Therefore piles are the normal foundation type appropriate for buildings in the city. These occupy the least plan

area of any foundation type and the report discusses how they will also cause the least damage to the deposit.

The type of piling determines how much damage is caused and it is noted that this should be restricted to the cross-sectional area of the pile. Where there are likely obstructions in the ground, especially at depth, then continuous flight auger (CFA) piles should be avoided. Bored cast-in situ piles are the most suitable.

The report provided a development framework, which stated that, in the majority of cases, the archaeological deposit should be preserved by adopting foundation solutions which destroy less than 5% of deposit (based on experience of piling). The framework also included for monitoring of deposits. It also recommended that the design assumptions used for the foundations of a development are archived by the City Council to ensure that an opportunity is left for future developments to use the same foundations.

The report also considers the use of basements, however, it is recognised that groundwater is an issue and these are unlikely to be adopted along the river. Deposits would need to be recorded in detail prior to excavation.

Following review of the 1991 study it is necessary to consider the following:

1. what data is available from planning applications and developments since the 1991 report;
2. how much data is available on designs adopted, in particular for foundations (have deposits been recorded properly and any more than 5% damage to deposits avoided?);
3. what level of detail there is in records, where deposits have been excavated or part preserved;
4. whether there are specific records of: piling layouts; new or extended basements; and site investigations;
5. whether developers have specifically addressed future re-use of foundations (piles in particular);
6. whether developers have specifically referred to Archaeological Mitigation Strategy (MS)[6] categories in their planning applications; and
7. what advances there have been in engineering and guidance since the 1991 report.

A number of studies have been undertaken in the years since the 1991 report. Arup authors have contributed to two key documents on the reuse of foundations by BRE[7] and CIRA[8], published in 2006 and 2007 respectively. Research was also carried out by the Environment Agency, English Heritage and the University of Sheffield, published in 2006, on the risks to groundwater and archaeology from piling. In 2007 a very useful guidance note was produced by English Heritage on

[6] See YDAS 6.7
[7] BRE (2006), 'Reuse of Foundations for Urban Sites: A Best Practice Handbook'
[8] Chapman, T, Anderson, S and Windle, J (2007), 'CIRIA Report C653: Reuse of Foundations

piling and archaeology[9], which includes a review of impacts of different types of piling upon archaeological remains and best practice guidance on choice and installation of piles, as well as records for the future. This is a key reference and should be referred to in any future strategy for resource management in York and by developers intending to undertake projects in the historic core.

In 2010 BRE published an information paper on sustainability in foundations BRE (2006), which includes reference to CEEQUAL. The Civil Engineering Environmental Quality Assessment and Award scheme (CEEQUAL) was originally developed by the Institution of Civil Engineers (ICE) and was launched in 2003. It was developed to encourage the attainment of environmental excellence in civil engineering, and to deliver improved environmental and social performance in project specification, design and construction. The impact on archaeology is included in the points-based scoring assessment, which is applicable to any civil engineering or public realm project.

Arup also prepared a design guide for the efficient design of piled foundations for low-rise housing in 2010[10], which, although not specifically concerned with preservation of archaeological deposits, may be useful for developers.

Since 1996 periodic conferences have been held on the subject of Preserving Archaeological Remains in Situ (PARIS) most recently (PARIS 4) in Denmark. The subjects covered range from the in-situ monitoring of peatlands to the effects on archaeology when it is built on and demonstrate the degree to which the discussion of in-situ preservation has moved on since the 1991 study[11].

Research Framework

The publication of YDAS in 1991 came at a pivotal point for UK archaeological practice, signalling a move from extensive investigation, favoured by the 'Rescue Years' of the previous two decades, to the notion, wherever possible, of in situ preservation. It also signalled, via EU legislation and its 'polluter pays' principle, the commercialisation of the archaeological process. This timing was not simply coincidental: many of the principles and methods espoused in this new context were pivotal within YDAS – archaeological value as a product of deposit quality, mapped by preservation, spacing and status, and then set beside research agendas to define future strategy[12].

These research agendas, defined in terms of hinterland, environment, and the Roman, Early Middle Ages and Medieval periods[13] , allowed a nine-fold Research Framework[14] to evolve. This focussed on the city's topographical and structural development, contextualised in relation to its economic growth as evidenced by production and exchange, in order to elucidate ideological and political

[9] English Heritage (2007), 'Piling and Archaeology: An English Heritage Guidance Note
[10] Arup/ NHBC Foundation (2010), 'Efficient design of piled foundations for low-rise housing: Design Guide
[11] Gregory, D and Matthieson, H (eds) 2012, Preserving Archaeological Remains in Situ: Proceedings of the 4th International Conference, Articles by Jim Williams and Tim Malim & Ian Panter are particularly relevant to the questions raised in this review.
[12] YDAS 3.5
[13] ibid. 5.3
[14] ibid. 5.4

imperatives. At the core of YDAS was the principle that finding out about the past should be a fundamental driver of heritage strategy. There may have been times in later years when this seemed forgotten, as preservation was deemed more important than investigation, yet this message was never lost in York's actual curatorial practices. The notion has received a welcome boost with the thrust of recent legislation[15], underpinned by the idea that the archaeological heritage can only be valued, cared for and enjoyed if we first enhance our understanding of these assets.

The text below considers how national and regional research frameworks have developed in the intervening 20 years, in order to assess how York might now move forward. To do so, it has drawn on a number of regional and national strategy documents and, where relevant, set these beside specific York projects.

Changing Research Frameworks

The last 20 years have not only seen institutional and methodological changes within archaeology, but also intellectual ones. Two of the most significant for present purposes concern regional trajectories and the discipline's thematic and chronological range. Recent academic thinking has stressed the need to move beyond 'grand narratives' and the overarching models that they tend to generate, to accommodate diversity of response. It is increasingly recognised that interpretative frameworks developed in one part of the UK, and then imposed elsewhere, may be hindering, rather than enhancing, our understanding of patterning in the detailed archaeological evidence from the latter zones[16] . This has led to the development of regional resource assessments and research agendas[17]. With the current development of 'localism' agendas, this way of thinking now seems likely to step down to still lower levels of spatial resolution.

Secondly, concerning chronology, 'Industrial archaeology' was an accepted sub-discipline in 1991. Today, however, interest in early capitalism has spread beyond its traditional focus on factories and transport infrastructure (although these topics can still have world-wide impacts, for example recent work on the turntables at the Engineer's Triangle, reported in Global Rail News: Samuel 2012). Now archaeological studies of recent industrial development have spread to a consideration of landscape setting and environmental impact, elite and religious power, migration and culture contact. In addition, studies now extend at least into the 20th century, with a burgeoning interest in the archaeology of the contemporary past. Such elements, for example, have been brought together in recent excavation of 20th century workers housing at Hungate[18] , in the process making the point that 'brownfield' sites are under particular development threat, being still thought of in some quarters as devoid of archaeological importance.

Alongside these general trends, particular practice in York has been affected by another fundamental shift: extending the area of curatorial responsibility out to the

[15] See Planning and Archaeology Policy above p5 et seq
[16] Bradley, R 2007
[17] Olivier, A (ed) 1996
[18] York Archaeological Trust (nd) at http://www.dighungate.com/content.asp?ID=131

ring road, and thus into the immediate environs of the historic town. This has not only required the City Archaeologist to deal with quite different archaeological contexts (threats due to ploughing and linear schemes such as pipelines) and communities (villagers who saw themselves as belonging to their immediate area, rather than as citizens of York). It has also meant that research objectives have to cater for prehistoric periods: the focus for YDAS was urban archaeology from the Roman period onwards (although it did, in prescient mode, include a study recommending the study of York environs, something which then became a core responsibility of the Community Archaeologist post established here in 2005). Thus important prehistoric developments in The Vale of York can be investigated, at the critical point where the conjunction of the Foss and Ouse rivers crossed the York glacial moraine.

This change also facilitates exploration of the dynamic relationship between York and its hinterlands, a sphere of interest given added impetus by Perring's publication of approaches to town and country in England[19]. Suburban development around York (see the recent publication by Ottaway (2011) collating work on Roman period activity in these extra-mural environs) is encircled by fields beyond. This allows hinterland interactions to be investigated as a continuum, contrasting sharply with what is possible around, for example, the core of London and most other historic cities.

Present Challenges

Because of the above changes, a series of issues arise when seeking to fully understand the archaeological development of the York area in a more holistic way than was attempted in the 1991 study. These concern periods, sites, landscapes/townscapes and techniques.

Conventional *periods* have been used to describe the results of archaeological investigations in the city, either defined by technological changes in prehistory (stone, bronze and iron) or by political/military events (Roman, Anglian, Viking Norman). Two problems arise with this. First, dating may not be sufficiently accurate to allocate particular developments to these categories. Here, the remedy comprises a concerted programme of C14 dating, concentrating on those periods prehistory and in the 4th-8th centuries AD when chronologies are not tightly tied down. Where such dates can be related to sequences of site development, Bayesian techniques may tighten chronologies still further.

The second, more intractable, issue is that this periodisation may itself conceal more than it shows. The fundamental shift around York in prehistory concerns how mobile peoples, initially moving westwards along the glacial moraine, became increasingly sedentary over an extended period of time. This process involved making claims on the landscape using burials and more major monuments, dividing it up for agriculture, building structures, etc. Making

[19] Perring D 2002

distinctions between the Mesolithic and Neolithic periods, or within the Bronze Age, may not help us understand these complex processes[20] .
By the same token, in later centuries, there is accumulating evidence that change *within* such periods may be just as significant as differences between them. Thus, in the Roman period, the founding of a fortress in the first century AD or its demise sometime in the fifth may be less important than developments either side of c.AD200 (something also argued for the surrounding countryside: Roskams 1999). Equally, the emphasis on Anglian, Anglo-Scandinavian and Norman 'periods' can be a product of what documentary sources tell us about political and military imperatives, rather than the social and economic dynamics accessed by archaeology (although recent work around the Minster suggests that the Norman conquest may have had a more significant impact on York's topography and enclosing walls than it has been given credit for).

Secondly, defining *sites*, both practically and conceptually, presents another set of challenges. The very notion of 'site' tends to focus on settlement. Yet, before the Middle Bronze Age at least, 'sites without structures' are much more common. The notion of 'siteless surveys' derived from landscape reconnaissance may have much to teach us here. Equally, visibility and vulnerability will vary between periods and site functions. Thus our knowledge of prehistoric periods is fundamentally affected by drift geology, for example where peat exposures show concentrations of Mesolithic material. Equally, our ability to recognise activity in post-Roman centuries is still compromised by the lack of durable material culture from that time. Finally, in later periods, work by buildings archaeologists, backed up by dendrochronological studies, have demonstrated that post-medieval structures often contain important traces of earlier, medieval building. Thus redevelopment of a quite recent, seemingly insignificant, building, may pose a threat to vulnerable earlier fabric concealed within it. In such circumstances, deciding what constitutes the site, and was constitutes a threat, must be carefully pondered.

This point about defining sites has still wider implications: *landscapes* and *townscapes* can only be understood holistically. Archaeological deposit mapping was initiated in York with YDAS, setting this beside the specific impacts of foundations involved with modern development to define curatorial strategies (*ibid.* 6.4). This approach should now be developed to include details of natural strata. Thus recent work on YAT's *Urban Transitions* project has used LiDAR data to study the drift geology and riverine regimes beneath York, showing how fundamental the configuration of the latter have been to the development of the town throughout its existence[21]. Such mapping must also now extend from the deeply-stratified core to shallow periphery, connecting to investigations of 'made ground' by the British Geological Survey in The Vale of York to allow strategic decisions to be made here in relation to changing agricultural practices.

[20] Bradley 2007, 26ff
[21] The importance of riverine regime has been to the archaeology of York is examined York:Waterlogged Archaeological Remains Statement of Significance at Appendix E of this review..

Finally, *techniques* for gathering, analysing and disseminating data have developed apace since 1991. Some of these provide solutions to new problems, for example the facilities of the *Unpublished Fieldwork Reports* of the Archaeology Data Service (n.d.) to enhance accessibility of the 'grey literature' now produced by field units as a result of the commercialisation of fieldwork. Elsewhere, they have been developed independently, for example micromorphology to elucidate deposit formation processes, isotope analyses to illustrate dietary change, or petrology to define artefact sources. Curatorial practice obviously has to keep up to date with such things, a sphere where Regional Science Advisors set up by English Heritage provide an important mechanism. Using commercial resources to allow these techniques to be applied will obviously need explicit justification in each context, but the academic studies now exist to allow us to make this research case. If we can define the challenge, then the necessary resources can be argued for. Thus, for example, we have considerable problems distinguishing coarse handmade pottery of late Iron Age date from its Anglian counterpart. Yet a concerted campaign of thin-sectioning, of material generated in modern developments could allow differentiation of material from different periods.

The real challenge here is that results from such research only become meaningful when material is investigated across projects[22]. If one considers the information derived from human skeletal research, for example, burials from any one period are unlikely to be encountered in great number on a single development site (and, if they are, might be best left *in situ*). Detailed analysis of small numbers of individual interments at any one point can be justified only when it contributes to larger datasets over extended timescales. Clearly, there is a real tension here between project-specific strategies and those longer term needs of archaeological research required to enhance public understanding.

Deposit Model

The deposit model created as part of the York Development and Archaeology Study was the product of a database of in excess of 1000 entries compiled from a number of sources including York Archaeological Trust records and the annual reports of the Yorkshire Philosophical Society[23]. The original study area was tightly defined and restricted to the immediate environs of the historic core –York City Council subsequently commissioned a supplementary data gathering exercise which expanded the database to include all parts of the historic core and all projects undertaken up to 1992.

In 1996 the creation of the City of York Council saw the addition of the parishes formerly within the Hambleton, Harrogate, Ryedale and Selby Districts of North Yorkshire. Data from the North Yorkshire County Sites and Monuments record relevant to the newly acquired parishes was incorporated into the CYC SMR.

[22] Poor understanding by the wider archaeological community of the wealth of material available for study is a significant bar to the development of cross-project syntheses. Enhancement of the Historic Environment Record would provide an improved entry point to the available data and could be a stimulus to cross-project syntheses.
[23] See YDAS Section 4.3 for a full list

The deposit model developed for the 1991 study was of necessity limited by the technology available at the time and has been further limited by subsequent IT support decisions. The details of the database used for the 1991 study are given at section 4.3 of the study. The files in the original dBase III format were held by York City Council. This data was subsequently migrated into Access and the archaeological deposit model data points were integrated into HBSMR when it was acquired by City of York Council. They are currently held in a customised SQL table in HBSMR

In 1992, YCC commissioned YAT to complete the data gathering exercise started in 1989 - the 1989 data gathering exercise did not capture all the available data in the YAT archive. YCC then purchased SURFER, a programme that allowed modelling and creation of graphic representations of the deposit model data. This was used regularly until 1996, when a decision was made to cease support for "non-standard" programs that ran only on stand-alone PCs. In the absence of a method of graphically presenting deposit model information the data is presented in tabular format if required to support documentation for planning purposes.

Unfortunate though the lack of functionality in the Deposit Model software might be, it is nonetheless possible to interrogate the database. The value of the database itself is however compromised by the complete lack of any data post-dating 1992 - the Deposit Model data from post-1992 archaeological interventions and which is contained in grey literature has not been extracted and entered into either the dB3 database, the subsequent Access database or into HBSMR[24].

Archaeological Practice in York

Archaeological practice in York has evolved over the course of the two decades since the publication of the 1991 Study, perhaps in ways which were not foreseen by the authors of the report.

Arguably the most important factor in driving the practice of archaeology in York since 1991 has been the wider ranging changes brought about in UK archaeology by the adoption of PPG16 – in particular the preponderance of interventions by commercial units in an environment where competitive tendering is the norm and the driving force behind archaeological activity is a requirement to satisfy planning conditions. These factors have seen a change in professional archaeological provision from a position where a single organisation, the York Archaeological Trust, was a de facto monopoly supplier to a position where, for example, YAT was one of eleven organisations or individuals which were responsible for a total of 42 entries recorded on the CYC database of interventions carried out in 2008.

[24] However a research project currently being undertaken by Kurt Hunter-Mann aims to extract deposit model data from the grey literature archive from approximately 200 post-1992 interventions in the walled area southwest of the Ouse. This project is likely to provide a useful benchmark for the utility of the data which can be extracted from the grey literature archive and for the resource level required to bring the Deposit Model database up to date.

One aspect of current archaeological practice which was prefigured in the 1991 report is the widespread use of site evaluation. The report recommended[25] evaluation of all sites in areas where existing information was insufficient to allow decisions on excavation or preservation to be made (whilst recognising that most sites in York were likely to fall into that category) – a recommendation which was implicit in Management of Archaeological Projects , commonly known as MAP2, published by English Heritage also in 1991[26]. Site evaluation coupled with mitigation of impact has now become standard practice in development driven archaeological projects and is recommended as best practice in construction industry guidance papers[27] – themselves an innovation since 1991. Such is the dominance of evaluation in archaeological practice that the CYC records of interventions undertaken since 1991 list three times more evaluations than excavations. This balance in the scale of archaeological interventions is not without its impact on the way understanding of York's archaeology has developed since 1991, a point which is discussed further in the next chapter.

A common thread in archaeological practice throughout the two decades since the publication of the York Development and Archaeology Study has been the involvement of amateur groups in archaeological field work. The number of individuals and groups undertaking projects has varied over the period however with the creation of the post of Community Archaeologist in 2005, participation in community archaeology projects has seen a steady growth in popularity. Until relatively recently however the engagement of non-professional archaeologists with the process of development driven archaeology was slight and largely confined to off-site processes. The example of Hungate (and other projects such as the A59 Park and Ride Scheme and Heslington East, see below) has shown that this engagement can be much more wide-ranging and dynamic and it is likely that non-professional involvement in development driven archaeology will be much more common in the future.

Curatorial practice in York since the publication of the Study has benefited from the occupation of the post of City Archaeologist by one individual throughout the period. The breadth and depth of knowledge acquired by the City Archaeologist to a large extent in practice mitigates the effects of the failure to maintain the currency of the Deposit Model and the Research Framework.

Long term curation of the archive of archaeological records has had a mixed history over the period. The Yorkshire Museum has been the presumed ultimate depository for curation of archaeological material throughout the period, however variations in collection policy at the museum (and in particular the proposed charges to be levied on the deposition of archives generated by development

[25] YDAS Sections 3.7 Research Management and 3.8 Principles for Archaeological Intervention in the 1990's.
[26] MAP2 paras 4.1 – 4.4
[27] For example Barber et al 2008 Archaeology and Development – a good practice guide to managing risk and maximising benefit – noting the reversal of emphasis from the 1991 Ove Arup report.

driven archaeological projects) have discouraged the large-scale transfer of archive material from commercial contractors[28].

4 Emerging Themes

Overview

When assessing the effectiveness of the 1991 study, the ground-breaking originality and ambitious scope of the report being reviewed are clear. The 1991 study was undertaken at a point of considerable upheaval in British archaeology and took the opportunity to look at the fundamental issues of archaeology and development in a radically new way.

The output of the report included a deposit model, archaeological resource assessment and research framework, methodologies for preservation of remains in situ as well as an institutional framework for dealing with archaeology within the planning process. Each one of these elements of the report would, under present circumstances, merit a study in its own right so to find them encompassed in a single holistic document is a tribute to the breadth of vision of both the commissioning body and the project team. More remarkably still, the report was undertaken in what might in some ways be described as a practical and methodological vacuum – the Town and Country Planning Act 1990 and the attendant guidance note dealing with archaeology, PPG16, were developed in tandem with the report and there was no real body of data to draw on when considering how archaeology and development would interact in the new legislative environment. The York Development and Archaeology Study can in many ways be seen as forward thinking and innovative in the approaches it took to addressing archaeology within the planning system[29].

In the intervening decades however application of the recommendations of the study has been variable and the success with which the aims of the report have been met has been mixed. The overwhelming view of the stakeholders consulted during the course of the review has been that development in York has not been 'unduly hindered by archaeological constraints'. The 5% threshold on developments within the historic core is understood and accepted by developers and has achieved the intended aim to allow development to proceed (see comment at Appendix B). It is less easy to say that the second part of the aim to 'conserve the most outstanding archaeological resources' has been achieved in the almost total absence of evidence for ground conditions on the sites which have been developed[30].

[28] The scale of archive retention by commercial contractors and some of potential consequences are discussed further in chapter 3.
[29] Adrian Olivier in Frameworks for the Past, published in 1996, noted that the 'York Development and Archaeology Study' and 'Conservation policies for York: archaeology' represented "the furthest that a local authority has gone in recognising the importance of archaeological frameworks and demonstrates the level of commitment that can be achieved for positive preservation policies acting in tandem with a structured research programme." The 1991 study continues to form a point of reference for similar archaeological policy documents – most recently in the case of 'King's Island , Limerick: a development and archaeology study.'.
[30] See also the appended York: Waterlogged Archaeological Remains Statement of Significance in particular section 3.2

The area in which application of the recommendations of the 1991 study has been least successful is in the development of the Historic Environment Record, Deposit Model and Research Framework. Both the Deposit Model and the Research Framework are substantially out of date and in their present form are of less use in managing the historic environment of York than would be the case if they had been consistently updated . The Historic Environment Record has fared better, however gaps in the database and inconsistencies in the source material constrain its utility.

The areas in which the recommendations of the 1991 study have been least successfully applied are the result of the chief flaw in the study which was arguably its failure to address the resourcing required to allow its recommendations to be taken forward - had the issue of resourcing been more explicitly addressed it is possible that both the Deposit Model and Research Framework would have been maintained and revised on the regular basis which the authors of the report envisaged[31]

A document of its time

The Study also, and inevitably, to some extent betrays in its emphases the concerns and interests of the period in which was compiled – concerns which, after the passage of more than 20 years may perhaps be viewed as less compelling than they once were. The foremost concern of the 1991 Study was to provide an intellectually viable underpinning for an affordable method of carrying out development driven archaeology against a background of recent examples of the requirements of archaeology and development clashing with much publicised and unfortunate results. In 2013 there is a substantial track-record of fruitful co-existence between development and archaeology. The question is now no longer 'can archaeology and development co-exist?' but 'how can archaeology and development best operate in order to achieve mutually beneficial results for York's citizens and visitors and the global community?'

The Study also exhibited some unexpected gaps – for example the exclusion of the prehistoric and post-medieval periods from the Research Framework and the failure to consider below-ground archaeology and the historic built environment as a continuum (the latter being a particularly striking omission in light of the quality of the historic built environment in York)[32].

The Evidence Base

The analysis in this chapter has been undertaken using two principal sources of information – the database of archaeological interventions maintained by City of York Council and results of key stakeholder engagement carried out in May and June 2013.

Engagement took the form of a questionnaire followed up by interviews, carried out either by telephone or face to face. Although resources for carrying out

[31] One possible method of addressing the resource issue – the use of Community Infrastructure Levy funds to support specialist posts – is discussed in Appendix C.
[32] It should be noted however that the exclusion of resourcing issues from consideration and the chronological limitations of the 1991 study were constraints set on the study by the terms of reference set by the commissioning body.

stakeholder engagement were limited a representative sample of the principal interest groups were approached and responses given by developers, archaeological contractors and curators[33].

The database of archaeological interventions contains 1199 entries dating from October 1990 to January 2012[34], each entry representing a grey literature report received by the City Archaeologist. The basis for compilation therefore means that the database does not represent a complete record of all archaeological activities since it excludes projects which fall into the following categories:

- Projects which are on-going and have yet to generate grey literature;
- Projects which have stalled, usually for financial reasons and have failed to generate grey literature[35] and :
- Projects which fall outside of the planning system and which do not therefore as a matter of course generate grey literature.

An initial examination of the data showed that 56 of the entries related to building recording, 299 appeared to be duplicate entries and a further 160 grey literature reports were missing from the CYC digital archive[36]. The accompanying GIS project is therefore based on a residual database of 684 entries.

The database of interventions provides information about site location, type of intervention and the responsible archaeological contractor however this review was mandated to analyse other categories of information (for example archive location, client and whether or not information generated by the project had been published). In order to obtain the necessary information the grey literature reports had to be consulted – an exercise which proved to be very time consuming and demonstrated, as might be expected, that reports compiled over the course of more than twenty years by a substantial number of different organisations varied considerably in both content and quality and rarely presented all of the required data in a concise and easily readable format[37].

The issues surrounding the evidential base are understood within CYC and a roadmap for the development of the HER has been prepared by the Design Conservation and Sustainable Development team. Unfortunately attempts to fund the activities required by the roadmap have so far proved unsuccessful.

[33] The key stakeholders who were interviewed are listed in Appendix A - their co-operation in assisting with this review is gratefully acknowledged. An copies of the responses received will be lodged with CYC as part of the project archive.
[34] The copy of the database of interventions supplied for use in this review represents the state of knowledge in March 2013.
[35] An example of this category of project can be found in the case of the site at 89 The Mount after two phases of evaluation an excavation was carried out in 2005/6. A dispute over liability for the costs of post-excavation work has meant that a post-excavation report has yet to be produced – the site is therefore represented on the database by the entries for the evaluation phases. In a further complication the site archive is split between two contracting units who hold the records and the majority of the finds. A gypsum burial recovered during the excavation is held by the Yorkshire Museum and a sarcophagus also recovered during the excavation can be found at the headquarters of the client.
[36] It is possible that some or all of these reports exist in hard copy at the CYC archive at Elvington however shortage of resources precluded searching for them.
[37] Grey literature reports, for example, seldom contained information on mitigation strategies or archive status.

Is preservation in situ really working?

Thirty five site-specific studies were presented in the 1991 report. These were sites, which were likely to be developed soon after publication of the report. In the proposal for review, it was anticipated that it would be possible to look at a small selection of these sites and comment on whether or not the recommendations from the 1991 report were implemented, and to what degree.

In the course of reviewing the data held by CYC it became apparent that several different databases hold information regarding the mitigation strategies adopted on sites developed within the historic core. Only very recently has a system been put been in place which can track projects from initial scoping to completion. Even then, data is not necessarily captured in one place. For example heritage monitoring has been conducted on a different basis and recorded on a different database to that on piling layouts and basements(held within the building control department records). To date, therefore, it has not been possible to complete a review of specific sites.

Information on mitigation strategies is not readily available as a result of database issues above. However, it has been possible to consider information supplied on two sites: Marks and Spencer at 44-45 Parliament Street; and Victoria House, Micklegate. The data from the Marks & Spencer was most useful as a 'deposit monitoring project' was undertaken. This concluded that the 5% damage limit proposed in the 1991 Arup study may be sustainable for deeply buried deposits. However, it also showed that the immediate sub-surface deposits (<2m deep) have highly dynamic characteristics, with observations of decay having been made.

In any event some degradation of deposits left in situ is likely to occur and one of the stakeholders drew attention to the need to devise strategies to reduce threats and risks to a minimum level[38]. This of course requires that a decision be made about what needs to be preserved and the same stakeholder questioned whether the current practice of evaluation is, in fact, asking for the wrong information.

It is not at present possible to gain easy access to a single database which includes archaeological records, mitigation strategies and foundation design choices. The reason for selecting particular foundation types should be clearly stated, taking into consideration the preservation of archaeological deposits as well as engineering aspects.

At present the assumption underlying the practice of restricting sub-surface impacts is that the archaeological deposits which are being left in situ are preserved. Unfortunately in the absence of a coherent and comprehensive programme of monitoring it is impossible to determine whether preservation in situ has been an effective strategy[39].

Good practice may be taking place in locations outside York and it is likely that useful lessons may be learned. For example, reports from both Canterbury and Nantwich (see below) identify the importance of groundwater and hydrological regime on the preservation of archaeological deposits and illustrate how monitoring can be used effectively.

[38] See transcript of interview with Ian Panter in project archive
[39] See note 24 above

The establishment of an effective programme of monitoring begs the question of whether and how an intervention could take place if ground conditions deteriorated below a trigger point. At the very least, it presupposes that any development which has adopted this approach has incorporated foundation designs which allow intervention without wholesale demolition[40].

Case Study – Nantwich

Excavations in Nantwich over the course of the last 30 years had uncovered remains of waterlogged material of exceptional quality. The remains, of roman and medieval date, included salt-ships (hollowed out oaks), barrels and structural timbers as well as organic-rich deposits of stable sweepings and domestic waste. The remains were clearly of national importance yet their distribution across the town was poorly understood.

In order to provide effective planning control advice Cheshire County Council commissioned an assessment of the waterlogged deposits, funded by the Historic Environment Enabling Fund of English Heritage.

The assessment (SLR 2008) comprised an initial desk based study which compiled and examined archaeological evidence in relation to geology and hydrogeology, and continued with a coring programme and assessment of soil samples. Over 93% of the 30 boreholes sunk produced positive results allowing the areas of waterlogged deposits to be accurately mapped.

As well as mapping the extent of the waterlogged deposits it was possible to identify the date at which waterlogging began and the formation processes involved. Evidence from areas removed from the immediate environs of the River weaver suggested that drainage and paving in the 19th century had impeded natural rainwater recharge of some deposits leading to substantial desiccation and consequent loss of archaeological information. The resulting soil shrinkage additionally poses a threat to the structural stability of existing and future buildings.

The correspondences between Nantwich and York are marked and the value of undertaking a similar exercise in York is clear – indeed a substantial body of evidence already exists upon which to base the desk study element of an assessment (see Appendix E below).

Case Study - London[41]

In 1958, a wooden Romano-Celtic boat was discovered buried below Guys Hospital just south of the Thames. One end was seen and recorded by Peter Marsden, then a student, and later to become a leading authority on Maritime Archaeology. The boat was uncovered during building work, and recorded at weekends. A few samples were removed, but the boat was left in situ, buried approximately 4m below ground level. It was seen again in 1965, and once again left *in situ.* In the 1980s it was designated a scheduled monument, on the basis of

[40] As envisaged in the 1991 study - see Mitigation Strategy 3 and figure 6.9.
[41] The author is grateful to Dr Jane Sidell for the information presented in this case study.

its rarity and survival, and to protect it in light of the ever-increasing development in London.

In 2009, Guys Hospital began planning a new Cancer treatment centre, to be built over the Roman boat and it looked as if the boat might need to be excavated in its entirety. At this point, the principle of fully excavated a scheduled monument was discussed. Generally scheduled monuments are left undisturbed, but it was considered this was a rather exceptional case. The boat could be considered an artefact, and not in its original setting. Setting and context play a large part in the understanding and significance of cultural heritage, as well as the physical remains. In this case, it was concluded that it would be permissible to carefully excavate, conserve and display the boat. At this point, a test pit was opened to see if the boat was present; only its northern end had ever been seen, and not for some time. The test pit, whilst small and deep, confirmed the boat was present and well preserved. Peter Marsden was able to visit and provide advice and information.

Figure 2: A test pit being excavated at Guy's Hospital in 2010 (courtsey of Jane Sidell, EH)

The architects for the new building now decided it would be possible to accommodate the boat below ground after all. Discussions then focussed on how to suitably protect the boat and guarantee its long term survival. The foundations have been designed to transfer load away from the boat. Hydrological studies have been carried out and the boat is within the water table, but the top of the boat is above the water table. Modelling suggests the proposed 14-storey building may depress the groundwater table by up to 30mm. Clearly a way of introducing water into the system was needed and so the architects were instructed to channel rainwater from the roof of the new building into the ground above the boat. In addition, another element of the design has provided for water to be channelled in, if rainwater is insufficient.

For the first time in London, and quite possibly the UK, in addition to the conventional monitoring, it was decided that there should be an option to recover the boat if monitoring clearly indicated deterioration. Parameters have been set for redox values, pH and water levels and a five to eight year monitoring programme is being designed. In addition, a 'corridor' has been left in the ground between the piles and below the ground beams, so that the boat may be excavated out if necessary. Legal agreements are being prepared to commit all parties to this. Although the public will not be able to see the boat at this time, things may change in future, and it will remain intact whilst allowing development with a clear public benefit.

Deciding Where to Dig : the Deposit Model and Research Framework

As noted above the deposit model developed for the 1991 Study has seen little advance in the intervening years. In 1992 the database was updated to include information from the parts of the AAI not captured in the original study however the deposit model still excluded areas of the City of York outside of the AAI. Since 1992 no data of any kind has been added to the deposit model.

The deposit model clearly reflects an out of date and partial understanding of York's archaeology and it is therefore not surprising that the general view of stakeholders was that the deposit model was of limited utility. The degree to which the partial coverage of the deposit model reduces its utility in providing guidance is perhaps mitigated slightly by the continued preponderance of archaeological activity within the historic core[42] .

The deficiencies in the deposit model are, in practice, largely compensated for by the knowledge and experience of the incumbent City Archaeologist. Reliance on individual expertise in the absence of a robust and comprehensive model backed by an up to date database is unlikely to be sustainable in the long term and risks introducing a 'single point of failure'.

Updating the deposit model in order to enhance its utility as a planning tool will require the database to be upgraded by addition of data from the interventions across the entire CYC area using the grey literature archive held by CYC. The non-standardised nature of the grey literature is likely to mean that this will be a time consuming activity[43]. Resources will need to be found to do this and the most cost–effective way to deal with the backlog would probably involve the use of research students and volunteers although this would equally probably extend the timespan of the activity by a considerable margin.

In order to maintain the currency of the deposit model the database needs to be kept up to date on a regular basis. However at present the City Archaeologist has insufficient resources to extract the necessary data from the grey literature and

[42] In the database compiled for this review 435 interventions fell within the AAI and 247 outside – the majority of the latter within the modern suburbs. See Fig 2 and Chart 1
[43] The exercise in extracting data from grey literature for an area of the historic core south west of the River Ouse currently being undertaken by Kurt Hunter-Mann may provide a useful benchmark.

convert it to database entries. This task would be rendered significantly quicker if the necessary data was presented by archaeological contractors in a standard format - ideally electronic – which could be added directly to the database. An example of a standard format used successfully by the Museum of London is included at Appendix D.

In order to make maximum use of an enhanced database the linked GIS system should have a modelling capability – a feature which was lost in York when SURFER ceased to be supported.

The YDAS document outlined York's archaeological importance twenty years ago and recent intellectual and methodological developments have only enhanced the city's potential. The same document also suggested (5.6.6) that, for its approach to planned archaeological intervention to work, the research programme guiding development decisions had to be monitored and updated. The creation of such a 'living document' proved difficult with the available curatorial resource, but time is now ripe to reflect afresh on the content of a new set of research aims. Since 1991, the growing need to set regional research agendas beside national priorities has been widely acknowledged (see Section 3 above). Most recently, however, the local level has been portrayed as of still greater importance (hence the appearance of agendas for quite specific areas such as that for Chichester Harbour Conservancy: 2007). By designing its own, dedicated set of research objectives, albeit lodged within regional and national frameworks, York would be well-placed to take archaeological understanding forward in a number of vital spheres:

- Prehistory: the growing investigation of prehistoric development in this part of the Vale can fill an important 'black-hole' in our understanding of Yorkshire as a whole and, by default, give chronological context to the founding of the Roman and medieval city
- Urban hinterlands: particular impacts of the town on its environs can be explored in meaningful detail, perhaps uniquely amongst the major historic towns in the country. This can include evidence derived from accessible suburbs, the whole investigated and recorded deploying a single, coherent form of curatorial strategy
- Local/regional trajectories: specific development can be charted in York, for most periods the main administrative, political, military and economic centre in the region. Once defined, these trends can be compared with a vibrant and well-investigated regional context of Yorkshire
- Industrial archaeology: York's long association with particular forms of manufacturing and rail transport has created associated facilities such as workers' housing, ripe for investigation alongside modern redevelopment. This includes accessible 20th century, as well as earlier, features.

To exploit these potentials fully, future practice will have to confront a series of challenges:

- Periodisation: to step beyond conventional categories and, in their place, seek to define underlying processes of change, whether fundamental transitions such as the move from mobility to sedentism

in prehistory or the changing forms of urbanism in the last two millennia

- Site definition: to systematically take on board differential site visibility and vulnerability, perhaps in the process stepping beyond the very notion of 'the (archaeological) site'
- Holistic landscapes/townscapes: to understand the nature of drift geology and riverine formation across the whole area, and site formation processes for all periods on top of this
- Methodological development: to deploy strategically a range of techniques which generate evidence which can only be analysed and interpreted meaningfully at a supra-project level.

Deciding When to Dig: Application of Archaeological Policy

Policy HE10 finalised in the Deposit Draft of the City of York Local Plan (1998) and re-stated in the City of York Draft Local Plan Incorporating the 4th Set of Changes (2005) encapsulated the innovative approaches set out in the 1991 Development and Archaeology Study.

What is clear is that the City of York Council has taken a pragmatic approach to the application of the policy, especially in enforcing the criteria of *"less than 5% of any archaeological deposits will be disturbed or destroyed"*. Stakeholder feedback highlights that mitigation measures agreed as part of development proposals have not strictly adhered to the 5% criteria, but instead have focused on being proportional and appropriate to the scale of the development and the expected impact. This is perceived as a positive approach, and one which has benefitted both York and the development industry.

This pragmatic approach to interpretation of the policy appears to have translated into the development industry not being overly concerned about the criteria within their investment decisions. Most stakeholders commented that the policy and criteria did not act as a restraint on development. However, it was highlighted that there are obvious financial implications in conforming to the policy and delivering the required mitigation measures. Whilst those seeking to develop in York recognise that archaeology is likely to be an aspect of delivery, the financial impact of additional mitigation does have to be normalised and factored into the overall consideration of development viability. It was stated that certain schemes, especially those situated outside the AAI, have been classified as only marginally viable (or unviable) due to the additional requirements linked to Policy HE10.

Given York's character and history it was deemed that archaeological deposits and their preservation do in fact represent an opportunity to add value to a development proposal. It was noted during discussions with stakeholders that new techniques to minimise the impact on deposits and preserve deposits were allowing for features to become an inherent part of the scheme.

Feedback during discussion with developers and during the workshop (see Appendix B) highlighted that the criteria in the current policy (either less than 5% of any archaeological deposits will be disturbed or destroyed inside the AAI; or preservation in situ outside the AAI) did not fully grasp the opportunity to share the results and findings from any archaeological mitigation. Whilst increasingly

the development industry is working with the City of York Council to understand how information can be captured and disseminated, the educational dimension to archaeological mitigation was deemed to be a missing component of the current policy.

It is clear that Policy DHE13 has been drafted to comply with the new NPPF. On this basis, it does appear more proactive in terms of facilitating development whilst also seeking to take an appropriate approach to managing impacts and deriving proportional mitigation measures. The approach within the policy is to move towards considerations of 'harm' as opposed to a fixed position based upon the 5% rule. Nevertheless, the 5% threshold is outlined in the supporting written statement that accompanies the policy – and it is expected that this would function in parallel to the policy, and by definition, helps to inform the degree of 'harm' and whether it constitutes 'substantial harm'.

Importantly, the emerging policy makes a stronger connection between the assessment of harm, defining appropriate mitigation solutions, and the concept of opening up the analysis and solutions through publication, archiving and community involvement.

Fragmentation and Dispersal: Archaeological Practice in York since 1991

Analysis[44] of the database of archaeological interventions demonstrates distinct patterning in the location and nature of development driven archaeology in York between 1991 and 2012. In the first instance there is a strong emphasis on interventions in the historic core as defined by the AAI with 435 interventions within the AAI as against 247 outside.

The extent to which interventions have been dictated by the research priorities laid out in the 1991 study is open to debate – clearly a substantial minority cannot have been because they fall outside of the study area. Within the historic core the patterning of intervention (see Figure 4) does not conform particularly closely to the zonal summary of deposit characteristics in the 1991 study (Table 4.2) – although since the summary noted that fully 50% of the zones lacked sufficient data to be characterised this is not particularly surprising, as it might have been expected that evaluation would have been fairly widespread across the historic core. In practice however the pattern of interventions of all kinds seems to reflect the zones about which knowledge was greatest in 1991 – the notable exception being that part of the AAI extending south west of the colonia along the modern Tadcaster Rd (Zone 16 - Extramural SW, west of the Ouse in the 1991 study[45]). It must be suspected therefore that the location of interventions has been to a considerable degree driven by the location of development demand and little, if at all by research priorities.

[44] As noted above grey literature reports for 160 sites could not be located and have not therefore been included in this analysis. In drawing conclusions from the data available it has been assumed that the projects not included in the analysis demonstrated similar patterning.
[45] It is however worth noting that only part of this extra-mural area actually fell within 1991 zone as the study area cut off along the 51 northing.

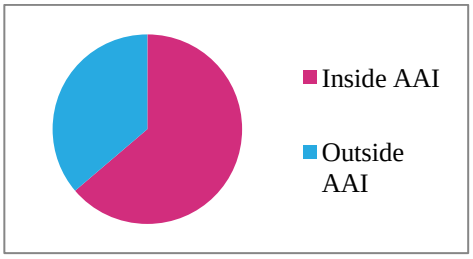

Chart 1 – Distribution of Interventions

Also noticeable was the tendency to small scale interventions with nearly two thirds of all interventions being defined as watching briefs[46] and excavations representing less than 10% of the total. Of the 66 excavations 51 lay within the AAI.

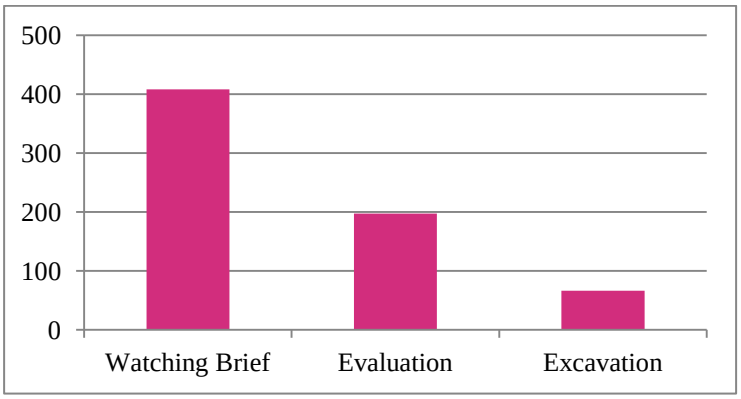

Chart 2 – Types of intervention

It is worth questioning whether interventions driven by development demand have contributed significantly to answering some of the research questions posed in 1991. In this respect it has been possible to draw on research undertaken by Patrick Ottaway into commercial archaeology and its contribution to the understanding of the Roman period in York[47]. Ottaway noted that the balance of archaeological interventions between the historic core and the suburbs/ immediate hinterland changed in favour of the latter after 1990. A fortuitous result of this has been an increase in the amount of information about the pre-Roman landscape in which the city was established and the landscape division and burial practice in the urban periphery. In the historic core however the limited nature of interventions has resulted in few additions to our knowledge of the fortress and the urban areas on either side of the Ouse.

Project No.	**Activity**	**Comment**
1	Urban Evaluation (deposit modelling)	Data collected, modelling not done

[46] In view of the lack of standardisation in nomenclature within grey literature attribution of site type should be viewed with a certain degree of caution but the general trends are clear.
[47] Ottaway 2011 – permission to use this material is gratefully acknowledged.

2	Formal excavation projects	51 undertaken in historic core, 4 published on line by YAT[48]
3	Remote mapping	No significant progress
4	Medieval Buildings	No significant progress
5	Artefact Assemblages	Some incorporation into ongoing YAT fascicules
6	River Regime	No significant progress
7	Hinterland Survey	Some fortuitous contribution
8	Protection for the Future	No significant progress
9	Research Reviews	Undertaken in connection with 2011 Conference

Table 1 A summary of the state of play with regard to the nine research activities outlined in the 1991 study (sections 5.4 and 5.5) .

What to do with what is found? An archival crisis waiting to happen

Notwithstanding the tendency to limit archaeological activity inherent in the 1991 study the archaeological interventions undertaken as a result of the framework put in place as result of the study have generated a substantial archive of finds and records. A striking feature of the analysis of the CYC database and stakeholder interviews is the overwhelming degree to which that archive remains in the hands of the excavators – of the 684 interventions only 10 have resulted in a transfer of archives to the Yorkshire Museum.

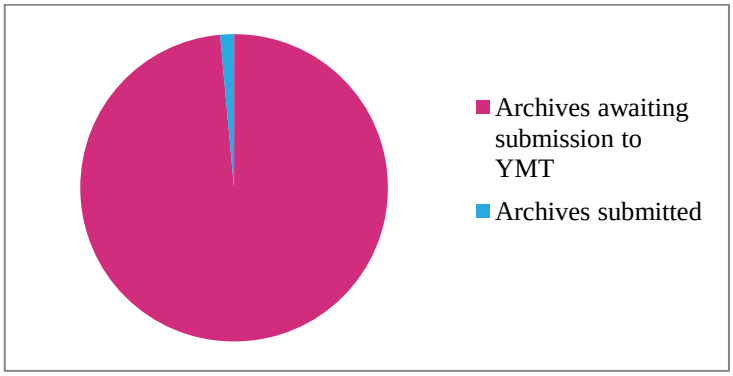

Chart 3 – Proportion of archives from the review data set deposited with York Museums Trust

This clearly raises issues of accessibility and long term care. The contractors interviewed were all committed to allowing public access to the material in their care however in practice public access is limited by a lack of knowledge of the

[48] Two further projects have been published on line by YAT one is characterised in the CYC intervention database as an evaluation and the report for the second is missing from the CYC on line archive. Data from a range of smaller developer funded sites has been included in Patrick Ottaway's 'Archaeology in the Environs of Roman York' AY6/2.

content of contractor archives. Public awareness of the extent of contractor held archives may be increased by the current trend for contractors to make grey literature accessible on line. This practice is a positive one however it is dependent on commercially driven organisation making resources available for what may be seen as non-essential activities. In a commercial environment which has seen archaeological companies cease trading it remains a possibility that records and finds are at risk of loss or dispersal until transferred to a suitable public archive (one of the guiding principles of the 1991 study).

The focus on development and preservation in the study was coupled with a desire to ensure that interventions were focused in such a way as to ensure maximum 'research value' and the guiding principles included requirements to ensure appropriate publication. The question of 'appropriate publication' is one in which current terms of reference are likely to differ significantly from those envisaged in 1991 however despite an encouraging trend towards making grey literature available on a wider basis than has been the case in the past through the use of on-line resources the processing and transfer of information about developer resourced interventions into the public domain remains slow. One reason for this lies in the relatively small scale of the majority of interventions which does not readily lend itself to publication in most conventional formats and leads to the majority of the data produced languishing in 'grey literature'. However the potential for conventional publication through synthesis of data from a wide range of sites which would not in themselves merit individual publication has recently been demonstrated to good effect by Patrick Ottaway's study of Archaeology in the Environs of York (Ottaway, 2011).

Pragmatic responses

The proposals contained in the 1991 study were a pragmatic response to excavation costs as is explicitly demonstrated in section 7.4.3 of the study. The effectiveness of the framework put in place as a result of the 1991 study is demonstrated by a general acceptance of the constraints on development in the historic core – none of the respondents to the questionnaire felt that the 5% threshold was a deterrent to development within the historic core and most felt that whilst it did to some degree limit what was possible in development terms this was balanced by the degree of certainty it gave.

However recent work at the Hungate excavations has provided an example of a more flexible application of the 5% threshold. Interventions were determined on the basis of research value model rather than a mechanistic application of the threshold distributing effort evenly across those parts of the site where foundations were to be dug . The result was considered to have represented a better return to both archaeology, which was able to concentrate on higher value deposits, and development, which was able to utilise more substantial groundworks than would normally be the case, whilst still preserving 95% of archaeological deposits.

Public participation in and access to the excavations formed a prominent element of the Hungate project. In many respects the work at Hungate managed to generate a level of public interest in and engagement with archaeology not seen

since Coppergate three decades previously[49]. Much of the public interest in Hungate focused on the most recent deposits – deposits which would in terms of the Research Framework presented in the 1991 study have been excluded from consideration. When considering the determinants of future archaeological intervention in York the 1991 concept of 'archaeological value' could usefully be combined with 'public value' in which public value represents the enhancement to the community at large which can be achieved by 'doing' archaeology rather than 'preserving' it (see below).

Core vs. hinterland

Expansion of the city boundaries with the creation of the unitary authority in 1996 meant that a substantial area of the city now lay outside of the framework derived from the 1991 study. Archaeological intervention in this area has followed standard national practice as represented by PPG16 and its successor guidelines. Although PPG16 and its successors were well established and understood by developers in York the effect of focusing attention on the historic core may have been to divert attention from the archaeological potential of the hinterland – several of the curatorial stakeholders commented that whilst the requirement to undertake archaeological work in the historic core was widely understood the need to investigate sites outside of the historic on occasion met resistance.

The difference in perception of archaeological requirements between the historic core and the hinterland is perhaps a result of , or at any rate compounded by, the legislative and practical differentiation between the Area of Archaeological Importance and the rest of the unitary authority area. None of the stakeholders questioned the utility of the AAI although it was clear that the very specific requirements with regard to archaeology incorporated in the 1979 Ancient Monuments and Archaeological Areas Act formed the basis of intervention in only a tiny minority of cases[50]. The notification requirements in respect of the AAI were however seen as helpful in that they allowed works which would normally fall outside of the planning system, for example those associated with utilities, to be flagged up and appropriate intervention undertaken.

Where does the 'Value' in archaeology lie?

A key concept in the 1991 study was that of 'archaeological value', being a function of deposit quality and research agenda. In practice over the intervening period 'archaeological value' has had limited impact on where archaeology has been done and in the face of a pressing need to review the research agenda it is perhaps time to consider whether the concept of 'public value' might enter the

49 c.1.500 people were involved in the excavation through various participatory/training events and another c.22,000 people visited the excavation. Also, during this time over 100 public talks and lectures were delivered which equates to another c.4,000 people learning about the excavation through further public dissemination – Peter Connelly pers comm.

50 In this respect practice in York differs greatly from Canterbury where all interventions within the AAI are based on the requirements of the 1979 Act and are undertaken by the organisation, Canterbury Archaeological Trust, named in the Act – pers comm Richard Cross, Canterbury City Archaeologist.

calculation when determining the location and nature of archaeological activity. 'Public value' in the case of archaeology can be seen as its capability to contribute to the educational, entertainment and commercial needs of the residential and tourist populations. Consideration of public value might, for example, lead to a decision to carry out work on a site which was of low archaeological valueand would otherwise not see significant intervention or to carry out work which went beyond the 5% threshold on sites within the historic core.. Indeed 'public value' might eventually become a mechanism by which archaeological activity becomes partly or entirely de-linked from site specific development driven intervention .

Public engagement with the process of archaeology within a development context has become much more frequent in recent years as part of the application of the principles of balance and opportunity contained within the developing local planning policy. The example of Hungate has been, briefly, considered above and other useful illustrations of the ways in which public engagement with development driven archaeology can be taken forward are provided by the work at the York University campus expansion at Heslington East and the proposed A59 Park and Ride Site at Poppleton Bar.

Case Study – Heslington East

As part of the Heslington East campus expansion (a 116-hectare, green field site on the edge of York containing evidence for a multi-period landscape) the Department of Archaeology at the University of York initiated an archaeological project in 2007 to investigate the development area using the combined the efforts of commercial archaeologists (YAT and On Site Archaeology), researchers and students from the university and community volunteers.

This required consultation on both work plans and analysis tasks, pooling of resources and expertise, and working together on site, all based on the principle that the research dividend achievable from the site could only be enhanced by an integrated and collaborative strategy (a notion now at the core of recent thinking and governmental guidance).

The project was designed to be as accessible and inclusive as possible and involved creating links with nearby schools (over 100 schoolchildren worked on the site, for example), the parish council, and various local bodies and events. The recruitment of volunteers utilised advertising in shops and on BBC Radio York, plus connecting with the Greater York Community Archaeology Project. We also approached groups under-represented within traditional models, for example occupants of a hostel for homeless people in the centre of York. Finally, results were disseminated via talks, exhibitions at village shows and display boards, plus a booklet distributed to all households in the vicinity.

All was made possible by £27K of HLF funding set beside 'help in kind' from the University. Follow-up surveys and reflexive discussion demonstrated just how much the various groups had got from the experience. These included not only the enjoyment of excavating features such as particular human burials (and welcoming the responsibilities that this involved), but more generally learning

new skills and problem solving, being part of a team, and having a sense of belonging by developing 'ownership' of the landscape and its associated memories.

Case Study – Poppleton Bar Park & Ride

An archaeological evaluation was undertaken by On-Site Archaeology Ltd during October and November 2012 in advance of a Park and Ride scheme. An important aspect of the project was the involvement of a large number of community participants from the local area. The involvement of local people was extremely valuable, allowing the excavation of a greater percentage of the features than would have been possible in an ordinary commercial excavation and the new perspectives and enthusiasm added greatly to the value of the project.

A total of 103 community participants were involved in the project, primarily in the fieldwork stages. A questionnaire was devised and distributed to all participants in order to capture the participants views on the project. Interest in the project derived predominantly from a general interest in Poppleton or the Park and Ride development, combined with a general interest in archaeology. When asked to rank their experience out of ten, with ten being labelled as a "great" experience and one labelled as a "poor" experience; none of the volunteers surveyed ranked their experience below a seven out of ten.

The positive aspects of the project were seen from the participants' perspective to be numerous and varied: the skill, friendliness, and knowledge of the staff who were willing to spend time training the inexperienced participants; the interest value in learning more about the procedures involved in archaeology; the opportunity to be able to discover more about their local history; the opportunity it afforded to meet more people from Poppleton.

As well as proving a success as a commercial archaeological venture the project was clearly a success as an exercise in community engagement which extended substantially beyond an extension of archaeological knowledge and interest and showed the potential of such schemes to promote participation and social cohesion at a community level.

New concerns for a new century

Climate change is happening (Intergovernmental Panel on Climate Change, 2007) and significant levels of climate change are unavoidable. These changes will bring many challenges across the UK. Flash flooding, water scarcity, heat waves, storms are just some of the weather phenomena that have potential to impact upon the historic environment.

Good practice guidance has been developed by both English Heritage[51] and UNESCO[52].

UK Government policy is strengthening on climate change adaptation. The 2008 Climate Change Act makes the UK the first country in the world to have a legally binding long-term framework to cut carbon emissions by 80% of 1990 baseline levels by 2050. It also creates a framework for improving the UK's ability to adapt to climate change and commits Government to publish a UK climate risk assessment at least every 5 years, and to roll-out an adaptation programme covering England which must contribute to sustainable development[53].

Although not considered as a factor in the 1991 study the potential impact of climate change on York's historic environment is undoubtedly likely to feature in future assessments of how York's heritage should be managed in the future. An example of the way in which concerns about the ability of climate change to adversely affect historic buildings and archaeological deposits are currently being investigated is proved by the UCL Parnassus Project[54] which includes as one of its cases studies the Barker Tower (North Street Postern Tower), York. Six standalone humidity, temperature and dew point data loggers have been placed on the tower in order to understand the moisture and temperature related deterioration mechanisms in this historic building.

Other Parnassus Project case studies have examined historic buildings and archaeological sites in Tewksbury, Winchester and Bodiam Castle.

51 http://www.english-heritage.org.uk/professional/advice/advice-by-topic/climate-change/flood-risk-and-advice/

52 For example http://whc.unesco.org/uploads/activities/documents/activity-393-2.pdf

53 UKCP09 Projections for Yorkshire and Humberside can be found at http://www.yourclimate.org/pages/uk-climate-projections-ukcp09

54 http://www.ucl.ac.uk/parnassus

5 A Way Forward?

The essential robustness of the 1991 study has been demonstrated by the extent to which the arguments it put forward and the recommendations it made remain relevant. The degree to which the intellectual context of the relationship between development and archaeology has matured in the intervening decades means that a thoroughgoing renewal of the 1991 study is not necessary. However, because there has been such a significant shift in policy and guidance in recent years there is an urgent need to reinvigorate YDAS, incorporating the wider historic environment and public engagement into an holistic approach to managing the historic environment. This needs to carefully consider the relationship between the built environment and sub-surface archaeology as well as recent work on characterisation (the York Historic Environment Characterisation Project). The benefits of an interventionist approach to archaeology should also be fully considered as part of unlocking the economic potential of York's inherited townscape, archaeology and landscape.

This process is best captured through a City of York Heritage Management Strategy which should clearly set out the city council's policy on development management; enhancement, maintenance and management of the city's historic environment evidence base; community engagement; research frameworks and resources. It should also set out the economic benefits of the historic environment to the city and its citizens. This strategy should be developed promptly so that it can play its part in the city's evolving policy framework though the draft Local Plan.

This review has also highlighted the urgent need to address several shortcomings of the YDAS: notably failure to resource the HER; failure to maintain the deposit model; failure to address archiving and publication; and, failure to fully address our understanding of the dynamics of waterlogged deposits. A revision of the research framework is also urgently needed to demonstrate the public benefits of any archaeological or research interventions.

The following proposal is recommended to ensure that York's internationally significant historic environment can play a much fuller role in the city's economic life as well as ensuring that its inherited resources and significances are more effectively enhanced, managed and better revealed for the benefit of all.

Proposal 1 Overarching Heritage Management Strategy

Reason Why

The advantages of CYC preparing, adopting and publishing this document are many but principally, it will ensure that York's unique selling point, its historic environment, is fully embedded as part of the council's day-to-day and strategic business in particular, the city's growth agenda.

Essential Elements

The minimum requirements of the strategy should be:

1. Integration of the Historic Core Conservation Area Appraisal and the York Historic Environment Characterisation Project.
2. Consideration of the socio-economic benefits of the historic environment.
3. Updating of the Deposit Model and enhancement of the HER
4. Assessment of the Waterlogged Deposits in the Historic Core
5. Revision of the Research Framework
6. Development of an Archive Deposition Programme

Requirements 3 to 6 can be delivered as stand alone projects as follows, however the strategy should in any case outline proposals for delivery including a timetable.

Key Stakeholders

The Planning and Environmental Management team at CYC are best placed to develop an overarching strategy document however consultation with key partners such as English Heritage, York Civic Trust and the York archaeological community, through YAF, will be essential to the production of a robust and sustainable strategy. Liaison with neighbouring authorities, North Yorkshire and East Riding of Yorkshire, will be desirable in order to ensure a common approach across the wider Vale of York.

Resourcing

In view of the already stretched resources of the Planning and Environmental Management team it is probable that additional resourcing will have to be made available in order to allow the strategy to be developed without adversely affecting the delivery of day to day services.

Proposal 2 Updating of the Deposit Model and enhancement of the HER

Reason Why

The management and use of the historic environment for the benefit of residents and visitors to York is an integral element of the city's Sustainable Community Strategy, the Council's Corporate Strategy and the emerging Local Plan. Updating the Deposit Model and enhancing the HER will provide efficient and effective tools for the management of the historic environment. In addition as the wealth of archaeological data from York becomes more widely known through an

known through an enhanced HER it is likely that the potential for cross-project synthesis and publication will become apparent. The opportunity to develop such syntheses would be a significant step towards making good a significant shortfall in the recent study of York's archaeology.

Essential elements

A programme of enhancing the deposit model database with backlog data from post 1991 interventions is critical to producing a robust evidential base . The data needs to extend beyond the historic core to the full extent of the current CYC boundary.

If the Deposit Model is to be fully functional GIS software should be enhanced in order to allow predictive modelling.

In order to streamline future data gathering and avoid the current difficulties in extracting usable information from a highly variable range of material provided to the HER a standardised deposit model data sheet should be developed which will form a compulsory element of every site report (an example of a standardised form is provided at Appendix D). Consideration should be given to development of systems which allow automated updating of the database.

Enhancement of the HER and modelling of the city should seek to fully integrate below ground archaeology with the historic built environment and should be compatible with other modelling packages such as BIM in order to allow three dimensional modelling of all aspects of the built environment.

Linkages with other holders of historic environment data such as the York Museums Trust and City of York Archives should be exploited in order to allow a wide ranging and layered approach to accessing historic environment data by a wide spectrum of users.

Key Stakeholders

The Planning and Environmental Management team at CYC are the established owners of the Deposit Model and HER and have a key role to play in co-ordinating the enhancement of these assets. Technical and conceptual assistance can be made available from external agencies with expertise in data capture and modelling, for example the Archaeology Data Service and archaeology departments at York, Bradford and elsewhere.

Once the database has been brought up to date with backlog data the co-operation of suppliers of new data , largely commercial archaeological contractors but also active community groups and others such as the PAS, will be key to ensuring that the database remains update.

Resourcing

This proposal requires input in three areas: updating the data base, acquiring installing and maintaining modelling software and staff time to maintain and facilitate access to the enhanced HER.

Updating the database will require more time input than the current historic environment team within Planning and Environmental Management can deliver and will require a temporary increase in the numbers on the team (unless the task is sub-contracted to an external agency with management of the activity remaining with CYC).

Effective use of an enhanced HER and updated Deposit Model requires the acquisition of suitable modelling software, a capital cost, but in addition will require installation (training for the staff who are to use it) and ongoing upgrades and maintenance which will need to be picked up as part of CYC's overall IT support costs.

The current staffing levels within the historic environment team limit access to the HER and contribute to the difficulties in maintaining its currency. As a minimum enhancement of the HER will require that an additional dedicated member of staff is added to the team in order to ensure that the database is maintained and access is facilitated without impacting on the functions of the existing members of the team. Consideration could be given to resource sharing with other local authorities or with other agencies such as City of York Archives.

Proposal 2a Assessment of the Waterlogged Deposits in the Historic Core

Reason Why

Waterlogged deposits are a major component of York's historic environment with the potential to contribute data of national or international importance (see appended Statement of Significance). The complexity of the deposits was recognised in the 1991 study but data was not systematically gathered to allow mapping and the exercise is long overdue. Understanding of the location, dates and formation processes associated with these deposits will substantially assist in updating of the Deposit Model and assessment of the condition of and threats to waterlogged deposits is essential to the effective management of this heritage asset.

Essential elements

The Nantwich study referred to above provides a suitable template for the assessment of York's waterlogged deposits. An initial desk based study can draw on a substantial body of data in order to place the archaeological evidence in its topographical and hydrogeological context. This data can also be used to target intervention in a subsequent phase of coring and assessment of soil samples (although it should be noted that for practical reasons coring may be confined to publicly owned land).

Key Stakeholders

This proposal could be taken forward as a project before the existing Deposit Model is upgraded in which case the existing database will have to be supplemented through access to archival material held by archaeological contractors, the most substantial quantity of which is likely to be held by YAT, although other contractors will no doubt contribute. In view of his considerable expertise in this field the Principal Conservator at YAT, Ian Panter, should be involved. Other key stakeholders will include the York City Archaeologist and the English Heritage Regional Science Advisor.

Resourcing

It is unlikely that The York historic environment team have the resources to undertake this assessment without considerable detriment to their ability to carry out their day to day activities and as a consequence additional team members will have to be recruited or the assessment sub-contracted to another organisation. In any event the coring programme and assessment of soil samples will have to be carried out by a specialist sub-contractor.

Proposal 3 Revision of the Research Framework

Reason Why

The archaeological potential of York was clearly laid out in the 1991 study and if anything the importance of its historic environment has been enhanced by the discoveries in the intervening period. By designing its own, dedicated set of research framework, albeit lodged within regional and national frameworks, York is well-placed to take archaeological understanding forward in a number of vital spheres. In order to properly manage a resource as important as the historic environment of York a robust and up to date Research Framework is required.

Essential elements

The baseline state of knowledge needs to be updated - the conference papers from the 2011 York Archaeology Conference provide a suitable starting point, with gaps filled by specially commissioned studies if necessary.

A research agenda should be developed which addresses inter alia the points raised in sections 3 and 4 above:

- Prehistory: to give chronological context to the founding of the Roman and medieval city
- Urban hinterlands: particular impacts of the town on its environs can be explored in meaningful detail, perhaps uniquely amongst the major historic towns in the country.

- Local/regional trajectories: once defined, these trends can be compared with a vibrant and well-investigated regional context of Yorkshire
- Industrial archaeology

Key Stakeholders

In common with other local or sub-regional research frameworks revision of the York framework will depend on a wide range of academics, local societies, archaeological contractors, consultants, finds specialists and curatorial archaeologists. The York Archaeological Forum is an existing locus for a similar range of stakeholders and would seem an obvious source of a steering committee to advance the production of a revised Research Framework.

Resourcing

Production of a revised Research Framework will require resources to be allocated to collate and order existing material in a suitable format and to generate new material – principally in respect of a research agenda. Production of research frameworks is typically a collaborative effort and a number of key stakeholders are likely to be involved.

The research framework will reach the widest audience if published on-line via the CYC website although provision for a limited hard copy print run should also be made.

Proposal 4 Development of an Archive Deposition Programme

Reason Why

The archive of records and material generated by archaeological interventions is an asset of public value which is currently largely held by archaeological contractors in conditions which limit access to the material. In order to maximise the value in the material and to ensure that it is curated in a suitable manner it should be transferred to a public archive as recommended in the 1991 study. Failure to implement a policy of archive transfer may lead to loss of data through unsuitable long term storage or, in extreme cases, dispersal in the event that commercial archaeological contractors go into liquidation.

Essential elements

A quantification of archives held by commercial contractors should be undertaken in order to establish the volume of material which requires transfer.

Ownership of the material needs to be established and transferred to the receiving public body.

A suitable public archive should be identified and the ability of the archive to accept the material established.

A policy on the transfer of archives from contractors to the selected public body should be developed – this should include a clear policy or rationalisation in order to minimise the burden on the receiving body.

Once a transfer policy has been agreed a programme of archive transfer should be implemented.

Key Stakeholders

The York Museums Trust are the obvious public body to undertake the long term curation of York's archaeological and engagement with the Trust will be critical. The majority of the material to be transferred is probably currently being curated by the York Archaeological Trust although substantial quantities may also be held by other archaeological contractors. The implementation of a programme of transfer may require enforcement action by CYC in respect of planning conditions requiring deposition of archives.

Resourcing

Quantification of the material involved will require the collation of data held archaeological contractors and could be undertaken by YMT, the Historic Environment Team at CYC or a sub-contractor. The receiving public body may need to rationalise its collections in order to make space for the material it is going to receive or acquire additional storage space. Specialist storage space, for example for metal objects or paper records, may need to be provided or expanded at the receiving body. Additional curatorial staff may be required by the receiving body to manage the transfer process and curate the expanded archive.

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Figures

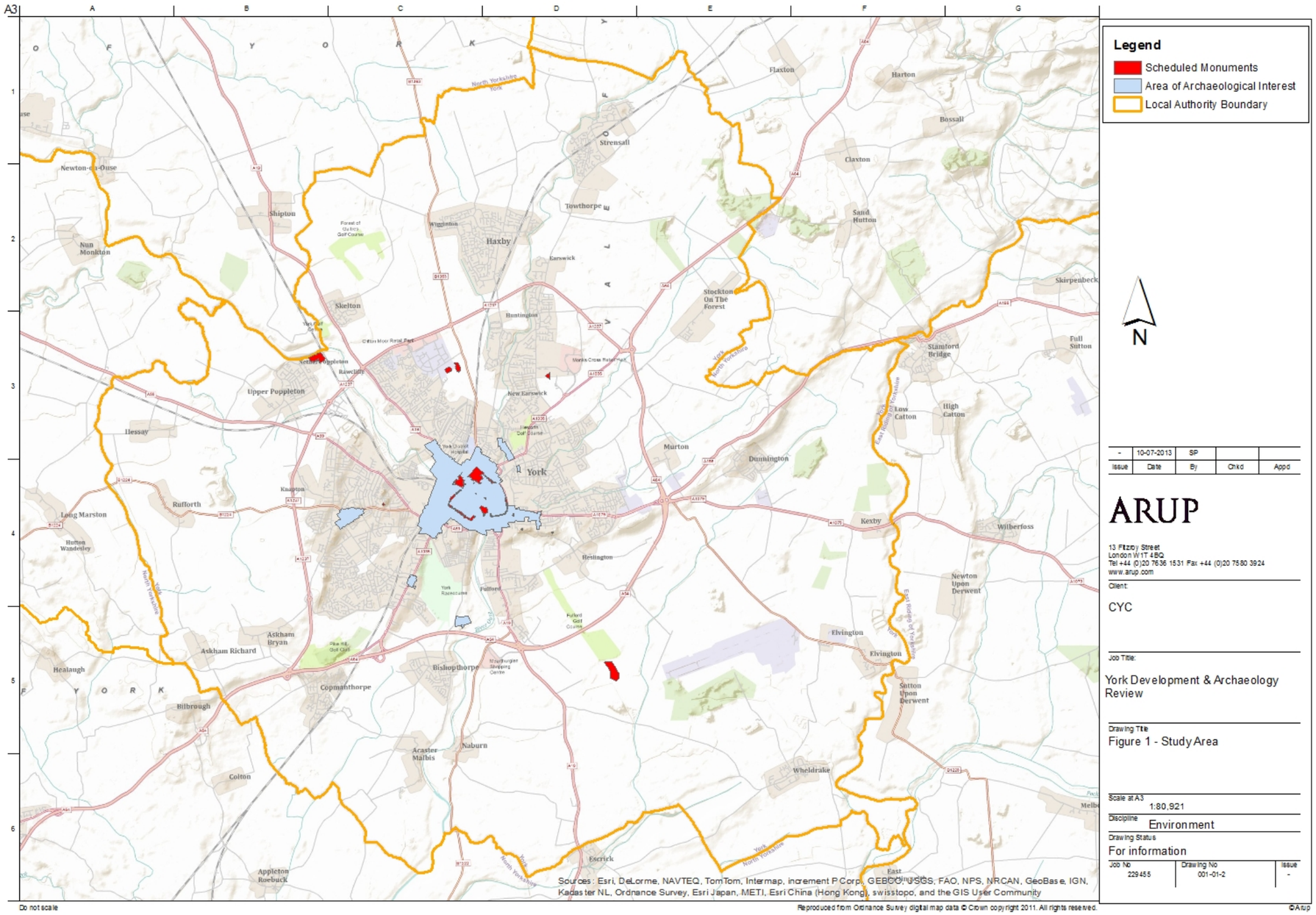

Figure 3:Study Area

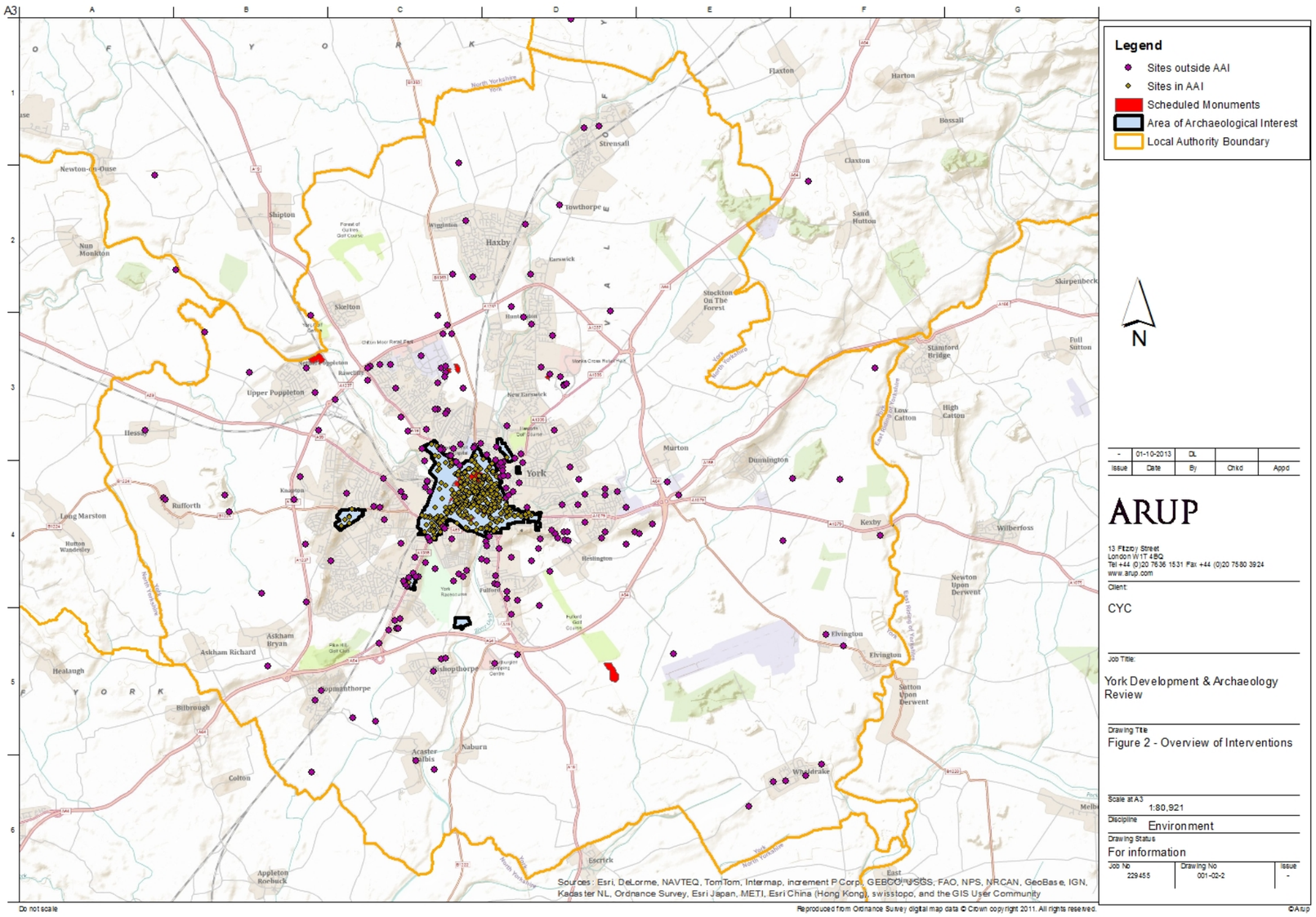

Figure 4: Overview of Interventions

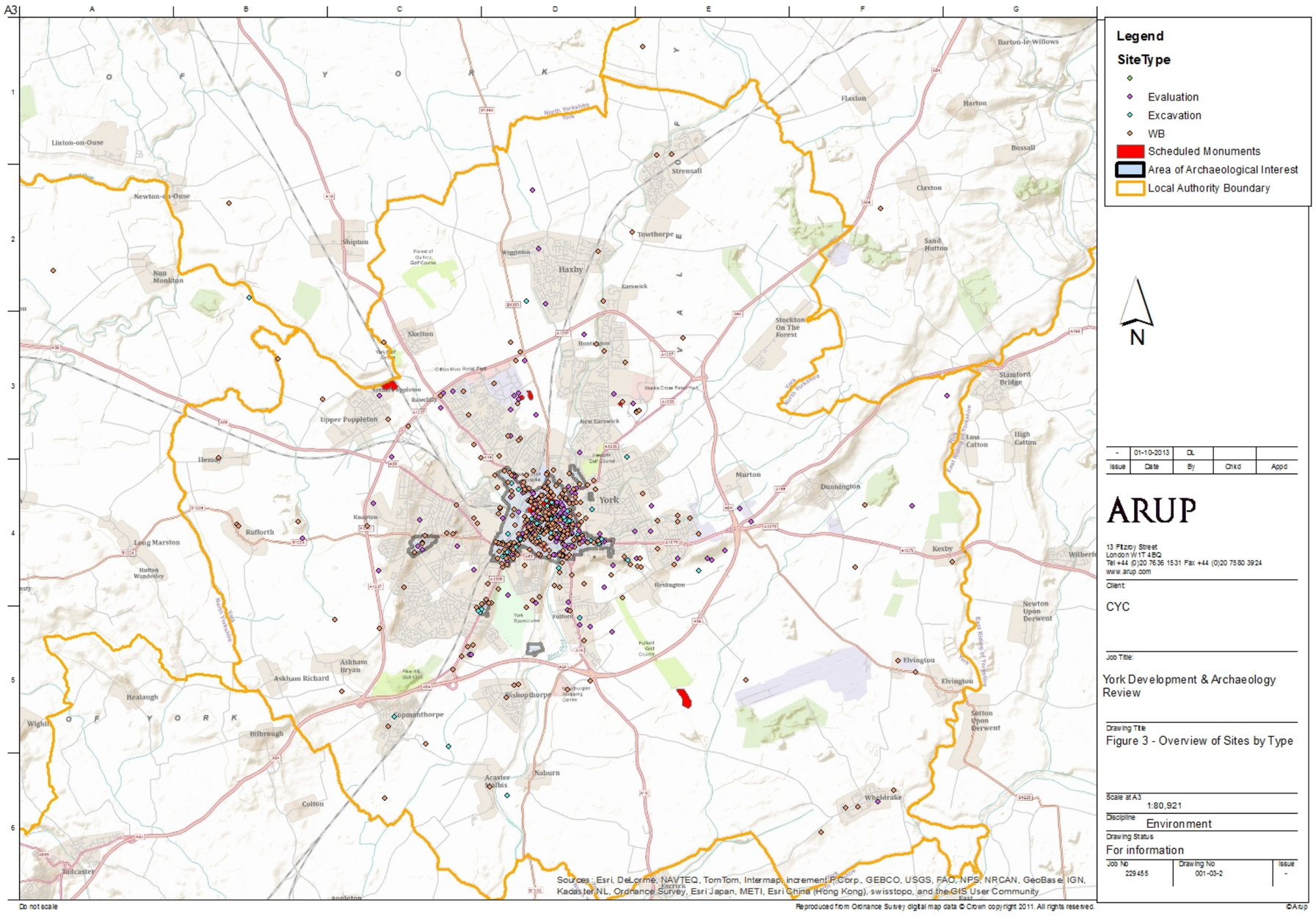

Figure 5:Overview of Sites by Type

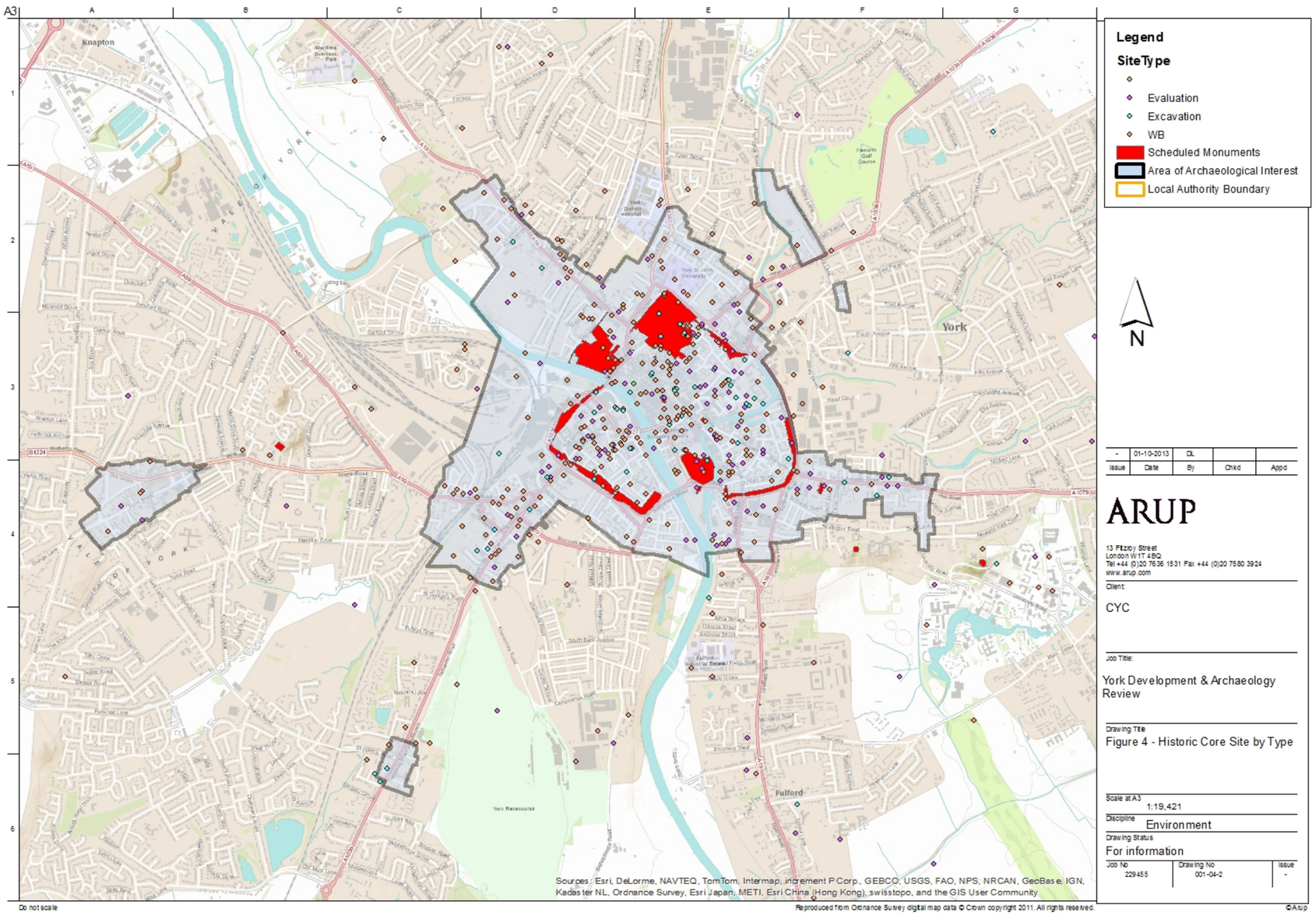

Figure 6:Historic Core Sites by Type

Appendix A

Key Stakeholder Consultees

Name	Organisation	Role
Graham Bruce	On Site Archaeology	Contractor
Jonathon Carr	City of York Council	Planner
Peter Connolly	York Archaeological Trust	Contractor
Keith Emerick	English Heritage	Curator
Richard Fraser	Northern Archaeological Associates	Contractor
Martin Grainger	City of York Council	Planner
Chris Hale	S Harrison Developments Ltd	Developer
Andy Hammond	English Heritage	Curator
Jon Kenny	York Archaeological Trust	Community Archaeologist
Ian McAndrew	Helmsley Group	Developer
Andrew Morrison	York Museums Trust	Curator
John Oxley	City of York Council	Curator
Ian Panter	York Archaeological Trust	Contractor
Neil Redfern	English Heritage	Curator
Ian Shepherd	Lend Lease Hungate Regeneration Area	Developer
Paula Ware	MAP Archaeological Practice Ltd	Contractor
Pete Wilson	English Heritage	Curator
Richard Wood	Oakgate Developments/ T.W.Fields	Developer

Appendix B

Workshop Report

Introduction

The aim of the review is to update knowledge of York's archaeological resource and to provide a framework for ensuring the development of sites is secured in a way which can conserve the most outstanding archaeological resources. Successful management of the City's archaeology is not only important for its heritage, but critical for the long term resilience of the city: the tourism industry at the heart of the economy of York depends on it. It is essential to understand the complex interdependencies of archaeology, planning and tourism and the risks and opportunities that these may present, both now and in the future. The half-day workshop involving CYC staff and external stakeholders aimed to ensure the initial findings of the archaeology review were communicated and the views of key stakeholders incorporated into the final version of the Review.

Attendees

Name	Organisation	Role
Jonathon Carr	City of York Council	Planner
Peter Connolly	York Archaeological Trust	Contractor
Keith Emerick	English Heritage	Curator
Richard Fraser	Northern Archaeological Associates	Contractor
Chris Hale	S Harrison Developments Ltd	Developer
Andy Hammon	English Heritage	Curator
David Jennings	York Archaeological Trust	Contractor
Harry Kenwood	York University	Academic
David Lakin	Arup	Project Team
Natalie McCaul	York Museums Trust	Curator
Patrick Ottaway	PJ Ottaway Ltd	Consultant
John Oxley	City of York Council	Client Team
Ian Panter	York Archaeological Trust	Contractor
Jamie Pithie	Arup	Project Team
Steve Roskams	York University	Project Team
Rachel Sandham	Arup	Project Team
Bob Sydes	CYC	Client Team
Paul Wheatly	Arup	Project Team
Pete Wilson	English Heritage	Curator

Points Captured

<u>From Discussion of emerging conclusions</u>

- Flexible approach needed re 5% rule, however flexibility requires expertise- risk of burden upon local authority. (Need clarification)

- Early engagement critical in terms of planning re archaeology/heritage.

- Information needs to be more publically available-need for quality control (a professional requirement.)

- Some units don't make evaluations available online-should be part of condition discharge…..emerging commercial issues.

- Re use of foundations is cost effective, more incentive if information is available.

- More clarity required in assessing non designated assets:
  -defining local councils role in improving understanding re setting/significance/context (inc sites not specific to archaeology – ie built environment)

- Developing a conceptual framework-settings of deposits.

Key subjects?

- Strategy for long term sustainability needed.

- NPPF discussion aims to give a holistic approach – misses the point-inaccuracies need addressing.

- Are we evaluating the wrong things? – ie not establishing overall vulnerability to change
  Sufficient timescale for data collection required (min 12 mths)
  Degree of preservation not addressed

- Policy control-use of information for public value –is the onus on the developer?.....are there any confidentiality issues?

Has the 1991 study been a success?

- Yes –of its time.

- Successful from an engineering/ developers point of view –(What about archaeology? Some landscape questions sidelined)

- Last 5-10yrs relaxation of council (if justification to do excavation it will be done) –monitoring part of development, issue funding post development.

- What to do with recording?-

Left not knowing what's going on under development-maybe destroyed or not - importance of ground water.

- Who are the record holders?- issues re storing/preserving.
- Monitoring enhanced for the long term – funding who pays/enforces this?

- Critique of PPG16, from archaeological point of view a mixed bag - got data but not detailed studies.
- Not enough research on in situ preservation.
- 1991 study has not driven research-Hungate (largest project since 1991) makes no ref to Arup report research aims.
- Excavations only the start - issues stem from storage/conservation/protection.

Public Value, What does it consist of?

- Economic drives different in London than York – can factor archaeological preservation in as a cost?
- Hungate numerous plots – 5% average throughout whole site therefore can have imaginative and appropriate mix – preserve/excavate.
- Challenges of smaller sites- constraints (is there public value in a watching brief?).
- Could developers contribute to archaeology pot?- NO- has to be infrastructure (levy funding)
- What does % actually mean for archaeological importance?
  Archaeological significance
  Context
  Research – what will it tell us?
- Public engagement- how accessible are the sites? Who decides archaeological significance?
- Museums Trust do a lot but have limited space (re working acquisitions and collections policy- better contact with developers required)
- Community/public archaeology- need to differentiate and drive carefully from various levels.

- View York as a modern city in order to attract development, seen as an exciting place - locals want to see artifacts.

- Empower communities – how do you manage this?
  - Health and safety issues on sites.

- Ownership model- key stakeholders.
- Capture community view- incorporate mitigation strategies.

- Professionals as facilitators not gatekeepers.

Summary

- Local involvement in development increased?

- More consultation re larger developments

- Recommendations on how to involve larger element- ie forum for historic environment.

- Consult planning panels- re community developments- existing processes.

- Set up new groups within York area- HLF legacy. remit of Trust/Council.

- Professional expertise in the decision process – report dependent on this.

- Role of city archaeologist – what if no longer funded? What then?

- City Council needs access to resources.

- 99% of data with contractors- real risk of loss if unit goes under- archive time bomb. Policy on transfer of archives-how much should be discarded?

Appendix C

York Archaeology Study and Community Infrastructure Levy

C1

1.1 Overview

The purpose of this note is to consider the possibility of including employee costs within the scope of the York Community Infrastructure Levy. The note will therefore set out the findings of research into other local authorities' approach to Community Infrastructure Levy, before offering a comparison to opportunities available through the section 106 planning obligations mechanism.

1.2 Comparing approaches to the Community Infrastructure Levy

To assess whether or not a Community Infrastructure Levy can be used as an appropriate mechanism for contributing towards specialist employee costs, background research into the approach taken by local authorities of a similar urban – rural nature with a strong historic character was undertaken. Table 1 demonstrates the findings of this background research.

Local Authority	Focus Schemes	Employee Provision	Documents Reviewed
Bristol City Council CIL adopted 1 January 2013	School Organisation Strategy Major Transport Schemes Parks and Green Spaces Strategy Flood Defence Measures	Appointed a Service Director of Major Projects	IDP June 2010 (Updated 2012) Draft Regulations 123 List Community Infrastructure Levy Gap Funding Background Paper
Oxford City Council Submitted for examination	Communications, Community Safety and Services, Education, Environmental Infrastructure, Health, parks and Open Spaces, Public Realm, Regeneration, Sports and Leisure, Education.	No explicit employee provision. Paragraph 39 of the CIL Draft Charging Schedule states that Oxford City Council will use 5% of the CIL revenue to fund the administration costs of the Levy.	Infrastructure List and Residual Funding Gap Background paper Developer Funding Background Paper Compliance with drafting requirement background papers
Greater Norwich Development Partnership Identified as a CIL Front Runner Project		No explicit employee provision. Paragraph 10.2 states that in general it is proposed that site specific mitigation measures' will be secured through planning conditions or S106 obligations. Three charging schedules of Broadland, Norwich and South Northfolk council are committed to cooperating through a Greater Norwich	Community Infrastructure Levy background and context (2012)

		Development Partnership Board which includes senior elected Councillors from each of the authorities (14.4)	

From the research, it is apparent that using the mechanism of the Community Infrastructure Levy to cover specialist employee costs is not a widespread approach.

- In Bristol, where a number of nationally significant infrastructure projects are within the infrastructure pipeline, the Council has appointed a Service Director of Major Projects. However, it is not clear whether the cost of this position will be covered by the CIL contributions achieved.
- Oxford City Council makes no explicit provision to cover employee costs. However, the CIL Draft Charging Schedule states that Oxford City Council will use 5% of the CIL revenue to fund the administration costs of the Levy. Again, it is not clear whether 'administration costs' would include specialist employee costs.
- Again, Greater Norwich Development Partnership makes no explicit specialist employee provision. However, the Community Infrastructure Levy Background and Context states that in general, 'site specific mitigation measures' will be secured through planning conditions or s106 conditions.

1.3 Implications of the Community Infrastructure Levy on the York Archaeology and Development Study

The use of Community Infrastructure Levy as a mechanism to cover specialist employee costs is therefore currently unknown. However, CIL is a developing mechanism which many local authorities across England are currently pursuing. This is because after 2014, the ability to charge for infrastructure outside the CIL process could be extremely limited. Therefore, whilst the English Heritage proposition for a development-funded archaeological officer is not something which is currently considered feasible as part of CIL, this may be an opportunity which could be explored in the future.

Two options arise when considering planning contributions and the provision of specialist employees.

The first option involves the opportunity presented by Section 106 planning obligations to provide for a development-funded archaeology officer. Original policies within the Deposit Draft of the City of York Local Plan (1998) and subsequent City of York Development Control Local Plan (2005) states that the 'applicant must make provision for the professional excavation and recording of archaeology'. This policy therefore presents hooks for inclusion of a specialist officer through S106 contributions.

Section 106 planning contributions are linked to specific developments and vary according to the size, impact and nature of the proposed development. The site-specific element of this mechanism, alongside the existence of precedents for the provision of staff funding through Section 106 contributions, indicate that this approach may be more suitable.

However, Section 106 obligations will be scaled back; beyond 2014, there will be restrictions on the number of planning obligations which can be pooled. Unlike CIL where payments form part of an accumulated fund to finance infrastructure, S106 obligation payment should be directly linked to the development generating it.

Furthermore, the requirement for an applicant to make provision for the professional excavation and recording of archaeological is not the case in the Local Plan Preferred Options (April 2013) policy which requires 'a desk based assessment and, where necessary, reports on intrusive and non-intrusive surveys of the application site and its setting', and no specific requirement for the inclusion of a professional.

Therefore the second option for planning contributions and the provision of specialist employees would be to postpone deliberation on the matter, and to anticipate the development of Community Infrastructure Levy documents across England. This would offer a better-informed discussion of the potential planning contributions mechanisms for the provision of specialist employees.

Appendix D

Museum of London Deposit Record Sheet

MOLAS DEPOSIT SURVIVAL SHEET

Supervisor	Sankey	**Site Address**	15-17 Leman Street and 1a Buckle Street, London E1	**Site Code**	LEZ09
Type of Investigation		Evaluation		**Easting**	533962
Date Investigation Started (mm/yyyy)		03/2009		**Northing**	181272
Date Investigation Finished (mm/yyyy)		03/2009			

Please complete parts 1, 2 and 3 below as applicable. Questions formatted in bold are mandatory. Please answer the mandatory questions even if the site was negative. If you wish to qualify any of your responses, please use the 'additional comments' box at the end of this form.

1. What type of natural was observed? Specify brickearth 10.66m OD over sand 10.26m OD over gravel 9.34 = alluvial fining-upwards sequence. Langley Silts Complex Brickearth is ALLUVIUM

At what OD height in metres was the natural? 10.66m

If the natural is sloping then give the OD height of the
i. lowest point m (enter a numerical value only)
ii. highest point m (enter a numerical value only)
iii. the slope details - enter slope direction and/or the grid refs of the highest and lowest points if possible.

Had this been truncated? (if yes then tick box and press tab to specify) ☒ brickfield quarry from Whitechapel road suburb to Hooper Street -- see GMF03 -- quarry pits into gravel to 9.3m OD

What was the OD height of the modern ground adjacent to the trench/edge of excavation?
13.77m (enter a numerical value only)

Please specify the type of modern ground: Other (please specify) groundlevel slab

2. Are any archaeological remains likely to survive on the site and, if so, in what areas might they be found?
Yes -- in any area outside of trenches

If known, what was the OD height of the highest surviving archaeological remains?
12.88m (enter a numerical value only)

3. Please complete the table below.

Specify dates or periods BC	Average OD of top of deposits (m)	Thickness of archaeological deposits relating to this period in (m)	Minimum and maximum depth of cut features of this period (m)		If the deposits were waterlogged, contained significant residual finds, evidence of burning (Boudican, 1666, etc), are a contemporary ground surface or have other significant properties (please specify)
			Min	Max	
Palaeolithic (450,000-12000BC)					
Mesolithic (12000-4000BC)					
Neolithic (4000-2000BC)					
Bronze Age (2000-600BC)					
Iron Age (600BC-AD43)					
Early Roman (AD43-200)					
Late Roman (AD200-410)					
Early Saxon (AD410-750)					
Middle Saxon (AD750-950)					
Late Saxon/ Saxo-Norman (AD950-1150)					
Medieval (AD1150-1500)					
Early Post-Med (AD1500-1700)					
Later Post- Medieval (AD1700-1901)	12.88	3.50	3.50	3.50	
Modern (POST AD1901)					
Unknown					

Please enter additional comments here (250 chars max)

A 4m-deep brickfield quarry extends from south of the 17th-century suburb of whitechapel -- Whitechapel Road -- to Hooper Street. Bronze Age -- medieval finds in bricjearth tailings, reworked gravel 10m OD nightsoil to groundlevel. + 17th-c cellars

Please copy a plan or relevant Fig.2 onto the reverse of this form. (It may be useful to indicate areas of likely archaeological survival or truncation).

Appendix E

York: statement of significance of waterlogged archaeological remains

York: statement of significance of waterlogged archaeological remains

1. DESCRIPTION

1.1 LOCATION AND TOPOGRAPHY

The City of York (SE 603 521) is situated centrally in the Vale of York, at a critical point where the Rivers Ouse and Foss converge and cut through the northernmost of two glacial moraines which form lines of higher ground which ran east to west across that Vale from the end of the last Ice Age, c.10,000 years BP (Whyman and Howard 2005). York's historic core is defined today by two areas of high ground on either side of the Ouse. York Minster is situated on the hill on its northeast bank, itself built above the remains of the Roman principia which occupied this prominent viewpoint originally. This zone is surrounded by mostly intact medieval walls which follow the line of Roman forerunners in the northwest and northeast but have been extended elsewhere as a result of suburban expansion in post-Roman periods.

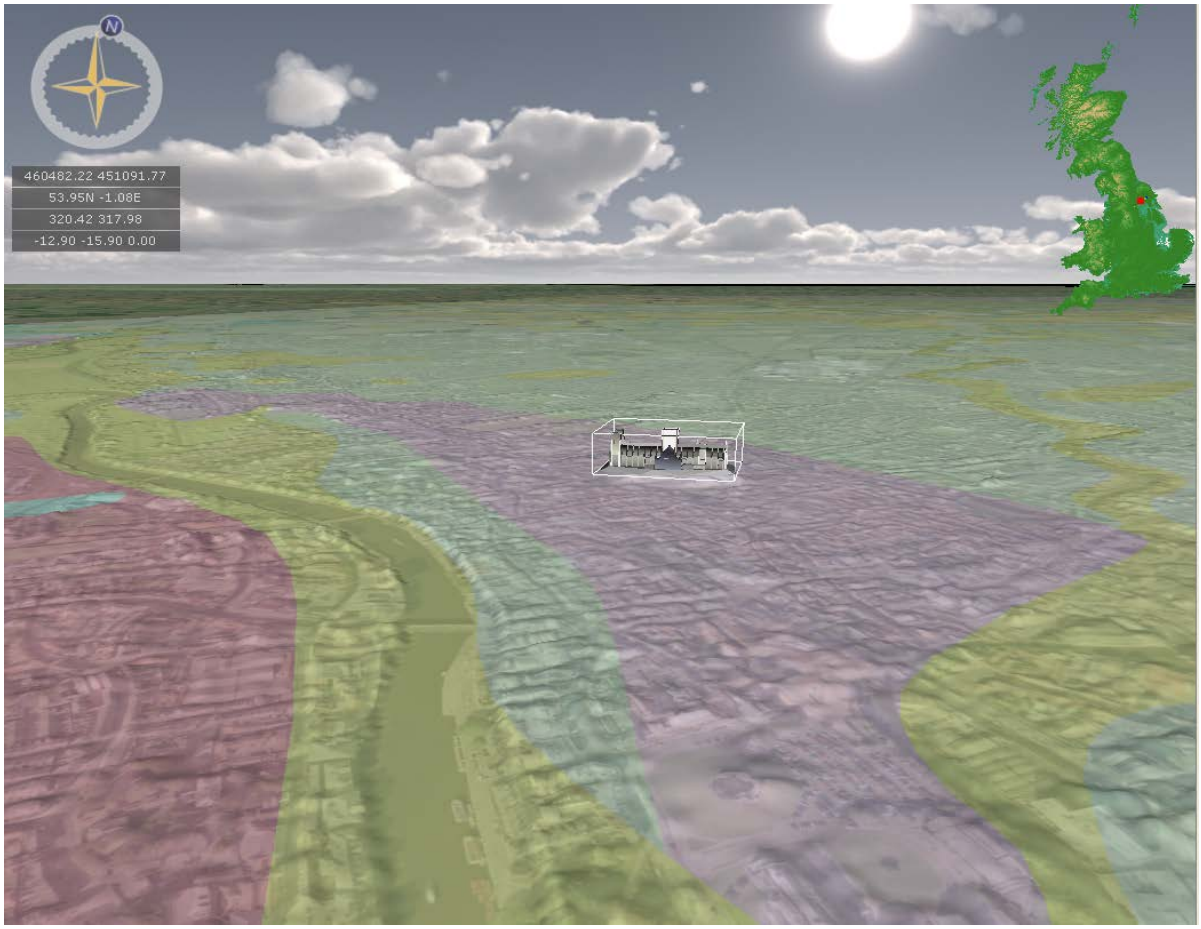

Fig. 1 Digital Terrain Model of York looking north, showing position of York Minster between Rivers Ouse and Foss © BGS

On the opposite, southwest side of the Ouse, the higher ground around Bishophill saw civilian development in the Roman period and a mixture of ecclesiastical and secular development thereafter. This is also encircled by medieval walls, for the most part believed to run on the line of their Roman forerunners. The lower zone between these two highpoints, together with that around the medieval Kings Pool beside Clifford's Tower to the south, near the confluence of Foss and Ouse, and the zone around the Minster, contain the most important waterlogged remains in the city.

1.2 GEOLOGY

The Vale of York is a low-lying alluvial basin stretching for over 50 km north-south from Northallerton to the Doncaster and bounded by diverse solid geology on each side: the Jurassic limestones and sandstones of the North York Moors and Hambleton and Howardian Hills to the north; the Cretaceous chalk of the Yorkshire Wolds to the east; Permian dolomitic limestones, then Carboniferous uplands of the Pennines to the west; and Triassic sandstones and 'marls' beneath the Vale in the south, the latter then sealed by glacial, lacustrine, aeolian and riverine Quaternary sediments deposited in the Devensian and Holocene (Natural England n.d.).

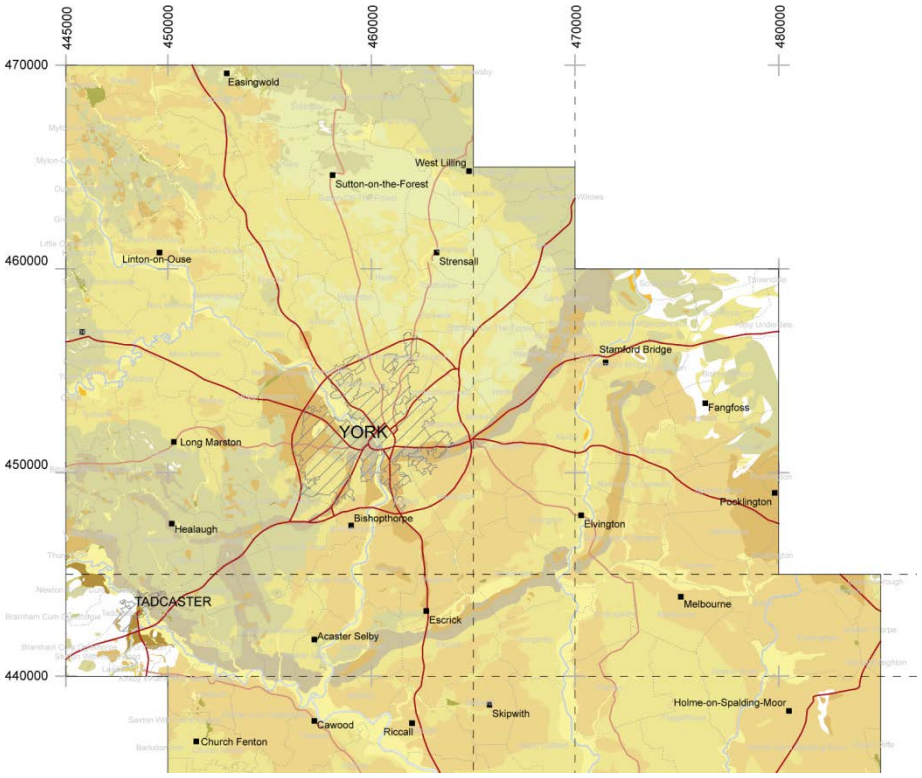

Fig. 2 Geology in the vicinity of York, showing position of 'York moraine' beneath the city and, to the southeast, the 'Escrick moraine' © YAT

During the last glacial maximum, 26,000-13,000 years BP, glacial melt created extensive overlying deposits of till and fluvioglacial sands and gravels across the Vale (Whyman and Howard 2005). York itself was set up on a high point of the glacial moraine. Here the drift deposits were in turn then covered by 'made ground' up to 10m deep (although in most places a maximum of 5m) which comprises the archaeological deposits discussed below.

1.3 SETTLEMENT HISTORY

Given York's position in the Vale, it is not surprising that prehistoric finds from the Mesolithic period onwards form a distinct focus on this Ouse/Foss confluence: the glacial moraine which these two rivers cut through at this point would have been the major east-west routeway for people moving back into Britain after the last Ice Age. The disparate landscapes beside the moraine, especially to its south, would have provided diverse resources on which mobile communities could have drawn. In the course of later prehistory, these sectors were then divided up into fields and other enclosures and increasingly settled, especially during the Mid- and Late-Iron Age (Whyman and Howard 2005, 22ff).

The Roman fortress at York is, as far as we know, the first major settlement built here. Created in the 70s AD, initially in timber, its defences, then internal buildings, were replaced in stone in later centuries. The settlement was occupied by the IXth then VIth legions, thus comprising the main military centre for northern Britain for over 300 years. By the end of the 2nd century AD, a civilian town had formed on the opposite bank of the Ouse. The significance of the whole settlement was sufficient for York to become capital of Britannia Inferior and to send a Bishop to the Council of Arles in AD314 (Ottaway 2004).

Post-Roman activity in York comprised, initially, early Anglo-Saxon burials, some seemingly occupying sites of former Roman cemeteries, but otherwise desertion. By the 8th century AD, however, a trading and manufacturing settlement, Eoforwic, had developed. The process of re-foundation was given further impetus during the Anglo-Scandinavian then Norman periods, as the fully-fledged town of Jorvik/York was created (Hall 1994). This centre prospered during the later medieval period, notably during the late-14th/early 15th centuries and, even after the trauma of the English Civil War, was only behind London and Norwich in scale in the late-17th century. Its role as a railway town in the 19th century is well known and continues today, as does chocolate production. In recent decades, however, York role as a major tourist centre has perhaps become more important than manufacturing and transport.

1.4 ARCHAEOLOGICAL HISTORY

As befits the main historic town in northern England, York has been subject to investigation over an extended period of time (Nuttgens 2001). Initially, antiquarians such as Leland and Camden drew on documentary sources and monument recording to interpret its past history. In more archaeological vein, excavations ('clearance', more accurately) took place in St. Mary's Abbey. Recording of features during laying of sewers by the Reverend Charles Wellbeloved ensued in the 19th century, an early form of 'rescue' archaeology.

The widespread existence of water-logged layers in York was not recognised at this time, however. Only work by Benson (1911) at the turn of the 20th century, attempting to map York's drift geology and thus speculate on riverine regimes, could have led to more detailed deposit modelling.

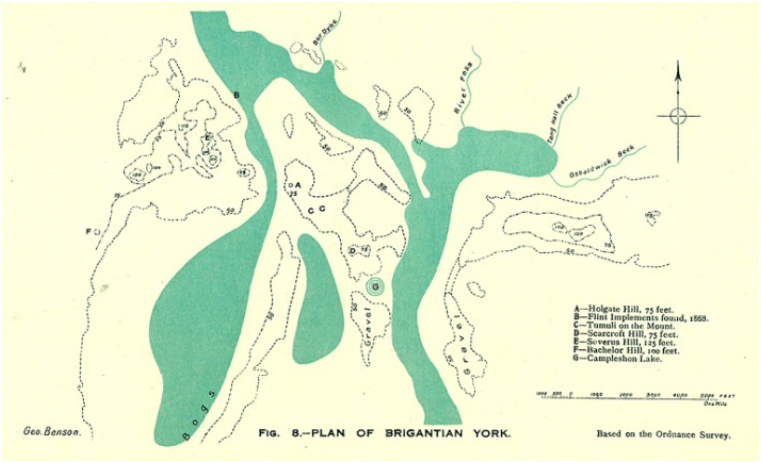

Fig. 3 Early mapping of York's drift geology (Benson 1911)

Thus only in the last quarter of the 20th century, following the work of Jeffrey Radley (Radley and Simms 1970, Radley 1971), did the full potential of anoxic contexts start to be appreciated. The creation of the York Archaeological Trust early in the 1970s was critical to this development. Its early work at Lloyds Bank (MacGregor 1982) and at Church Street (Buckland 1976, MacGregor 1976, Whitwell 1976), then on Coney Street beside the Ouse (Kenward 1979), was formative in alerting the archaeological community to that potential, as were investigations at Skeldergate on the opposite side of the river (Carver *et al*. 1978, Hall *et al*. 1980, MacGregor 1978).

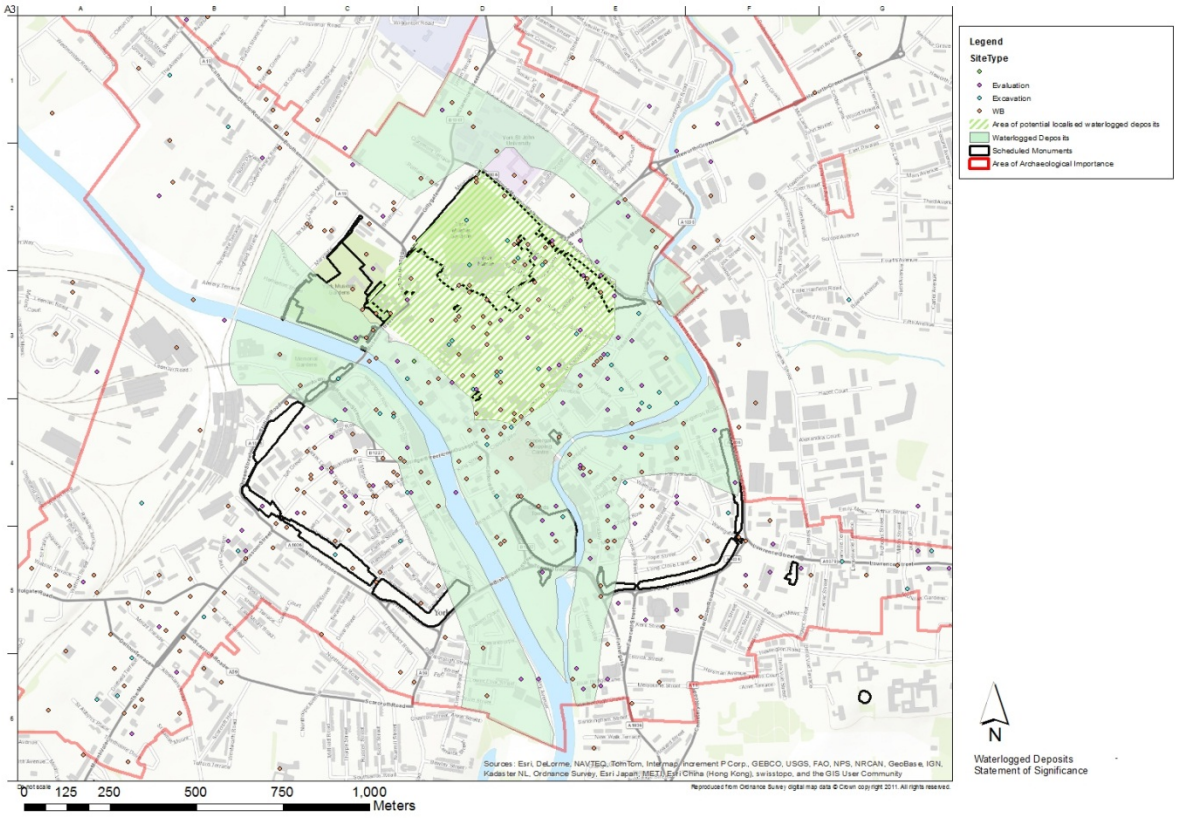

Fig. 4 Map of possible extent of waterlogged archaeological deposits below York[1].

It was the excavations at Coppergate in the mid-1970s, however, which drove this message home and engaged broader audiences (Hall 1984). Indeed, it could be argued that this site, alongside similarly well-preserved structures in Dublin (Wallace 1992) (uncovered in controversial circumstances: Bradley 1984), did for our understanding of early medieval timber buildings what London excavations did for timber waterfronts (Milne 1985, 2003), signalling to the discipline across Europe the significance of waterlogged strata. For York, it is now clear that such deposits can be expected to survive modern truncation across much of the lower areas of York, even if they vary considerably in date, complexity and depth.

[1] Note that, within the designated area, there will be zones with only limited preservation, for example in the tongue of higher land beneath Clifford's Tower; where anoxic conditions vary over quite short distances, for example beneath the Roman Fortress and The Minster; and where organic materials survive only in certain periods, for example in early medieval horizons but not their underlying Roman counterparts. Equally, beyond that designated area, preservation conditions may be unexpectedly favourable, for example where individual features such as pits and wells have been dug to a considerable depth into waterlogged strata, or Roman burials inserted into outlying riverine deposits to the northwest and northeast of the city. Thus the above outline comprises merely an initial model requiring further work and testing.

Fig. 5 Leather from 16-22 Coppergate, showing the ability of waterlogged sites to not only allow understanding of complete artefacts (left) and also of the production process (right, these bi-products including evidence for mutliple bite marks from that activity) © YAT

1.5 PALAEOENVIRONMENTAL HISTORY

As noted, the palaeoenvironmental potential of anoxic deposits was recognised soon after the foundation of the York Archaeological Trust. More importantly, *strategic plans* were put in place immediately to exploit that potential, in the form of the Environmental Archaeology Unit (henceforth EAU). This research group, established in 1975 in the Department of Biology at the University of York, was funded initially by the Leverhulme Trust and the then Historic Buildings and Monuments Commission (EAU n.d.). Its research fellows were subsequently supported by English Heritage and, most recently, by both the University centrally and using commercial contracts and other project funding. The EAU has not only served York's needs but was, in effect, fundamental to the establishment of this form of urban environmental archaeology across the UK and beyond.

The integrated approach propounded by York's EAU has drawn together studies of soils and sediments, pollen and plant macrofossils, both invertebrates (parasitic nematodes, insects and molluscs) and vertebrates, and sought to integrate these with detailed contextual information from controlled excavation. To do so, it has designed and carried through sampling routines, many of which have then been adopted across the country; developed systems of sieving and sub-sampling post-excavation; and adopted innovative approaches to archiving and dissemination. The resulting outputs run from work on environmental conditions at early sites mentioned above (the Church Street sewer, the Roman warehouse at Coney Street, the timber well in Skeldergate), followed by work in Tanner Row (O'Connor 1988)

and, of course, biological evidence from Coppergate (Kenward and Hall 1995). Recent work on micromorphology, via the InterArChive project at the University of York (InterArChive n.d.), has demonstrated that, although large-scale excavation may have given way to small-scale interventions, even the latter, for example in the base of a lift shaft under York Minster, can provide useful opportunities for environmental sampling.

2. EVALUATION

2.1 THE EVIDENTIAL SIGNIFICANCE OF YORK'S WATERLOGGED DEPOSITS

The impact of the Coppergate excavations and, more recently, their equivalent in Hungate (Hungate n.d.), together with methodological developments under the auspices of the EAU, has been considerable: York's waterlogged deposits are widely accepted as of national significance and, indeed, of international renown. Thus, for example, their detailed investigation over decades formed a pivotal basis for York's recent application for World Heritage Status (CYC 2012).

The Ove Arup report (Ove Arup and Partners 1991) represented the first attempt to systematically model the extent and approximate form of these anoxic zones, showing how they clustered in the environs of the Rivers Ouse and Foss, together with the area near their confluence beside Clifford's Tower. Where subjected to proper investigation, these deposits have yielded not only important paleoenvironmental evidence (see EAU, above) but also a range of wood leather and textile artefacts, kept safe from decomposition caused by bacteria, fungi, insects and vermin. Such assemblages have added considerably to our understanding of all phases of York's occupation, but especially its mid-Roman and early medieval periods (e.g. MacGregor 1978 and Walton 1989 respectively).

In addition, the associated excavations have uncovered significant structures such as the Roman bridgehead road at Wellington Row (not yet formally published but discussed in detail in Whyman 2001), timber foundations for Roman buildings at Rougier Street (see O'Connor 1988 for a summary description), and the medieval Watergate at Skeldergate (Addyman 1988). More generally, they have begun to help us understand how the position of the river has changed over time, chronicling the change from a wide, shallow feature of the Roman period to the narrow, deep River Ouse, prone to flooding, which flows through York today. In addition, they have charted how the creation of the King's Pool after the Norman Conquest altered so much of the townscape in the area beside Clifford's Tower.

Given the knowledge of York's waterlogged archaeology developed over some decades outlined above, especially the 20 years since the Ove Arup report attempted to model its extend and character, one might hope to be able to say quite accurately now where the best preserved, anoxic strata from each period of York's history lay, and how they might best be investigated or protected. Indeed, some general aspects are clear: that such strata cluster, unsurprisingly, along the Ouse and Foss basins and around the Kings Pool, and that features dating to the mid- to late-Roman period and to the early- to high-medieval period seem most likely to be preserved.

In addition, more recent observations (CYC 2012, 28) show that 'wet' sites are evident around and within the fortress. The former zone is probably a function of good preservation within the deep ditches associated with the city walls (indeed, the seeming 'absence' of similar anoxic zones on the opposite, southwest bank of the Ouse may be due simply to a lack of recent excavation there). The area within the fortress itself is, perhaps, less expected. Although archaeological levels are often much truncated here, any fortuitous survival would be a considerable importance.

Two factors militate against more detailed understanding beyond the above remarks, thus constraining our ability to design a meaningful policy for curating these hugely significant deposits. Firstly, there have been only very limited availability of the resources needed to update and augment the deposit model generated for the original Arup study. Thus recent observations of waterlogging have been recorded in individual projects, but not integrated systematically with earlier evidence.

Secondly, the full complexity involved in modelling waterlogged deposits has only become clear with the experience of viewing larger sites post-Coppergate. Thus the excavation at the Queens Hotel site (not yet published: this development occurred at the point that the original Ove Arup report was being written, so could not be incorporated into its recommendations), showed that levels of organic preservation at its centre was far better than in those outlying zones dried out by contact with the drainage systems running beside modern roads.

In similar vein, recent work at Hungate (Hungate n.d.) has demonstrated that almost adjacent early medieval, sunken-floored buildings can enjoy very different preservation conditions. Thus any attempt at modelling waterlogged deposits, if it is to play a legitimate role in curatorial decision making, must take place at a close level of spatial resolution.

Fig. 6 Anglo-Scandinavian sunken-floored buildings under investiagation at Hungate. They are situated within 10m of each other, yet preservation levels are markedly better on the the left than the right © YAT

2.2 THE EVIDENTIAL SIGNIFICANCE OF YORK'S PALAEOENVIRONMENTAL REMAINS

Palaeoenvironmental investigations have already given us some understanding of general riverine regimes in York (above) and of the character of the landscape on which Roman authority first imposed itself. We also know about local conditions and types of activities in specific parts of the townscape in the mid- to late-Roman period and the early- to high-medieval period. Future objectives are thus two fold – to build on these foundations and fill chronological gaps. The latter would involve understanding the impact of possible tidal regimes and when these became absent from York's waterways; charting pollution resulting from the urban trades and industries carried on in the settlement; and testing whether the environmental conditions across York reproduce or contrast with those evidenced at, for example, Coppergate and Hungate.

In the early Roman period and for the later medieval period onwards, we have no comparable base lines to work away. Thus any opportunity to chart the initial military impact of the Roman fortress, as has been possible for Carlisle (Oxford Archaeology North 2013), must be seized, as should corresponding evidence from recent periods, where the pollution resulting from early industrialisation might be expected (see, for example, in London: REF TBA). Perhaps the most significant period in this respect is the 5th to 7th centuries. Work on post-Roman pits and wells at both Skeldergate (Hall *et al*. 1980) and beside the Minster (Kenward *et al*. 1986), for example, have shown how, with careful attention to context, study of beetles can elucidate degrees of human activity in the vicinity, with important implications for a lack of occupation of this part of the townscape in these critical centuries. The very nature of the issues – possible fragmentation of occupation across the townscape – means that evidence if needed from diverse zones in order to meet meaningful conclusions.

2.3 PUBLIC INTEREST AND AMENITY VALUE

The Coppergate excavations, alongside delivering important new information about Anglo-Scandinavian York, also impacted significantly on public imagination, not least because of the levels of organic survival of its building remains. This was the impetus for the creation of the Jorvik Viking Centre, a visitor experience which continues to attract vast numbers of tourists to York. Alongside this, at a more local level, the engagement of York's own citizens with its archaeology remains vibrant, as evidenced when on-going commercial excavations are opened for public visits (a recent project by On Site Archaeology, for example, attracted over 1,000 visitors in a

single weekend). A range of popular booklets ensure that archaeology is kept at the forefront in the city.

That said, there is no doubt that existing public interest multiply hugely when waterlogged deposits are investigated on any scale, for example recently at Hungate. The Community Archaeologist post in York and the associated umbrella organisation for the many community groups, Timeline York Plus (n.d.), means that the organisational mechanisms are in place to facilitate their direct involvement in any such project. Current initiatives to further support these activities in association with commercial development via Section 106 agreements look set to enhance community archaeology still further in the city. Naturally, if a community infrastructure levy was to emerge as a national initiative, this process would be taken to a higher level. Certainly experience at Hungate (n.d.) and Heslington East (Neal and Roskams 2013) suggests that community projects can be delivered alongside commercially-driven work and are able to engage all of York's residents, including often marginalised groups such as young offenders and homeless people (Schofield and Kiddey 2011).

3. MANAGEMENT

3.1 DEVELOPMENT PRESSURE

In a major historic town such as York, there are always a complex relationship between development pressures and any archaeological remains on which they might impact. These pressures can only increase where anoxic preservation is evident: the cost of commercial excavation increases yet, at the same time, public pressure to ensure *in situ* preservation may be at its greatest. York itself, however, has a good record in reconciling these tensions. Thus, for example, of the twelve sites flagged up in 1988 as places at risk along the waterfronts, split evenly between the Ouse and Foss (Addyman 1988), viable solutions for either protection or investigation were negotiated by the City Archaeologist for all zones where development actually came to fruition.

These successes notwithstanding, major development of any significant part of the waterfront zone would pose challenges, as well as offer opportunities. Recent large scale pressures have tended to focus beyond such areas, for example the development of The Triangle or, in the near future, housing development on the margins of the city. There is therefore time and space presently to think seriously about the detailed evaluation of waterlogged deposits to assess their vulnerability to future development when that arises.

3.2 EXISTING POLICIES AND PRACTICES AND HISTORIC/ENVIRONMENTAL DESIGNATIONS

Existing policies towards archaeology in York, together with their underlying principles, have recently been critically evaluated and there seems little point in repeating that description or its general conclusions here (this document can also be consulted to check to check on historic and environmental designations within waterlogged areas). Clearly, the current focus on ensuring sustainable development, drawing on the LDF and the now-defunct but still influential Regional Spatial Strategy, and the stress on the need for early consultation apply to developments of waterlogged zones as much as elsewhere, and arguably even more so.

York's anoxic strata fall within the Area of Archaeological Importance as designated in the 1979 *Ancient Monuments and Archaeological Areas Act* and are thus subject to the specific powers that the latter embodies, especially on notification of work on utilities, which normally lies outside the planning system. In addition, a number of scheduled monuments overlie waterlogged deposits, most obviously the Minster and some lengths of the city walls (and if a 250m 'buffer zone' was added around such monuments, this would cover the majority of the relevant layers). It must be admitted, however, that

such ‘protection’ is a mere bi-product of protecting significant standing remains, not based on the importance of the buried strata per se.

In order to manage archaeological deposits with organic survival as a specific sphere of interest, two particular aspects of present practice need to be examined. Firstly, the ‘5% rule’ may be a viable strategy for dry land sites. Yet puncturing anoxic deposits to such a degree will have impacts well beyond those specific interventions, allowing decay processes to commence in adjacent areas. The same problem, writ large, will arise where a development is allowed to go ahead because its specific building footprint does not impact directly on surviving archaeological remains: these foundation may still de-water adjacent areas and thus promote the decay of surviving organic materials there.

A second issue concerns sustainability of these deposits under the current policy (cf. objections raised at a formative stage of PPG16 by Biddle: 1994). Monitoring of waterlogged deposits at the Marks and Spencer site suggested that the sub-surface deposits here, down to a depth of 2m deep, have highly dynamic characteristics and indicate a certain amount of decay in the few years since ‘sustainable’ new development took place (Davies *et al. 2*001). If such modifications of survival characteristics were evident in a number of locations across York, it would call into question the whole rationale behind the current management strategy (it is to the credit of the current City Archaeologist that he was prepared to test these principles and accommodate their implications, and a corresponding shame that resources were not made available to complete this experiment, let alone extent it to other places in the York).

3.3 CONCLUSIONS AND RECOMMENDATIONS

As outlined above, York’s pivotal position in the Vale of York virtually guaranteed that it would be significant in the development of this regions, form the time when people started moving back in to Britain after the last Ice Age, some 10,000 years ago. From the first century AD, that importance was enhanced to a still greater level with the foundation of the Roman fortress here, something continued into the medieval period when York was *de facto* capital of Northern Britain.

As a major historic town, it has been subject to investigation for several hundred years, but this process took on a more focused and organised form with the foundation of the York Archaeological Trust in 1972. It is no coincidence that this was also the point at which the significance of its waterlogged deposits were first fully recognised. This resulted, in part, in the setting up of the EAU to exploit the palaeo-environmental potential of these deposits, something which placed its staff at the forefront of this then-emerging sub-discipline.

It was not until the Ove Arup report in 1991, however, that any attempt was made to systematically define the extent, depth and character of these strata. Such anoxic zones were suggested as clustering in the environs of the Rivers Ouse and Foss, together with an area near their confluence beside Clifford's Tower. This hypothesis seems to have been reinforced by fieldwork in subsequent years, although the area within, and adjacent to, the fortress should also be appended to this. Equally importantly, the model produced in 1991 has not been updated in the intervening period. Finally, other sorts of information are now needed if curatorial strategy and advice is to be generated on a coherent and systematic basis.

The following recommendations are therefore put forward, in an appropriate order to achieve this objective:

1. Archaeological observations since 1992 must be incorporated into the model developed in the Ove Arup report, to check the accuracy of those initial predications and, if necessary, modify planning decisions accordingly
2. The updated model thus generated should be augmented by incorporating evidence from different, non-excavation sources such as commercial boreholes, cellar observations and pictorial/map evidence.
3. The point data derived from 2) then needs to be set beside detailed topographic information, of a type best derived from LiDAR data. This would allow us to relate York's social development over 2,000 years to its riverine development over a more extended timespan, and beyond this to the modelling of drift geology in the Vale of York presently being undertaken by the British Geological Survey.

Fig. 7 LiDAR data for the centre of York, showing highground (blue: due to the underlying morraine) and the lower areas of the Ouse and Foss themslevs (white) and associated valleys (brown)

4. The above, refined the deposit model will still present a patchy view of the depth and extent of York's waterlogged deposits in certain zones and, in some places, will generate contradictory implications.

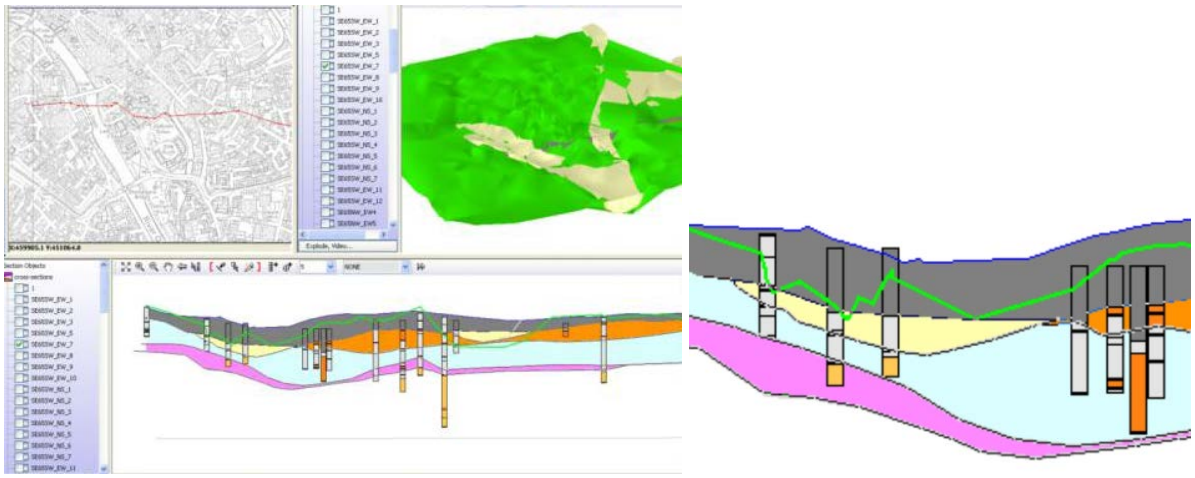

Fig. 8 Recent preliminary work modelling deposits along a transect across its rivers (left), when looked at in detail (right), shows that the projetcd surface of archaeological deposits (green line) lies above the level of the River Ouse. Thuis is simply a product of having insufficiently detailed evidence. Hence 'joining the (dispersed) dots' is quite misleading

Thus dedicated data gathering, for example boreholes drilled into blank areas, data gathered from GPR across the townscape, will be needed to allow a realistic estimate of the position and volume and of York's anoxic deposits in a way that might be meaningful for curatorial strategies. The move from geotechnical maps to three dimensional models, as achieved in Helsinki (Vähäaho 1998), is a critical requirement. Recent work in Great Yarmouth provides a good example of how this might be approached in York.

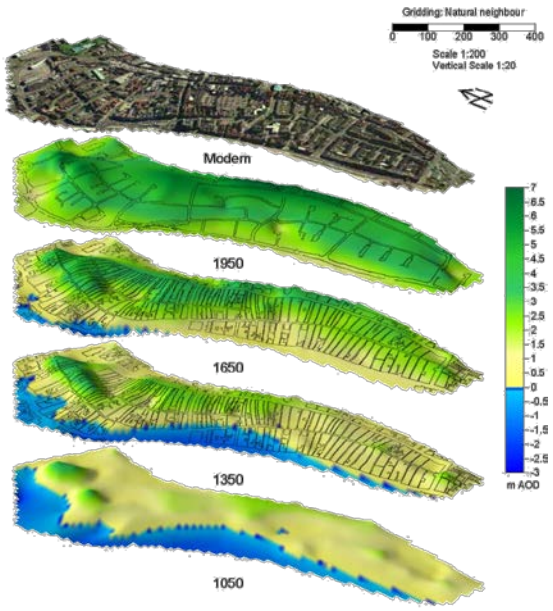

Fig. 9 Chronologcial development of Great Yarmouth, based on pictorial/map evidence and commercial/dedicated borehole data, then used to guide detailed investigation of medival undercrofts and general GPR surveys © Norfolk Archaeology/EH

5. In the future, it will be important to design a system to gather data from every archaeological interventions, not just in relation to the character of natural subsoil and overall depth of deposit by date, as done in 1991, but also classified in terms of preservation, spacing and status (Carver 2003, Fig. 4/2). Only then will it be possible to assess the vulnerability of these zones to future development, as attempted in Bergen. The information in such an 'enhanced' model could be used not only for curatorial decision-making, but to inform and engage a wider number of parties – community groups, developers, academics. In this way, the city's water-logged deposits will not only be better known and understood, but better cared about, and thus cared for.

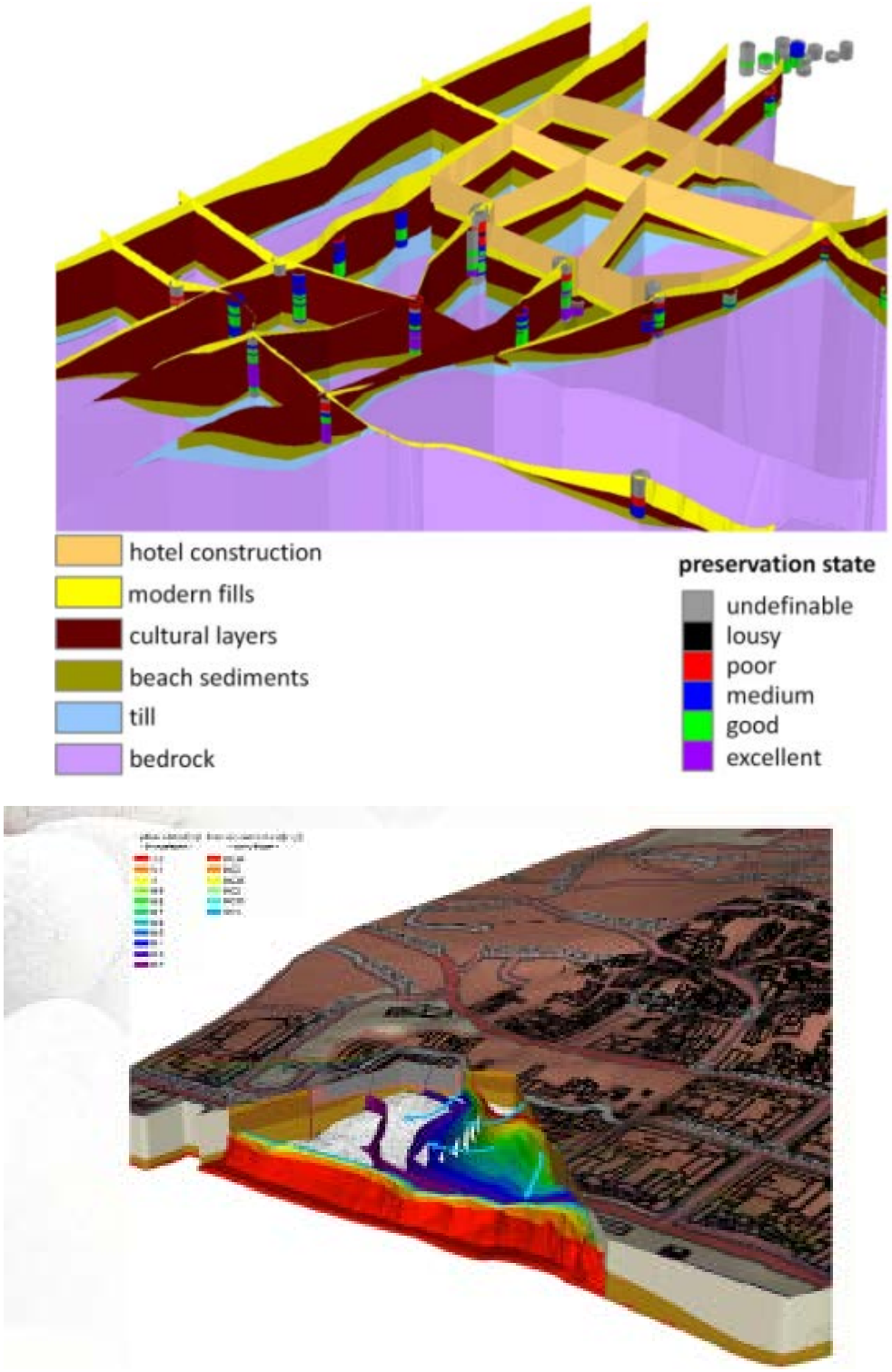

Fig. 10 Deposit modelling in Bergen, another European town with vitally improtant anoxic deposits: observations from boreholes (top) enable us to picture the modern town in relation to its underlying drift geology, via an intervening 'cultural' layer quantified by state of preservation (bottom) © Johannes de Beer/Geoarchaeological Survey of Norway

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Appendix F
Glossary and abbreviations

Term	Definition
AAI	Area of Archaeological Importance
ADS	Archaeology Data Service
BRE	Building Research Establishment
CEEQUAL	Civil Engineering Environmental Quality Assessment and Award Scheme
CFA	Continuous Flight Auger
CIL	Community Infrastructure Levy
CYC	City of York Council
EH	English Heritage
GIS	Geographical Information System
Grey Literature	Informally published written material such as watching brief reports and post excavation assessments not published commercially or widely available
HBSMR	Historic Buildings Sites and Monuments Record
HER	Historic Environment Record
ICE	Institution of Civil Engineers
MAP2	Management of Archaeological Projects 2nd edition
MoRPHE	Management of Research Projects in the Historic Environment
MS	Mitigation Strategy
NPPF	National Planning Policy Framework
PARIS	Preserving Archaeological Remains In Situ
PAS	Portable Antiquities Scheme
PPG15:	Planning Policy Guidance Note 15: Planning and the Historic Environment
PPG16	Planning Policy Guidance Note 16: Archaeology and Planning
PPS5	Planning Policy Statement 5: Planning for the Historic Environment
YAT	York Archaeological Trust
YCC	York City Council
YDAS	York Development and Archaeology Study
YMT	York Museums Trust