How involving archaeology at the design phase enhances a project and reduces carbon

Catherine McGrath, Category Manager/ Framework Manager – Ground Investigation and Archaeology, National Highways

Involving design in any category is a must for any client as the designer owns the specification/ scope and quantities in the Bill of Quantities (BoQ).

Reducing carbon emissions is at the top of most companies' agendas, including that of National Highways. Our Carbon Net Zero plan (presented to the archaeology industry during 2022/2023) sets out our commitment to reaching carbon net zero by 2050. To enable this, designers should now look at how to reduce clients' and suppliers' carbon emissions. They must think outside the box to make innovative design a physical reality.

At the highest level, we have committed to reaching net zero across our three spheres of influence:

1 by 2030 for our corporate carbon

2 by 2040 for our maintenance and construction carbon (working with our supply chain)

3 by 2050 for carbon emitted by road users (where our role is to support the government)

We can only reach this target with the collaboration of our supply chain and partners, shaping the net zero and carbon reduction journey for archaeology and the historic environment. This is heavily dependent on design being smarter and including Early Contractor Involvement (ECI) that enables our archaeology supply chain to provide detailed information to further inform design.

- a whole life carbon approach to design (smarter)
- carbon calculator tool
- pre-work/consultation/design

Earlier this year OCA JV worked on National Highways A417 Missing Link upgrade, working closely with Historic England, Gloucestershire County Council archaeologists and contractors Kier; this is a scheme which will improve a three-mile stretch of single-lane carriageway on the A417 between the Brockworth bypass and Cowley roundabout in Gloucestershire. Credit: National Highways/Cotswold Archaeology

MOLA archaeologists found an unusual loom weight used in cloth making, which could date to the Bronze Age (2500–800 BC). Credit: National Highways/MOLA

During excavation last summer, OCA JV uncovered an Iron Age 'banjo enclosure'. This site likely served as a hub for significant activities like feasting. The revelation drew considerable interest and was featured on the latest season of Digging for Britain on BBC Two, hosted by Professor Alice Roberts, who visited the A417 Missing Link project to meet the team and gain insights into the work. The series is now available on BBC iPlayer. Credit: National Highways/Cotswold Archaeology

The conditions at the site have preserved several wooden objects in the boggy ground for 2000 years. This Iron Age ladder was used by the local community to reach water from the shallow well. Credit: National Highways

- buy-in from planning authorities/county archaeologists – intrusive fieldwork is always carbon heavy
- behavioural change
- systems and processes
- digital tools and technology
- innovation
- smarter design
- greater focus on research-led methodologies to reduce carbon footprint

Working with local authorities in engagement with archaeology and the historic and natural environments delivers a successful project. Not only does it help mitigate obvious project construction and financial risks, but collaborative working can also improve the sustainable design of the project, bringing about better understanding and benefits to conservation. It can help in meeting climate change objectives, for example by retaining and preserving archaeological sites. We have worked with ALGAO UK and ALGAO England to be smarter about archaeology and reduce carbon emissions. Incorporating the historic environment into the design of projects from the start contributes to other key objectives such as sustainable development opportunities in health, wellbeing, education and community involvement. These are all aims for our project legacies.

We have launched a Low Carbon Opportunities register, which is intended to be a comprehensive list of all low carbon opportunities known to National Highways and a single source of reference.

Since the series of carbon workshops National Highways ran in 2023 with archaeological organisations in our supply chain, I have challenged our designers, asking what they have done to demonstrate a 'smarter design' based on the ideas which came from the workshops.

If you would like to access the Low Carbon Opportunities register and the other resources on the National Highways carbon hub, email carbon@nationalhighways.co.uk

Catherine McGrath

Catherine is National Highways category lead and framework manager for both the Ground Investigation and Archaeology frameworks. For both categories Catherine leads communities that seek to share and develop knowledge, understanding and good practice through collaboration and best practice and lessons learned.

Catherine is a National Highways Be the Change: HS&W Ambassador.