

The Archive arriving on Platform 1....

Digital Archives and Mega-infrastructure projects

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Introduction

Major infrastructure projects offer special challenges and opportunities for digital preservation and access. On the one hand, they create digital data in unprecedented quantities, frequently combined with the use of project-specific recording systems, and an appetite for innovative digital methods. On the other hand, given the scale of the archaeological fieldwork, conventional publication is never an option, providing an incentive to investigate hybrid dissemination strategies, making the most of opportunities provided by digital media, as recommended as early as 2003 by the Council for British Archaeology's *Publication User Needs Survey* (Jones et al., 2003). Major infrastructure projects should also have the resources, and the incentives, to provide exemplars of the creative combination of digital and traditional publication methods.

The Archaeology Data Service (ADS) has provided digital preservation and dissemination for major transport infrastructure projects since 2004, and this paper will explore some of the challenges and opportunities we have encountered. It will draw upon our experience archiving the digital outputs of projects as diverse as Stansted Airport¹, Heathrow Terminal 5², the A1 and A14 trunk roads, the Channel Tunnel Rail Link³, Crossrail, and most recently, HighSpeed2 (HS2).

Together these projects represent the largest transport infrastructure projects undertaken in the UK in the last 20 years. They comprise massive financial investments, usually with direct government funding, and the archaeological fieldwork generally represents a minute fraction of their budgets, within which the digital archiving is an even smaller proportion. Unlike smaller projects, therefore, the digital archiving is generally a negligible outlay compared with the overall costs of the

¹ Framework Archaeology (2009) *The Stansted Framework Project*. doi: [10.5284/1000029](https://doi.org/10.5284/1000029).

² Framework Archaeology (2011) *Framework Archaeology Heathrow Terminal 5 Excavation Archive*. doi: [10.5284/1011888](https://doi.org/10.5284/1011888).

³ Stuart Foreman (2018) *Channel Tunnel Rail Link Section 1*. doi: [10.5284/1000230](https://doi.org/10.5284/1000230).

programme. At the same time such projects may operate under some sort of “best value” framework, seeking to ensure cost-effective expenditure for the taxpayer, whilst maintaining or enhancing best practice (Andrews et al., 2000). For the archivists the scale of the archives presents major challenges in providing intuitive user interfaces and access to specific files.

Opportunities

Ideally, large infrastructure projects should provide opportunities for early planning, assessing the archaeological work required (Carver, 2013), as well as the scale of data that will be generated and the solutions needed. Traditionally, archiving has often been regarded as an afterthought, following publication. With the advent of digital means of dissemination, however, access to online data should be seen as part of the overall publication strategy and planned from the outset. Similarly, the archiving strategy needs to be considered even before work starts on site, with guidelines on file formats, file naming conventions, and version control. For HS2, ADS prepared a digital archiving strategy whilst work was still in the planning stage (ADS, 2015). It may even be possible to embed digital archivists within contractors, ensuring best practice.

Challenges

This is not always the case, however. In the rush to stay ahead of the bulldozer and under major time pressures there are occasions when the immediate priorities become the focus, shelving longer term archive preparation, and storing up problems for later. Archiving is once more relegated to an afterthought. There can be other challenges too. Large infrastructure projects may involve extended communication channels. At Stansted and Heathrow Terminal 5 the scale of the contract led to the establishment of a new super unit, Framework Archaeology, an over-arching consortium of Wessex and Oxford Archaeology. In recent rail infrastructure projects groups of archaeological contractors have worked with civil engineering consortia, and there are also archaeological consultants, hired direct by the “developer”, who manage the archaeological work. This can lead to delays and miscommunications between those providing guidance on data standards and those implementing them in the trench. In addition, it is normal for the primary contractors—the civil engineering consortia—to have their own proprietary IT systems, to which the archaeologists must adapt. In recent years these are generally based on BIM (Building Information Modelling) rather than the more usual GIS (Geographical Information Systems) with which most archaeologists are more familiar. This can create further difficulties for extracting the data in open formats. Furthermore, infrastructure projects are often politically sensitive and archaeologists, appearing in advance of the bulldozers, may have to operate in a climate of secrecy. Finally, the release of data may be subject to issues of client confidentiality, running contrary to principles of Open Data.

Conclusions

In summary, major infrastructure projects can offer exciting opportunities to provide wide public access to archaeology. Such benefits are often appreciated by developers, and free online access to heritage information can be used to counter the bad publicity that may surround these projects. For researchers there are also tremendous potential benefits of access to large data sets, enabling major

works of synthesis, underpinned by reliable data collected to a consistent standard. If the challenges can be overcome, we can safeguard the legacy of these major archaeological investments and provide unparalleled research resources for the future.



Fig. 1. Image from Framework Archaeology Stansted Airport digital archive.



Fig. 2. Image from the ADS Crossrail digital archive – excavations at Liverpool Street station.

ads ARCHAEOLOGY DATA SERVICE

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Channel Tunnel Rail Link Section 1

Stuart Foreman, 2004 (updated 2018)

Introduction
Project Overview
Project Downloads
Using the resource

Map Search
Period Search
Advanced Search
Site List
Reference List
Usage Statistics

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HIGH SPEED

Map Search
Click on the panels of the map below to see site details.

Route Map

Click on a panel to view the sites in that area

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Fig. 3. Landing page for the ADS Channel Tunnel Rail Link Digital Archive. doi: [10.5284/1000230](https://doi.org/10.5284/1000230).

References

- Andrews, G., Barrett, J., and Lewis, J. (2000). 'Interpretation not record: The practice of archaeology', *Antiquity*, 74(285), 525–530. doi: [10.1017/S0003598X00059871](https://doi.org/10.1017/S0003598X00059871).
- Archaeology Data Service (2015). 'Historic Environment Digital Data Management and Archiving Strategy'. HighSpeed2. Unpublished report.
- Carver, J. (2013). 'The Challenges and Opportunities for Mega-Infrastructure Projects and Archaeology', *Papers from the Institute of Archaeology*, 23. doi: [10.5334/pia.437](https://doi.org/10.5334/pia.437).
- Jones, S. et al. (2003). 'From the Ground Up: The Publication of Archaeological Projects: a user needs survey. A summary', *Internet Archaeology*, 14. doi: [10.11141/ia.14.4](https://doi.org/10.11141/ia.14.4).