Cross sections

When the Crossrail construction project began in 2009, archaeology was both expected and planned for. Now an exhibition opening next month at Museum of London Docklands puts the project, the archaeology and the finds into perspective. Becky Wallower discussed the discoveries with exhibition curator Jackie Keily.

The statistics for the archaeology associated with Europe's largest ever infrastructure project are impressive: 200 archaeologists working in 40 construction sites along the 100km route have uncovered more than 10,000 finds covering 55 million years. Crossrail's archaeologists have been providing information on discoveries since the project began in 2009, through on-site displays, press announcements, online features and blogs, education projects and TV specials. But now that the excavations undertaken by Oxford Archaeology/Ramboll, MOLA and Wessex Archaeology are complete, the final publications due out in spring 2017, and the Elizabeth Line opening in 2018, it's time to take stock. What insights can be drawn from an unrelated series of spy-holes into some of London's most historic areas? How have the archaeologists adapted to such demanding conditions and schedules? How will the findings inform our understanding of London's history, people and future research? And how does the project itself fit into London's legacy of engineering innovation?

Curator Jackie Keily, working closely with Crossrail's lead archaeologist Jay Carver and the units involved, is drawing all these strands together for an exhibition running through most of 2017 in Docklands – *Tunnel: the archaeology of Crossrail*. The Docklands site was selected partly because a large part of the railway is in east London, which has become a focus for this part of Museum of London, and partly because both this branch of the museum, and the exhibition itself, share a key aim to make archaeology accessible and family-friendly.

Jackie's first challenge was not just the usual quart-into-a-pint-pot problem (she's selected just over 350 objects from the 10,000 finds), but how to present what is essentially a linear project in a cuboid space. It was felt that a chronological approach would have hopped around too much, and provided less of an opportunity for people who live along the site to understand the implications for their own areas. The solution is to highlight the most significant stories from three broad sections of the line, which will itself be represented as an integrated feature winding through the gallery.

The narrative will follow a course from east to west in recognition of the Docklands perspective. It begins with four 'clusters' of archaeology between Abbey Wood in the eastern suburbs and Stepney Green in the heart of the east end. The second section deals with the central London run from the Liverpool Street / Moorgate area to the Charterhouse Square site at Farringdon, and the final section presents clusters from Tottenham Court Road and Bond Street westwards to Paddington and beyond. A total of nine clusters, some of which relate to part of an archaeological site, and some to more than one site, were selected not only for their importance as new archaeological evidence, but also for their narrative value in presenting an engaging story: how displayable are they, and what do they represent?

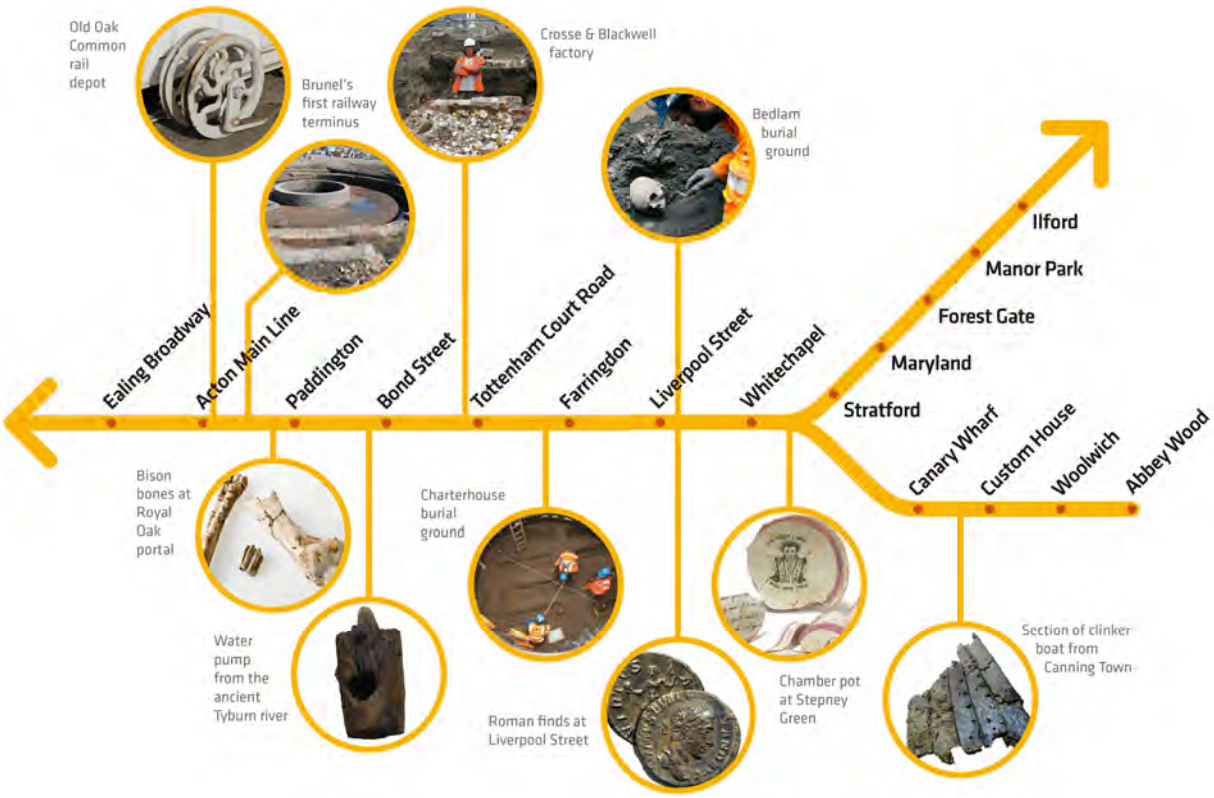
As with most archaeology, the importance of much of the corpus of finds is extracted mainly from the analysis of what they represent – in terms of the dates, quantities, processes and events in the evidence. However, some individual finds have thrown light on local activities and people – a Tudor bowling ball came from a moated manor house in Stepney, and a range of Roman equine objects from the Liverpool Street area, such as bones, hipposandals and harness fittings, indicate this was a 'horse-y' area for hundreds of years.

Other finds have proven to be of major significance. A 3rd-century medallion of Philip I is one of only two known. Analysis of the skeletons from the mass graves at Bedlam burial ground has for the first time found plague pathogen that was present before death, confirming that this was a 1665 plague pit. aDNA from Charterhouse Square skeletons had also confirmed plague, including from the 1348 Black Death.

Skeletons from both these sites will be on display, as will a Roman skeleton plus some of the Walbrook skulls from the sites around Liverpool Street, offering an opportunity to show why such evidence is important and how it can be interpreted.

The role of archaeologists is a key theme being drawn from the displays, which will highlight the excavation practice, analysis and interpretation behind the stories. Jackie hopes that, as well as demonstrating the work of specialists such as osteoarchaeologists, geoarchaeologists, period and artefact experts, the exhibits and activities will illuminate the complexity of

BELOW from left: mesolithic flint scraper from North Woolwich; Tudor bowling ball from Stepney Green; Crosse and Blackwell ginger jar from Tottenham Court Road, where a huge deposit of slightly earlier commercial pottery was also found; Roman hipposandal from Liverpool Street



LEFT schematic of Crossrail route, showing some of the archaeological sites **BELOW** view down into 4.5m diameter grout shaft at Charterhouse Square where skeletons of Black Death and other plague victims were recovered

modern archaeology and the jobs involved. Children can don orange high vis jackets and hard hats as they enter the exhibition, for instance, to find out how PPE might affect working conditions. Interactives, activities and family educational sessions will also be on offer.

Although the sites highlighted are all along the route, they don't necessarily correspond to stations. As Jackie explained: 'At up to 40m down, the tunnels themselves were, of course, much deeper than the archaeology, which mainly extended to 5m or less. Many of the excavations were related to associated works the public will never see, such as grout shafts, necessary in some locations to pump in material to stabilise ground that was subject to settlement, and the shafts built to provide access for the tunnel boring machines.' Some such works have provided unique access to archaeology: the Charterhouse Square Black Death burials had lain untouched for almost 800 years until the excavation of the grout shaft, and the site is unlikely to be disturbed again in the foreseeable future.

Just as the archaeology has been integrated into the Crossrail works, the engineering story will be integrated into the exhibition as it follows the Elizabeth Line through the gallery. Displays of clusters from the western section are particularly germane here as they bear witness to another famous rail project: Brunel's Great Western Railway. Archaeologists found remains at Westbourne Park for Brunel's depot, including evidence of how the infrastructure had been changed when his original 7-foot broad gauge was converted to standard gauge in the 1850s.

Visitors will also be introduced to the human side of Crossrail. The tunnel boring machines were given female names, for instance: Jessie and Ellie (for Olympic / Paralympic gold medallists Jessica Ennis-Hill and Ellie Simmonds) bored the tunnels near the Olympic Park.

Crossrail's legacy extends beyond the remains eventually to be stored at the museum's Archaeological Archive. The Natural History Museum will house the prehistoric animal bones and amber, and sustainability policies have ensured that 98% of the seven million tonnes of material extracted from tunnels is reused. Much of it has gone to creating the Wallasea Island Wild Coast project, creating a coastal marshland nature reserve 2.5 times the size of the City of London.

Crossrail has also created a collaborative blueprint for the integration of archaeology, engineering and construction on even the largest infrastructure projects in future. By employing high standards of both archaeology and project management, and by generating high visibility for and interest in archaeology over some fourteen years, Crossrail has provided ample evidence that archaeology can not only work within such complex projects but that it can add to the benefits perceived by the public. It's a good story, and should be well told in this timely exhibition.

Tunnel: the archaeology of Crossrail
10 February to 3 September 2017 at Museum of London Docklands. Details on website: museumoflondon.org/docklands