

SLR Consulting Ltd undertakes excavations at Ashbury's Coach Works in Manchester for Network Rail in 2012
Credit: Adam Stanford Aerial-Cam

Design and integration of archaeology as part of a construction project

Tim Malim, chair of the Federation of Archaeological Managers and Employers (FAME) and technical director at SLR Consulting, explains how to get the best outcomes and plan effectively for capacity issues.



Credit: SLR Consulting Ltd



ARCHAEOLOGICAL remains routinely turn up as part of development schemes and planning to reduce archaeological risk is a key requirement at the design stage.

Improving performance in how risk is identified and managed has huge potential to increase the value of the work, not just in terms of the public benefit from sustainable development, but for the client as well.

To the normal challenges of uncertainty are added significant skills and capacity shortages which can only be addressed in partnership and in collaboration with the wider development sector.

Archaeology as added value

The design and planning stage for any construction project is well recognized as critical in achieving project aims as efficiently and safely as possible.

The planning stage needs to be a well-informed and iterative process so that a comprehensive understanding and holistic approach is applied to detailed design, project programming and risk management, described in RIBA's briefing on its Plan of Work (PoW) as "evidence-based design processes".

The 2013 PoW comprises an eight stage process from the initial strategic vision through to use of the finished construction, with the first five stages focussed on design and project planning and a single stage for construction (stage five build and commission).



Excavating an Iron Age sword at Must Farm Clay Pit, Peterborough for Hanson Building Products (now Forterra)

It emphasises the importance of transition between stages, of effective briefing and communication to improve collaboration, and the continuum between design and construction so that the whole process helps deliver the project objectives successfully and create value for the client.

The PoW provides a useful model to integrate archaeology which should be seen as a significant part of this process so that the risks posed, and value added, that standing and buried remains might bring to a project, are fully evaluated and managed sensibly from the outset.

There are considerable benefits to clients from a carefully considered and executed archaeological programme which can be used to boost public relations and leave a legacy to society through increase in knowledge, providing a pride of place for local communities.

Archaeology as risk

Construction projects which have not properly considered the archaeological dimension during the planning stage, or left the commissioning and site investigation for archaeology until the principal contractor has been appointed and the construction programme has started, can find it a costly lesson.

Headlines about delays due to unexpected discoveries, and resultant bad PR for a project, are not inherently due to the nature of archaeological remains, but are far more often due to a lack of successful early integration of archaeology as a necessary element of construction within the UK. In our experience many projects still leave this issue to the last minute, with insufficient time for adequate archaeological planning and budget allocation.

Archaeology is similar to many other surveys that are required early on during the life-span of a project, such as geotechnical and land quality investigation, ecological and hydrological assessments, and it has established a staged process to ensure cost effective delivery of a programme of work for clients.

Archaeology integrated into construction

RIBA's PoW offers clear comparisons with the staged approach that archaeological best practice adopts.

Initial information on the likelihood for buried archaeological remains or for impacts on other parts of the historic environment that might be effected by construction, and the potential significance of it (desk-studies and heritage assessments), should assist with the first two stages of the PoW. Including archaeology in the design, and refining project-specific knowledge through intrusive site investigation (called "evaluation" in archaeological terminology) to inform the process, equates with the next three stages.

These preparatory actions provides an evidence-base for designing a comprehensive scheme that includes provision for conservation or archaeological investigation as mitigation, and the facility for more accurate budget and programme planning.

Building Information Modelling (BIM) is requiring all construction projects to improve efficiency through centralising digital data from all elements so that information is readily available and conflicts quickly identified.

Archaeologists routinely use platforms that are compatible with BIM, and record site data so that details of investigations, including ground conditions and any areas of in-situ preservation, can be assimilated into the model.

PRINCE2 sets out the principles for effective project management and proposes a mature approach to managing risk with a focus on outcomes rather than process, to the benefit of the overall project, balancing

scope, timetable, quality and budget. When sufficient archaeological planning is not included within the critical path, then targets and risks can change with knock-on effects to the rest of the programme.

Early Contractor Engagement and PQOs help identify the most appropriate archaeological company for the type of project being planned, it allows partnership working and clarity in approach, teasing out potential incompatibility and misunderstanding.

Detailed guidance for procuring the right archaeological organisation for the job is available on the FAME website and a list of expert suppliers accredited by the Chartered Institute of Archaeologists is available from their website

CDM regulations 2015 stress the importance of safe working practices, including continuity in responsibility from design through construction, with properly qualified individuals identified to oversee that the regulations are adhered to and coordinated between all the different contractors on site.

Although archaeological investigation as a stand-alone discipline is exempt from CDM, all archaeological work that is conducted as part of a notifiable project must be CDM compliant, with archaeologists operating as specialist sub-contractors to the Principal Designer or client.

Although using the staged RIBA PoW approach significantly reduces archaeological uncertainty, it is normal for there to be a residual level of risk around the scale and complexity of any remains that might survive.

This risk needs to be allocated appropriately using the correct form of contract. FAME is currently looking to develop a standard method of measurement which will add a tool for archaeologists, clients and quantity surveyors in predictive costing and equitable payment based on quantities actually investigated.

Archaeological capacity

The construction sector faces a severe skills gap and archaeology is no different. It is a small profession with only c.3000 archaeologists in commercial practice in the UK (State of the Archaeological Market Survey 2016) and a recent study by Historic England’s Intelligence Unit using government figures for projected infrastructure spend to 2033 estimates that there will be a short-fall of 25 to 64 per cent in the available workforce to service these projects (in addition to the current and ongoing need for archaeologists to assist private development) without action to build capacity.

HS2 is the most imminent of these infrastructure schemes, with deadlines set but with as yet no quantifiable identification of what archaeological response will be required. Although the enabling contracts for Tier 1 suppliers have now been awarded, there is still insufficient information available for the archaeological sector to plan effectively, to cost up and innovate, train and recruit staff to meet the coming exceptional volume of work.

During the days of the Celtic Tiger economy, Irish archaeological companies



Credit: SLR Consulting Ltd
Archaeologist planning an industrial flue at Ashbury's in Manchester for Morgan Sindall and Network Rail



Credit: Headland Archaeology
A cemetery site at St Peter's Church requiring the excavation of 2000 skeletons along the Blackburn Orbital route

grew exponentially and drew in archaeologists from across Europe, with some sites having up to 18 nationalities and 450 archaeologists. With Brexit and pressures on reducing migration, this option is unlikely to help solve potential capacity issues.

Apprenticeship schemes are being put in place together with much improved training, but these schemes will take time for successful implementation, whilst graduates, burdened with increased debt, increasingly find the idea of trying to make a career in archaeology unattractive despite improving conditions and opportunities.

While archaeologists are working hard to build resources and expertise, more must be done in partnership with clients to build the capacity that will be required over the next few years.

Collaborative culture

While there are many examples of successful collaborative working with between archaeologists, clients and principal contractors, there are still projects where significant gains could be made through earlier and better engagement. With early engagement comes better risk management, more secure programmes and budgets and better value-added outcomes.

Proper planning is now even more critical given the pressures on the archaeological supply chain from planned infrastructure development and house building. Large projects such as HS2 will need to do more to identify their needs, work with the archaeology sector to build the skills and capacity they need, and ensure collaboration across and between projects to effectively manage scarce resources.

A new dynamic of early contractor involvement and partnership working would benefit all parts of the construction industry. ■

Case study: Transforming Mitcham

FM Conway thrown off track by tram route discovery

WHILE working with the London Borough of Merton to support a major regeneration scheme for Mitcham town centre, FM Conway uncovered remains of an old tram route.

Supported by funding from Transport for London, the £6.2 million Rediscover Mitcham project was launched by Merton Council in 2012.

Due for completion later this year, the first phase of the six-stage project saw the infrastructure services company carry out refurbishments to the town’s main shopping area and market place as well as restoring Mitcham’s iconic clock tower, first built in 1898 to mark Queen Victoria’s Diamond Jubilee.

Phase two, which includes a major overhaul of the road network to create a new bus route, is now underway.

While constructing the route, FM Conway unearthed reminders of Mitcham’s historic transport network. During reconstruction works along London Road, the team



uncovered and managed to salvage remains from an old tram route into the town.

Jonathan Delany, project manager at FM Conway, explains: “As part of the old London County Council network, trams were introduced in the London Borough of Merton during the early 1900s, with a route running along Merton High Street. The trams were decommissioned in the 1950s but the network has since been revived with the opening of the new Tramlink service.” ■