

**An Assessment  
Report of an  
Archaeological Strip  
and Map and Watching  
Brief at Development  
Zone B, Kings Cross  
Central, London Borough  
of Camden**

**KXU10**

**March 2012**



**PRE-CONSTRUCT ARCHAEOLOGY**

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# **An Assessment Report of an Archaeological Strip and Map and Watching Brief at Development Zone B, Kings Cross Central, London Borough of Camden**

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**Site Code:** KXU10  
**Central National Grid Reference:** TQ 30119 83347  
**Local Planning Authority:** London Borough of Camden

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Pre-Construct Archaeology Limited, March 2012

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March 2012**

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*“Grand are the Works which doth Gas produce  
But grander far, Sirs, is its noble use.  
There shines the Gas, a bright resplendent light  
And dissipates the horrors of the night.”*

**GAS LAMPLIGHTERS ADDRESS, 1830**

*(Extracted from Stewart 1957)*



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## **1 Abstract**

- 1.1 This report details the results and working methods of an archaeological strip and map and watching brief at Development Zone B, Kings Cross Central, London Borough of Camden (Figure 1).
- 1.2 The archaeological investigation took place between 15th August 2011 and 14th October 2011. At the time of writing, the archaeological watching brief at Development Zone B (KXU10) is ongoing. This report is limited to the results of the strip and map in plots B5 and B6 with a further report on the remainder of the watching brief to follow upon its completion.
- 1.3 The project was undertaken by Pre-Construct Archaeology Ltd and commissioned by Kings Cross Central General Partner Limited (representing the original applicants for the Kings Cross Central scheme).
- 1.4 The archaeological interventions undertaken at Development Zone B between 15th August and 14th October 2011 comprised 2 open area excavations and 8 watching brief test pits. The investigation was aimed at exposing and recording structural remains relating, in particular, to the IGLCC St Pancras Gasworks, alongside subsequent development of the land after ownership passed to the Great Northern Railway company. The archaeological methodology was designed so as to facilitate archaeological recording in a manner safe for site staff considering the known contamination issues present on site.
- 1.5 The underlying geology is understood to consist of London Clay. Preparatory work in the form of made ground deposits to stabilise the ground ahead of the construction of the gasworks structures were observed in geotechnical test pits. The earliest brickwork encountered related to the earlier phases of the gasworks (mid 1830's), in particular a fragment of Gasholder 13 which was also observed within a test pit, along with a culvert further to the west. Following this the remains of a basemented extension to the Retort House and the footings of the Purification Plant were revealed; the latter presenting the remains of structures relating to the scrubbers, condensers and purifiers, datable to the mid 19th century. The remains of a section of Crushing House, constructed in the mid-late 19th century, were also exposed and recorded. Aside from some evidence of minor additions and modifications to the above buildings, little changed until the gasworks itself was decommissioned and demolished in the early 20th century. The foundations of a stable building, completed by 1917, upon the footings of a part of the Purification Plant, were also observed. Modern made ground along with service runs and concrete surfaces overlay the above structures.

## **2 Introduction**

- 2.1 An archaeological strip and map exercise alongside a series of watching briefs were undertaken on land occupied by buildings and landscape features that once formed part of the former IGLCC St Pancras Gasworks, Kings Cross, London Borough of Camden (Figure 1). The aim of the archaeological investigation was to increase our understanding of the development of the gasworks, gain an insight into the industrial processes that took place there, and investigate its demise.
- 2.2 All excavation areas were targeted on buildings non-extant above modern ground surface and other infrastructure that formed part of the Retort House, the Crushing House and the Purification Plant. A watching brief was also undertaken on geotechnical test pits being excavated on behalf of the site contractor for ground remediation purposes.
- 2.3 The work was commissioned by Kings Cross Central General Partner Limited (representing the original applicants of the Kings Cross Central scheme) and was managed by Charlotte Matthews of Pre-Construct Archaeology Ltd. The archaeological strip and map and the watching brief conducted upon the associated geotechnical test pits were supervised by Iain Bright, of Pre-Construct Archaeology Ltd. Kim Stabler, of the Greater London Archaeology Advisory Service (GLAAS), monitored the work on behalf of the London Borough of Camden.
- 2.4 Archival research was carried out by Guy Thompson at the British Library (BL), the Camden Local Studies Library & Archive Centre, the Guildhall Library, etc.... Historic maps and documents, contemporary accounts, bulletins, newspapers and magazines were consulted. The results of this research are presented throughout the following report.
- 2.5 Development Zone B is bounded to the north and west by Goodsway by the newly expanded entrance to Kings Cross station to the south and by a National Rail compound to the east. The site forms an irregular, roughly trapezoid shape in plan and is centred at National Grid co-ordinates TQ 30119 83347. It was assigned a unique identifying code, KXU10.
- 2.6 The redevelopment consists of commercial units and open public spaces. New structures will be built alongside a long boulevard linking Kings Cross Station to Goodsway and the entrance to the new University facilities situated immediately north of Regents Canal.
- 2.7 The site is not situated within an Archaeological Priority Zone as defined by the London Borough of Camden's Unitary Development Plan (UDP). It is however situated within one of the Borough's Conservation Areas (London Borough of Camden, 2006).

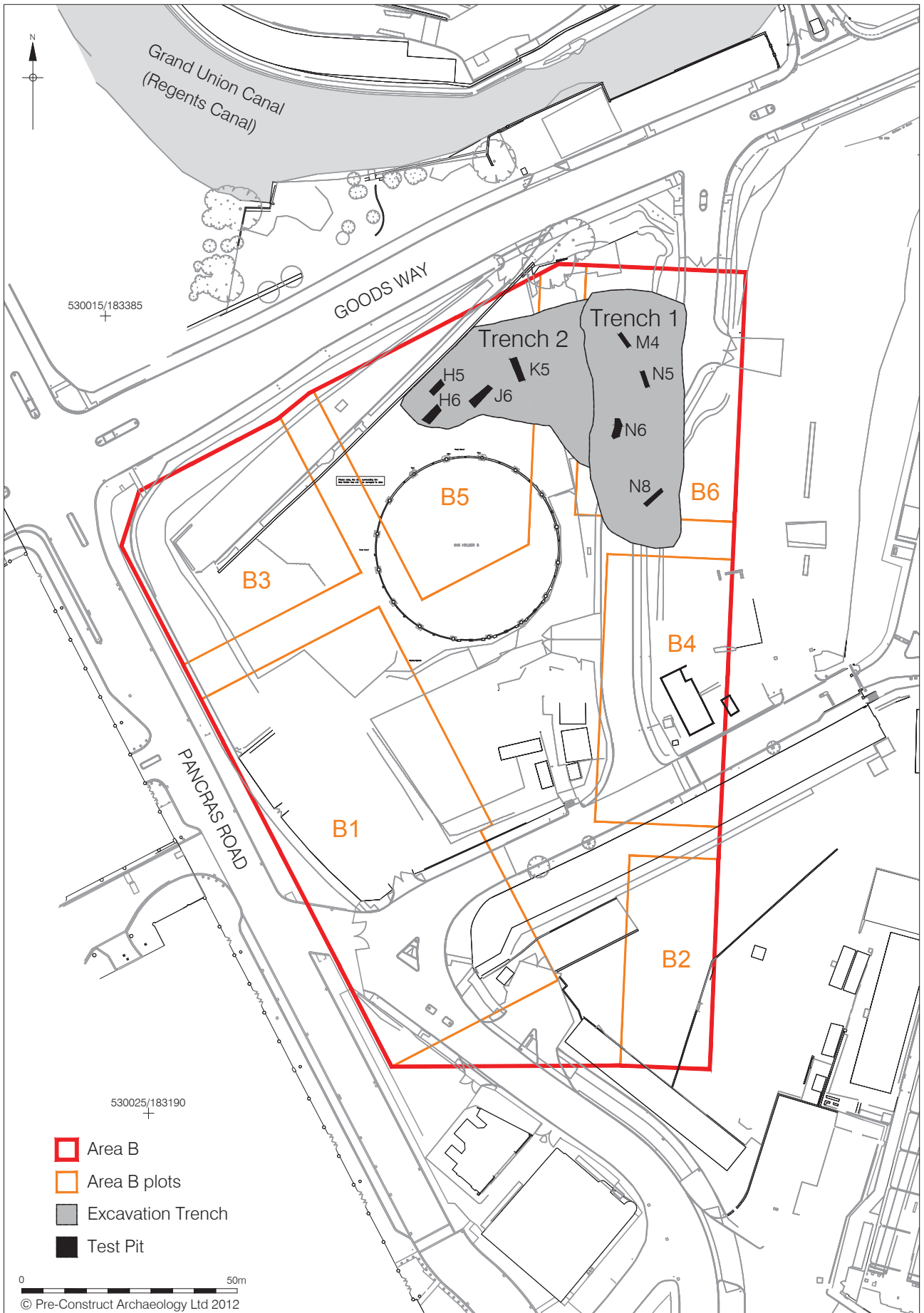




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Figure 1  
 Site Location  
 1:10,000 at A4





Topographical Survey data provided by client  
21/03/12 JS

Figure 2  
Kings Cross - Imperial Gas Works; Area B  
Trench Location  
1:1,250 at A4

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### 3 Planning Background

#### 3.1 National Guidance: Planning Policy Statement 5

3.1.1 In March 2010 the Department of the Environment issued Planning Policy Statement 5 (PPS5) "Planning for the Historic Environment", providing guidance for planning authorities, property owners, developers and others on the preservation and investigation of archaeological remains.

3.1.2 In short, government policies provide a framework which:

- Protect Scheduled Ancient Monuments;
- Protect the settings of these sites;
- Protect nationally important un-scheduled ancient monuments;
- Has a presumption in favour of in situ preservation;
- In appropriate circumstances, requires adequate information (from field evaluation) to enable informed decisions; and
- Provides for the excavation and investigation of sites not important enough to merit in situ preservation

3.1.3 In considering any proposal for development, the local planning authority will be mindful of the policy framework set by government guidance, in this instance PPS5, of existing development plan policy and of other material considerations.

#### 3.2 London Borough of Camden Replacement UDP

3.2.1 The Development Plan framework is provided by the Camden Replacement Unitary Development Plan (2006) which states:

*B8 – ARCHAEOLOGICAL SITES AND MONUMENTS*

*A – SITES AND MONUMENTS OF NATIONAL ARCHAEOLOGICAL IMPORTANCE: WHEN CONSIDERING DEVELOPMENT CLOSE TO SITES AND MONUMENTS OF NATIONAL ARCHAEOLOGICAL IMPORTANCE, INCLUDING SCHEDULED ANCIENT MONUMENTS, THE COUNCIL WILL SEEK THE PHYSICAL PRESERVATION OF THE ARCHAEOLOGICAL FEATURES AND THEIR SETTINGS.*

*B – SITES AND MONUMENTS OF ARCHAEOLOGICAL IMPORTANCE: THE COUNCIL WILL ONLY GRANT CONSENT FOR DEVELOPMENT WHERE ACCEPTABLE MEASURES ARE UNDERTAKEN TO PRESERVE REMAINS OF ARCHAEOLOGICAL IMPORTANCE AND THEIR SETTINGS. DEVELOPERS SHOULD ADOPT MEASURES THAT ALLOW SUCH REMAINS TO BE PERMANENTLY PRESERVED IN SITU. WHERE THIS CANNOT BE ACHIEVED, NO DEVELOPMENT SHALL TAKE PLACE UNTIL SATISFACTORY EXCAVATION AND RECORDING OF THE REMAINS HAS BEEN CARRIED OUT.*

3.2.2 Also of relevance is local policy KC11:

*KC11 - HERITAGE*

*THE COUNCIL WILL GRANT PLANNING PERMISSION FOR DEVELOPMENT PROPOSALS FOR THE KING'S CROSS OPPORTUNITY AREA, WHICH SEEK TO ENSURE THAT:*

- A) PRESERVE LISTED BUILDINGS OR STRUCTURES AND THEIR SETTING*
- B) PRESERVE OR ENHANCE BUILDINGS, STRUCTURES AND OTHER FEATURES OF CHARACTER AND HISTORIC INTEREST, AND THEIR SETTING, WITHIN THE CONSERVATION AREAS*
- C) PRESERVE THE REMAINS OF SIGNIFICANT ARCHAEOLOGICAL IMPORTANCE AND THEIR SETTINGS.*

- 3.2.3 In accordance with the Camden Replacement Unitary Development Plan (2006) and local policy KC11, the Outline Planning Permission for the project (granted by Camden Council) stipulated that a programme of archaeological and built heritage recording was required. This is detailed in Outline Planning Permission Condition 56 (Archaeological Investigation and Mitigation), which states:

*No development shall take place in relation to each phase of the Development as notified under condition 21 until the applicant, their agent or successors in title has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved by the local planning authority.*

*Reason: Important archaeological remains may exist on the site. The requirements of this condition are to secure the provision of archaeological investigation and the subsequent recording of the remains prior to development and to minimize damage to them in accordance with the Environmental Impact Assessment, in accordance with the policies policy B8 of the London Borough of Camden Replacement Unitary Development Plan 2006.*

### **3.3 Site Specific Mitigation**

- 3.3.1 Earthworks and remediation works were undertaken as part of the development of Development Zone B. Zone B was broken down into 6 separate plots referred to as B1, B2, B3, B4, B5 and B6, which sat around a new piece of principal public realm referred to as Pancras Square. Reserved Matters applications for buildings B2, B4, B6, the shared zone B basement and the zone B public realm were submitted and approved pursuant to conditions attached to the KXC outline planning permission dated 22 December 2006 (ref: 2004/2307/P), (the 'Outline Planning Permission').
- 3.3.2 Condition 56 of the Outline Planning Permission 2004/2307/P required a programme of archaeological investigation and recording to be prepared and implemented. Pre-Construct Archaeology Ltd was commissioned to undertake these works. A Written Scheme of Investigation, which relates to archaeological investigation works for Development Zones B and E was approved by Kim Stabler, English Heritage Greater London Archaeological Advisory Service on behalf of the Local Planning Authority, Camden Borough Council.
- 3.3.3 For Development Zones B and E, an Archaeological Watching Brief process was determined to be the appropriate mitigation measure, as identified within the Environmental Statement.
- 3.3.4 The strategy, allowed for 'early mitigation solutions' and for archaeological excavations, and other investigations as deemed necessary, by a progressively improved understanding of the archaeological resources and asset value determined during the course of development.



## **4 Geology and Topography**

### **4.1 Geology**

- 4.1.1 The British Geological Survey of England and Wales 1:50,000 scale map of the area (Sheet 256 *North London*) indicates that the site of Development Zone B is underlain by London Clay. This in turn seals the Woolwich and Reading and Thanet Formations, which sit above Upper Cretaceous Chalk.
- 4.1.2 Geotechnical investigations undertaken on site prior to enabling works indicated that the upper surface of the London Clay falls consistently in a southwards direction in the Zone B Area from around +18.0m OD to around +16.0m OD. The base of the London Clay/top of the Lambeth Group lies at between -1.5m OD and -4.0m OD, giving a maximum London Clay thickness of approximately 20m (LBH 2009).

### **4.2 Topography**

- 4.2.1 The portion of the site designated for archaeological investigation (namely the north-eastern plots - B5 & B6), prior to groundworks, comprised of a concrete surface, a haul road, rough ground and overgrown scrubland.
- 4.2.2 The area within which Trench 1 (B6) was located included an elevated haul road to the east adjacent to which was a gradual bank extending to the west with a drop of approximately 2.00m. A similar bank existed along the northern edge of this area along Goods Way. A concrete surface was present in the lower lying area adjacent to the haul road and was likely used for parking associated with a since demolished building located in the vicinity.
- 4.2.3 Plot B5, within which Trench 2 was positioned, comprised of overgrown scrubland. Concrete and tarmac surfaces were present to the north and Gas Holder 8 was situated immediately to the south.
- 4.2.4 Levels across the site varied ranging from 23.58m OD at the highest point at the junction of Goods Way and the haul road to 20.75m OD on the lower lying concrete surface adjacent and to the west.

## 5 Historical Background

*Guy Thompson*

### 5.1 The Construction of the Gas Light and Coke company Gasworks 1822-1823

- 5.1.1 The Imperial Gas Light and Coke Company (IGLCC) came into being in July 1821, following the passing of an 'Act to establish an additional Company for Lighting certain parts of the Metropolis and parts adjacent with Gas' in Parliament (B/IMP/GLC/1: 02/07/1821). The new company promised to supply gas to a district on the north side of the Thames extending from Pimlico in the west to Whitechapel in the east, which was subdivided into three sub-sectors: Western, North-Western and Northern (the latter subsequently split into separate North-Eastern and Eastern areas) (*ibid*: 31/08/1821; Everard, 1992: 157). Having proposed to establish a gasworks in each sector, a committee of three Directors was appointed to identify potential locations that were readily accessible by water; either via the Thames (in the case of the Western works) or the Regent's Canal for the North-Western and Northern works. In September of that year locations on the banks of the Regent's Canal at St Pancras and Shoreditch were earmarked for the North-Western and Northern sector gasworks, and the committee was authorised to open negotiations with local landowners for the acquisition of both sites (B/IMP/GLC/1: 07/09/1821).
- 5.1.2 In mid-October the Directors approached the Governors of St Bartholomew's Hospital seeking authorisation to purchase a plot of land on the south bank of the Regent's Canal westward of the Maiden Lane Bridge (*ibid*: 12/10/1821; Figure 3). The hospital consented to the sale early the following year, shortly after which the gas company made separate arrangements with the parish of St Pancras for the purchase of an adjacent plot on the same side of the canal (*ibid*: 15/02/22, 26/02/1822). The site proposed for the new works earned the approval of Sir William Congreve, the Inspector of Gas Light Works who proclaimed it "the most proper situation... for the erection of Works for the Manufacturing of Gas" when he visited in May 1822 (*ibid*: 17/05/1822). By the first week of August 1822 construction of a 'temporary shed' at St Pancras was "proceeding with all possible expedition" (*ibid*: 02/08/1822). The directors approved tenders submitted by Messrs Ward and Son for the construction of buildings at St Pancras, and from Samuel Walker for supplying and erecting iron roofs at both the Pancras and the Shoreditch works (*ibid*: 02/08/1822; 09/08/1822). In the half-yearly report issued to shareholders later that month, the directors admitted that while the works at St Pancras had been "delayed by various circumstances", they were "now in progress to be speedily erected" (*ibid*). However the directors' optimism appears to have been somewhat misplaced, as the company was still wrestling with problems with the conveyance of the land that prevented the building works from getting under way (Everard, 1992: 158). Worse was to come that autumn, when the company attracted the unwelcome attentions of the cantankerous local landowner William Agar, over whose land contractors were obliged to cross in order to gain access to the site of the new works (B/IMP/GLC/1: 01/11/1822). According to the minutes of the Court of Directors, Agar placed obstructions at the entrance to the company's premises

and interfered with the work of the contractors who brought building materials to the site (*ibid*). In a report read to shareholders at a half-yearly general meeting in February 1823, the directors apologised to shareholders for the ongoing problems with the conveyance of the property, blaming the “impediments offered by certain parochial trusts” for the lack of progress on site (*ibid*: 07/02/1823).

- 5.1.3 The Company finally began to clear these hurdles the following year. A gasworks founded and operated by William Caslon in Dutton Street, near the Gray’s Inn Road was acquired as a going concern, supplying gas in place of the still unfinished Shoreditch works (Everard, 1992: 158). Meanwhile construction at St Pancras gained renewed momentum towards the end of May 1823, when the tenders of Messrs William and John Whitehead and Mr Thomas Souter (also spelt ‘Sowter’) for the construction of the main buildings were accepted and contracts were drawn up soon afterwards (B/IMP/GLC/1: 30/05/1823). The contract for the excavation of the first six<sup>1</sup> gasholder tanks at Pancras was awarded to Peter Anderton early the following month, while contracts also went to Messrs Grazebrook and Son for retorts and Samuel Walker & Co for the iron roof and chimney shaft for the first retort house in July (*ibid*: 06/06/1823; 04/07/1823).<sup>2</sup> In mid-July arrangements were made for the foundation stone-laying ceremony, which was scheduled to take place later the same month (*ibid*: 16/07/1823). On Thursday 24th July, a “multitude of spectators attracted by the interesting ceremony and the fineness of the weather” assembled to watch Sir William Congreve lay the foundation stone of the retort house in front of a crowd which included the Directors, Peter Moore the Deputy Governor, Thomas Souter the builder and Francis Edwards, the architect of the works (*ibid*: 24/07/1824).<sup>3</sup> At the end of his speech Congreve was presented with the trowel used to lay the stone, following which the guests adjourned to the Freemason’s Arms in Maiden Lane for a celebratory dinner (*ibid*).
- 5.1.4 Less than three months after the stone-laying ceremony, the Committee for Works of the Imperial Company informed the Directors that the first gasholder to be completed at the Pancras works entered service on 16th October, when it was filled with gas via the main from the recently completed Shoreditch works (LMA B/IMP/GLC/2: 17/10/1823). Within a week the iron roof of the first retort house had also been completed (*ibid*: 24/10/1823).
- 5.1.5 At the beginning of February 1824 the Directors arranged a second ceremony at St Pancras, this time in order to mark the occasion of the completion of the ‘indent’, a short branch of the canal that enabled barges to deposit cargoes of coal on a wharf adjacent to the retort house (*ibid*: 30/01/1824; TNA RAIL 1189/1423: Ellis to Brickwell, 29/06/1915). At 1pm on the afternoon of Tuesday 3rd February the Court of Directors, Messrs Edwards and Souter, together with Mr Tait, Engineer to the Regent’s Canal Company and a “numerous assemblage of spectators” assembled to watch a procession of barges containing construction materials enter the basin from the canal and moor alongside the new coal wharf (LMA B/IMP/GLC/2: 03/02/1924). Known subsequently as the Gasworks Basin, the ‘indent’ was also equipped with a set of lock gates supplied by Thomas Douglas at a cost of £164.7.4 (*ibid*: 06/02/1824).

- 5.1.6 The minutes of the Court of Directors record a series of payments made to contractors throughout the spring and summer of 1824; in addition to regular payments to Souter and Whitehead for the buildings, cheques were made out to Messrs Grazebrook and Son for retorts (£211.19.8 in February), W.R. Griffiths for supplying stone curbs for the gasholders (£130 in mid-April), Thomas Douglas “for unspecified “work done at Pancras”, the latter possibly associated with the Gasworks Basin (£51.3.0 in late May) and Thomas Fisher for “well digging at Pancras” in early July (*ibid*: 20/02/1824; 15/04/1824; 28/05/1824; 02/07/1824). A payment of £123.7.6 to John Cliff for clay retorts reflected Joseph Clarke’s interest in the application of earthenware retorts, which he had witnessed for the first time at the works of the Leeds Gas Company in December of the previous year (*ibid*: 12/12/1823; 13/08/1824). While the retorts purchased from Mr Cliff were not acquired for use at the Pancras works, a “St Pancras Pattern” of clay retort was later developed for use in the company’s retort houses (LMA B/IMP/GLC/72, 14/06/1866). The roadways in the gasworks were laid by Richard Laycock, a local businessman who also supplied bricks and cartage services to the gas company at St Pancras, while Henry Griffin was paid nearly £20 for bell-hanging at the works in October (LMA B/IMP/GLC 1: 29/11/1822, 10/01/1823, 14/03/1823; LMA B/IMP/GLC/2: 20/05/1824, 29/10/1824).
- 5.1.7 The Pancras works entered service towards the end of August. The works were formally opened on Wednesday 25th August at a low-key ceremony attended by Sir William Congreve and the Prince of Schaumburg-Lippe, following which the fires at Caslon’s gasworks at Dutton Street were extinguished and these works ceased production (LMA B/IMP/GLC/2: 27/08/1824).
- 5.1.8 When complete the gasworks at St Pancras was equipped with a single retort house, a separate engine house (the roof of which had to be rebuilt following a fire in late February 1826) and only six gasholders (LMA B/IMP/GLC/3: 03/03/1826). A map of the capital surveyed by Christopher and John Greenwood between 1824 and 1826 and published in 1830 indicates that the first six gasholders stood in two rows of three holders aligned north-south in the north-west corner of the site, some distance to the west of the main complex (Figure 4). The map also shows that the main (west) entrance to the site, from the as-yet unnamed Congreve Street had been built by this date.
- 5.1.9 Although the number of purifiers used at the gasworks during the early days is uncertain, minutes of the Court of Directors indicate that gas was purified by washing in a suspension of slaked lime, the latter supplied by W.H. Whitbread, who also supplied the company’s works at Shoreditch (LMA B/IMP/GLC/2: 20/05/1824). From February 1825 the Pancras works were managed by John Vivian, who had recently been appointed Superintendent-in-Chief of the Imperial, which provided him with a house at the works (Everard, 1949: 158; LMA B/IMP/GLC/5: 07/11/1828). A second house on or adjacent to the site was provided for the use of the works storekeeper, the next most important officer of the Company at St Pancras after the Superintendent (*ibid*: 26/06/1828). A Mr Glendon was the storekeeper of the works in 1824, although he was succeeded soon after by Vivian’s close associate Mr Atkins (LMA

B/IMP/GLC/2: 12/07/1824; LMA B/IMP/GLC/5: 26/06/1828). The Superintendent's and Storekeeper's houses may have been the two structures that stood in the south-west corner of the site, shown on maps produced in 1830, 1834 and 1849 (Figures 4, 5 and 7).

## **5.2 The enlargement of the Pancras Gasworks, 1825-6**

- 5.2.1 In September 1824 the Imperial Company acquired the lease of Sandford Manor in Sands End on the borders of Chelsea and Fulham in order to establish a holder station to supply gas to the western district (LMA B/IMP/GLC/2: 24/09/1824). Instead of manufacturing gas at Sands End, it was decided that the holders there were to be supplied with gas produced at St Pancras (Everard, 1992: 159; LMA B/IMP/GLC/3: 11/02/1825). In order to produce sufficient gas to meet the needs of the western district, on 25th March 1825 the Court of Directors approved a Committee for Works proposal to build a second retort house and six further gasholders at the Pancras works (LMA B/IMP/GLC/3: 25/03/1825). Details of a series of payments to contractors associated with these works were recorded in the minutes of the Directors following this date. Contractors involved with the construction of the new gasholder tanks included Bough & Scott, who received two payments for "excavation at St Pancras" of £180 and £200 in July 1825 and July 1826, while William Green received twelve payments of £34-£40 each between March 1823 and November 1826 (LMA B/IMP/GLC/2, LMA B/IMP/GLC/3). Isaac Horton received a payment of £500 for gasholders in July 1827; this may have been towards the construction of the six new holders at St Pancras (LMA B/IMP/GLC/3: 14/07/1826). The principal contractors for the construction of the new retort house appear to have been Messrs W and J Whitehead and Thomas Souter, with masonry work undertaken by Messrs John Alexander and Co (LMA B/IMP/GLC/3: 08/07/1825 – 27/01/1826).
- 5.2.2 In a half yearly report issued to shareholders in early February 1826 the company announced that the new retort house and four of the new gasholders were approaching completion, and that the remaining two holders were "in a state of progress" (*ibid*: 08/02/1826). Towards the end of the same month a fire broke out which destroyed the roof of the Engine House at the works, and plans for the reconstruction of this were prepared by Francis Edwards in early March (*ibid*: 03/03/1826).
- 5.2.3 It is not clear to what extent the fire impeded the progress of the new works at St Pancras, however it was not until early March the following year that the Directors reported the completion of the second retort house and the new gasholder tanks, although neither the eleventh nor twelfth holders had been completed by that date (LMA B/IMP/GLC/4: 07/03/1827). Despite the comparatively slow progress of construction, the Directors were confident that following the completion of the new facilities it would not be necessary to authorise any further expenditure at St Pancras (*ibid*). By late October the Directors had sufficient confidence in the newly enlarged gasworks to inform shareholders that the works were "in a state of perfection so far as is necessary for the supply of gas to the districts dependent on that station" (*ibid*: 26/10/1827). Although the Greenwood map of 1830 (surveyed 1824-1826) shows only six gasholders, it depicts the north and south retort houses,

both built to an identical design and arranged on either side of the original purifiers, which formed the east and west 'sides' of the rectangular layout of the works (Figure 4; LBH Wembley, 2009: Appendix). An inventory of the condensing and purifying apparatus used at the Pancras works in the early 1850s lists nine 'wet' lime purifiers (six of 10' diameter and three of 12' diameter) of the type used at gasworks built before the middle of the century; it is likely that these were used to purify the gas manufactured in the 1820s retort houses (LMA B/IMP/GLC/63: 28/02/1852). An engraving of the completed works published in 1828 shows both the north and south retort houses and their respective chimneys (Plate 1; Hunter & Thorne 1990 Fig. 26 p42; origin unknown).

### **5.3 Upheavals at the Imperial Gas Light and Coke Company, 1826-8**

- 5.3.1 As early as July 1824 various concerned parties had begun to raise questions regarding the governance and financial arrangements of the Imperial Company (Everard 1992: 160). Since its foundation in 1821 the company's affairs had been dominated by Joseph and Henry Clarke, the *de-facto* Governor and the Chief Clerk of the company respectively. Rumours of malpractice circulated in the national press, not least in the letter pages of the *Times*, where damning allegations regarding nepotism and fraud associated with the company's coal contracts were published in March 1826 (*ibid*: 163-4). Following the death of Rowland Edward Williams, the ailing Governor of the company in November 1826, the Court of Directors nominated Joseph Clarke for the post, a proposal that was rejected by the shareholders at a turbulent General Meeting held in January the following year (*ibid*: 165; LMA B/IMP/GLC/4: 06/12/1826). Instead Williams was succeeded as Governor by Philip Monoux Lucas, a number of new Directors were appointed and a Committee of Enquiry was established in order to investigate the company's financial affairs. When the Committee published its findings at the end of the summer the shareholders forced the resignation of Henry Clarke, who promptly fled to France having obtained a generous pension and a bond of indemnity against any claims brought against him for any acts he had carried in the company's service (*ibid*: 07/09/1827; Everard 1992: 165).
- 5.3.2 Clarke was replaced by his associate Bartholomew Mayhew, who was forced to resign soon afterwards following the discovery that he had misappropriated more than £6,000 of the company's funds (Everard 1992:166; LMA B/IMP/GLC 5: 22/03/1828). A comprehensive audit of the company's accounts conducted by two of the new Directors, Bell and De Lannoy, revealed that corruption, embezzlement and malpractice were rife, and in May 1828 their attention turned to the actions of Mr Vivian, Superintendent of the Pancras works (*ibid*: 21/05/1827; Everard 1992: 167). An examination of Messrs Vivian, Atkins (Storekeeper at St Pancras), Vickers (Manager of the Shoreditch works) and Gregory (Manager of the Tar and Ammonia Works at Millwall) concluded that all had been party to the systematic falsification of returns of the coal, coke and tar stocks at their respective works over a number of years (LMA B/IMP/GLC 5: 27/05/1828, 25/06/1828). Both Vivian and Atkins were found guilty as charged and were dismissed from the company's service; amongst the papers belonging to the



company handed over by the former was a set of four draft drawings of the retort houses and engine at St Pancras (*ibid*: 26/06/1828). In the wake of the dismissals, Joseph Thomas was appointed interim manager of the Pancras works, while a Mr Stroud was appointed temporary storekeeper (*ibid*). Shortly after Vivian's dismissal, applications were sought for the office of Engineer and Superintendent of the Company's Works; the renowned Samuel Clegg was duly appointed at the beginning of August, while the post of permanent Storekeeper was advertised the following March (*ibid*: 01/08/1828, 27/03/1829). Despite the decision of the Directors to dismiss Vivian and his confreres in June 1828, the former Superintendent continued to occupy the house the company had given him at the Pancras works until February 1829, Samuel Clegg having elected to live with his family in privately rented accommodation in Old Pancras Road (*ibid*: 05/09/1828, 07/11/1828, 06/03/1829).

5.3.3 Following a tip-off, in September 1828 the Regent's Canal Company accused the Imperial of the unauthorised extraction of as much as 950 tons of water per day from the canal at Pancras and a further 265 tons per day at Shoreditch, a process that had apparently been taking place since the two works opened in 1824 and 1823 respectively (Faulkner 1990: 49; Everard 1949: 166). Although the Imperial initially refused to meet the canal company's demand for compensation of £2,481, a sum equivalent to a rate of ½d per ton of water taken, the claim was eventually settled for £1,700 in 1829.

5.3.4 The minutes of the Court of Directors convey the impression that the institutional turmoil caused by the discovery of extensive corporate malpractice and, to a lesser extent the dispute with the canal company, may have overshadowed the day-to-day business of the Imperial during the period 1827-1828. By late September 1828 however, it had become apparent to the Committee for Works that it was necessary to sink a second well at the Pancras Works in order to meet the site's daily requirements for water (LMA B/IMP/GLC 5: 26/09/1828). Instructions to sink the new well were given to Mr Edwards (presumably Francis, the architect of the works) at the beginning of October (*ibid*: 01/10/1828).

## **5.4 The Pancras Gasworks during the 1830s and 1840s**

5.4.1 Owing to the sheer volume of institutional records generated by the various Committees of the Directors of the Imperial company (a consequence of the practice of these bodies of holding meetings every third working day in a working week of six days), it was decided that a representative selection of this material would form the primary documentary archive resource underpinning the present assessment report. Minutes of meetings held during known periods of expansion and enlargement, such as the 1820s, 1850s, 1860s and 1880s were consulted, as were those that documented the closure and dismantlement of the works during the 1900s. Comparable records compiled during the 1830s, 1870s and 1890s, where alternative sources such as published maps and plans were available, were not investigated during the course of the present research, though it is planned to consult these in advance of the publication of the present investigation (see 'Further Research Questions' below).

5.4.2 A map of the parish of Marylebone surveyed by B.R. Davies and published by Edward

Stanford in 1834 shows an arrangement of twelve gasholders and two retort houses (Figure 5). Although Davies' map is somewhat schematic, and appears to owe a substantial debt to the Greenwood map of four years earlier, it suggests that no major additions had been made to the site since the completion of the second phase of works in the late 1820s.

- 5.4.3 As the rate of urban and suburban development in and around the capital accelerated during the following decade, the potential market for gas light continued to grow, although demand remained subdued as a consequence of the preference of suppliers to establish local monopolies by means of negotiating agreements with potential rivals. These anti-competitive practices came to an end in the early 1830s, when established suppliers were confronted by a number of new competitors who weren't prepared to be bought-off by monopolistic districting agreements (Everard 1992: 170-171). The Imperial responded by cutting its own gas prices, fuelling public demand for cheaper gas. As prices fell, so demand increased and the 1830s and early 1840s saw the enlargement of the Pancras and Fulham works under the aegis of John Kirkham, who had succeeded Clegg as Chief Engineer following the dismissal of the latter in 1830 (*ibid*: 174). Evidence of the renewed enlargement of gas-making facilities at St Pancras is provided by a plan of the vicinity surveyed in association with the Great Northern Railway Act of 1846, which indicates that the retort complex had been considerably enlarged over the twelve years since the publication of the Davies' map (Figure 6). The 1846 Great Northern plan indicates that at least two new structures had been built adjoining the north side of the northernmost of the two 1820s retort houses, the largest of which was a south-east – north-west aligned rectangular building which stood close to the south bank of the Regent's Canal. Both the Ordnance Survey's First Edition map of 1871 and a Goad Fire Insurance map of 1891 indicate that the new building, together with a second structure which occupied the space between it and the 1820s retort house contained retort beds, suggesting that both of the new structures had been purposely-built as retort houses (Figures 9 & 10).
- 5.4.4 The 1846 plan also shows two parallel lines extending south-westward from the west elevation of the northernmost of the original retort houses. This feature was depicted as a solid rectangular extension to the retort house on a slightly later plan of the area, surveyed in advance of the construction of the Great Northern Railway King's Cross Goods and Passenger Stations (Figure 7). Issued in 1849, this plan shows the line of the tracks and tunnels heading southward from Belle Isle to the proposed site of the Passenger Terminus south of the Regent's Canal. The 1891 Goad Fire Insurance map indicates that the extension to the 1820s retort house also contained retort beds, suggesting that the structure probably represented the fifth retort house built at St Pancras, although it was not identified as a retort house on the first Edition Ordnance Survey map of 1871 (Figures 9 & 10). By the time that gas production ceased in early 1904, the Pancras works had acquired a complement of six retort houses, suggesting that the final retort house was added after 1846 (Stewart 1957: 72).
- 5.4.5 Both the 1846 and 1849 plans depict a narrow elongated rectangular 'structure' aligned south-west – north-east, immediately to the west of the new retort houses. This feature comprised a number of discrete elements that stood on the south side of Wharf Road, which the 1891



Goad plan indicates included tanks (presumably for holding liquor and tar) and purifiers, where the gas manufactured in the new retort houses was washed to remove tar and ammonia. Advances in purification technology during the late 1840s rendered the 'wet' lime washers used since the 1800s redundant, and it is possible that the purifiers used in this part of the works included some of the ten dry lime purifiers (two of 16'x9'; two of 12½'x9'; and four of 19'x11') that an inventory of February 1852 listed as being in use at the works (LMA B/IMP/GLC/63: 28/02/1852).<sup>4</sup>

- 5.4.6 The expansion of the scale of gas production at the Pancras works in the 1830s and 1840s evidently necessitated the enlargement of the station's gas storage capacity. While Davies' map of 1834 shows twelve holders of equal circumference neatly arranged in three parallel rows of four holders, the 1849 Great Northern plan shows a total of thirteen holders of at least four different dimensions, only eight of which appeared to be the same structures depicted by Davies (Figure 7). The plan indicates that the large gasholders located in the western area of the site described by later documents and maps as holder nos. 1 and 9 had been completed by 1849, the latter holder apparently replacing one or two of the original 50' holders. The 1891 Goad plan indicates that both of the new holders were 90' high. The 1849 plan showed that a second holder had been erected close to the southern boundary of the works, a short distance to the west of the southernmost of the 1820s retort houses. This holder was still in use in 1871, when the First Edition Ordnance Survey map of the area was surveyed, although it had been removed by 1891, its outline having been partially preserved in the form of the concave curved east wall of a material house and purification plant built immediately to the west (Figures 9 & 10).

## **5.5 The impact of the Great Northern Railway on the Pancras Gasworks in the early 1850s**

- 5.5.1 Having begun its existence in a largely undeveloped suburban setting in the 1820s, by the late 1840s the relative tranquillity of the location of the Pancras gasworks had been encroached upon on three sides by residential development. The latter included the streets of Agar Town, which had grown rapidly since 1840, when the southern part of the late William Agar's estate was broken up and sold off on short leases to local workers. Built on land belonging to the Church Commissioners of England, the district that grew up around the genteel-sounding Suffolk, Norfolk and Cambridge Streets quickly became a byword for shabby, poorly-built and insanitary housing. However within the space of less than thirty years the slums of Agar Town had gone, having been demolished in order to make way for the development of the goods and passenger stations that have shaped the development of the King's Cross/St Pancras district to the present day.
- 5.5.2 The Imperial was quick to spot the commercial opportunities that the arrival of the Great Northern Railway at King's Cross represented. In early May 1850 the gas company tendered to provide lighting for the premises of the Great Northern at Maiden Lane, where the railway company was in the process of building the King's Cross Goods Station and the Temporary Passenger Station (LMA B/IMP/GLC/62: 08/05/1850).

- 5.5.3 Before construction of the new railway stations could commence, it was necessary for the site to be extensively levelled, which obliged the Great Northern to seek a suitable location nearby where spoil could be deposited. In 1849 the railway company received permission from a Mr Limpus to dump spoil on land belonging to him on the south bank of the canal, adjacent to the Gasworks Basin. A temporary timber viaduct spanning the canal was built to enable John Jay, the chief contractor for the Great Northern to deposit material on Limpus' land. In mid-May 1850 the Imperial's Committee for Works was informed that dumping on the site had caused "considerable damage" to the wall on the east side of the Gasworks Basin, which was temporarily out of action owing to maintenance work being carried out by the Regent's Canal Company (B/IMP/GLC/62: 13/07/1850). In order to prevent a recurrence, Lewis Cubitt, a member of the Committee who also served the Great Northern in the role of architect of the King's Cross stations, was asked to ensure that steps were taken to ensure that the Basin would not be rendered inoperable in future (*ibid*).
- 5.5.4 While the construction of the Goods Station on the north bank of the canal caused at most a short-lived inconvenience for the gas company, the development of the Great Northern's Permanent Passenger Station to the south-east of the works the following year caused more extensive dislocation. Indeed the upheaval brought about by the construction of the new station and of the Gasworks Tunnel beneath the canal was widespread; the railway company was compelled under the 1846 Act to undertake a wide range of works to mitigate the impact of the new station, including such obligations as the demolition and rebuilding of Maiden Lane Bridge at its own expense (TNA RAIL 236/469: 14/05/1850). The Great Northern was also obliged to replace Congreve Street, the access road to the main (east) entrance of the Pancras works which would be lost to the cutting that contained the railway tracks between the mouth of the Gasworks Tunnel and the new station. To replace the roadway the Great Northern agreed to provide an iron bridge designed by Joseph Cubitt (Chief Engineer of the Great Northern), which carried road traffic, pedestrians and new gas mains, the latter replacing those which had underlain the old road surface (B/IMP/GLC/62: 28/06/1851, 02/07/1851). The construction of the cutting also necessitated the construction of a retaining wall on its west side that would underpin the eastern boundary wall of the gasworks. However the Great Northern proposed to excavate to an extent of 6' beneath the 'warehouses' that stood on the south-eastern boundary of the gasworks to accommodate this wall, thereby preventing the Imperial from ever basementing these structures should it wish to do so at some point in the future (*ibid*: 05/11/1851; see Figures 8 & 9). This potential dispute was defused in December 1851, when the two companies agreed to proposals prepared by Joseph Cubitt to build the retaining wall of the cutting directly below the boundary wall of the gasworks, and to exchange land between themselves in order to create a new boundary at the south-east corner of the gasworks, where the railway company would erect a replacement boundary wall at its own cost (*ibid*: 17/12/1851). The Congreve Street boundary wall was subsequently raised by a further 6' in 1854 in order to support a new light roof inside the gasworks (LMA B/IMP/GLC/63: 19/04/1854, 28/06/1854).

5.5.5 Construction of the passenger station also necessitated the diversion of numerous gas mains in the vicinity of the Pancras works. In August 1851 the Committee for Works agreed to divert the 18" and 10" gas mains that carried gas from the Valve House at the works along Edmund Street, which was itself to be diverted to the west and renamed Upper Edmund Street in order to make way for the new railway station. Owing to the increased demand for gas in the district it was decided at the same time to replace the larger main with a 24" main and the smaller with 15" pipes at a cost of £1,800 (*ibid*: 30/08/1851, 20/09/1851). Subsequently the Imperial agreed to divert the mains that led from the works to Maiden Lane along the north side of the Congreve Street Bridge "on the paving provided for them" (*ibid*: 27/12/1851).

## **5.6 The enlargement of gas production and storage capacity at the Pancras Gasworks during the 1850s**

5.6.1 The early commercial success of both the Great Northern Goods and Passenger Stations at King's Cross stimulated the local economy of the St Pancras district and contributed to the continuing growth of the capital. The rate at which new residential streets were laid out accelerated in the northern district after 1850. In January 1852 the Imperial announced the provision of new street lighting in Pancras Vale and across the rapidly expanding suburb of Hackney (LMA B/IMP/GLC/63: 10/01/1852). In February of each year the Chief Engineer of the Imperial presented forecasts of annual demand to the Committee for Works, together with estimates for the expenditure necessary to meet it. At the end of February 1852 Kirkham proposed to build a further new gasholder at the Pancras Works, 120' in diameter and 36' high, to be accommodated in a brick-built tank measuring 123' by 37½', for an estimated outlay of £11,355 (*ibid*: 25/02/1852). Even more ambitious plans for the enlargement of the Fulham works were proposed at the same meeting, including the provision of a new telescopic gasholder measuring 157' in diameter and 42' in depth, the construction of a new retort house and coal store and the purchase of new purifiers and exhausters, for a total cost of £24,562 (*ibid*: 25/02/1852, 06/03/1852). The reasons for the Committee's decision to suspend the enlargement of capacity at Pancras while proceeding with the enlargement of the Fulham works are not clear, although the latter may have had greater scope for expansion than the much larger, but increasingly crowded works at St Pancras.<sup>5</sup>

5.6.2 Contracts for the construction of the new tank and holder at Fulham were awarded to George Myers<sup>6</sup> and Westwood and Wright<sup>7</sup> respectively the following month, although the completion of both elements was dogged with problems and the holder did not enter service until April 1853 (LMA B/IMP/GLC/63: 20/04/1853). The failure to complete the Fulham holder in time for the winter forced the Committee for Works to consider means by which the shortfall in supply could be met, whilst relieving the demand on the Pancras works, which remained by far the largest of the company's stations.<sup>8</sup> It was therefore decided to erect a number of temporary additional retorts at Pancras and Shoreditch, in order to manufacture the gas necessary to meet anticipated demand (*ibid*: 30/10/1852, 10/11/1852).

5.6.3 The following February, David Methven<sup>9</sup> (who had been appointed acting Engineer at St

Pancras following Kirkham's resignation in November 1852)<sup>10</sup> proposed to make the additional retort bed capacity at Pancras permanent with the acquisition of two stationary steam engines and four gas exhausters to be used in conjunction with the additional clay retorts already ordered, together with a further 100 cast iron retorts (20" x 12½" x 9'6") for the 'Iron Retort House' at the works, with which problems had been experienced earlier in the winter (*ibid*: 17/11/1852, 02/02/1853).<sup>11</sup> The contract to supply the two steam engines was awarded to George Brown & Bros of Portrack Lane Iron Works, Stockton-on-Tees engines for £750, while the exhauster cylinders were manufactured by Yale and Wilkie of Port Dundas, Glasgow (*ibid*: 16/02/1853; 29/06/1853). Both steam engines and one of the exhausters were in service by the beginning of August 1853 (*ibid*: 06/08/1853).

5.6.4 It is unlikely that the provision of extensive new retort capacity at St Pancras in late 1852 represented the construction of an additional retort house. Contemporary minutes of the Committee for Works do not describe the works as representing a substantial new investment, while Stanford's *Library Map of London and its Suburbs* of 1862, although somewhat schematic, shows exactly the same arrangement of retort houses as the 1849 Great Northern map (Figures 7 & 8). The arrangement of retort houses shown on the Stanford map contrasts with that depicted by the 1871 Ordnance Survey map, which identified a substantial new structure at the north-east corner of the works as a retort house (Figure 9). A reference made in January 1856 to the investigation of fissures in the chimney of the "new Retort House at Pancras" presumably therefore related to one of the 1840s retort houses (LMA B/IMP/GLC/65: 09/01/1856).

5.6.5 In contrast to the debacle over the Fulham gasholder the previous year, the erection of a new tank and telescopic gasholder at the company's Bethnal Green holder station in 1853 passed without major incident, the holder entering service several weeks before the Christmas deadline for its completion (*ibid*: 03/12/1853; 10/12/1853). By the beginning of 1854 it had become apparent that demand for gas in the Northern district was such that it had become necessary to again enlarge holder capacity at St Pancras.

## **5.7 The construction of Gasholder No. 3, 1854**

5.7.1 At the beginning of February 1854 David Methven proposed to replace two of the original 50' diameter gasholders (nos. 2 and 3) with a single telescopic holder, 50' high when full, with a tank measuring 118' in diameter and 25' deep (LMA B/IMP/GLC/64: 01/02/1854). Two weeks later Methven submitted a specification for the proposed works to the Committee for Works, which requested that he also prepare a schedule of prices to account for any additional work that might become necessary during the construction process (*ibid*: 15/02/1854). Shortly afterwards John Jay and George Myers were invited to tender for the construction of the tank, the contract for which was awarded to the former in the second week of March (*ibid*: 08/03/1854). Having accepted Jay's tender, Methven proposed to amend the schedule of prices in order "to meet the possibility of the cone requiring to be constructed at a greater inclination than mentioned in the specification", which would have necessitated the excavation

of additional earth to build up the sides of the 'dumpling' to the correct gradient (*ibid*). Methven was also instructed by the Committee to arrange a meeting with Thomas Wright in order to discuss the specification for the gasholder in advance of Westwood and Wright tendering for the work.

- 5.7.2 Jay's contract for the construction of the tank and well specified that the structure was to be "a true cylinder measuring 118' diameter and 26' in depth from the coping or wall to the rest stones at the bottom of the tank" (LMA/4438/01/03/006, 29/04/1854). The coping of the tank was to be built to the same level as that of the top of the tank of Gasholder No. 9, which was 2'6" above the existing ground level, thus necessitating excavation to a depth of 25'. In order to accommodate the new holder, the tanks of holders 2 and 3 within the diameter of the cone (dumpling) of the new holder were "to be filled with the excavated clay" from the site of the new tank (*ibid*). This clay was to be turned over and mixed several times, "so as to form good puddle" and to be "carefully pounded while moist, so that the whole may form one solid mass free from rents or fissures" (*ibid*). A layer of concrete, 1' thick was to be formed on the top of the cone; while concrete was to be poured to a thickness of 15" over the slope and bottom of the cone. When complete, the cone was to have a diameter of 66' at the top and 112' at the bottom. The tank would be built with 13 brick-built piers, each terminating 10' from the top of the tank wall and capped with a stone 12" thick, drilled with three holes to accommodate cast iron plates and holding down bolts (*ibid*).
- 5.7.3 Before John Jay's men could begin building the tank it was necessary for Methven to arrange for the clearance of the old holders and associated pipework, which meant that groundwork did not commence until Monday 3rd April 1854 (LMA B/IMP/GLC/64: 29/03/1854; 05/04/1854). By the third week of April Methven was able to report that Jay's men were making "very satisfactory" progress; the brick wall of the tank having already reached a height of 9' (*ibid*: 24/04/1854). The construction of the tank was proceeding as planned on the 3rd of the month, when Thomas Wright was asked to ensure that "the large Iron Bolts to be fixed in the brickwork of the tank", were delivered "without delay" (*ibid*: 03/05/1854). Seven days later however, Methven informed the committee that the natural clay inside the *smaller* of the two old tanks, which was to have been retained in order to form part of the cone/dumpling of the new tank was of such "a slippery and deceptive nature" that the brickwork of the old tank had to be removed and replaced with a timber framework to support the centre of the new holder (*ibid*: 10/05/1854).
- 5.7.4 In mid-May Methven reported that further problems had been encountered during the construction of the new tank, one wall of which had been forced inward at the point where the new and old tanks intersected by the weight of the clay puddle behind the wall of one of the old tanks (*ibid*: 17/05/1854). The wall had been forced in to a depth of 3½", therefore necessitating the reduction of the diameter of the gasholder by at least 3" (*ibid*). At the end of the month Methven reported that the wall had buckled at another location, approximately 16' away from where the previous breach had occurred (*ibid*: 31/05/1854). In early June, the Secretary of the Imperial wrote to Jay, requesting either that he took down about 15' of the



circumference of the tank and rebuilt it, or that he paid the excess that Westwood and Wright demanded for altering the specification of the gasholder (*ibid*: 07/06/1854). In reply, John Jay defended his company's work, maintaining that the tank wall had buckled because its construction had been rushed in order to meet the deadline for completion specified by the gas company, with the result that insufficient time had been allowed for the mortar to set (*ibid*). It was subsequently agreed that Jay contribute towards the cost of any alterations to the gasholder specification to the value of the cost of taking down and rebuilding the tank wall (*ibid*).

5.7.5 Despite the problems encountered during the construction of the wall, Methven remained convinced that the tank would be completed by the middle of June, enabling Westwood and Wright's men to take possession of the site immediately thereafter (*ibid*: 14/06/1854). While Jay's workers did finish the tank that June, Methven's optimism regarding the pace of construction proved to be misplaced. The first delivery of ironwork for the new gasholder arrived nearly a month late on 18th July, prompting the Imperial to warn Westwood and Wright of the consequences of any further delays (*ibid*: 19/07/1854; 09/08/1854). Owing to the continuing lack of progress on site by the middle of August, Methven was despatched to Dudley to find out for himself the cause of the problem, and to persuade Wright to expedite the contract without further delay (*ibid*: 16/09/1854). On his return to the capital three days later, Methven reported that he had discovered that while fabrication of the gasholder components was "in a very forward state", the foundry contracted by Westwood and Wright to cast the column parts had not even started the casting process, which was not expected to commence until late October (*ibid*: 19/08/1854).

5.7.6 On reading Methven's report, the Committee for Works summoned Wright to explain himself, prompting the latter to announce that he had taken the patterns of "the first and second lengths of column together with the tripod parts" out of the hands of Bennett and Co of Spon Lane Ironworks, West Bromwich (the foundry subcontracted to cast the holder frame) and had agreed with a Mr Heywood of Derby to manufacture and deliver the frame parts in three weeks (*ibid*: 23/08/1854). Meanwhile gasholder parts cast at Westwood and Wright's Dudley foundry continued to arrive on site throughout September, joined shortly afterwards by the first of the column castings (*ibid*: 07/10/1854). However shortly after Westwood and Wright's team began to assemble the frame, it became apparent that a significant number of the "top parts" of the columns had been cast in a "rough and deficient manner" and had to be returned to the manufacturer (*ibid*: 11/10/1854; 25/10/1854). In order to ensure that the gas company could meet its obligations to its customers over the coming winter, Methven proposed on 25th October that "two-thirds of the gasholder might be got ready for action by about next Sunday week... and that the columns could be wholly completed afterwards" (*ibid*). Wright's men managed to meet the revised deadline and the holder entered service on Monday 6th November, albeit with a much reduced capacity of 320,000 cubic feet owing to the non-completion of the columns (*ibid*: 08/11/1854). Despite Methven's evident disappointment with the manufacturer's work, he did concede that the gasholder was "well-executed", but that the

sides were “not so smooth and free from buckle as he could have wished” (*ibid*). It subsequently turned out that Westwood and Wright had not subcontracted the casting of the columns to Mr Heywood of Derby as Wright had maintained (possibly James Haywood’s Phoenix Foundry; *Freebody’s Derby Directory*, 1852: 115), but had instead allowed Bennett and Co to cast the parts (LMA B/IMP/GLC/65: 11/11/1854). Two month later, Westwood and Wright were summoned to return to St Pancras in order to complete the columns “without unavoidable delay” (*ibid*: 17/01/1855).

## **5.8 The construction of Gasholder No. 8, 1855**

5.8.1 With demand for gas forecast to increase further in the northern districts of the capital during the winter of 1855/6, in January 1855 the Committee for Works instructed Methven to prepare plans and a specification for a new two-lift telescopic gasholder at St Pancras (*ibid*). The new holder was to be 145’ in diameter, 52’ high with a capacity of 840,000 cubic feet of gas (*ibid*). The holder would bring an additional capacity of 700,000 cubic feet, as it was intended to replace four existing 50’ holders (nos. 7, 8, 11 and 12) which had a combined capacity of 136,000 cubic feet (*ibid*). Less than a month later, Methven presented the Committee a draft specification that proposed that the new holder be 138’ in diameter, with a tank 26’ deep (*ibid*: 14/02/1855). In mid-February tenders for the construction of the tank were invited from John Jay, George Myers and five other contractors, while a week later an offer to make and erect the holder within a space of 14 weeks was received from Thomas Wright (*ibid*: 21/02/1855). The Committee resolved to accept Wright’s offer, although care was taken to add a penalty clause to the contract for non-completion within the specified timeframe (*ibid*). An offer by Wright to remove the four existing small gasholders on the site of the new holder for £120 was accepted at the same time.

5.8.2 At the end of February it was decided to award the contract for the construction of the new tank to John Willson, who had tendered to complete the works for £4,067 by the middle of June (*ibid*: 28/02/1855; LMA/4438/01/03/011, 31/03/1855). Willson’s contract specified that the cone of the tank was to measure 112’ in diameter at the base and 66’ in diameter at its apex, which was to be built to a height of 10’ below the coping of the tank wall (LMA/4438/01/03/011). As had been the case with the tank of holder No. 3, brickwork from the tanks of the four old holders was “to be allowed to remain undisturbed until the excavation shall have been completed” (*ibid*). The brickwork footings of the new tank were to be built in three double courses, respectively 45”, 40½” and 36” in thickness, while the lowest quarter of the tank walls were to be built to a thickness of 31½” (3½” bricks), the second quarter to 27” (3 bricks), the third to 22½” (2½ bricks) and the upper 6’6” of the wall 18” (2 bricks) thick (*ibid*). The tank was to have 16 brick piers, each measuring 4’9” by 6’ and terminating 10” short of the coping at the top of the wall, and each capped with a stone block 12” thick, to which cast iron plates and holding down bolts were to be attached. 16 stone blocks (each measuring 18” by 18” by 12”) were to be placed level with the coping of the tank at intervals equidistant from each of every two piers, the remaining surface of the brickwork to be laid with 3” York

stone coping, “worked and tooled to the circle of the tank, the points to be plugged with lead” (*ibid*).

- 5.8.3 Meanwhile Methven prepared drawings of the new gasholder which he submitted together with a final specification to the Committee for Works in mid-March (LMA B/IMP/GLC/65: 14/03/1855). The holder specification called for the lower lift of the new holder to be 136’6” in diameter, while the diameter of the upper lift was to be 134’8””: both lifts were to be 26’ high (*ibid*). After several weeks spent haggling over the price of the gasholder, Thomas Wright agreed on a price of £23 per ton for all the wrought iron work and £12 per ton for the cast iron (*ibid*: 13/06/1855).
- 5.8.4 In an apparent repetition of the problems encountered during the construction of the previous holder tank, Willson’s men ran into trouble in June when the brickwork of the tank walls began to buckle inwards (*ibid*: 27/06/1855). Although Methven assured the Committee of his confidence in the “permanent stability” of the structure, at the beginning of July the problems intensified when the wall of the tank sprang a leak (*ibid*: 04/07/1855). It was therefore decided to line the inside of the structure with cement where necessary, though this did little to arrest the problem of the bulging brickwork, which had buckled inwards in places by as much as 8” by the middle of July (*ibid*: 08/08/1855). Aware that should this ‘deformity’ be allowed to go unchecked it would not be possible to lower the upper lift into the tank, Thomas Wright proposed to alter the bottom curb of the holder, in order that 3” “might be saved in the width of the curb which would thus admit of the proper play of the gasholder” (*ibid*). Wright’s proposal also promised to save money, as it would be possible to make use of a curb “already made for other work” (*ibid*). Having received assurance from Methven that the tank walls had remained stable for the preceding three weeks, the committee resolved to accept Wright’s proposal.
- 5.8.5 Methven continued to monitor movement in the walls of the tank throughout August and was pleased to report that the brickwork “had not varied in the slightest degree” by the third week of the month (*ibid*: 22/08/1855). Meanwhile construction of the gasholder itself was also under way, and the Committee inspected the works on 15th August. By the latter date Wright’s men had almost completed the inner holder, while the column holders were reported as being fixed on their pedestals (*ibid*: 15/08/1855). In contrast to the succession of mishaps that dogged the construction of holder No. 3, the completion of holder No. 8 appears to have passed without further incident.

## **5.9 The removal of Gasholder No. 13, 1861**

- 5.9.1 This period saw the removal by Methven of the 50’ diameter holder No. 13 and its brick tank in 1861.

## **5.10 The construction of Gasholder No. 11 and the Agar Town Gasholder Station, 1861/2**

- 5.10.1 The completion of Gasholders Nos. 3 and 8 in the early 1850s, preceded by that of No. 9 the previous decade left very little room for further expansion of storage capacity at the Pancras



works. However as demand continued to rise inexorably, the Imperial already had a solution to the problem in the form of a plot of 5½ acres of land to the west of Wharf Road that had been owned by the company since the 1820s (Structural Perspectives, n.d. 17). Located to the south of Cambridge Street in the heart of Agar Town, the land was occupied by the tenements of Spann's Buildings, King's Place and York Place, all of which were subsequently cleared in the 1860s to make for the 'Siamese Triplet' gasholders and the railway tracks into the new St Pancras Station (Figure 7).

- 5.10.2 In July 1860 Methven submitted a proposal to the Committee for Works to build a huge single-lift holder measuring 220' in diameter and 50' deep on the Agar Town site. The holder would be larger than any others in the Imperial Company's service, which was reflected in the exceedingly high costs that Methven calculated for its completion. Having detected an error in his calculations and failed to take into account the existence of a right-of-way across the site, Methven subsequently submitted an alternative proposal to build a cluster of three holders with a combined storage capacity of 1,786,000 cubic feet, which could be built simultaneously without the need to close of the right-of-way (Structural Perspectives, n.d. 21). Methven proposed to build holders of 145', 134' and 105' in diameter, with tanks of 55' deep for the two larger holders and 50' for the smallest (*ibid*: 22). While the contract for the construction of the tanks was awarded to John Aird & Sons (the firm that had recently built large tanks at the Company's Shoreditch and Fulham works) without being put out to competitive tender, tenders for the supply and erection of the first of the three new holders were invited from John Mabon of Manchester and Westwood and Wright, the contract eventually being awarded to the former. Committed to completing the tank by the end of May 1861, Aird encountered similar problems during its construction to those that plagued the construction of the tank of Gasholder No. 3 seven years earlier, not least the heavy clay that made the dumpling at the centre of the tank unstable. The tank was finally completed in August, as were two sister tanks for future holders on the site. Despite the fact that shortages of trained manpower hampered construction of the new gasholder, Mabon had completed his contract by the end of November and the holder was ready to enter service in time for the peak demand period of winter 1861/2 (*ibid*: 25). The completed holder was shown standing in isolation at the Agar Town holder station on Edward Stanford's *Library Map of London and its Suburbs* of 1862 (Figure 8).

## **5.11 The construction of Gasholder No. 10 and preparations for winter 1864/5**

- 5.11.1 In mid-November 1863 the Committee for Works read a proposal from Methven to build "additional accommodation... for the purpose of turning over the peroxide purifying material" at St Pancras (LMA B/IMP/GLC/70: 11/11/1863). The proposed works, which entailed the erection of area of wooden flooring on iron columns on the north and west sides of the existing coke enclosure were approved at the same meeting (*ibid*). It is likely that this structure was built in the south-central area of the site, where the Coke Yard was depicted on the 1891 Goad plan (Figure 10).

5.11.2 The Engineer's annual 'Special Report' into additional works required in order to meet demand for the forthcoming winter of 1864/5 was read by the Committee for Works in January 1864 (*ibid*: 22/01/1864). In his report Methven proposed the following additional works at St Pancras:

- A new 131' diameter gasholder in existing tank No. 10 at the Agar Town holder station
- Three new gas governors
- New offices
- Extension of the smithy (*ibid*)

5.11.3 The proposed works were promptly approved by the Committee and Westwood and Wright was invited to tender for the fabrication and erection of the new gasholder (*ibid*: 04/02/1864). Construction of the holder took place over the spring and summer, and was witnessed by the writer Zerah Colburn when he was undertaking a survey of the London gas industry that was to be published the following year (Colburn 1865: 68). Gasholder No. 10 entered service during the second half of September 1864 (B/IMP/GLC/70: 21/09/1864). By which date the Imperial had acquired a reputation for constructing large gasholders, the largest being the 201' example at the Hackney Road holder station (Colburn 1865: 68).

5.11.4 In March 1864 a discussion by the Committee for Works regarding the proposed extension of the smithy, store room and clerk's office concluded that the smithy was to be extended and the temporary smithy demolished, thereby enabling much-needed office accommodation and a new Committee Room to be built, which in turn allowed the old Committee Room to be converted into a waiting room and plan office (*ibid*: 02/03/1864). A contract worth £600 for the construction of the new offices was awarded to Mansfield & Sons of Gray's Inn Road (*ibid*: 25/05/1864). The extended stores building and smithy can be seen close to the south-east corner of the gasworks site beside Battle Bridge Road on the 1891 Goad Fire Insurance plan (Figure 10).

## **5.12 The continuing enlargement of gas production and storage capacity at the Pancras Gasworks during the mid-1860s**

5.12.1 Although the Pancras works remained the largest in the capital until the end of the 1860s, by the middle of the decade the technology used at the plant, some of which remained unchanged from the early 1820s, was beginning to show its age. The incremental development of the works meant that the retort houses were built to slightly different designs, each reflecting the technology of the decade in which it had been conceived. Scheduled episodes of maintenance and repair allowed engineers to bring existing plant up-to-date; for example when the retort beds of No. 2 Retort House were being reset in July 1864 it was decided to replace the brick-built upper stage with a wrought iron stage supported by cast-iron girders, of a design similar to that used in No. 3 Retort House (*ibid*: 27/07/1864). Colburn noted that while many of the 600 or so retorts in use at St Pancras were set in beds of the industry-standard ten retorts per bench, other benches in the retort houses were set in beds

of six (Colburn, 1865: 9). In February 1867 the Committee for Works authorised the conversion of half of No. 4 Retort House from six to ten retorts per bed, together with the necessary alteration of pedestals, stages, beds, and the construction of ovens for £4,760 (LMA B/IMP/GLC/72: 06/02/1867).

- 5.12.2 When Zerah Colburn visited St Pancras in the second half of 1864 he observed that the Imperial was still using obsolete exhausters to pump gas around the works (Colburn 1865: 37). These early models were of the triple bell type, comprising “reciprocating pumps, a sheet iron cylinder open at the bottom, and having a flap valve opening upwards at the top, being made to work up and down, with its lower edge in water... enclosed in gas tight case” (*ibid*; Stewart 1957: 72). Although cheap, the exhausters used at Pancras were inefficient and tended to cause “objectionable fluctuations to the gas, causing the water gauge and the lights at the burners to oscillate violently” (Colburn 1865: 37-8). Most gas manufacturers in the capital, with the exception of the Equitable and the Great Central Consumers companies, used Beale’s patent exhausters, which were designed and manufactured by John Beale of East Greenwich. Each Beale’s patent exhauster comprised a small upright trunk engine attached to the same baseplate as “a stationary cylindrical case, with a horizontal axis, within which revolves a shaft, placed eccentrically with respect to the axis of the case, and carrying two flat plates or pistons adjusted to fit accurately to the internal surface of the case” (*ibid*: 39). A reference to the repair of a ‘circular exhauster’ built by Beale at the Pancras works in a minute of a meeting of the Committee for Works held in March 1864 indicates that at least one Beale’s patent exhauster was in use by that date (LMA B/IMP/GLC/70: 30/03/1864).
- 5.12.3 Although the gradual introduction of new technology at St Pancras was clearly welcome, the impact of decades of daily wear and tear upon the gas-making facilities at the works had begun to show by the mid-1860s. In mid-May 1865 the Engineer advised the Committee for Works that it was necessary to rebuild the retort beds of No. 1 Retort House, the existing ones having become unusable (LMA B/IMP/GLC/71: 17/05/1865). Two months later it was decided to replace the roof of the coal stores of No.1 Retort House altogether, using longitudinal girders upon which rails would be laid for coal wagons to discharge their contents (*ibid*: 05/07/1865).
- 5.12.4 While the Committee for Works was focused upon ensuring that the existing facilities at Pancras remained operable on a day-to-day basis, by the mid-1860s the senior officers of the Imperial were becoming concerned about the measures necessary to meet anticipated consumer demand for gas by the end of the decade. In early December 1864 the Secretary of the Imperial prepared a Special Report that considered the options available to the company to increase capacity sufficiently to meet demand six years hence (*ibid*: 05/12/1864). The report suggested that in order to accommodate a retort house of sufficient capacity at St Pancras it would be necessary to demolish gasholders Nos. 1, 2, 4 and 5 and the Engineer’s house at the works, thereby transforming the south-west corner of the site (*ibid*). Even this option was considered to be insufficient to meet the demand anticipated by the early 1870s, so the Secretary proposed building an entirely new gasworks at the eastern extremity of the

Imperial's district, preferably at a site earmarked for development at Old Ford, in addition to building a new retort house and gasholders at St Pancras and a new holder at Shoreditch (*ibid*).

5.12.5 As the decade progressed senior figures in the Imperial became increasingly preoccupied about the supply of gas to the eastern district. While the proposal to build a new works at Old Ford came to nothing, in summer 1866 the Engineer and Chief Inspector of the company inspected a hitherto undeveloped area of the West Ham Abbey Marsh, which they considered "very eligible" for the site of a new gasworks (LMA B/IMP/GLC/72: 08/09/1866). The presence of railway tracks on two sides and the River Lea on the third, not to mention the absence of neighbours, commended the site to members of the Committee for Works when they visited in early September that year (*ibid*: 123-4). Although construction of the Bromley-by-Bow gasworks did not commence until 1870, the leading lights of the company came to see the 160 acre site as offering the best opportunity to accommodate a works capable of manufacturing sufficient gas to meet the growing demands of the north-eastern suburbs of the capital.

5.12.6 As the attention of the senior officers of the Imperial turned eastwards, continued investment in new plant and facilities at St Pancras remained essential if consumer demand was to be met. While the proposal to build a new retort house in the south-west corner of the site was abandoned, in early February 1866 the Committee for Works approved a report prepared by the Engineer which called for the acquisition of one new large steam engine for the works and the construction of a new purifying materials store/shed, which was to be built on the site of one of the old gasholder tanks (LMA B/IMP/GLC/71: 02/02/1866). The latter may have been Gasholder No. 13/D', which had been replaced by a rectangular north-west to south-east aligned building shown on the First Edition Ordnance Survey map of 1871 (Figure 9). This structure (or one in the same location) was identified as the Exhauster House on the 1891 Goad plan; minutes of the Committee dated to February 1867 suggest that this structure was built after that date to accommodate new exhausters, so it is not altogether clear whether the purifying materials store was built the previous year (Figure 10). Another purifying materials store at the Pancras works had been given a roof a few months earlier (*ibid*: 25/10/1865).

5.12.7 Although the 1866 works were somewhat limited in extent, a much more ambitious programme of works was approved early the following year. In January 1867 Methven listed the plant that he considered necessary to acquire in order to meet the anticipated demand of winter 1867/8. Methven proposed that the following be provided at the Pancras works:

- One new Retort House, which would be created through the conversion of the long coal store
- New exhausters
- New purifiers (at a combined cost of £44,250)
- *Either*: telescope Gasholder No. 9
- *or* build a new gasholder and tank at the Agar Town holder station (LMA B/IMP/GLC/72:

16/01/1867)

5.12.8 Methven's scheme was considered by the Committee for Works, which voted to approve the following new works at Pancras at the beginning of February:

- the construction of a new Gasholder No. 12 at Agar Town at a cost of £16,000
- the purchase of two Beale's Patent Exhausters capable of exhausting 140,000 cubic feet of gas per hour, one boiler with valves, connections and settings at £2,500
- The construction of one half Retort House, with roof, pedestals and seven retort beds at £8,435
- The conversion of half of No. 4 Retort House from six to ten retorts per bed at £4,760 (LMA B/IMP/GLC/72: 06/02/1867).

5.12.9 The committee decided that cast iron goods for the work were to be supplied by the Staveley Iron Company of Chesterfield; wrought iron goods were to be provided by Westwood and Wright, while the contract for the construction of the tank for Gasholder No. 12 was awarded to John Aird for £12,687, the latter figure taking into account the need to remove substantial quantities of clay "surplus ground", and the cost of transporting it by barge to Bow (B/IMP/GLC/72: 02/02/1867, 06/02/1867, 13/02/1867).

5.12.10 Beale agreed to supply the exhausters and engines, together with a boiler 25' in length and 6'6" in diameter, plus installation and connection for a total of £2,041, the new exhausters were almost certainly installed in the Exhauster House, which had a 60' chimney and stood adjacent to Gasholder No. 8; the same building was shown for the first time on the 1871 First Edition Ordnance Survey map (B/IMP/GLC/72: 02/02/1867, Figures 9 & 10). In early November 1867 a fire broke out in the tar well behind the exhauster house, breaking windows in the adjacent engine house (LMA B/IMP/GLC/73: 14/11/1867). At the beginning of the following February John Clark (by then the permanent Engineer at the Pancras works) proposed that 'some small building' be erected over the "Engine and new Tar Pumps lately erected on the south side of the Exhauster House to communicate internally with the Exhauster House"; this work was approved for an outlay of £60 (*ibid*: 05/02/1868).

5.12.11 The third and final tank at the Agar Town holder station was completed by Aird's men ahead of schedule in late July 1867 (*ibid*: 13 (27/07/1867)). The new 'half Retort House' ordered appears to represent the sixth and final retort house completed at the Pancras works; it was built in the north-east corner of the site beside the Gasworks Basin and appears to have been formed by converting and extending the existing coal store in that location, as Methven had originally intended (Figure 10).

### **5.13 Construction of the Gasworks Bridge and Viaduct, 1867**

5.13.1 In late July 1867 Richard Johnson (Chief Engineer of the Great Northern at King's Cross) approached Joseph Clark (*de-facto* Engineer of the Pancras works since Methven resigned the post at the end of January) with a new proposal to build a bridge over the canal to

transport coals by rail to the gasworks (LMA B/IMP/GLC/72: 355 (26/07/1867)). This was not the first time that the Great Northern Railway had proposed to carry coal by rail to the St Pancras gasworks; as early as 1853 Seymour Clarke (General Manager of the Great Northern) informally tendered to supply 50,000 tons of coal to the works over a three year period (TNA RAIL 236/276/23: 16/08/1853). Both this and a second proposal made by Clarke the following April to build a railway bridge over the canal were declined by the Imperial (LMA B/IMP/GLC/64: 05/04/1854).

5.13.2 Johnson's proposals arose from an agreement between the Great Northern and Jonassohn and Elliott, owners of the Usworth Colliery near Sunderland, for the former to carry 100,000 tons of the latter's coal per annum from York to the St Pancras Gasworks (TNA RAIL 236/144: 246). At the beginning of July 1867 Johnson supplied Clark with a set of drawings of the railway bridge that the Great Northern proposed to build across the canal. Clark and his superiors were amenable to the scheme, so long as Jonassohn and Elliott were not granted exclusivity over the coal that the new line conveyed (LMA B/IMP/GLC/72: 360-1 (03/07/1867)). Soon afterwards the Board of the Great Northern awarded the contract to construct "a timber viaduct in the King's Cross Goods Depot and a wrought iron and timber bridge" over the Regent's Canal for £3,884 to Messrs W.H. Bracher and Son of 15 Great Ormond Street (TNA RAIL 236/170: 21, 28). The following month Johnson sought contracts for the construction of coal shoots at the south end of the viaduct, and in mid-September the Imperial and Great Northern jointly agreed to award the contract for this work to Bracher for £684 (LMA B/IMP/GLC/73: 34, 42 (04/09/1867, 18/09/1867)). These shoots allowed coal to be discharged from wagons on the overhead railway track into the coal bin below; a proposal to build a roof over the drops was approved by the Committee for Works in February 1868 (LMA B/IMP/GLC/73: 12/02/1868). At the end of September 1867 the Way and Works Committee of the Great Northern authorised the purchase of two weighing machines for the new bridge, the cost of which was met by the Imperial (TNA RAIL 236/170: 49). The structure housing the new coal shoots and coal bin was first depicted on the First Edition Ordnance survey map of 1871 and shown in greater detail on the 1891 Goad Fire Insurance plan (Figures 9 & 10).

5.13.3 In early November 1869 a fire broke out at the gasworks which spread to the southern section of the railway bridge, causing a certain amount of damage, the cost of which was met by the gas company (TNA RAIL 236/171: 46-7). The contract between the Great Northern and Johansson and Elliott was renewed at the end of 1871, and the quantity of coal carried across the viaduct continued to increase until it reached nearly 200,000 tons per annum later in the century (TNA RAIL 236/144: 270; TNA RAIL 783/112: Brooks to Grinling, 13/02/1904).

#### **5.14 Further improvements at the Pancras Gasworks in the late 1860s**

5.14.1 Shortly before negotiations concerning the Gasworks Viaduct began at the end of July 1867, the Committee for Works read a proposal to remove one of the last surviving 1820s 50' diameter gasholders at the Pancras works (LMA B/IMP/GLC/73: 8 (17/07/1867)). The Committee heard that after 40 years service the holder had "become worn out and useless for



five years past”, so it was proposed to sell it to Westwood and Wright, who offered to pay £34 to dismantle the holder and remove the scrap ironwork from the site (LMA B/IMP/GLC/73:11). Owing to the shortage of tar storage facilities at the works it was decided to retain the tank as a receptacle for tar extracted during the purification process (*ibid*). It is not clear whether a proposal read by the Committee in February 1868 to cover over an existing gasholder tank and convert it into a tar tank represents the same or another one of the original holder tanks at the works (*ibid*: 12/02/1868).

5.14.2 In mid-February 1868 the Committee for Works approved a Special Report that detailed the plant required in order to meet anticipated demand in winter 1868/9 (LMA B/IMP/GLC/73: 12/02/1868). The proposed works were extensive and represented a substantial investment in gas-manufacturing plant at the works, including the following:

- New Material and Revivifying House, £5,000
- New Liquor and Lime Water Tanks, £558
- New roof over rail hoppers [Gasworks Viaduct Coal Drops] and over coal stores of Nos. 2 and 4 Retort Houses, £640
- Build new gasholder and tank at Agar Town, £18,500
- Reset the west half of No. 4 Retort House in present position, £1,750
- Convert west half of No. 2 Retort House from six to ten in a bed; i.e. total of 22 additional retorts, £1,650
- General repairs to roofs (*ibid*)

5.14.3 The First Edition Ordnance Survey map of 1871 revealed the impact of the several improvement schemes carried out at the Pancras works during the preceding decade (Figure 9). All six retort houses were in operation, while the number of gasholders on the site had been reduced to seven, only one of which (Gasholder ‘A’) survived from the original twelve 1820s holders. The map was also the first to show the completed Agar Town gasholder station, although Gasholder No. 9 was enlarged between 1871-3 from the existing 120’ diameter holder to a 90’ tall two-lift structure with a three-tier guide frame designed by John Clark (Tucker & Bussell 2004a: 5).

## **5.15 Merger of the Chartered and Imperial Gas Light and Coke Companies, 1876**

5.15.1 Following several decades of fractious co-existence, London’s gas companies embarked upon a series of mergers in the 1870s that were to have a lasting effect upon the supply of gas in the capital. The initial catalyst for the mergers of the early 1870s was the completion of the Chartered Company’s vast gasworks at Beckton, with which the company’s smaller rivals found themselves simply unable to compete. In April 1870 the Chartered amalgamated with the City Gas Co, followed within the space of eight months by the Great Central Co. and the Victoria Docks Gas Co. (Everard 1949: 237-241). While the technologically advanced works at Beckton proved to be a success for the Chartered, the Imperial, which represented the

Chartered's principal competitor in the capital, was encumbered with a number of increasingly obsolescent works, in addition to the vastly expensive new works at Bromley-by-Bow. Since its inception at the end of the 1860s the Bromley gasworks had been dogged by problems; its design was obsolescent, its location was too remote from the Thames and by 1875 it had cost the company nearly £300,000 and yet was still nowhere near completion (*ibid*: 246).

5.15.2 When Parliament, abetted by the Corporation of London and the Metropolitan Board of Works moved to introduce a sliding scale of prices for gas consumers, which threatened to punish suppliers who raised prices by reducing the dividend to their shareholders, the Imperial was propelled into the awaiting arms of the Chartered (*ibid*: 247). The amalgamation of the two companies in March 1876 created the Gas Light and Coke Company (GLCC), the principal gas supplier in the northern half of the capital until nationalisation in 1948.

### **5.16 The consolidation of gas storage capacity at the Pancras Gasworks during the 1880s**

5.16.1 In February 1881 Westwood and Wright submitted a tender to the Directors of the GLCC for the purchase and removal of Gasholder No. 5 (also known as Gasholder 'C') and its supporting tripods for £230 (LMA B/GLCC/36/1: 11/02/1881). It is possible that the holder (date of construction unknown) or its tank had failed as the Board readily accepted the request. The outline of the south-western side of the holder was preserved in the wall of the purifier and materials house that abutted Gasholder No. 8 to the south, shown for the first time on the 1891 Goad Fire Insurance plan (Figure 10). This suggests that the latter structure was built at some point between the publication of the 1871 Ordnance Survey map and the removal of the holder in 1881.

5.16.2 A number of alterations were made to the station's purification facilities during the early 1880s, including the acquisition of three new purifiers from the Staveley Iron Company in mid-July 1881 and the purchase of a further two from the Thames Ironworks Company in September the following year (LMA B/GLCC/36/1: 15/07/1881; LMA B/GLCC/114: 25/08/1882, 01/09/1882). The Staveley Iron Company was also contracted to reconstruct two purifiers in January 1882, although it is not clear whether these were the ones purchased from the same manufacturer the previous year (*ibid*: 27/01/1882). The purification capacity of the works may have been further enlarged the following year, when the firm of Messrs Aird and Co. were awarded a contract "for executing the foundations of the new Purifiers" in June 1883 (LMA B/GLCC/114: 01/06/1883).

5.16.3 Although the locations of the new purifiers was not specified in the minutes of the Committee of Works of the GLCC, given that four of the five purifiers in the purifier house beside Wharf Road were in use by 1871, as were the early purifiers located between Retort Houses Nos. 1 and 2, it is possible that the 1881-3 purifiers were fitted either in the purifying house immediately to the west of former Gasholder No. 5 or in one that was shown on the site of the former holder on the 1891 Goad plan (Figure 10).

### **5.17 Removal and replacement of Gasholder No. 8, 1883**



- 5.17.1 As early as January 1868, John Clark had informed the Committee for Works that the tank of Gasholder No. 8 “had become so much out of truth... that it [was] no longer fit for work with safety”, a consequence he believed either of subsidence or “outward pressure” (LMA B/IMP/GLC/73: 137). In January 1883 Clark proposed that holder No. 8 be removed altogether, either to be replaced by a new holder or the site to be put to an alternative use (LMA/B/GLCC/114: 19/01/1883). Clark recommended that the task be entrusted to Westwood and Wright, who were to be instructed to carry out the work as day work, on account of “the nature of the ground and the dangerous proximity of the other holders” (*ibid*). Clark advocated that the troublesome old holder be replaced by a new and larger holder, plans for which he presented to the Committee of Works of the GLCC in mid-April (*ibid*). Clark proposed to increase the depth of No. 8 tank by 2’, in order to accommodate a new 3-lift holder, each stage of which was to be 28’ high (*ibid*). Clark recommended that Messrs Aird and Co, who had recently awarded the contract to build the tanks for two new holders at Horseferry Road, be asked to tender to complete the works for a fixed fee (*ibid*). The Directors of the GLCC approved Clark’s suggestion, and an invitation was extended to Aird to tender for the works (LMA B/GLCC/36/1 and 2: 387).
- 5.17.2 Aird’s offer to complete the necessary works for a fixed sum of £1,700 was accepted at a meeting of the Committee of Works held a week later, at which it was decided to proceed with Clark’s scheme for a new 3-lift telescopic gasholder (LMA/B/GLCC/114: 20/04/1883). The Committee agreed to award the contract for the construction of the new gasholder to Westwood and Wright, who undertook to complete the works for a net price of £10,932, after taking into account credit for materials from the old holder to the value of £1,318 (*ibid*; LMA B/GLCC/36/1and 2: 391-2). The Committee considered that it had negotiated a good deal for the company, noting that the price of the works was almost the same as that agreed with Westwood and Wright ten years earlier for the construction of No. 9 holder, which was slightly smaller than the new holder (LMA/B/GLCC/114: 20/04/1883).
- 5.17.3 Aird’s men appear to have begun work deepening the tank shortly after the contract for the work was awarded in late April. Construction was well underway at the beginning of June, when Aird bid successfully for the erection of foundations for two new purifiers at the Pancras works (LMA B/GLCC/36/1and2: 410). Work on the tank had evidently been completed by the end of the first week of July, when the Directors approved payment of a bill to Aird for unspecified ‘extras’ incurred during the construction of the tank (LMA/B/GLCC/114: 06/07/1883).
- 5.17.4 The next reference in the minutes of the Works and Products Committee of the GLCC to holder No.8 appeared towards the end of October 1883, when Clark reported that it had been completed by Westwood and Wright within the specified timeframe, and that “as far as he was able to judge, it was working satisfactorily” (LMA B/GLCC/115: 26/10/1883).

## **5.18 The last years of the GLCC Pancras Gasworks**

- 5.18.1 The Goad Fire Insurance plan of February 1891 showed the Pancras works in its ultimate

form, a few years before it was closed. No differences in the layout of the works can be discerned between the Goad plan and the Second Edition Ordnance Survey map, which was revised in 1895 (Figures 10 & 11). By the end of the 1880s the Beckton works dominated gas production north of the Thames, and even the troubled works at Bromley-by-Bow had overcome its early problems since the opening of Beckton pier in 1880 (*Coke & Gas*, 1955: 338). As the GLCC concentrated upon the giant gasworks in the east, the volume of coal carried by the Great Northern to the Pancras works declined, falling from 200,000 tons per annum to an average of approximately 60,000 tons at the end of the century (TNA RAIL 783/110: 16/02/1904). Between 1901 and 1902 the tonnage of coal from northern collieries carried across the Gasworks Viaduct more than halved, halving again the following year to a meagre total of just over 15,000 tons (*ibid*).

5.18.2 In 1903 the GLCC decided to overhaul the coal handling facilities at the Bromley-by-Bow works in order to allow the barges that brought coal to the works from Beckton pier to carry larger loads (*Coke & Gas* 1955: 339). As the capacity of the Beckton and Bromley works continued to expand, the company launched an assessment of the viability of continuing gas production at St Pancras towards the end of May 1903 (LMA B/GLCC/126: 28/05/1903). Having decided against reconstructing the works “on modern principles”, in December of that year, the Directors decided to close the works “as an experiment” at the end of the following January and to transfer gas production to Beckton (LMA B/GLCC/126: 18/12/1903; TNA RAIL 783/110: Grinling to Bury, 22/01/1904). Notice of the imminent closure was given to the workforce in early January, with production ceasing during the first week of February (LMA B/GLCC/126: 04/02/1904).

5.18.3 Although gas production had ceased at St Pancras at the end of January 1904, the future of the works still remained uncertain the following year and the gas company continued to retain a skeleton workforce of 65 men at the site for the time being (LMA B/GLCC/126: 04/02/1904). In August 1906 staff of the Great Northern at King’s Cross claimed to have witnessed gas company contractors stripping the retort houses at the gasworks of plant and equipment, which was reportedly shipped by barge to Homerton (TNA RAIL 783/112: Grinling to Proud, 14/08/1906). A reference by Stewart to gas production starting again in 1907 does not appear to be substantiated by the minutes of the GLCC Works and Products Committee, although discussion did take place that year regarding the removal of fittings from the retort houses (Stewart, 1957: 72; LMA B/GLCC/128: 06/07/1907).

5.18.4 No decision regarding the ultimate fate of the works appears to have been settled much prior to January 1908, when Alexander Ross (Great Northern Engineer) identified three ‘distinct advantages’ that would accrue to the railway company were it to acquire the site (TNA RAIL 783/110: Ross to Brickwell, 27/01/1908). These included the opportunity to dispense with the Gasworks Viaduct and the approach to it through the Goods Yard; to dismantle the Congreve Street Bridge and to close and demolish the Battle Bridge Road Bridge, each of which was considered to be in urgent need of repair (*ibid*). Ross envisaged that once cleared of the remaining plant and machinery, the site could be used to accommodate either a further set of

- coal drops or an additional carriage shed, the latter of which would be reached via a new tunnel that would pass under the canal east of the No.1 Goods Office (*ibid*: Ross to Brickwell, 25/07/1910).
- 5.18.5 In early December 1909 the Supervisor of the GLCC Product Works requested that two disused scrubbers be removed from the Pancras works and shipped to him at Beckton for reuse (LMA B/GLCC/129: 02/12/1909). Shortly over a month later the Works and Products Committee approved a proposal to remove half the retort settings from No.1 Retort House, “with a view to giving more room for the manufacture of base stones for stoves” (*ibid*: 13/01/1910). It is not clear what came of the proposal to make base stones at the works, however six weeks later the committee agreed to a proposal to demolish the remaining eight retort settings in the retort house (*ibid*: 24/02/1910).
- 5.18.6 In July 1910 David Milne-Watson, General Manager of the GLCC, finally confirmed that the company was prepared to sell 5½ acres of the gasworks site to the Great Northern, whilst retaining Gasholder Nos. 1, 3, 8 and 9 as a standalone holder station (TNA RAIL 783/110: Milne-Watson to Bury, 20/07/1910). The GLCC was prepared to accept as little as £55,000 for the site, provided that the Great Northern paid for the removal of the mains and the erection of a 10’ brick boundary wall around the western perimeter of the site, which would serve as the boundary wall for the holder station (*ibid*: Brickwell to BoD, 20/10/1910; 01/11/1911).
- 5.18.7 The pace at which the Pancras works was dismantled accelerated in the autumn of 1910, when a number of contracts were awarded for the removal of plant and machinery. At the beginning of November an offer of £435 submitted by Samuel Isaacs & Sons, scrap metal merchants of Phoenix Iron Wharves, Bankside for the purchase of old ironwork was accepted, while two week later the Bryan Donkin Co. Ltd of Chesterfield (Gas Engineers) was awarded a contract to remove an engine and two exhausters (LMA B/GLCC/129: 03/11/1910, 17/11/1910; *Post Office Directory* 1910: 1594, 1653). The gas meter manufacturers Parkinson & Cowan agreed to remove 100,000 cubic feet of station meter from Pancras to Shoreditch, and to purchase 150,000 cubic feet of meter from the works for a total of £500, while Westwood and Wright returned to Pancras in January 1911 to dismantle an oil gas settling tank at the works and re-erect it at the Kensal Green holder station (LMA B/GLCC/129: 02/12/1910, 29/12/1910). The same month a tender submitted by Westwood and Wright to transfer nine purifiers from Pancras to Beckton was accepted, although it was subsequently decided to send the purifiers to Colchester, Bow Common and Kensal Green (LMA B/GLCC/130: 26/01/1911, 09/02/1911, 23/02/1911).
- 5.18.8 Internal correspondence of the Great Northern indicates that the site was in the possession of the railway company by April 1911, while the holder station wall had been built by the beginning of November. At the beginning of 1912 Messrs. T.C. Jones of Shepherd’s Bush agreed to clear the site of building materials and reduce the brickwork to ground level, while it was envisaged that the remaining ironwork would be cleared by the autumn (TNA RAIL 783/110: Brickwell to Bury, 18/03/1912).

## **5.19 The construction of Goods Way and the Great Northern Stables, 1913-1921**

- 5.19.1 The acquisition of the disused gasworks presented the Great Northern with an opportunity to create an entirely new road route that would improve access to the Goods Yard from both Pancras Road and York Road. Ross' proposals for a new tunnel and carriage shed were shelved, and an application was made to Parliament to seek powers to build the new road instead. Authorisation to build the proposed road (to be named Goods Way) was granted by the Great Northern Act of 1913 (TNA RAIL 1189/1423; TNA RAIL 1189/1428, Brickwell to Directors, 31/10/1917).
- 5.19.2 It was proposed to construct Goods Way between York Road and Pancras Road along the south bank of the canal, which would necessitate closing and infilling the Gasworks Basin and infilling the canal lay-by and building new retaining walls to the north of the existing alignment (TNA RAIL 1189/1423/3). The road would then cross the canal via a new bridge, replacing both the awkward approach to Somers Bridge and the bridge itself.
- 5.19.3 When plans were first drawn up for the construction of the new road, the Great Northern was reasonably confident that ownership of the gasworks granted it rights and title to all the lands previously occupied by the GLCC. This confidence appears to have been somewhat misplaced and negotiations with the canal company rapidly descended into stalemate by 1914. At issue was the ownership of the lay-by on the south bank of the canal, though the impasse was further exacerbated by the obduracy of the RDC Company Secretary Mr E. Clarkson, with the result that several years of negotiations ensued. By the time that an agreement seemed to be within reach, the independent canals had been taken under *de facto* state control in the interests of the war effort and had become subject to a virtual moratorium on new capital expenditure imposed by the Board of Transport (TNA RAIL 1112/51: 30/06/1917).
- 5.19.4 Despite these obstacles the Great Northern did manage to complete a number of necessary works on the south bank of the canal before the First World War ended. The Great Northern Way and Works Committee authorised infilling of the entrance to the Gasworks Basin approved by the end of June 1915, while the new stables on the site of the gasworks had been completed by January 1917. These stables were subsequently extended (and probably originally built) by Cottinghams Ltd (TNA RAIL 1189/1429: GNR Police Dept Report, 11/07/1918). By July 1918 the stable block was occupied by J & L Davies (Coal Merchants) and Beatties & Co (Coal Contractors).
- 5.19.5 The contract for the construction of Goods Way was awarded to Sir Robert McAlpine & Son, and it was reported that preparatory work had commenced by late July 1919 (TNA RAIL 1189/1427: 24/07/1919). By November 1919 negotiations regarding the course of the road in the vicinity of the Cambridge Street Coal Drops were still in progress, while plans to embed a 24" gas main within the south carriageway of the new road between the gasholder station on Wharf Road and the mains in York Road were only approved in December (TNA RAIL 1189/1432: Lacey to Brown, 19/12/1919). Contractors working for Sir John Mowlem & Co. were instructed to level the old gasworks site in advance of the construction of the new road

in December 1919, though they do not appear to have started work until the following month (TNA RAIL 1189/1429: Edwards to Brickwell, 31/08/1920).

- 5.19.6 A Goad Insurance plan of the King's Cross Goods Yard dated January 1921 indicates that while the new concrete road bridge had been erected and the Gasworks Viaduct dismantled by that date, Somers Bridge still remained. The reinforced concrete bridge had been built on site by McAlpine and was slid into position once it was complete (Sabel, Bussell & Tucker, 2004: 2-3). The new road had been completed by April 1921, when the Borough Engineer of St Pancras certified that it had been finished to his satisfaction (TNA RAIL 1189/1425: Brickwell 14/04/1921).

## **5.20 Stables, Garages, Piggery and Parking c.1922-c.1955**

- 5.20.1 The 1921 Goad plan showed that the Great Northern retained a number of former gasworks buildings in the southern and south-eastern area of the site (Figure 12). Structures retained included a store and smithy building shown on the 1891 Goad, which seem to have retained their original functions thirty years later. The former office building at the west end of Congreve Street had been converted into a stores building and possible drawing office, Congreve Street and bridge having long since been removed. These buildings and the Great Northern stables framed an open yard area, which was utilised by the Cartage Department of the railway company.
- 5.20.2 Shortly after the railway companies were 'grouped' into four large regional concerns in 1923, the London and North Eastern Railway (LNER) set about identifying areas where duplicated or excessive expenditure could be reduced. Cutting the size of the cartage departments of its constituent companies presented a significant opportunity to make savings. An investigation conducted by the Chief General Manager in the autumn of 1923 found that the company had inherited nearly 2,500 cartage horses in London, compared with a motor vehicle fleet of only 22 trucks (TNA RAIL 390/58: Minute 165, 04/10/1923). Over the years that followed the company gradually reduced the horse stock in the capital, replacing them with *ad hoc* purchases of motor vehicles of various types.
- 5.20.3 By the autumn of 1928 it had become apparent that facilities for the repair and maintenance of motor vehicles in the Southern Area of the LNER network were "quite inadequate" to meet the needs of the company's still expanding vehicle fleet (TNA RAIL 390/704: Gresley Report to Southern Area Cartage Committee, 23/10/1928). That November proposals were approved to build a covered repair garage and workshop at King's Cross Goods, however the following year it became necessary to defer the scheme "in view of the urgent need for economy" (*ibid*: Works Committee, 03/02/1929). By the end of 1933 however the number of motor vehicles in the fleet at King's Cross Goods had risen to 200, prompting Nigel Gresley (Chief Mechanical Engineer of the LNER) to revisit earlier plans to establish garage facilities at King's Cross (*ibid*: Memo to Locomotive Committee, 07/12/1933). Although the site of the old gasworks was originally earmarked for the new garage, it was decided instead to build the new facilities on the infilled Granary Basin, which had been recently paved for use as a car park (TNA RAIL 390/71, Minutes 2692 and 2704: 27/07/1933 and 28/09/1933). The gasworks site continued to



be used for stabling, vehicle maintenance and for parking during the 1930s, the southern end of the stable block having been converted into a 'Motor Sundries' store (Hunter & Thorne, 1990: 150-1). A Goad fire insurance plan of 1942 indicates that a piggery was built on the northern part of the site, presumably as part of campaign to breed pigs in urban areas following the introduction of rationing at the beginning of the Second World War (Figure 13).

## 5.21 The Motor Maintenance Depot, c.1955-c.1990

5.21.1 An Ordnance Survey map surveyed eight years after the end of the war described the piggery as a ruin, further suggesting that it was a wartime expediency (Figure 14). By this date the former gasworks offices in the south-eastern corner of the site had been demolished, while a new structure had been built at the northern end of the old Great Northern stable block. While the site of the former gasworks remained largely undeveloped at this time, an aerial photograph (not illustrated) taken four years later revealed that a substantial structure was erected on the site in the mid-1950s. The new development was described simply as a 'depot' on an Ordnance Survey map of 1965, and comprised a large north-south aligned rectangular building on the eastern side of the site, its eastern gable end overlooking the railway lines into King's Cross across a substantial landscaped embankment (Figure 15). Both the aerial photograph and the Ordnance Survey map indicate that the western elevation of this building faced a long platform across a narrow roadway; this structure appears to have been a platform or ramp for loading or unloading. The development was described as a Motor Maintenance Depot in an inventory of the railway lands compiled by English Heritage in 1988; the main shed built of steel and concrete and containing workshops (*ibid*: 152). It is likely that this facility was operated by British Rail, which retained ownership of the site.

### ENDNOTES

<sup>1</sup> Confirmation that the works initially had six gasholders is provided by a reference in Directors' minutes to a report dated 7th March 1827, which reported that the second group of six gasholders (first proposed on 25th March 1825) had been completed, bringing the total number of holders at the Pancras works to twelve (LMA B/IMP/GLC/3; LMA B/IMP/GLC/4)

<sup>2</sup> Confirmation that there was initially only one retort house at the Pancras works is given by board minutes dated 25th March 1825 (LMA B/IMP/GLC 3) and 7th March 1827 (LMA B/IMP/GLC/4)

<sup>3</sup> Francis Edwards (1784-1857) of Southwark was architect of the Church of St John the Baptist, Hoxton (1824) and Goding's Lion Brewery, Belvedere Road, Lambeth (1836) (Roberts & Godfrey, 1951: 51-4; RIBA British Architectural Library Catalogue, online at: [http://riba.sirsidynix.net.uk/uhtbin/cgiisirs/Lmz8CaHpft/MAIN\\_CAT/247540070/2/13](http://riba.sirsidynix.net.uk/uhtbin/cgiisirs/Lmz8CaHpft/MAIN_CAT/247540070/2/13))

<sup>4</sup> The Pancras works remained the largest in the capital until the Beckton gasworks was built by the Gas Light and Coke Company in 1869 (Stewart 1957: 72).

<sup>5</sup> George Myers, building contractors of Ordnance Wharf, Belvedere Road, Lambeth.

<sup>6</sup> Westwood and Wright of the Hope Foundry, Brierley Hill, Staffordshire and Queen's Cross, Dudley, Worcestershire, were the leading suppliers of cast iron gasholders, tripods and frames for much of the second half of the 19<sup>th</sup> century.

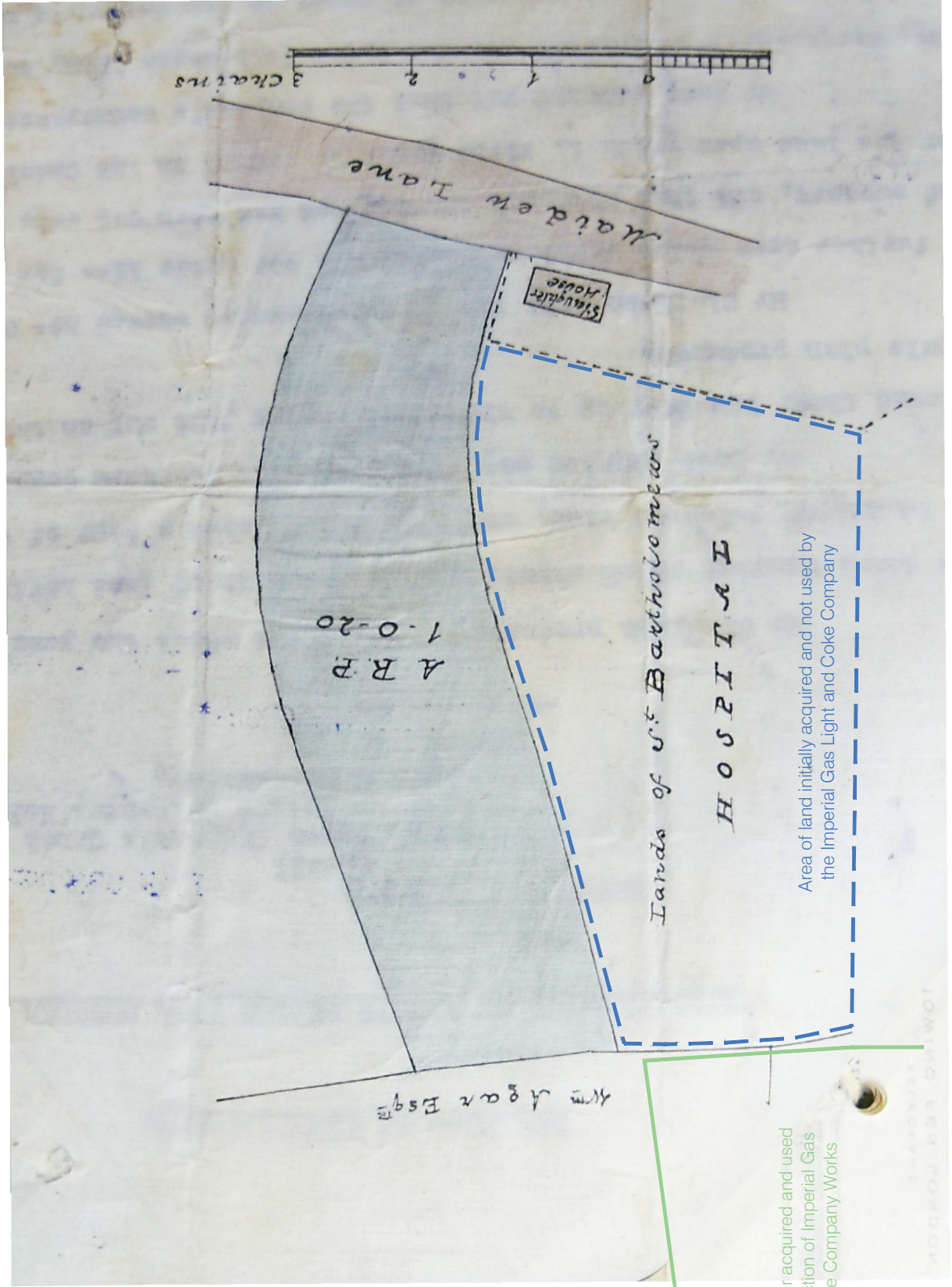
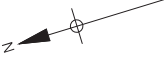
<sup>8</sup> In October 1852 the Pancras works had a storage capacity of 1,353,000 cubic feet of gas, compared with 656,000 cubic feet at the Shoreditch works and 681,000 cubic feet at Fulham (LMA B/IMP GLC/63: 30/10/1852).

<sup>9</sup> David Methven was appointed Assistant Engineer at St Pancras in March 1852 (LMA B/IMP GLC/63: 24/03/1852). Prior to this appointment he had worked at Coventry Gasworks, before being appointed Superintendent of the Commercial Gas Light and Coke Company, from which he was compelled to resign in 1850 owing to his association with Alexander Croll of the Great Central Company, a rival concern of the Commercial Company (Francis 2010: 43).

<sup>10</sup> Kirkham resigned on 24<sup>th</sup> November 1852, following the discovery a week earlier that the quantity of gas stored in the

holders at Pancras had fallen to as little as 30,000 cubic feet owing to a “temporary stoppage of the flues of the Iron Retort House” (LMA B/IMP GLC/63: 17/11/1852).

<sup>11</sup> It appears that Retort House No. 1, the northernmost of the 1820s retort houses was the ‘Iron Retort House’ referred to here, so-named presumably as a consequence of the use of cast iron (as opposed to clay) retorts. No. 1 Retort House also had an iron roof (see above), which was repaired in 1853 by William Stirling of Stratford for £211 (LMA B/IMP/GLC/63: 22/06/1853).

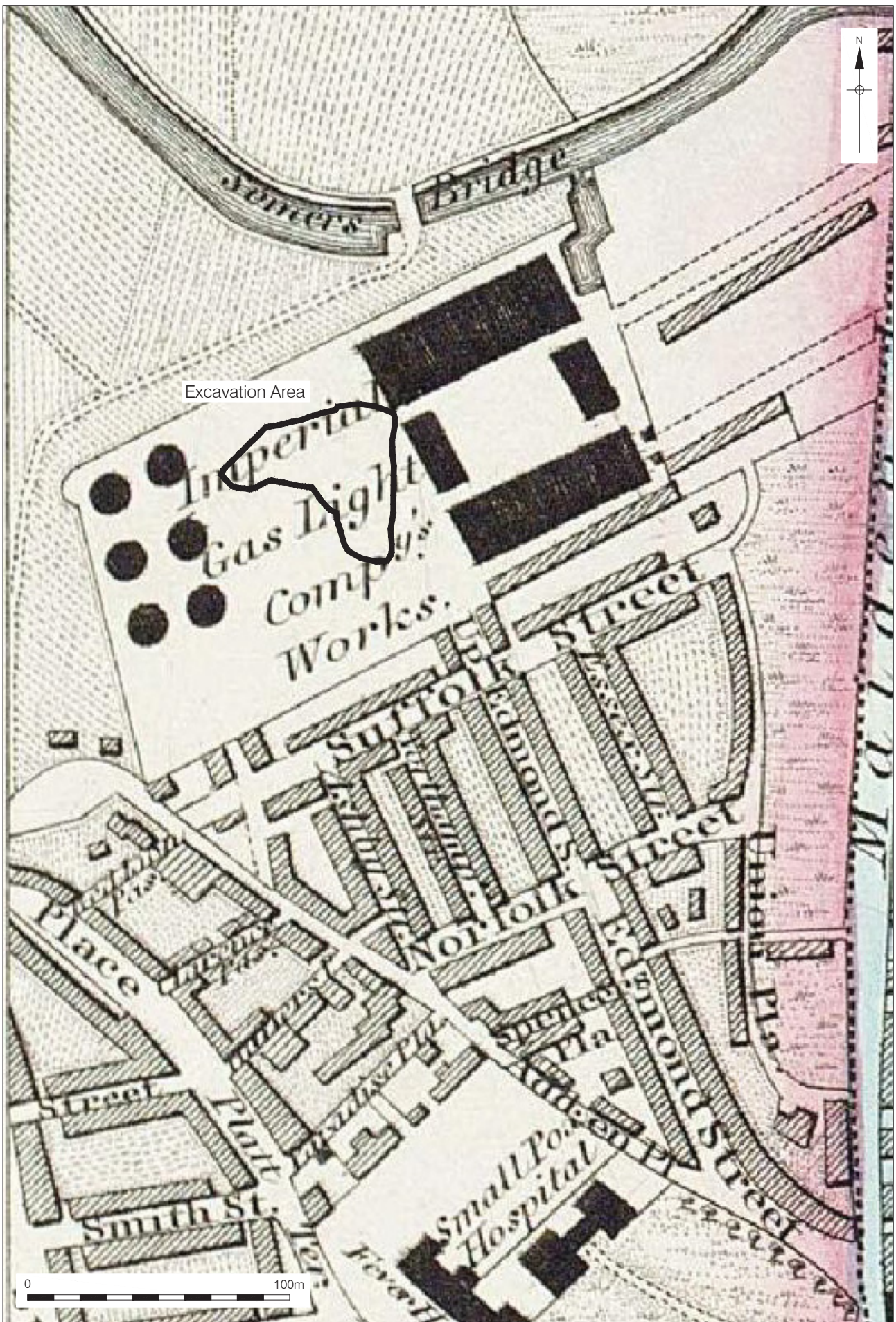


Area of land later acquired and used for the construction of Imperial Gas Light and Coke Company Works



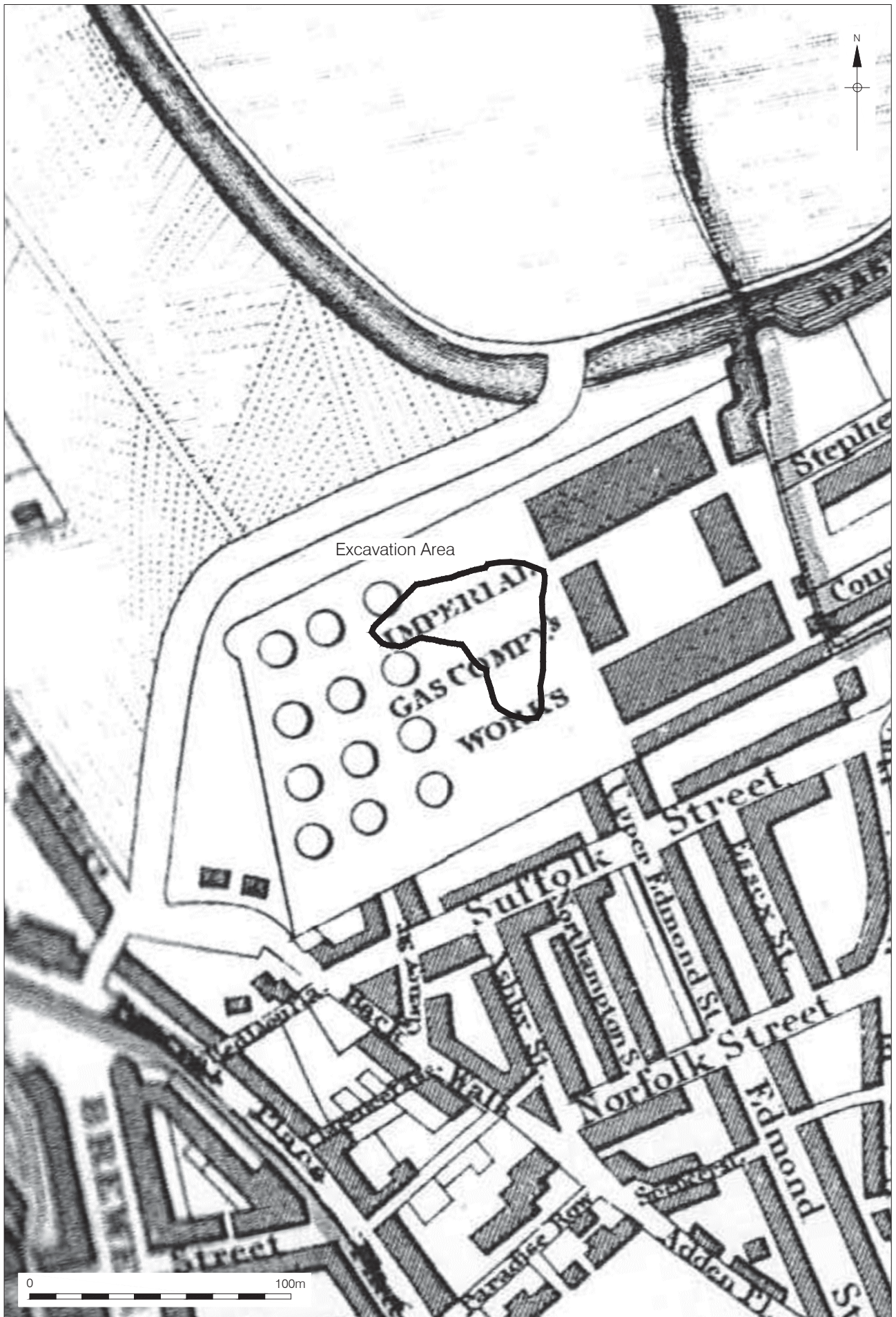
Figure 3  
Land conveyed by the Governors of St. Bartholomew's Hospital to the Imperial Gas Light and Coke Company, 1823  
Approx. 1:1,000 at A4





Excavation Area

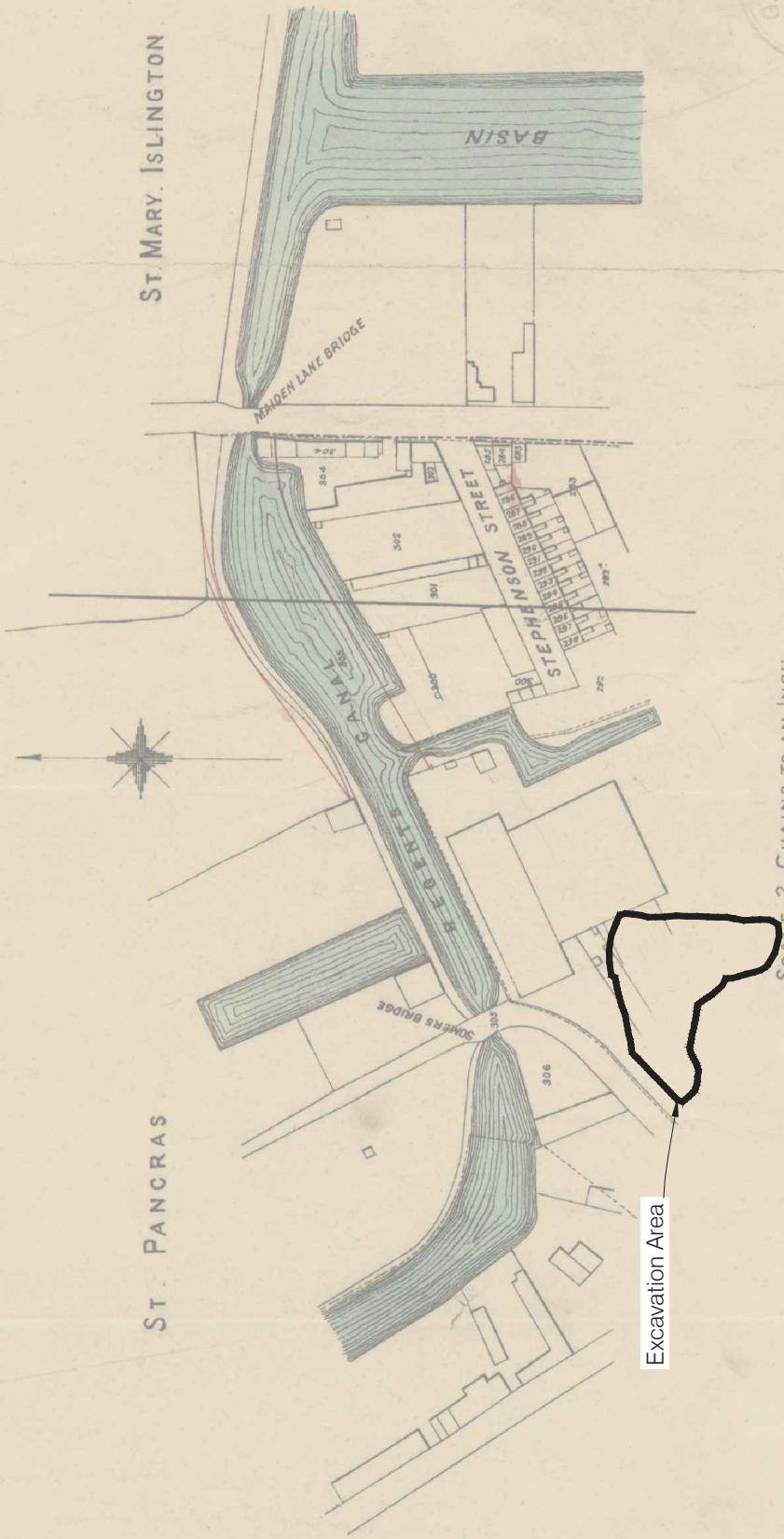






# GREAT NORTHERN RAILWAY

EXTRACT FROM DEPOSITED PLAN FOR SESSION, 1846



G. N. R.  
SURVEYORS  
DEPARTMENT  
1820. 14

SCALE 2 CHAINS TO AN INCH

Excavation Area

Figure 6  
Great Northern Railway Bill, Parliamentary Session plan, 1846  
Approx. 1:2,500 at A4



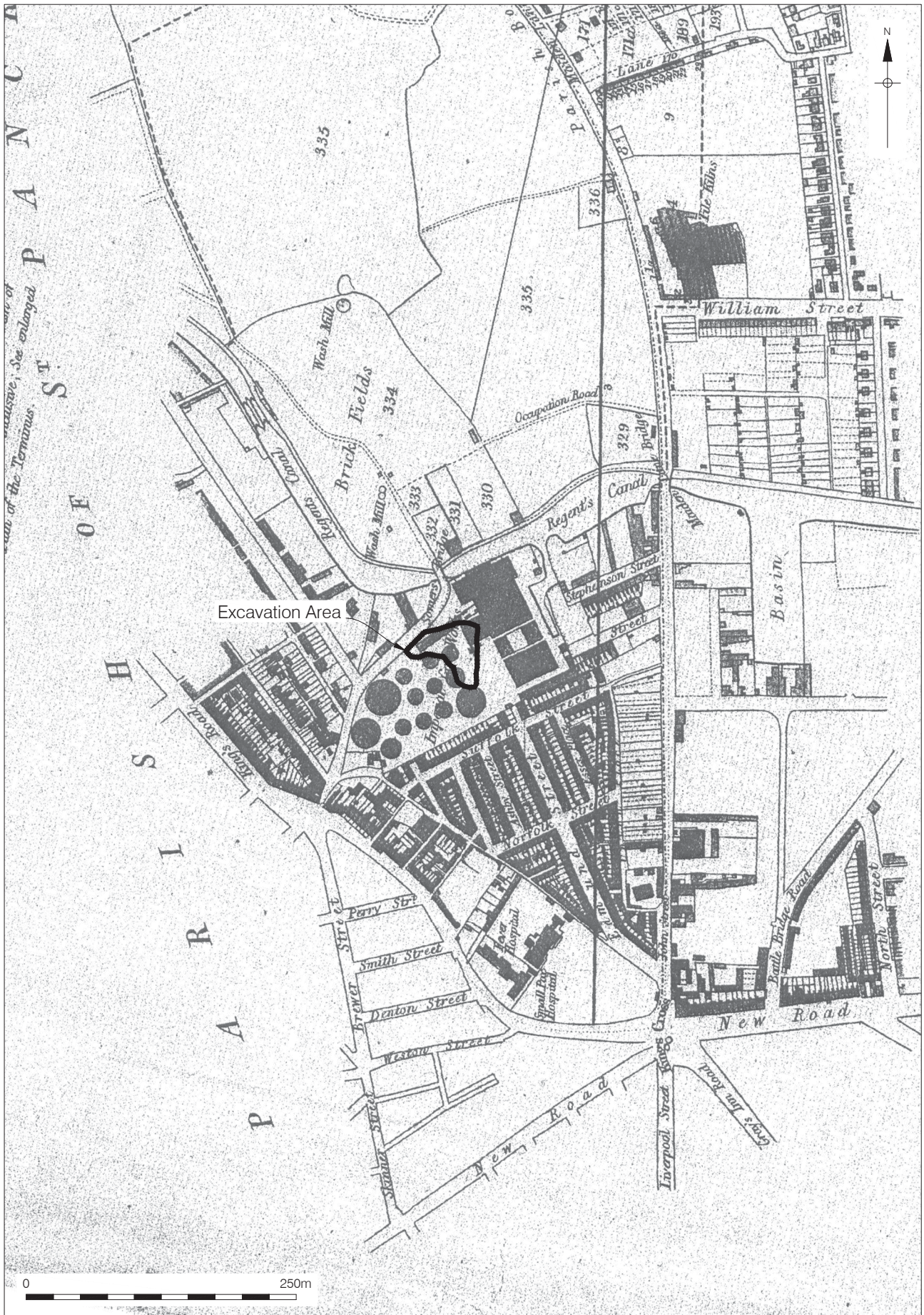
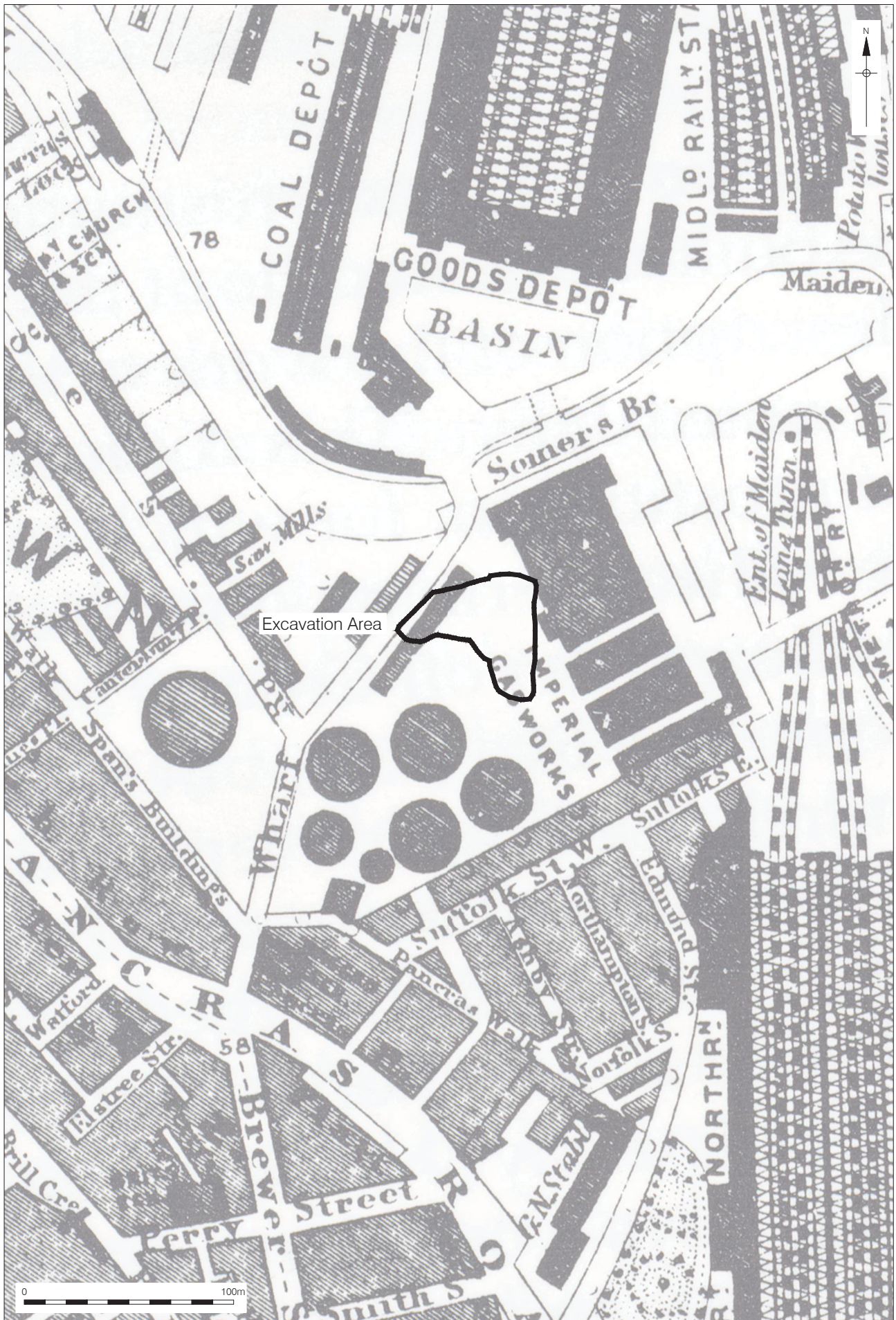
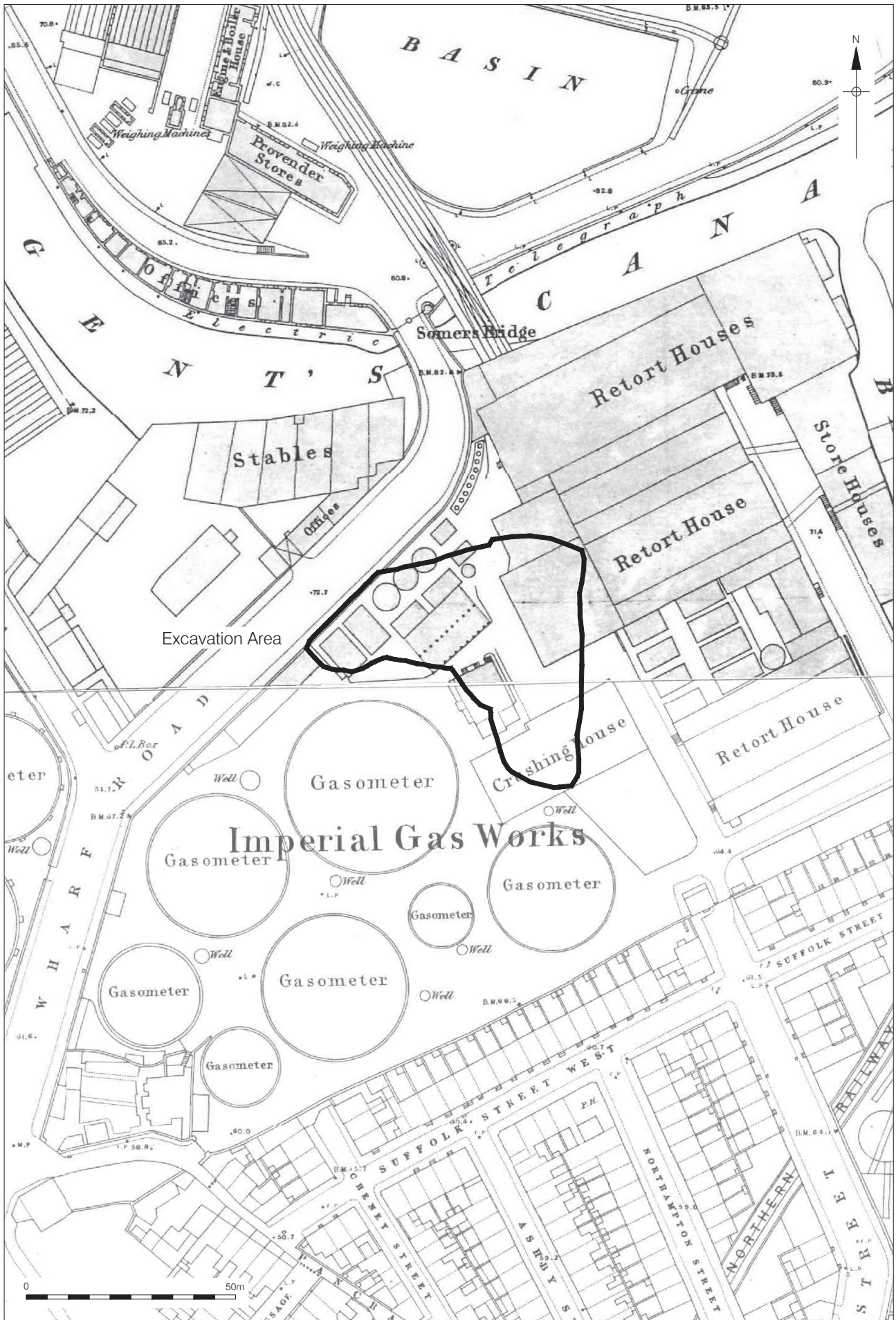


Figure 7  
Great Northern Railway Bill, Parliamentary Session Plan, 1849  
1:5,000 at A4

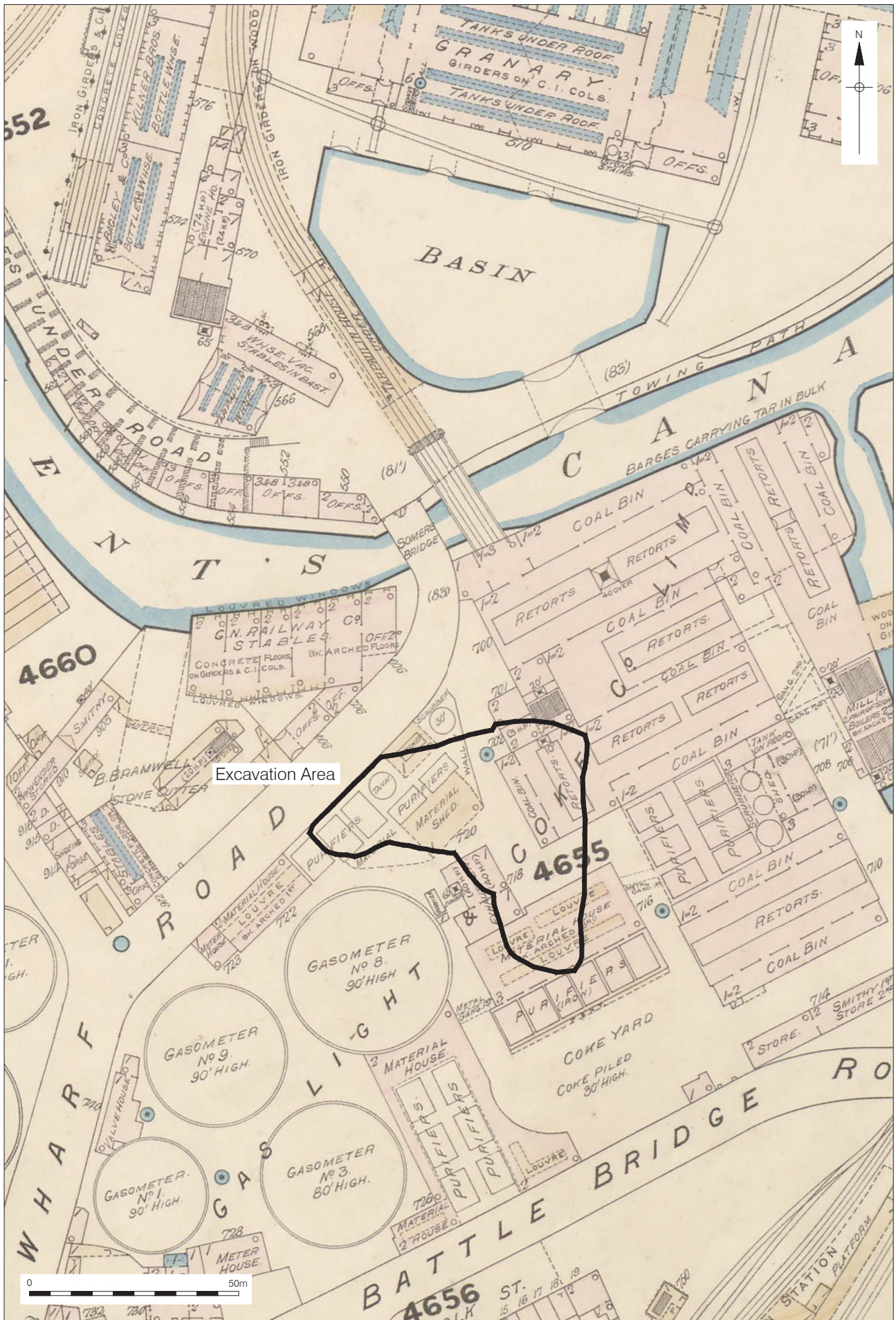




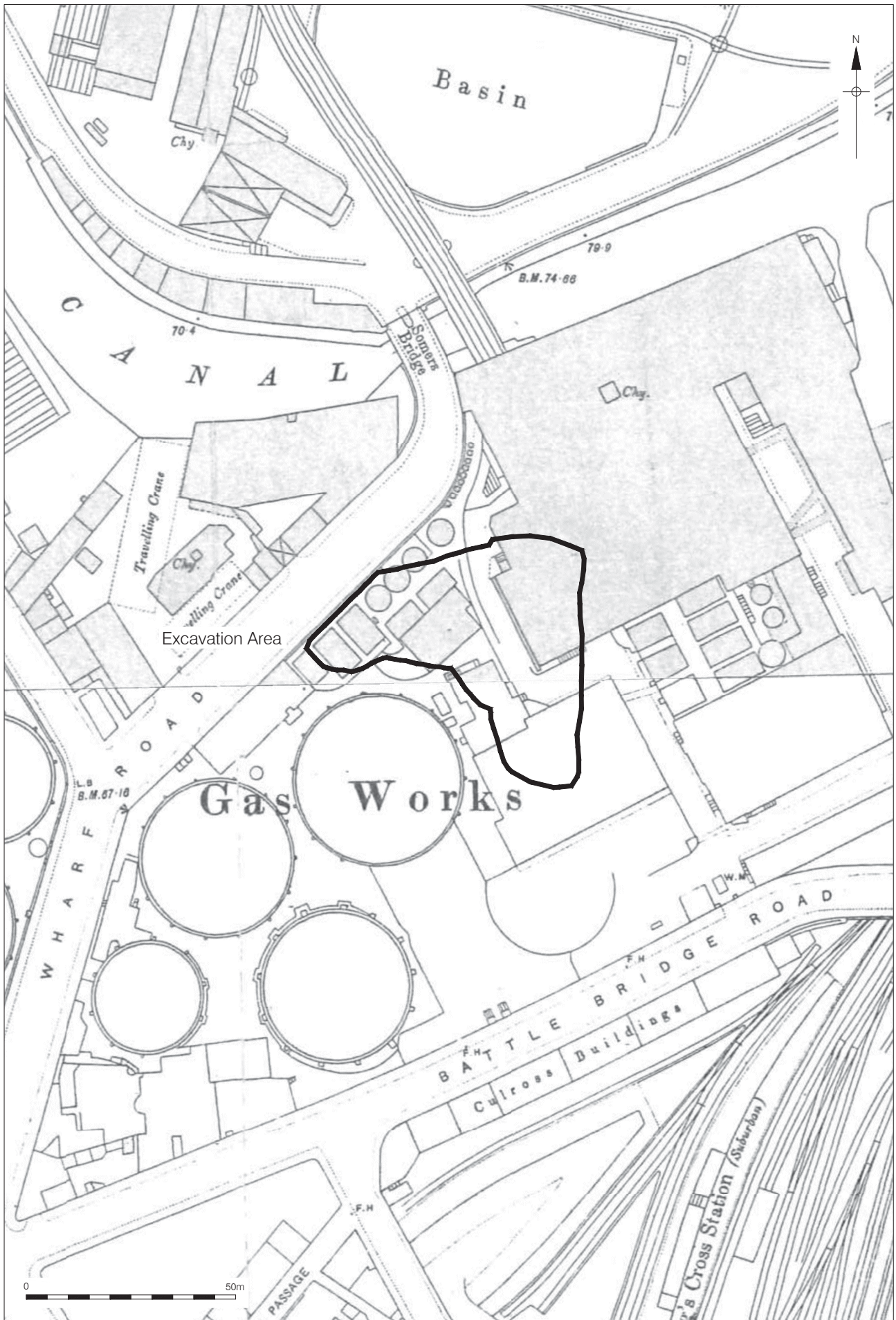




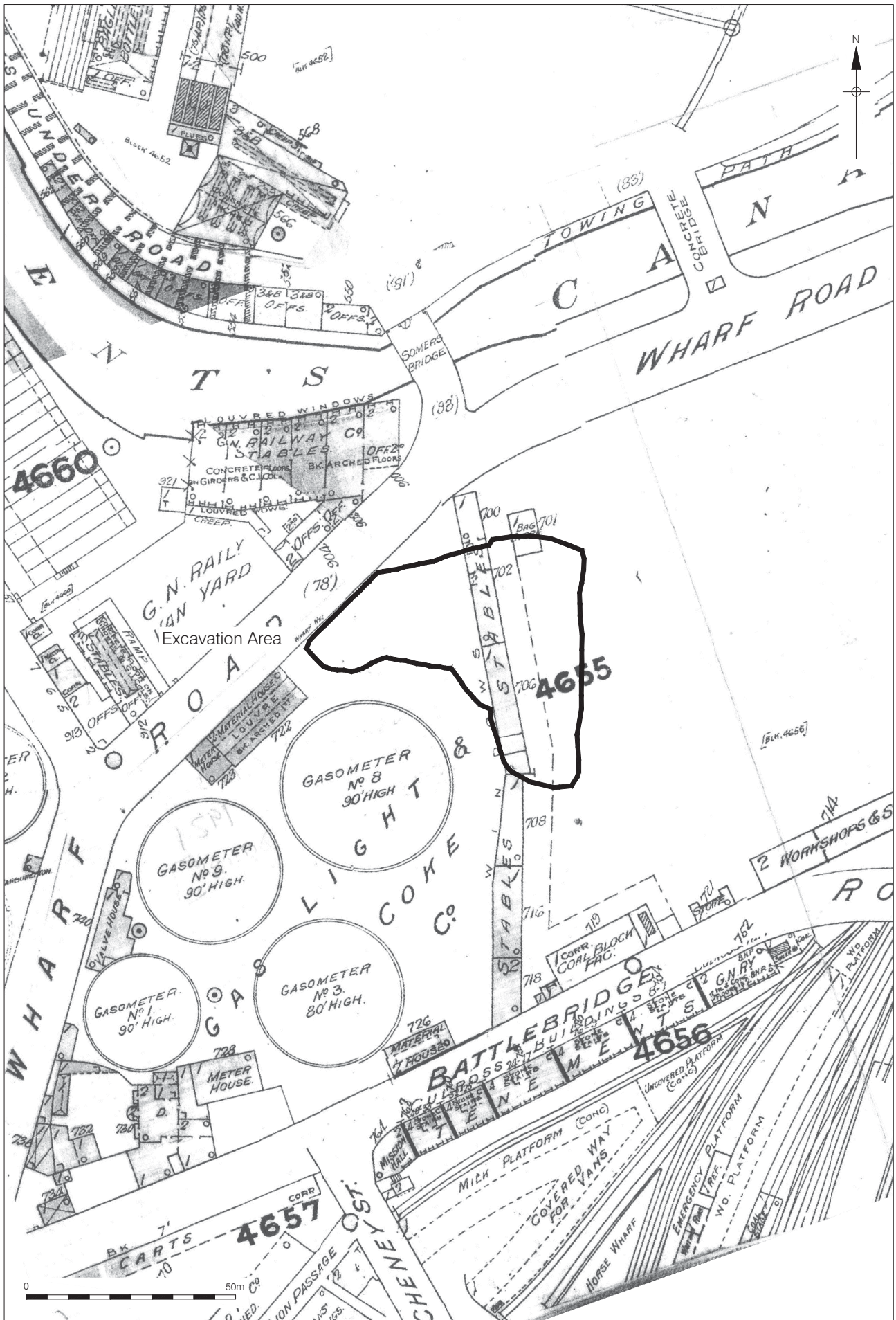




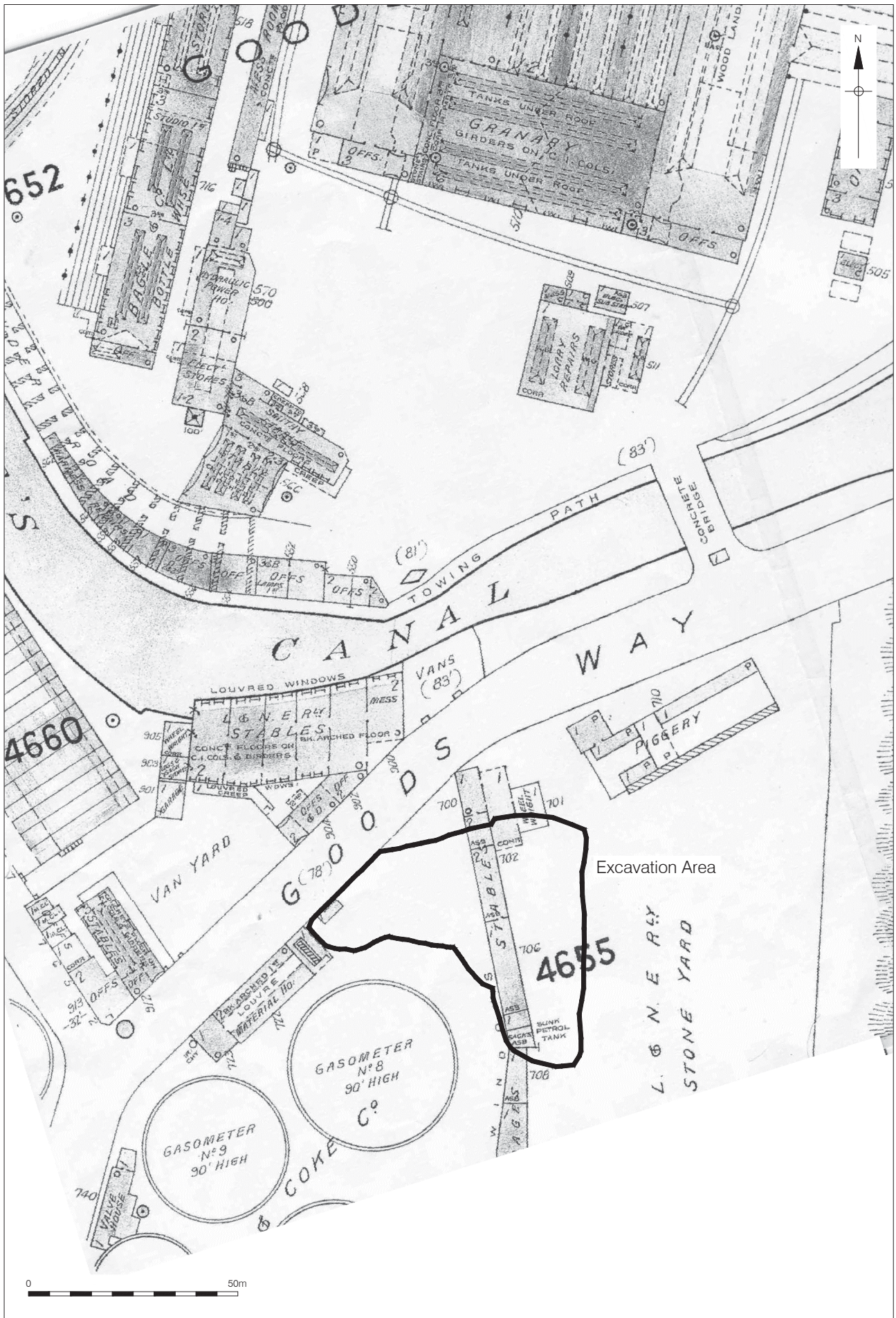




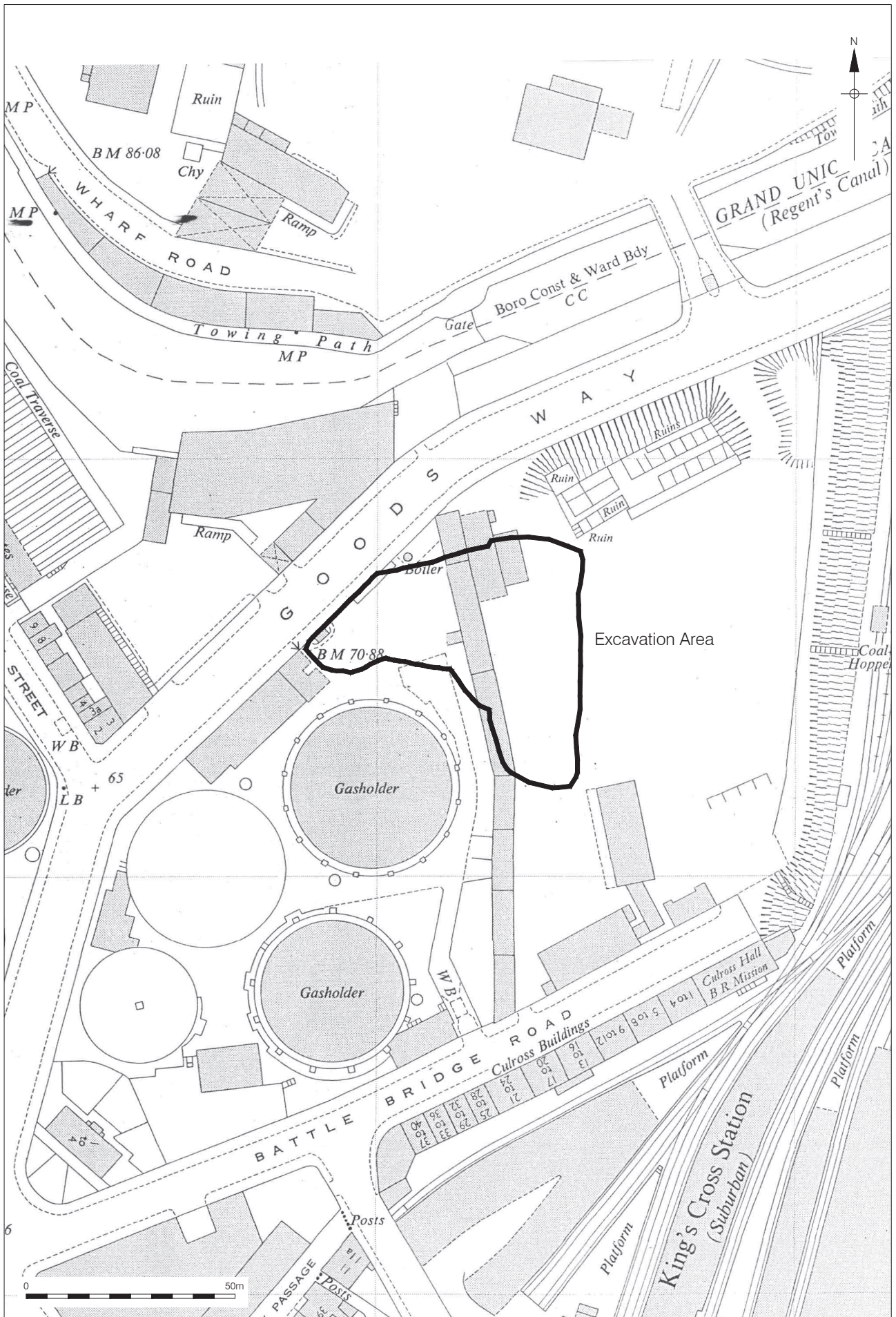




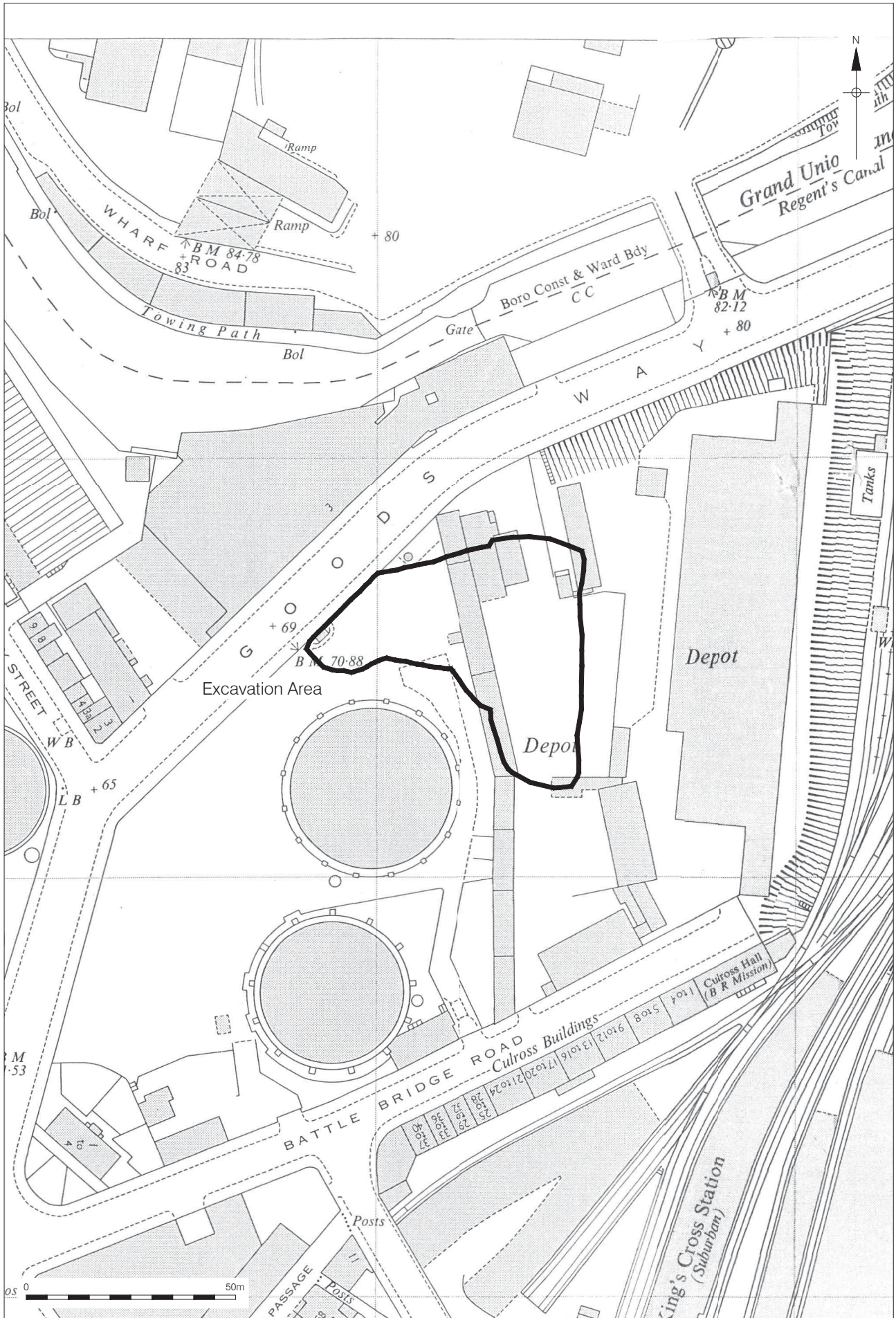












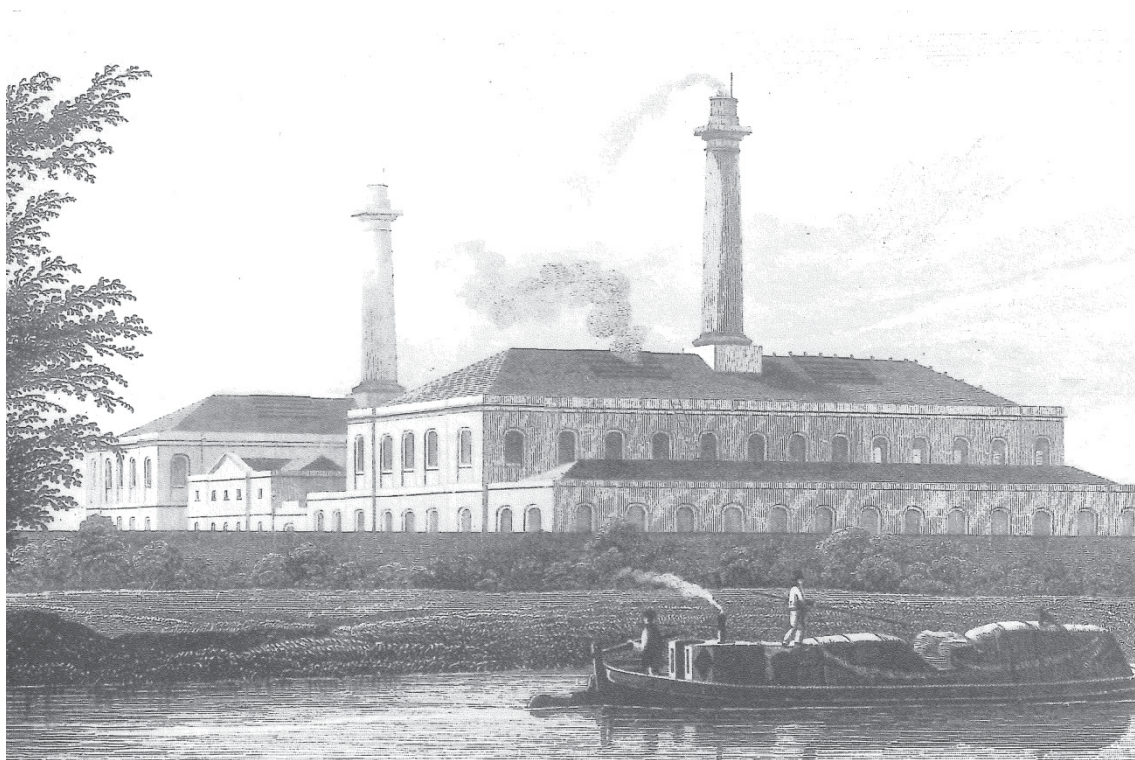
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 20/03/12 MR

Figure 15  
 Ordnance Survey map, 1965  
 1:1,250 at A4



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***Plate 1 The Imperial Gas Light & Coke Company's Works at King's  
Cross, 1828***



## 6 Archaeological Methodology and Objectives

### 6.1 General Considerations

- 6.1.1 In accordance with the Written Scheme of Investigation (Matthews 2011), the strip, map and sample exercise involved the monitoring of ground reduction and bulk excavation necessitated by the development of Zone B, Kings Cross Central, London Borough of Camden.
- 6.1.2 The purpose of the archaeological monitoring of the groundworks was to facilitate where necessary appropriate investigation and recording of any remains found at the site. The exercise was also designed to afford an opportunity to investigate and record structures associated with the gasworks, relating to the production and treatment of gas, in advance of the invasive groundworks pertaining to the new development.
- 6.1.3 Two areas within the Zone B Development were designated as of being of considered interest, namely Areas B5 and B6. They were selected after consultation with historic maps which demonstrated that these areas housed buildings associated with the production and purification of gas prior to storage in the various gasholders located across the site. As such it was agreed that two trenches would be excavated, one in each area, the approximate dimensions of which are presented in the table below:

Trench No.	North-South	East-West
1 (B6)	55.00m	25.00m
2 (B5)	15.00-35.00m	50.00m

- 6.1.4 Additionally, upon completion of recording work in each trench, a series of geotechnical test pits (Figure 2) were excavated for ground remediation purposes. A watching brief was conducted whilst the test pits were excavated. Details of each test pit are provided below:

Trench No.	Test Pit No.	Length	Width	OD Height at top	Total Depth
1 (B6)	M4	3.50m	0.90m	18.12m	1.60m
1 (B6)	N5	3.50m	0.90m	18.12m	2.00m
1 (B6)	M6	4.00m	1.50m	19.15m	1.70m
1 (B6)	N8	5.00m	0.90m	19.55m	3.00m
2 (B5)	H5	3.70m	1.29m	19.55m	2.90m
2 (B5)	H6	4.86m	1.64m	19.85m	4.10m
2 (B5)	J6	4.50m	4.00m	19.55m	1.80m
2 (B5)	K5	3.00m	1.20m	21.80m	1.90m

### 6.2 Ground Contamination

- 6.2.1 Historic land-use of the site indicated that significant chemical ground contamination was likely. Contaminants identified in the soil prior to commencement of the main strip and map exercise included Total Cyanide, phenols, PAHs, sulphates, sulphides, and ammonia gas. Though contamination hot spots were present the ones identified were not considered to

consider risk of a magnitude that would prevent working in their vicinity, provided that appropriate safety measures were implemented.

6.2.2 As a result the following PPE requirements were instructed and implemented whilst archaeological work took place;

6.2.3 P3 rated particle filtering and m3 vapour rated half masks were worn at all time whilst working inside the trench each containing A1B1E1K1P3 filters.

6.2.4 In addition to this disposable overalls with elasticated cuffs and hood goggles; gloves; ear defenders; rubber boots with steel toe-caps & insoles were worn as and when appropriate.

- Four gas monitors and one PID monitor for measuring VOC's were provided by the Principle Contractor.
- Two operating decontamination units with boot washes were provided along with a tool store by the trench.

6.2.5 The extent of contamination prevalent across the site limited the nature of the archaeological investigation to a strip and map exercise instead of a full excavation. As such the total depths of many of the structural foundations were not established and accurate interpretation of some of their relationships to one another was not always achievable.

### **6.3 Method**

6.3.1 The trenches were excavated using at least two 360 mechanical excavators (of varying sizes) under archaeological supervision, fitted with a flat-bladed ditching bucket. Excavation by machine was undertaken in spits until significant archaeological horizons were reached. Care was taken not to excavate to depths that would expose hazardous deposits encountered in the preliminary test pits completed by a specialist ground remediation contractor.

6.3.2 Trench 1 was excavated with a battered face continuing the slope created by the B6 piling mat platform. This was formed and maintained for a safe archaeological working environment. Trench 2 was predominantly stepped although the northern limit of excavation continued the battered face constructed in Trench 1.

6.3.3 The sides and bases of those trenches deemed safe enough to enter were tidied prior to recording. Due to health and safety concerns in relation to ground contaminants, the use of hand trowels was barred. Hoes, mattocks and shovels were deemed acceptable for use.

6.3.4 All recording systems adopted during the investigations were fully compatible with those most widely used elsewhere in London, that is those that developed out of the Department of Urban Archaeology Site Manual, now published by Museum of London Archaeology (MOLAS 1994). Individual descriptions of all archaeological and geological strata and features excavated and exposed were entered onto pro-forma recording sheets. The archaeological features and deposits encountered were planned from a temporary baseline. Sections were hand-drawn on polyester based drawing film at a scale of 1:10 and located with a GPS. The OD heights of all principal strata were recorded using a GPS and annotated on the appropriate paperwork. A full photographic record of the investigations was compiled, including both black and white

prints and colour transparencies on 35mm film and digital images. The trenches were located with the use of a GPS instrument tied into the Ordnance Survey Grid.

#### **6.4 Objectives**

6.4.1 The aims and objectives of the field work were to identify, characterise and record any archaeological deposits present on the site. Specific aims and objectives were:

- Understanding the pre-development ground conditions;
- Excavating the arrangement of structures and spaces so that a history of the gas works  
And the industrial processes taking place can be developed;
- Examining the demise of the gas works;
- Recovering artefacts;
- Sampling of building materials;
- Examining the relationship of the gas works to the Regent's Canal.

## **7 ARCHAEOLOGICAL PHASE DISCUSSION: AN INTRODUCTION**

7.1.1 The sequences discussed below are those from interventions which were archaeologically monitored and found to contain remains comprising 19<sup>th</sup> to 20<sup>th</sup> century structures and made ground deposits.

7.1.2 For the purposes of this report the findings have been divided into individual phases of activity, charting the development of the gasworks with its subsequent demolition and beyond. Within each phase discussion will be sub-divided into the separate structures that were identified during the investigations, namely; the retort house, the crushing house, the purification plant and the stable building. Additional structures and site activity will also be discussed within each phase.

### **7.2 PHASE 1: THE EOCENE EPOCH**

#### **7.2.1 DEVELOPMENT ZONE B: THE UNDERLYING NATURAL GEOLOGY**

7.2.1.1 A layer of London Clay is thought to underlie the entire site, which was deposited during the Eocene Epoch. The British Geological Survey of England and Wales suggests that the site is situated on top of London Clay.

7.2.1.2 Natural geology was encountered during the archaeological interventions. London Clay was observed in the geotechnical test pits excavated in targeted areas across the two trenches (Figure 2).

7.2.1.3 Where observed the clay was described as firm and light yellowish/greyish brown in colour [250], [309], [528] and [533], although in Test Pit J6 it appeared that the natural clay had been contaminated with tar deposits and as such held a shiny black quality [532]. The natural clay was observed between 17.95m OD and 17.06m OD, appearing higher further west (in Trench 2).

7.2.1.4 To conclude, the deposits observed in the geotechnical test pits appear to confirm the geological model followed by the British Geological Survey which suggests that the site is situated on London Clay, deposited during the Eocene Epoch.

### **7.3 PHASE 2: EARLY C19TH: SITE PREPARATION (C.1821-C.1823)**

#### **7.3.1 PREPARATORY GROUNDWORKS**

7.3.1.1 Evidence for preparatory groundworks was witnessed in the form of made ground deposits at varying points across the two trenches. These layers were seen in various areas of the trenches at the basal LOE and also within the geotechnical test pits.

##### **7.3.1.2 Trench 1 (B6)**

7.3.1.2.1 Observed to the west and south of the basement of the retort house and to the north of the crushing house was a layer of compacted yellowish brown silty clay [312] into which the features relating to the gasworks structures were cut. This layer of made ground contained



frequent sub-angular pebbles, flecks of coal and fragments of CBM. It was observed at levels ranging from 19.55m OD to 18.97m OD.

#### **7.3.1.3 Test Pit N8**

7.3.1.3.1 The made ground deposit was observed in section and recorded as a firm blackish brown silty clay [308] of approximately 0.30m thickness. The colour was indicated the deposit was contaminate. The top of this layer was at 19.25m OD.

#### **7.3.1.4 Test Pits M4 & N5**

7.3.1.4.1 Here the layer of made ground comprised a fairly loose light yellowish brown silty clay and gravel [310] which was 0.50m thick. It occurred at a height of 18.02m OD. It lay immediately beneath a brick floor surface [313] of the retort house basement.

#### **7.3.1.5 Test Pit J6**

7.3.1.5.1 The made ground here comprised a compact mid red silty clay [531]. Observed within the deposit were frequent fragments of CBM and mortar. It measured approximately 0.70m in thickness and was identified at 19.55m OD.

7.3.1.5.2 The planning and laying out of a gasworks required due consideration to pre-existing ground conditions prior to the construction of relevant structures. Clay was known to form excellent conditions with made up demolition/rubbish deposits considered as treacherous (Meade 1921). As such it is likely that earlier unstable and uneven ground was removed and consolidated with the preferred clay deposits. This work would have been carried out during the first stages of construction between 1821-1823 and the deposits seen in the archaeological excavation are likely to have been those resulting from the ground preparation work during those years.

### **7.4 PHASE 3: EARLY C19TH: ENLARGEMENT OF THE IGLCC ST PANCRAS GASWORKS: CONSTRUCTION OF GH13; MID-1830S**

#### **7.4.1 GASHOLDER 13**

7.4.1.1 The earliest structure observed in the archaeological interventions was seen in geotechnical Test Pit N6 (Figure 16). Unfortunately due to the health and safety concerns it was not possible to closely examine this structure or to take samples due to contamination concerns and the unstable, confined nature of the test pit.

7.4.1.2 The masonry [251] comprised of red fabric mortared brick. As exposed it measured approximately 2.00m in length and 0.70m in width and ran in a NW-SE direction. It was noted that the masonry appeared to display a subtle curve. It was recorded at 18.55m OD.

7.4.1.3 Considering the curved nature of the stretch of masonry observed and making a comparison with cartographic sources it becomes apparent that this feature represent a segment of one of the smaller gasometers constructed in the earlier phases of the site's history. It would appear that this fragment belongs to gasholder 13 which came into to use prior to 1830. It

would have been decommissioned, buried and built over sometime within the subsequent thirty years.

#### **7.4.2 BRICK CULVERT**

- 7.4.2.1 A watching brief conducted for geotechnical Test Pit H6 revealed a portion of a brick culvert. It comprised red and yellow fabric 3032 and 3035 bricks. It was observed at approximately 16.85m OD. The depth and instability of the test pit combined with the obvious local ground contamination present meant that it was not possible to fully record this structure.
- 7.4.2.2 A layer of clay [529] approximately 2.10m thick was observed sealing the culvert. The top of the layer was at 18.95m OD. It is possible that this layer contained the cut and backfill associated with the construction of the brick culvert, although this could not be fully determined due to the nature of the test pit.
- 7.4.2.3 The type of brick observed alongside its relationship with the overlying stratigraphy allow us to state with some confidence that the culvert was constructed prior to the building of the Purification Plant, but a little later than the earliest activity related to the gasworks already encountered on site.

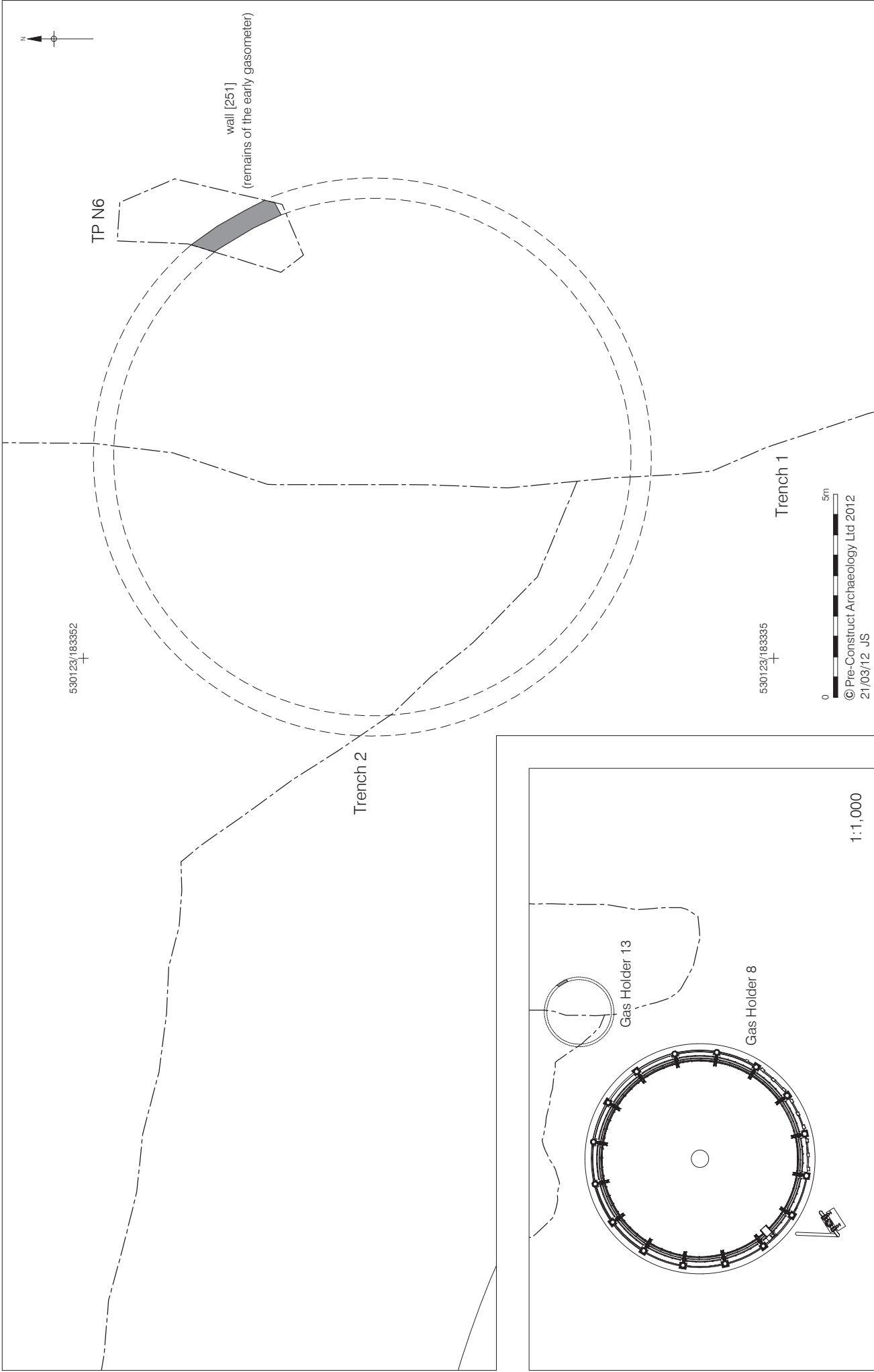


Figure 16  
 Gasholder 13  
 Phase 3: Mid-1830s  
 1:125 at A4



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## **7.5 PHASE 4A: MID- C19TH: ENLARGEMENT; NEW RETORT HOUSE, SCRUBBERS, CONDENSERS & PURIFIERS (C.1840-C.1850)**

### **7.5.1 THE RETORT HOUSE (Figure 17)**

7.5.1.1 This building [220] housed the retorts within which gas was produced. Coal was heated within a retort, which acted like a pressure oven, the by-product of which was gas. The gas was subsequently transferred to the scrubber towers for the next stage in the process.

7.5.1.2 Comparative analysis using cartographic sources suggest that the basement of the south-west corner of a western extension to the main retort house building was that observed in Trench 1, encompassing a long corridor (coal bins) with a staircase at the northern end, a large room which likely housed furnaces or retorts, and a smaller room of unknown function immediately to the north.

7.5.1.3 A layer of made ground [219]/[311] was observed within Trench 1, in which the foundations of the Retort House and associate features were cut. The made ground consisted of a compacted yellowish brown clay with no obvious inclusions. It sealed Gasholder 8 and as such was likely deposited as part of the ground consolidation in advance of the construction of this phase of the Retort building. A level of 19.97m OD was recorded for the made ground.

#### **7.5.1.4 The External Wall**

7.5.1.4.1 The most substantial piece of masonry uncovered in Trench 1 was the western external wall [200] of the basement of the Retort House. The north-south portion of the wall measured 24.75m in length and 2.50m in width and 1.80m at its tallest. The east-west portion measured 6.00m in length (to LOE) and 0.50-1.00m in width. The main build was constructed of frogged, machine moulded yellow clinker brick, 3032 & 3035, measuring 230mm x 110mm x 60mm, bonded with Portland cement, in English bond style. Millstone grit blocks were identified in the western face of the wall, demonstrating the likelihood that this was an external wall. Gabbro brick and Yorkstone was also observed within the masonry. The top of the wall was recorded at 20.38m OD at it's highest point.

7.5.1.4.2 Resting within the top section of the wall was a cement lined flue [204] which, it is believed, once held a substantial pipe which had long since been removed. Measuring 20.00m (where observed) in length by 0.50m in width and 0.15m deep. Supports built from voussoir kiln brick were observed at various intervals along the course of the flue. An OD height of 20.24m was recorded at the base.

7.5.1.4.3 The flue appeared to stop alongside a hollow brick structure built into, and part of, the external wall, on the western side. The structure measured 2.30m by 1.00m and was filled with brick rubble. A cast iron pipe [277] ran through it in a N-S direction. Given its proximity to what appears to be the terminus of the flue channel it is possible that this structure forms the remains of a chimney base.

7.5.1.4.4 Towards the north of the wall and adjacent to the flue a drainage downpipe [205] was

observed with a diameter of 0.38m. It was constructed of kiln brick with a metallic glazed ceramic pipe set within. The drain appeared to be incorporated into a working surface [206], which, it is posited, existed at the top side of the wall. It was constructed from the same yellow clinker brick at the main build of the wall. A level of 20.31m OD was recorded for this potential surface and the drain.

7.5.1.4.5 Three alcoves were observed, built into the internal side of the wall (Figure 29, Sections 28 & 29). All varied in shape and size. The northern most alcove was semi-circular in plan and measured 1.50m in length and 0.30-40m in depth. The central alcove was irregular in plan, measuring 2.00m in length and being recessed 1.00m at the deepest point. Its form suggested that some form of shaft or small lifting platform could have operated within its space. The southernmost alcove was rectangular in plan and measured 1.50m in length by 0.50m deep. It is feasible these bays or 'shafts' were the means by which coal was delivered into the corridor or 'coal bin' from an upper level, supporting the theory that the area at the top of the wall once incorporated a working surface.

#### 7.5.1.5 The Coal Bin

7.5.1.5.1 The highly detailed 1891 Goad map (Figure 10) labels the western 'corridor' as the coal bin. The coal bin would likely have been an area into which coal was passed and stored, utilised either for the furnaces that would heat the retorts, or to be placed within the retorts themselves.

7.5.1.5.2 The area measured 22.50m in length and was 2.50m wide. To the north was a staircase [766] rising up to the ground floor. It was constructed from the same yellow fabric brick as the external wall, with cement rendering on the steps. The height at the top of the staircase was recorded as 20.37mOD and the base at 18.50m OD.

7.5.1.5.3 A dividing wall [209] & [210] was bounded on the eastern side of the coal bin, separating this space from the larger room to the east. The wall measured 21.00m in total length and 0.50m in width. It was formed of a deep frogged yellow and red fabric bricks, 3032, 3034, 3035, set in Portland cement mortar and English cross style. Three entrances were observed along the length of the wall, the first immediately adjacent to the staircase, the second 12.00m to the south and a final portal a further 4.00m to the south of that. The highest extremity of the wall was recorded at 20.47m OD. The portals were relatively close to (though not exactly opposite) the three alcoves observed within wall [200].

#### 7.5.1.6 Room 1

7.5.1.6.1 This large room, measuring 23.00m by 7.00m, was bounded to the west by walls [209] & [210] and to the north by wall [212]. It contained a brick flue channel [314] constructed into the floor surface [221] & [313] running N-S along the centre of the room and the remains of at least one vaulted structure [211] along the eastern LOE.

7.5.1.6.2 The floor [221]/[313] was constructed of frogged red/yellow fabric bricks and kiln bricks, 3032, 3035, 3261, measuring on average 220mm x 60mm x 100mm. It was set in a hard grey Portland cement. The surface extended for 21.00m from the north to where it was

truncated at the southern end. It extended for 5.00m east-west. The highest level was at 18.42m OD. The excavator noted the kiln brick was predominant in isolated pockets across the floor surface and sparse or randomly incorporated in other areas.

7.5.1.6.3 Incorporated into the brick floor surface was a brick lined flue [314]. The flue was formed of kiln brick and capped with a smooth Yorkstone slab. It measured 14.00m in length before running into the eastern LOE and ranged from 0.50m to 1.00m wide in places. A majority of the slabs measured approximately 1000mm by 600mm by 100mm. It was recorded at 18.42m OD. It is known that Yorkstone is relatively heat resistant and thus the purpose of this flue could have been to channel hot air or liquid from one area to another.

7.5.1.6.4 A brick base [211] with an arched or vaulted element projecting from it (Figure 29, Section 24) was observed towards the north-eastern LOE, adjacent to wall [212]. This feature was constructed of frogged, red/yellow fabric brick and kiln brick, 3032, 3034, 3261, measuring 230mm x 110mm x 60mm. The bonding was English cross and the partial arch was evidenced on the south-west facing side of the structure. It measured 2.50m by 1.60m and stood 0.90m tall. The structure was observed at 19.37m OD. The kiln brick (which probably came from a Leeds manufacturer) was bonded with a hard dark cement, likely to be Portland cement with a higher ash content for added strength against intense heat. Stone clad bases were observed 2.00m (and then a further 1.50m) each to the south suggesting that a bank of brick arched structures once stood in this space. Retorts were often housed in vaulted brick structures, however given the basement location of these particular examples it seems more likely that these here housed furnaces, likely used to generate the heat for retorts located elsewhere (probably on the floor above).

#### 7.5.1.7 Room 2

7.5.1.7.1 This room, located towards the northern LOE and adjacent to the basement stairs [766] was bounded by wall [212]. This wall was constructed of frogged red/yellow fabric brick, 3032/3035, measuring 220mm by 100mm by 60mm with a hard yellowish grey mortar. Much of the southern face was obscured by cladding and a level of Welsh slate was evident within the build as a damp proof course.

7.5.1.7.2 Despite its varying in thickness the wall was constructed in one build. The southern portion measured 7.00m by 0.70-1.00m before it turning ninety degrees into a NW-SE direction for 4.00m at with a 0.30m thickness. Another ninety degree turn in a NE-SW direction for 2.50m into the LOE was 0.50m thick. It is likely this connected with a 1.00m by 1.00m wall to create a room 2.50m<sup>2</sup> in size. It stood 1.32m tall and the highest level was recorded at 21.18m OD.

7.5.1.7.3 The precise function of this room is unclear. The presence of numerous cast iron pipes leading into it suggest it could have once housed machinery of some kind that has since been removed (most likely salvaged for parts and scrap during the demolition of the building).

#### 7.5.1.8 Cast Iron Pipes



7.5.1.8.1 A number of cast iron pipes, related to building infrastructure, were observed during the archaeological strip and map. The details of these pipes has been tabulated below.

Context No.	Length	Diameter	Thickness of material	OD Height
259	1.45m	190mm	11mm	19.89m
260	1.00m	320mm	-	19.24m
261	1.47m	260mm	14mm	19.30m
262	19.03m	210mm	10mm	19.51m
264	4.90m	550mm	21mm	19.24m
265	1.44m	510mm	-	18.65m
266	1.50m	510mm	-	19.85m
267	4.98m	160mm	6mm	19.79m
268	6.20m	130mm	13mm	19.87m
269	2.98m	130mm	-	19.51m
270	4.65m	410mm	-	19.70m
271	2.75m	130mm	4mm	19.74m
272	1.07m	160mm	-	19.27m
273	0.62m	45mm	2mm	19.75m
274	0.84m	130mm	-	19.68m
276	0.92m	160mm	9mm	20.13m
277	8.64m	130mm	9mm	19.70m
278	0.52m	150mm	-	19.96m

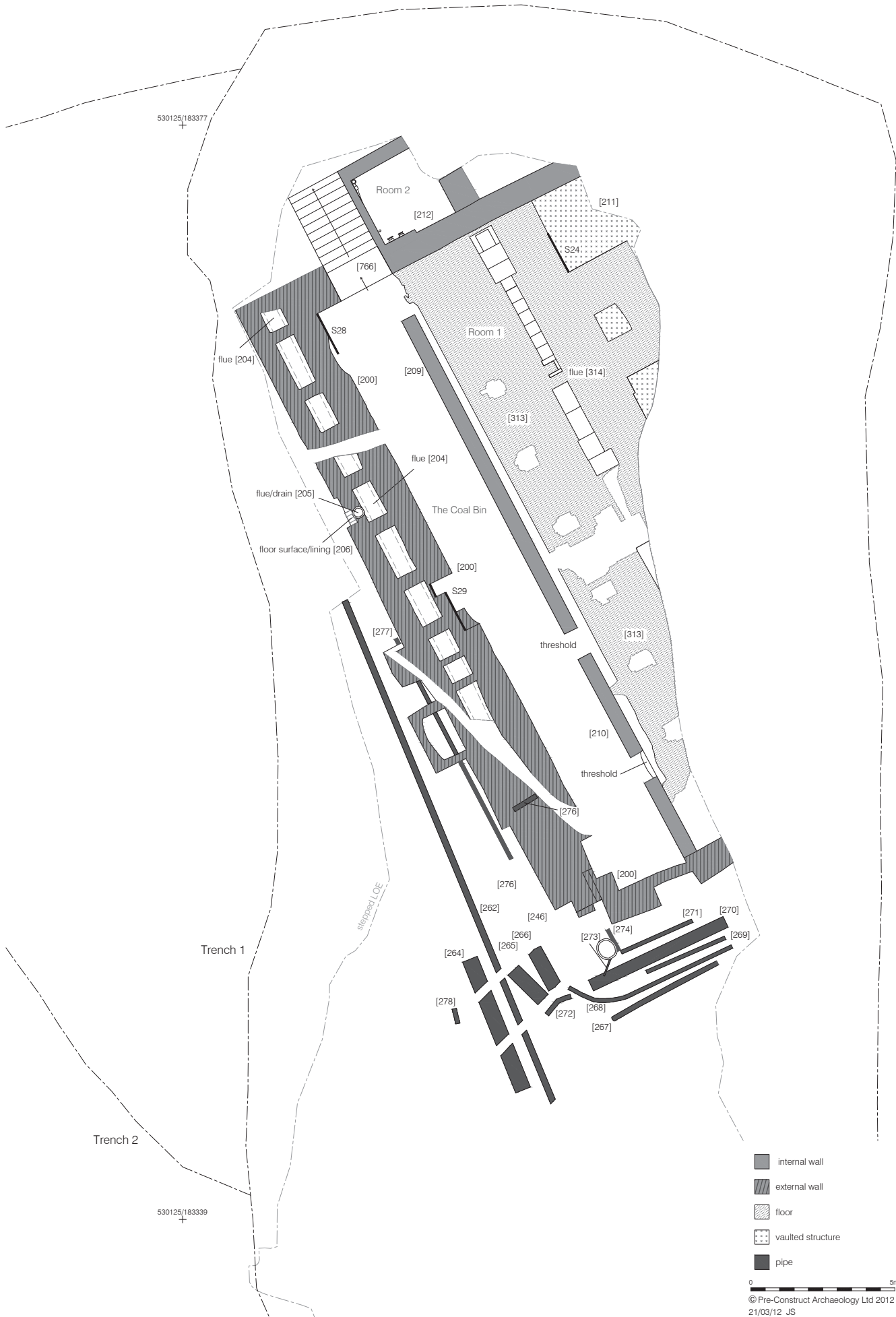


Figure 17  
Retort House [200]  
Phase 4a: c. 1840-c. 1850  
1:125 at A3

### 7.5.3 THE PURIFICATION PLANT (Figure 18)

7.5.3.1 Constructed alongside this phase of the Retort House was the Purification Plant which continued the gasification process through a variety of means, including condensing, scrubbing and purifying prior to it's eventual storage within the gasholders. It is possible to discern at least three separate buildings which made up the plant and which is supported in the available cartographic evidence.

#### 7.5.3.2 Building 1 (Figure 19)

7.5.3.2.1 The investigations did not produce a complete footprint for this building, however portions of it were recorded alongside bases, surfaces and inspection chambers. Condensers and tar wells appear to have been located within the footprint of Building 1, the details of which are discussed below under their respective headings.

7.5.3.2.2 The northern boundary wall [391], orientated NE-SW, measured 17.00m in length (into the eastern LOE) by 0.80m wide at its widest point. It had been constructed from frogged purple/red fabric 3032 and yellow fabric 3035 brick bonded with a hard light grey Portland cement. It was encountered at 20.09m OD. A wall to the south [368] potentially represented the southern limit to Building 1. This masonry element was constructed from the same building materials and measured 2.00m in length (into the southern LOE) by 0.80m in width, appearing at the same height; 20.09m OD. A final fragment of masonry [464] represents what remains of the south-western edge of the building. Constructed with the same building fabric this section of wall measured 1.26m in length and 0.08m wide, with only one course of brickwork remaining. Its top surviving level was at 19.67m OD.

7.5.3.2.3 In the vicinity of the south wall [368] lay a concrete surface [370] comprised of an indurated light grey Portland cement containing frequent small to medium fragments of CBM, gravel and clinker. It measured 6.50m by 3.64m by 0.15m thick at 20.22m OD. A wrought iron rail [375] was found along a portion of the north-western edge of this surface, measuring 2.17m in length and 0.03m in thickness. Resting on top of the concrete surface was a 2.37m long by 0.62m wide stretch of wall [369] of yellow fabric 3035 brick and kiln brick. It ran parallel to wall [368]. It was recorded at 20.34m OD and potentially formed the remains of an internal structure within the building. The remains of a culvert [371] were also observed abutting the northern edge of the concrete surface. It was built with a combination of red fabric 3032 and yellow fabric 3035 and occasional kiln bricks with Portland cement and measured 4.00m by 1.00m at the thickest point and was at a top level of 20.24m OD.

7.5.3.2.4 The remains of further sections of floor surface were present within or adjacent to the building comprising [347], [362], [363] & [383] all were made of machine cut Yorkstone slabs. Details of each can be seen in the table below;

Context No.	Materials	Length	Width	Level
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347	Yorkstone	2.00m	0.50m	20.14m OD
362	Yorkstone	0.80m	0.70m	19.89m OD
363	Yorkstone	0.76m	0.73m	19.94m OD
383	Yorkstone	4.10m	3.22m	20.13m OD

7.5.3.2.5 Surface [383] featured the remains of a granite curb stone [385] adjacent to it's southern edge. This measured 1.69m in length by 0.15m in width and stood 0.15 high. It was at 20.10m OD and could have represented the edge of a working surface that was found alongside the tar wells.

7.5.3.2.6 Three plinths/column bases were seen within Building 1. Each was constructed of a Yorkstone slab resting on a brick footing (of yellow stock brick). Each of these structures held four cast iron rods protruding from their top surface which at one point would likely have been connected onto another structure, possibly a machine or a roof support. Dimensions and heights are in the table below;

Context No.	Materials	Length	Width	Height	Level
343	Yorkstone, Yellow stock brick, iron	0.60m	0.56m	0.50m	20.13m OD
382	Yorkstone, Yellow stock brick, iron	2.04m	1.12m	0.72m	20.13m OD
384	Yorkstone, Yellow stock brick, iron	2.50m	1.04m	0.23m	20.03n OD

7.5.3.2.7 A brick built inspection chamber [342] was also present within the footprint of the building. It was made of red fabric 3032 and yellow fabric 3035 bricks and measured 0.90m by 0.60m by 0.60m deep at 20.03m OD. This compartment appeared to act as an access point for pipes [345] and [440].

### 7.5.3.3 Building 2 (Figure 20)

7.5.3.3.1 Building 2 was positioned west of the first building and housed a set of purifiers. It's western limit is not known as it lay outside of the trench LOE.

7.5.3.3.2 The northern edge of the building is represented by wall [451], [449], [479] which was made of red fabric 3032 and yellow fabric 3035 bricks bonded in a hard grey Portland cement mortar. The wall measured 12.00m (NE-SW) by 0.80m (NW-SE) and was approximately 0.70 - 0.75m tall. The highest level was at 20.20m OD. Three equally spaced plinths [452], [448], [478] (standing approximately 3.00m apart) were incorporated into the outer edge of the feature. These were made of Yorkstone slabs with protruding cast iron rods and a red and yellow fabric brick footing, measuring approximately 1.00m by 0.60m by 0.80m tall. The tops of the plinths were recorded at 20.55m OD and they likely footed beams supporting the roof of the building. The western limit was formed by wall

[480] which ran was on a NW-SE alignment over a length 7.50m. It was constructed with the same building materials as [451], measured approximately 0.36m in width and was at a top level of 19.75m OD. The southern end of the building was marked by wall [525], of the same build and measuring 8.00m (NE-SW) by 0.28m (NW-SE). The wall continued into the southern LOE of the trench and thus the position of the western edge of the building remains unknown. A top level of 20.36m OD was recorded for this wall.

7.5.3.3.3 A floor surface [490] was uncovered in Building 2. It was made of purple/red fabric 3032 and yellow fabric 3035 bricks with a concrete render. It measured 14.00m (NE-SW) by 9.00m (NE-SE). The levels ranged between 19.53m OD and 19.60m OD.

7.5.3.3.4 Other miscellaneous features located within included two brick and Yorkstone plinths [515] and [524] identical to [448] and [478] but located on the south-eastern margin of the building at 20.47m OD and 19.88m OD respectively (the differing heights being the result of modern truncation). A red/yellow fabric brick pipe support [516] was located along the southern edge of the building, adjacent to plinth [515]. It measured 0.72m by 0.38m and stood 0.48m tall at 20.21m OD. There was also evidence to suggest that cast iron pipe [509] had been encased in brick, consisting of the partial remains of context [506], comprising mainly yellow fabric 3035 bricks with some red fabric 3032 at 19.93m OD. The masonry measured 0.52m by 0.46m by 0.38m in height.

#### 7.5.3.4 Building 3 (Figure 21)

7.5.3.4.1 Masonry was observed on the south side of the trench which appeared to have been part of another building, aligned on a slightly different orientation to Buildings 1 & 2. Cartographic evidence suggests that this could represent part of the structure that housed the Exhausters, although no archaeological evidence was found to confirm this.

7.5.3.4.2 The footprint of Building 3 is defined by a series of wall foundations [359], [361], [360], [405], [401], [403], [333], [244] & [331], which were unless otherwise stated all built of the same brick and mortar type. The northern limit of the building is represented by wall [359] which was constructed of predominantly red fabric 3032 bricks with some yellow fabric 3035, bonded with Portland cement. It was orientated NEE-SWW and measured 3.00m by 0.30m at a top level of 20.10m OD. It was abutted by wall [361] which was set on wall [359] in a NNW-SSE orientation for 0.90m (with a width of 0.29m) at 20.17m OD. It comprised mainly frogged yellow stock bricks in Portland cement. This wall in turn connected with wall [360] which was on the same orientation as wall [359] but was of more substantial build, being 0.60m wide. It was constructed of the same fabric and was 2.74m in length at a level of 20.25m OD. It is likely that this wall once connected with foundation [405], located a metre to the east and which measured 1.73m by 0.77m. This foundation stood in line with wall stub [333] which abutted [401]/[403]. Foundation [333] measured 0.78m by 0.60m with wall [401]/[403] which was 3.00m in length by 0.30m-0.50m in width, both orientated NNW-SSE. It appears that the building footprint may have continued in this direction, as represented by foundation [244] which measured 1.50m by 1.00m at 20.01m OD. There is evidence of an internal dividing wall in the form of wall [331]. This fragment of

masonry measured 0.94m by 0.46m and ran on a NWW-SEE orientation. The limited level information available for the above structures is due to the site contractor inadvertently backfilling this portion of the trench prior to the completion of archaeological recording. The south and western footprint of the building was not observed due its likely position outside the LOE of the two trenches.

#### 7.5.3.5 Scrubbers (Figure 19)

7.5.3.5.1 The bases of three scrubber tanks were observed immediately north of and adjacent to Building 1. The scrubbers were essential large towers containing coke (a by-product of the retort process) through which water was passed removing the ammonia and ammonium compounds.

7.5.3.5.2 The remains of the structures observed during the excavation comprised a circular brick base [428], [427] and [392] constructed of predominantly red fabric 3032 bricks alongside some yellow fabric 3035, bonded with a yellowish brown sandy mortar. At the centre of the brick base stood a brick plinth [429] and [440] composed of red/purple 3032 fabric brick with a light brownish grey cement mortar. Plinth [440] was capped with a Yorkstone slab. The plinths sat upon a paved surface composed of machine cut granite slabs bonded with the same light brownish grey cement mortar.

7.5.3.5.3 Further details pertaining to the scrubber tank bases, as observed, are presented in the table below;

Scrubber	Context No.	Form	Materials	Length	Width	Level
1	428	Base	Red fabric 3032; Yellow fabric 3035	6.00m	6.00m	20.17m OD
"	431	Surface	Granite slab	6.00m	3.00m	19.71m OD
"	429	Plinth	Purple/red fabric 3032	0.70m	0.66m	20.17m OD
2	427	Base	Red fabric 3032; Yellow fabric 3035	5.00m (to LOE)	3.00m (to LOE)	20.09m OD
"	440	Plinth	Purple/red fabric 3032; Yorkstone slab	0.80m	0.46m	20.20m OD
3	392	Base	Red fabric 3032; Yellow fabric 3035	2.50m (to LOE)	0.60m (to LOE)	20.21m OD

7.5.3.5.4 A rudimentary surface [439] was observed linking Scrubber 2 and 3 comprising brick with a concrete render. It measured 1.84m by 1.50m by 0.80 in height at 19.87m OD and could represent the remains of a working platform.

#### 7.5.3.6 Condensers and Purifiers (Figures 19 & 20)

7.5.3.6.1 Evidence for gas condensation and purification activity was represented by brick lined



‘bay’ foundations. It is within these bays that the condensers and purifiers would have been located. The condensers comprised of a bank of air-cooled gas pipes resting over a water filled sump. As the gas cooled, tar residue condensed out, accumulating in the tar wells located immediately to the south. The purifying process involved passing gas over trays of moist ferric oxide, thereby removing hydrogen sulphide prior to it passing through into the gasholder.

7.5.3.6.2 Structures believed to be associated with condensing and purifying machinery comprised masonry ‘bays’ alongside brick and Yorkstone plinths (most likely acting as machine bases). The form and location of the ‘bays’ in each building suggest that the condensers were situated in Building 1, whilst the purifiers were housed in Building 2. The fabric of these structures comprised chiefly red/purple fabric 3032 bricks, yellow fabric 3035 brick, kiln brick and Yorkstone slabs.

7.5.3.6.3 For ease of reference the four tables below present data relating to the brick bay foundations and the plinths/bases recorded in Building 1 and 2 respectively;

**Table 1a: Building 1 Condensers (Brick Foundations)**

Bay	Context(s)	Materials	Length	Width	Level
1	472	Red/purple brick 3032;	3.98m	0.38m	20.04m OD
	473	Yorkstone slab	2.96m	1.52m	20.32m OD
2	437	Red/purple brick 3032	2.24m	0.38m	19.81m OD
3	381	Red/purple brick 3032	3.82m	1.54m	19.86m OD
4	380	Red/purple brick 3032;	3.04m	1.56m	20.04m OD
		Yorkstone slab			
5	471	Red/purple brick 3032	3.53m	0.38m	19.87m OD
	(472)				
6	470	Red/purple brick 3032	3.20m	0.38m	19.71m OD
	(437)				
7	459	Yellow brick 3035	3.30m	0.38m	19.69m OD
	(471)				
8	469	Red/purple brick 3032	3.15m	0.38m	19.71m OD
	(470)				
9	447	Red/purple brick 3032; Yellow brick 3035	2.60m	0.38m	20.05m OD
	(459)				
10	468	Red/purple brick 3032; Yorkstone slab	3.55m	0.38m	20.04m OD
	(469)				
11	447	Red/purple brick 3032; Yellow brick 3035	2.60m	0.38m	20.05m OD
		Red/purple brick 3032; Yorkstone slab			
12	468	Red/purple brick 3032; Yellow brick 3035	3.55m	0.38m	20.04m OD
		Red/purple brick 3032; Yorkstone slab			
13	510	Red/purple brick 3032; Yellow brick 3035	2.80m	0.38m	19.94m OD
	(409)				
14	409	Red/purple brick 3032; Yellow brick 3035	8.50m	0.23m	20.16m OD
	(424)				
	(425)				

15	424 (425)	Yellow brick 3035	2.15m	0.23m	19.99m OD
16	425 444	Red/purple brick 3032; Yellow brick 3035; Yorkstone slab	3.50m 2.30m	0.30m 0.30m	20.04m OD 20.24m OD

**Table 1b: Building 1 Plinths/Bases**

Bay	Context(s)	Materials	Length	Width	Level
1	474 476	Red/purple brick 3032	1.07m 1.02m	0.47m 0.66m	20.28m OD 20.04m OD
2	426	Red/purple brick 3032; Yellow brick 3035	0.90m	0.86m	20.64m OD
3	438	Red/purple brick 3032	1.12m	0.62m	20.73m OD
11	446	Red/purple brick 3032	1.28m	0.80m	20.39m OD
12	467	Red/purple brick 3032	1.29m	0.77m	20.46m OD
13	410	Red/purple brick 3032; Yellow brick 3035	1.27m	1.04m	19.60m OD
14	423	Red/purple brick 3032; Yellow brick 3035	0.60m	0.52m	20.00m OD

**Table 2a: Building 2 Purifiers (Brick Foundations)**

Bay	Context(s)	Materials	Length	Width	Level
1	481	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.70m	0.70m	19.97m OD
2	491	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.68m	0.68m	19.72m OD
3	482 (481)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.70m	0.70m	19.80m OD
4	492 (491)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.74m	0.64m	19.88m OD
5	483 (482)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.70m	0.70m	19.87m OD
6	493 (492)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.76m	0.72m	19.87m OD
7	496 495	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	4.14m 3.98m	0.68m 0.68m	19.73m OD 19.73m OD
8	484 (483)	Red/purple brick 3032; Yellow brick 3035;	3.70m	0.70m	19.87m OD

		Kiln brick; Yorkstone slab			
9	494 (493)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.70m	0.70m	19.88m OD
10	502 (495)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	2.84m	0.68m	19.63m OD
11	485 (484)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.70m	0.70m	19.89m OD
12	512 (494)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.80m	0.58m	19.80m OD
13	503 (502)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.04m	0.68m	19.71m OD
14	486 (485)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.70	0.70	19.98m OD
15	513 (512)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.74m	0.75m	19.87m OD
16	504 (503)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	2.04m	0.68m	19.70m OD
17	523 (486)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	3.70m	0.70m	19.97m OD
18	514 (513)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.60m	0.62m	20.42m OD
19	505 (504)	Red/purple brick 3032; Yellow brick 3035; Kiln brick; Yorkstone slab	1.60m	0.44m	19.84m OD

**Table 2b: Building 2 Plinths/Bases**

Bay	Context(s)	Materials	Length	Width	Level
8	488	Yellow stock brick	0.75m	0.38m	19.78m OD
11	487	Yellow stock brick	0.84m	0.50m	19.87m OD
12	522	Yellow stock brick	0.80m	0.38m	19.72m OD

### 7.5.3.7 Tar Wells (Figure 19)

7.5.3.7.1 At least four tar wells [441], [400], [411] & [372] were encountered during the investigations, located within the projected footprint of Building 1. They would have been located close to the condensing machinery, storing the coal tar that was extracted as part of the gasification process. The masonry of the tar wells comprised of the now familiar



mixture of mainly red fabric 3032 and yellow fabric 3035 brick. Some of the yellow fabric brick displayed evidence of over-firing. The structures were bonded with a hard grey concrete type mortar, likely as a sealant measure.

Tar Well	Context No.	Materials	Diameter	Level
1	441	Red fabric 3032; Yellow fabric 3035	4.20m	20.15m OD
2	400	Red fabric 3032; Yellow fabric 3035	5.00m	20.08m OD
3	411 453	Red fabric 3032; Yellow fabric 3035; Kiln brick	5.00m	20.01m OD
4	372	Red fabric 3032; Yellow fabric 3035	Beyond LOE	20.06m OD

7.5.3.7.2 Tar Well's 1-3 were constructed with four separate layers of brickwork which, it is thought, helped to prevent leakage of tar deposits from within the structure. The inner two layers were composed of brick (3032, 3035), with the third comprising of a hard yellowish brown clay [454] & [457] containing occasional small flint pebbles. The outer layer was once more composed of the same brick type with some kiln brick inclusions.

#### 7.5.3.8 Wells (Figures 19 & 21)

7.5.3.8.1 Four circular brick structures, believed to have been wells, were observed within the area of the Purification Plant, generally within or close to Buildings 1 & 3. These were constructed from a mix of red fabric 3032, yellow fabric 3035 kiln bricks and limestone slabs and were bonded with a hard grey cement mortar containing clinker and gravel inclusions.

7.5.3.8.2 The table below details the well characteristics;

Well	Context No.	Materials	Diameter	Level
1	443	Red/purple fabric 3032;	1.60m	20.35m OD
2	395 394	Red fabric 3032; Yellow fabric 3035; Kiln brick	1.85m	20.25m OD
3	393	Red fabric 3032; Yellow fabric 3035; Kiln brick	2.80m	20.10m OD

		Limestone slab		
4	416	Brick	2.50m	19.72m OD

### 7.5.3.9 Boundary Wall (Figure 29, Section 33)

7.5.3.9.1 Observed to the north of the Purification Plant, running parallel in a NE-SW direction was a substantial foundation [430]. This is present on various OS maps and appears to have been the base of the northern site boundary wall. The LOE of the trench respected the alignment of this wall.

7.5.3.9.2 It was constructed mainly of frogged red/purple 3032 fabric bricks bonded with a fine yellow/white sandy mortar. It measured 17.70m in length and stood at least 1.46m tall. The wall continued into the NW, NE and SW LOE's of the trench. It was at a level of 20.57m OD.

7.5.3.9.3 It was noted that the wall was not completely vertical, inclining slightly to the south (east) and that a number of recesses had been built into the masonry allowing access for cast iron pipes. Certain portions of the wall displayed evidence of paint or rendering.

### 7.5.3.10 Miscellaneous Features

7.5.3.10.1 A number of miscellaneous pieces of masonry, a number of which were merely fragmented remains, were observed within the Purification Plant. In a number of cases their function and relationship to the surrounding masonry can only be speculated upon.

7.5.3.10.2 The details of these features have been tabulated below:

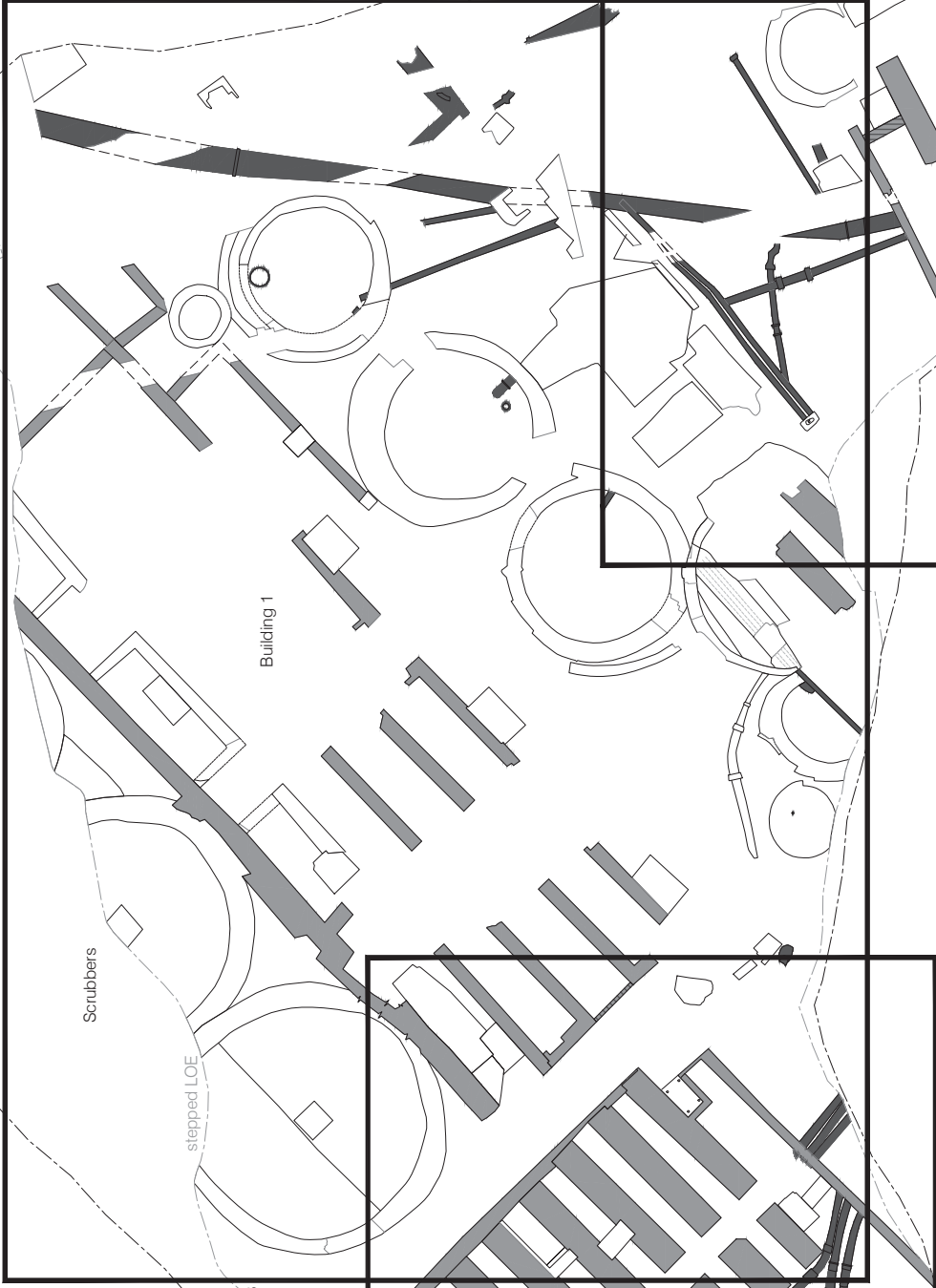
Context No.	Description	Materials	Length	Width	Height	Level
337	Brick foundation	Red fabric brick	0.60m	0.20m	-	19.87m OD
377	Brick foundation	Red/Yellow fabric brick	1.00m	1.00m	-	-
379	Brick foundation	Red 3032; yellow 3035; kiln brick 3261	0.72m	0.62m	0.22m	19.75m OD
402	Brick Plinth/Base	Red/Yellow fabric brick	3.00m	1.90m	-	-
406	Foundation/Surface	Concrete	3.30m	2.00m	-	-
460	Foundation/Surface	Limestone slab	0.91m	0.64m	-	19.61m OD
461	Brick foundation	Yellow 3035; Kiln brick	0.57m	0.23m	-	19.61m OD
462	Brick foundation	Yellow 3035; Kiln brick	0.66m	0.47m	-	19.64m OD
487	Pipe support/stand	Yellow stock brick	0.84m	0.50m	0.32m	19.87m OD
488	Pipe support/stand	Yellow stock brick	0.75m	0.38m	0.26m	19.78m OD
522	Pipe support/stand	Yellow stock brick	0.80m	0.38m	0.16m	19.72m OD

### 7.5.3.11 Cast Iron Pipes

7.5.3.11.1 A number of cast iron pipes were observed, the details of which can be seen in the table below.

Context No.	Length	Diameter	Thickness of material	OD Height
338	0.55m	160mm	-	-
339	2.40m	500mm	10mm	19.62m
344	16.88m	660mm	15mm	19.54m
345	1.80m	120mm	10mm	19.92m
346	5.10m	180mm	10mm	19.76m
352	1.16m	200mm	-	-
353	0.60m	800mm	20mm	19.85m
354	0.50m	100mm	12mm	19.93m
355	0.90m	200mm	-	19.96m
356	1.24m	240mm	-	19.65m
364	0.40m	200mm	20mm	20.01m
366	16.88m	660mm	20mm	19.54m
367	5.70m	180mm	20mm	19.85m
374	4.72m	150mm	-	20.04m
387	5.00m	120mm	20mm	19.91m
388	5.00m	120mm	20mm	19.91m
389	2.73m	130mm	20mm	19.67m
390	4.66m	220mm	20mm	19.80m
396	-	140mm	30mm	20.31m
408	0.66m	100mm	-	19.66m
412	0.28m	160mm	-	20.08m
413	-	200mm	-	20.05m
414	0.64m	240mm	-	20.05m
415	4.00m	200mm	10mm	20.01m
419	3.00m	200mm	5mm	19.97m
420	16.88m	660mm	20mm	19.54m
442	-	480mm	15mm	20.29m
463	0.46m	300mm	-	19.89m
466	0.18m	180mm	10mm	19.70m
489	14.80m	540mm	10mm	19.79m
499	0.20m	140mm	20mm	20.08m
501	1.92m	140mm	-	19.80m
507	5.50m	200mm	-	19.87m
508	5.00m	200mm	-	20.12m
509	5.00m	220mm	-	20.39m
517	1.80m	180mm	20mm	19.79m
518	1.60m	180mm	20mm	19.78m
519	1.50m	180mm	20mm	19.78m

Figure 19



530086/183366

S33

530132/183366

Figure 20

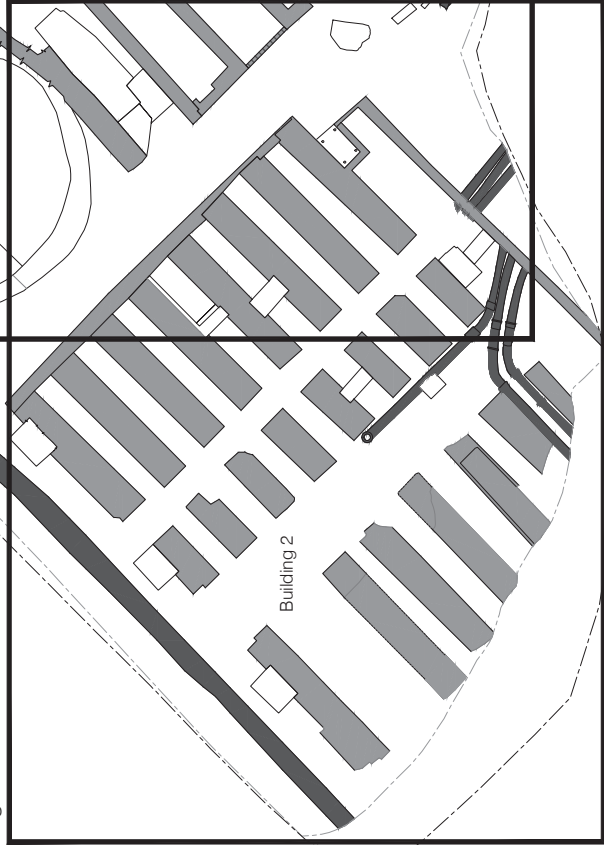
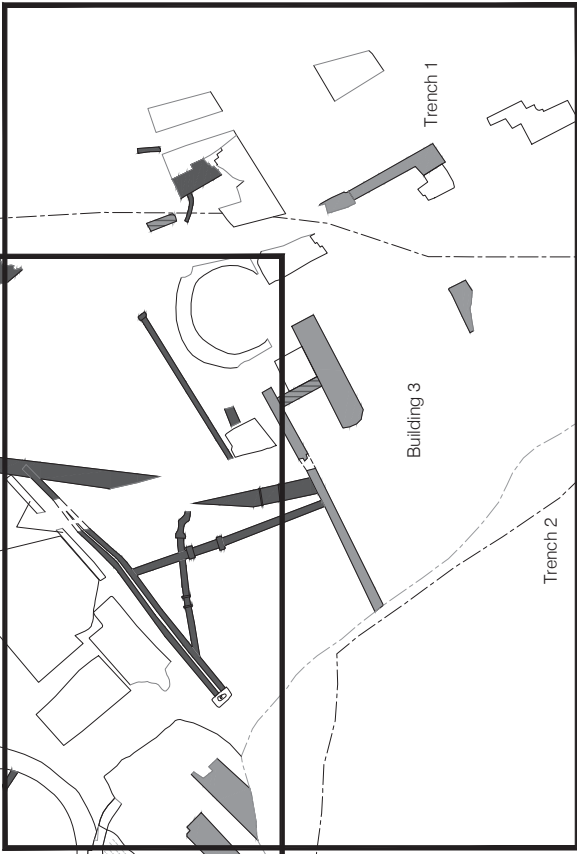


Figure 21





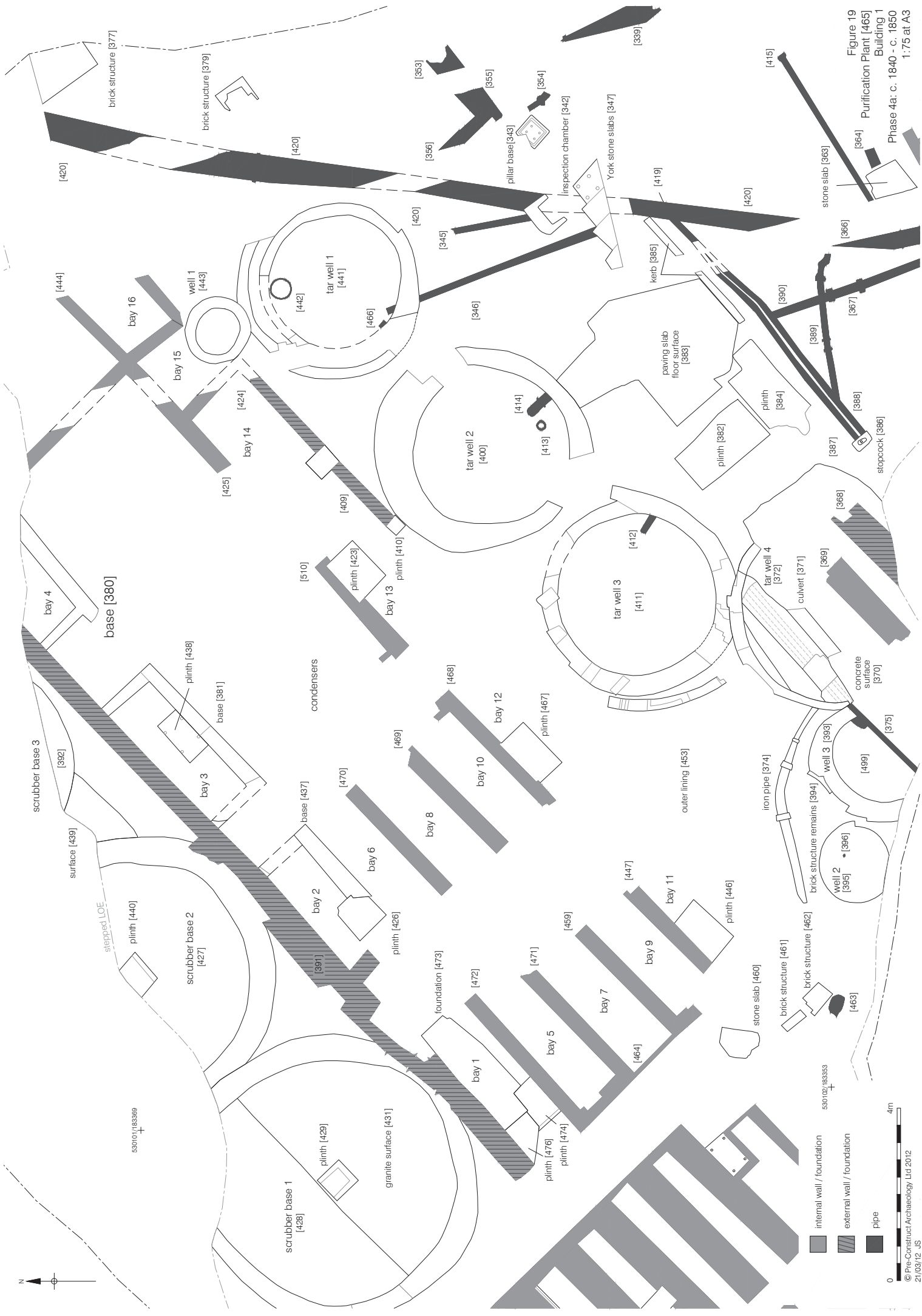


Figure 19  
Purification Plant [465]  
Building 1  
Phase 4a: c. 1840 - c. 1850  
1:75 at A3

internal wall / foundation  
 external wall / foundation  
 pipe

0 4m  
 © Pre-Construct Archaeology Ltd 2012  
 21/03/12 JS

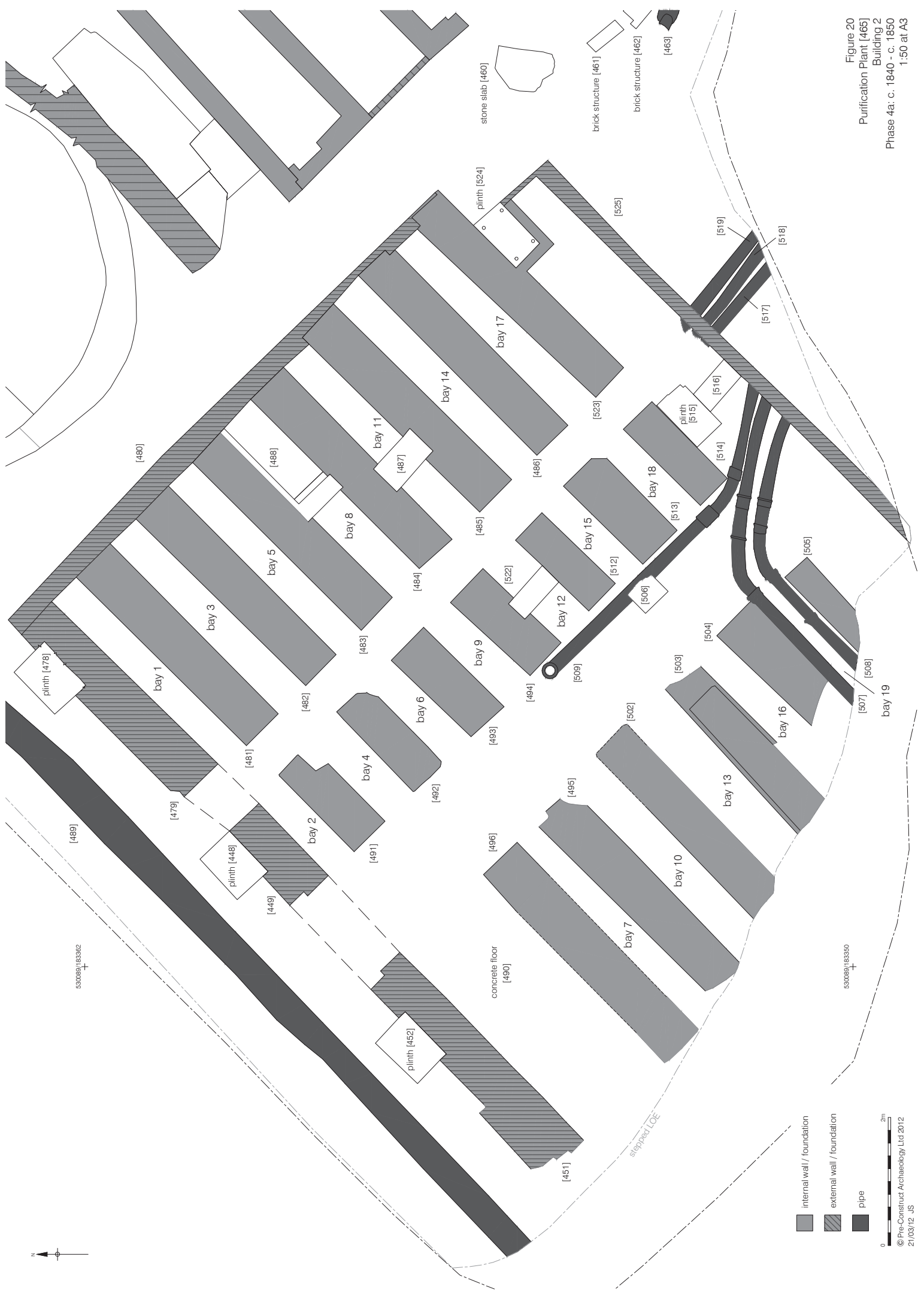


Figure 20  
Purification Plant [465]  
Building 2  
Phase 4a: c. 1840 - c. 1850  
1:50 at A3



- internal wall / foundation
- external wall / foundation
- pipe





## **7.6 PHASE 4B: MID-LATE C19TH: ENLARGEMENT; NEW CRUSHING HOUSE (C.1851-C.1880)**

### **7.6.1 THE CRUSHING HOUSE (Figure 22)**

7.6.1.1 The Crushing House (also known as the Materials House/Shed) [762] is believed to have been where freshly the imported coal was broken down into smaller grade material for it to flow readily to fill the retorts or ovens in the carbonizing plant or retort house for the gasification process. An alternative interpretation is that this building was established to crush coke produced from the retorts for use in the scrubbers. The building observed here is a later addition to the already established gas works.

#### **7.6.1.2 Room 1**

7.6.1.2.1 A majority of the area of the Crushing House exposed during the strip and map forms Room 1, measuring 15.50m by 13.00 as exposed. It was bounded to the north by a substantial foundation [289], [295], [298], [307]. The wall ran in a NE-SW direction for 10.00m with a width of 0.70-80m before turning ninety degrees in a NW-SE direction for a further 3.00m with a width of 0.70-90m. The wall was constructed of predominantly shallow frogged yellow fabric bricks, 3035, measuring 210-220mm x 100-110mm x 60-70mm. It was bonded with a light yellowish grey sandy mortar. Its maximum height was 1.13m at a level of 20.26m OD.

7.6.1.2.2 The partial remains of an internal flagstone floor [299] & [306] were observed within this room. Floor [299] measured 4.00m (NW-SE) by 3.50m (NE-SW) with floor [306] recorded as 5.00m (NW-SE) by 3.50m (NE-SW). Later truncation separated the two areas. The floor was composed of Yorkstone slabs measuring 0.05m x 0.06m from the smallest up to 0.80m x 0.90m at the largest. From its appearance it looked as though the slabs were machine cut and laid flat on a mortar bed. The floor was between 19.81m and 19.62m OD.

7.6.1.2.3 A circular cast iron ring delimited by predominantly purple fabric 3032 bricks [324] was seen a short distance south of wall [231]. The bricks measured 220mm x 110mm x 70mm, had shallow frogs, many of which were bat bricks. It was bonded with a light yellowish grey mortar and the structure as a whole measured 0.80m by 0.80m. A level of 19.77m OD was recorded. As the feature lay in a highly contaminated area it was not fully excavated and thus it's function can only be a matter of speculation. It is possible that it represented a storage container for a liquid substance or that it connected to pipes located further below the floor level.

7.6.1.2.4 Three brick-lined drains or channels [316], [317], [320], [321] were seen in the south-east corner of the trench. A heavily truncated piece of masonry [316] measuring 0.38m by 0.24m and composed of red fabric 3032 bricks with a sandy yellowish brown mortar was likely part of channels [317] and [320]. It was at a level of 19.59m OD. [317] and orientated NE-SW; it measured 4.24m in length by 0.74m wide, was made of the same building materials and at a level of 19.57m OD. Channel [320] extended in a NW-SE direction for 4.30m, varying in width from 1.20m to 0.30m at narrowest. It was at a level of



19.53m OD. The final drain [321] located a little further west, measured 2.80m in length by 0.84m wide and ran in a NW-SE direction at a height of 19.21m OD. The use of standard 3032 bricks, as opposed to heat resistant kiln brick, suggests that these structures were for the drainage of liquids and not flues for the passage of gas. Additionally they did not appear to have interacted with the adjacent cast iron pipes.

7.6.1.2.5 Located towards the western LOE a large vaulted brick structure [236] was observed. It was not fully excavated due the contamination issues related a concentration of iron cyanide in the southern portion of the trench. It was possible, however, to discern an arched roof in section at the truncated end to the north. The extent of the vaulted structure was 6.50m (NW-SE) by 3.00m (NE-SW) into the LOE. It comprised of red and yellow fabric bricks, 3032 & 3035, approximately 220mm x 80mm x 100mm, bonded with a brownish yellow sandy mortar. This vaulted chamber appears to have continued south and west and led into Room 3. It was recorded at 19.56m OD. Built into the top of the structure, to the south, was a rectangular inspection chamber [243] constructed of yellow fabric bricks, 3035, and hard grey mortar. It measured 1.40m by 1.30m and was filled with demolition rubble. Its top level was recorded at 19.42m OD. To the north of the structure, immediately adjacent to wall [235] was a Yorkstone slab [239] measuring 0.76m by 0.40m at 19.73m OD. This has been interpreted as a step.

7.6.1.2.6 A number of plinths/bases were observed within Room 1, constructed of brick lined Yorkstone slabs. The bricks were a combination of red and yellow fabric bricks and the dimensions of the plinths/bases below varied and have been presented in the table below.

Context No.	Materials	Length	Width	Level
223	Yorkstone; Brick	0.60m	0.60m	19.37n OD
227	Yorkstone; Brick	0.50m	0.50m	19.45m OD
238	Yorkstone	0.66m	0.66m	19.70m OD
300	Yorkstone; Brick	0.69m	0.69m	19.72m OD
301	Yorkstone; Brick	0.82m	0.70m	19.70m OD
318	Yorkstone	0.54m	0.50m	19.43m OD
319	Brick	0.80m	0.80m	19.46m OD
322	Yorkstone; Brick	1.60m	1.40m	19.21m OD

7.6.1.2.7 The precise nature or function of these plinths is uncertain. Although it is possible that they represent bases for heavy machinery and equipment, it is just as likely that they were the foundations for beam supports for the roof of the Crushing House.

### 7.6.1.3 Room 2

7.6.1.3.1 This smaller basement room measured 3.00m by 2.00m and was bounded by walls [285] and [287] with an entrance to the west. Recording of this room was limited as a result of the discernable presence of contaminants.

7.6.1.3.2 The northern wall [285] extended 2.00m in a NE-SW orientation before turning approximately sixty-five degrees and running for 4.00m in a NNW-SSE direction. It was

predominantly constructed out of unfrosted yellow fabric bricks, 3035, with some frosted red/purple 3032, inclusions. They were bonded with a light greyish cement. The basement wall stood 1.67m high to the basal LOE. A height of 19.38m OD was recorded from the top of the wall.

7.6.1.3.3 Wall [285] is build around a large cast iron pipe [287] which dominates the south-east corner of the room. The pipe is vertical and measured an approximate diameter of 1.44m. The pipe was flanged towards the top end. A concrete slab [286] seemingly associated with this pipe and adjacent wall [285] was observed abutting it's eastern edge. It measured 2.27m by 1.03m and comprised a poured concrete slab. It was located at 19.15m OD.

7.6.1.3.4 The southern wall [288] of the basemented room was made of the same materials as [287] and measured 2.62m by 1.88m, standing 1.78m tall from the basal LOE. Incorporated as part of this feature was a 1.50m by 1.00m chamber which was filled with brick rubble. It is likely that this was associated with a large cast iron pipe [287] and performed a similar function to brick chamber [296]. This structure was recorded at 19.49m OD.

#### 7.6.1.4 Room 3

7.6.1.4.1 Adjacent and to the west lies Room 3. This measured 7.00m by 5.00m (to the western LOE) and was bounded by walls to the north [226], to the east [225], [241], [231], and to the south [233], [235].

7.6.1.4.2 The north wall [226] was constructed of purple/red fabric bricks, 3032, measuring 220mm x 100mm x 60mm with a yellowish brown sandy mortar. It measured 1.50m in length by 0.60m wide and was observed at 19.72m OD. A space existed between this wall and [225] which indicated the presence of a backfilled passageway. Wall [225] was constructed mostly of fabric 3032 bricks with a few yellow fabric 3035 bricks included. It was bonded in a yellowish brown sandy mortar and rendered with Portland cement, dating it firmly to post 1840. A change in the build [241] was identified just over 1.00m southwards where the mortar changed to a hard grey Portland cement. Despite the slight change in building fabric it is believed that these two sections of wall were contemporary. The wall continued south for 1.80m and measured 0.56m in width at 19.09m OD.

7.6.1.4.3 A portal into Room 2 separated walls [241] and [231], with the latter continuing in a south-easterly direction, displaying the same building characteristics as [241]. It measured 3.80m in length, widening to 0.80m before turning ninety degrees in a south-westerly direction. Its top level was at 19.80m OD. This wall appeared to have been horizontally truncated as it continued west [233] and dropped to a level of 18.83m for 2.50m. Wall [235] rose to 19.87m OD over its final 2.32m before running into the western LOE of the trench. The room was further delimited by wall [230], protruding from the western LOE. It ran in a NW-SE direction for approximately 3.00m and was composed of the same masonry and bonding material as seen for the remainder of the room. A level of 19.51m OD was recorded.

7.6.1.4.4 A set of partially rendered brick steps (Figure 29, Section 31) [232] were observed towards the south of the room, abutting wall [231]. Constructed of red and yellow fabric bricks,

3032, 3035, measuring 230mm x 105mm x 65mm, the small staircase extended 0.90m in a NW-SE direction. It was clad in red tile. A top level of 18.81m OD was recorded and a basal level of 18.22m OD.

#### 7.6.1.5 Exterior Plinths/Bases

7.6.1.5.1 Four plinths/bases of unknown purpose were observed immediately north of the Crushing House. All were construction of a mixture of unfrogged, machine moulded red and yellow fabric, 3032, 3035, bricks with light yellowish grey mortar with flint, shell and clinker inclusions. Details of these structures are listed in the table below.

Context No.	Materials	Length	Width	Level
282	3032; 3035	0.96m	0.95m	19.67m OD
284	3032; 3035	0.88m	0.85m	19.71m OD
290	3032; 3035	0.80m	0.48m	19.15m OD
291	3032	0.60m	0.54m	19.04m OD

#### 7.6.1.6 Cast Iron Pipes

7.6.1.6.1 A number of cast iron pipes were observed, the details of which can be seen in the table below.

Context No.	Length	Diameter	Thickness of material	OD Height
252	2.70m	150mm	12mm	19.43m
253	5.03m	180mm	8mm	19.64m
254	7.56m	190mm	11mm	19.44m
255	0.57m	130mm	-	19.48m
256	7.04m	150mm	15mm	19.61m
257	1.10m	150mm	8mm	19.37m
258	1.18m	150mm	-	19.29m
259	1.45m	190mm	11mm	19.89m
260	1.00m	320mm	-	19.24m
261	1.47m	260mm	14mm	19.30m
263	1.48m	140mm	7mm	19.49m
275	1.83m	100mm	7mm	19.38m
294	1.69m	-	-	19.56m



530152/183332

530124/183332

Figure 22  
Crushing House [762]  
Phase 4b: c. 1851 - c. 1880  
1:125 at A4



## **7.7 PHASE 4C: LATE C19: ADDITIONS: (C.1881-C.1900)**

### **7.7.1 THE RETORT HOUSE (Figure 23)**

#### **7.7.1.1 Modifications to the Coal Bin**

- 7.7.1.1.1 Two sets of masonry were added to the Coal Bin area within the Retort House, compartmentalising the space into three areas; the smallest located at the foot of the staircase measuring 1.50m by 2.50m, the second measuring 7.50m by 2.50m and the third 12.50m by 2.50m.
- 7.7.1.1.2 The northern additions comprised two sets of masonry [222] & [763] measuring 0.85m and 0.60m (NE-SW), respectively, by 0.45m wide. These were of red and yellow fabric, 3032, 3035, bricks measuring 230mm x 110mm x 60mm and bonded with Portland cement. The southern modifications [208] & [764] wall stubs were composed of the same fabric and measured 0.68m and 0.70m (NE-SW), respectively, by 0.35m.
- 7.7.1.1.3 The exact purpose of these minor additions to this space is not known although it is possible they were included to more efficiently demarcate the separation of differing size and/or types of material being stored along the length of the room.

#### **7.7.1.2 Additions to the south of the Retort House**

- 7.7.1.2.1 A number of structural features were observed to the south of the Retort House which appears to have belonged to a later phase of activity. A curving brick wall [247] was recorded adjacent to the NE-SW portion of wall [200]. It was constructed of frogged red 3032 and yellow fabric 3035 bricks bonded with a yellowish brown sandy mortar. It measured 1.28m x 1.20m and was recorded at 19.70m OD. This curvilinear wall abutted masonry [248] that was more square in plan, made of the same building fabric and measuring 0.80m by 0.60m. The function of these additions to the Retort Building is unclear but could relate to structures and/or features located to the east, beyond the LOE of the trench.
- 7.7.1.2.2 Another addition was recorded running from the south-west corner of the Retort House east towards Room 3 of the Crushing House. This long rectangular brick-lined chamber, [224], [245] & [246] extended for approximately 9.00m in a NE-SW direction with an average width of 2.00m. A number of cast iron pipes, [262], [264], [265] & [266] passed through the structure, which was built with deep frogged red fabric 3032 and yellow 3035 brick with a hard grey mortar. The top level recorded was 20.00m OD. A vertical concrete encased cast iron pipe [249] was housed inside the chamber which measured 1.32m by 1.22m at 19.79m OD.
- 7.7.1.2.3 Two concrete rendered brick bases, [279] & [278], were observed adjacent to and immediately south of the brick lined chamber. They were both constructed of a combination of one visible course of unfrogged red fabric 3032 and yellow 3035 brick. Base [279] measured 1.31m by 1.20m and base [280] was recorded as measuring 2.24m by 1.79m. Both were located at 19.38m OD. Their function remains uncertain although

given their position, between the brick lined chamber and the basemented room of the Crushing House, it is possible they form the remains of one large foundation for a since demolished structure which linked the processes of the Retort House with those of the Crushing House.

- 7.7.1.2.4 Finally, a brick inspection chamber [281] was found within 2.00m to the south-east of the concrete rendered bases. It was built with a mix of unfrogged, stock moulded fletton and kiln brick, bonded with a light grey cement mortar. It measured 2.17m by 1.45m at 19.38m OD.



Figure 23  
 Retort House [220]  
 Phase 4c: Late 19th century additions  
 (c. 1881-C 1900)  
 1:125 at A4

## 7.7.2 THE PURIFICATION PLANT (Figure 24)

### 7.7.2.1 Modifications to Scrubber Base 1

7.7.2.1.1 Later masonry was identified within Scrubber Base 1, which indicated that modifications were made towards the end of the 19<sup>th</sup> century. The changes comprised four individual but related pieces of masonry, namely; a brick lined channel, a concrete surface and two brick footings. It is likely their construction occurred as a result of an attempt to increase the efficiency of the purification process associated with the scrubber tanks.

7.7.2.1.2 Brick channel [435] was composed predominantly of red fabric 3032 brick with some yellow 3035 inclusions. It was bonded in a hard reddish grey cement mortar. The channel measured 2.47m by 0.30m and was approximately 0.41m deep. It was at 20.42m OD and was situated at the northern limit of the scrubber base.

7.7.2.1.3 A 0.50m gap separated this channel from a substantial brick base [434] which was made of yellow fabric 3035 brick set in the same dark reddish grey cement mortar. This base was stepped and measured 6.00m by 0.70m by 0.35m high at 20.37m OD. It ran parallel to the channel.

7.7.2.1.4 Adjacent to this was a concrete surface [433] measuring 6.00m by 0.58m. Its thickness remains unknown. It was recorded at 20.02m OD. This surface abuts the final addition to the scrubber base which comprised a 5.00m by 0.34m brick footing [432]. The footing stood 0.74m high and comprised yellow fabric 3035 brick in dark reddish grey cement mortar. It was found at 20.45m OD. It is possible that the concrete surface, which was set around 0.40m lower than the surrounding brick work, supported machine or cast iron pipes which had since been removed.

### 7.7.2.2 Additional Walls, Plinths and Bases

7.7.2.2.1 Some small additions to the structure of the plant in Buildings 1 and 2 were observed which appeared (on the basis of building fabric) to be later modifications. This comprised two bricked up entrances to Building 2, one wall addition associated with a plinth within Purifier Bay 1 (Building 1) along with two further plinths/bases in the same area.

7.7.2.2.2 Evidence of the bricking- up of two possible entrances in Building 2 was observed along the north western side of the structure. The more substantial build [450] was formed of yellow fabric 3035 and red 3032 bricks bonded in a very hard grey mortar and measuring 1.80m by 0.25m. The remains measured 0.68m in height and were located at 20.21m OD. Just over 1.00m to the north-east was further evidence for a blocked doorway [500], this time comprising solely of a single course width of frogged yellow 3035 fabric brick with a hard grey mortar, measuring 0.86m by 0.12m by 0.30m high. It was found at 19.94m OD.

7.7.2.2.3 A modification [475], most likely a repair, relating to the south-western end of Bay 1 in Building 1 comprised yellow 3035 fabric brick with one course of red 3032 fabric brick at its base. This was bonded with a bluish grey cement mortar and measured 0.73m by 0.21m at 19.85m OD. A similar addition [477] was observed to plinth/base [426]. This was



constructed from predominantly red 3032 fabric brick with a hard grey concrete mortar and measured 0.90m by 0.66m by 0.99m tall at 20.64m OD.

- 7.7.2.2.4 Evidence for the final addition to the Purification Plant comprised a construction cut [456] with associated brick base [456] which appears to have been fitted for the installation of a pipe which ran NE-SW through the three Tar Wells located within Building 1. The cut measured at least 11.00m in length by 0.70m in width and was found at 19.77m OD. The brick base [456] was constructed of an even proportion of yellow fabric 3035 brick and kiln brick bonded with a light grey Portland cement. The base was at 19.90m OD.



Figure 24  
Purification Plant [465]  
Phase 4c: Late 19th Century additions (c.1881 - c. 1900)  
1:125 at A4

### 7.7.3 THE CRUSHING HOUSE (Figure 25)

#### 7.7.3.1 The Modified Entrance

7.7.3.1.1 One of the more noteworthy alterations to the Crushing House is the modification of the entrance along the north wall [295]/[307]. This work resulted from the addition of a new pipe and necessitated some changes to the structural configuration of the wall. This was clear from differences in the building material the relationship between various sections of the masonry.

7.7.3.1.2 The threshold [292] was made of predominantly frogged red fabric 3032 brick capped with a large Yorkstone slab, bonded with a yellowish grey sandy mortar. It measured 1.29m in length by 0.36m wide by 0.44m high. Its top level was at 20.06m OD. Abutting the threshold (on the exterior side of the portal) were a series of kiln bricks [293], measuring in total 0.91m in length by 0.22m in width at 20.09m OD. It can be theorised that these were added during the insertion of the new pipe which probably transferred hot vapours in or out of the building.

7.7.3.1.3 The construction cut for the new pipe [304] penetrated through the flagstone surface and was sub-rectangular in plan with near vertical sides and had a reasonably flat base. It measured 2.34m in length by 1.46m in width with a total depth of 0.62m. It was noted at 19.71m OD. The cut was lined with brick [305] in order to protect the now absent pipe. The brick was a combination of reused purple fabric 3032 and yellow fabric 3035 frogged brick bonded with a light yellowish grey mortar.

7.7.3.1.4 There were four additional sections of masonry in the vicinity of this point of access (and believed to be associated with it). They were all constructed of an engineering brick type known as Staffordshire Blue, measuring 230mm x 140mm x 70mm which was unfrogged, machine moulded and bonded with a dark brownish grey mortar. Individual dimensions/levels for the wall modifications are detailed in the table below.

Context No.	Materials	Length	Width	Level
302	Staffordshire Blue Brick	0.58m	0.14m	19.82m OD
303	Staffordshire Blue Brick	1.92m	0.48m	19.75m OD
323	Staffordshire Blue Brick	0.89m	0.30m	19.77m OD
765	Staffordshire Blue Brick	0.25m	0.25m	19.75m OD

#### 7.7.3.2 Modification to Room 3

7.7.3.2.1 A dividing wall [240] was observed in Room 3 which appeared to be of a later phase to the adjacent build, due to relationship and building fabric. It was 'L' shaped, in plan; the NE-SW portion measured 1.50m by 0.30m with its NW-SE section running over a length of 3.00m. It was constructed from red fabric 3032 and yellow fabric 3035 brick with a dark hard mortar. It was found at a level of 19.45m OD.

7.7.3.2.2 It is likely that this wall represents a later modification to Room 3, creating a sub-division between the area on the east side and that lying outside the LOE of the trench, to the

west.

### 7.7.3.3 Other Additions

- 7.7.3.3.1 A rectangular brick chamber [296] was seen adjacent to the external wall foundation of the Crushing House [289]/[298]. This was located on the inside of the building, it measured 1.60m by 1.21m with the lower courses built with fletton brick and with kiln brick forming the upper course. The use of these brick types suggests that heated vapour passed through this chamber indicating that this may have been a base of a chimney/exhaust flue likely connected with the large vertical cast iron pipe situated immediately to its north in Room 2. The cut [325] as well as containing the masonry was also filled with a loose dark brownish grey ashy gravelly silt deposit [326]. This feature was found at 19.67m OD.
- 7.7.3.3.2 A brick structure interpreted as a machine base [315] was present further south, within remains of the Crushing House. It was built from yellow fabric 3035 brick which contained ventilation holes and measured 280mm x 120mm x 70mm. It was set in a hard grey mortar and measured 1.24m by 0.96m. It was observed at 19.52m OD. The use of this type of brick suggests that the machine that was once incorporated into this structure operated with highly pressurised and/or hot gases as a by-product.
- 7.7.3.3.3 The final modification made during this phase consisted of the addition of a brick lined inspection pit [283] located 2.00m to the north of the Crushing House building. It comprised mainly shallow frogged red fabric 3032 brick with the occasional inclusion of kiln brick, set in a yellow/brown grey mortar. It measured 1.60m by 1.48m with a depth of 0.52m and was recorded at a level of 19.65m OD.





- wall
- retained wall
- retained floor
- retained feature

0 5m  
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 21/03/12 JS

Figure 25  
 Crushing House [762]  
 Phase 4c: Late 19th century additions (c.1881-c1900)  
 1:125 at A4

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## **7.8 PHASE 5: EARLY C20TH: DECOMMISSIONING, DEMOLITION AND GNR WALL (C.1904-C.1915)**

- 7.8.1 There was evidence of demolition deposits at various locations across the trench, notably within the backfilled scrubber tank bases and tar wells. Isolated dumps of clinker and iron oxide were also noted as was a layer of made ground observe in the trench section.
- 7.8.2 A layer of demolition rubble was seen across much of the site. This material had been retained and was recorded in a number of the tar wells which were not fully excavated as a result to health and safety concerns over associated contamination. In two cases the demolition material [436] and [497] comprised loose reddish orange fabric 3032 brick and mortar. Contamination had in some instances stained the deposits black. The fills were present within tar wells [400] and [411] and were at levels of between 20.03m OD and 20.05m OD. A further deposit was noted within a probable well [393]. This was a loose dark brown sandy silt [498] with brick rubble comprising red and purple fabric 3032, yellow stock and fabric 3035 kiln brick. Iron pipe fragments and fittings were also noted within this fill which was recorded at 19.73m OD.
- 7.8.3 Geotechnical Test Pit H5 revealed a layer of black clinker/coke which was approximately 0.70m thick, at 18.25mOD. As this was not observed in nearby test pit the assumption can be made that this is an isolated dump.
- 7.8.4 Another isolated deposit, this consisting of iron oxide waste [521], was observed inbetween bay foundations [486] and [523] in the Purification Plant. It was reddish brown in colour and contained small fragments of brick. The deposit measured 1.16m by 0.60m and was recorded at a height of 19.55-58m OD.
- 7.8.5 Sealing the above deposits was a demolition layer [397] which was made up of a loose mid brown silty sand with CBM fragments. It also contained fragments of concrete and mortar. Other inclusions were a number of pieces of earthenware and stoneware pottery as well as a single mould made Rockingham-type ware flanged teapot lid and an intact ink bottle with a pouring spout (the base of the bottle was stamped with the legend 'CALVERT & LOVATT\NOTTSLANGLEY MILL'). A number of fragments of glass, including some intact bottles, were also recovered, including a probable drinks bottle, a milk bottle, ink bottles, Bovril bottles, and a bottle embossed with the lettering: "ELLIMAN'S EMBROICATION" which was a container for a muscle pain relief lotion. All datable material recovered was identified as being late 19<sup>th</sup> century or early 20<sup>th</sup> century. The layer was up to 2.42m thick, the top of which was observed at around 22.25m OD towards the western side of the site (Trench 2 (B5)).

### **7.8.6 THE GREAT NORTHERN RAILWAY BOUNDARY WALL (Figure 26)**

- 7.8.6.1 A 14.00m long stretch of wall was observed in Trench 2 (B5) running in an approximately NNW-SSE direction. It would appear that this structure formed a temporary boundary wall that was erected at the time the ownership of the eastern portion of the site changed to the Great Northern Railway company.

- 7.8.6.2 The foundation [357] of the wall was constructed of York stone and measured at 320mm by 70mm by 1700mm, where observed. It is likely this material was reused, possibly from an earlier surface. It was identified at a level of 19.85m OD.
- 7.8.6.3 The main surviving element of wall [340] comprised red and yellow fabric 3032 brick measuring 220mm x 62mm x 100mm. It was set in a greyish cement mortar. It was noted by the excavator that this wall had the appearance of being a quick build. Levels were recorded between 20.13m OD – 20.32m OD.
- 7.8.6.4 Minor repair work [526] was noted on a small portion of the western edge of the wall, possibly to reinforce structural integrity as this portion joined up with earlier masonry [444] related to the Purification Plant in a manner which could impair its stability. The repair was composed of a 1.60m by 0.10m stretch of reddish orange fabric brick measuring 220mm x 110mm 70mm. It was observed at a level of 20.21m OD.
- 7.8.6.5 The temporary boundary wall, separating land under ownership of GNR from that retained by the gasworks, was lost in a subsequent phase during the construction of a new stable building.

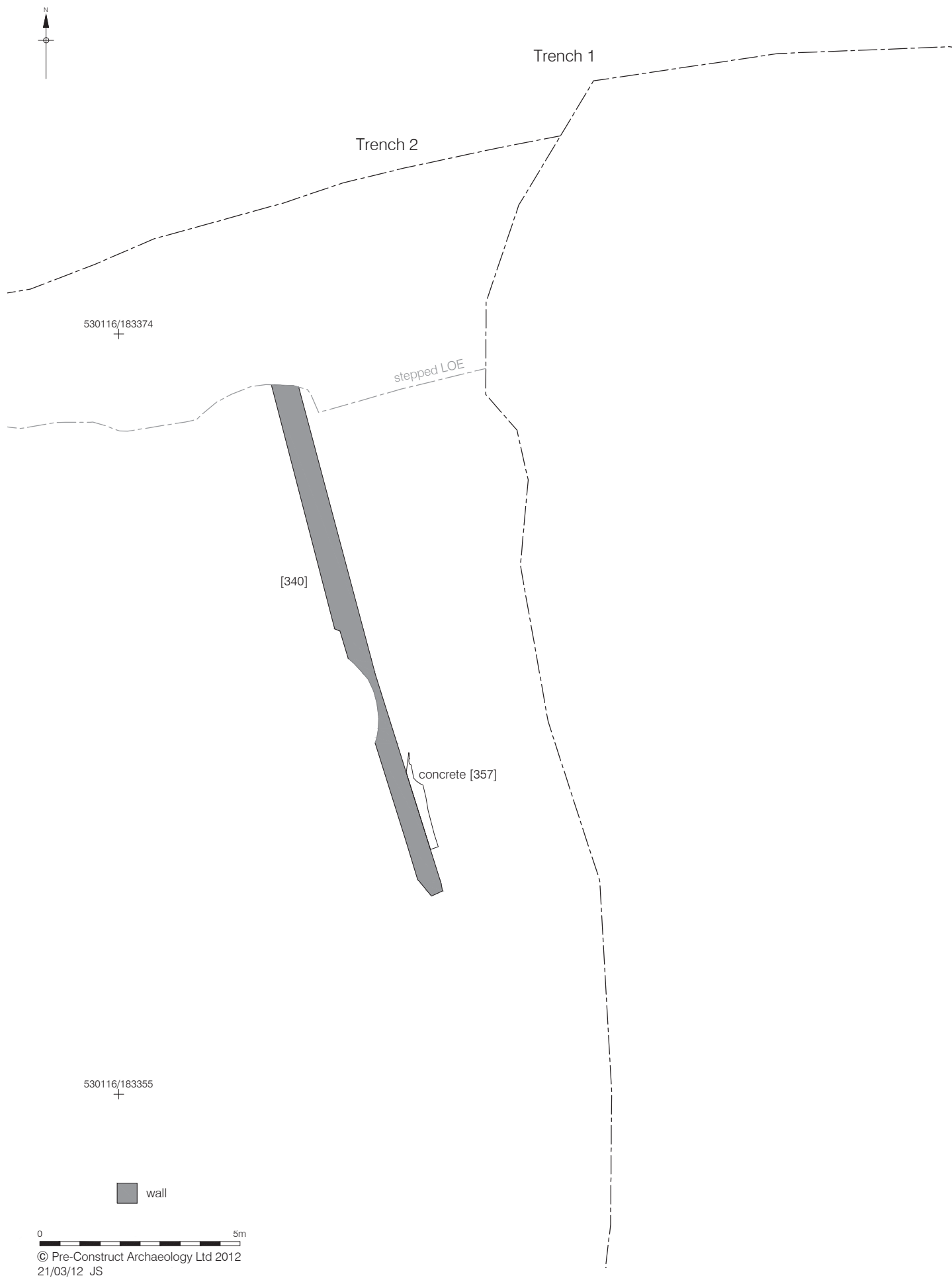


Figure 26  
Boundary Wall  
Phase 5: Early 20th Century  
1:125 at A4



## **7.9 PHASE 6: EARLY-MID C20TH: STABLING, PARKING & PIGGERY (C.1916-C.1953) THE STABLE BUILDING**

7.9.1 Evidence for this phase of activity is represented by the foundations of a stable building [511] known to have been constructed c1916-1918. The archaeological investigations revealed evidence of preparatory works, footings, external and internal wall foundations, repair work and surfaces all related to the stable block (Figure 27). No evidence of the piggery or of road surfacing datable to this period was found.

### **7.9.2 Ground Preparation**

7.9.2.1 A layer of soft mid-greyish brown sandy silt [458] was identified on the north side of the trench, in section (Figure 29, Section 35). It contained moderate small flint pebble inclusions and was approximately 0.30m thick. It was recorded at a level of c19.90m OD. This levelling layer is thought to have been laid down as a make-up dump in preparation for the construction of the stables.

### **7.9.3 Concrete Foundations**

7.9.3.1 The concrete foundations [336], [349], [417], [418] and [421] themselves were of a greyish portland cement containing occasional clinker and small fragments of brick and York stone. It varied in thickness from 0.35-0.50m. These foundations were observed along the full length of the stable building at levels of 20.18m to 20.22m OD.

### **7.9.4 External Walls**

7.9.4.1 The main build of the stable block comprised two structural supporting external walls running parallel in a NNW-SSE direction; [330] on the western side and [332] & [335] on the eastern side.

7.9.4.2 Wall foundation [330] was 30.00m in length (within the LOE) with a width of 0.70m and a surviving height of 0.45m. It was constructed of red/yellow fabric (3032/3035) brick measuring 220mm x 120mm x 80mm and 220mm x 100mm x 70mm set in a yellow sandy (roman) mortar. Welsh slate was also used to produce a damp proof course. Two internal walls [341] & [404] were observed abutting wall [330] forming at least two separate rooms. The top of the foundation was at a level of 20.40-20.61m OD. Portions of the wall sat directly on top of earlier structures related to the Purification Plant (e.g. wall [424] and tar well [401]).

7.9.4.3 The eastern limit of the building was represented by a 23.00m stretch of wall [332] & [335], which had been partially truncated by later activity towards the southern end. Further, isolated portions of it were observed, [228] & [234], further south. The width of the eastern external foundation was approximately 0.65m and it stood to 0.52m in height. The brick type was identical to that used in wall [330]. The two internal walls [341] & [404] also abutted this foundation. Evidence of repair work [376] was observed towards the portion of the wall closest to the northern LOE. The brick here comprised unfrogged yellow gault brick measuring 230mm x 110mm x 65mm. It was bonded with a grey mortar containing clinker. The portion of the wall that displayed evidence repair/modification work measured 6.00m in

length by 0.66m in width. Gault brick was known to be manufactured in Cambridgeshire towards the end of the 19<sup>th</sup> century and as such it's presence here is indicative of the import of this brick from further afield, possibly re-used from the demolition material of a different site. Unlikely as it is that the brick was imported specifically for the construction of the stable block, it is likely that the gault brick was spare from material that had been brought in for construction work elsewhere on the GNR site. Heights were recorded as 20.40mOD on the main portion of the eastern wall and 20.18m OD on the repaired portion.

- 7.9.4.4 Two further stretches of the eastern wall of the stable building were also observed. Wall [228] was recorded in Trench 1 (B6) near the south western LOE. It comprised yellow/pink deep frogged brick (predominantly fabric 3035 with some 3032) measuring 220 x 80mm x 100mm and bonded with a hard dark grey mortar with frequent chalk fleck inclusions. This portion of the wall measured 3.32m in length by 0.50m in width. It rested on an earlier concrete base, was horizontally truncated to a greater degree and was recorded at 19.56m OD.
- 7.9.4.5 The final evidence for the continuation of the stable building to the south was provided by wall [234]. This was constructed with the same brick and mortar types as were used for wall [228], and measured 1.22m by 0.40m by 0.30m tall. Its highest surviving level was recorded at 19.61m OD. The excavator noted that both this wall and [228] were sloppily constructed, as indeed was the majority of the masonry associated with the stable block. This would suggest the stable building was either build inexpensively, inexpertly or both.
- 7.9.4.6 The positioning of walls [228] and [234] suggest the orientation of the building with these had shifted slightly more N-S. This detail is confirmed in map evidence which demonstrates that a 'kink' occurs at this point in the building plan. It is likely that the edifice (which follows the land boundary established between the gasworks and the new GNR site) respected the configuration of Gasholder 8, located close by to the west.

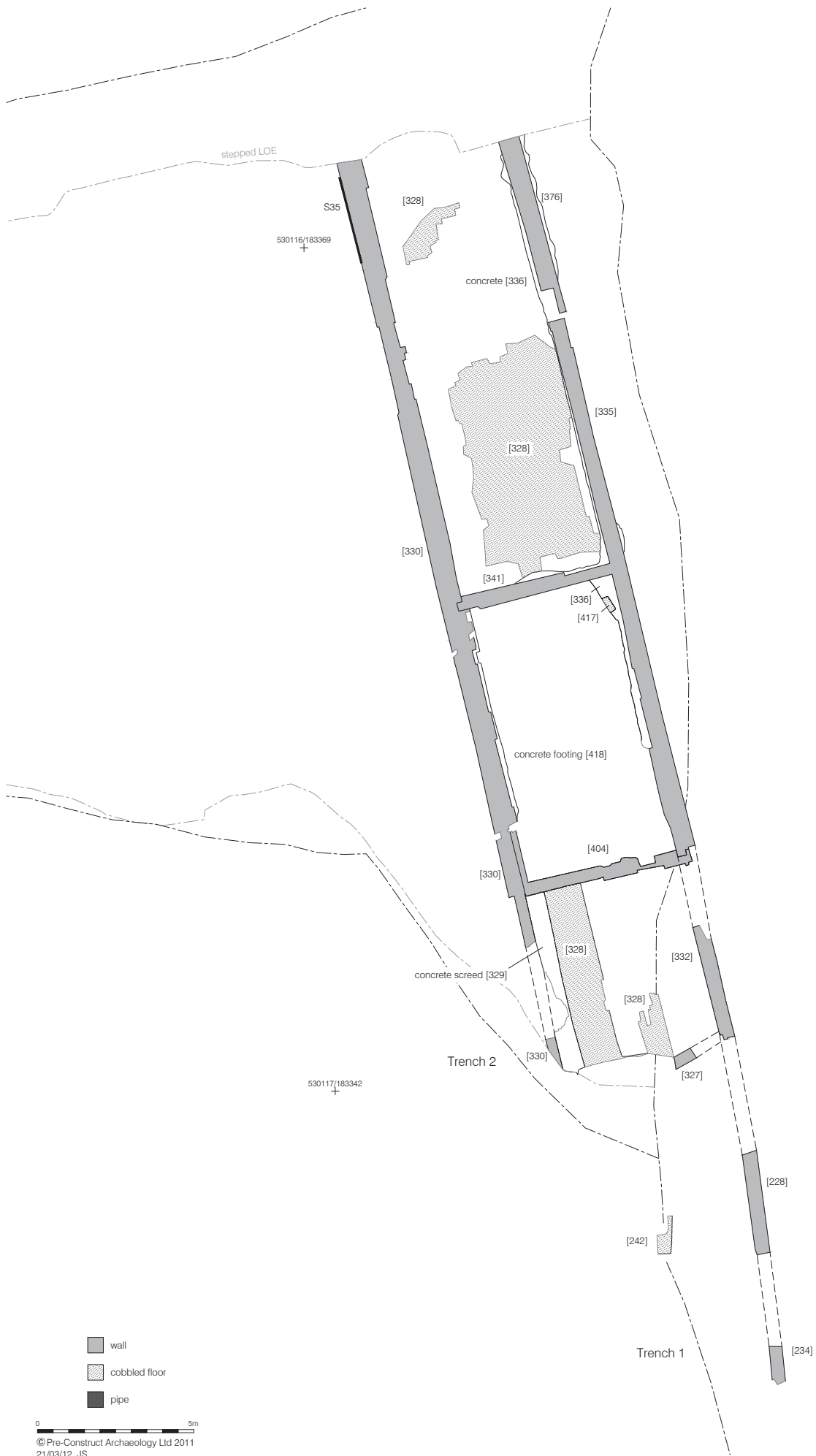
### **7.9.5 Internal Walls**

- 7.9.5.1 Two intact internal walls [341] and [404] were present set at right angles to the external walls creating three individual spaces or rooms within the building. The northern most wall [341] was composed of frogged red/yellow fabric brick measuring 220mm x 100mm x 60mm, bonded with a grey mortar with clinker inclusions. It measured 5.00m by 0.46m and was recorded at 20.60m OD. It appears to have rested upon an earlier York stone surface [347] with iron attachments which were undoubtedly related to the former Purification Plant. A further 5.00m by 0.56m internal wall [404] was seen approximately 9.00m to the south which was recorded as standing at 0.40m in height at a level of 20.40m OD. It is of the same construct as [341] and had Welsh slate used for a damp course.
- 7.9.5.2 A small section of masonry [327] measuring 0.80m by 0.46m by 0.40m was seen 6.00m to the south of wall [404] and is believed to have represented the remains of an additional internal wall, increasing the number of potential rooms to four. This masonry comprised red/yellow brick measuring 240mm x 60mm x 100mm set in a hard grey mortar containing clinker. There was evidence of rendering or paint on the northern face of this wall. The angle

at which the wall was found can be explained as being the result of truncation immediately to the north believed to have resulted from the excavation of a geotechnical test pit inserted in advance of the archaeological strip and map exercise.

#### **7.9.6 Internal Surfaces**

- 7.9.6.1 Some evidence for internal surfaces survived intact, although in many places it was heavily truncated by later activity. Two types of flooring were observed, a cobbled [328] and a concrete one [329].
- 7.9.6.2 The cobbled surface [328] comprised small to large granite and limestone cobbles. These were set into a grey mortar and with a build up of soil was between the gaps. Two main areas of cobblestone were observed, one to the north measuring 15.00m by 7.00m at maximum its extent and another to the south measuring 12.50m by 5.00m, although in the latter case heavily truncated. Levels taken on the cobblestones indicates a height of 20.40m OD.
- 7.9.6.3 Immediately adjacent to the southern area of cobblestones was a 4.00m by 0.60m strip of concrete scree [329]. This was as 0.10m thick at a level of 20.51m OD. It was adjacent to wall [330]. This floor could represent re-surfacing work carried out after the addition of a drain run or other service. Alternatively, the presence of machinery or equipment could have necessitated the existence of a flat surface in this area of the room.



- wall
- cobbled floor
- pipe

0 5m  
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 21/03/12 JS

Figure 27  
 Stable Building [511]  
 Phase 6: Early - Mid 20th Century  
 (c. 1916 - c. 1953)  
 1:125 at A3

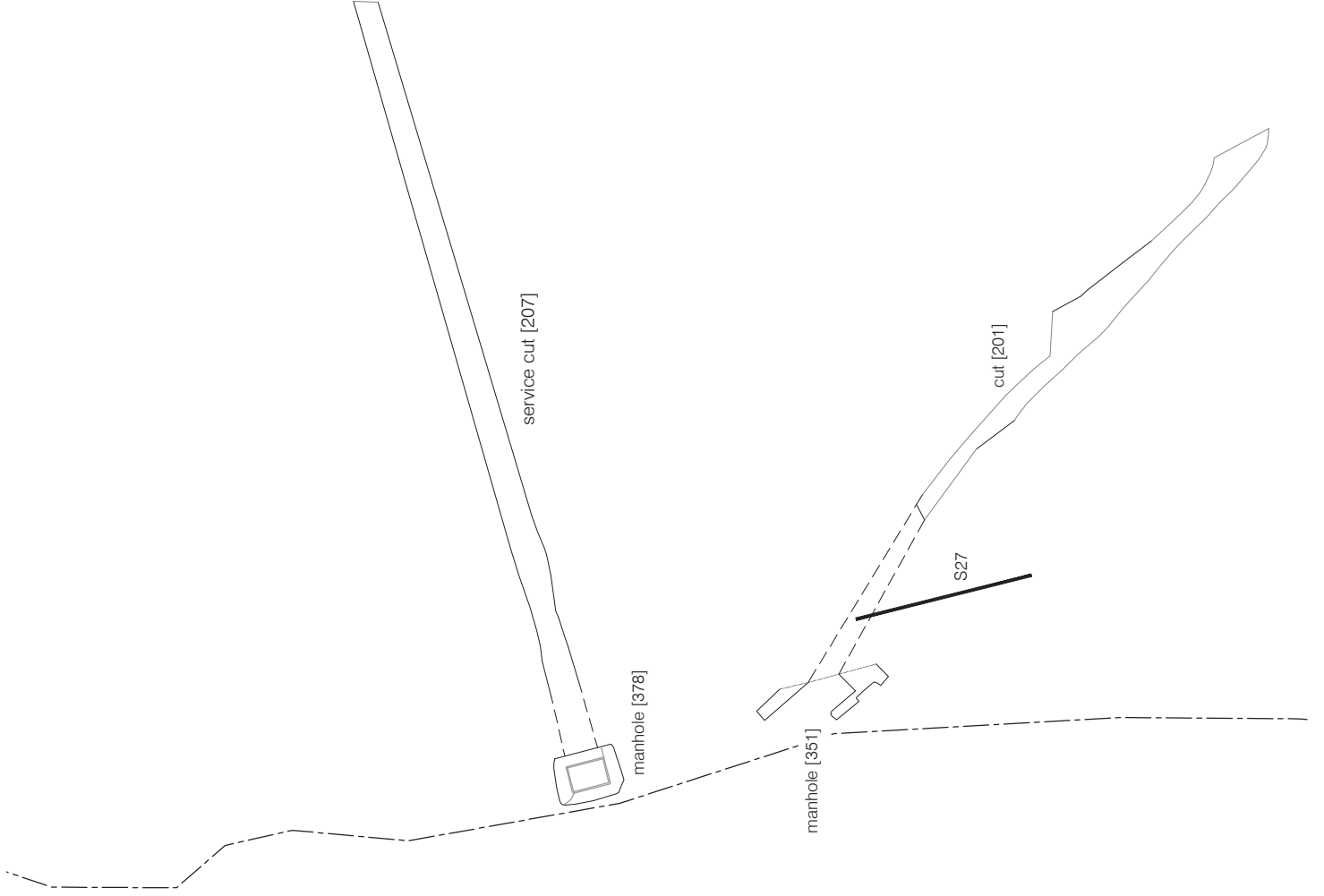


## **7.10 PHASE 7: MID-LATE C20TH: POST-NATIONALISATION DISTRIBUTION DEPOT (C.1953-C.2001)**

- 7.10.1 Evidence for recent and modern activity was observed within Trench 1 in the form of external surfaces, service runs and brick manholes.
- 7.10.2 A section completed in Trench 1 (Figure 29, Section 27) revealed two tarmacking episodes , the first [218] approximately 0.16m thick and located at a level of 20.01m OD. Overlying this was a layer of highly compacted grey concrete which was 0.20m thick, at 20.20m OD. This in turn was overlain by a 0.15m layer of later tarmac at c 20.35 - 20.40m OD. It is likely that this tarmac represented an earlier road or car park surface associated with the distribution depot. Yet another layer of concrete [215] sat on top of the tarmac, measuring approximately 0.10-0.20m in thickness. It was recorded at 20.62m OD.
- 7.10.3 Two service runs truncate earlier demolition layer [397] (Figure 28), which also cut the underlying masonry of the Retort House. One cut [201], which was linear with steep concave sides and a concave base was followed over approximately 6.00m and measured 0.42m in width. Its total original depth remains uncertain. It is believed this cut extended the entire width of the trench, running in a roughly NW-SE direction. Within it was a ceramic pipe [202], as well as a very compact whitish grey concrete [203] which encased the ceramic pipe. A level was recorded at 20.38m OD. The pipe ran into manhole [351] which was constructed of red fabric brick measuring 220mm x 100mm x 60mm and was dated to the mid-late 20<sup>th</sup> century.
- 7.10.4 Another service run [207] was observed in Trench 1, on a NEE-SWW orientation and revealed over a length of 13.00m into the trench LOE. It was approximately 0.50m wide and 0.50m deep and was recorded at a level of 20.33m OD. This cut appeared to run directly towards manhole [378], which was constructed from brick with iron fittings, and included a manhole cover and concrete base. It was set in a grey mortar and measured 1.24m by 0.92m. Its top level was at 20.52m OD. The brick used in its construction dates the manhole to mid-late 20<sup>th</sup> century.
- 7.10.5 Modern made ground [+] of varying thicknesses overlay the majority of the archaeologically investigated areas across Zone B.

530119/183374

Trench 1



530119/183355



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Figure 28  
Phase 7: Mid to Late 20th Century  
1:125 at A4

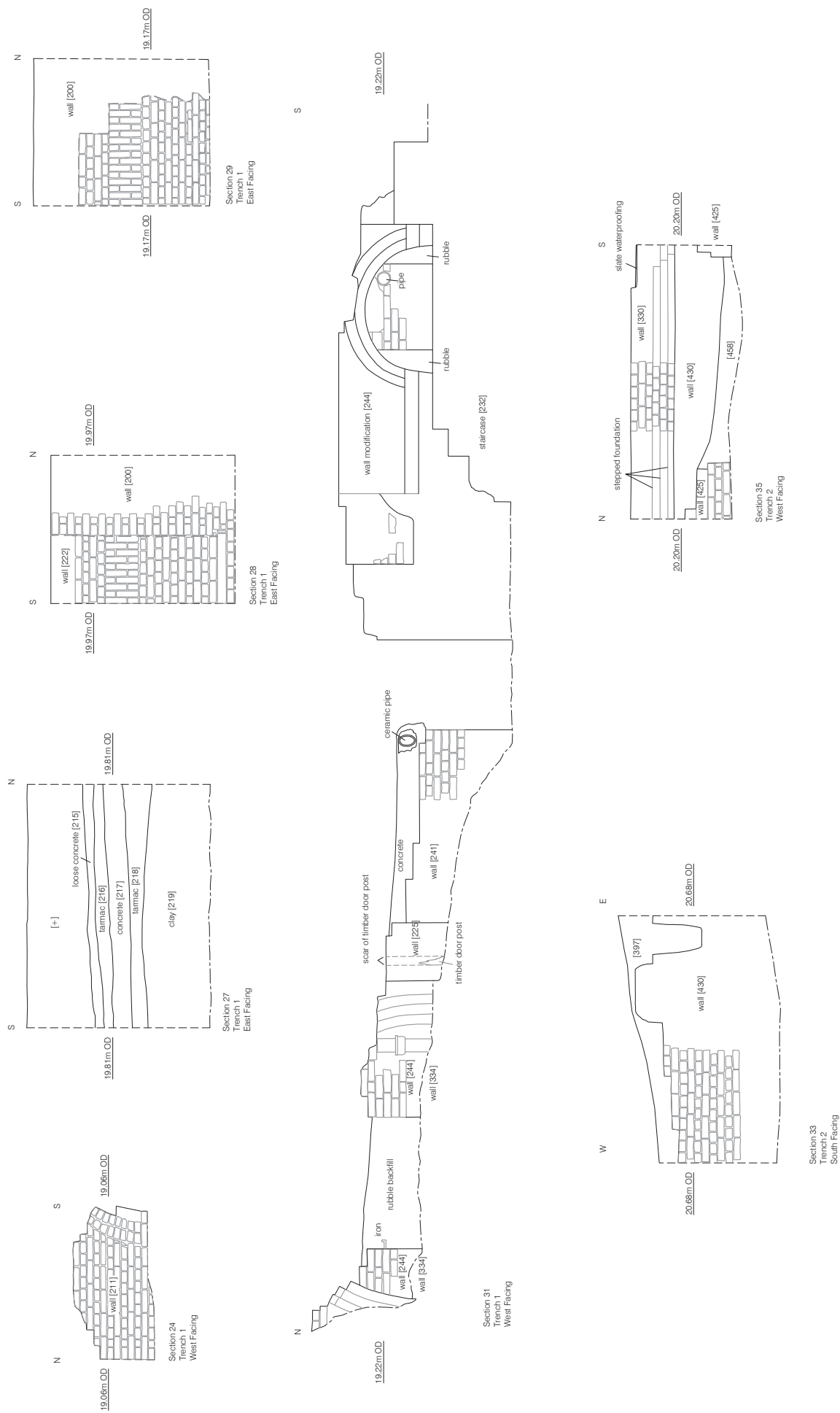


Figure 29  
Sections 24, 27-29, 31, 33 & 35  
1:40 at A3



## **8 Original and Additional Research Objectives**

### **8.1 Original Research Objectives**

8.1.1 The following research objectives are drawn from the Method Statement for the Archaeological Strip and Map and Watching Brief WSI at Development Zone B, Kings Cross Central (Matthews 2010) which are in turn derived from an earlier Archaeological Specification (IHCM 2010).

### **8.2 An understanding of the pre-development ground conditions**

8.2.1 Due to the levels of contamination encountered prior to and during the archaeological investigations, full scale excavation down to the natural geology was not deemed suitable due to health and safety concerns. As such earlier archaeological horizons were observed only during the excavation of small geotechnical trenches and the data retrieved was limited.

8.2.2 However it was possible to establish that the natural geology across the site comprised of London Clay deposited during the Eocene Epoch. The clay was predominantly light yellow/grey in colour, with occasional instances of ground contamination in evidence. It was observed between 17.95m OD and 17.06m OD, appearing higher further west.

8.2.3 Evidence for preparatory ground-works was observed in the form of made ground deposits at varying points across the two trenches. These layers were observed in various areas of the trenches at the basal LOE and also within the geotechnical tests pits and comprised chiefly of silty clay deposits containing occasional fragments of CBM and mortar. It is likely that due to the importance of ground stability on the site of a gasworks a significant amount of levelling and ground raising was employed prior to the construction of structures and buildings relating to the works.

### **8.3 To develop an understanding of the history of the gasworks and the industrial processes that took place there**

8.3.1 Interrogation of available historical records and cartographic sources make it apparent that the area within which the archaeological investigations took place represents only a small proportion of the full extent of the former gasworks. The archaeological remains investigated largely pertain to the later period in the history of the works.

8.3.2 It has proven possible to detail the development of that portion of the site investigated and phase of the works within which the strip and map took place. Evidence for preparatory works was encountered in the form of made ground deposits. In addition the earlier phase of the works is represented by elements of masonry encountered in a geotechnical test pit which appears, upon analysis, to form part of Gasholder 13. Historical research indicates that this gasholder was originally constructed in the mid 1830's. A brick culvert, believed to be of the same period, was also observed.

8.3.3 Subsequently a later phase of expansion was evidenced by substantial building foundations encountered in both trenches. Mid 19<sup>th</sup> century (1840-1850) activity witnessed the extension of the Retort House and the construction of the Purification Plant. This was followed by a new



Crushing/Materials House to the south and various modifications and additions datable to the late 19<sup>th</sup> century.

- 8.3.4 A study of available documentary sources and archives along with an assessment of the archaeological data have facilitated, with considerable confidence, the identification of the functions of many of the structures observed in the two trenches. For example in the former basement of the Retort House the remains of coal bins and structures relating to either the furnaces or the retorts themselves were recognized; the remains of a working surface in the Crushing House; the brickwork bases upon which the Scrubber towers would have been located, the tar wells and the brick banks where the condensing and purifying machinery would have operated were all located. Further analysis will be required to describe and work out the processes carried out on site in detail and to establish the interactions between the various distinct elements of the works, from the transport of coal onto the site through to the eventual storage of the purified gas, and relating these to the individual structures encountered during the investigation.

#### **8.4 An examination of the demise of the gasworks**

- 8.4.1 Historical evidence indicates that the gasworks fell into a steady and relatively rapid decline during the last years of the 19<sup>th</sup> century, culminating in its eventual closure in 1911. The archaeological investigation provided evidence for this phase in the form of demolition layers datable to the early 20<sup>th</sup> century. In addition a 14m long stretch of wall was recorded which is thought to have been a temporary boundary wall erected around the time the eastern side of the site changed ownership and was transferred to the Great Northern Railway company.
- 8.4.2 Within the following ten years a stable block was constructed along the boundary separating the land still occupied by the gasworks and the GNR compound to the east. The foundations of this structure were relatively makeshift with them wherever possible reusing the former foundations of the eastern portion of the now defunct and demolished Purification Plant.
- 8.4.3 Evidence of mid-late 20<sup>th</sup>/early 21<sup>st</sup> century activity related to the rail distribution depot was present in the form of external surfaces, service runs, brick manholes and made ground.

#### **8.5 To examine the relationship between the gasworks and Regents Canal**

- 8.5.1 The location of the two archaeological trenches did not facilitate any investigation into the interaction of the gasworks and Regents Canal.
- 8.5.2 It is thought that the canal originally provided the main point of access for shipments of the raw materials required for the industrial processes of gasification (in particular the import of coal). This would have been obsolete by the mid 19<sup>th</sup> century after the arrival of the new rail lines immediately to the north and east and was very likely the trigger for the expansion of the works during this period.

#### **8.6 Additional Research Objectives**

- 8.6.1 The archaeological investigation and subsequent assessment of the records have raised a

number of additional research questions which should be addressed to improve our understanding of the history of the gas works and the industrial processes involved therein. These questions are outlined below.

- Can we build a detailed model of the process of gasification from its beginning to its final stages and relate this specifically to the individual structures encountered during the archaeological investigation?
- Is there any evidence to provide an insight into the location of the exhausters?
- What information and understanding can be gleaned from an in depth analysis of the various diameter cast iron pipes encountered across the site?
- What is the function of the Phase 4b brick lined channel that runs from the south-west corner of the Retort House?
- Can we obtain a greater understanding of the function of and relationship between the numerous plinths/bases and miscellaneous structures encountered within the Purification Plant?
- Is there evidence to support the inclusion of additional phases of activity within the Retort House, the Crushing House and the Purification Plant?
- Can we model the changes in coal supply to the plant resulting from the changes from a canal to railway supply?
- The expansion of gas production at the Pancras works in the 1830s and 1840s necessitated the enlargement of the station's gas storage capacity. While Davies' map (1834) shows 12 holders, the 1849 Great Northern plan shows 13 of differing dimensions. Eight appear to be the same structures on both maps (Figure 7). When were the gas holders actually constructed? Why and what were their dimensions?.
- By the time that gas production ceased in early 1904, the Pancras works had a complement of six retort houses, suggesting that the final retort house was added after 1846 – when and why was it built.
- It is unlikely that the provision of extensive new retort capacity at St Pancras in late 1852 included the construction of an additional retort house. Neither the contemporary minutes of the Committee for Works nor Stanford's *Library Map of London and its Suburbs* of 1862, suggest additional construction. How was this expansion of capacity achieved?

## 9 Contents of the Archive

### The Paper Record

Context Record Sheets	332
Plans	10
Sections	4
Photographs	29 Colour Transparencies 29 Black & White Prints 192 Digital Shots 48 Med format exposures

### The Finds

CBM	1 box
Pot	1 box
Glass	1 box

## **10 Importance of the Results and Publication Outline**

### **10.1 Importance of the Results**

- 10.1.1 The investigation carried out by Pre-Construct Archaeology Ltd. at Development Zone B, Kings Cross Central (KXU10), revealed the below-ground foundations of buildings and infrastructure that formed part of the former IGLCC St Pancras Gasworks and later structures relating to the GNR company. The age, nature and layout of these structures and deposits shed light on the development and the eventual demise of the complex, which spanned a period from 1821 to 1911, along with later activity related to the railway companies.
- 10.1.2 This assessment has illustrated the value of combining archaeological and historical research when investigating a complex industrial site of this nature. In combination, these sources enabled the layout of the site and the way that it functioned as a gasworks along with the additions and modifications that occurred to it over time to be comprehensively reviewed and facilitated a significantly improved understanding of the development of the site than would have been possible using either data source in isolation. Crucially, the study improved our understanding of how coal moved around the site, was prepared for and subjected to industrial processes within the Retort House and purified and stored for use as town gas.
- 10.1.3 The IGLCC St Pancras Gasworks represented an archaeologically well-preserved 19<sup>th</sup> century industrial complex; with a number of its contemporaries having disappeared altogether as a result of redevelopment throughout the course of the 20<sup>th</sup> century. Gasometer 8 aside, little above ground evidence related to the St Pancras Gasworks remained. Consequently the present study represents a uniquely detailed and thorough insight into the design, workings and eventual demise of an early-late 19<sup>th</sup> century gasworks over the 90 years of its history.

### **10.2 Publication Outline**

- 10.2.1 It is proposed to analyse the results of the investigations and to publish the archaeology and history of the site as part of a monograph covering developments in the Kings Cross Goods yard development area south of the Regents canal by Pre-Construct Archaeology. It will consist of a description of the archaeology uncovered contextualised within the available documentary records and to produce a summary of the interpretations and models of the developments and land-use across this area as involved in major aspects of the logistics concerned with the energy and goods supply of an urban conurbation during the 19<sup>th</sup> and early 20<sup>th</sup> centuries.
- 10.2.2 The results of this study will be integrated with the reports and analysis of the above ground remains (in particular Gasholder 8), which were recorded in a parallel programme of Historic Building Recording undertaken by Pre-Construct Archaeology. This will facilitate amalgamation of all interrelated archaeological, documentary, standing building records and archive in order to lead to a multidisciplinary approach to the project results and joined up thinking in the planned publication.

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- B/IMP/GLC/2 Imperial Gas Light & Coke Company Directors' Minutes and Orders No. 2, 1823-1824
- B/IMP/GLC/3 Imperial Gas Light & Coke Company Directors' Minutes and Orders No. 2, 1824-1826
- B/IMP/GLC/4 Imperial Gas Light & Coke Company Directors' Minutes and Orders No. 2, 1827-1828
- B/IMP/GLC/5 Imperial Gas Light & Coke Company Directors' Minutes and Orders No. 2, 1828-1829
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### **Directories**

Freebody's Derby Directory, 1852



## Appendix 1: Context Register

Site Code	Context No.	Plan	Section / Elevation	Type	Trench	Description	Date	Phase	Structure
KXU10	200	200	n/a	Masonry	Trench 1 (B6)	External Basement wall of Retort House	c.1840- c.1850	4a	Retort House
KXU10	201	200	n/a	Cut	Trench 1 (B6)	Cut for Pipe	c.1953- c.2001	7	n/a
KXU10	202	200	n/a	Pipe	Trench 1 (B6)	Ceramic Pipe	c.1953- c.2001	7	n/a
KXU10	203	200	n/a	Fill	Trench 1 (B6)	Fill of [201]	c.1953- c.2001	7	n/a
KXU10	204	200	n/a	Masonry	Trench 1 (B6)	Moulded flue structure within wall [200]	c.1840- c.1850	4a	Retort House
KXU10	205	200	n/a	Masonry	Trench 1 (B6)	Brick flue/drain within wall [200]	c.1840- c.1850	4a	Retort House
KXU10	206	200	n/a	Masonry	Trench 1 (B6)	Brick floor surface/lining	c.1840- c.1850	4a	Retort House
KXU10	207	200	n/a	Cut	Trench 1 (B6)	Cut for service/pipe	c.1953- c.2001	7	n/a
KXU10	208	200	n/a	Masonry	Trench 1 (B6)	Dividing wall	c.1881- c.1900	4c	Retort House
KXU10	209	200	n/a	Masonry	Trench 1 (B6)	Basement wall	c.1840- c.1850	4a	Retort House
KXU10	210	200	n/a	Masonry	Trench 1 (B6)	Basement wall	c.1840- c.1850	4a	Retort House
KXU10	211	200	S24	Masonry	Trench 1 (B6)	Vaulted Structure	c.1840- c.1850	4a	Retort House
KXU10	212	212	S26	Masonry	Trench 1 (B6)	Basement wall	c.1840- c.1850	4a	Retort House
KXU10	213	n/a	S25	Deposit	Trench 1 (B6)	Bedding Layer for [200]	c.1840- c.1850	4a	Retort House
KXU10	214	n/a	S25	Deposit	Trench 1 (B6)	Consolidation Layer for [200]	c.1840- c.1850	4a	Retort House
KXU10	215	n/a	S27	Layer	Trench 1 (B6)	Modern made ground	c.1953- c.2001	7	n/a
KXU10	216	n/a	S27	Layer	Trench 1 (B6)	Tarmac/road surface	c.1953- c.2001	7	n/a
KXU10	217	n/a	S27	Layer	Trench 1 (B6)	Concrete raft for tarmac road	c.1953- c.2001	7	n/a
KXU10	218	n/a	S27	Layer	Trench 1 (B6)	Tarmac	c.1953- c.2001	7	n/a
KXU10	219	n/a	n/a	Layer	Trench 1 (B6)	Made ground	c.1840- c.1850	4a	Retort House
KXU10	220	200	n/a	Structure	Trench 1 (B6)	Retort House	c.1840- c.1850	4a	Retort House

KXU10	221	200	n/a	Masonry	Trench 1 (B6)	Brick Floor surface	c.1840- c.1850	4a	Retort House
KXU10	222	200	S28	Masonry	Trench 1 (B6)	Dividing wall	c.1881- c.1900	4c	Retort House
KXU10	223	B/L 5	n/a	Masonry	Trench 1 (B6)	Pillar/Machine base?	c.1851- c.1880	4b	Crushing House
KXU10	224	B/L 3	S31	Masonry	Trench 1 (B6)	Later Wall/Modification	c.1881- c.1900	4c	Retort House
KXU10	225	B/L 3	S31	Masonry	Trench 1 (B6)	NW-SE Wall	c.1851- c.1880	4b	Crushing House
KXU10	226	B/L 3	n/a	Masonry	Trench 1 (B6)	E-W Wall	c.1851- c.1880	4b	Crushing House
KXU10	227	B/L 5	n/a	Masonry	Trench 1 (B6)	Pillar/Machine base	c.1851- c.1880	4b	Crushing House
KXU10	228	B/L 3	n/a	Masonry	Trench 1 (B6)	N-S Wall	c.1916- c.1953	6	Stable Building
KXU10	229	B/L 3	n/a	Masonry	Trench 1 (B6)	Later Concrete foundation	c.1916- c.1953	6	Stable Building
KXU10	230	B/L 3	n/a	Masonry	Trench 1 (B6)	Wall	c.1851- c.1880	4b	Crushing House
KXU10	231	B/L 3	n/a	Masonry	Trench 1 (B6)	Wall	c.1851- c.1880	4b	Crushing House
KXU10	232	B/L 3	n/a	Masonry	Trench 1 (B6)	Staircase	c.1851- c.1880	4b	Crushing House
KXU10	233	B/L 3	n/a	Masonry	Trench 1 (B6)	E-W Wall	c.1851- c.1880	4b	Crushing House
KXU10	234	B/L 3	n/a	Masonry	Trench 1 (B6)	Later E-W Wall	c.1916- c.1953	6	Stable Building
KXU10	235	B/L 3	n/a	Masonry	Trench 1 (B6)	E-W Wall	c.1851- c.1880	4b	Crushing House
KXU10	236	B/L 3	n/a	Masonry	Trench 1 (B6)	Vaulted Structure	c.1851- c.1880	4b	Crushing House
KXU10	237	B/L 3	n/a	Pipe	Trench 1 (B6)	Cast Iron Plate/Fixture	c.1851- c.1880	4b	Crushing House
KXU10	238	B/L 3	n/a	Masonry	Trench 1 (B6)	Pillar/Machine base	c.1851- c.1880	4b	Crushing House
KXU10	239	B/L 3	n/a	Masonry	Trench 1 (B6)	Yorkshire stone slab/step	c.1851- c.1880	4b	Crushing House
KXU10	240	B/L 3	n/a	Masonry	Trench 1 (B6)	Later Wall	c.1881- c.1900	4c	Crushing House
KXU10	241	B/L 3	n/a	Masonry	Trench 1 (B6)	N-S Wall	c.1851- c.1880	4b	Crushing House
KXU10	242	B/L 3	n/a	Masonry	Trench 1 (B6)	Cobbled Surface	c.1916- c.1953	6	Stable Building
KXU10	243	B/L 3	n/a	Masonry	Trench 1 (B6)	Brick Inspection Chamber	c.1851- c.1880	4b	Crushing House
KXU10	244	P/Ex:	S31	Masonry	Trench 2 (B5)	Pier base for Arch	c.1840-	4a	Purification

KXU10	245	155/195 B/L 1	n/a	Masonry	Trench 1 (B6)	Wall of Large Inspection Chamber	c.1850 c.1881- c.1900	4c	Plant Retort House
KXU10	246	B/L 1	n/a	Masonry	Trench 1 (B6)	Wall of Large Inspection Chamber	c.1881- c.1900	4c	Retort House
KXU10	247	B/L 1	n/a	Masonry	Trench 1 (B6)	Curvilinear Wall	c.1881- c.1900	4c	Retort House
KXU10	248	B/L 1	n/a	Masonry	Trench 1 (B6)	Wall Associated with Retort House	c.1881- c.1900	4c	Retort House
KXU10	249	B/L 1	n/a	Masonry	Trench 1 (B6)	Concrete encasing pipe	c.1881- c.1900	4c	Retort House
KXU10	250	GPS Survey	Sketch	Layer	Trench 1 (B6) TP N5	Greyish Brown Clay	Natural	1	n/a
KXU10	251	GPS Survey	Sketch	Masonry	Trench 1 (B6) TP M6	Brick structure forming edge of Gasometer	mid-1830s	3	Gasometer 13
KXU10	252	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	253	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	254	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	255	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	256	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	257	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	258	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	259	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	260	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	261	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	262	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	263	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	264	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	265	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	266	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	267	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House

KXU10	268	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	269	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	270	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	271	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	272	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	273	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	274	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	275	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1851- c.1880	4b	Crushing House
KXU10	276	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	277	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	278	GPS Survey	n/a	Pipe	Trench 1 (B6)	Cast Iron Pipe	c.1840- c.1850	4a	Retort House
KXU10	279	B/L 2	n/a	Masonry	Trench 1 (B6)	Brick foundation	c.1881- c.1900	4c	Retort House
KXU10	280	B/L 2	n/a	Masonry	Trench 1 (B6)	Brick foundation	c.1881- c.1900	4c	Retort House
KXU10	281	B/L 2	n/a	Masonry	Trench 1 (B6)	Brick Inspection Chamber	c.1881- c.1900	4c	Retort House
KXU10	282	B/L 2	n/a	Masonry	Trench 1 (B6)	Brick plinth/column base	c.1851- c.1880	4b	Crushing House
KXU10	283	B/L 2	n/a	Masonry	Trench 1 (B6)	Brick Inspection Chamber	c.1881- c.1900	4c	Crushing House
KXU10	284	B/L 2	n/a	Masonry	Trench 1 (B6)	Brick plinth/column base	c.1851- c.1880	4b	Crushing House
KXU10	285	B/L 4	n/a	Masonry	Trench 1 (B6)	Basement wall	c.1851- c.1880	4b	Crushing House
KXU10	286	B/L 4	n/a	Masonry	Trench 1 (B6)	Concrete floor surface	c.1851- c.1880	4b	Crushing House
KXU10	287	B/L 4	n/a	Pipe	Trench 1 (B6)	Large cast iron outlet pipe	c.1851- c.1880	4b	Crushing House
KXU10	288	B/L 4	n/a	Masonry	Trench 1 (B6)	Basement wall	c.1851- c.1880	4b	Crushing House
KXU10	289	B/L 4	n/a	Masonry	Trench 1 (B6)	N-S External wall of Crushing House	c.1851- c.1880	4b	Crushing House
KXU10	290	B/L 4	n/a	Masonry	Trench 1 (B6)	Brick foundation	c.1851- c.1880	4b	Crushing House
KXU10	291	B/L 4	n/a	Masonry	Trench 1 (B6)	Brick foundation	c.1851- c.1880	4b	Crushing House



KXU10	292		B/L 4	n/a	Masonry		Trench 1 (B6)	Entrance Modification to Crushing House	c.1880 c.1881- c.1900	4c	House Crushing House
KXU10	293		B/L 4	n/a	Masonry		Trench 1 (B6)	Wall composed of Kiln Brick	c.1881- c.1900	4c	Crushing House
KXU10	294		B/L 4	n/a	Pipe		Trench 1 (B6)	Large cast iron pipe	c.1851- c.1880	4b	Crushing House
KXU10	295		B/L 4	n/a	Masonry		Trench 1 (B6)	N-S External wall of Crushing House	c.1851- c.1880	4b	Crushing House
KXU10	296		B/L 4	n/a	Masonry		Trench 1 (B6)	Brick lined chamber	c.1881- c.1900	4c	Crushing House
KXU10	297		n/a	n/a	n/a	Plot B3		n/a	n/a	n/a	n/a
KXU10	298		B/L 4	n/a	Masonry		Trench 1 (B6)	N-S External wall of Crushing House	c.1851- c.1880	4b	Crushing House
KXU10	299		B/L 4	n/a	Masonry		Trench 1 (B6)	Flagstone floor surface	c.1851- c.1880	4b	Crushing House
KXU10	300		B/L 4	n/a	Masonry		Trench 1 (B6)	Stone plinth/column base	c.1851- c.1880	4b	Crushing House
KXU10	301		B/L 4	n/a	Masonry		Trench 1 (B6)	Stone plinth/column base	c.1851- c.1880	4b	Crushing House
KXU10	302		B/L 4	n/a	Masonry		Trench 1 (B6)	Entrance Modification to Crushing House	c.1881- c.1900	4c	Crushing House
KXU10	303		B/L 4	n/a	Masonry		Trench 1 (B6)	Entrance Modification to Crushing House	c.1881- c.1900	4c	Crushing House
KXU10	304		B/L 4	n/a	Cut		Trench 1 (B6)	Cut of [305]	c.1881- c.1900	4c	Crushing House
KXU10	305		B/L 4	n/a	Masonry		Trench 1 (B6)	Brick encased gas pipe	c.1881- c.1900	4c	Crushing House
KXU10	306		B/L 4	n/a	Masonry		Trench 1 (B6)	Flagstone floor surface	c.1851- c.1880	4b	Crushing House
KXU10	307		B/L 4	n/a	Masonry		Trench 1 (B6)	N-S External wall of Crushing House	c.1851- c.1880	4b	Crushing House
KXU10	308		GPS Survey	Sketch	Layer		Trench 1 (B6) TP N8	Made ground	c.1821- c.1823	2	n/a
KXU10	309		GPS Survey	Sketch	Layer		Trench 1 (B6) TP N8	Light yellowish brown clay	Natural	1	n/a
KXU10	310		GPS Survey	Sketch	Layer		Trench 1 (B6) TP M4	Made ground	c.1821- c.1823	2	n/a
KXU10	311		GPS Survey	Sketch	Layer		Trench 1 (B6) TP M6	Made ground	c.1840- c.1850	4a	n/a
KXU10	312		n/a	n/a	Layer		Trench 1 (B6)	Made ground	c.1821- c.1823	2	n/a
KXU10	313		313	n/a	Masonry		Trench 1 (B6)	Brick floor surface	c.1840- c.1850	4a	Retort House
KXU10	314		313	n/a	Masonry		Trench 1 (B6)	Stone capped flue	c.1840- c.1850	4a	Retort House

KXU10	315	B/L 5	n/a	Masonry	Trench 1 (B6)	Machine base	c.1881- c.1900	4c	Crushing House
KXU10	316	B/L 5	n/a	Masonry	Trench 1 (B6)	Brick lined drain	c.1851- c.1880	4b	Crushing House
KXU10	317	B/L 5	n/a	Masonry	Trench 1 (B6)	Brick lined drain	c.1851- c.1880	4b	Crushing House
KXU10	318	B/L 5	n/a	Masonry	Trench 1 (B6)	Machine base	c.1851- c.1880	4b	Crushing House
KXU10	319	B/L 5	n/a	Masonry	Trench 1 (B6)	Machine base	c.1851- c.1880	4b	Crushing House
KXU10	320	B/L 5	n/a	Masonry	Trench 1 (B6)	Brick lined drain	c.1851- c.1880	4b	Crushing House
KXU10	321	B/L 5	n/a	Masonry	Trench 1 (B6)	Brick lined drain	c.1851- c.1880	4b	Crushing House
KXU10	322	B/L 5	n/a	Masonry	Trench 1 (B6)	Machine base	c.1851- c.1880	4b	Crushing House
KXU10	323	B/L 4	n/a	Masonry	Trench 1 (B6)	Entrance Modification to Crushing House	c.1881- c.1900	4c	Crushing House
KXU10	324	B/L 6	n/a	Masonry	Trench 1 (B6)	Brick lined well/soakaway	c.1851- c.1880	4b	Crushing House
KXU10	325	B/L 4	n/a	Masonry	Trench 1 (B6)	Cut of [296]	c.1851- c.1880	4b	Crushing House
KXU10	326	B/L 4	n/a	Masonry	Trench 1 (B6)	Fill of [325]	c.1851- c.1880	4b	Crushing House
KXU10	327	P/Ex: 150/195	n/a	Masonry	Trench 2 (B5)	E-W Wall	c.1916- c.1953	6	Stable Building
KXU10	328	P/Ex: 150/195	n/a	Masonry	Trench 2 (B5)	Cobbled Surface	c.1916- c.1953	6	Stable Building
KXU10	329	P/Ex: 150/195	n/a	Masonry	Trench 2 (B5)	Concrete screed	c.1916- c.1953	6	Stable Building
KXU10	330	P/Ex	S35	Masonry	Trench 2 (B5)	N-S Wall	c.1916- c.1953	6	Stable Building
KXU10	331	P/Ex: 150/195	n/a	Masonry	Trench 2 (B5)	SW-NE Wall	c.1840- c.1850	4a	Purification Plant
KXU10	332	P/Ex	S35	Masonry	Trench 2 (B5)	N-S Wall	c.1916- c.1953	6	Stable Building
KXU10	333	P/Ex: 155/195	n/a	Masonry	Trench 2 (B5)	Pier base for Arch	c.1840- c.1850	4a	Purification Plant
KXU10	334	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	335	P/Ex	n/a	Masonry	Trench 2 (B5)	N-S Wall	c.1916- c.1953	6	Stable Building
KXU10	336	P/Ex	S35	Masonry	Trench 2 (B5)	Wall Foundation	c.1916- c.1953	6	Stable Building
KXU10	337	P/Ex: 155/205	n/a	Masonry	Trench 2 (B5)	NW-SE Wall	c.1840- c.1850	4a	Purification Plant
KXU10	338	P/Ex: 155/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant

KXU10	339	P/Ex	n/a	Pipe	Trench 2 (B5)	Large cast iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	340	P/Ex	n/a	Masonry	Trench 2 (B5)	N-S Boundary Wall	c.1904- c.1915	5	Boundary Wall
KXU10	341	P/Ex	n/a	Masonry	Trench 2 (B5)	E-W Wall	c.1916- c.1953	6	Stable Building
KXU10	342	P/Ex: 150/210	n/a	Masonry	Trench 2 (B5)	Brick Inspection chamber	c.1840- c.1850	4a	Purification Plant
KXU10	343	P/Ex	n/a	Masonry	Trench 2 (B5)	Pillar Base/Footing	c.1840- c.1850	4a	Purification Plant
KXU10	344	P/Ex	n/a	Pipe	Trench 2 (B5)	Large cast iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	345	P/Ex: 150/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	346	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	347	P/Ex	n/a	Masonry	Trench 2 (B5)	Pillar/Machine base?	c.1840- c.1850	4a	Purification Plant
KXU10	348	P/Ex: 150/210	n/a	Masonry	Trench 2 (B5)	Circular Brick lined tank	c.1840- c.1850	4a	Purification Plant
KXU10	349	P/Ex	n/a	Masonry	Trench 2 (B5)	Wall Foundation	c.1916- c.1953	6	Stable Building
KXU10	350	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	351	P/Ex: 155/210	n/a	Masonry	Trench 2 (B5)	Brick Inspection chamber	c.1953- c.2001	7	n/a
KXU10	352	P/Ex: 155/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	353	P/Ex: 155/210	n/a	Pipe	Trench 2 (B5)	Large cast iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	354	P/Ex: 155/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	355	P/Ex: 155/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	356	P/Ex: 155/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	357	P/Ex	n/a	Masonry	Trench 2 (B5)	Wall Foundation	c.1904- c.1915	5	Boundary Wall
KXU10	358	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	359	P/Ex: 150/200	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	360	P/Ex: 150/200	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	361	P/Ex: 150/200	n/a	Masonry	Trench 2 (B5)	NW-SE wall	c.1840- c.1850	4a	Purification Plant
KXU10	362	P/Ex: 150/200	n/a	Masonry	Trench 2 (B5)	Stone slab/surface	c.1840- c.1850	4a	Purification Plant

KXU10	363	P/Ex: 150/200	n/a	Masonry	Trench 2 (B5)	Stone slab/surface	c.1840- c.1850	4a	Purification Plant
KXU10	364	P/Ex: 150/200	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	365	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	366	P/Ex	n/a	Masonry	Trench 2 (B5)	Large cast iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	367	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	368	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	369	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	370	P/Ex	n/a	Masonry	Trench 2 (B5)	Concrete floor surface	c.1840- c.1850	4a	Purification Plant
KXU10	371	P/Ex: 140/205	n/a	Masonry	Trench 2 (B5)	Brick culvert	c.1840- c.1850	4a	Purification Plant
KXU10	372	P/Ex: 140/205	n/a	Masonry	Trench 2 (B5)	Tar Well	c.1840- c.1850	4a	Purification Plant
KXU10	373	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	374	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	375	P/Ex	n/a	Iron	Trench 2 (B5)	Wrought Iron structural support	c.1840- c.1850	4a	Purification Plant
KXU10	376	P/Ex	n/a	Masonry	Trench 2 (B5)	N-S Wall	c.1916- c.1953	6	Stable Building
KXU10	377	P/Ex: 155/220	n/a	Masonry	Trench 2 (B5)	Brick structure	c.1840- c.1850	4a	Purification Plant
KXU10	378	P/Ex: 155/215	n/a	Masonry	Trench 2 (B5)	Brick inspection chamber	c.1953- c.2001	7	n/a
KXU10	379	P/Ex: 155/215	n/a	Masonry	Trench 2 (B5)	Brick structure	c.1840- c.1850	4a	Purification Plant
KXU10	380	P/Ex: 145/225	n/a	Masonry	Trench 2 (B5)	Rectangular brick structure/base	c.1840- c.1850	4a	Purification Plant
KXU10	381	P/Ex: 145/225	n/a	Masonry	Trench 2 (B5)	Rectangular brick structure/base	c.1840- c.1850	4a	Purification Plant
KXU10	382	P/Ex: 145/205	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	383	P/Ex: 145/205	n/a	Masonry	Trench 2 (B5)	Flagstone floor surface	c.1840- c.1850	4a	Purification Plant
KXU10	384	P/Ex: 145/205	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	385	P/Ex: 145/205	n/a	Masonry	Trench 2 (B5)	Floor surface edging/curb	c.1840- c.1850	4a	Purification Plant
KXU10	386	P/Ex: 145/205	n/a	Pipe	Trench 2 (B5)	Stopcock associated with [387] & [388]	c.1840- c.1850	4a	Purification Plant

KXU10	387	P/Ex: 145/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	388	P/Ex: 145/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	389	P/Ex: 145/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	390	P/Ex: 145/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	391	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	392	P/Ex	n/a	Masonry	Trench 2 (B5)	Brick base for Scrubber tank	c.1840- c.1850	4a	Purification Plant
KXU10	393	P/Ex: 135/205	n/a	Masonry	Trench 2 (B5)	Circular Brick lined tank	c.1840- c.1850	4a	Purification Plant
KXU10	394	P/Ex: 135/205	n/a	Masonry	Trench 2 (B5)	Remains of brick structure	c.1840- c.1850	4a	Purification Plant
KXU10	395	P/Ex: 135/205	n/a	Masonry	Trench 2 (B5)	Circular Brick lined tank	c.1840- c.1850	4a	Purification Plant
KXU10	396	P/Ex: 135/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	397	n/a	S32	Layer	Trench 2 (B5)	Made ground	c.1904- c.1915	5	n/a
KXU10	398	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	399	P/Ex: 140/225	S32	Layer	Trench 2 (B5)	Backfill of [427]	c.1840- c.1850	5	Purification Plant
KXU10	400	P/Ex: 145/210	n/a	Masonry	Trench 2 (B5)	Tar Well	c.1840- c.1850	4a	Purification Plant
KXU10	401	P/Ex: 155/195	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	402	P/Ex: 155/195	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	403	P/Ex	n/a	Masonry	Trench 2 (B5)	NW-SE wall	c.1840- c.1850	4a	Purification Plant
KXU10	404	P/Ex	n/a	Masonry	Trench 2 (B5)	E-W Wall	c.1916- c.1953	6	Stable Building
KXU10	405	P/Ex: 155/200	n/a	Masonry	Trench 2 (B5)	Brick pier/base	c.1840- c.1850	4a	Purification Plant
KXU10	406	P/Ex: 155/200	n/a	Masonry	Trench 2 (B5)	Concrete foundation/surface	c.1840- c.1850	4a	Purification Plant
KXU10	407	P/Ex: 155/200	n/a	Pipe	Trench 2 (B5)	Ceramic Pipe	c.1840- c.1850	4a	Purification Plant
KXU10	408	P/Ex: 155/200	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	409	P/Ex: 145/215	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	410	P/Ex: 145/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant



KXU10	411	P/Ex	n/a	Masonry	Trench 2 (B5)	Tar Well	c.1840- c.1850	4a	Purification Plant
KXU10	412	P/Ex: 145/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	413	P/Ex: 145/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	414	P/Ex: 145/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	415	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	416	P/Ex	n/a	Masonry	Trench 2 (B5)	Circular Brick lined tank	c.1840- c.1850	4a	Purification Plant
KXU10	417	P/Ex: 155/205	n/a	Masonry	Trench 2 (B5)	Wall Foundation	c.1916- c.1953	6	Stable Building
KXU10	418	P/Ex	n/a	Masonry	Trench 2 (B5)	Concrete foundation	c.1916- c.1953	6	Stable Building
KXU10	419	P/Ex: 150/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	420	P/Ex	n/a	Masonry	Trench 2 (B5)	Large cast iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	421	P/Ex	n/a	Masonry	Trench 2 (B5)	Concrete foundation	c.1916- c.1953	6	Stable Building
KXU10	422	P/Ex: 150/205	n/a	Masonry	Trench 2 (B5)	Wall Foundation	c.1916- c.1953	6	Stable Building
KXU10	423	P/Ex: 145/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	424	P/Ex: 145/215	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	425	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	426	P/Ex: 135/220	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	427	P/Ex: 135/220	n/a	Masonry	Trench 2 (B5)	Brick base for Scrubber tank	c.1840- c.1850	4a	Purification Plant
KXU10	428	P/Ex	n/a	Masonry	Trench 2 (B5)	Brick base for Scrubber tank	c.1840- c.1850	4a	Purification Plant
KXU10	429	P/Ex: 135/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	430	n/a	S33	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	431	P/Ex: 130/220	n/a	Masonry	Trench 2 (B5)	Granite slab surface within [428]	c.1840- c.1850	4a	Purification Plant
KXU10	432	P/Ex: 130/220	n/a	Masonry	Trench 2 (B5)	NE-SW wall within [428]	c.1881- c.1900	4c	Purification Plant
KXU10	433	P/Ex: 130/220	n/a	Masonry	Trench 2 (B5)	Concrete structure/surface within [428]	c.1881- c.1900	4c	Purification Plant
KXU10	434	P/Ex:	n/a	Masonry	Trench 2 (B5)	Brick structure within [428]	c.1881-	4c	Purification Plant

KXU10	435	130/220 P/Ex: 130/220	n/a	Masonry	Trench 2 (B5)	Brick channel within [428]	c.1900	4c	Plant Purification Plant
KXU10	436	P/Ex: 145/210	n/a	Fill	Trench 2 (B5)	Backfill of [400]	c.1881- c.1900	5	Purification Plant
KXU10	437	P/Ex: 135/220	n/a	Masonry	Trench 2 (B5)	Rectangular brick structure/base	c.1840- c.1850	4a	Purification Plant
KXU10	438	P/Ex: 145/225	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	439	P/Ex: 140/225	n/a	Masonry	Trench 2 (B5)	Brick surface	c.1840- c.1850	4a	Purification Plant
KXU10	440	P/Ex: 135/225	n/a	Masonry	Trench 2 (B5)	Brick plinth/base within [427]	c.1840- c.1850	4a	Purification Plant
KXU10	441	P/Ex: 150/215	n/a	Masonry	Trench 2 (B5)	Tar Well	c.1840- c.1850	4a	Purification Plant
KXU10	442	P/Ex: 150/215	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	443	P/Ex	n/a	Masonry	Trench 2 (B5)	Small circular Brick lined tank	c.1840- c.1850	4a	Purification Plant
KXU10	444	P/Ex: 150/220	n/a	Masonry	Trench 2 (B5)	Rectangular brick structure/base	c.1840- c.1850	4a	Purification Plant
KXU10	445	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	446	P/Ex: 135/210	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	447	P/Ex: 135/210	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	448	P/Ex	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	449	P/Ex	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	450	P/Ex	n/a	Masonry	Trench 2 (B5)	Bricked up entrance	c.1881- c.1900	4c	Purification Plant
KXU10	451	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	452	P/Ex: 115/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	453	P/Ex: 140/210	n/a	Masonry	Trench 2 (B5)	Outer lining of [411]	c.1840- c.1850	4a	Purification Plant
KXU10	454	P/Ex: 140/210	n/a	Fill	Trench 2 (B5)	Packing fill between [411] & [453]	c.1840- c.1850	4a	Purification Plant
KXU10	455	P/Ex	n/a	Cut	Trench 2 (B5)	Cut for pipe (no longer <i>in situ</i> )	c.1881- c.1900	4c	Purification Plant
KXU10	456	P/Ex: 140/210	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1881- c.1900	4c	Purification Plant
KXU10	457	P/Ex: 140/210	n/a	Fill	Trench 2 (B5)	Backfill of [372]	c.1840- c.1850	4a	Purification Plant

KXU10	458	n/a	S35	Layer	Trench 2 (B5)	Levelling deposit associated with [330]	c.1916- c.1953	6	Stable Building
KXU10	459	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	460	P/Ex: 130/210	n/a	Masonry	Trench 2 (B5)	Stone slab/surface	c.1840- c.1850	4a	Purification Plant
KXU10	461	P/Ex: 130/210	n/a	Masonry	Trench 2 (B5)	Remains of brick structure	c.1840- c.1850	4a	Purification Plant
KXU10	462	P/Ex: 130/210	n/a	Masonry	Trench 2 (B5)	Remains of brick structure	c.1840- c.1850	4a	Purification Plant
KXU10	463	P/Ex: 130/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	464	P/Ex: 130/210	n/a	Masonry	Trench 2 (B5)	NW-SE wall	c.1840- c.1850	4a	Purification Plant
KXU10	465	P/Ex	n/a	Masonry	Trench 2 (B5)	Purification Plant	c.1840- c.1850	4a	Purification Plant
KXU10	466	P/Ex: 150/215	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	467	P/Ex: 140/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	468	P/Ex: 140/215	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	469	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	470	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	471	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	472	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	473	P/Ex	n/a	Masonry	Trench 2 (B5)	Stepped brick foundation	c.1840- c.1850	4a	Purification Plant
KXU10	474	P/Ex: 130/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	475	P/Ex: 130/215	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1881- c.1900	4c	Purification Plant
KXU10	476	P/Ex: 130/215	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	477	P/Ex: 135/210	n/a	Masonry	Trench 2 (B5)	Addition to brick plinth/base [426]	c.1881- c.1900	4c	Purification Plant
KXU10	478	P/Ex: 125/220	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	479	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	480	P/Ex	n/a	Masonry	Trench 2 (B5)	NW-SE wall	c.1840- c.1850	4a	Purification Plant
KXU10	481	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840-	4a	Purification Plant

KXU10	482	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1850	4a	Plant
KXU10	483	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	484	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	485	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	486	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	487	P/Ex: 125/215	n/a	Masonry	Trench 2 (B5)	Brick pipe casing/support	c.1840- c.1850	4a	Purification Plant
KXU10	488	P/Ex: 125/215	n/a	Masonry	Trench 2 (B5)	Brick pipe casing/support	c.1840- c.1850	4a	Purification Plant
KXU10	489	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	490	P/Ex	n/a	Masonry	Trench 2 (B5)	Concrete rendered brick floor	c.1840- c.1850	4a	Purification Plant
KXU10	491	P/Ex: 120/215	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	492	P/Ex: 120/215	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	493	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	494	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	495	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	496	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	497	P/Ex	n/a	Fill	Trench 2 (B5)	Backfill of [411]	c.1904- c.1915	5	Purification Plant
KXU10	498	P/Ex: 135/205	n/a	Fill	Trench 2 (B5)	Backfill of [393]	c.1904- c.1915	5	Purification Plant
KXU10	499	P/Ex: 135/205	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	500	P/Ex: 120/220	n/a	Masonry	Trench 2 (B5)	Bricked up entrance	c.1881- c.1900	4c	Purification Plant
KXU10	501	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1881- c.1900	4c	Purification Plant
KXU10	502	P/Ex: 120/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	503	P/Ex: 120/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	504	P/Ex: 120/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant

KXU10	505	P/Ex: 120/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	506	P/Ex: 120/210	n/a	Masonry	Trench 2 (B5)	Brick pipe casing/support	c.1840- c.1850	4a	Purification Plant
KXU10	507	P/Ex: 120/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	508	P/Ex: 120/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	509	P/Ex	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	510	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	511	P/Ex	n/a	Masonry	Trench 2 (B5)	Stable Building	c.1916- c.1953	6	Stable Building
KXU10	512	P/Ex: 125/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	513	P/Ex: 125/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	514	P/Ex: 125/210	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	515	P/Ex: 125/210	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	516	P/Ex: 125/210	n/a	Masonry	Trench 2 (B5)	Brick pipe casing/support	c.1840- c.1850	4a	Purification Plant
KXU10	517	P/Ex: 125/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	518	P/Ex: 125/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	519	P/Ex: 125/210	n/a	Pipe	Trench 2 (B5)	Cast Iron pipe	c.1840- c.1850	4a	Purification Plant
KXU10	520	n/a	n/a	n/a	n/a	VOID	n/a	n/a	n/a
KXU10	521	P/Ex: 125/210	n/a	Deposit	Trench 2 (B5)	Iron oxide dump	c.1904- c.1915	5	Purification Plant
KXU10	522	P/Ex	n/a	Masonry	Trench 2 (B5)	Brick pipe casing/support	c.1840- c.1850	4a	Purification Plant
KXU10	523	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW foundation	c.1840- c.1850	4a	Purification Plant
KXU10	524	P/Ex: 130/210	n/a	Masonry	Trench 2 (B5)	Brick plinth/base	c.1840- c.1850	4a	Purification Plant
KXU10	525	P/Ex	n/a	Masonry	Trench 2 (B5)	NE-SW wall	c.1840- c.1850	4a	Purification Plant
KXU10	526	n/a	n/a	Masonry	Trench 2 (B5)	NW-SE wall	c.1904- c.1915	5	Boundary Wall
KXU10	527	GPS Survey	Sketch	Layer	Trench 2 (B5) TP H5	Clinker/coke deposit	c.1904- c.1915	5	Purification Plant
KXU10	528	GPS Survey	Sketch	Layer	Trench 2 (B5) TP H5	Mid Brown Clay	Natural	1	n/a



KXU10	529	GPS Survey	Sketch	Layer	Trench 2 (B5) TP H6	Made ground	mid-1830s	3	n/a
KXU10	530	GPS Survey	Sketch	Layer	Trench 2 (B5) TP H6	Brick culvert	mid-1830s	3	n/a
KXU10	531	GPS Survey	Sketch	Layer	Trench 2 (B5) TP J6	Made ground	c.1821- c.1823	2	n/a
KXU10	532	GPS Survey	Sketch	Layer	Trench 2 (B5) TP J6	Contaminated Natural?	Natural	1	n/a
KXU10	533	GPS Survey	Sketch	Layer	Trench 2 (B5) TP J6	Mid Brown Clay	Natural	1	n/a
KXU10	534	GPS Survey	Sketch	Layer	Trench 2 (B5) TP K5	Made ground	c.1821- c.1823	2	n/a
KXU10	535	GPS Survey	Sketch	Layer	Trench 2 (B5) TP K5	Contaminatd Made ground	c.1821- c.1823	2	n/a
KXU10	762	B/L 1-5	n/a	Structure	Trench 1 (B6)	Crushing House	c.1851- c.1880	4b	Crushing House
KXU10	763	200	n/a	Masonry	Trench 1 (B6)	Dividing wall	c.1881- c.1900	4c	Retort House
KXU10	764	200	n/a	Masonry	Trench 1 (B6)	Dividing wall	c.1881- c.1900	4c	Retort House
KXU10	765	B/L 4	n/a	Masonry	Trench 1 (B6)	Entrance Modification to Crushing House	c.1881- c.1900	4c	Crushing House
KXU10	766	200	n/a	Masonry	Trench 1 (B6)	Staircase into Retort Basement	c.1840- c.1850	4a	Retort House

<b>Phase 1</b>	Natural ('The Eocene Epoch')
<b>Phase 2</b>	Early C19th: site preparation (c.1821-c.1823)
<b>Phase 3</b>	Early C19th: enlargement of the GLCC St Pancras gasworks: construction of GH13; mid-1830s
<b>Phase 4a</b>	Mid- C19th: enlargement: new purifiers & retort house (c.1840-c.1850)
<b>Phase 4b</b>	Mid-late C19th: enlargement new crushing house (c.1851-c.1880)
<b>Phase 4c</b>	Late C19: additions: (c.1881-c.1900)
<b>Phase 5</b>	Early C20th: decommissioning, demolition and GNR wall (c.1904-c.1915)
<b>Phase 6</b>	Early-mid C20th: stabling, parking & piggery (c.1916-c.1953)
<b>Phase 7</b>	Mid-late C20th: Post –nationalisation distribution depot (c.1953-c.2001)

## Appendix 2: Post-Roman Pottery Assessment

Chris Jarrett

### Introduction

A small sized assemblage of pottery was recovered from the site (one box). The pottery dates exclusively to the 19<sup>th</sup> century, and the material is in a good condition, surviving in the form of one intact vessel and the another with a complete profile. The vessels were therefore deposited soon after breakage or final use. The pottery was quantified by sherd count, estimated number of vessels (ENV's) and weight. Pottery was recovered from a single context in the form of a small (fewer than 30 sherds) group.

All the pottery (two sherds representing 2 ENV's and weighing 554g) of which none are unstratified, was examined macroscopically and microscopically using a binocular microscope (x20), and entered into a digital database, by fabric, form and decoration. The classification of the pottery types follows the Museum of London Archaeology format. The material is discussed by type and distribution.

### THE POTTERY TYPES

The pottery occurs in the form of earthenware and stoneware. A single mould made Rockingham-type ware (ROCK) flanged teapot lid, weighing 137g, survives with a complete profile and has a clubbed knob above a circular recess containing a piercing (to allow steam to escape and the top of the recess is decorated with a beaded border. This pottery type was mostly produced in the 19<sup>th</sup> and 20<sup>th</sup> centuries and usually on an industrial scale. A second piece of pottery comprises an intact English stoneware vessel, weighing 417g, which is in the form of an ink bottle with a pouring spout, the form being dated mainly to the late 19<sup>th</sup> and early 20<sup>th</sup> century. Near the base of the bottle is an oval stamp with the legend 'CALVERT & LOVATT\NOTTS\LANGLEY MILL'. This pottery was established in c.1863/65 and the stamp was in circulation in the 1870's and probably the succeeding decade (Askey 1998, 185-6).

### DISTRIBUTION

The pottery comes from a single context : [397] and the details are shown in Table 1.

Context	Size	SC	EVE's	Wt (g)	Date range of the pottery types	Date range of the latest pottery type	Pottery types	Spot date
[397]	S	2	76	554	1700-1900	1800-1900	ENGS, ROCK	1870-1880

Table 1. SKQ10: Distribution of pottery types showing the individual context containing pottery, the number of sherds, ENV's, weight and EVE's, the date range of pottery and the date range of the latest type, the fabrics present and a suggested deposition date. SC: sherd count, ENV's: estimated number of vessels.

#### SIGNIFICANCE AND POTENTIAL OF THE COLLECTION

The pottery is of little significance at a local level. The stratified assemblage reflects activity on the site only for the 19<sup>th</sup> century. The pottery is in keeping with the ceramic profile for the London area. Other nearby, larger assemblages of pottery have been reported (Sudds 2011). The material has the potential to date the features from which it was recovered. None of the pottery merits illustration. The teapot lid may have been derived from a possible staff canteen located within the gas works, while the ink bottle may have been used by administrative staff.

#### **Recommendations for further work**

No further work is recommended on the pottery assemblage and any publication work required should use this report for information.

#### **References**

Askey, D. 1998, *Stoneware bottles, from bellarmines to ginger beers, 1500-1949*. BBR Publishing: Barnsley.

Sudds, B. 2011, Assessment of the Saxon, medieval and post-medieval pottery, in A. Douglas, Phased summary and assessment of the excavations at Bermondsey Square, London Borough of Southwark, SE1, Volume 2. Pre-Construct Archaeology Ltd unpublished document.

## **Appendix 3: Glass Assessment**

Chris Jarrett

### **INTRODUCTION**

A small assemblage of glass was recovered from the excavation (1 box). All of the glass dates to the late 19<sup>th</sup> and 20<sup>th</sup> centuries. A very high proportion of the vessels in the assemblage is in the form of intact items. This signifies that the majority of the assemblage was discarded and buried soon after it had ceased to be of use. The glass forms could all be identified and are all present in the form of bottle types.

There are a total of eight sherds/vessels (three of which are unstratified). Stratified glass was recovered from a single context. The vessels were recorded according to glass type and colour, form and decoration and the information was entered on to an Access database.

#### **The Bottle types**

### **BOTTLES**

#### **Cylindrical bottles**

An emerald green soda glass bottle is recorded, which is largely intact except for its missing rim and neck. Embossed on the body in a curve is the legend 'R.W. & S Ld' above the name 'WHITE' displayed vertically and at the base of this is a shield containing 'J'. On the underside of the base is the name White, which appears twice in the form of a cross. The bottle was probably a container for a drink, possibly of the soft drink type (possibly lemonade), dates to the late 19<sup>th</sup> century and was recovered from context [397].

#### **Inkbottles**

Two very similar, intact, small, clear soda glass inkbottles are present. These have a collared rim/string finish, a deep neck, rounded shoulder, straight wall and concave bases, one has a central dimple (unstratified), and the other, slightly smaller example from context [397], has embossed within a circle the number '508'. Both inkbottles were made in a two-piece mould and date to the 19<sup>th</sup> and 20<sup>th</sup> centuries.

#### **Milk bottle**

A single, unstratified milk bottle is present and is of a mid to late 20<sup>th</sup> century date (pre 1971 decimalization), as demonstrated by its shape and the style of embossed type face used. The

milk bottle is complete and has a collared rim with a foil cap fitting. Embossed on the shoulder is the word 'EXPRESS' and on the opposed side and at a diagonal is 'THIS BOTTLE COSTS\ 4d\ PLEASE RINSE & RETURN\ CONTENTS 1 PT'. The vessel was made in a two-piece mould. Express Dairies was founded in London in 1864.

Flat, octagonal bottles

There are two very similar pale blue green, flat soda bottles, octagonal in plan. The first is unstratified and survives in one piece from the shoulder to the base. On one broad front panel is embossed the lettering: 'ELLIMAN'S EMBROICATION' . This was a container for a muscle pain relief lotion which was made by a Slough company dating from the early 19<sup>th</sup> century. The second vessel was recovered from context [397] and it is intact with a squared rim finish. Embossed on one broad front panel is the lettering: 'C. HOO...\LONDON', the full name being obscured by a hard concrete type deposit. Both vessels are dated to the mid to late 19<sup>th</sup> century.

Bovril bottles

There are two very similarly executed intact, brown soda glass Bovril bottles and on each of the rounded sides are embossed the words: '4 oz\ BOVRIL\ LIMITED'. Both vessels date to the late 19<sup>th</sup> century and derive from context [397].

## DISTRIBUTION OF THE GLASS

The distribution of the glass is shown in Table 1, which shows the context the glass was found in, the number of fragments and a spot date for the deposit.

Context	No. of fragments/vessels	Spot date
[379]	5	Late 19 <sup>th</sup> century

Table 1: "The Eastern Goods Yard", Kings Cross, glass spot dating index.

## SIGNIFICANCE OF THE ASSEMBLAGE

The glass is of limited significance. Its presence on site probably derived from on site activities. The glass profile is typical for that of London with local and national proprietary brands represented. The occurrence of ink bottles may reflect the administrative duties undertaken by clerical staff at the Gas works, while medicinal bottles, such as the octagonal flat bottles may have been brought on to the site by workers to treat their ailments, while drink containers may reflect tea or lunch breaks. Larger, more diverse assemblages of glass have been recovered from nearby excavations: Kings Cross Central (KXI07), The Engine House (KXO08) and Turntables A & B (KXP08) (Jarrett n.d.).

## POTENTIAL



The main potential of the glass is to date the context it was found in.

## **RECOMMENDATIONS FOR FURTHER WORK**

The glass from this excavation should be briefly incorporated into a publication text for the glass assemblages for the other Kings Cross excavations e.g. KXI07, KXO08, KXP08.

### **Reference**

Jarrett, C., n.d. Glass, corks, lids and stoppers assessment, (Kings Cross: KXI07, KXO08, KXP08). Pre-Construct Archaeology Ltd., unpublished document.

## Appendix 4: OASIS Data Collection Form

OASIS ID: preconst1-121053

### Project details

Project name An Archaeological Strip and Map and Watching Brief at Development Zone B, Kings Cross Central, London Borough of Camden

Short description of the project The underlying geology is understood to consist of London Clay. Preparatory work in the form of made ground deposits to stabilise the ground ahead of the construction of the gasworks structures were observed in geotechnical test pits. The earliest brickwork encountered related to the earlier phases of the gasworks (mid 1830's), in particular a fragment of Gasholder 13 which was also observed within a test pit, along with a culvert further to the west. Following this the remains of a basemented extension to the Retort House and the footings of the Purification Plant were revealed; the latter presenting the remains of structures relating to the scrubbers, condensers and purifiers, datable to the mid 19th century. The remains of a section of Crushing House, constructed in the mid-late 19th century, were also exposed and recorded. Aside from some evidence of minor additions and modifications to the above buildings, little changed until the gasworks itself was decommissioned and demolished in the early 20th century. The foundations of a stable building, completed by 1917, upon the footings of a part of the Purification Plant, were also observed. Modern made ground along with service runs and concrete surfaces overlay the above structures.

Project dates Start: 15-08-2011 End: 14-10-2011

Previous/future work Yes / Not known

Any associated project reference codes KXU10 - Sitecode

Type of project Field evaluation

Site status Conservation Area

Current Land use Vacant Land 3 - Despoiled land (contaminated derelict and ?brownfield? sites)

Monument type GAS HOLDER Post Medieval

Monument type RETORT HOUSE Post Medieval

Monument type PURIFIER HOUSE Post Medieval

Monument type CRUSHING HOUSE Post Medieval

Significant Finds POT Post Medieval

Significant Finds GLASS Post Medieval

Methods & techniques 'Photographic Survey','Targeted Trenches','Test Pits'

Development type Urban commercial (e.g. offices, shops, banks, etc.)

Prompt Planning condition

Position in the planning process After full determination (eg. As a condition)

### Project location

Country England

Site location GREATER LONDON CAMDEN CAMDEN Development Zone B, Kings Cross Central, London Borough of Camden

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Postcode NW1 2TJ  
Site coordinates TQ 30119 83347 51.5335195470 -0.123797365962 51 32 00 N 000 07 25 W Point  
Height OD / Depth Min: 17.06m Max: 17.95m

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Project creators

Name of PCA  
Organisation

Project brief King's Cross Central General Partner Ltd  
originator

Project design Charlotte Matthews  
originator

Project Charlotte Matthews  
director/manager

Project supervisor Iain Bright

Type of Nuttals Ltd  
sponsor/funding  
body

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Project archives

Physical Archive LAARC  
recipient

Physical Contents 'Ceramics','Glass'

Digital Archive LAARC  
recipient

Digital Contents 'none'

Digital Media 'Database','Images raster / digital photography','Spreadsheets','Survey','Text'  
available

Paper Archive LAARC  
recipient

Paper Contents 'none'

Paper Media 'Context sheet','Matrices','Photograph','Plan','Report','Section'  
available

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Project bibliography

1

Publication type Grey literature (unpublished document/manuscript)

Title An Assessment Report of an Archaeological Strip and Map and Watching Brief at  
Development Zone B, Kings Cross Central, London Borough of Camden

Author(s)/Editor(s) Bright, I., Thompson, G.

Date 2012

Issuer or publisher PCA

Place of issue or Brockley, London  
publication

Description            Grey Literature Assessment Report

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