

**AN ARCHAEOLOGICAL EVALUATION (PHASE 2)  
AT YORK ENGINEERS' TRIANGLE,  
YORK RAILWAY STATION, CINDER LANE,  
OFF LEEMAN ROAD, YORK**

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PRE-CONSTRUCT ARCHAEOLOGY

**DOCUMENT VERIFICATION**

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AT YORK ENGINEERS' TRIANGLE, YORK RAILWAY STATION,  
CINDER LANE, OFF LEEMAN ROAD, YORK**

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**An Archaeological Evaluation (Phase 2) at York Engineers' Triangle,  
Cinder Lane, York Railway Station, York**

**Central National Grid Reference: SE 459330 451500**

**Site Code: YES 12**

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## **1. NON-TECHNICAL SUMMARY**

- 1.1 A phased programme of archaeological investigations is being undertaken by Pre-Construct Archaeology/Ramboll at the York Engineers' Triangle, a parcel of land within the curtilage of York Railway Station, off Cinder Lane, to the south-west of the main station building. The site is roughly triangular in shape covering c. 2.8ha, centered at National Grid Reference SE 459330 451500.
- 1.2 Planning permission has been approved for the re-development of the site by Network Rail. Extensive new build is proposed and Ramboll is partnering BAM in delivery of the scheme for Network Rail. In terms of cultural heritage and archaeology, Ramboll is developing and implementing a strategy, in liaison with the City of York Archaeologist, to ensure that all constraints, risks and opportunities in relation to the historic environment are fully considered in the design of the scheme.
- 1.3 Ahead of the programme of archaeological work, the Engineers' Triangle site was considered to lie within an area of moderate archaeological potential, with evidence of prehistoric and Roman activity considered most likely. Cemetery activity of the Roman period is known to the immediate north-east, on higher ground in the area of York Railway Station. Previous archaeological monitoring of geotechnical site investigations indicated the potential of the site for palaeoenvironmental data despite evidence for extensive truncation of earlier ground surfaces by 19th-century development. The site was also considered highly likely to contain remains of important elements of industrial era railway infrastructure, most notably a group of mid-19th century engine sheds, depicted on historic mapping within the central portion of the site. York was a core location at the heart of railway development in the north of England from the mid-19th century and has remained one of the UK's chief centres of employment in the railway industry since then. The potential survival of extensive buried remains associated with the rich and important railway heritage of the site, therefore represented a key consideration in the design of the archaeological work.
- 1.4 The initial element of the programme of archaeological work comprised a trial trenching evaluation (Phase 1) undertaken December 2011-January 2012. Seven trenches were sited to provide a broad coverage of the site, whilst incorporating areas of the development footprint. Some trenches were also sited to investigate the level of survival of structures dating from the mid-19th century, specifically a rectangular 'straight' engine shed, built c. 1841 (the 1841 Engine Shed), and three roundhouse engine sheds, Roundhouses 1, 2 and 3, built in c. 1851, c. 1852 and c. 1864, respectively. To this end the evaluation identified limited remains of the 1841 Engine Shed, the exceptionally well-preserved remains of Roundhouses 2 and 3 and the less well-preserved remains of Roundhouse 1.
- 1.5 An extensive programme of archaeological recording was undertaken January-March 2012 in order to inform the detailed design of the re-development scheme. The work comprised exposure, hand cleaning and detailed photography and survey of the portions of Roundhouses 1 and 2 that lay within the site boundary and approximately two-thirds of the area of Roundhouse 3. An octagonal structure at the intersection of Roundhouses 1 and 2 was also exposed and recorded. A report detailing that work is currently being compiled.

- 1.6 At the time of writing, a section of live rail that forms part of the turning triangle is yet to be decommissioned. Upon the decommissioning of the live rail, further archaeological work is proposed for specific parts of the historic railway structures that will be affected by the development, namely an additional part of Roundhouse 3 and the north-western portion of the 1841 Engine Shed. Adjacent to the site boundary, an additional portion of Roundhouse 2 is also to be exposed and recorded.
- 1.7 Due to site access arrangements, the Phase 1 evaluation was only able to expose a small portion of the south-western corner of the 1841 Engine Shed, so that the degree of survival of the building was not accurately determined. Therefore, a further archaeological evaluation (Phase 2) was required for the building in order to further inform the proposed detailed design of the re-development scheme. The work was undertaken according to a Project Design prepared by Pre-Construct Archaeology/Ramboll.
- 1.8 The Phase 2 evaluation comprised three trial trenches (Trenches 8, 9 and 10) that specifically targeted three corners of the 1841 Engine Shed. Trench 8 was sited to target the north-western corner, Trench 9 was sited to target the north-eastern corner and Trench 10 was sited to target the south-eastern corner. The broad aim of the work was to determine the full extant footprint of the 1841 Engine Shed and to determine the degree of preservation of sub-surface structural elements.
- 1.9 The Phase 2 evaluation established that, at each location investigated, sub-surface structural remains of the 1841 Engine Shed survive to an exceptional degree. The external brick wall of the building and associated surfaces and drainage structures were recorded in all three trenches. Elements of inspection pits and track that would have formed part of the northernmost road running through the shed were recorded in Trenches 8 and 9. In Trenches 9 and 10, on the eastern corners of the building, the minimum depth at which structural remains were encountered was 0.41m (at a maximum height of 12.77m OD) and in general they lay within 0.52m of the existing ground surface. In Trench 8, on the north-western corner, structural remains were encountered at a depth of just 50mm below existing ground level at the eastern extent of the trench (at a maximum height of 12.77m OD) and a depth of 0.41m at the western extent of the trench. The work therefore established that the 1841 Engine Shed measured c. 46.80m (153ft 6in) WNW-ESE by c. 16.40m (53ft 10in) NNE-SSW, identical to the dimensions depicted on the 1892 Ordnance Survey map and at precisely the same location.
- 1.10 In all of the trenches investigated in the Phase 2 evaluation, structural remains of the 1841 Engine Shed were overlain by 20th-century levelling deposits. The uppermost strata in all trenches comprised either hardcore or dolomite forming the existing ground surface.

## 2. INTRODUCTION

### 2.1 General Background

- 2.1.1 This report details the methodology and results of Phase 2 of an archaeological evaluation undertaken by Pre-Construct Archaeology (PCA) May 2012 on a parcel of land – the York Engineers' Triangle site (YET) – within the curtilage of York Railway Station (Figure 1). Planning permission has been approved for the development of the site by Network Rail, with extensive new build proposed within eastern portion of the site and also extending into the north-western portion, in a roughly three pointed star-shaped new build footprint.
- 2.1.2 Ramboll is partnering Principal Contractor BAM in delivery of the scheme for Network Rail. The Cultural Heritage and Archaeology section of Ramboll is liaising closely with the City of York Archaeologist to ensure that all constraints, risks and opportunities in relation to the historic environment are fully considered in the design of the scheme. Phase 1 of the evaluation was undertaken by PCA in December 2001-January 2012,<sup>1</sup> ahead of the determination of the planning application for the scheme. Ramboll has prepared a Heritage Statement in support of the application.<sup>2</sup> The Phase 2 of the evaluation was undertaken to further inform the new build design.
- 2.1.3 A Project Design for the Phase 2 evaluation was prepared by PCA/Ramboll to detail the scheme of archaeological work to be undertaken.<sup>3</sup> The Project Design followed the format set out in *Management of Research Projects in the Historic Environment (MoRPHE)*.<sup>4</sup>
- 2.1.4 The site has been the subject of previous archaeological interventions and research. In 1998, a limited trenching evaluation conducted in the north-western part of the site.<sup>5</sup> In 2005, a desk-based assessment (DBA) was undertaken of the archaeological and historical potential of a large area of land to the south-west of the River Ouse, ahead of a broader re-development scheme which included the York Engineers' Triangle site within its south-easternmost portion.<sup>6</sup> The DBA concluded that the site was located within an area of 'moderate' archaeological potential, with evidence of prehistoric and Roman activity considered most likely, as well as remains of elements of industrial era railway infrastructure, most notably a group of engine sheds built during the mid-19th century. Subsequent to the DBA, archaeological monitoring of geotechnical site investigations (SIs) was undertaken.<sup>7</sup>
- 2.1.5 The aforementioned Phase 1 evaluation undertaken by PCA identified significant below-ground structural elements of three roundhouse engine sheds dating from the mid-19th century (Roundhouses 1, 2 and 3) and the western structural elements of a rectangular engine 'straight' shed built in c. 1841 (the 1841 Engine Shed), this the earliest structure recorded. The work demonstrated the potential of the site for highly significant industrial era structural remains associated with the development of York's railway infrastructure.

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<sup>1</sup> PCA/Ramboll 2012a.

<sup>2</sup> Ramboll 2012.

<sup>3</sup> PCA/Ramboll 2012b.

<sup>4</sup> English Heritage 2006.

<sup>5</sup> Northern Archaeological Associates 1998.

<sup>6</sup> Archaeological Services Durham University 2005.

<sup>7</sup> Archaeological Services Durham University 2006.



- 2.1.6 As a result of the findings of the Phase 1 evaluation, an extensive programme of archaeological recording was undertaken January-March 2012, in order to inform the detailed design of the re-development scheme. The portions of Roundhouses 1 and 2 within the site boundary and approximately two-thirds of the area of Roundhouse 3 were exposed and hand cleaned, electronically surveyed then subject to detailed photographic and written recording, with some targeted excavation. An octagonal structure at the intersection of Roundhouses 1 and 2 was also exposed and recorded. An assessment report on that work is currently being compiled.
- 2.1.7 The Phase 2 evaluation, as detailed in this report, was required to further investigate the degree of survival of the 1841 Engine Shed and thus inform the new build sub-structure design. The building was first depicted on the 1851 Ordnance Survey map as a three-road rectangular straight shed. The south-western corner of this building had been exposed during the Phase 1 evaluation therefore the Phase 2 evaluation was designed to target the remaining three corners through three machine-excavated trial trenches (Trenches 8, 9 and 10) (Figure 2).
- 2.1.8 The Site Archive (site code YES 12) is currently held at the Northern Office of PCA and the retained element, comprising the written, drawn and photographic records, as well as a small assemblage of artefactual material, will ultimately be deposited at the Yorkshire Museum. The Online Access to the Index of Archaeological Investigations (OASIS) reference number for the project is: preconst1-130097.

## **2.2 Site Location and Description**

- 2.2.1 The site is located to the south-west of York Railway Station, off Cinder Lane, which runs south from Leeman Road. Centered at National Grid Reference SE 459330 451500, the site is roughly triangular and covers c. 2.8ha (Figures 1 and 2). The triangle is derived from the very beginnings of the railway infrastructure in the city in the mid-19th century, when the separate lines of the York and North Midland Railway and the Great North of England Railway were connected by a curving link line which bypassed the original station, built in 1841.
- 2.2.2 Today the site is bounded to the west/south-west by the modern version of the curving link line at Holgate Junction, beyond which lies a modern housing development, St. Paul's Mews. To the east/south-east it is bounded by the tracks of the East Coast Mainline Railway on the approach from Holgate Junction to the existing station building, built in 1875, while to the north it is bounded mostly by a station car park on Cinder Lane, with various station facilities, including a signaling house and telephone exchange, to the north-east.
- 2.2.3 Currently the site is mostly open ground with some areas of hardstanding and heaps of rubble. At the time of the evaluation herein described, the central part of the site was occupied by a BAM site compound, including temporary offices and welfare buildings, with a Network Rail temporary car park extending north-eastwards from the compound. Retained within the site is a triangular arrangement of curving railway tracks; used only occasionally and due for decommissioning in 2013. The only standing building on the site is a small disused one-storey brick building, adjacent to the south-eastern site boundary.

2.2.4 The postulated footprint of the 1841 Engine Shed is located within the central northern part of the site, with a curving NE-SW aligned section of the occasionally used track overlying the central portion of the structure. East of the track, the ground surface comprises dolomite hardstanding within the BAM site compound, while another area of hardstanding, in use as a storage compound, lies to the west of the track.

### **2.3 Geology and Topography**

2.3.1 The solid geology of the area of the site comprises sandstone bedrock of the Sherwood Sandstone Group.<sup>8</sup> The site lies to the south of the River Ouse and within its floodplain, in an area where the superficial geology is complex. Devensian Till (boulder clay) is predominant but pockets of glaciofluvial and/or morainic sand and gravel are also known, as well as alluvial material, mostly clay and silt, but also sand and gravel.

2.3.2 Generally the site is fairly level with the current ground level at a height of c. 13.0m OD. Along the central eastern margin of the site ground level is c. 13.10m OD, in the northernmost portion it is c. 12.90m OD, in the north-westernmost portion it is c. 12.80m OD and at the southern end it is c. 12.75m OD, these values demonstrating that on the whole there is relatively little variation in ground level.

2.3.3 The portion of the site investigated by the evaluation herein described is relatively level. To the west, at Trench 8, existing ground level was recorded at maximum and minimum heights of 13.11m OD and 12.78m OD, respectively, while to the east, at Trenches 9 and 10, ground level was recorded at maximum and minimum heights of 13.62m OD and 13.08m OD, respectively.

### **2.4 Planning Background**

2.4.1 The planning application for the re-development scheme has been approved. Extensive new build is proposed, the majority occupying the eastern portion of the site but also extending into the north-western portion in a roughly three pointed star-shaped new build footprint.

2.4.2 Ramboll is partnering BAM in delivery of the scheme for Network Rail. Close liaison between the Cultural Heritage and Archaeology section of Ramboll and the City of York Archaeologist is ensuring that constraints, risks and opportunities in relation to the historic environment are fully considered in the design of the scheme. Ramboll compiled the aforementioned Heritage Statement in support of the planning application.

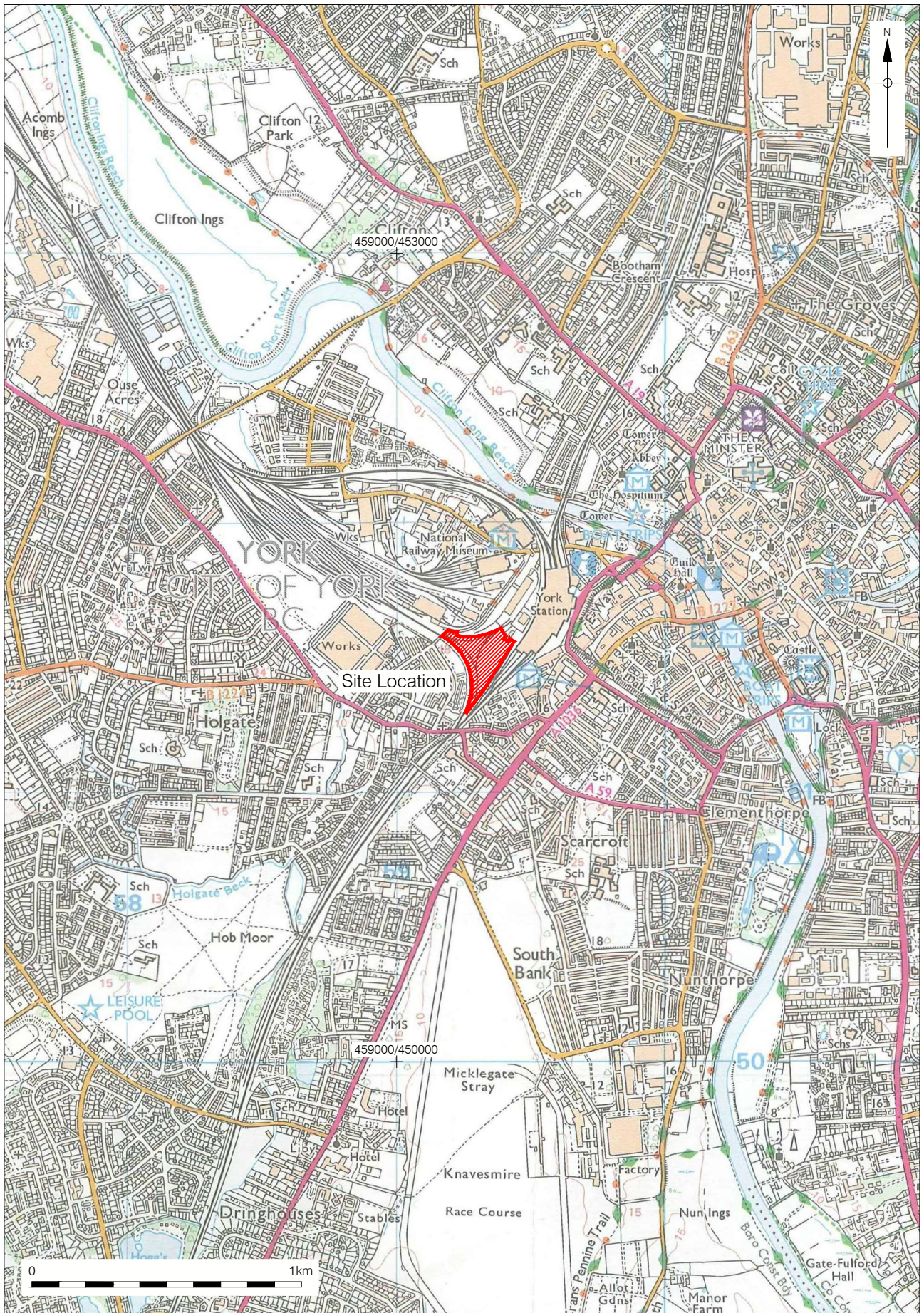
2.4.3 The requirement to undertake the archaeological investigation is in line with planning policy at a national level.<sup>9</sup> The NPPF provides up-dated guidance for Local Planning Authorities, property owners, developers and others on the conservation and investigation of the historic environment. It requires applicants to provide early consideration of the potential for 'heritage assets' (those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest) on their sites, a description of the significance of those heritage assets and an assessment of the potential impact of the proposed development on the significance of those heritage assets.

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<sup>8</sup> Geological information from the *British Geological Survey* website.

<sup>9</sup> The *National Planning Policy Framework* (NPPF) (Department of Communities and Local Government 2012) came into effect on 27th March 2012, replacing *Planning Policy Statement 5: 'Planning for the Historic Environment'* (PPS5) (Department of Communities and Local Government 2010).





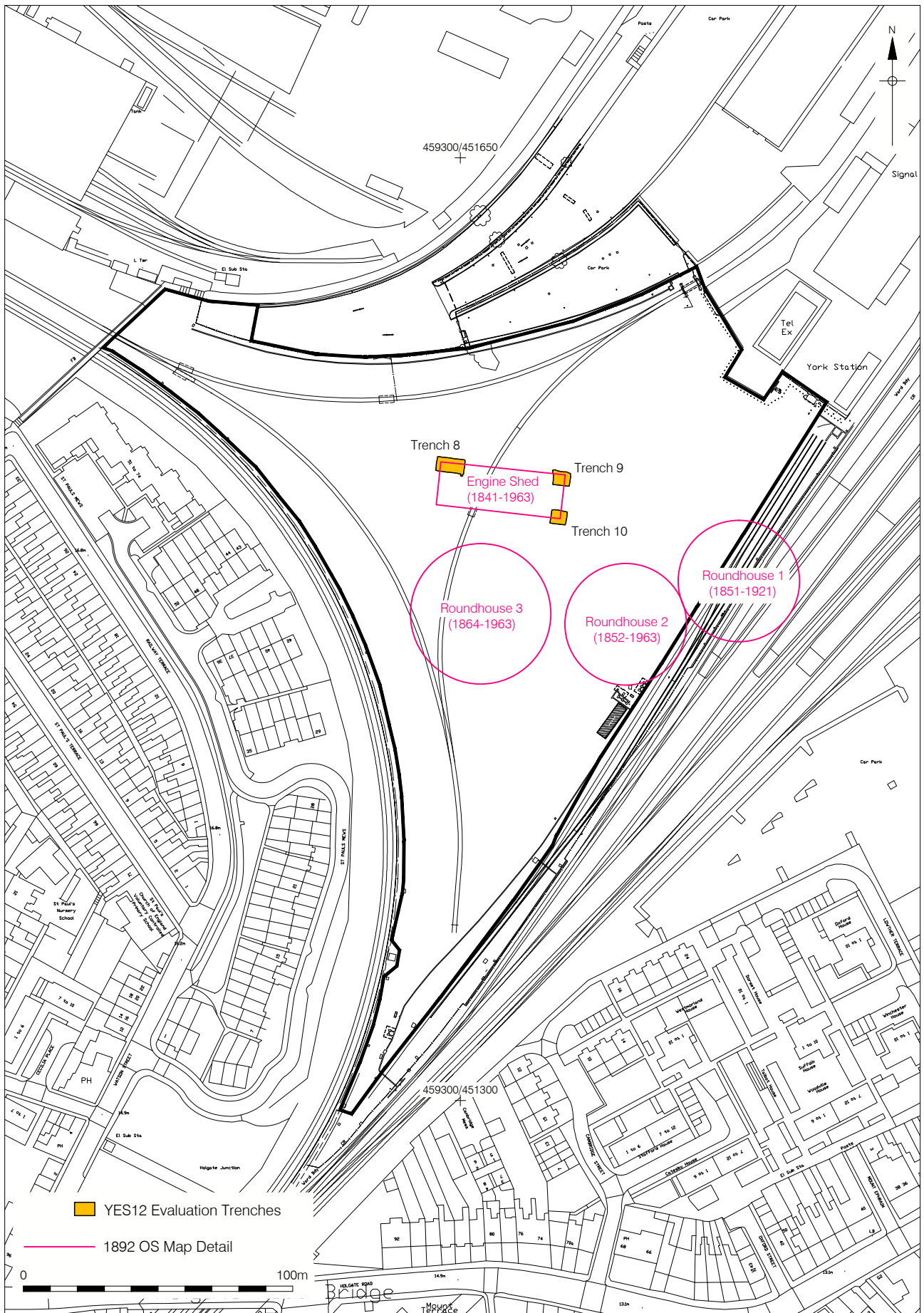
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27/02/12 MR

Figure 1  
Site Location  
1:20,000 at A4





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 23/02/12 MR  
 updated 27/06/12 HB

Figure 2  
 Trench Location  
 1:2,000 at A4

2.4.4 The requirement for archaeological work at the site is also in accordance with Policy HE10 'Archaeology' of the *City of York's Draft Local Plan Incorporating the 4th set of changes, Development Control Local Plan*,<sup>10</sup> currently being replaced by a Local Development Framework.

2.4.5 In sum, therefore, the Phase 2 evaluation herein described was designed specifically to investigate the degree of survival of below-ground structural remains of the 1841 Engine Shed and thereby provide sufficient information on the principal heritage assets of the site to the Local Planning Authority, the City of York Council, as well as to the re-development scheme design team.

## **2.5 Archaeological and Historical Background**

2.5.1 The aforementioned 2005 DBA concluded that the site was located within an area of moderate archaeological potential. Phase 1 of the evaluation did not record any prehistoric, Roman, medieval or pre-industrial post-medieval archaeological deposits (although residual artefactual material of Roman date was recovered), while it recorded well-preserved below-ground structural remains associated with industrial era elements of York's early railway infrastructure. With the focus of the Phase 2 evaluation herein described one specific element of those industrial era remains – the 1841 Engine Shed - the background to earlier archaeological eras has been omitted from this report – the report on the Phase 1 evaluation should be consulted for further detail. A summary of the industrial era background is included below.

2.5.2 For the early modern industrial era, the site was known to have very high potential for important archaeological remains, specifically relating to elements of railway infrastructure. York was, and remains, the epicentre of the railway system in the North of England, forming a hub for lines travelling in all directions. Driven chiefly by Yorkshire's own 'Railway King', George Hudson, the railways first arrived in York in 1839 with the construction of the York and North Midland Railway (YNM) to Normanton and Leeds. This was soon joined by the Great North of England (GNE) railway to Darlington, and the two planned a joint station, duly constructed in 1841 inside the city walls, adjacent to Tanner Row. The origin of the triangular form of the site has been previously mentioned, when the separate lines of YNM and the GNE were connected by a link line – the North Junction–Holgate Bridge Junction curve – which bypassed the first station, which was replaced in 1875 by the current building.

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<sup>10</sup> City of York 2005.

- 2.5.3 When the GNE's first services reached York in 1850, there were already three locomotive sheds in place to the south of the station, two wholly or partly within the site.<sup>11</sup> The first of these was a three road straight/rectangular shed built in 1841 on the south side of the GNE lines and it was this building that the Phase 2 archaeological evaluation herein described was specifically targeting. The 1841 date for the construction of the shed is supported by documentary evidence in the form of a contract from GNE to Crawshaws of York to build the 'Engine House at York', submitted 22 September 1840.<sup>12</sup> The Crawshaws partnership was dissolved by 1842, as evidenced from an extract from *The London Gazette*, and the engine shed had presumably been completed by this time.<sup>13</sup>
- 2.5.4 The 'straight' engine shed first appears on the Ordnance Survey 1st edition map of 1851 as a rectangular three-road structure. This edition depicts the structure with two rectangular projections located externally to each of the north and south walls, these probably four chimney stacks. The materials and labour costs for the original construction of the engine shed are listed in detail in the aforementioned contract, amounting to £1,534.<sup>14</sup> The shed broadly retains a similar form throughout subsequent editions of the Ordnance Survey map, with the exception of the 1892 edition, which shows the addition of two end-to-end rectangular structures, external to the north wall. This map also shows that, by this date, the four chimney stacks depicted on the earlier map were no longer in existence.
- 2.5.5 A photograph of the 1841 Engine Shed, thought to have been taken after 1923, shows a rectangular engine shed of brick construction with door pillars between the three roads and a slate roof incorporating a large clerestory (Figure 19).<sup>15</sup> The roof depicted in this photograph is possibly part of the original build, however the original entrances to the shed were probably arched, later replaced by steel framed doorways probably during the late 19th or early 20th century.<sup>16</sup> The engine shed was used by the GNE until it was taken over by the London Midland and Scottish Railway in 1932. It is likely that the shed was refurbished at this time, with the roof replaced. A mid-20th-century photograph shows the western entrance to the shed, with a shallow arched roof with brick fascia (Figure 20) and another photograph taken around the same time shows the arched roof fascia of the eastern entrance arched clad with vertical boarding.<sup>17</sup> The shed was later used for storing locomotives until its demolition in 1963.
- 2.5.6 The remains of the south-western corner of the 1841 Engine Shed were revealed in Trench 2 during Phase 1 of the archaeological evaluation. Substantial brickwork representing the corner of the building was exposed, to a height of 0.84m, with a stepped footing and an associated brick culvert. Later, probably early 20th-century, drainage features were also recorded.

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<sup>11</sup> Information regarding the site's railway heritage has been largely summarised from Hoole 1972 and 1976, Appleby 1993 and Griffiths and Hooper 2000.

<sup>12</sup> National Archives Ref. RAIL 232.32.

<sup>13</sup> The London Gazette 1842.

<sup>14</sup> National Archives Ref. RAIL 232.32.

<sup>15</sup> Hoole 1983.

<sup>16</sup> Griffiths and Hooper 2000.

<sup>17</sup> Rose 1994.

- 2.5.7 Two WNW-ESE aligned inspection pits were partially exposed in the central part of Trench 2. Both inspection pits were similarly constructed with track walls built using red brick and capped by a concrete plinth along their length that would have housed the rail chairs that in turn carried the rail track. The projected alignment of these track walls show the exposed portion was located c. 8m from the western entrance of the engine shed, however photographic evidence shows that by the mid-20th century, these inspection pits extended towards the engine shed stopping just short of its entrances (Figure 20).<sup>18</sup>
- 2.5.8 The second engine shed built at the site was a roundhouse which was brought into use c. 1851 and appears on the Ordnance Survey 1st edition map of 1851; only the extreme north-westernmost portion of this structure – Roundhouse 1 – lies within the eastern boundary of the site. A probably identical building – Roundhouse 2 – was built in 1852, this immediately to the south-west of Roundhouse 1. Both sheds had 16 stalls and were served by a 42ft turntable. A third and larger roundhouse – Roundhouse 3 – with 18 stalls and a 45ft turntable was erected to the west of Roundhouse 2 in 1864. Historic photographs show that this had a relatively elaborate superstructure, each radiating road having an individual ribbed roof with gable end and its main circular central roof surmounted by a large weather vane with locomotive design.
- 2.5.9 Re-development of York Station in 1875 required the eastern wall of Roundhouse 2 to be ‘shaved’ off. In October 1921, by which time Roundhouse 1 was being used to repair wagon sheets, a fire completely destroyed that shed and its contents. Roundhouse 2 continued in use until 1961 and was demolished in 1963. The 1864 shed – Roundhouse 3 – was originally used by the North Eastern Railway, but from 1879 was used by the Midland Railway to provide accommodation for its engines under an agreement with the NER. After 1923 Roundhouse 3 was used solely by the London and North Eastern Railway until its closure in 1961 and demolition in 1963, by which time only its walls were standing, the roof having been removed.
- 2.5.10 An assessment report is currently being compiled to set out the findings of the work undertaken by PCA January-March 2012 to record the available portions of Roundhouses 1, 2 and 3 within the site boundary.

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<sup>18</sup> Rose 1994.

### **3. PROJECT AIMS AND RESEARCH OBJECTIVES**

#### **3.1 Project Aims**

- 3.1.1 The broad aim of the Phase 2 archaeological evaluation was to provide detailed information regarding the degree of survival of the 1841 Engine Shed, this likely to be the earliest historic structure at the site, and therefore an important component of the heritage assets of the site, in order to further inform the new build design and, in consultation with the City of York Archaeologist, allow the formulation of an appropriate archaeological mitigation strategy.
- 3.1.2 In general, preservation *in situ* of important archaeological remains is the preferred option in a development scheme. Accordingly, the City of York Archaeologist has stated that ‘the key principle should be that the remains of Roundhouses 2 and 3 and the 1841 rectangular engine shed will be preserved underneath the new development after construction has taken place’. However, due to the extensive survival of these structures, the proposed foundation design, using driven-piles, will almost certainly not allow total preservation *in situ*. Therefore, the results of the ongoing programme of archaeological work – including the Phase 2 evaluation herein described - are to be collated in order to inform the design and construction methodology associated with the scheme, with the aim of achieving the minimum possible impact on archaeologically significant structural remains.
- 3.1.3 Trench 2, investigated during the Phase 1 evaluation, exposed structural elements of the 1841 Engine Shed, specifically brickwork representing the south-westernmost corner of its perimeter wall. A subsequent geotechnical investigation encountered a stone sett surface in the north-westernmost part of the presumed footprint of the building, suggesting good survival of internal floor surfaces. However, without further investigative work, the overall degree of survival of the building remained unclear. Therefore, the Phase 2 evaluation was required to elucidate this matter.
- 3.1.4 In sum, the results of the Phase 2 evaluation will augment the record made in the Phase 1 evaluation and form the basis of modeling the survival of the 1841 Engine Shed across its footprint and further inform the proposed sub-structure design for the re-development scheme to ensure that all constraints, risks and opportunities in relation to the historic environment are fully considered in the re-development scheme.
- 3.1.5 Archaeological trial trenching was selected as the most appropriate investigative tool to test the potential survival of below-ground structural remains associated with the 1841 Engine Shed.
- 3.1.6 Additional aims of the project were:
- to compile a Site Archive consisting of all site and project documentary and photographic records, as well as all artefactual and palaeoenvironmental material recovered;
  - to compile a report that contains an assessment of the nature and significance of all data categories, stratigraphic, artefactual, etc.



## **3.2 Research Objectives**

3.2.1 The specific objective of the Phase 2 evaluation was to investigate the potential survival of below-ground structural remains of the 1841 Engine Shed. The project was considered to have little or no potential to contribute to existing knowledge of prehistoric, Roman and medieval York, but particularly high potential with regard to the city's industrial era railway archaeology.

3.2.2 In sum, the proposed archaeological work had the following site-specific objectives:

- to assess the significance of any buried structural remains associated with the 1841 Engine 'Shed';
- to assess the likely impact of the re-development proposals upon any buried archaeological structural remains;
- to provide the basis for exploring the feasibility of preserving, *in situ*, any archaeological remains deemed regionally or nationally significant through engineering design;
- to inform the detailed engineering design of the scheme;
- to inform the scope and design of other mitigation measures, should they be required.

## **4. ARCHAEOLOGICAL METHODOLOGY**

### **4.1 Fieldwork**

- 4.1.1 Fieldwork for the Phase 2 evaluation was undertaken 14–25 May 2012. All fieldwork was undertaken in accordance with the relevant standard and guidance document of the Institute for Archaeologists (IfA).<sup>19</sup> PCA is an IfA-Registered Organisation. The evaluation was undertaken according to the aforementioned Project Design compiled by PCA/Ramboll which should be consulted for full details of methodologies employed regarding archaeological excavation, recording and sampling.
- 4.1.2 Archaeological trial trenching was selected as the most appropriate investigative tool to test the potential survival of structural remains associated with the 1841 Engine Shed. Three trenches (Trenches 8-10) were located across elements of the assumed footprint of the 1841 Engine Shed, whilst taking into consideration the existing constraints, in order to provide a model for the survival of the building.
- 4.1.3 A summary of the rationale for the evaluation trenching and the dimensions of each trench at ground level are set out below:
- Trench 8 measured 10.50m east-west x 5.40m north-south and was targeted to test the north-western corner of the 1841 Engine Shed.
  - Trench 9 measured 6.40m east-west x 5.50m north-south and was targeted to test the north-eastern corner of the 1841 Engine Shed.
  - Trench 10 measured 5.70m east-west x 5.10m north-south and was targeted to test the south-eastern corner of the 1841 Engine Shed.
- 4.1.4 The trenches were set-out by PCA using a Leica Viva Smart Rover Global Navigation Satellite System (GNSS), with pre-programmed co-ordinate data determined by an office based CAD operative. The Smart Rover GNSS provides correct Ordnance Survey co-ordinates in real time, to an accuracy of 1cm.
- 4.1.5 All trenches were mechanically-excavated by a c. 8-tonne wheeled 'back-acting' machine with toothless ditching bucket under archaeological supervision. The trenches were excavated to the top of the first significant archaeological deposit or structure.
- 4.1.6 All trenches were hand cleaned and then photographed and archaeologically recorded, with sample excavations to expose structural elements associated with the building where necessary.
- 4.1.7 A Temporary Bench Mark (TBM) was established on site using the Smart Rover GNSS survey. The height of the TBM, which was located on a drain cover immediately east of Trench 9, was 13.22m OD. The height of all principal strata and features were calculated relative to Ordnance Datum and indicated on the appropriate plans and sections.

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<sup>19</sup> IfA 2009.

## 4.2 Post-excavation

- 4.2.1 The stratigraphic data generated by the project is represented by the written, drawn and photographic records. A total of 81 archaeological contexts were defined in the three evaluation trenches. Post-excavation work involved checking and collating site records, grouping contexts and phasing the stratigraphic data (Appendix B). A written summary of the archaeological sequence encountered within each trench was then compiled, as described below in Section 5.
- 4.2.2 The artefactual material from the evaluation comprised a small assemblage of pottery, ceramic building material, ceramic insulators and metal finds. Specialist examination of the pottery and ceramic building material was undertaken and relevant comments integrated into Section 5, with a summary report on the ceramic material included as Appendix C. A catalogue of the ceramic insulators and metal finds was compiled and is included as Appendix D. It is intended that specialist assessment of this material will be undertaken during a final phase of post-excavation work which will comprise the compilation of an integrated assessment report detailing all phases of archaeological investigation undertaken at the site. No material recovered during the Phase 2 evaluation required specialist stabilisation or an assessment of its potential for conservation research.
- 4.2.3 The palaeoenvironmental sampling strategy of the project was to recover bulk samples where appropriate, from well-dated (where possible), stratified deposits covering the main periods or phases of occupation and the range of feature types represented, with specific reference to the objectives of the excavation. To this end, no appropriate deposits were encountered and therefore no bulk samples were recovered. No other biological material was recovered.
- 4.2.4 The complete Site Archive will be packaged for long term curation. In preparing the Site Archive for deposition, all relevant standards and guidelines documents referenced in the Archaeological Archives Forum guidelines document<sup>20</sup> will be adhered to, in particular a well-established United Kingdom Institute for Conservation (UKIC) document<sup>21</sup> and the relevant IfA publication.<sup>22</sup> The depositional requirements of the body to which the Site Archive will be ultimately transferred will be met in full.

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<sup>20</sup> Brown 2007.

<sup>21</sup> Walker, UKIC 1990.

<sup>22</sup> IfA 2008.

## 5. RESULTS: THE ARCHAEOLOGICAL SEQUENCE

*During the evaluation, separate stratigraphic entities were assigned unique and individual 'context' numbers, which are indicated in the following text as, for example [123]. The archaeological sequence in each trench is described below, with the remains assigned to broad descriptive phases.*

### 5.1 Trench 8 (Figures 3, 7-11)

#### ***Original build of the 1841 Engine Shed and associated structures***

- 5.1.1 The wall, [59], forming the north-western corner of the 1841 Engine Shed was exposed within Trench 8 (Figures 3, 7 & 9). No construction cut for the wall was identified and it is presumed that the whole area of the building footprint was reduced during its construction. The north wall was exposed for a maximum distance of 9.14m WNW-ESE, continuing to the east beyond the limit of excavation. A 2.40m return represented the NNE-SSW aligned west wall which terminated to the south within the limits of the trench. Photographic and 19th-century mapping evidence depicts a three-road arrangement of tracks serving the shed and the west wall terminus probably represents the general location of the entrance for the northernmost of these roads. However, the recorded terminus of the west wall element is likely to represent a later truncation resulting from the installation of a later track. The original west wall possibly continues to the south at a greater depth, however it was not possible to confirm this within the limits of the trench.
- 5.1.2 The width of the corner portion of the perimeter wall in Trench 8 varied from up to 0.68m for the north wall and up to 0.50m for the west wall. The wall was built using a combination of shallow frogged and unfrogged red bricks (up to 230mm x 115mm x 75mm) in English bond with lime mortar. It was exposed for a maximum of five courses, to a maximum height of 0.41m, and was encountered at maximum and minimum heights at 12.77m OD and 12.66m OD, respectively. The depth at which the wall was encountered below the existing ground level varied from a maximum of 0.41m at its western extent and a minimum of 50mm at its eastern extent; at this very shallow depth the remains lay immediately below material forming the existing ground surface.
- 5.1.3 A brick culvert, [66], ran parallel to the external elevation of the north wall, gradually curving north-eastwards at its eastern extent (Figures 3 and 9). No construction cut was identified and it is likely that the culvert was built on a made ground surface and then overlain by a levelling deposit, [65]. The base and sides of the culvert were only exposed at its western extent where the capping bricks had been removed. Where exposed, the base of the culvert was formed by a row of bricks laid on bed. The exposed sides of the structure were formed by two brick walls laid in stretcher courses. Each wall was four courses (c. 0.25m) high, bonded with lime mortar and capped by a row of bricks laid on bed. All elements of the culvert were built with unfrogged red bricks (230mm x 110mm x 80mm) the majority of which were covered in lime mortar suggesting that the bricks were reused.

- 5.1.4 The culvert was exposed for a maximum distance of 6.90m WNW-ESE and was 0.39m wide with an internal width of c. 0.10m. To the east, the culvert continued beyond the limit of excavation and to the west it had been replaced by a later ceramic drain, [64], as described in due course. The upper surface of the culvert was encountered at a maximum height of 12.42m OD at its western extent, gradually sloping downwards to its eastern extent where it was recorded at a minimum height of 12.34m OD. A single accumulated deposit, [76], comprising sterile sandy silt up to c. 50mm thick was recorded within the culvert.
- 5.1.5 A compact deposit of clayey sand, [65], overlay the culvert and abutted the north wall, [59], of the shed. This deposit extended across the northern portion of the trench, external to the structure, and was recorded for a maximum distance of 9.20m east-west by 1.70m north-south. The upper interface of the deposit was relatively level, ranging in height from a maximum and minimum of 12.43m OD and 12.33m OD, respectively. This deposit probably represents a levelling and ground consolidation deposit laid down immediately after the construction of the shed and its associated brick culvert.

***Later additions to the Engine Shed***

- 5.1.6 A drain, [61], had been cut through the north wall, [59], of the shed, c. 0.90m from the corner of the building. Its construction cut, [77], recorded within the upper surface of the wall, measured 0.56m east-west by 0.46m north-south and contained a c. 120mm diameter iron drainpipe, [61], consolidated with brick fragments and stone, [82]. The iron drainpipe element probably represents the basal portion of a downpipe. Similar drainage structures were recorded within Trenches 9 and 10; that recorded in Trench 10, comprising the basal portion of the iron downpipe adjoining a flanged ceramic drainpipe, being the best preserved. The drainage feature recorded in Trench 9 continued below the floor surface of the shed and it is likely that drain [61] also adjoined a ceramic drain running southwards below the internal surface of the shed.
- 5.1.7 The northern portion of a substantial irregular cut, [67], was recorded in the north-western corner of the trench measuring at least 3.80m north-south by 3.66m east-west. Its single fill, [62], comprised compact crushed coal and ash at least 0.23m thick; this deposit probably formed track ballast on the western approach to the shed. Although no datable material was recovered from this feature, it truncated structures and deposits associated with the initial construction of the 1841 Engine Shed. Therefore, this feature must be later in date and probably represents improvement of the track in the early 20th century. A single substantial upright timber post, [74], was recorded adjacent to the west wall of the shed, overlain by ballast deposit, [62]. The post measured 150mm by 150mm and was exposed to a maximum height of 400mm high (Figure 10). The function of this post was not established.
- 5.1.8 Ballast deposit [62] was truncated by a WNW-ESE aligned linear cut, [64], measuring at least 3.60 in length by up to 0.60m wide. This feature ran on the same alignment as brick culvert [66] and is interpreted as representing a rebuild of the drain following truncation by 20th-century activity associated with the improvement of the track. Its single sandy fill, [63], contained large fragments of ceramic drainpipe that probably would have adjoined the brick culvert.

- 5.1.9 Along the southern edge of the trench were the well-preserved remains of the northern portion of an inspection pit. This comprised a WNW-ESE aligned brick and stone block track wall, [70], and an end-to-end group of three timbers, [69], forming the waybeam that would have housed the rail (Figures 3 and 11). Track wall [70] was only exposed within a sample excavation area at the south-eastern corner of the trench and was recorded for a maximum distance of 0.90m in length by up to 0.62m wide. At least 0.96m high, its lowermost c. 0.75m was c. 0.40m wide, built with red bricks (210mm x 70mm) bonded with lime mortar.
- 5.1.10 The track wall was capped by large dressed stone blocks (620mm x 590mm x 270mm) bonded with cement. The waybeam, [69], comprised three substantial rectangular box halved timbers fixed to the stone capping (Figure 11). This was recorded for a maximum combined distance of 6.72m WNW-ESE with each timber measuring c. 0.32m wide by 0.16m high and the longest complete timber measuring 4m in length. The height of the upper surface of the waybeam was 12.67m OD. Eight square iron fixing nails were recorded across the upper surface of the waybeam, these presumably secured the rail chairs that housed the track rail.
- 5.1.11 The end portion of a NNE-SSW aligned timber, [83] was recorded against the southern limit of excavation, abutting the waybeam. It was exposed for a maximum distance of 0.10m NNE-SSW, continuing beyond the limit of excavation, and was 0.32m wide and 0.16m high. Although only part of this timber was exposed, it likely represents the location of the access to the inspection pit chamber. It is unclear if the inspection pit formed part of the original 1841 Engine Shed construction. The lower brick-built portion of the inspection pit footing, bonded by lime mortar, could potentially be contemporary with the original build, however this is not certain. The form of the concrete bonding to the stone block cap broadly indicates a 20th-century date, with the stone blocks possibly re-used material derived from an original inspection pit.
- 5.1.12 A substantial clayey sand deposit, [68], at least 0.87m thick was recorded, within the sample excavation area in the south-eastern corner of the trench, for a maximum distance of 0.65m north-south by 0.83m east-west. This material is interpreted as a levelling and consolidation deposit, laid down immediately after the construction of the inspection pit. A single sherd of degraded pottery was recovered from this deposit; it was not possible to determine the date of this pottery (see Appendix C).
- 5.1.13 The floor surface, [52], of the engine shed was exposed for a maximum distance of 7.60m east-west by 2.59m north-south; it directly overlay levelling deposit [68] and delimited the northern edge of inspection pit [70]. The surface was constructed with rectangular granite setts (up to 450mm x 190mm x 130mm), laid in rows perpendicular to the north wall and bonded with lime mortar (Figures 7 and 8). Within the western half of the surface, as exposed, the relatively regular rows of granite setts were interrupted by two separate rows of larger, rectangular (up to 1000mm x 300mm) and square (up to 290mm x 290mm) granite setts (Figure 3). The floor surface was generally recorded at a height c. 12.76m OD. Slumping was evident within the central and eastern areas of the surface, presumably where the underlying deposit, [68], had compacted over time. Where such slumping occurred, the floor was recorded at a height of c. 12.69m OD.

- 5.1.14 Two WNW-ESE aligned rectangular timbers, [73], measuring up to 1.74m long by 0.26m wide and the remains of five timber blocks, [72], measuring up to 255mm by 110mm and up to 112mm high, were recorded abutting granite surface [52], directly overlying ballast deposit [62] (Figure 10). All the timbers were generally in a poor state of preservation, with the timber blocks for the most part only evident as impressions in the ballast. These timbers probably represent elements of a timber-decked access, with the long timbers forming the main surface and the timber blocks an edging at the interface of the granite sett surface and timber decking.

### ***Modern***

- 5.1.15 When the engine shed fell into disuse, the track and associated rail chairs on the inspection pit waybeam were removed and the inspection pit chamber was backfilled with a rubble deposit, [71], that comprised concrete and brick fragments within a sandy matrix. This backfill was only excavated to a maximum depth of 0.52m, at which point fragments of asbestos sheeting were encountered and excavation ceased. Four iron objects were recovered from this deposit, including two fragments of window frame and two corroded fixing nails.
- 5.1.16 The eastern extent of granite sett surface [52] had been truncated by a substantial shallow feature, [54], measuring 2.57m north-south by at least 1.65m east-west. This area of truncation may have been the result of 20th-century levelling activity; at this location the structural remains of the engine shed were recorded at very shallow depth, as little as 50mm, below the current ground surface. A further area of truncation, [56], within the eastern portion of the granite sett surface measured 0.80m north-south by 0.50m east-west; this was the result of a recent geotechnical investigation. The granite setts removed during that work were reinstated prior to the trench being backfilled.
- 5.1.17 A crushed coal and cinder deposit, [60], was recorded extending across Trench 2 overlying the structural remains of the 1841 Engine Shed (Figure 3, plan and section). From this, a sample of railway telegraph or electricity cable insulators (eleven barrel-shaped ceramic objects and a circular ceramic object) was recovered. This levelling deposit was up to 0.23m thick and was directly overlain by a 0.23m thick hardcore surface, [58], forming the current ground surface for the central and eastern portion of the trench. To the west, this was overlain by a layer, [57], of dolomite, up to 0.24m thick, a recently laid access road.

## **5.2 Trench 9 (Figures 4, 12-14)**

### ***Original build of the 1841 Engine Shed and associated structures***

- 5.2.1 The wall, [16], forming the north-eastern corner of the 1841 Engine Shed was recorded within Trench 9 (Figures 4 and 12). The north wall was exposed for a distance of 4.40m WNW-ESE, continuing to the west beyond the limit of excavation. A 2.10m long return, representing the NNE-SSW aligned east wall, terminated to the south, this forming part of the eastern entrance into the shed for the previously described northernmost road (Figure 12). As with the western entrance located within Trench 8, it is likely that the southern end of the east wall had been truncated during track improvement, and that the original wall continues at a greater depth below the later track.

- 5.2.2 The north and east walls of the shed, for which no construction cut was identified, were both 0.62m wide and built with red bricks (up to 230mm x 110mm x 70mm) in English bond with lime mortar. Two sample areas were excavated adjacent to the north-facing elevation of the north wall and adjacent to the east-facing elevation of the east wall. Within these areas the wall was exposed for at least ten courses (0.72m) high, and was recorded at a maximum height of 12.67m OD (Figure 14). The wall was encountered at a depth of 0.43m below the existing ground level at its highest point.
- 5.2.3 A brick culvert, [46], was exposed in the two sample areas excavated external to the building (Figures 4 and 14). No construction cut was identified for either culvert element and, as with the culvert encountered in Trench 8, it is likely that the structure was built on a made ground surface and then backfilled. Only the brick capping for the culvert was exposed within the sample excavation areas and this was recorded for a maximum distance of 1m WNW-ESE and 0.80m NNE-SSW within the northern and eastern areas, respectively, and was at least 0.22m wide. Both exposed capping elements built using unfrogged red brick (240mm x 120mm) laid in rows on bed, bonded with lime mortar. Lime mortar was evident on the upper surfaces of the structure indicating that the bricks were probably reused. The culvert was encountered at a maximum height of 11.82m OD within the northern sample excavation area and at a minimum height of 11.68m OD within the eastern area. Although the culvert was not fully exposed, it is likely to be of similar construction to the culvert recorded in Trench 8 and probably represents a continuation of the culvert running along the length of the north wall of the engine shed.
- 5.2.4 A brick drain, [17], was recorded abutting the external elevation of the north wall of the shed (Figures 4 and 14). The structure measured 0.48m east-west by 0.26m north-south and survived up to four brick courses (c. 0.27m) high. It was built using a single skin of unfrogged red brick and halved bricks (up to 230mm x 110mm x 70mm) bonded with lime mortar. Within the sample area excavated, the lower course of the drain was recorded adjoining brick culvert [46] and is therefore interpreted as representing an element of the original drainage system of the shed.
- 5.2.5 A compact deposit of clayey sand, [29], abutted north wall [16] and overlay elements of the drainage system, [17] and [46]. This deposit was exposed within the north-eastern corner of the trench and within both areas of sample excavation and was recorded for a maximum distance of 2.14m north-south by 4.0m east-west, encountered at a maximum height of 12.1m OD. This deposit represents a levelling and ground consolidation deposit laid down after the construction of the 1841 Engine Shed and associated drainage system.
- 5.2.6 A thin patchy spread of lime mortar, [28], directly overlay levelling deposit [29] at the north-western corner of the trench. This was recorded for a distance of 1.60m east-west by 0.45m north-south and was up to 40mm thick. This deposit probably represents a dump deposit associated with the original construction of the shed.



### **Later additions to the Engine Shed**

- 5.2.7 A compact clayey sand deposit, [42], was recorded as the basal deposit within three additional sample excavation areas located internal to the engine shed; two immediately south of the north wall and one between two timber sleepers against the southern limit of the trench. This material is interpreted as a levelling and consolidation deposit and, although only small areas of this deposit were exposed, it is likely to extend across the whole of the internal area of the shed. It was not established if this deposit was associated with later development of the shed and it is possible that it could be contemporary with the original build.
- 5.2.8 A drain, [44], was recorded cutting through the central portion of the exposed north wall of the shed. Its construction cut, [45], was recorded within the upper surface of wall [16] and within the sample excavation area located immediately to the south. Where the drain truncated the wall surface, its construction cut measured c. 0.35m east-west by c. 0.20m north-south. It presumably truncated the SSW facing wall elevation at greater depth; it was recorded in the sample excavation area internal to the shed, truncating ground raising/consolidation deposit [42]. Within this location it was recorded for a maximum distance of 0.45m NE-SW by at least 0.34m wide and 0.40m deep and contained a c. 120mm diameter ceramic drainpipe, [44], that continued below a concrete surface, [18], on a NE-SW alignment. The construction cut was backfilled with clinker and rubble, [43].
- 5.2.9 Within the sample excavation area internal to the shed, a sandy ash deposit, [26], overlay drain [44]. This deposit was recorded for a maximum distance of 1.10m east-west by 1.10m and was up to 0.46m thick, encountered at a maximum height of 12.51m OD. This deposit represents a levelling and bedding deposit associated with the overlying concrete surface, [18]. Four corroded iron objects were recovered from this deposit, including three fragments of window frame and a further object that could not be identified.
- 5.2.10 A similar sandy ash deposit, [20], up to 0.46m thick, was recorded within a further sample excavation area located at the north-eastern corner of the structure. This deposit represents the continuation of levelling and bedding deposit [26]. Nine iron and two copper-alloy objects were recovered from this deposit. Although the iron objects were heavily corroded they were identifiable as fixing nails, probably representing track elements associated with the northernmost road. The copper-alloy objects included a fragment of a brass sheet and a tap.
- 5.2.11 At some stage, probably during the early 20th century, a service trench had been cut through the north wall at the north-eastern corner of the shed. Its construction cut, [23], measured up to 0.42m east-west by 0.90m north-south and was 0.60m deep, and contained a c. 40mm diameter iron duct, [75]. Where it truncated the wall, the lower five courses of brick were removed leaving the upper courses *in situ*. The construction cut was backfilled with brick rubble within an ash matrix, [27], with packing material of brick and stone recorded where the iron duct exited the wall to the south. The iron duct probably housed electricity cables installed during the early 20th century.

- 5.2.12 The aforementioned internal concrete slab surface, [18], was recorded for a distance of 3.77m east-west, continuing beyond the western limit of the trench, by up to 2.04m north-south and was 70mm thick. This surface was relatively level, recorded at a maximum height of 12.52m OD. It was punctuated by two rectangular shaped areas measuring up to 1.18m north-south by 0.78m east-west at the north-eastern corner of the shed (Figure 13). It is unclear if these areas were contemporary with the concrete surface or represent later truncations.
- 5.2.13 A compact layer of crushed coal and ash, [25], overlay deposits [28] and [29], associated with the original construction of the shed. This deposit was only recorded external to the engine shed along the northern and eastern edge of the trench, recorded for a maximum distance of 6.30m east-west by 3.40m north-south and was at least 0.77m thick. This deposit represents ground raising activity probably undertaken during the late 19th or early 20th century.
- 5.2.14 A substantial north-south aligned cast iron pipe, [24], was recorded for a maximum distance of 1.90m north-south. No construction cut was identified for this, indicating it was laid down at the same time as levelling deposit [25]. The exposed portion of pipe was formed by at least three sections of pipe c. 120mm in diameter, measuring at least 0.84m in length and joined by flanges c. 170mm in diameter. The substantial gauge of this pipe suggests that it may represent part of a high pressure water system.
- 5.2.15 The remains of a WNW-ESE aligned track representing the northernmost road through the engine shed was recorded along the southern edge of the trench (Figure 13). The recorded elements of the track included six timber sleepers and associated ballast deposits. The ballast deposits, [19] and [21], comprised compact crushed coal and ash and compact sand, respectively, recorded for a maximum combined distance of 4.64m east-west by 1.72m north-south and recorded in section up to 0.20m thick (Figure 4, plan and section). The upper surface of the ballast was relatively level, recorded at a maximum height of 12.52m OD. The timber sleepers were laid onto this ballast with the same material infilling the intervals.
- 5.2.16 The six timber sleepers, [7], [8], [9], [10], [11] & [12] (group [14]), varied from a maximum of 0.47m and a minimum of 0.30m apart. The timbers measured at least 1.64m long, continuing beyond the southern limit of excavation, by up to 0.27m wide and were c. 0.12m high. The upper surfaces of the timber sleepers were relatively level and where these survived in a good state of preservation were recorded at a height of 12.52m OD. Although the upper surfaces of the sleepers were badly degraded, square areas of iron staining (0.20m x 0.20m) and sockets for fixings were recorded on sleepers [9], [10] and [12], and two sockets on sleeper [9]. The iron staining and associated sockets represent the locations of rail chairs that would have housed the rail for the northern road into the shed.
- 5.2.17 In the south-western corner of the trench were the remains of a structure, [13], that would have been set below the rail track (Figures 4 and 13). Only the upper portion of the north-eastern corner of this structure was exposed and this was formed by a poured concrete slab. This exposed portion of this structure comprised a 0.52m wide WNW-ESE aligned track wall, recorded for a distance of 1.18m, with a 1.08m NNE-SSW aligned return probably forming the upper step accessing the inspection pit chamber, this 0.32m wide. The backfill of the inspection pit was not excavated due to the presence of asbestos.

5.2.18 The upper surface of the inspection pit was recorded at the same level as the sleepers at a height of 12.53m OD. A single square shaped area of iron staining (0.26m x 0.22m) and associated sockets were identified on the upper surface of the track wall, these representing the location of a rail chair. The rail chair lay on the same alignment as those identified on the timber sleepers to the east and represents continuation of the north rail of the northernmost road through the engine shed.

### ***Modern***

5.2.19 The inspection pit chamber was backfilled by a rubble deposit, [15], comprising brick fragments within a crushed coal and ash matrix. This deposit was only excavated to a maximum depth of 0.10m, at which point asbestos sheeting was encountered.

5.2.20 Three levelling and ground raising deposits, [4], [5] and [6], were recorded extending across the whole of Trench 9 with a maximum combined thickness of 0.67m (Figure 4, section). The earliest of these deposits, [6], comprised crushed coal and cinder up to 0.20m thick, this directly overlying the structural remains of the shed. This was overlain by a c. 40mm thick deposit of sand, [5], in turn overlain by a c. 0.50m thick deposit of sandy silty ash, [4]. The uppermost of these deposits was recorded at a maximum height of 13.21m OD. These represent ground levelling activity post-dating the demolition of the shed in 1963. Five iron objects were recovered from levelling deposit [6], including four fixings and a rail chair. All of these finds probably represent elements of track.

5.2.21 The corner of an inspection chamber, [22], was recorded at the eastern end of the trench within a broad construction cut, [3], measuring at least 4.62m north-south by 1.32m east-west and at least 0.68m deep. The exposed portion of the chamber measured 0.50m north-south by 0.22m east-west and was at least 1.02m high and was built using concrete blocks (260mm x 110mm) bonded with cement. The construction cut was backfilled with sandy silt, [2].

5.2.22 A deposit of crushed stone, [1], was recorded across Trench 9, up to 50mm thick overlying levelling deposit [4] and inspection chamber [22]. This deposit was recorded at a maximum height of 13.34m OD and formed the existing ground surface.

## **5.3 Trench 10 (Figures 5, 15-18)**

### ***Original build of the 1841 Engine Shed and associated structures***

5.3.1 The wall, [37], forming the south-eastern corner of the 1841 Engine Shed was exposed within Trench 10 (Figures 5 and 15). The south wall was recorded for a maximum distance of 3.64m WNW-ESE, with a 3.34m long return represented the NNE-SSW aligned east wall. As with Trenches 8 and 9, no construction cut was identified. Sample excavation undertaken within the internal corner of the structure exposed the base of the wall, constructed with a stepped footing at least 0.70m wide (Figure 18). The uppermost portion of the exposed south and east walls of the shed was up to 0.62m wide, built with unfrogged red brick (up to 236mm x 110mm x 69mm) in English bond with lime mortar.

- 5.3.2 A single course of sandstone slabs (280mm x 180mm x 50mm) was recorded only within the external elevation of the south wall and may represent the location of a threshold or window. Within the sample excavation area, the wall was exposed to a maximum of 15 courses and was at least 1.40m high. At its highest point, the wall was encountered at a depth of 0.52m below the existing ground surface, at a maximum height of 12.77m OD. The upper three courses (c. 0.30m) of the exposed east wall at its northern extent had been truncated by a substantial linear feature, [81], for a distance of at least 1.30m. It is unclear if this truncation occurred during the demolition of the structure or represents the location of the entrance of the southernmost road, with the truncation being the result of track refurbishment.
- 5.3.3 A cemented lime mortar and brick rubble deposit, [51], was recorded within the base of the internal sample excavation area, directly overlying the stepped foundation of the shed walls and exposed for a distance of 0.80m north-south by 0.76m east-west. The composition of this deposit is similar to that of the materials used to construct the perimeter wall. Therefore, this deposit was probably derived from the original construction of the shed.
- 5.3.4 The upper portion of a brick culvert, [48], running parallel to the external elevation of the south wall was exposed for a distance of 0.92m WNW-ESE, within a sample excavation area located at the external corner of the structure (Figure 17). No construction cut was evident for the culvert and, as with similar culvert elements recorded in Trenches 8 and 9, the structure was probably built on made ground and then overlain by a levelling and consolidation deposit, [50]. Only the capping bricks of the culvert were exposed and this comprised a row of bricks laid on bed (230mm x 110mm x 80mm). Lime mortar was present across the upper surfaces of capping bricks indicating that the bricks had been reused. Within this section of culvert no bonding material was evident and it is possible that at some point the culvert capping was removed to maintain and facilitate drainage in the structure and then the bricks replaced. A re-cut, [49], recorded along the extent of the culvert in the sample excavation area may represent this postulated unblocking episode.
- 5.3.5 A compact silty sand deposit, [50], was recorded within the external sample excavation area for a distance of 0.90m north-south by 0.90m east-west. This abutted the south wall and overlay the brick culvert and has been interpreted as a ground raising/consolidation deposit laid down immediately after the construction of these structures.

#### ***Later additions to the Engine Shed***

- 5.3.6 A c. 1m thick compact sand deposit, [40], directly overlay internal construction deposit [51], recorded for a maximum distance of 1.88m east-west by at 2.02m north-south. This deposit was relatively level, recorded at a maximum height of 12.42m OD, and has been interpreted as a ground raising/consolidation deposit. Its composition is similar to that of deposits recorded in Trenches 8 and 9, also interpreted as ground raising/consolidation deposits, and it is probably contemporary with these. A small assemblage of artefacts was recovered; four fragments of ceramic building material, one of which could possibly be Roman in date, one sherd of 19th-century pottery and one sherd of second-century AD samian pottery (see Appendix C).

- 5.3.7 The southern portion of a substantial presumably east-west aligned linear feature, [81], was recorded along the northern edge of the trench for a distance of at least 2.50m east-west by at least 0.80m wide and exposed to a maximum depth of 0.18m. This feature truncated the east wall of the shed at its northern exposed extent and was directly overlain by a concrete surface, [35]. This feature probably represents the southern edge of a cut for ballast material and associated track of the southernmost road that ran through the shed on a WNW-ESE alignment. Its single fill, [80], comprised compact crushed coal and ash, this probably the track ballast. This was relatively level, recorded at a maximum height of 12.46m OD.
- 5.3.8 Part of a timber, [36], was exposed directly overlying the ballast deposit at its western extent. The exposed portion of timber measured at least 297mm long, continuing beyond the northern limit of excavation, by 250mm wide and 120mm thick; it possibly represents a sleeper element of the southernmost road track.
- 5.3.9 At some stage, a drain, [39], had been cut through the central portion of the south wall. Its construction cut, [78], which truncated the upper surface and south-facing elevation of the wall, measured 0.42m east-west by 0.26m north-south and was at least 0.36m deep. The drain itself comprised a c. 210mm diameter ceramic drainpipe that adjoined the basal portion of a vertical c. 80mm diameter iron downpipe, this bonded with cement. Its backfill, [79], comprised brick rubble within an ash matrix. Similar drainage structures recorded in Trenches 8 and 9 are probably contemporary and although the orientation of the drain was not established, it probably continues northwards below the floor surface of the shed, as evidenced in Trench 9.
- 5.3.10 An internal floor surface, [38], was partially exposed for a maximum distance of 1.26m east-west, continuing beyond the western limit of excavation, by 1.42m along the western edge of the trench, abutting the north facing elevation of the south wall and directly overlying levelling and consolidation deposit [40] (Figure 16). It was built using rectangular granite setts (maximum 500mm x 120mm x 200mm – minimum 140mm x 120mm x 200mm) laid in up to nine rows perpendicular to the south wall, bonded with cement. The floor surface was level, recorded at a height of 12.35m OD.
- 5.3.11 A concrete surface, [35], c. 0.16m thick, was partially exposed for a maximum distance of 1.14m east-west by 1.43m north-south in the north-western corner of the trench, abutting granite sett surface [38]. A lattice of rectangular impressions recorded across the surface likely represent a crude attempt to imitate the adjacent granite stone sett surface (Figure 16). The southern edge of the concrete surface was on the same alignment as the portion of the truncated east wall, [37]. Therefore, this concrete surface was probably laid down after the removal or abandonment of the track that formed the southernmost road through the shed.
- 5.3.12 A substantial crushed coal and ash deposit, [41], directly overlay the 19th-century ground raising/consolidation deposit [50]. This deposit was only present external to the shed and was recorded for a maximum distance of 5.80m east-west by 5.0m north-south and was up to 0.48m thick, encountered at a maximum and minimum height of 12.67m OD and 12.53m OD, respectively. This deposit is interpreted as a levelling deposit that was probably laid down in the early 20th century.

5.3.13 A WNW-ESE aligned linear cut, [49], measuring at least 0.92m WNW-ESE by 0.38m wide and 0.56m deep, was recorded within the sample excavation area located external to the south wall, truncating levelling deposit [41]. The feature ran on the same alignment as the earlier brick culvert [48], and probably represents a re-cut related to maintenance of the culvert. Its single fill, [47], comprised crushed coal and ash, similar to that of levelling deposit [41], therefore the alignment of the cut beyond the sample excavation was indistinguishable. This feature would have extended along the length of the brick culvert.

***Modern***

5.3.14 A rubble deposit, [34], c. 0.32m thick, was recorded within the internal area of the shed for a distance of 2.86m east-west by at least 2.86m north-south. It comprised brick fragments and pieces of mortar within an ash matrix. This material was probably derived from the demolition of the shed in 1963 and, therefore, has been interpreted as a demolition deposit.

5.3.15 Three deposits, [31], [32] and [33], were recorded extending across Trench 10 with a combined thickness of up to 0.77m (Figure 5, section). These comprised various compositions of crushed coal, ash and silty sand and represent levelling and ground raising activity undertaken during the 20th century, post-dating demolition of the shed.

5.3.16 A crushed stone and brick deposit, [30], was recorded at the western extent of Trench 10, up to 0.12m thick overlying the uppermost modern era levelling deposit. This was recorded at a maximum height of 13.39m OD and formed the existing ground surface within this area.

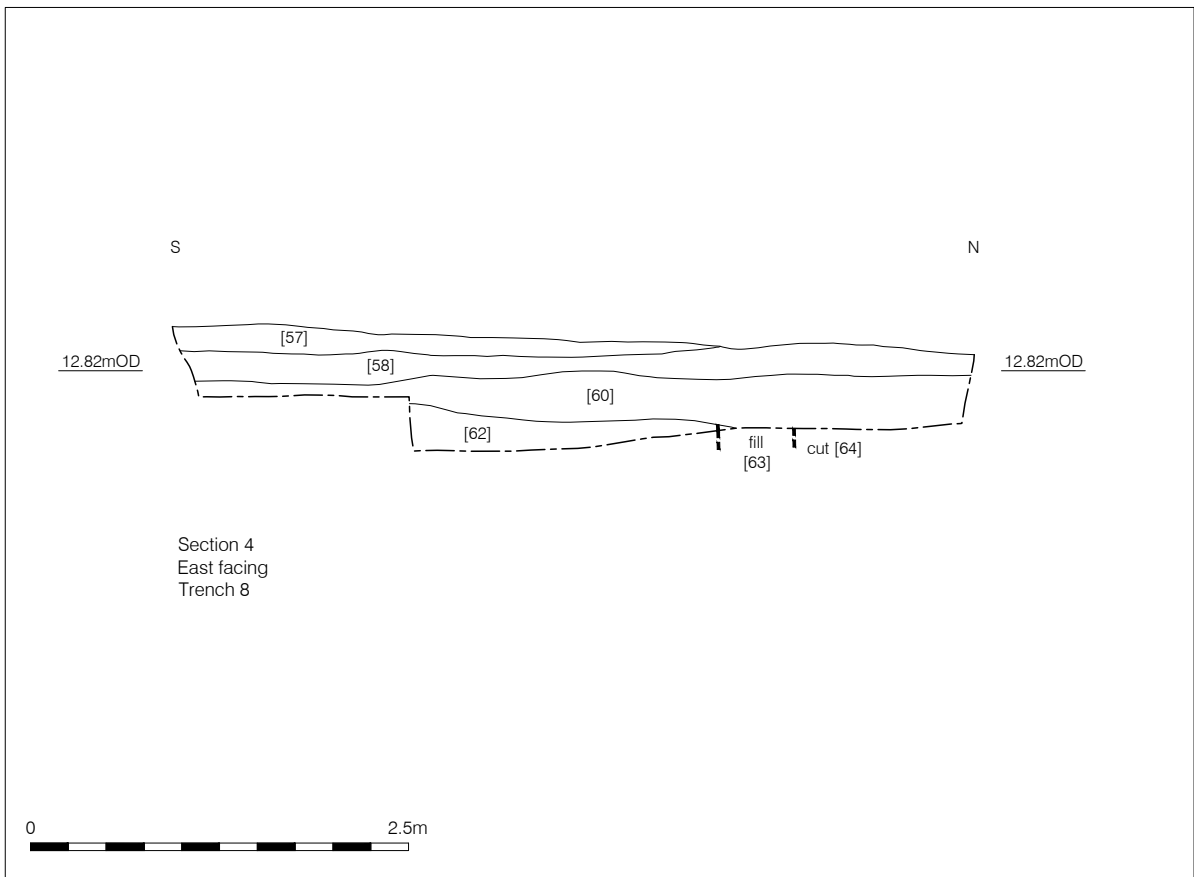
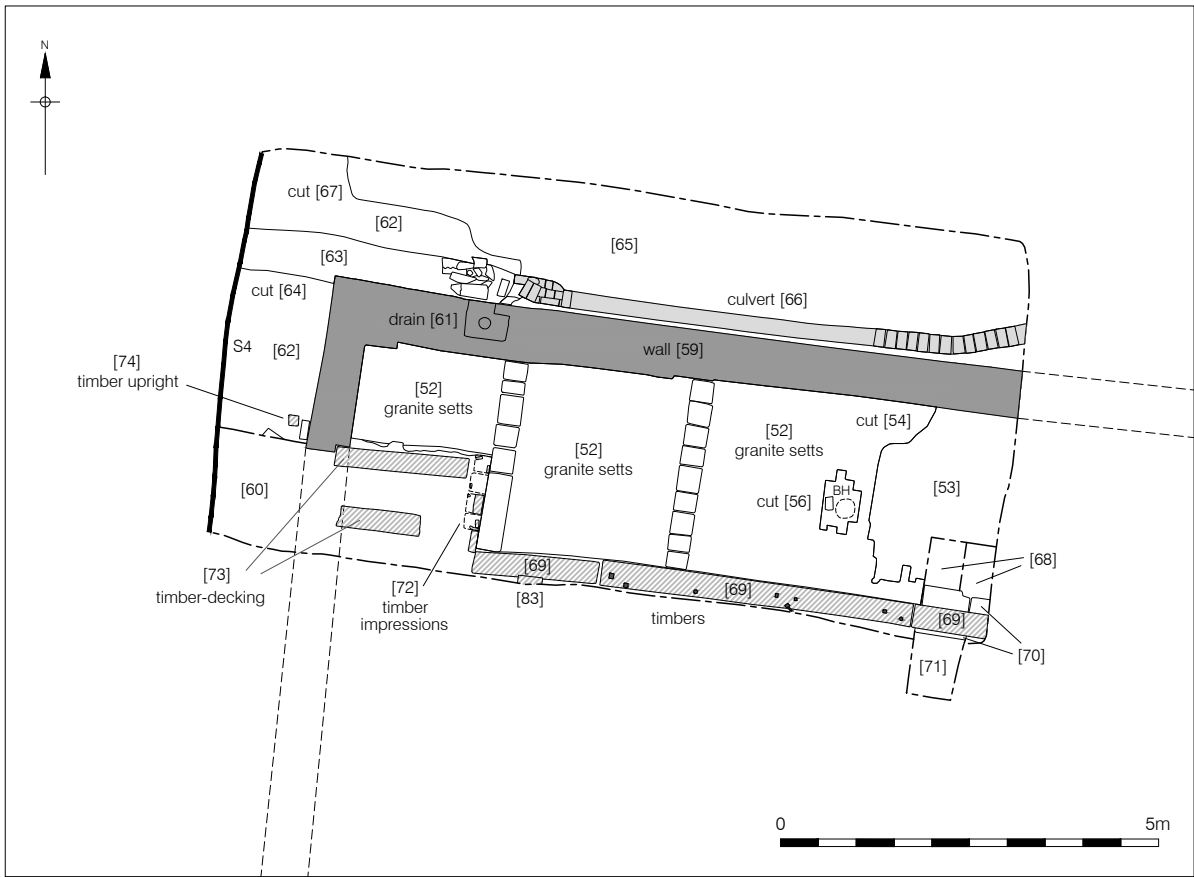
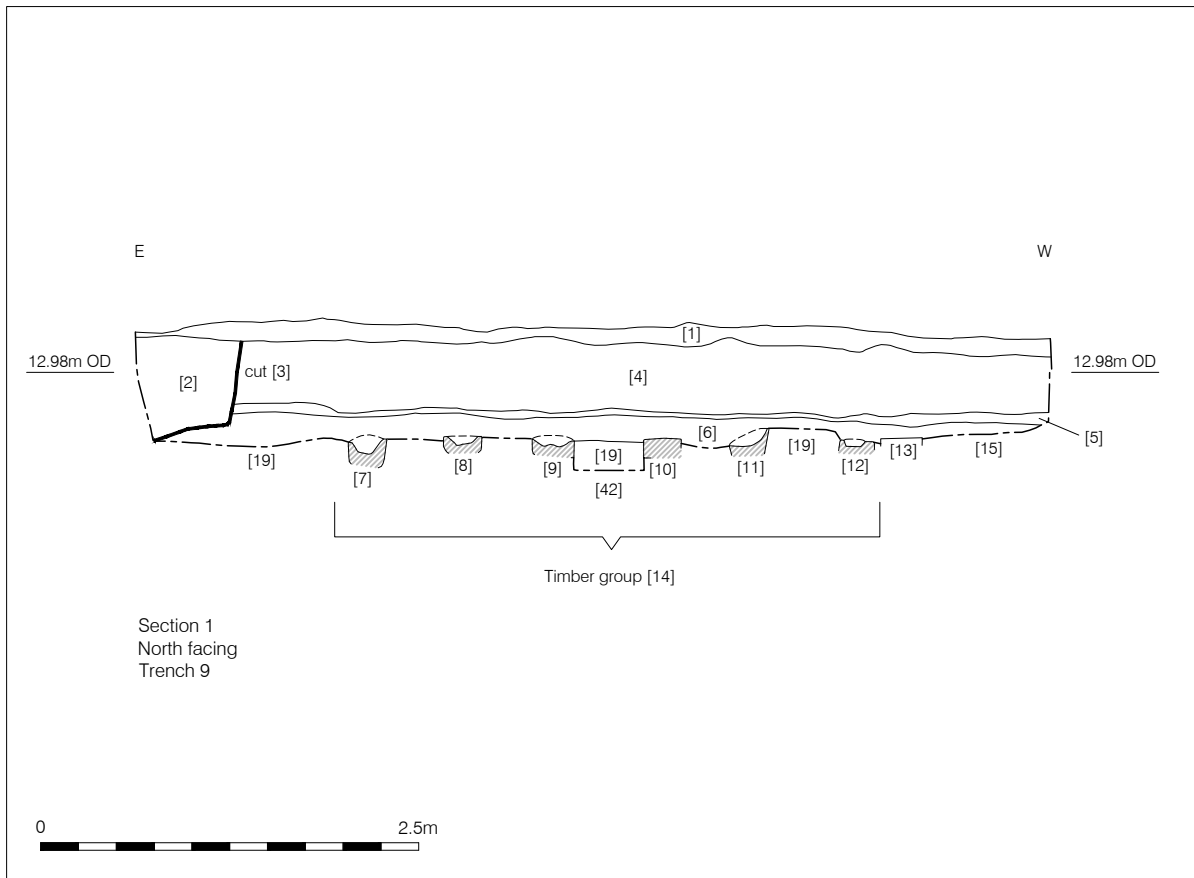
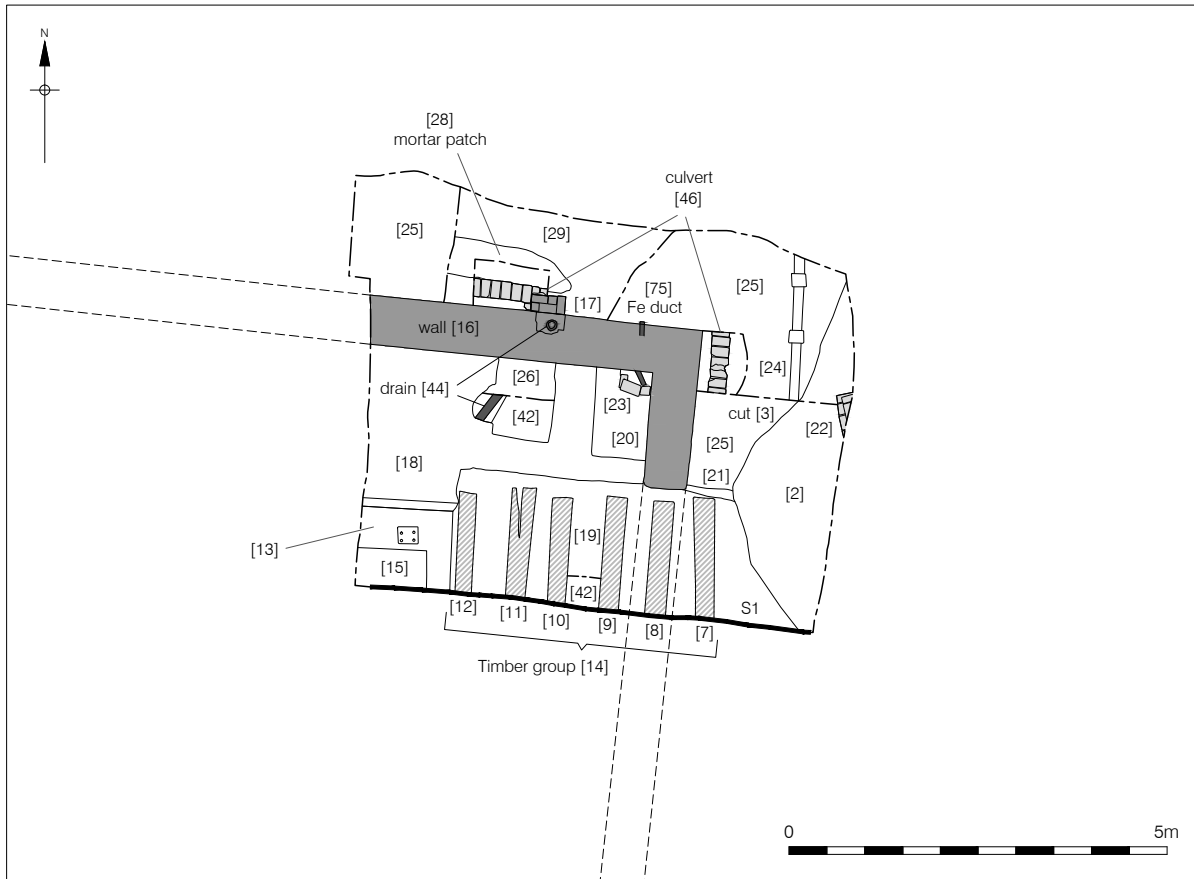


Figure 3  
Trench 8 plan and section  
Plan 1:100; Section 1:50 at A4



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Figure 4  
 Trench 9 plan and section  
 Plan 1:100; Section 1:50 at A4



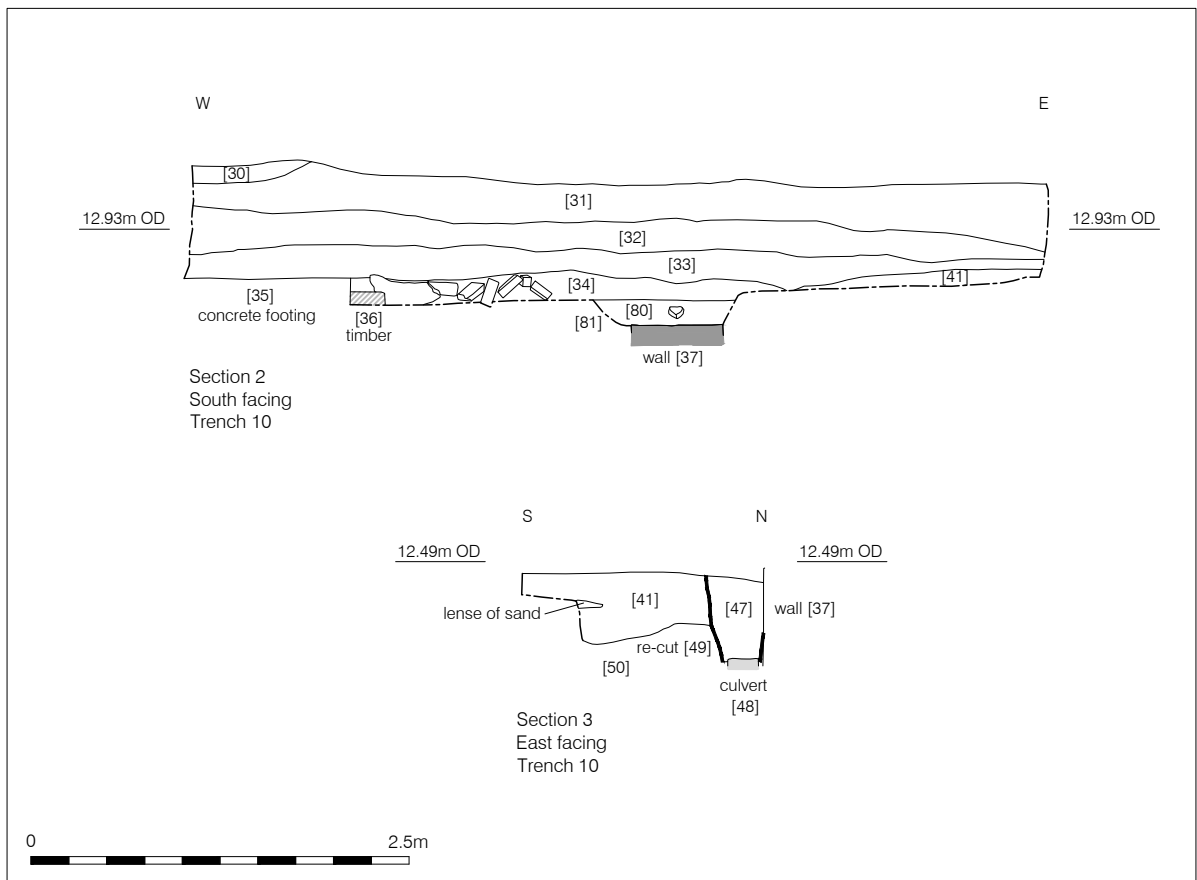
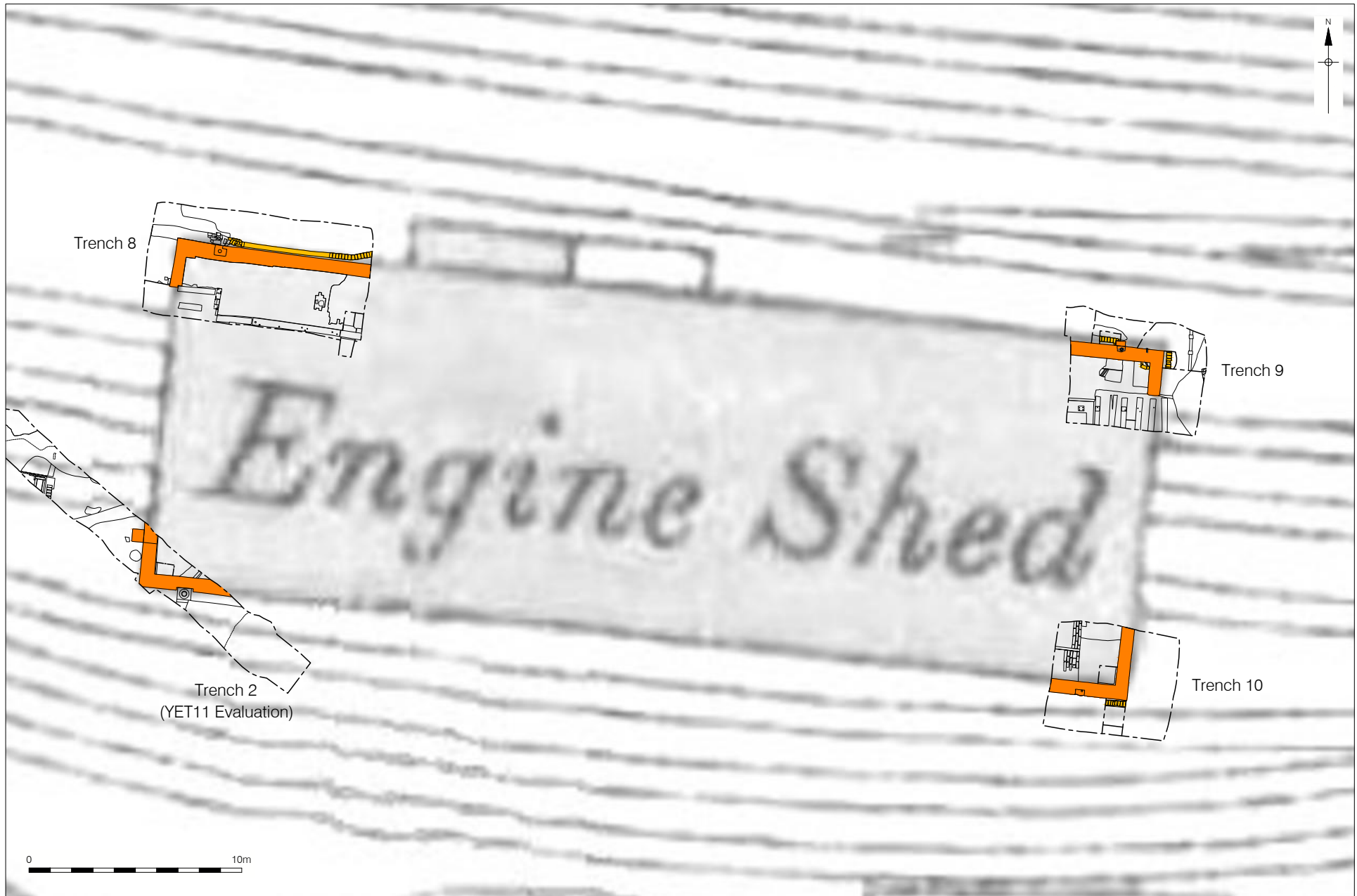


Figure 5  
 Trench 10 plan and section  
 Plan 1:100; Section 1:50 at A4



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Figure 6  
 Plan of Trenches 8, 9 & 10 overlain on 1892 Ordnance Survey map  
 1:250 at A4

## 6. CONCLUSIONS

- 6.1 Investigation of Trenches 8, 9 and 10 during the Phase 2 evaluation has demonstrated that structural elements of the 1841 Engine Shed survive to an exceptional degree as below ground archaeological remains. This structure is the earliest element of a historically significant complex of buildings at the site which represents an important component of York's early railway infrastructure. The 1841 Engine Shed was first depicted on the 1851 Ordnance Survey map as a three-road rectangular 'straight' engine shed with this arrangement continuing into the 20th century until its abandonment and subsequent demolition in 1963. Photographic evidence depicts this three-road arrangement showing the engine shed with its original clerestory roof (Figure 19) and later shallow arched roof after a 20th-century refurbishment (Figure 20).
- 6.2 Trench 2 investigated during Phase 1 of the evaluation exposed structural elements representing the south-western corner of the 1841 Engine Shed. These comprised a 0.68m wide wall constructed with a stepped footing and associated drainage structures. A sand deposit recorded within the internal part of the exposed structure, initially interpreted as the natural sub-stratum,<sup>23</sup> is now thought more likely to be a ground raising/consolidation deposit.
- 6.3 The Phase 2 evaluation trenches targeted the remaining corners of the 1841 Engine Shed and each trench encountered exceptionally well-preserved below-ground structural remains. Therefore, with all four corners of the engine shed having been exposed, it has been possible to determine the precise dimensions of the building footprint - 46.80m (153ft 6in) WNW-ESE by 16.40m (53ft 10in) NNE-SSW. Figure 6 depicts all structural elements of the 1841 Engine Shed, as recorded exposed during Phases 1 and 2 of the evaluation, overlain on the 1892 Ordnance Survey map.
- 6.4 In Trench 8, the structural elements of the engine shed were recorded at varying depths below the existing ground surface, ranging from a maximum of 0.41m at its western extent, within the vicinity of the current access road, to a minimum of 50mm at its eastern extent, where the remains lie almost immediately below the existing hardstanding ground surface. In Trenches 9 and 10, the structural remains of the engine shed were recorded at minimum depths below existing ground level of 0.41m and 0.52m, respectively. Collectively, the structural remains, including those exposed in Trench 2 investigated during the Phase 1 evaluation, were generally encountered at maximum heights between 12.77m OD and 12.66m OD, across the exposed areas.

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<sup>23</sup> PCA 2012a.

- 6.5 Structural elements interpreted as representing the original build of the 1841 Engine Shed include the external perimeter wall and a closely associated brick culvert. Where exposed, the culvert was recorded external to the perimeter wall and running parallel with it. In Trench 8, the culvert at its eastern extent was recorded gradually turning to a north-east alignment. The 1851 Ordnance Survey map depicts two ancillary structures – probably chimney stacks - adjacent to the north wall and the change in alignment by the culvert in Trench 8 potentially reflects the position of one of these.
- 6.6 No construction cut was recorded for the engine shed wall or the brick culvert. Therefore, it is surmised that the method of construction for the engine shed involved ground reduction of the entire building footprint, followed by construction of the wall with a ground raising/consolidation deposit subsequently laid down. Levelling deposits were recorded external and internal to the building, the external material overlying the brick culvert and probably representing activity undertaken during the original build. The internal material could represent levelling activity associated either with the original build or a later refurbishment.
- 6.7 Later, probably early to mid-20th-century additions, included drainage features, service features, floor surfaces, inspection pits and structures and features associated with the northernmost and southernmost through roads. Parts of two inspection pits forming part of the northernmost road were recorded in Trenches 8 and 9. The uppermost portions of the inspection pits were evidently 20th century additions. The lower portion of the westernmost inspection pit wall was possibly part of the original build, although this is not certain.
- 6.8 A group of probable 20th-century drainage features were recorded cutting through the north and south walls. In Trench 10, the ceramic element of a drain extended below the internal floor surface of the building, as was the drainage feature recorded in Trench 2 during the Phase 1 evaluation, and a similar arrangement is likely for the other recorded drains.
- 6.9 Elements of the northernmost and southernmost WNW-ESE aligned through roads were recorded in all three trenches. Elements of the northernmost road comprised a substantial cut filled with ballast material and a length of timber waybeam set above the inspection pit track wall in Trench 8, and ballast material and six timber sleepers in Trench 9. Elements of the southernmost road recorded in Trench 10 comprised a substantial cut filled with ballast material and a partially exposed timber that may represent a sleeper.
- 6.10 Surfaces recorded internal to the shed are likely to represent early to mid-20th-century additions and comprised granite sett surfaces in Trench 8 and 10, timber-decking in Trench 8 and concrete surfaces in Trenches 9 and 10. The granite sett surfaces are probably early 20th century in date, with the concrete surfaces laid down at a later date, possibly when the engine shed was used by the LMS for general storage. The concrete surface recorded in Trench 10 was positioned on a similar alignment and overlay a substantial linear feature interpreted as the cut for the southernmost road track and was therefore laid after its removal. Track removal and subsequent laying of the concrete surface may have been undertaken when the building was used for storage, as mentioned above.

- 6.11 The artefactual material recovered from the Phase 2 evaluation comprised a small assemblage of pottery, 12 ceramic insulators and 23 iron and copper objects. The pottery assemblage recovered from internal levelling and consolidation deposits included sherds of Roman and late 18th-century pottery, both residual in context. The ceramic insulators was recovered from an external levelling deposit in Trench 8 and probably represent railway telegraph or electricity insulators of early to mid-20th-century date. The bulk of the metal finds recovered represent elements of track probably associated with the engine shed through roads and architectural material of iron window frame fragments. Although closely associated with the 1841 Engine Shed in terms of recovery location, all these objects were recovered from either post-demolition levelling deposits in Trench 9 or the inspection pit backfill and are therefore essentially residual in context.

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[http://www.bgs.ac.uk/education/geology\\_of\\_britain/home.html](http://www.bgs.ac.uk/education/geology_of_britain/home.html)

## 8. ACKNOWLEDGEMENTS AND CREDITS

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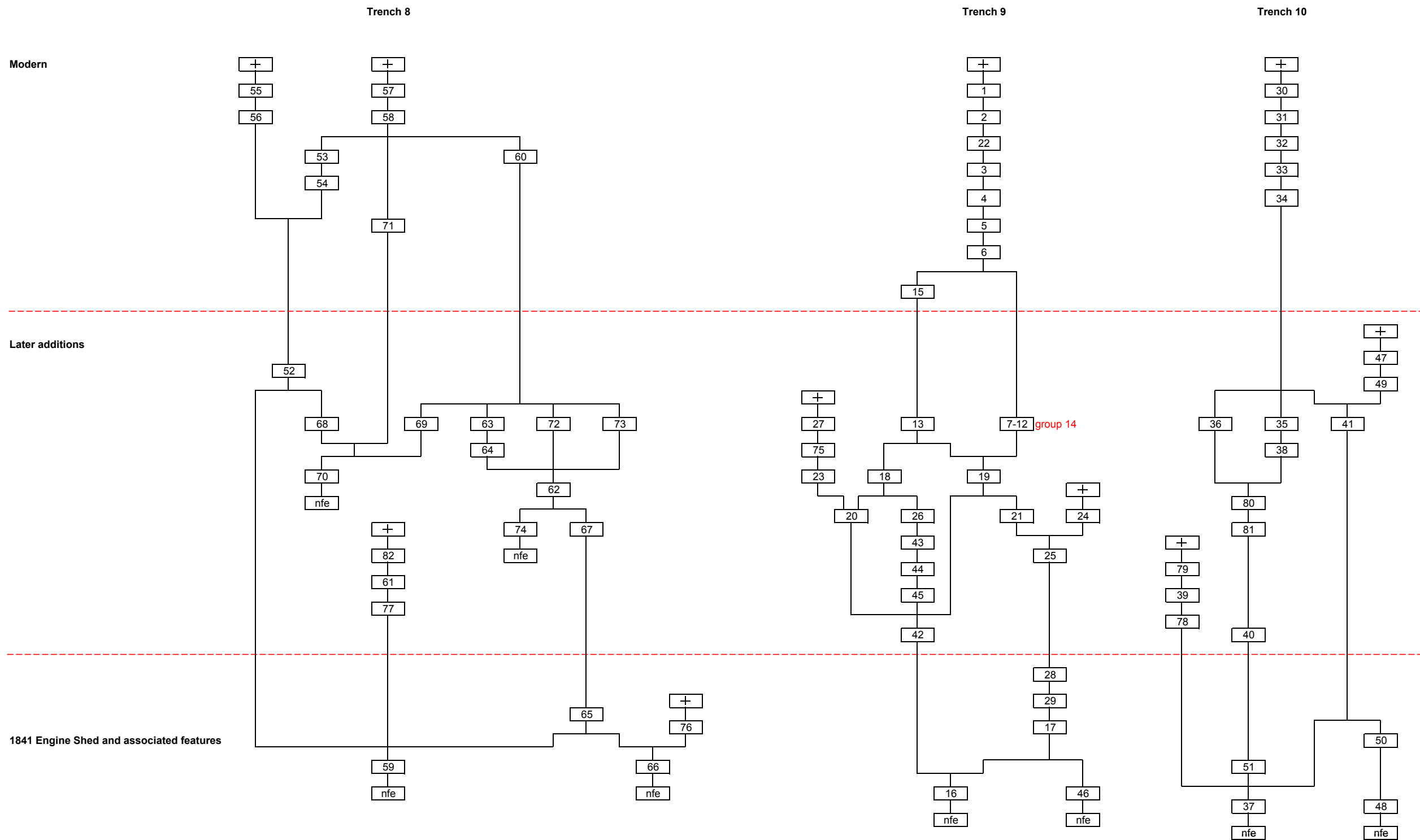
*Illustrations:* Hayley Baxter

### **Other Credits**

*Ceramic identification:* Alex Croom (Tyne and Wear Museums)



**APPENDIX A**  
**STRATIGRAPHIC MATRICES**



**APPENDIX B  
CONTEXT INDEX**

**YES 12: CONTEXT INDEX**

<b>Context</b>	<b>Trench</b>	<b>Type 1</b>	<b>Type 2</b>	<b>Interpretation</b>
1	9	Deposit	Layer	Ground raising dump
2	9	Deposit	Fill	Fill of inspection chamber [3]
3	9	Cut	Discrete	Cut for inspection chamber; filled by [2] & [22]
4	9	Deposit	Layer	Ground raising dump
5	9	Deposit	Layer	Ground raising dump
6	9	Deposit	Layer	Ground raising dump
7	9	Timber	Horizontal	Timber sleeper, group [14]
8	9	Timber	Horizontal	Timber sleeper, group [14]
9	9	Timber	Horizontal	Timber sleeper, group [14]
10	9	Timber	Horizontal	Timber sleeper, group [14]
11	9	Timber	Horizontal	Timber sleeper, group [14]
12	9	Timber	Horizontal	Timber sleeper, group [14]
13	9	Masonry	Structure	Concrete inspection pit; filled by [15]
14	9	Timber	Horizontal	Group of six timber sleepers
15	9	Deposit	Fill	Fill of inspection pit [13]
16	9	Masonry	Structure	Wall for 1841 Engine Shed
17	9	Masonry	Structure	Brick drain
18	9	Masonry	Surface	Concrete surface
19	9	Deposit	Layer	Ballast for timber sleepers, group [14]
20	9	Deposit	Layer	Ground raising dump
21	9	Deposit	Layer	Ballast for timber sleepers [14]
22	9	Masonry	Structure	Brick inspection chamber with iron cover
23	9	Cut	Discrete	Service pit; filled by [27], containing iron duct [75]
24	9	Deposit	Structure	Iron water pipe
25	9	Deposit	Layer	Ground raising dump
26	9	Deposit	Layer	Ground raising dump
27	9	Deposit	Fill	Fill of service pit [23]
28	9	Deposit	Layer	Ground raising dump
29	9	Deposit	Layer	Ground raising dump
30	10	Deposit	Layer	Ground raising dump
31	10	Deposit	Layer	Ground raising dump
32	10	Deposit	Layer	Ground raising dump
33	10	Deposit	Layer	Ground raising dump
34	10	Deposit	Layer	Demolition deposit
35	10	Masonry	Surface	Concrete surface
36	10	Timber	Horizontal	Timber sleeper
37	10	Masonry	Structure	Wall for 1841 Engine Shed
38	10	Masonry	Surface	Stone sett surface
39	10	Masonry	Structure	Drain
40	10	Deposit	Layer	Ground raising dump
41	10	Deposit	Layer	Ground raising dump
42	9	Deposit	Layer	Ground raising dump
43	9	Deposit	Fill	Fill of drain [45]
44	9	Deposit	Structure	Ceramic drain in [45]
45	9	Cut	linear	Drain; filled by [43]
46	9	Masonry	Structure	Brick culvert
47	10	Deposit	Fill	Fill of culvert recut [49]
48	10	Masonry	Structure	Brick culvert
49	10	Cut	linear	Culvert recut; filled by [47]
50	10	Deposit	Layer	Ground raising dump
51	10	Deposit	Layer	Construction deposit
52	8	Masonry	Surface	Stone sett surface
53	8	Deposit	Fill	Fill of truncation [54]
54	8	Cut	Discrete	Truncation; filled by [53]
55	8	Deposit	Fill	Fill of borehole [56]
56	8	Cut	Discrete	Borehole; filled by [55]
57	8	Deposit	layer	Stone surface
58	8	Deposit	layer	Stone surface
59	8	Masonry	Structure	Wall for 1841 Engine Shed
60	8	Deposit	Layer	Ground raising dump
61	8	Masonry	Structure	Drain
62	8	Deposit	Fill	Ballast filling cut [67]
63	8	Deposit	Fill	Fill of drain [64]
64	8	Cut	Linear	Drain; filled by [63]
65	8	Deposit	Layer	Ground raising dump
66	8	Masonry	Structure	Brick culvert; filled by [76]
67	8	Cut	Discrete	Feature; filled by ballast [62]
68	8	Deposit	Layer	Ground raising dump
69	8	Timber	Horizontal	Group of four timber waybeams, for inspection pit [70]

**YES 12: CONTEXT INDEX**

<b>Context</b>	<b>Trench</b>	<b>Type 1</b>	<b>Type 2</b>	<b>Interpretation</b>
70	8	Masonry	Structure	Inspection pit
71	8	Deposit	Fill	Fill of inspection pit [70]
72	8	Timber	Vertical	Group of five upright timbers
73	8	Timber	Horizontal	Two timber sleepers
74	8	Timber	Vertical	Timber post
75	9	Deposit	Structure	Iron duct within service pit [23]
76	8	Deposit	Fill	Fill of culvert [66]
77	8	Cut	Drain	Drain containing iron drainpipe
78	10	Cut	Drain	Drain containing iron drainpipe and ceramic drainpipe
79	10	Deposit	Fill	Backfill of drain [78]
80	10	Deposit	Fill	Possible ballast filling linear feature [81]
81	10	Cut	Linear	Linear feature; filled by ballast [80]
82	8	Deposit	Fill	Backfill of drain [77]

**APPENDIX C**  
**POTTERY AND CERAMIC BUILDING MATERIAL IDENTIFICATION**

## Pottery and Ceramic Building Material Identification

By Alex Croom

### Pottery

- [40] 1) body sherd samian Central Gaulish (Lezoux), second century, probably Form 18/31 or 31 etc
- 2) body sherd blue & white transferware, late eighteenth century+
- [68] 1) oxidised body sherd, unknown period

### Tile

- [40] 1) body sherd of possible Roman *tegula*, but it is featureless and could be post-Roman
- 2) three scraps

**APPENDIX D  
SMALL FINDS INDEX**



**YES 12: SMALL FINDS INDEX**

SF No.	Context	Material	Description	Trench
96	20	Cu	Brass plate/sheet fragment 140mm x 80mm x 4mm thick (1 of 10)	9
96	20	Fe	Corroded object 50mm diameter x 30mm thick (2 of 10)	9
96	20	Fe	Corroded fixing nail 190mm x 30mm diameter (3 of 10)	9
96	20	Fe	Corroded fixing nail 160mm x 20mm diameter (4 of 10)	9
96	20	Fe	Corroded square headed fixing nail 160mm x 30mm x 30mm (5 of 10)	9
96	20	Fe	Corroded square headed fixing nail 160mm x 18mm x 16mm (6 of 10)	9
96	20	Fe	Corroded object 160mm x 30mm x 15mm (7 of 10)	9
96	20	Fe	Corroded fixing nail 190mm x 30mm x 23mm (8 of 10)	9
96	20	Fe	Corroded hexagonal headed fixing nail 110mm x 45mm x 45mm (9 of 10)	9
96	20	Fe	Corroded ?washer 110mm diameter x 15mm thick (10 of 10)	9
97	26	Fe	Corroded object 210mm x 70mm x 70mm (1 of 4)	9
97	26	Fe	Window frame fragment 210mm x 40mm x 13mm (2 of 4)	9
97	26	Fe	Window frame fragment 170mm x 40mm x 13mm (3 of 4)	9
97	26	Fe	Window frame fragment 90mm x 40mm x 13mm (4 of 4)	9
98	6	Fe	Corroded fixing nail 180mm x 40mm x 35mm	9
99	6	Fe	Corroded square headed fixing nail 220mm x 40mm x 40mm	9
100	6	Fe	Corroded fixing nail 150mm x 40mm x 40mm	9
101	6	Fe	Corroded fixing nail 230mm x 60mm x 70mm	9
102	6	Fe	Rail chair with attached fixing nail (incomplete) 200mm x 190mm	9
103	71	Fe	Corroded fixing nail 190mm x 15mm x 15mm (1 of 4)	8
103	71	Fe	Corroded fixing nail 140mm x 35mm x 33mm (2 of 4)	8
103	71	Fe	Window frame fragment 140mm x 40mm x 13mm (3 of 4)	8
103	71	Fe	Window frame fragment 170mm x 40mm x 13mm (4 of 4)	8
104	20	Cu	Tap 75mm x 37mm	9

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