C254 Archaeology West

Site Code - XSI 10

Paddington New Yard, Westbourne Park, London W9

Archaeological Fieldwork Report

CRL Document Number: C254-OXF-T1-RGN-CRG03-50251 rev2

~~**Contract MDL reference CXX.XXX**~~

1. Contractor Document Submittal History:

Revision:	Date:	Prepared by:	Checked by:	Approved by:	Reason for Issue:
1.0	20/05/2015	Gary Evans	Richard Brown	Andy Shelley	Acceptance
2.0	20/07/2015	Gary Evans	Richard Brown	Andy Shelley	Acceptance

2a. Stakeholder Review Required? YES ☐ NO ☒

Stakeholder submission require LU ☐ RfL ☐ NR ☐ LO ☐ DLR ☐ Other

Purpose of submission: For no objection ☐ For information ☐

This document has been reviewed by the following individual for coordination, compliance, integration and acceptance and is acceptable for transmission to the above stakeholder for the above stated purpose.

Sign: _____ Role: _____ Name: _____ Date: _____

2b. ~~Review by Stakeholder (if required):~~

Stakeholder Organisation	Job Title	Name	Signature	Date	Acceptance
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3. Acceptance by *Crossrail*:

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Reviewed/Accepted by:(signature)	Print Name: J. CARVER		Position: PROJ. ARCH	Date: 30/07/15
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Summary

This report details archaeological work undertaken by Oxford Archaeology/Ramboll during 2014 in connection with Crossrail works at Paddington New Yard, City of Westminster, London W9. The site lies just to the west of the newly constructed western portal for the Crossrail tunnels (Royal Oak Portal).

The archaeological works comprised a mixture of trial trenching, and Targeted and General Watching Briefs. These took place during the construction of an elevated bus deck for the Westbourne Park bus garage and concrete batching plant as well as track realignment, and drainage for the Crossrail tunnel approaches.

The well-preserved below ground remains of a number of structures were uncovered and recorded during the project. These included brick-built turntable pits, the walls of engine sheds and below-ground inspection pits, as well as sections of the Marcon Sewer. All of the remains related either to the Great Western Railway's locomotive department workshops and stabling sheds which were present on the site from c.1853 to 1907, or subsequent developments of the site by the GWR and their successor bodies. These remains can be reasonably well-dated by documentary and cartographic sources.

The depot, which was designed by the Great Western Railway's Chief Engineer Isambard Kingdom Brunel and his Locomotive Superintendent Daniel Gooch, was an important component of, what was at the time, one of the most innovative railways in the world. The national and international significance of the Paddington to Bristol section of the Great Western Railway is shown by the fact that it was considered for UNESCO World Heritage Site status in 2000.

1 Introduction

1.1 Scope of Work

1.1.1 Oxford Archaeology in partnership with Ramboll (hereafter OAR) were required under Crossrail's contract C254 Archaeology West to undertake a programme of archaeological works at Paddington New Yard (PNY), in Westbourne Park, City of Westminster, London W9.

1.1.2 The archaeological work, which took place between 11th April and 21st November 2014, consisted of trial trench excavations, mitigation excavation and recording of significant historic assets, strip, map and sample excavation, salvage of historic items and a general watching brief. The work mitigated the effects of Crossrail's construction activities.

1.1.3 These construction activities included the construction of an elevated bus deck supported on a grid of circular columns resting on pile caps, each supported by four bored piles. The new structure will provide parking for buses as well as refuelling and washing facilities for Westbourne Park bus garage, which lies at the northwest corner of the site. Other works included the construction of a new concrete batching plant and track formation and drainage works. The construction works were undertaken under Crossrail contract C336 (principal contractor Costain).

1.1.4 In detail, the works comprised the construction of:

- Approximately 9000 sq. m of elevated bus deck supported on a grid of 900mm diameter circular columns at nominally 12.5m x 13.5m spacing with additional intermediate columns in the rows adjacent to the siding tracks. The columns were supported on 1.2m thick pile caps generally supported on 4 no 900mm diameter bored piles approximately 30m deep. The deck was of in situ reinforced beam and ribbed slab construction. The northern edge is supported on a line of 750mm diameter piles while the southern edge is integral with a piled reinforced concrete retaining wall.
- Ground reduction to allow formation of temporary pile mats (working platforms) and removal of obstructions to piling. Working Platform 1 allowed test piles to be constructed and measured c. 35m x 35m x 1.1m in depth. Working Platform 2 measured c. 10m x 60m x 1.1m in depth thickness and allowed high level piles on the northern boundary of the site to be constructed. Working Platform 3 allowed the piles and other foundations for the Railway Batching Plant (RBP) to be constructed and Working Platform 4 allowed the secant piles for a Bottom Discharge Hopper (BDU) to be built. Other ground reduction activities occurred in areas where below-ground obstructions were identified or where required by temporary works or installations.
- A mini pile cut-off wall installed north of the deck to retain the canal embankment during construction of the ground slab and retaining wall;
- Fuel storage tanks beneath the deck;
- Piled foundations for the RBP aggregate bins store, batching plant and silos;
- A skip elevator pit, a grey water wedge pit, a below-ground stirrer pit and a storm water wedge pit;
- A BDU of secant pile wall construction beneath the deck to allow rail delivery of aggregate to the batching plant;
- Ground-level access roads and miscellaneous retaining walls;
- Lighting, drainage and power supplies to the refuelling and washing facilities;
- Diversion of and connection into the Marcon Sewer. The Marcon Sewer is a Network Rail asset and drains the site eastwards to discharge into the Ranelagh Sewer.
- Construction of the Great Western Road Sewer and chambers (new assets) across the Network Rail lines west of the Green Lane Bridge.
- Stabilisation of the Green Lane Bridge north abutment to enable the lowering of the tracks in the vicinity;
- Construction of the track formation and drainage for turnback sidings, CRL eastbound and Marcon sidings; and
- Connection of the Network Rail track drainage system into the new Marcon Sewer.

1.1.5 The Paddington New Yard Archaeological Site Specific Written Scheme of Investigation (Document No. C254-OXF-T1-GMS-CRG03-50006 Rev 5.0, hereafter the SSWSI) provided a strategy for archaeologically mitigating the impacts arising from these construction activities.

1.1.6 The archaeological mitigation works required by the SSWSI comprised:

- Further desk-based historical research and report on the early and subsequent development of the GWR's infrastructure at Westbourne Park, concentrating on the collation and interpretation of primary archive drawings and documents;
- Targeted trial trench excavations centred on areas of the site where construction impacts coincided with the position of significant heritage assets;
- Archaeological excavation and recording of significant historic assets if they were shown to survive. This comprised opening out of trial trenches to reveal significant structures such as the turntables, before full historic building recording of such structures;
- Strip, map and sample excavation and historic building recording in areas of ground reduction where it coincided with heritage assets;
- Identifying, cataloguing and co-ordinating salvage of historic railway items; and
- General watching brief during enablement and construction activities outside of the areas covered by the mitigation activities listed above.

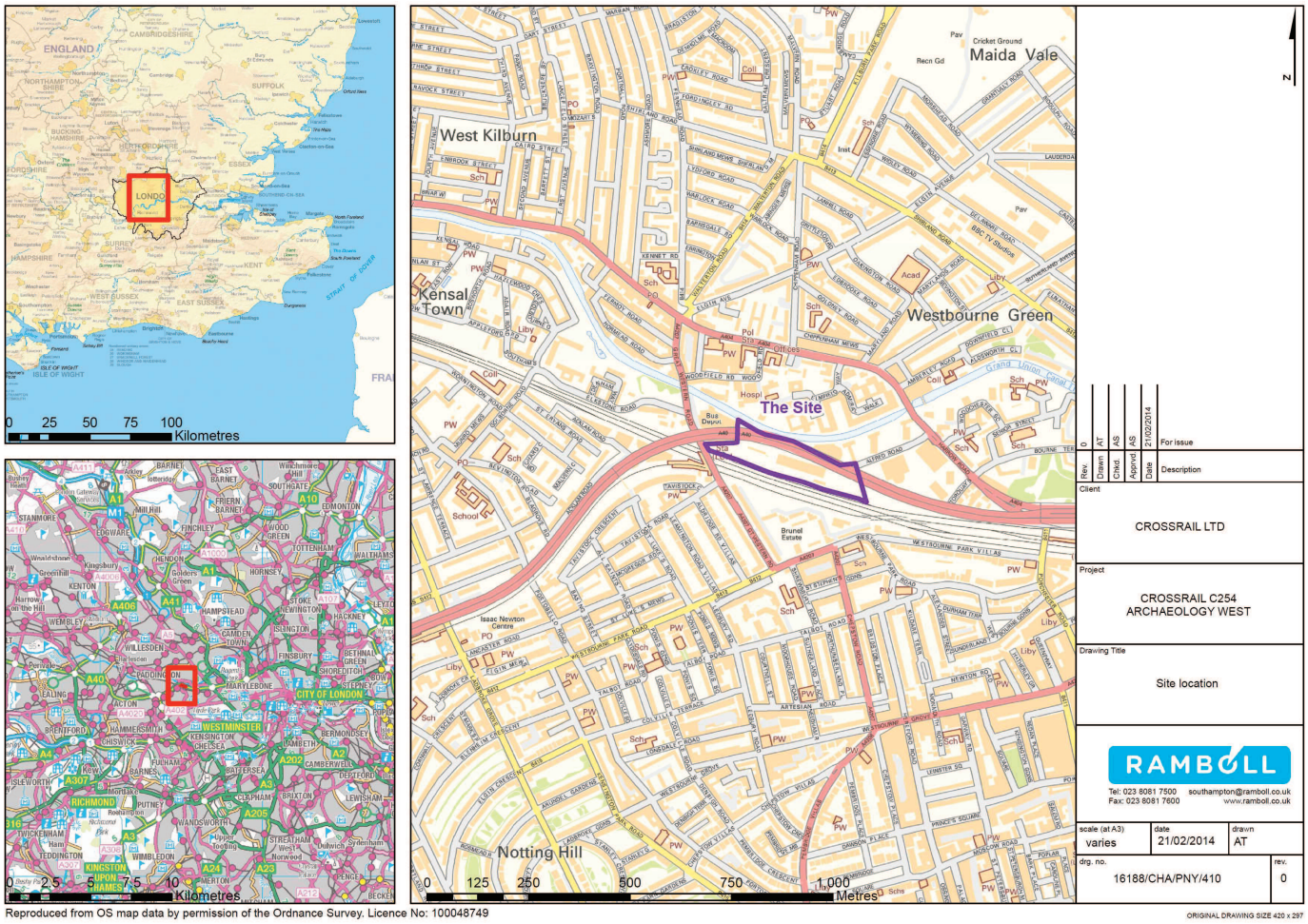
1.1.7 This document is a full Fieldwork Report in line with Section 8F of the Specification for Evaluation and Mitigation (CR-PN_LWS_EN_SP_0001).

1.2 Location

1.2.1 PNY is located immediately to the west of Royal Oak Portal (the point at which Crossrail enters its central tunnelled section) and east of London Underground's Westbourne Park Station (Fig.1). The site lies some 1.3km to the west of Paddington Station and is bound by the Grand Union Canal and the A40 Westway, which oversails the site on a series of large concrete piers, to the north, and the Great Western Mainline into Paddington Station to the south. Crossrail's Royal Oak Portal worksite formed the site's boundary to the east and Great Western Road (A4207) and Green Lane Bridge forms the site's western boundary (Figure 1).

1.2.2 The site was centred on Ordnance Survey National Grid Reference TQ (5) 25118 (1) 81775.

1.2.3 The site was until 2010 partly in use as a goods siding, with the Westbourne Park bus garage, Great Western Studios (a former three-storey British Rail lost property office, now demolished) and a concrete batching plant, operated by Lafarge Tarmac, occupying the western end of the site. Murphy's and Sons used the far eastern end of the site as a yard for motorway maintenance and that end of the site was still called Murphy's Yard until recently. From 2010 until April 2014 Crossrail contractor C300 occupied most of the site not occupied by Lafarge Tarmac, with a site set-up including a sprayed concrete lining (SCL) batching plant, a grout batching plant, a narrow gauge railway, precast rings storage, gantry cranes, muckaway conveyors and temporary sidings. Lafarge Tarmac and C300 controlled the western end of the site until the autumn of 2014.



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ORIGINAL DRAWING SIZE 420 x 297

1.3 Planning Background

1.3.1 The overall framework within which the archaeological work took place is set out in the Environmental Minimum Requirements (EMR) for Crossrail (CR/HB/EMR/0001, fifth draft July 2008). These required that the nominated undertaker or any contractors implement certain control measures in relation to archaeology before or during construction work.

1.3.2 The strategy for archaeological works on Crossrail is set out in the Crossrail Generic Written Scheme of Investigation (Generic SSWSI, CR-PN-LWS-EN-SY-00001). The Generic SSWSI presented the strategy for archaeological design, evaluation, mitigation, analysis, dissemination and archive deposition to be adopted for Crossrail and provided a general statement of objectives, standards and structure for the planning and implementation of archaeological works.

1.3.3 The SSWSI provided the strategy for mitigating impacts on sub-surface archaeological remains on the site. OAR's Archaeology Method Statement (C254-OXF-T1-GMS-CRG03-50005 Rev 2, hereafter the AMS) set out how this strategy would be followed.

2 Archaeological Background

2.1.1 The archaeological and historical development of the site was set out in a Detailed Desk-Based Assessment for the site (DDBA, document CR-SD-CT1-EN-SR-00002) and later developed in the SSWSI. Further research has been undertaken during the course of preparing a Crossrail volume on the railway heritage of London. A summary drawn from these sources is included here.

2.1.2 The landscape of the site and its environs during the prehistoric period would have been dominated by the valley of the river Westbourne which would have provided a landscape ideal for hunter-gatherer activity and occupation. Isolated finds of Palaeolithic axes (c. 450,000-12,000 BC) have been recovered from the gravel deposits of the area, and an assemblage of flintwork, including Levallois flakes and cores and a Bos tooth, were recovered from clay and gravel deposits beside the former course of the Westbourne in Hyde Park in 1925. Little evidence remains of early farming and land use dating to the later prehistoric period, and what has been recovered is piecemeal in nature.

2.1.3 Archaeological work at Royal Oak in 2010 for Crossrail revealed a swathe of early deposits filling a topographical hollow. These were recognised as Pleistocene sediments (deposits relating to the most recent sequence of glaciations between 12,000 and 2.5 million years before present).

2.1.4 Four thousand fragments of bone were retrieved from the deposits. The pieces large enough to be identified proved to be mainly Bison and Reindeer remains - some gnawed by carnivores, possibly bear or wolf. The sediments have been dated to c 70-80 thousand years before present by OSL dating which places them in the early Devensian period. Analysis of pollen samples from the site indicate the landscape is likely to be on of a treeless, grassed open tundra.

2.1.5 The degree of historic truncation present of the site meant a low potential for archaeological remains from any part of the Holocene period survive, even if they had been present before the railway was constructed.

2.1.6 The area was first impacted on when the Grand Junction Canal was constructed in 1801. In 1838 the Great Western Railway's terminus at Paddington followed (GWR). The Victorian Ranelagh Sewer, a brick structure which crosses the mainline beneath Ranelagh Bridge, took the former Westbourne River underground and was commissioned as part of the Metropolitan Board of Works improvements to the area in the 1870s.

2.1.7 The first railway line through this area, constructed by the GWR, was operational by summer 1838 and linked Maidenhead to a temporary terminus to the west of the newly constructed Bishop's Road Bridge. The temporary GWR station operated between 1838 and 1853 and was constructed primarily from timber, although the roofs were carried by iron columns. The terminus, somewhat haphazardly conceived, was intended to be a purely temporary affair before the completion of the more permanent station to the east of the bridge in 1854. The engine shed to the first terminus, a rather splendid octagonal building designed by Daniel Gooch, GWR's young locomotive superintendent, housed a turntable and eight 'roads'. This building stood to the west of carriage sheds and offices, which themselves were separated from Bishop's Road

Bridge by the arrival and departure platforms. After the opening of the existing Paddington Station east of Bishops Bridge Road, the area of the earlier terminus became the station's goods depot, and the area of the former goods shed (and engine shed) in turn became the new terminus.

2.1.8 With the new station opened, the GWR's Chief Engineer Isambard Kingdom Brunel and his Locomotive Superintendent, Daniel Gooch, moved London's locomotive department from the old engine shed to a trapezoidal-shaped field at Westbourne Park. To accommodate the new depot, the field was cut away by extending northward the deep cutting in which the mainline travelled, almost as far as the canal. Engines could now be housed in a huge, rectangular, brick-built shed (Structure 1) constructed to accommodate Brunel's 7-foot wide broad-gauge rails (later converted to Stephenson's standard gauge. Lengths of this broad-gauge rail were found at Westbourne Park during construction works in 2010, and were seen to be of the Brunel-designed type, which he designed specifically for use on the London-Bristol line, and which differed from Barlow's later bridge-rail design by featuring a vertical rather than curved base to the profile's height. These early rails were of wrought-iron). The engine shed housed four tracks spanned with a simple roof of tied wrought iron trusses.

2.1.9 A workshop building to the north of the engine shed (Structure 2) housed offices for Daniel Gooch and his clerks, workshop space for smiths, fitters, coppersmiths and carpenters, and stores. There was also accommodation for enginemen, including 'a sleeping room'. To the north there was an oval-shaped reservoir (Structure 10) and a company house for the depot superintendent ('Alfred Villa', Structure 12) and another, smaller, workshop was located at the western boundary of the site below the Green Lane Bridge (Structure 4).

2.1.10 In 1861 the tracks into Paddington Station were modified so that standard-gauge trains could be accommodated, and the following year a standard-gauge shed was added to the depot (Structure 3). This was erected to the west of the workshops and originally housed three tracks. In 1873 the building was doubled in size to accommodate three additional tracks. This building became known as the 'NG shed' (NG being shorthand for narrow gauge. The broad-gauge shed, logically, became known as the BG Shed). The western part of the site (now occupied by Westbourne Park Bus Garage) was by the 1860s occupied by the Westbourne Schools (Structure 5). To the south of the GWR mainline lay Crimea Goods Yard, which originally had housed additional workshops and a coal stage.

2.1.11 The 1872 Ordnance Survey (OS) map depicts further development. A turntable of 12.8m diameter (42ft, Structure 7) stood to the west of the broad-gauge shed and another (Structure 8) was situated on a track linking the standard-gauge shed with the workshop. A small, hexagonal building, probably a boiler house (Structure 9), adjoined the 42ft turntable, which is believed to have been the only one on the GWR network powered by steam. The northern part of the site was separated from the depot by an access ramp which lead from Alfred Road. This was lost with the construction of the Portobello Junction line in later years, but was later reinstated on a different alignment (Structure 11). By 1872 Westbourne Schools had been joined by St. John's Servants' School (Structure 13), as well as a group of presumably residential buildings constructed along the canal.

2.1.12 A lifting shop (Structure 22) was constructed to the north-east of the standard gauge shed in 1879 and in 1880 a sand furnace (Structure 15) and storage tank were added to the western end of the site, adjacent to the Westbourne School. Also in 1880, a footbridge (Structure 19) was introduced to span a new twin-track goods line (the

Portobello Junction lines) which was laid along the northern boundary of the lower-level parts of the depot.

2.1.13 In 1881/2 the southern turntable and boiler hut were removed to free up space for additional tracks in the main-line corridor. In its place a new 45' turntable (Structure 14) was installed to the west of the standard-gauge engine shed. The detailed 1895 1:1056 Town Plan shows that by then the GWR cutting had been extended northwards almost to the site boundary with the canal at the western end of the site and up to the triangle that housed the oval-shaped reservoir (now appearing to be reduced in area), rectangular tanks (Structure 23) and Alfred Villa at the eastern end. In 1896, in one of the last significant changes to what was by then an impossibly cramped site, the eastern turntable was replaced with one of 55ft diameter.

2.1.14 From May 1906, immediately after the relocation of the locomotive depot to Old Oak Common (situated several miles further west along the mainline), work began on re-developing Westbourne Park Depot into a new GWR new freight depot, named on its opening in 1908 as Paddington New Yard. As part of the changes, several of the bridges, including Westbourne Bridge, were replaced with long-span steel girder structures.

2.1.15 The centrepiece of Paddington New Yard was a large through-road warehouse which had been heavily adapted from the site's original workshop, store and office building. The lifting shop and sand house were also retained. Many of the locomotive depot's other buildings, including both engine sheds, were demolished, and both turntables were removed. New ramped access from Alfred Road into the freight depot was provided. The 1916 OS map shows that the reservoir had been infilled, possibly at the time the site became a freight depot, but certainly by the time the GWR's new motor works were established on the site in 1917 (Structure 24).

2.1.16 Alfred Road Warehouse was built in 1938 (Structure 25) and replaced Structure 17. At the same time, the depot was renamed Alfred Road Goods Depot. The building was assessed and recorded by MoLA in 2010 (C150-CSY-T1-RGN-CR076_PT001-00010), and described at that time as a three storey, twenty bay, purpose-built brick building surmounted by two timber rectangular stair towers. The ground floor was located on a brick plinth, on top of which were timber platforms and intermittent breeze block structures. First and second floors were mounted on a concrete ring beam. Window openings featured concrete lintels broken up by brick pilasters. A timber canopy was also provided. Associated railway tracks also survived. Alfred Road Warehouse formed one of the very last urban railway warehouses. According to the Council for British Archaeology (CBA 2012, 277- 278) the Liverpool Shipping Warehouses in Trafford Park, Manchester, built between 1927 and 1932, lay at 'the end of the classical railway warehouse tradition'. Both the Trafford Park and Alfred Road warehouses shared one of the innovations in building materials that characterised this period, that of the use of concrete.

2.1.17 The access ramp from Alfred Road was also modified in c.1938, with the brick retaining wall and grass embankment being replaced by a concrete retaining wall 'with a granolithic surface' immediately north of Alfred Road Warehouse. The 1956 1:2,500 Ordnance Survey map depicts a new, curvilinear goods shed and platform (Structure 26) located immediately to the north-west of Alfred Road Warehouse, adjoining to the north the Portobello Junction lines. This survived into 2015. Paddington New Yard closed as a goods yard in 1972 and Alfred Road Warehouse became a British Rail lost property depot. Two sidings were retained for use by a concrete batching plant that was established on the site at around the same time (this was owned by Marcon, later

Tarmac Topmix and Lafarge Tarmac). Alfred Road Warehouse was sold in 1994 and renamed Great Western Studios.

2.1.18 One other historic structure lay (and still lies) hidden below the ground surface. The Marcon Sewer was built to drain the railway corridor and the buildings within Paddington New Yard. The sewer was exposed during construction works at Royal Oak in 2010, and seen to be constructed from two skins of red unfrogged bricks laid as stretcher courses to form a barrel-vaulted conduit. The bricks were bonded with a pale grey mortar.

2.2 Previous Work

2.2.1 A number of studies and documents of specific relevance to PNY (such as Specialist Technical Reports: Assessment of Archaeology Impacts Parts 1, 2, and 6) prepared in support of the Environmental Statement 2005, Crossrail 2005) were undertaken during the early stages of the Crossrail Bill process. A Detailed Desk-Based Assessment (DDBA) of the site was prepared (document CR-SD-CT1-EN-SR-00002 Rev 1.0) and was followed by a SSWSI for Royal Oak and Westbourne Park combined (document C150-CSY-T1-RGN-CR076_PT001-00005 Rev 5.0).

2.2.2 Intrusive trial pit surveys were undertaken across the Royal Oak Worksite West area as part of Advanced Works Package WEP-S-008. These comprised the excavation of trial pits targeted to identify the location and depth of utilities, cable routes and other subsurface hazards, including former buildings between Chainage 045 and 120. Several of these intrusive trial pits (S3/03, S3/04, S3/11, S3/12 and S3/13) were selected for archaeological monitoring in order to identify and record any subsurface archaeological deposits (Scott Wilson, 2009, Westbourne Park GI Report, WEB-S-0008C). The headline result of these works was that historic structures and made ground were seen to survive at depths of less than 0.5m below existing ground level.

2.2.3 North-to-south aligned intrusive trial pit Trench S3/03 was situated between the northern side of Marcon Line 2 and the centre of Relief Line 4. This recorded multiple east-west aligned brick wall foundations, typically constructed from red brick, bonded by a cream sandy mortar and surviving to varying depths. A number of the walls appeared to be internal elements of the engine shed and were capped by dark blue-grey copping stones or purple engineering bricks. Red brick and concrete floor levels were also identified at depth of c 121.45 and 121.35 ATD. (ATD being above Tunnel Datum where the Tunnel Datum is calculated as being 100m above Ordnance Datum e.g. 1m aOD = 101m ATD).

2.2.4 Trench S3/04 revealed two north–south aligned concrete foundations at a depth of c 121.88m ATD. Located on the southern side of the Marcon Line these foundations fell outside of the engine shed and it is unclear what structure they may relate to. Made ground was recorded to the limit of excavation at 1.50m b.g.l. (c.121.10m ATD).

2.2.5 North-to-south aligned Trench S3/11 revealed multiple east-west aligned brick wall foundations recorded between the northern side of Marcon Line 2 and the northern side of Relief Line 4. The brick foundations were typically constructed from red brick, bonded by a cream sandy mortar, capped or faced with purple engineering bricks and surviving to varying depths below the existing track level. Again, a number of the walls appeared to be internal elements of the engine shed inspection pits or troughs. Brick and concrete floor levels were also recorded of c 121.52 and 121.67m ATD.

2.2.6 Test trench S3/12 was aligned east-to-west across the ‘open’ western end of the 1860s main engine shed, but proved to be negative, revealing only modern railway ballast.

2.2.7 East-to-west aligned Trench S3/13 was situated between Marcon Lines 1 and 2 and partially uncovered a single concrete foundation which ran the entire 30m length of the southern side of the trench at a depth of c 121.15m ATD. Made ground was recorded to the limit of excavation at 1.50m b.g.l. (c.121.10m ATD) where London Clay was exposed.

2.2.8 A programme of fieldwork at the eastern end of PNY was undertaken by C254 during 2010 and 2011 (document C254-OXF-T1-RGN-CRG03-50047). This included a Targeted Watching Brief on construction works within an area to the north of Murphy's Yard known to contain a GWR dwelling (Alfred Villa) and a GWB on the bulk excavation of the terracing in the Murphy's Yard area of the site. The TWB, although curtailed by the discovery of asbestos, duly uncovered the foundations and cellars of Alfred Villa. To the south of the building a series of brick-built boundary walls and various levelling deposits used to make up the terrace was uncovered. To the east, the demolition of a section of the original GWR brick retaining wall was also monitored.

2.2.9 The 2010-2011 works also recorded a continuation of existing rails seen and recorded as part of Scott Wilson's non-listed built heritage survey (C150-T1-RGN-CR076_PT001-005). These were located on the northern side of the former Alfred Road Warehouse. A rail (7004) extending to a length of approximately 2m was slightly curved in plan and lay about 400mm below the surface. The rail itself was made of steel and displayed a bullhead 'I' shaped profile. The rail was bolted to underlying transverse wooden sleepers (7005 and 7013); a surface of rectangular granite setts (7002) had been laid at the same level as the rails. An overlying Tarmac surface (7001) sealed both. A layer of black ashy stone ballast (7000) was associated with the remains, all of which were clearly truncated by the concrete column bases for Alfred Road Warehouse. Several layers of material were used to level the ground for the tracks (7008 and 7010-7012). The track is likely to be the former Portobello Junction goods line which passed to the north of the original Westbourne Park locomotive depot.

2.2.10 The summary of utilities and assets undertaken by Crossrail (document C178-CSY-C-RGN-CR076_MS005-50003 Rev 2) referred to the partial exposure of a turntable during the construction of Network Rail's UTX Crossing 8. This turntable was subsequently catalogued in the SSWSI as Structure 14. The image reproduced in the asset survey report showed a substantial, curved brick wall survived to a depth of c.700mm, over which a capping course survived.

2.2.11 Recording was also undertaken in 2010 by MoLA in advance of demolition, and the results summarised in Westbourne Park and Royal Oak Portal Site-Specific Archaeological Written Scheme of Investigation (document C150-CSY-T1-RGN-CR076_PT001-00005) and Westbourne Park, Non-Listed Built Heritage Recording.

3 Geology and Topography

3.1.1 Information on the geology and topography of PNY has been summarised from the DDBA (document CR-SD-CT1-EN-SR-00002) and previous summaries in Westbourne Park and Royal Oak Portal Site-Specific Archaeological Written Scheme of Investigation (document C150-CSY-T1-RGN-CR076_PT001-00005).

3.1.2 The site lies within a cutting constructed in the 19th century for the GWR. This formed a trapezoidal-shaped parcel of terraced land sandwiched between the Grand Junction Canal and the mainline railway into Paddington Station. The lower terrace is relatively flat, sloping gently from c. 123m ATD at the base of the concrete retaining wall of the railway cutting to c. 122.6m ATD at the existing track level of the Network Rail mainline. The majority of C254's work took place at this level. The upper terrace slopes down

from c. 129m ATD adjacent to the Grand Junction Canal to between c. 128m and 125m ATD at the top of a new concrete retaining wall as it extends west to east across the site. A cobbled access ramp runs east-west along the northern edge of the site and provides access from Alfred Road at the higher level to the eastern side of the 1980s Westbourne Park bus garage on the lower terrace.

3.1.3 The drift geology of PNY is, as is common over most of this part of the capital, London Clay, a marine geological deposit dating to the Eocene c. 56-49Ma.

3.1.4 Geotechnical and geo-environmental conditions within the Royal Oak Worksite West were investigated as part of geotechnical ground investigations Works Package 17B undertaken between February and June 2009. The upper terrace of the Site, immediately east of the former Great Western Studios (GWS) was investigated by five cable percussion boreholes (ROP6–9 and ROP6A), five window samples (WS114–118) and two test pits (TP350 and TP 351).

3.1.5 The stratigraphic sequence in this area is summarised below in Table 1.

Stratum	**Elevation at top, m ATD**	**Thickness, m**
Made Ground	128.38 to 125.95	1.0 to 3.05
Alluvium[1]	126.48 to 125.94	0.30 to 1.05
Organic Alluvium[2]	125.64	0.30
Reworked London Clay[3]	125.71 to 124.38	0.40 to 1.40
London Clay	125.78 to 122.98	Not proven

Table 1: Stratigraphic summary for the upper terrace east of the GWR cutting

Notes: [1] Window Samples WS114-116 only. [2] Window Sample WS116 only.

[3] identified in boreholes ROP6a and ROP8 only

3.1.6 The area of the site within the GWR cutting and immediately north of the mainline railway was investigated by two cable percussion boreholes (ROP12 and ROP14), three rotary boreholes (ROP13R, ROP15R and ROP16P) and five window samples (WS113 and WS120-WS123).

3.1.7 The stratigraphic sequence for the area within the GWR cutting is summarised in Table 2 below:

Stratum	**Elevation at top, m ATD**	**Thickness, m**
Made Ground	122.74 to 122.54	0.80 to 1.80
Alluvium	126.48 to 125.94	0.30 to 1.05
Organic Alluvium (Borehole ROP15R and window samples WS114-4 only)	121.45 to 126.48	0.05 to 1.05
London Clay	121.90 to 120.78	Not proven

Table 2. Stratigraphic summary of the Lafarge Tarmac Batching Plant and Tower Transit bus facility (within the GWR cutting)

3.1.8 The ground investigations confirmed the natural slope of the underlying London Clay southward. The investigation also confirmed that the site has be subjected to significant truncation during the excavation of the GWR cutting, construction of railway buildings and track layouts and, more recently, construction of the A40 Westway road. However, the ground investigations report also noted that the depth of truncation and made ground was variable.

3.1.9 Three window samples (WS114–116) located outside the GWR cutting on the upper terrace of the Site (area around Murphy's Yard) identified a firm brown/brown mottled orange clay alluvial deposit (0.3–1.05m thick), overlain by between 1m and 1.9m of "made ground". In WS116 the brown alluvial deposit sealed a grey mottled black, organic alluvium 0.3m thick which overlay the London Clay.

3.1.10 Within the GWR cutting borehole ROP15R identified a light brown/blue grey clay alluvial deposit (0.05m thick) sealed by 1.15m of "made ground". The alluvial deposit sealed the London Clay.

3.1.11 The palaeoenvironmental and geoarchaeological potential of these below-ground deposits was demonstrated in 2010-2011 when several relict channels, possibly of the River Westbourne, were identified at a location c. 300m to the east of the site (within the Royal Oak East worksite, beside Crossrail's Royal Oak Portal tunnel entrance). It is possible that the alluvial deposit identified in borehole ROP15R was part of another former watercourse, or a floodplain deposit.

4 Research Aims and Objectives

4.1.1 The main aim of the archaeological mitigation strategy set out in the SSWSI was to assess and record the nature, extent, character and significance of any geoarchaeological or archaeological features and deposits on the Site that might be impacted on by the proposed construction activities.

4.1.2 The overall objective of the archaeological mitigation set out in the SSWSI was to preserve by record any surviving archaeological remains before they were impacted upon by the development. These remains were taken to include:

- The foundations and other below ground evidence for the site's engine sheds, workshops, Sand House, turntables and track layouts within the site's GWR cutting, and also the remains of any associated railway infrastructure, early track formations, supporting timbers, transoms or associated ironwork; and
- Possible geoarchaeological remains cut through or overlain by the London Clay which underlies the site.

4.1.3 Selected research themes derived from A Research Framework for London Archaeology 2002 (Nixon et al, 2003) are included in the Assessment of Archaeology Impacts Technical Report (Crossrail 2005). Specifically here, archaeological investigation and mitigation within the PNY worksite sought to provide evidence relating to early railway construction. Any such evidence was thought to have the potential to contribute to the following research themes:

4.1.1 The early development of the GWR is of great interest to historians. At PNY, the facilities conceived and developed by Isambard Brunel and his deputy, Daniel Gooch, were the first full statement of what they had tried, but largely failed, to achieve at Paddington Station. Here they could provide a full-sized engine shed and workshops, unencumbered by the space restrictions that had so hampered their early efforts at

Paddington. It is no coincidence that the site contained an office for Gooch and a house for his deputy (Alfred Villas) because here, for the first time, the pair were able to preside directly over the maintenance of Gooch's newly designed locomotives. Understanding the layout and workings of this early locomotive depot was recognised in the SSWSI as a key part of understanding how the GWR operated in London in its early days.

5 Methodology

5.1 Methodological Standards

5.1.1 All work has been undertaken in accordance with the SSWSI, the AMS, OA best practice and the following documents:

- Crossrail Archaeological Generic Written Scheme of Investigation, Document No: CR-PN-LWS-EN-SY-00001, 7 July 2009 (AWSI)
- Crossrail Archaeology Specification for Evaluation and Mitigation (including Watching Brief), Document No: CR-PN-LWS-EN-SP-00001, 26 June 2009, (ASEM)
- Institute for Archaeologists – Standard and Guidance for archaeological excavation, 2008 (revised);
- Institute for Archaeologists – Standard and Guidance for an archaeological watching brief, 2008 (revised);
- Museum of London collections and archive policies and guidance;
- English Heritage – Geoarchaeology, 2007;
- English Heritage - Archaeological Science at PPG16 interventions: Best Practice Guidance for Curators and Commissioning Archaeologists, 2003;
- GLAAS Archaeological Guidance Papers 1999;
- Corporation of London archaeology guidance – Planning Advice Note 3, 2004;
- Museum of London Archaeology Service site recording manual (MOLA 1994); and
- OA Fieldwork Manual 1992.

5.2 Fieldwork Techniques

5.2.1 This section sets out the methods applied during the archaeological works.

Trial trench excavation

5.2.2 Archaeological evaluation, comprising trial trench excavation in a number of locations (Fig 3), sought to identify the level of survival (if any) of significant heritage assets on the site. In accordance with the SSWSI and instruction from the Project Archaeologist some of the trenches were later adapted to form mitigation areas. A table detailing the nominal dimensions, location and purpose of each trench, the construction impact the SSWSI anticipated at each location, and what mitigation measures followed is provided below.

Trench No.	Dimensions (in m) and co-ordinates. Co-ords to Ordnance Survey grid, approximate only and represent midway point of two shortest trench sides	Rationale	Impact Type	Subsequent mitigation
1	Nominally 1.8m wide by 15m length W 524978.327, 181762.815 E 525001.644, 181753.798	Trench was designed to test for the survival of the 42' turntable to the west of the broad gauge engine shed (Structure 7) and turntable boiler or control house (Structure 9). **NOTE: This trench lay within Network Rail's Operational Railway area and did not form part of the archaeological response to the works described herein. It was included in the SSWSI solely to inform any archaeological mitigation strategy that Network Rail might prepare in response to their Paddington Approaches works.**	Track reconfiguration	n/a
2	1.8m wide by 15m length. W 524970.827, 181792.298 E 524985.079, 181787.619	Trench was designed to test for the survival of the 45ft wide turntable (Structure 14)	Track reconfiguration	Extended northwards and westwards to expose most of footprint of the turntable. The discovery of north-south and east-west aligned high voltage power cables running across the turntable prevented complete excavation of the structure.
3	1.8m wide by 15m length N 525040.546, 181778.299 S 525036.364, 181763.893	Trench was designed to test for the survival of the narrow gauge engine shed (Structures 3 and 32)	Construction of bus deck	Extended northwards and westwards to expose the northern wall of the engine shed and the limits of its later northern extension. The western limits of the shed were monitored and recorded as part of a General Watching Brief
4	1.8m wide by 15m length. W 525074.619, 181762.114 E 525088.892, 181757.500	Trench was designed to test for the survival of turntable (Structure 8)	Site clearance/ construction of bus deck	Area was extended westwards to expose whole of the footprint of the turntable
5	1.8m wide by 15m length N 525150.410, 181727.790 S 525146.228, 181713.385	Trench was designed to test for the survival of the broad gauge engine shed (Structure 1).	Track reconfiguration	Extended westwards, northwards and eastwards (where it joined to Trench 8), to

Trench No.	Dimensions (in m) and co-ordinates. Co-ords to Ordnance Survey grid, approximate only and represent midway point of two shortest trench sides	Rationale	Impact Type	Subsequent mitigation
				expose eastern end and the northern wall of shed
6	1.8m wide by 15m length N 525228.431, 181728.643 S 525224.249, 181714.238	Trench was designed to expose eastern end of locomotive Department workshop (Structure 2).	Track reconfiguration / batching plant construction	Trench replaced by strip, map and sample excavation
7	1.8m wide by 15m length N 525170.859, 181745.463 S 525166.677, 181731.057	Trench was designed to expose western end of Locomotive Department workshop (Structure 2).	Track reconfiguration / batching plant construction / bus deck	Trench replaced by strip, map and sample excavation
8	1.8m wide by 15m N 525249.393, 181695.571 S 525245.211, 181681.166	Trench was designed to test for the survival of the broad gauge engine shed (Structure 1).	Track reconfiguration / Marcon Sewer works	Extended eastwards, to expose eastern end of shed
9	1.8m wide by 15m length N 525276.046, 181702.833 S 525271.864, 181688.428	Trench was designed to test for evidence of former track formations (Structures 27, 28 and 29)	Track reconfiguration	De-scoped and replaced by general watching brief
10	1.8m wide by 15m length N 525108.179, 181781.788 S 525103.997, 181767.382	Trench was designed to test for evidence of the lifting shed (Structure 22)	Bus deck / site clearance	No further works. The areas to the east and west were seen to have been almost completely truncated during the construction of Alfred Road Warehouse in 1938 and by the later Lafarge Tarmac tanks and bins

Table 3 Archaeological Trial Trenches 1-10

5.2.3 The SSWSI included an historic asset gazetteer compiled from the archaeological and historical background section. The gazetteer gave a number (structure number) and significance rating to each asset. Because none of the structures were listed buildings or structures non-Listed built heritage recording methods were used. The recording strategy consisting of three main elements: a drawn record, a descriptive written record and a photographic record. As the historic assets were industrial and had housed many different functions particular attention was paid to evidence of the former use of the buildings and their operations.

5.2.4 The trial trenches were excavated to the base of archaeological remains or to the lowest construction levels as agreed by the Project Archaeologist.

5.2.5 The provision and operation under archaeological supervision of plant equipped with toothless machine buckets, any breaking out required, banking, all temporary works and any enabling work was the responsibility of the Principal Contractor.

5.2.6 The machine removed modern overburden progressively, in spits of up to 500mm depth. Control of the plant activity/movements was undertaken by the supervising archaeologist who liaised with the machine's supervising banksman.

5.2.7 Any variations to the excavation methodology were agreed beforehand with the Project Archaeologist. Machine excavation ceased at the level where archaeological levels were reached, at which point hand excavation commenced.

5.2.8 All relevant trenches respected a 2m wide easement against Network Rail's Operational Railway area. Each spit was examined carefully to assist the recovery of any archaeologically significant artefacts and to help determine when to cease machining. The archaeological level was cleaned in plan by the Principal Contractor using a wide-blade ditching bucket (i.e. toothless bucket) or similar (if applicable).

5.2.9 Planning and section drawing of appropriate structures, single contexts and features was undertaken at a variety of scales (usually at 1:20 scale for plans and 1:10 scale for sections).

5.2.10 Section drawings were located on the relevant plan and both London Grid and OS co-ordinates recorded. The locations of the OSBM or PGM bench markers used and any site TBM was also indicated.

5.2.11 A record of the full extent in plan of all archaeological structures and deposits as revealed in the investigation was made; these plans were on polyester based drawing film. Single context recording was as used as appropriate.

5.2.12 A 'Harris matrix' stratification diagram was employed to record stratigraphic relationships. This record was compiled and fully checked during the course of the excavations.

5.2.13 Each photograph and transparency included an appropriate graduated scale, a north arrow, and a header board detailing the project event code and context/feature number. In addition, record photographs were taken to illustrate work in progress.

Mitigation excavation and recording of significant historic assets

5.2.14 If the results from a trial trench indicated the survival of significant historic assets (generally those characterised in the SSWSI as being of regional or significant local significance), and those assets were shown to be at risk of being impacted on by construction activities, the trial trenches were, on the instruction of the Project Archaeologist, opened out to reveal the extent (or a statistically valid sample area) of those structures. Once exposed the structures were archaeologically cleaned before excavation and historic building recording took place. This work aimed to expose any machinery, fittings and artefactual, construction or engineering evidence which was not apparent or had been only partially resolved in the trial trench excavation. Excavations ceased once these matters had been resolved, unless the Project Archaeologist instructed otherwise.

5.2.15 The excavation and recording methodology employed for these works is outlined in the trial trench excavation section above.

Strip, map and sample excavation

5.2.16 In some areas where construction activities (such as general ground reduction, obstruction removal or track formation) coincided with known heritage assets, strip, map and sample excavation took place. Strip, map and sample excavation was characterised in the SSWSI as the stripping of areas using a flat-bladed bucket under archaeological supervision and control, followed by the rapid recording of such structures. Ground reduction took place to facilitate the construction of pile mats (also termed working platforms), the testing for any obstructions to piling, excavations for pile caps, formation of new permanent way and excavations for new drainage and service

runs. In addition, the new batching plant included a number of areas where deep excavations were required to facilitate construction of receiving pits.

5.2.17 In such areas ground reduction works were supervised by an archaeologist who liaised with the mechanical excavator's supervising banksman. The machine used in the exercise reduced the ground level progressively, in spits of 200mm to 500mm depth (dependent on specific site conditions), at all times using toothless buckets. Any variations to this excavation methodology were recorded in writing for inclusion in the final report to the Project Archaeologist.

5.2.18 Machine excavation ceased temporarily at the level where archaeological structures, features or deposits requiring recording was reached.

Salvage of historic items

5.2.19 A number of historic items relating to past uses of the site were revealed during the works. As possibly suitable candidates for salvage and re-use, these were identified and fully recorded, issued with a catalogue number and brought to the attention of the Project Archaeologist. An appraisal of their significance was also made.

5.2.20 Historic items of significance relating to the use of the site were defined in the SSWSI as objects such as machinery, machine components, architectural fittings, fragments or components, signage, tools, permanent and temporary way fixtures and fittings, and any other general railway paraphernalia which could be reasonably salvaged and which, it might be reasonably supposed, would be accepted by a heritage body.

5.2.21 Items which fell into this category included lengths of *ex situ* broad gauge 'bridge rail' which had been used to seal the tops of access chambers into the Marcon Sewer. These were donated by Crossrail to be included in an art installation. Several tons of bricks from the broad gauge shed and eastern turntable pit were also donated, this time to the Gloucester and Warwickshire Steam Railway who intend to use them in the rebuilding Broadway Station, Worcestershire.

General Watching Brief

5.2.22 In other remaining areas where historic assets were known to exist but which had not been subject to trial trenching, mitigation excavation or strip, map and sample excavation, a general watching brief (GWB) was undertaken. Particular attention was paid to areas of deep construction activity, such as the excavation for the BDU, in order to capture any geoarchaeological evidence. A GWB is defined in the Generic SSWSI as 'a programme of archaeological monitoring (i.e. observation, investigation and recording) which is carried out by a suitably qualified archaeologist during site investigations (e.g. geotechnical test pits, boreholes and utilities trial trenches) and construction works. The purpose of a watching brief is to identify the potential of any archaeological remains that are uncovered in the course of the works and record them appropriately (as far as is reasonably practicable).

5.2.23 At the start of each GWB field event, methods, health and safety issues, programme and lines of communication were agreed by the Principal Contractor, the Project Archaeologist and OAR.

5.2.24 All site recording was undertaken in accordance with the Oxford Archaeology Field Manual (ed. D Wilkinson 1992) and Museum of London guidance, as per requirements set out in SSWSI, and was at all times be compliant with.

5.2.25 All observations are issued a unique Event Site Code (XSI10). A continuous unique numbering system operated. Written descriptions were recorded on OA proforma sheets comprising factual data and interpretative elements. Mapping and surveying

was undertaken as specified in the SSWSI, and as described throughout this document.

5.2.26 Works were located on 1:1250 base plans. Where manual recording was required plans and sections were drawn on London archive acceptable permatrace paper at a scale of either 1:50, 1:20 or 1:10, and later digitally scanned.

5.2.27 A digital, and black and white photographic record was maintained, illustrating (detail and general context) the principal features. It also included working shots.

5.3 Recording

Artefact recovery, conservation, retention and disposal

5.3.1 Any artefacts recovered during the archaeological work are the property of Crossrail Ltd. Arrangements have been made via the Project Archaeologist to organise legal deposition with the receiving museum or appropriate heritage body.

5.3.2 All artefacts recovered from hand-excavated contexts were retained unless they were of recent origin. In such cases, sufficient quantities of the material were retained to validate the date and establish the function of the deposit from which the finds were recovered.

5.3.3 Finds retrieval policies of the Museum of London were adopted. Exact retention and disposal policies, as specified by the Museum of London, were set out in the AMS.

5.3.4 Unstratified objects from modern made ground or other modern deposits were not retained except in circumstances where they were of intrinsic interest either in their own right or could contribute to an understanding of the site.

5.3.5 Recovery was normally by hand, except where bulk samples were taken for other purposes or for special recovery of small items. Where possible all upcast/spoil was scanned by hand and any finds retrieved.

5.3.6 All finds and samples were treated in an appropriate manner and to standards agreed in advance with the Museum of London.

5.3.7 Artefacts collected during the excavation were identified by context. The artefacts were exposed, lifted, cleaned, stabilised, marked, bagged and boxed in appropriate materials and conditions to ensure that no deterioration occurs.

5.3.8 All artefact/ecofact processing/storage was carried out in accordance with UKIC (United Kingdom Institute for Conservation) - Archaeology Section Guidelines for the Preparation and Storage of Excavation Archives for long-term Storage (1990) and the Standards and Guidelines for the Collection, Documentation, Conservation and Research of Archaeological Materials (Institute for Archaeologists 2001).

5.4 Site Survey and Spatial Recording

5.4.1 Oxford Archaeology uses as a guideline for its metric survey English Heritage Metric Survey Specifications. The survey was conducted with reference to these.

5.4.2 The spatial extents of the investigations were set out by the Project Archaeologist and on site engineers in accordance with the setting out co-ordinates supplied by the Project Archaeologist. All recording were in accordance with the London Survey Grid Standard (formerly Crossrail Survey Grid, see Crossrail standard CR-SATD-010).

5.4.3 OA/R did not obtain dimensions by scaling from the Employer's drawings. Dimensions which are not shown on the Employer's drawings or calculable from dimensions shown on the Employer's drawings were obtained from the Project Archaeologist.

5.4.4 Surface heights were recorded and related to PGMs (Permanent Ground Marker) or approved Ordnance Survey Bench Marks (OSBM) .The full descriptions and locations of PGMs and OSBMs known to the Employer were supplied to OA/R by the Project Archaeologist.

5.4.5 Survey work was conducted using a combination of Total Station Theodolite (TST) survey utilising Reflectorless Electronic Distance Measurement (REDM) where appropriate, hand-measured elements The survey equipment used by OA was a Leica TCRP 1205 TST.

5.4.6 All control stations were checked by closed traverse. The accuracy of these control stations were accessed on a regular basis and re-established accordingly. All stations were recorded on Survey Control Station sheets. Each TBM was levelled as part of a closed loop starting and finishing on approved OSBMs or Crossrail PGMs. Where more than one TBM was required per site OA/R established the TBMs as part of the same closed loop.

5.4.7 Each control station was marked with a PGM. Witness diagrams included the full 3-D co-ordinates generated, a sketch diagram and measurements to at least three fixed details, written description of the mark and a photograph of the control point in its environs.

5.4.8 Prior to entry into the field all equipment was checked, and all pre-survey information logged onto the field computer and uploaded onto survey equipment as appropriate. The software in the field computer was verified and all cabling between the TST and computer checked. Prior to conducting the survey the Site was reconnoitred for locations for a viable control network and check the line of sight and any possible hindrance to survey. Daily record sheets were kept to record daily tasks and conditions.

5.4.9 All spatial data was recorded by the TST in either the internal data-logger, on an appropriate memory card or directly onto a field computer through use of appropriate software (such as TheoLT, Penmap or Leica TST CAD). Non-spatial information was recorded either in a field notebook, on the field drawings or logged directly onto a laptop or PDA (Personal Digital Assistant). Data was periodically downloaded onto a field computer, and backed up onto CD, or DVD. It was cleaned, validated and inspected.

5.4.10 Each TBM was levelled as part of a closed loop starting and finishing on approved OSBMs or Crossrail PGMs. Where more than one TBM is required per site OA/R established the TBMs as part of the same closed loop.

Rectified Photography and 3D scanning

5.4.11 During the project the Crossrail project archaeologist suggested that a series of high 3D scans be taken of the structures found during the archaeological works. Including turntables, the workshop and both engine sheds. This was carried out with laser scanners by a Geomatic Survey team from Crossrail headed by Christian Gaguana and produced a high definition 3D record of these structures.

Data Capture of Excavated Interventions and Detail Recording

5.4.12 Excavated archaeological interventions and areas of complex stratigraphy were hand-drawn. At least two Drawing Points (DPs) were set in as a baseline and measurements taken off this by tape and offset. The hand-drawn plans were

referenced to the digitally captured pre-site plan by measuring in the DPs with a TST or GPS. These hand-drawn elements were then scanned in, geo-referenced using the DPs as reference points and digitised following OA's digitising protocols.

GIS/CAD Work

5.4.13 Any survey data recorded in the field were downloaded using Leica GeoOffice, LisCAD or other appropriate downloading software, and saved as an AutoCAD Map DWG file, or an ESRI Shapefile. These files were regularly updated and backed up with originals being stored on an OA server in Oxford.

5.4.14 All drawings were composed of closed polygons, polylines or points in accordance with the requirements of GIS construction and OA Geomatics protocols. Once created, additional GIS/CAD work was carried out at OA Central's office.

5.4.15 In all instances, CAD work followed the guidelines set out in Crossrail's CAD Standards (CRL1-XRL-O6-STD-CR001-00014 CAD Standard V4) and Crossrail Archaeology Specification for Evaluation & Mitigation (including Watching Brief) (Document CR-PN-LWSEN- SP-00001).

5.4.16 All plan scans were numbered according to their plan site number. Digital plans were given a standard new plan number taken out from the site plan index.

Maintenance/Curation

5.4.17 All digital data were backed up incrementally on CD or DVD. Each Friday the entire data directory were backed up and returned to Oxford, where it were copied onto the OA projects server. Each CAD drawing contained an information layout, which included all the relevant details appertaining to that drawing. Information (metadata) on all other digital files were created and stored as appropriate. At the end of the survey all raw measurements were made available as hard copy for archiving purposes.

6 Results

6.1 Introduction

6.1.1 This section summarises the results of the archaeological investigations at Paddington New Yard. The results are presented by Historic Asset (ie Structure 14 (turntable), Structure 1 (broad-gauge engine shed etc), with the Structure Number cited being that provided in the SSWSI's Historic Asset Gazetteer. Detailed summaries of each archaeological feature or deposit are presented in Appendix 1; full details are available in the fully cross-checked project archive.

6.1.2 Within each historic asset section the results are presented as a chronological narrative. All periods of activity identified are shown in Figures 4-10 and are phased where possible.

6.2 Natural Deposits and Lower Archaeological Deposits

6.2.1 The natural geology of the site was characterised by a layer of archaeologically sterile, mid brown weathered clay (8002, 8676 and 8082), part of the London Clay complex that forms the underlying geology in this part of London. This deposit was revealed across the entire site at a depth of c. 0.9m to 1.0m below ground level; c121.6m ATD (Plate: 60).

6.2.2 The exposed sequence of the earliest non-Natural deposits consisted of a 0.2 to 0.6m thick layer of clean crushed red brick fragments (8002 and 8682), which lay directly on top of the London Clay (Plate: 60).

6.2.3 Similar deposits of crushed red brick were observed spread over Natural Geological deposits during OA/R' s watching brief at the Crossrail Royal Oak Portal and Lord Hill's Bridge. Context 1003 in the Crossrail Royal Ok Portal (OA/R C254-OXF-T1-RGN-CR G03-50047) and context 2007 at Lord Hill's Bridge (C254-OXF-T1-RGN-CRG03-50116).

6.2.4 The lack of mortar fragments either within this deposit or attached to the brick fragments would suggest that this deposit be derived from brick works waste, rather than from crushed demolition waste from buildings.

6.2.5 Above this makeup / working surface lay a compact layer of dark greyish black ashy gravel with clinker inclusions (context 8136). This track ballast was up to 0.6m thick but was often much thinner. This represents the land contemporary with the use of many of the structures found on site. And essentially formed the surface of the Site prior to its conversion into a goods yard at the turn of the 20th century.

6.3 Turntable -Structure 14 (Trench 2)

6.3.1 Structure 14 was revealed by excavation in the southwest corner of the Site close to the present day operational mainline track into Paddington. This brick built, circular turntable pit was initially discovered in Trench 2, just below the modern surface of the present yard. Trench 2 was subsequently opened out to reveal most, but not the entire turntable pit. Health and Safety constraints: two suspected live power cables which ran east- west and north-south across the turntable along with a signal gantry in the southeast corner, required that two 1m wide bulks be left unexcavated.

6.3.2 The turntable pit was 13.71m (45ft) in diameter and 1m deep. It appeared to have two building phases (8332 and 8302) (Figure: 4).

6.3.3 The initial pit (8332) was circular in plan with a single outer wall (coloured green on Figure: 4). During the second phase (8302) a conjoining machine room (8528) was added to the pit's northeast quadrant (coloured blue on Figure: 4).

6.3.4 The initial turntable pit consisted of a single brick built outer wall (8521) and a brick floor (8524). Both of these were built of red, brownish red and mauve red coloured bricks with shallow frogs.

6.3.5 The outer sidewall was 0.46 m (1ft 6") wide. Extant for most of its height (1.02m). The top of the wall and any capping had been removed prior to the excavations. Wall 8521 was built of bricks lain on bed in an alternating headers and stretchers (English bond) these were set in a hard coal ash mortar (Plates: 3-6).

6.3.6 A 190 mm (7½ ") wide inner ledge (8522) was observed running along the inside base of wall 8521, 190mm (7½") high this was built of two layers of bricks covered in a light brown render and laid on edge in a stretcher bond.

6.3.7 Interior to this was a 0.36m (10") wide gully **(**8525) Set into the brick floor this ran around edge of the entire turntable pit. Only 10mm deep, this gully contained a series of short, 0.35m long and 0.15m wide, wooden sleepers (8599) which were set at regular intervals into its base. A number of metal bolts 150mm (6") high and 25mm (1") in diameter were also set vertically at regular intervals into the base of this feature. The base of this gully was covered in a light brown render similar to that found on ledge 8522 (Plates: 3 and 5).

6.3.8 The gully with its wooden sleepers and bolts appeared to be the base for a (removed), guide track for the guide wheels which were used to rotate the turntable.

The flat wooden sleepers acting as pads of the rail mounts for the track/guide rail (Plate 5).

6.3.9 The floor (8524/8526) of the turntable pit constructed of a single layer of bricks lain on bed and set out in a concentric circular pattern radiating out from the centre (Plate: 2, 4 and 6). This floor was not set upon any bedding layer rather it was set directly into the weathered London Clay. The floor gently sloped down to the centre. The outermost metre of the pit base was close to horizontal with just enough of a slope to shed rainwater and it is here that the circular turntable track/guide rail was located.

6.3.10 A circular shallow drainage gully (8523) was set into the brick floor. This had a brick base and was 30mm deep and 0.24m wide. It ran around the centre of the turntable (4m from the outer wall) (Plate: 2).

6.3.11 At its southeast quadrant this drainage gully turned southeast to exit the pit through a square opening (8840) in the base of wall 8521.

6.3.12 At the centre of the turntable pit floor a slightly sunken and more eroded area of bricks was observed (8527). This inner section of floor had been partly repaired with a horizontal layer of concrete. A series of vertically set metal nuts and bolts were seen set into 8527. These fixtures were 150mm high and 50mm (2") in diameter, and appeared to be arranged around a larger central metal bolt (150m in diameter). These bolts are thought to be securing pins for the turntable's central pivot that along with the turntable's wheels supported the weight of the rotating turntable.

6.3.13 A brick built structure (Engine House): 8528 (Coloured blue in Figure: 4) was later added to the northeast quadrant of the turntable pit. The walls of this structure were not keyed in to the main turntable wall and it was clearly a later addition. This structure was square in plan (2.3m long x 1.34m wide and 1.18m deep), built of three, 0.23m wide walls, its southern side opened into the main turntable. Its walls were built of frogged bright red machine made bricks set into a hard light grey mortar in alternate courses of headers and stretchers. The floor of this structure (8531) was built of similar red bricks (Plate: 8).

6.3.14 A number of graffiti were carved into the northwest wall of this structure (Plate: 9).

6.3.15 Most of the turntable's pit remained intact, aside from some holes in the wall caused by later service trenches. However, none of the turntable platform/deck, structural ironwork or working mechanism survived, although a number of metal bolts and the base of the central metal pivot set into the turntable's floor survived. The turntable deck and any movable parts of its running mechanism had presumably been removed when the turntable was dismantled and its pit backfilled.

6.3.16 The turntable pit and the associated engine house were filled with demolition rubble (8301) made-up of fragments of red and blue bricks, quantities of mortar and some large pieces of concrete. A number of metal fixtures and fittings were also found. This deliberate back fill appeared to be mostly derived from the demolition of nearby buildings, presumably during the dismantling of the depot. This was sealed with layer railway ballast (8300). Along its northern edge the demolition infill and railway ballast was sealed by a cobbled surface (8319) made up of granite sett across the rest of the turntable it was covered by thick concrete slab, which together with the cobbled surface formed the latest surface across much of the Site.

6.4 Narrow Gauge Engine Shed–Structure 3/32 (Trench 3)

6.4.1 This brick built rectangular building was initially discovered in Trench 3 and was just below the surface of the modern yard. Trench 3 was subsequently opened out to reveal

most the eastern end of this structure. The western end of the shed was not included within the Strip, Map and Record phase of the Targeted Watching Brief but it was monitored by OA/R during the General Watching Brief.

6.4.2 The narrow gauge engine shed appeared to have two building phases (Phase1 coloured green and Phase 2 coloured blue on Figure 5).

6.4.3 Engine shed 8912 ran east –west, and was 44.80m long and 13.11m wide.

6.4.4 The southern and northern outer walls of this phase of the narrow gauge shed (8699 and 8683/8741) were built of red shallow frogged bricks set in a hard light yellowish white coarse sandy mortar (Plate: 11). These walls were 0.38 m wide with a series of brick built buttress on their outer face, these were 1.95m long and protruded 0.39m beyond the outer face of the wall. The footings of these walls stepped some 0.3m out and sat upon a base of concrete.

6.4.5 The eastern side of this shed was open; both of the external walls terminated in square brick built buttresses at their eastern end. Instead of a wall a north-south row of square Greensand stone plinths (8588/8589/8590/8591) were arranged 4.47m apart (Plate: 14). These plinths had 30mm sized circular holes in each corner and were 0.92 m and 0.3m thick. These almost certainly acted as bases for metal columns, which supported the eastern roof gable and formed the shed's the entrance at its eastern end. The arrangement at the shed's western end was not clear, although parts of a north-south running brick wall (8644) which suggest that was not completely open.

6.4.6 Three east-west aligned brick built pits (8708, 8706 and 8707/8650) were excavated within the narrow gauge engine shed (Plates: 12 and 13). Rectangular in plan with brick walls and brick floors, these inspection pits were 42.67m long, 1.18m wide and 0.78m deep. Their walls were 0.48 m wide and were built of shallow frogged pinkish red bricks. Which were all lain on bed in alternate courses of headers and stretchers and set in a hard sandy yellow mortar.

6.4.7 The pits' sidewalls were largely intact with only the upper capping course missing. A row of 6" deep rectangular cuts, containing 10" long metal nails and short timber sleepers were cut into the top of the pits' walls. These ran along both sides of the pits and were the remains of the pads for the bulk rail, which must have formed the standard gauge roads in the shed (Plate: 15).

6.4.8 The inspection pits floors were also of brick, and consisted of a single course of grey or red bricks lain on bed in rows of off-set stretchers aligned north–south. These floors had a slight chamber from the centre to the sides. Where a single row of stretchers aligned east-west, ran along the base of each sidewall. These acted as drainage gullies, leading to a series of rectangular pits set into the floor. These water catchment pits were covered with metal grills and had east-west ceramic drains at their base (Plate: 13).

6.4.9 Floor 8684 in the eastern half of pit 8707 was different from the pit floor to the west. The construction was rougher and it had been more corroded than the rest of the floor. The red bricks of this section of floor were lain in an off-set north-south stretcher bond. No drainage gully was seen in this part of the floor although a narrow catchment pit was. It was difficult to see which section of flooring was earlier, although the western floor was made of similar bricks and was of very similar build to the brick floors of the three inspection pits in the shed's later northern extension.

6.4.10 All the floors were sat on a thin layer of mortar (8686) used as a bedding layer, which in turn overlay a sub base of ashy clinker (8687).

6.4.11 Between the inspection pits, several layers of rough yellow concrete (8658, 8694, 8690 and 8615) represent the sub base of the narrow gauge engine shed's floor. Along the northern edge of the initial shed the rectangular imprints of the former brick floor was clearly visible in a thin layer of brown render (8702) which covered concrete 8615

6.4.12 To the north of the original shed, a large, 8m x 3m x c.4m deep, north-south aligned brick built "tank" (8828) was uncovered. This tank had been filled with re-deposited London Clay and had no solid base being cut directly into the Natural London Clay. Its walls, which were 0.5m wide, were built of unfrogged blue engineering bricks (Plate: 16). No pipes or openings were seen and the roof of this structure had been destroyed by the northern extension (Structure 32) to the narrow gauge shed.

6.4.13 The northern extension (8913) to the narrow gauge shed was 44.59 m long and 12.5 m wide making the building in its final phase, 44.80m long and 25.60m wide.

6.4.14 The northern wall (8742) of the original shed acted as the southern partition wall of the newly enlarged shed. The northern wall (8833) of the northern extension was also revealed and recorded during the project.

6.4.15 Three brick built inspection pits (8785/8639, 8775/8634 and 8835 - Plates: 17-19) were uncovered running east-west along the length of the extension. These were rectangular in plan and were 1.12m wide x 42m long and 0.38m deep. The walls were of red brick, lay on bed in alternating stretchers and headers and were 0.34m thick. A 0.2m high step made from brick stood at the eastern end of the pits.

6.4.16 The floors of these pits were built of brick lain in an off-set stretcher bond running north-south. The floors were slightly cambered downward towards the edges of the pit. Where two east-west gullies ran along the base of the sidewalls. These gullies, which were one brick in width, connected to a series of rectangular catchment pits set into the floor. These carried waste-water away from the pits in ceramic drains.

6.4.17 The northern extension of the shed appeared to have been built at a slightly higher level than the earlier phase. As a result the inspection pits' sidewalls here were not well-preserved. Neither were the sleeper cuts and sleepers, which were so prominent a feature of the earlier pits.

6.4.18 The eastern end of pit 8785 showed signs of being repaired. Both the sidewalls and the floor were different. The floor was re-laid in a different bond with the bricks running in an off-set east-west stretcher bond (See 8757 in **Table 6**). No drainage gully was seen, although the floor sloped down to a small north-south aligned catchment pit, the catchment pits in the other floors were all aligned east-west.

6.4.19 As with the early shed the eastern side of this part of shed was open; both of the external walls terminated in square brick built buttresses at their eastern end. Instead of a wall, two square brick built plinths (8782 and 8762) were situated at the southeast corner of each pit. These plinths were 0.92m and 1.5m thick and were almost certainly the bases for metal columns, which supported the roof of the shed and formed the shed's the entrance at its eastern end.

6.4.20 A north-south drain (8703) had been bored through the walls of the three southern pits. This drain was square in profile and was made of brick.

6.4.21 An east-west aligned cast iron pipe (8780) was also seen running between pits 8836 and 8786. This was 102mm (4") in diameter and was marked "GWR". It was perhaps part of the system of hydraulic pipes used by the GWR to power some of the Locomotive Depots cranes and turntables.

6.4.22 A series of four brick built inspection or ash pits (8724 and 8732 in the south and 8787 and 8788 in the north - Plate: 20) were seen to the east of the shed. Rectangular in plan with a brick step at the western end. These extant walls were 0.34m wide and were built of unfrogged red bricks with a single line of chamfered blue engineering bricks, stamped with the makers monogram, along the inside edge of the top (See 8720, 8730 and 8767 in **Table 6**). The rest of the tops of the walls were rendered in brown cement in which a series of square and rectangular indentations were seen. These were the traces of the screw-jacks and other temporary props used in the repair and maintenance of the engines. These pits were 1.1m wide and up to 1.4m deep and their western walls were underpinned with concrete.

6.4.23 Although external, these pits were used by the same roads that went into the engine shed to the west. To the south, external pit 8732 was in line with internal pit 8706 and pit 8724 was in line with internal pit 8707/8650. Whereas to the north pit 8787 was in line with internal pit 8785/ 8639 and pit 8788 was in line with pit 8786/8634.

6.4.24 The latest phase of the narrow gauge shed was the demolition of the shed's outer walls. These had been cut down to the ground level, leaving the stepped foundations and their concrete footings in place. The metal structures holding up the shed's eastern gable had also been removed, leaving the traces of their cut off holding bolts, in the line of brick and stone plinths (8591, 8590, 8589, 8586, 8582 and 8762). The pits in the narrow gauge engine shed and the adjacent exterior inspection pits were all left, but were filled with broadly similar deposits. A mix of track ballast and demolition rubble, made-up of fragments of red and blue bricks, with quantities of mortar and some large pieces of concrete. A number of metal fixtures and fittings were also found. This deliberate back fill appeared to be mostly derived from the demolition of the shed itself and nearby buildings, presumably during the dismantling of the Locomotive Depot.

6.4.25 The backfilled pits and cut off walls were all covered with a 0.5m thick layer of black ashy track ballast (8300), which formed the level surface of the yard. This was sealed by the concrete slab (8740) of the Tarmac Yard to the east and cobbled surface (8319) to the west.

6.4.26 A series of concrete tanks and bins of the Lafarge Tarmac Concrete/Aggregate Batching Plant had heavily damaged the northeast corner of the shed. A network of drains and pipes had also been cut into the track ballast surface of the goods yard further damaging the buried walls of the pits.

6.5 Turntable –Structure 8 (Trench 4)

6.5.1 Structure 8 was a brick built, circular turntable pit. It was excavated to the east of the narrow gauge engine shed and initially discovered in Trench 8, just below the modern surface of the yard. Trench 8 was subsequently opened out to expose the entire turntable pit. Two (suspected live) power cables were running north-south along the eastern edge of the structure and an east - west concrete encased pipe across the northern edge of the turntable pit. These were retained insitu during the excavations.

6.5.2 The turntable pit in its fullest extent measured 16.77m (55ft) in diameter and was 0.6m deep. It appeared to have two building phases (8838 and 8792 - Figure: 6. Plates: 21, 22 and 26).

6.5.3 The primary turntable pit (8338) (coloured green on Figure: 6) was 13.71m in diameter and consisted of a single brick built outer sidewall (8745) and a brick floor (8751). Wall 8745 was 0.6m thick and built of purplish red stock bricks with shallow frogs set in a white lime mortar (See 8745 in **Table 6**). Extant for most of its height (0.7m). The top of the wall and any capping had been removed prior to the excavations. Wall 8746 was

built of bricks lain on bed in an alternating headers and stretchers (English bond) these were set in a dark grey mortar.

6.5.4 The floor (8751) of the turntable pit was constructed of a single layer of brownish red and yellow bricks set out in a concentric circular pattern of stretchers with occasional half bats, radiating out from the centre. These bricks, which were similar to the bricks used in the pit's sidewall, were bonded with a white lime mortar and had shallow frogs. During the demolition of the pit it was discovered that the floor was set upon a sub base of concrete (8872) which was itself set on a bedding layer of yellow sandy gravel (8874). Floor 8751 gently sloped down towards the centre. The outer-most metre of the pit base was close to horizontal with just sufficient slope to shed rainwater. A circular turntable track/guide rail was located at this outer perimeter.

6.5.5 The robbed out remains of the guide rail were evidenced by a 0.74m wide and 220mm deep gully (8801) set into the brick floor. This ran around edge of the entire turntable pit, 0.3m from the inner face of the pit's sidewall (8820). A single line of reddish grey engineering bricks were set into floor of turntable pit, lain end to end around the inside edge of the guide rail gully. A number of metal bolts 150mm (6") high and 25mm (1") in diameter were set vertically at regular intervals into the base of this feature. The base of this gully was covered in a light brown render.

6.5.6 A number of upright, 0.53m high, iron fixtures (8803) were attached to inside of wall 8746. These were set 2m apart and were 0.23m wide (Plate: 23).

6.5.7 The OA/R works showed that the turntable pit had been enlarged to a diameter of 16.95m through the addition of brick wall (8752) 1.1m beyond the outer face of the pit's original sidewall (8746). An inner brick wall (8747) which cut through the earlier brick floor (8751) had also been added (coloured blue in Figure: 6) (Plate: 25).

6.5.8 Wall 8752 was 0.47m wide and built of blue grey engineering bricks set in a hard white mortar (See Table 6). Wall 8752 survived for most of its original height (0.6m) and comprised five courses of stretcher bond, with a single course lain on edge at its top. Monitoring of its demolition by OA/R showed that it had stepped foundations set on substantial concrete footings.

6.5.9 At the centre of the turntable pit, a 0.84m high wall (8747) formed an inner circle 4.16m in diameter (Plate: 24). This wall was clearly a later addition as it cut through the brick floor of the original turntable pit and was almost certainly associated with wall 8752. Wall 8747 was built of blue grey hard engineering bricks, similar to those of the outer sidewall 8752. These were all lain in courses of alternate stretchers and headers and bonded with a hard greyish white mortar. The wall was 0.35m thick.

6.5.10 At the centre of the pit a circular drainage gully (8839) was seen set into the floor. This would have channelled water to a drain cut through the pits sidewall in its eastern side.

6.5.11 A ring of 7 metal bolts set vertically into the floor within the circle formed by wall 8747. These fixtures were c.150mm high and 50mm (2") in diameter, and appeared to be arranged in a circle. These bolts are thought to be securing pins for the turntable's central pivot, which along with the turntable's wheels would have supported the weight of the rotating turntable.

6.5.12 A brick built structure (8800) had been added to the northwest quadrant of the turntable pit (Coloured red in Figure: 6 - Plate: 27). The walls of this structure were not keyed in to the original turntable's sidewall and it was clearly a secondary addition. This structure was square in plan (1.56m x 1.5m and 0.64m deep) and built of three, 0.23m wide walls, its southern side opened into the main turntable pit. Its walls were built of

frogged machine set into a hard light grey mortar. The floor of this structure (8531) was built of similar red bricks lain on bed in a stretcher bond and covered in a light brown render. No traces of fixtures were seen in the rooms' walls or floor.

6.5.13 Two east-west aligned, 1m long and 0.3m wide brick and concrete buttress (8790 and 8700) and a raised section of wall had been added to the outside of wall 8752 on the pit's western quadrant. These sat on a 0.5m thick underpinning of concrete foundations.

6.5.14 Two hollow, rectangular brick built structures (8817/8818) were set on to a bed of concrete, which rested on the brick base of the turntable pit. (Coloured red in Figure: 6 - Plate: 26). These were built of bright red bricks with an upper course of blue grey engineering bricks. These "boxes" were 1.42m x 1.07m and 0.63m deep and were both covered with metal lids. They contained no pipes or mechanisms. No other openings apart from the top seen in either "box".

6.5.15 Although most of the turntable's pit remained intact, none of the turntable platform/deck, structural ironwork or working mechanism survived. A number of metal bolts and the base of the central metal pivot set into the turntable's floor were present. The turntable deck and any movable parts of its running mechanism had presumably been removed when the turntable was dismantled and its pit backfilled.

6.5.16 The turntable pit and the associated engine house were filled with demolition rubble (8501) made-up of fragments of red and blue bricks, with quantities of mortar and some large pieces of concrete. A number of metal fixtures and fittings were also found. This deliberate back fill appeared to be mostly derived from the demolition of nearby buildings, presumably during the dismantling of the Locomotive Depot. This was sealed with a layer of railway track ballast (8824). Along its northern edge the demolition infill and railway track ballast was covered with a cobbled surface (8813) made up of granite setts. Across the rest of the turntable it was covered by thick concrete slab (8823), which together with the cobbled surface formed the latest surface across much of the Site.

6.5.17 The eastern ends of the four external inspection or ash pits (8732, 8724, 8787 and 8788), which were also seen to the east of the narrow gauge shed, were uncovered to the west of the turntable pit.

6.6 Broad Gauge Shed- Structure 1 (Trenches 5 and 8)

6.6.1 Trenches 5 and 8 were both excavated at the southern limit of the Site and subsequently opened out until nearly 75% of the length of the broad gauge engine shed was revealed (189.55m) (Figure: 7).

6.6.2 At the northern limit of the trenches, the northern (exterior) wall (8418, 8656, 8844 and 8886) of the shed was uncovered for a total of 189.55 m (Plate: 47). This 0.42m (1ft 4 ½") thick, wall was found 0.6m below the present ground level and was built of red bricks set in a cream coloured lime mortar. A series of brick built buttress and vertical drainpipes ran along the outside of the wall.

6.6.3 Mid-way along its length, the outer wall of the shed incorporated two short (2m long) north-south aligned sections (8658 in the west and 8663 in the east) of brick wall. These "buttress" were 13.71m apart and were probably the two sides of a large doorway or extension tacked on to the northern side of the shed. The gap between the structures had been closed with brick wall 8653, this continued the line of wall 8418/8656.

6.6.4 To the west of 8658, the northern shed wall had been widened at some point by the addition of an east-west aligned brick wall (8659). This was attached to, but not keyed in to, the inside of wall 8656.

6.6.5 The eastern end of the shed was revealed in Trench 8. Here the northern wall of the shed terminated in a small brick buttress (8888). As with the narrow gauge shed, the east end of the broad gauge shed appears to have been open. With a sandstone square shaped plinth (8848) 0.92m x 0.92m (measurements in plan) acting as a support for one of the row of metal columns, which must have once supported the shed's eastern gable.

6.6.6 A long rectangular brick trough (8323/8853) ran east-west within the broad gauge shed. This longitudinal pit was uncovered for 175.24m and its interior was partly excavated down to its base for 33m of its length (Plates: 48-52).

6.6.7 The trough was constructed of two parallel brick walls (south: 8917/8919, north: 8918/8920) 0.42m (1ft 4 ½ ") thick and built 1.81m apart. (5ft 11"). The trough's walls were 0.52m (1ft 8 ½") high. These were built of purplish red bricks with shallow frogs, which were set in a greyish white coloured course sandy line mortar (see 8341 in **Table 6**). These were all in laid on bed in an alternate header and stretcher bond. A single line of chamfered unfrogged, blue engineering bricks ran along the inner upper edge of the wall (See 8312 in **Table 6**) and offered some protection from the general wear and tear to the exposed inner edge of the wall. These bricks were set in a hard greyish white line mortar and were laid on edge, running at right angles to the wall. These copping bricks over hung the inner face of the wall by some 60mm forming a sort of overhanging lip (Plate: 51). The eastern end wall of the trough (8846) was uncovered in Trench 8; this was similar to the two sidewalls although it lacked the line of copping bricks or overhanging lip.

6.6.8 At one point along its length the trough was narrowed to 1.07m (3ft 3") by the insertion two new parallel walls (south 8921/8923/8925, north 8922/8924 and 8926). These walls were built up against the inner face of the earlier pit walls, but were not keyed into the earlier walls. The sidewalls were built of red bricks set in a hard grey coloured lime mortar and laid in alternate courses of headers and stretchers. These walls were 0.37m (1ft 2½") thick and stood on the earlier brick floor. Surviving for their whole height (0.52m), the inner top edge of the walls were capped with a single line of chamfered blue engineering bricks with dumbbell shaped frogs (See 8315 in **Table 6**). These were set in a hard grey coloured mortar and ran lengthways along the top of the walls. Unlike the earlier copping bricks, these did not overhang beyond the face of the wall (Plate: 51).The tops of these walls were covered in a light brown render in which square and rectangular indentations were seen. These varied in size from 400mmx 400mm to 600mmx 300mm and appeared to be the traces left by jackscrews and other temporary props used during the running maintenance of the locomotives that used the shed.

6.6.9 A line of rectangular cuts contained short lengths of wooden sleepers and 10" long metal bolts were uncovered running along the tops of each wall (Plate: 52). Set at regular intervals (2.14m (7ft)), they ran along both sides of the pit and were the remains of the pads for the bulk rail, which must have formed the standard gauge roads in the shed.

6.6.10 A line of oval holes, c 0.3m-0.4m wide, and 1.30m apart were observed behind the trough's northern sidewall. These were set at regular intervals and were filled with re-deposited weathered London Clay. Cut into the back of the wall and the concrete sub base of the shed's floor. These holes almost certainly represent the robbing out

remains of the sleepers and bolts of the baulk rail for the broad gauge track, which carried the broad gauge locomotives along the top of the pit.

6.6.11 The base of the pit was covered with a single layer of red bricks (8318/8328) these were lain down in an off set, north-south stretcher pattern (Plate: 49). The floor was slightly chambered, sloping down to a central, east-west running, gully made up of three bricks lain length ways. The gully sloped down to a succession of brick lined catchment pits (8358 and 8592), which were covered in metal grills and set flush into the base of the pit. The walls at the base of these catchment pits were pierced by round holes, the entrances to the ceramic pipes that evacuated any water and liquid waste from the inspection pit into the nearby Marcon Sewer. Or possibly into the group of deep circular shafts in the northeast corner of Structure 2.

6.6.12 Subsequent to the partial narrowing of the trough its middle section was divided off by the insertion of two brick built cross walls (8363 and 8370). These walls had cut through the original floor of the pit and formed a 5.8 m long separate area within the structure. The brick floor within these two dividing walls was much more corroded than the floor outside the walls. Indicating perhaps that some different activity was taking place in this part of the shed. This was possibly an internal ash pit, used to rake out the ash and char from the engines smoke box.

6.6.13 The trough (8323/8853) was clearly an inspection pit used to access the underside of the steam locomotives, which used the shed for stabling and routine maintenance. Although mostly used for inspecting the underside of the engines and carrying out any running repairs, the pit could also have played a role in the running of the engines by acting as an ash pit. However this sort of dirty activity was often carried out in specially assigned ash pits placed out in the open air. A number of external pits were also uncovered on the Site, including one (8852) just outside the eastern entrance to the broad gauge shed.

6.6.14 Pit 8852 was found in Trench 8 outside the eastern end of the shed, and was in a direct line with internal inspection pit 8323/8853, but was not joined to it. This rectangular trough was built of brick walls with a brick floor (8854), and was 1.09m wide and 0.74m deep. No signs of wooden sleepers or sleeper cuts were seen in the tops of this pit's sidewalls. This along with the fact that it was clearly outside the engine shed makes it likely that this pit was used as an ash pit.

6.6.15 Ash pits were used to rakeout hot ash from the engine's ash box situated on the underside of the locomotives. These would have by necessity been sited in the open air. The hot ash would also have damaged the track's timber sleepers and the bulk rails along ash pits were often set on metal plates rather than flammable wooden timers.

6.6.16 Several Sections of a very uneven brick floor (8307) were seen between the inspection pit and the northern wall of the shed. For the most part, this floor was made up of reused red and blue engineering bricks set on a rough concrete sub-base (8308 and 8845). These bricks were not laid flush with one another nor were they well lain. At the east end of the shed; the brick floor (8875) was better constructed being made up of regular well-laid bricks, which were all flush with one another.

6.6.17 Four brick built, square inspection chambers (8448, 8535, 8853 and 8897) were set into the concrete floors (8308/8845/8876 - Plate: 53 and 55). These were built to allow access to the Marcon Sewer [8898], which ran east-west 2m below the floor of the shed. A set of metal steps in the northeast corner of these chambers allowed access into the chamber and the sewer.

6.6.18 At the time of excavation, the circular opening of the still active sewer could be clearly seen. At some point, probably when the shed was demolished, the original movable covers of these chambers were removed and replaced with a permanent cover made-up of short lengths of broad gauge bridge rails (Plate: 53).

6.6.19 The circular entrance to the Marcon Sewer was constructed from two skins of red bricks laid as stretcher courses to form the walls and the arched roof set in a pale grey lime mortar. These bricks were unfrogged.

6.6.20 Two other semi-circular brick built access chambers 8654 and 8893 were built against the outside wall of the shed. These were 2 m deep and were joined to the Marcon Sewer by a north-south tunnel running beneath the concrete floor of the shed and which pierced through the shed's outer wall by a square doorway (Plate 54).

6.6.21 The excavation also revealed the final phase of the building. In this phase the outer walls of the building were removed down to the ground level, although the foundations were left in. The columns forming the eastern gable were also taken down) although the stone plinth with the fittings for the metal uprights was left in). The floors of the building were also partly removed and the inspection pit, which was left intact, was deliberately filled in. This rubble rich backfill (8304/8329), which was likely, derived from the demolition of the shed's walls, overlay an earlier fill (8626). This fill was mostly made up of fragments of roofing slate and ribbed plate glass the remains of the demolished roof skylights and windows. The upper fill 8304 was relatively devoid of finds (see 8304 in **Table 4** for the pottery found in this fill).

6.6.22 The two lines of rails, which formerly ran along the top of the pit to form the roads, had also been removed leaving the timber sleepers and the bolts in place.

6.6.23 The inspection chambers were permanently sealed with a latticework made-up of short lengths of ex situ rail (8446) (Plate: 53). These rails were of the bridge rail type and had probably been removed when all of the broad gauge tracks had been taken up in Paddington area in the decades leading up to 1892.

6.6.24 After the walls had been demolished and inspection pit filled in, the area was levelled with a c. 0.6m thick layer of track ballast (8322) used as a levelling and makeup layer to form the goods yard's surface. A number of services were found cutting into the track ballast, including an east-west iron pipe (8395) whose valve was sealed with a circular metal lid marked "GWR-Gas Oil" (see metalwork).

6.6.25 Three "modern" ceramic drains leading on to the Site, from the operational Paddington mainline tracks and cutting through the buried inspection pit were also found. These led to small square brick access chambers, built on to the southern sides of the now closed off access chambers to the Marcon Sewer (Coloured red in Figure: 6).

6.7 Workshop – Structure 2 (Trenches 6 and 7)

6.7.1 Trench 7 was excavated in the centre of the Site. It exposed a set of well-preserved walls some 0.7m below the present ground surface. It was decided with the agreement of the CRL project archaeologist and the principle contractor to uncover more of the area in a programme of strip map and record.

6.7.2 It appeared that this building had undergone four phases of development.

6.7.3 Much of the western quarter of the building along with it's northeast corner, was excavated and recorded in the trench and excavation programme of works, whilst most

of its northern (outer) wall (8185/8174) was uncovered during general watching brief monitoring (Figures: 8-10).

6.7.4 The southern wall (8030) of the initial building was built of purplish red stock bricks with shallow frogs; these were set in a white lime mortar (See **Table 6** below). Wall 8030 was 0.33m wide and had a series of 0.7m long brick buttresses running along the outside. Wall 8030 was seen to turn northwards where it became wall 8256. This wall was similar to 8030 but did not have any buttresses, it ran north- south parallel and 2.14m away from a similar brick wall (8043), forming a 7ft wide north–south corridor (Plates: 28, 29).

6.7.5 To the west, wall 8043 formed the eastern wall of the west wing of the original building and along with wall 8072 to the west and wall 8068 to the south, formed a 3.66m (12ft) wide room. A 2m wide gap in wall 8068 was the remains of a door or a south facing bay window.

6.7.6 The northern, outer wall, of the initial building was also revealed and recorded in Trench 6 during the GWB. Wall 8185/8174 was 0.74m wide and was built of purplish yellow stock bricks, which were set into a white lime mortar (See Table 6). This wall, which did not have buttresses, had substantial below ground foundations. These stepped out some 0.3m from the face of the wall.

6.7.7 At the northeast corner of the building, Trench 6 uncovered a square room. With an angular chimney base in its southwest corner. Built of yellow and red bricks with shallow frogs set in a yellow sandy mortar. This wall was 0.34m wide, but had substantial stepped foundations. No floors seen within this part of the structure (Plate: 36).

6.7.8 At the western end of the building, a north-south aligned brick built culvert (8153) was seen running beneath the walls of the western block (Plate: 32). This was part of the primary build and would appear to be for channelling water to the substantial east-west conduit (Marcon Sewer), which ran beneath the broad gauge engine shed.

6.7.9 No floors were seen within the structure or its two wings. Two installations were uncovered. A rectangular base (8029), which was 2.1m x 1.36m in size with a large rectangular opening in the centre. Built of yellow and red unfrogged bricks set in a white sandy lime mortar (see **Table 6**). This feature was probably the remains of a base for a small forge (Plate: 30).

6.7.10 Just to the east of the forge base, pit 8027 was 0.90m deep, 1.20m wide and 2.60m long. It was built of very hard dark grey unfrogged engineering bricks set in a dark grey hard lime mortar which contained many flecks of red brick (see **Table 6**). The 0.26m wide sidewalls of this pit were rendered with cold ash mortar and topped with roofing slate. The pit's two long sides were vertical, but the two end walls sloped at a 45°. This probable quenching pit was filled with a number of backfills (8037, 8038, 8112 and 8152). The lowest fill (8152) being full of a compact mass formed from fragments of iron and copper slag. The base of the pit was also built of rendered engineering bricks (Plate: 31).

6.7.11 A long cast iron pipe (8062) was uncovered running east-west, 2m to the south of wall 8030 (Plate: 29). Although external to Structure 2, this 8" pipe was almost certainly associated with it and was possibly part of the depot's hydraulic power grid.

6.7.12 A 22.86m long 12.20m wide extension was attached to the western side of the original building. Within this extension, three brick built east-west aligned inspection pits (8914, 8915, and 8916) were partly excavated by the OA/R archaeologists in May-June 2014 (Plates: 34,35 and 39). The excavation showed that, initially, the inspection

pits used the outer western wall (8072) of the original building as an eastern end wall (Plate: 33). Presumably the rooms were still in use at that time. No signs of a doorway were seen between the two structures.

6.7.13 The inspection pits were all 22.3m long, 1.18m wide and 0.5m deep. The pits' sidewalls were 0.32m thick. They were built of very hard reddish brown unfrogged engineering bricks laid in an English bond and set in a yellowish grey sandy mortar (See 8076 in **Table 6**). The upper surface of these walls had been removed and no copping bricks, rendering or sleeper cuts were seen.

6.7.14 The floors of the pits were built from a single layer of hard brownish red, engineering bricks set in a layer of concrete (See 8082 in **Table 6**). The bricks were laid in an off-set north-south header pattern. The base of the pits had a slight camber down to the centre. In places the floor had sunk into a definite concaved east-west trough (Plate: 37). The pit floors all had a general slope down toward brick lined catchment pits that were set into the floors. These were square in plan and were all covered with pierced metal grills. A series of ceramic pipes lead off of the base of these pits, and would have channelled any liquid waste and water into a north-south aligned brick built culvert (8153).

6.7.15 The three inspection pits had been extended 3.84m eastwards into the former western block of the original building and wall 8072 had been demolished. Wall 8043, which was formally the eastern wall of the original building's western block and western wall of the "corridor" formed the eastern end wall of the pits. The new pit extension's sidewalls were all of purplish red coloured stock bricks that were all set in a light grey mortar. They all had floors made of unfrogged hard reddish brown bricks, which were set into a grey mortar (See 8119 and 8110 in **Table 6**). The earlier catchment pits were left in place and drained both the old pits and their new extensions.

6.7.16 Low brick steps had been built into the base of the eastern end of the pits. These were set on to the brick floor of the pits. A north-south aligned metal gas pipe had subsequently been inserted between the step and wall 8043.

6.7.17 The western extension does not appear to have had solid southern wall. A row of seven stone plinths (8061, 8062, 8070, 8071, 8080, 8086, and 8088) measuring 0.72m x 0.72m in size represented the bases of metal columns. These plinths all had round holes cut into the through which metal vertical drainpipes were inserted, presumably to channel the roof's water run off (Plate: 38).

6.7.18 The western gable of the western extension was also carried by uprights; this was evidenced by a pair of vertical steel bars embedded into brick bases (8087 and 8257).

6.7.19 The northern wall of Structure 2 was only seen to the east of the western extension. This is possibly because northern side of the extension was, like the southern side, left open or because the concrete foundations of the Alfred Road Warehouse had removed the wall. The fact that the walls of the most northerly inspection pit (8914) had been removed almost to the floor suggests the latter. Similarly no walls were uncovered to the north of the northern wall of the original block. This was almost certainly because any walls would have been removed during the construction and demolition of the Alfred Road Warehouse.

6.7.20 The GWB uncovered a complex of three interconnecting circular, brick lined shafts (8236, 8235 and 8234 - Plates: 40-43) with associated brick built conduits (8213, 8244, 8247, 8237, 8250 and 8251). These had been preserved because of their depth - up to 12m, and because they had been covered with the 1.5m thick concrete base (8184) of a short section of an in situ standard gauge track (8049).

6.7.21 Although the excavation and partial demolition of the shafts by the main contractor was monitored by OAR, access constraints meant that the OAR's archaeologists could not accurately record these structures at their lowest levels. As a result, many of the measurements for the lower part of this series of shafts are approximate only.

6.7.22 The western most and largest shaft (8243) was 3.66m (12ft) in diameter and 12m deep. It consisted of a circular brick built shaft (8204). At its base an arched brick built room (8245), of undetermined use, was built onto the shaft's western side.

6.7.23 The main shaft was built of a double skinned brick wall (Plate: 43), this was 0.37m thick and was made up of very hard unfrogged purple black bricks and blue grey engineering bricks. These were all set in to a very hard black coloured, thick coal ash lime mortar. The bricks on the outer skin were all whole bricks and were laid on bed in a header bond (see **Table 6** above). The bricks of the inner skin were all half bats. The base of this shaft was made of a c. 1m thick layer of concrete.

6.7.24 At the bottom of the shaft an arched doorway, on the shaft's southeast quadrant, lead to a short 1.5m long "tunnel" (8237). Which joined the larger shaft to a smaller brick lined shaft (8235) situated to the southeast (Plate: 42).

6.7.25 Shaft 8235 was 0.62m (2ft) in diameter and was built of light orange red unfrogged well-made bricks set in a very hard grey coal ash mortar (See **Table 6** above). At its base this shaft was joined to shaft 8243 by an arched tunnel 8237.To the northeast it was joined to the upper levels (8201) of the eastern most shaft (8236) again by a brick built vaulted culvert or tunnel (8213 - Plate: 41). Both of these "tunnels" were large enough to allow a man to enter.

6.7.26 At its base it was joined to the bottom of (8227) the lower level of 8236 by another arched brick built tunnel (8250) also large enough for a man to enter.

6.7.27 Shaft 8236 was the most easterly of the three shafts (Plate: 40-41). It was 3.5m (11ft 6") in diameter and was built in two definite levels. 8201 which went from the surface down to c.5m below the present yards ground and 8227, which went from c.5m to 12m below ground level. The upper and lower shafts being separated from each other by a, 0.4m thick, concrete floor (8239).

6.7.28 The upper level of 8236 was a circular, brick lined shaft (8201) with two square brick built "rooms" 8209 and 8214 added to the east and west (Plate: 40). These were built of different bricks, were not keyed in to 8201 and were clearly later. The central shaft was built of dark orange red unfrogged large engineering bricks set in a dark grey mortar (See **Table 6** above) the bricks were lain exclusively in a header bond.

6.7.29 Two arched entrances one above the other were seen in the southern side of 8201. The highest led to a short brick built culvert 8013, which connected 8201 to shaft 8235, and the lower culvert 8044 ran off north south beyond the area of OA/R excavations. Both of these were large enough for a man to enter.

6.7.30 Below the concrete capping 8239, which had a raised square shaped area into whose corners large circular metal bolts were set; shaft 8227 was full of muddy water. During the monitoring of operation to empty the lower levels of the shaft in preparation to it being filled with "foam concrete" it was seen that it was a plain brick lined circular vertical shaft. Its walls were built of reddish mauve unfrogged bricks, all laid on bed in a header bond and set in a very hard dark grey ash mortar. A number of metal fixtures were seen set into the walls, including the remains of a metal grill/platform or landing which were 5m down from the top.

6.7.31 The circular entrance to a brick lined culvert (8251) was uncovered mid-way down in the shaft's eastern side. This culvert was c. 1.7m in diameter and run southeast-northwest (Plate: 44). A metal ridge just below the base of the culvert's entrance was perhaps the remains of a working/ entrance platform. At the base of the shaft an arched doorway, large enough for a man to enter was seen in the shafts southwest quadrant. This appeared to be the entrance to a "tunnel" linking the base of 8236 with shaft 8235 to the southwest (Plate: 44).

6.7.32 The base of shaft 8236 was uncovered during the cleaning operation and appeared to be solid concrete.

6.7.33 The works revealed that at some point, the upper most walls of all three of the shafts had been cut down to the ground. As were the walls of the rest of Structure 2, although below ground foundations and the three inspection pits were mostly left in.

6.7.34 The shafts and the inspection pits were then filled in. For the inspection pits this was a broadly similar deposit; a mix of ashy track ballast and brick and concrete rich rubble. This rubble was almost certainly derived from the demolition of the standing buildings on Site. These fills were relatively devoid of finds and it seems that the GWR's reputation for parsimony was well deserved

6.7.35 The fills of the shafts were different. The largest shaft 8243 was partly filled with re-deposited London Clay. A 10m thick loose dark grey mix of crushed red bricks, cinders, unburned coal and coke covered this. Frequent large fragments of glass like slag was also seen. The smallest shaft 8235 was backfilled with a friable reddish brown fill, a mix of clay silt and crushed red brick. This fill also contained frequent fragments of clinker. Shaft 8236 was partly filled with re-deposited weathered London Clay, although this does not appear to have been deliberate. The upper and lower levels of this shaft continuously filled with water that appeared to have come from the culverts. The culverts were also found to contain quantities of Methane and Hydrogen Sulphite gases.

6.7.36 The whole of this complex was partly sealed by an east-west running section of a standard gauge railway track 8049 (Plate: 45-46). This set in 8183 red brick base and a 1.60m thick linear concrete 8184 block. On either side of this, a layer of ashy track ballast formed the latest pre Crossrail ground surface in this part of the Site.

6.8 Lifting Shed – Structure 22 (Trench 10)

6.8.1 The badly truncated remains of a series of parallel east-west aligned walls were uncovered c 0.60m below the present ground level in Trench 10. A short section of the southern and northern walls of this structure were uncovered [8899 and 8908] (Plates: 57-58). These buttressed walls were of red bricks and 0.34m wide. The two walls and the brick floor of the only inspection pit in this structure were also partly excavated. This pit was 1.2m wide and 0.76m deep.

6.8.2 It appears from the excavations that most of the lifting shed had been destroyed by later structures i.e. Alfred Road Warehouse and tanks and bins of the Tarmac yard.

6.9 Alfred Road Warehouse- Structure 17

6.9.1 Some remains of Alfred Road Warehouse were identified during the GWB. These were situated beside the base of the Alfred Road ramp into the site (Figure 9) and comprised a series of large rectangular concrete blocks in two rows (Plate 59). Measuring up to 3m by 2m in plan with a thickness of up to 1.5m, the blocks had been formed from grey concrete cast onto a steel frame. An east-west stretch of ceramic

drain to the south of the line of concrete bases, complete with brick manholes built of yellow stock bricks, was also recorded (Plate 58).

7 Finds

7.1 Pottery

7.1.1 A total of six sherds of pottery, all of a 19th-century date and weighing 1503g were recovered. These represent six separate vessels from four contexts.

7.1.2 The assemblage has been fully catalogued as it contained a few pieces of interest. Each vessel was assigned a separate record within its context. Each record contains details of sherd count and weight, also context spot-date. Other details were recorded in an expanded comments field including fabric code and vessel description. The dimensions of complete (or nearly complete) vessels were also recorded. Pottery fabrics were recorded using the codes of the Museum of London (LAARC 2007). The full name was also recorded. The types occurring here are listed below in roughly chronological order.

- ENGS: English stoneware, c. 1670-1900+.
- PEAR: Pearlware, c. 1780-1840. Staffordshire etc.
- TPW: Transfer-printed refined whitewares, c. 1780-1900+. Staffordshire etc.
- BONE: Bone china, c. 1794-1900+.
- ENGS BRST: English stoneware with Bristol glaze, c. 1835-1900+. Bristol, London etc.

7.1.3 The stonewares (ENGS and ENGS BRST) included two complete 19th century cylindrical 'ink bottles' one of which contained a shrivelled cork stopper (context 8202). The contents of this bottle smelt of white spirit or furniture polish.

7.1.4 The broken base of another bottle (context 8304) bore a large oval black transfer-printed vendor's mark from Newport in South Wales and the impressed mark of a Bristol stoneware manufacturer. Fuller details may be consulted in the catalogue.

Context	Spot-date	No.	Weight	Comments
7035	c.1830-1870	1	3	Body sherd English bone china (BONE). Wall sherd from dish with trace of foot ring. Traces of light grey transfer-printed decoration interior - probably foliage?
7035	c.1830-1870	1	6	Body sherd from plain flat floor/base of a vessel in Pearlware (PEAR, c.1780-1840)
8113	c.1830-1860	1	2	Body sherd from wall of smallish dish in transfer printed whiteware (TPW) with blue Chinese-style border at base of wall
8202	c.1820-1900	1	421	Complete cylindrical English stoneware (ENGS) bottle with very pale grey fabric and light brown salt glaze all over exterior. Unmarked. Carinated shoulder & large bead rim on narrow mouth (diam 35mm). Body/base diam 70mm. Height 160mm. The bottle contained a shrivelled blackened

Context	Spot-date	No.	Weight	Comments
				cork stopper (extra 1g). Contents of bottle smell of white spirit or possible furniture polish?
8304	c.1835-1900	1	287	Lower half of cylindrical or slightly bulging bottle in Bristol-glazed stoneware (ENGS BRST). Off-cream fabric. Clear glazed interior and exterior. Flat base diam 62mm, surviving height 90mm. Very thick-walled towards base. Bottle wheel-thrown. Base chipped. Black transfer-printed vendor's mark on front in a large upright oval with inscription around the inside 'NEWPORT & MAINDEE [top]/ NEWPORT. MON [bottom]' and in centre a fancy monogram of N&M and below this 'BOTTLING CO./ 44 DUCKPOOL RD./ MAINDEE' with small foliate underline filler or flourish under the latter word. On opposite side of bottle a broken transfer ribbon with word 'STON[EWARE]'. Small impressed oval marker's stamp near base 'HAWLEY & Co./ BRISTOL' and with single letter 'F' or possibly 'E' in centre of stamp
8304	c.1835-1900	1	784	Complete tall cylindrical Bristol-glazed stoneware (ENGS BRST) inkbottle. With off-cream fabric and clear glaze all over exterior and interior. Unmarked. Carinated shoulder & narrow neck with cordon at narrowest point and with expanded thickened flat-topped/beaded rim with pouring lip (chipped) (rim diam 44mm). Body/base diam 86mm. Height 225mm. Probably mid to late 19C?
TOTAL		**6**	**1503**	

Table 4: Pottery recovered from PNY (XSI 10)

7.2 The clay tobacco pipes

7.2.1 The excavation produced only three pieces of clay pipe weighing 72g from two contexts. These have been spot-dated and a given a basic catalogue. The catalogue records, per context, the quantity of stem, bowl and mouth fragments, the overall sherd count, weight, and comments on condition and any makers' marks or decoration present. The comments field has been expanded in this instance to include additional information on parallels and any other observations worthy of note.

7.2.2 The two pieces of pipe from context (7034) include a nearly complete bowl of c. 1700-1780. The item from context (8885) is unusual and fairly rare. This comprises a broken but largely complete pipe bowl of c. 1820-1860 embedded in a fragment of purplish-brown London stock brick. This may have been lost by the brickmaker. Both seams of the pipe bowl are decorated with characteristic 19th century oakleaf moulding. A record

photograph of the piece has been taken as it is of some intrinsic interest. Fuller details may be consulted in the catalogue. No further work is recommended.

Context	Spot-date	Stem	Bowl	Mouth	Tot sherds	Tot Wt	Comments
7034	c.1700-1780	1	1	0	2	11	Complete fresh but damaged bowl profile of common 18C type (AO25) with prominent circular heel. No evidence of maker's mark or possibly from worn out mould? Knife/wire-cut rim. The internal base or floor of the bowl has stamped relief cross. Stem missing. Unsmoked? Also 1x slightly worn stem from a separate pipe with stem bore diam c.2.5mm probably early 18C
8885	c.1820-1860	0	1	0	1	61	Broken bowl & short length of stem (pipe weight probably c. 8mm) embedded in a dark purplish-brown stock brick fragment of which one edge-angle or corner survives. The bowl, which lacks rim, is about 2/3 complete and of common mid 19C type (AO28) with moulded oakleaf seams and evidence of a spur. The broken stem is visible in section. The bowl has scorched purplish-brown surfaces and is white where broken (fresh breaks). NB. Fairly rare to find pipe bowls embedded in bricks
TOTAL		**1**	**2**	**0**	**3**	**72**	

Table 5: Clay tobacco pipes recovered from PNY (XSI 10)

7.3 The Bricks

7.3.1 The brick assemblage comprises 26 complete bricks and with measurable dimensions present and two incomplete examples (half or three-quarters complete). All of these are of 19th-century date or later.

7.3.2 Just over one third of the assemblage (10 examples) comprises rough 'Stock' bricks - These all have a shallow frog and one or two appear to have a faint (illegible) maker's stamp in the base of the frog. The 'Stocks' probably date to the first half of the 19th-century.

7.3.3 The other major element here (also 10 examples) comprises very hard (and heavy) grey machine-made 'engineer's' bricks, which probably date to the late 19th and early 20th centuries. A number of these were made for specific functions and have bevelled ends or sides.

7.3.4 Two identical engineers' bricks (8720 and 8767) have a bevelled end and a maker's mark in a shallow dumbbell-shaped frog. The mark is a monogram of three letters in relief comprising a "C" enclosing two back to back "Bs" within a large C – the registered trademark of the Cakemore Blue Brick (CBB). Who operated out of Rowley Regis (Blackheath), Worcestershire. From 1880 being taken over by the South Staffordshire Blue Brick Company in 1888 (Cox 2005, 14-17).

7.3.5 The bevelled ends of both bricks are sooted. Another group of three identical, engineer's bricks (also with sooted bevelled faces) have a plain dumbbell-shaped frog with no mark.

7.3.6 There are two yellow refractory firebricks from the Midlands, which are scorched and probably from furnaces of some kind. They probably date to the first half - or perhaps the middle of the 19th century.

7.3.7 One of these (context 0) is stamped with the inscription 'COALBROOKDALE/LIGHTMOOR'. Lightmoor is an industrial village near Coalbrookdale in the Ironbridge Gorge (Shropshire). This is quite an unusual mark to find so far south, as most firebricks at this time were from Stourbridge in Worcestershire.

7.3.8 The other firebrick has a fairly common ''HICKMAN & Co/STOURBRIDGE' mark.

7.3.9 The remaining six bricks form a miscellaneous grouping of unfrogged but fairly late-looking hard orange-firing bricks which may be related to the 'engineer's ' group but includes one or two uncertain (scorched) bricks which may be firebricks or just scorched domestic bricks. Fuller details may be consulted in the following catalogue.

Context	Spot-date	No	Wt gm	Length mm	Width mm	Thickness mm	Completeness	Comments	Discard?
0	E-M19C	1	2699	N/A	115	68	Incomplete	Label marked context " (+)" Unstratified. Broken but 3/4 complete – surviving length 195mm. Unfrogged. Yellow refractory firebrick with large off-centre incuse maker's stamp in rectangular frame 140mm x 43mm. Two line Inscription in capitals but first part of both line is v worn/faint although first line is almost certainly correct	

Context	Spot-date	No	Wt gm	Length mm	Width mm	Thickness mm	Completeness	Comments	Discard?
								'[COALB]ROOKDALE/[LIGH]TMOOR. One side very burnt with thick dark purplish slag on that side only. NB. - Lightmoor is an industrial village near Coalbrookdale in the Ironbridge Gorge, Shropshire. PHOTO?	
8027	L19-E20C	1	5050	230	110	75	Complete	Unfrogged. Very hard dark grey engineers brick. Fairly rough. Brick has a large amount of grey mortar and red brick rubble adhering – probably 1/3 of total weight?	Discard
8029	E-M19C	1	2600	225	110	68	Complete	Shallow rectangular frog. Reddish-yellow “Stock brick”. Frog with large stamped incuse capital letters in base (mostly covered in white mortar). Letters possibly 'IH & [Co]?' - nearly illegible	
8030	E-M19C	1	2661	220	105	65	Complete	Very shallow frog – mostly full of thick white mortar. Purplish “Stock brick” with yellow surface patches	Discard
8065	E-M19C?	1	2872	220	105	60	Complete	Complete (but in 2 joining pieces). Unfrogged. Probably originally yellow firebrick - very scorched with dark purplish cindery slag along one side and thick light grey mortar on one face. Large rectangular stamp (165mm x 36mm) positioned diagonally on one face. Incuse capitals 'HICKMAN [& Co?]/STOURBRIDGE	
8066	E-M19C	1	1998	207	103	68	Complete	Chipped at one end. Shallow frog – mostly full of white mortar. Rough purplish stock brick. Use-wear on one side – possibly used for paving?	Discard
8067	E-M19C	1	2378	215	100	65-70	Complete	Unusual deep narrow rectangular frog (120mm x 35mm) possibly with illegible stamped lettering in frog? The 1st letter may be an 'L' ? Rough purplish stock brick with yellow surface patches. Thick white mortar	
8076	L19C	1	3902	225	110	75	Complete	NB. 2 separate context labels with this brick: (8076) & (8078) – northern and southern wall of inspection pit 8916. Unfrogged. Very hard reddish-brown engineers-style brick. Possibly machine made? Very neat. Very faint/fine textile impression on both sides	
8082	L19-E20C	1	3465	225	110	68	Complete	Unfrogged. Hard red-brown? Engineers brick with granular fabric. Machine made.	
8109	L19-E20C	1	3645	230	105	80	Complete	Unfrogged. Complete but one side is very worn – possibly damaged during lifetime (e.g. by engines or machinery?). Very hard red-brown granular fabric (i.e. late-looking). Possibly machine-made? Some light grey mortar adhering	
8119	E-M19C	1	2851	230	105	65	Complete	Possibly with shallow frog? Rough stock brick. Purplish with yellow surfaces. Encrusted with thick light grey lime mortar	Discard

Context	Spot-date	No	Wt gm	Length mm	Width mm	Thickness mm	Completeness	Comments	Discard?
8185	E-M19C	1	2630	220	110	65	Complete	Very shallow frog. Purplish-yellow stock brick. Fairly neat. White mortar encrusted	
8201	L19-E20C?	1	5100	225	125	80	Complete	Unfrogged? Outsize engineers brick. Hard orange-red granular fabric. One face covered in hard grey mortar	
8204	L19-E20C	1	2215	N/A	110	75	Half	Unfrogged. Very hard dark purplish engineers brick.	Discard
8204	L19-E20C	1	4301	225	110	73	Complete	Unfrogged. Very hard dark grey engineers brick with thick dark grey cement adhering	Discard
8206	L19C?	1	3513	230	110	70	Complete	Unfrogged. Very neatly made light orange brick. Heavily encrusted in dark grey fine mortar (mixed with soot?)	
8312	L19-E20C	1	3737	228	112	70	Complete	Unfrogged. Very hard dark grey engineer's brick made with one bevelled corner on one end only - small bevel. Partly covered in grey mortar	
8312	L19-E20C?	1	3650	220	110	85	Complete	Identical engineers brick to (8730) with same bevelled edge and with identical dumbbell-shaped frog	Discard?
8315	L19-E20C	1	4705	220	110	85	Complete	Identical engineers brick to (8730) & (8312) with same bevelled edge and with identical dumbbell-shaped frog	Discard?
8341	M19C?	1	2302	230	105	62	Complete	Rough stock or possibly firebrick? Shallow rectangular frog (double recessed or stepped in section). Frog probably has faint illegible lettering in the base. Brick heavily scorched at both ends. Scorched reddish-brown surfaces – possibly originally yellow? Wire-or blade-dragged down one face - machine made? One corner has been drilled away to create a small semi-circular bevel or chamfer (possibly to take a pivot or structural rod?). Traces light grey to white mortar	
8341	E-M19C	1	2640	225	105	65	Complete	Shallow frog – similar to others seen from this site. Purplish-red stock brick. Mostly covered with grey mortar	Discard
8364	L19-E20C?	1	2938	230	110	68	Complete	Unfrogged. Machine made? Neat orange brick. Small patches dark grey mortar	Discard
8720	L19-E20C	1	4341	225	110	75	Complete	Stamped engineers brick – identical to 8767 and 8730 with same monogram stamp. Also sooted on bevel as latter	
8730	L19-E20C	1	3926	220	110	85	Complete	Frogged. Hard dark grey engineers brick (jamb or voussoir?). Made with one long (stretcher) edge bevelled-off giving a 5-sided section. Bevel width = 75mm. Bevel edge sooted. Neatly stamped dumbbell-shaped frog with squared-off ends and with screw head impressions at either end. Length of frog = 155mm x max width 60mm & min width 30mm at waist, & c. 5mm deep. No maker's mark. Patches of fine grey mortar	
8745	E-M19C	1	2497	230	110	68	Complete	Shallow rectangular frog with a longitudinal line or groove along axis of frog. Purplish-red stock brick. Part covered in white mortar	Discard

Context	Spot-date	No	Wt gm	Length mm	Width mm	Thickness mm	Completeness	Comments	Discard?
8752	L19-E20C	1	4396	225	105	73	Complete	Unfrogged. Hard dark grey engineers brick	Discard
8757	E-M19C	1	2525	235	100	68	Complete	Shallow frog - mostly full of grey mortar. Very rough reddish-brown stock brick	Discard
8767	L19-E20C	1	3925	225	110	75	Complete	Very hard dark grey engineers brick made with one end bevelled-off - the latter end very thickly sooted. Neatly stamped shallow frog of slack dumbbell or propeller shape (length of frog 165mm x max width 60mm & min 40mm at 'waist', c8mm deep). In centre of frog a neat relief maker's mark - a monogram of 3 letters or letters & numbers (a large 'C' enclosing two back to back 'Bs'). At either end of frog is a screw-head impression (from the metal stamp or die) and on the right-hand side of the frog is a small but deliberate relief 'X'. Soft grey cement in places	
TOTAL		**28**	**93462**						

Table 6: Bricks recovered from PNY (XSI 10)

7.4 Glass

By Ian R Scott

7.4.1 There are 8 pieces of glass from 5 contexts. The glass has been identified and recorded below. The Bovril bottle has photographed for record purposes.

Context 7035: (1) Small flat sherd with small section of thickened edge. Pale blue green. Unlikely to be vessel glass its function is uncertain. 15mm x 20mm; Th at edge: 3mm.

Context 7067: (2) Wine bottle. Body sherd from a moulded cylindrical wine bottle in dark olive green metal. Probably moulded in Rickett's type two-piece mould. Mid to late 19th-century. Ht of sherd: 98mm; D of bottle: c 85mm

Context 8075: (3) Bovril jar. Small 1 ounce Bovril jar in amber glass. Distinctive oval body with flat or slightly dished front and back. Moulded jar possibly with hand tooled rim. Embossed on both curved ends: "1oz | BOVRIL LIMITED". Bovril company was founded in 1889 to market a product first produced in 1870. Of very late 19th- or more probably early 20th-century date. Ht: 69mm; W: 55mm. (SF 1)

Context 8246: (4) Window glass. Sherd of very pale blue green glass with reeding on one face. Late 19th- or 20th-century. 50mm x 50mm; Th: 4mm.

Context 8626: (5-8) Window glass. Four sherds, no obvious refits. Very pale blue green metal. The glass is thick with reeding on one side only. Probably of 20th-century date. The two largest sherds have one long straight edge with signs of glazing. 155m x 99mm; 106mm x 66mm; 86mm x 48mm; 77mm x 66mm. Th: 5.5mm.

7.4.2 Much of the glass is not closely datable, and none of the glass needs to date earlier than the 20th-century with the exception of the sherd of wine bottle which dates to the mid to late 19th century.

7.5 Metal Finds

By Ian R Scott

7.5.1 A number of metal objects mainly of iron were recovered during works at Paddington New Yard. These were recovered from nine contexts with most objects coming from contexts 8037, 8085, 8304 and 8705. The finds have been listed with measurements and descriptions and summary listing is appended below. The objects were also photographed for record purposes.

7.5.2 Amongst the finds were two rail chairs (context 8049) and complete manhole cover embossed for the “G W R” and also “OIL” and “GAS” (context 8428). There is small iron plate with two fixing holes and raised or applied letters “P N” on one face from context 8037. A large heavy oval link, very possibly a coupling link came from the same context. From context 2304 there is a long handled fire tool with ring handle at one end and semi-circular blade set at a right at the other end. This probably a fire rake. Other tools include a worn socketed shovel head (L: 0.46m) and a very large socketed shovel head measuring c 0.76m long with blade at least 0.50m long both from context 8085. A socketed rake head with long tines bent at a right angle was found in context 8304, which also contained a very large tanged half round file (L: 0.5m).

7.5.3 The two rail chairs and the manhole cover all have obvious rail connections, and the small metal label with the raised letters “P N” may very well have direct link to Paddington New Yard, although this will require confirmation. The large oval link probably from a coupling also has a rail connection. The tools – the shovels and rakes – although almost certainly used at the yard do not have do not have an exclusively rail use except possibly the very large and distinctive shovel from context 8085.

7.5.4 Summary listing of metal finds by context

Code	Context	sf	Description and dimensions	Photo(s)	Proposed retention?
XSI 10	**2304**	23	Fire tool with loop handle at one end and flat semi-circular blade. Fire rake? L: 1.3m (1300mm) Fe.	12, 13, 14	Yes
XSI 10	**8037**		Strut formed from thick rod with angled flattened and pierced terminal at one end. Mineral preserved wood attached. L: c 510mm	55, 56, 57, 58	No
XSI 10	**8037**		1 x length of fe rod. L: 150mm	59	No
XSI 10	**8037**		1 x curved length fe bar of square section. Probably part of a larger curved or even circular object L extant: 200mm	59	No
XSI 10	**8037**		large oval link, very heavy, probably a coupling link from a locomotive, wagon or coach. L: c 355mm; W: 150mm.	5	Yes
XSI 10	**8037**	2	rectangular fe plate with slightly curved ends and two screw holes or fixing holes. Raised letters "P N" on plate. L: 115mm; W: 60mm.	6, 7	Yes
XSI 10	**8049**		rail chair with bolts. L: c 450mm; W: c 190mm. Fe	10, 11	Yes
XSI 10	**8049**		rail chair with bolts. L: c 450mm; W: c 190mm. Fe	10, 11	Yes
XSI 10	**8075**	5	cu alloy tap or T-handle with broken threaded stem. L: c 50mm	50	Yes
XSI 10	**8085**		Socketed shovel head, worn blade. L overall: 460mm; L of blade: c 220mm; W of blade: c 250mm.	40, 41	Yes
XSI 10	**8085**		Large fire shovel with long blade. L overall: 760mm; L of blade: c 510mm; W of blade: c 255mm	45, 46, 47	Yes
XSI 10	**8085**	4	cu alloy rod with threaded collar attached at one end. L: 128mm	48, 49	No
XSI 10	**8085**	3	cu alloy sheet with circular stamped cut-outs. L: c 105mm; W: 54mm.	51	No
XSI 10	**8085**		thick fe plate, approximately rectangular but one corner missing. 135mm x 95mm, Th: c 8 to 9mm.	60	No
XSI 10	**8085**		thick fe plate slightly curved in section, very approximately rectangular. Has threaded hole at its centre and may have a plate fragment attached to the reverse. 95mm x 75mm, Th: c 8 to 9mm.	60, 2, 3, 4	No
XSI 10	**8085**		1 x length of fe rod with thread at one end. L: c140mm	60, 1,	No
XSI 10	**8202**		cast Fe window handle and catch. L: c 158mm.	52, 53, 54	No
XSI 10	**8304**		Adjustable prop? Near square head or foot. L extant: 165mm; Head/foot: 90mm x 88mm. (see also example from context 8075). Fe.	15, 16, 17, 27, 28, 29	Yes
XSI 10	**8304**		Bolt. L extant: c 330mm. Fe.	No	No
XSI 10	**8304**		file with tang, long half round blade. Has strip of iron fused to round face. L overall 500mm; W max: 42mm. Fe.	37, 38, 39	Yes
XSI 10	**8304**		Adjustable prop? Max D: 57mm. L extant: c240mm. Diameter reduces in three steps. Fe.	18, 19, 20, 21	Yes
XSI 10	**8304**		Rake head with 5 long tines bent at a right angle. Socketed head. W: 291mm; Depth of tines: 135mm; L of head and socket: 205mm. Possibly a fire rake. Fe.	42, 43, 44	Yes
XSI 10	**8428**	23 (sic)	Manhole cover for oil / gas. Embossed "G W R" and "GAS" and "OIL" Cover and surround. D incl flange: c 450mm; D of upper rim: 340mm; Ht: 150mm. Cast fe.	9	Yes
XSI 10	**8705**		3 x fe strips. L: 550mm; 260mm, 230mm	22	No
XSI 10	**8705**		Rod, Fe. L: 230mm	23	No
XSI 10	**8705**		Tapered Fe bar or spike. L: 160mm	23	No

XSI 10	**8705**		Adjustable prop? Near square head or foot. L extant: c 260mm; Head/foot: 95mm x 86mm. (see also example from context 8304). Fe.	24, 25, 26	Yes
XSI 10	**8705**		2 x cu alloy strip bent into half circles. L: 60mm & 63mm.	30, 32	No
XSI 10	**8705**		rubber washer, broken. D: 63mm x 65mm.	30, 31	No
XSI 10	**8705**		small non-ferrous casting, broken. L: 82mm	30, 33, 34	No
XSI 10	**8705**		large rectangular fe plate, apparently with notch at each end. L: 367mm; W: 140mm. Fe.	35	No
XSI 10	**8705**		fe strip. L: 250mm	35	No
XSI 10	**8705**		2 x lengths of rod. L: 170mm and 150mm. Fe.	36	No
XSI 10	**8705**		nail, L: 128mm. Fe.	36	No
XSI 10	**8780**		1 length of cast fe pipe with junction. L overall: 920mm; D of pipes: 95mm.	8	No

8 Phasing

8.1.1 Broad phasing has been ascribed to the deposits and structures encountered during the works on the basis of relative stratigraphy and finds uncovered, these were used in conjunction with cartographic and documentary evidence. The results are presented below in chronological order. It is must noted that imposing rigidly defined periods on a continuous process is somewhat of a contrivance but is done so in this report for simplicity.

8.1.2 This phasing is provisional as is proper for this type of report and may be refined in the light of evidence produced from detailed analysis of this and associated datasets. The following interpretative narrative is therefore offered with the appropriate caveats.

8.1.3 Nine broad phases of archaeological activity could be defined across the PNY.

8.1.4 These are subdivided.

- Phase 0: Natural Drift Geology
- Phase 1: Pre railway
- Phase 2: 1838 – 1859 Early Railway and Brunel Era
- Phase 3a: 1860 –1870 Westbourne Park Depot
- Phase 3b: 1871-1880 Westbourne Park Depot
- Phase 3c: 1881 – 1900 Westbourne Park/Paddington New Yard Depot
- Phase 4: 1901 -1937 Paddington New Yard- Goods Yard
- Phase 5: 1938 –1972 Paddington New Yard- Goods Yard
- Phase 6: 1972-2010 -Marcon Sidings

Phase 0: Natural Drift Geology

8.1.5 Deposits that were confidently identified as *in situ* Natural Geology were seen in various locations across the Site dependent upon depth of excavation and level of truncation.

8.1.6 The Natural Geology was the same across the entire Site, and was characterised by a layer of archaeologically sterile, mid brown weathered clay (8002, 8676 and 8082). Part of the London Clay complex that forms the underlying geology in this part of

London. This deposit was revealed across the entire Site during bulk ground-reduction excavations at *c.* 0.9m –1m below ground level (Plate: 60).

Phase 1: Pre Railway

8.1.7 The uppermost sequence was truncated by the GWR railway cutting, which had removed between 2-3m of potential Holocene and Archaeological deposits from the top of the sequence.

Phase 2: 1838-1859 Early Railway and Brunel Era

8.1.8 The earliest archaeological features, structures and deposits uncovered at PNY date from this period. Documents show that the development of the Site by the GWR as a railway depot was caused by the fact that the GWR's original London terminus at Paddington had neared capacity far more quickly than anybody could have imagined. (See Brindle 2004, 25-26 on the reasons why the first Paddington Station outgrew its site). In response Brunel and the company's locomotive superintendent, Gooch switched the position of the station and its goods yard. The newly enlarged goods depot in turn engulfed the carriage sheds, workshops and engine shed which had stood to the west of the former station in the area now covered by the Paddington Central Sheldon Square/ Kingdom Street development.

8.1.9 In late 1853 or early 1854 new workshops and engine shed opened on a former field in Westbourne Park to the north of the GWR's 1830s mainline cutting. The new site was situated within an extensive cutting and nestled between the line in Paddington and the Grand Junction Canal. Here finally was space for Brunel and Gooch to realise what they had lagely failed to achieve at Paddington. The earliest structures uncovered at PNY are the remains of Brunel and Goochs newly designed Locomotive Department Depot.

8.1.10 The earliest exposed sequence of deposits dating to the early railway was fairly consistent throughout the Site. A 0.2-0.6m thick layer of clean crushed red brick fragments (8002 and 8682) lay directly on top of the London Clay (Plate: 60). This deposit, which was seen over most of the Site, was probably lain down to act as a dry working surface on top of the muddy London Clay during the construction of GWR railway in the 1830s and the Westbourne Park cutting and Locomotive Depot in the early 1850s.

8.1.11 Similar deposits of crushed red brick were observed spread over Natural Geological deposits during OA/R' s watching brief at the Crossrail Royal Oak Portal and Lord Hill's Bridge. Context 1003 in the Crossrail Royal Ok Portal (OA/R C254-OXF-T1-RGN-CR G03-50047) and context 2007 at Lord Hill's Bridge (C254-OXF-T1-RGN-CRG03-50116).

8.1.12 The lack of mortar fragments either within this deposit or attached to the brick fragments would suggest that this deposit be derived from brick works waste, rather than from crushed demolition waste from buildings.

8.1.13 Above this "working surface" lay a compact layer of dark greyish black ashy gravel with clinker inclusions (context 8136). This track ballast was up to 0.6m thick but was often much thinner. Seen across most of the Site it appears to be contemporary with of the structures found during the project. Under nearly all the recorded archaeological structures cut through the track ballast or crushed brick deposit into the underlying Natural Geology. Although some appeared to be cut directly into the Natural Geology.

8.1.14 The move from Bishop's Bridge in 1852-1853 to the much larger site at Westbourne Park meant that GWR's Paddington Station's Locomotive's Department's workshops,

stores and offices (Structure 1) could for the first time be brought together into one building. The carriage works were moved to the southern side of the tracks between Bishops Bridge and Westbourne Bridge in an area later covered by the station's Parcel Depot.

8.1.15 The Locomotive Department's workshop is shown on Stanford's 1862 map and is portrayed on a drawing from c.1853 (Brindle 2004 fig. 7.40 134). This shows the southern elevation and plan of the two floors. It consisted of a pair of two-storey wings, each with a double-height bay, which bookended workshops for carpenters, smiths and fitters. There were stores on the ground floor of the western wing and enginemen's sleeping quarters on the first floor. The eastern wing housed a general office, with an "arch for men signing in", and individual offices for "Mr Andrews", Gooch and his clerks.

8.1.16 The 1850s drawing has been largely corroborated by the findings of the OA/R team, who excavated and recorded much of the western quarter of the shed, along with the northeast corner and the northern wall [(185/8174), during April and May 2014. The southern wall (8030) of the workshop was built of stock bricks with slight frogs. It was 0.33 m wide and had a series of brick buttresses running along the outside (Plates: 28-29). The 1853 drawing shows eight windows and two doorways in the workshop's southern side, each flanked with square buttresses and simple columns (Ibid.) (shown in green on Figure 8).

8.1.17 Wall 8030 was seen to turn northwards where it became wall 8256. It ran parallel to and 2.14m away from wall (8043) to form a long 3.66m (7ft) wide "corridor. This was initially thought to be a corridor, but the 1852 drawing shows it as a narrow room for the "night foreman", with a door through the building's southern wall, and the base of the stairs leading up to the engineer's quarters on the first floor behind. The western most of the "corridor's" walls (8043) formed the eastern wall of the west wing of the workshop and along with wall 8072 to the west and wall 8068 to the south formed a 3.66m (12ft) wide room which is marked as "stores" the 1853 drawing. A 2m wide gap in wall appears to be a window; in fact a bay window is shown on the 1852 drawing (Ibid.) (shown in green on Figure 8).

8.1.18 Although no floors survived within the building, a brick lined quenching pit 8027 and a brick base of a forge 8029 (Plates: 30-31) were also uncovered in the area marked as "smith's shop" in the 1853 the plan (Ibid - shown in green on Figure 8).

8.1.19 Westbourne Park Locomotive Depot's centrepiece when it opened in 1852 was a four-road engine shed built for Gooch's new generation of broad gauge locomotives. The vast brick structure, which was later known as the 'BG' (Broad Gauge, is shown on Stanford's 1862 map and is described on a 1901 itinerary of the depot (Hawkins Reeve 1987). Where it is said to be 663ft long (202m) and 68ft (20.72m) wide in its "middle section "and 56ft (17.06m) wide at its "ends". According to the itinerary, it was 35ft (10.66m) high in the "middle section" and 38ft (11.58m) at its "ends", the walls being 21ft (6.4m) high. The gabled slate roof resting on wrought iron principles was gabled. The roof was fitted with smoke troughs, which the itinerary notes were removed in November 1901, running above each road (Ibid.). These were connected to a series of brick built chimneys; early photographs of the shed show a line of chimneys jutting out of the roof (Brindle 2004 fig 7.39 133). This photograph also shows the shed's slate roof and a series of long windows, each flanked by brick buttresses, set at regular intervals along the southern wall of the shed. Evidence for these windows and the slate roof was discovered during the archaeological works. This took the form of a 0.10m thick layer of roofing slate and ribbed window plain glass fragments (8626), which was uncovered at the base of the shed's backfilled inspection pit. This deposit

was almost certainly the dumped remains of the shed's roof and windows, removed during the "soft strip" phase of demolition in 1906.

8.1.20 The OA/R excavations showed that the eastern end of the shed was open with the eastern gable resting on a metal upright resting on stone plinths one of these square plinths (8848) was uncovered during the excavations. An early photograph of the shed shows the western end of the shed as open. With four wooden shed doors and intervening wooden end walls below and an open latticework of metal struts above (Figure: Plate: 14). It seems safe to suggest that, this was the case at the shed's eastern end as well.

8.1.21 The 1901 itinerary states that the shed had four "Engine Pits" each 663ft in length. These are described as being used for "running the engines and for repairs". The itinerary notes that "engines are repaired on running lines as required (Ibid.).

8.1.22 One of these brick built pits, which appears to have run the length of the building, was partly excavated by archaeologists from OA/R in August-September 20014 (Plates: 48-52). This rectangular trough was 1.81m wide and 0.52m deep. The pit's sidewalls (south: 8917/8919, north: 8918/8920) were of purplish red stock brick walls and were 0.42m thick. A brick floor (8318/8328), which had a central drainage gully running down the centre, formed the base of the pit, which has been interpreted as an inspection pit. Which was built to enable the GWR engineers etc. to access the underside of the locomotives that were "visiting" or stabled at the depot. So as to carry out routine maintenance and any running repairs. The drainage gully led to a series rectangular catchment pits, which drained off any liquid waste and water. A single line of chamfered engineering bricks formed the inner upper edge of the pits. These jutted out slightly from the inner face of the wall to form an overhang or lip. This over hang is still a feature in many of the railway station platforms in the area formerly run by the GWR.

8.1.23 The constant problems that the depot must have had with water, caused by the fact that it lay within an artificial cutting within impermeable London Clay, meaning that there was no natural drainage. This is illustrated by the attention that the GWR played to drainage.

8.1.24 A brick culvert (8898), which is now known as the Marcon Sewer, was built to drain the volumes of waste water (Plate: 53) generated by servicing and maintaining the company's locomotives, not to mention the normal volumes of rainwater that might be expected. This appears to have been constructed as part of the initial scheme, if not a little before it. During the Crossrail works, the Marcon Sewer was discovered running east-west beneath the broad gauge engine shed's floor between the north (outer) wall of the shed and the shed's northernmost inspection pit.

8.1.25 During the excavations a series of brick built pits were uncovered set at regular intervals sunk into the floors of the inspection pit. These were water catchment pits and connected to the Marcon Sewer by means of ceramic and iron pipes.

8.1.26 Two semi circular shaped built Inspection chambers (8854 and 8893), which were joined to the Marcon Sewer by means of a square door and tunnel piercing the outer wall of the broad gauge shed were also uncovered (Plate: 54).

8.1.27 A series of square shaped access chambers (8535, 8447 8891 and 8852) leading into the top of the Sewer were also discovered set into the concrete floor of the building (Plate: 53 and 55).

8.1.28 The brick culvert (8153), which was discovered running north-south beneath the "store rooms" of the Locomotive Department's workshop's western wing (Plate: 32), was also connected to the Marcon Sewer and must have drained the workshop.

8.1.29 The Marcon Sewer continued beyond the ends of the broad gauge shed and beyond the limits of the Site. Joining with the Green Lane Sewer to the west of Green Lane Bridge and to the east running along the northern edge of the GWR cutting where it was uncovered and diverted during C300 works at the Crossrail Royal Oak Portal (OA/R 2013. Before joining to the Ranelagh Sewer, a large 19th century culvert built to channel the River Westbourne underground to the Thames.

Phase 3a: 1860-1870 Westbourne Park Depot

8.1.30 In 1861or 1862 records show that a new shed was built to accommodate the standard gauge engines, which had begun to operate out of Paddington Station in August 1861. An event which lead to the Paddington mainline and the Westbourne Park Depot tracks being converted to a mixed broad gauge/standard gauge system. Although it is not shown on Stafford's 1862 map of the area, it is clearly shown on the 1872 OS map. Which shows this shed, with east-west three roads entering form the west and leaving from the east, lying to the west of the Locomotive Department's workshops and office building (Structure 2).

8.1.31 The walls of a large brick built building 13.11m x 44.8m in size were uncovered during the General and Targeted Watching Brief in this area during September 2014. This has been interpreted as the remains of the 1861 the narrow gauge engine shed (Structure 3).

8.1.32 The southern and northern outer walls (8699 and 8742) of the 1861 narrow gauge shed were uncovered. These were constructed with red bricks and had a series of brick buttresses built on to their outer face (Plate: 11). An early photograph taken of the southeast corner of the narrow gauge shed, shows the shed's southern outer wall with a series of bay windows separated by rectangular brick-built buttresses (Brindle 2004 fig 7.39, 133).

8.1.33 The eastern side of the shed was found to have been open; both of the external walls terminated in square brick built buttresses at their eastern end. Instead of a wall a north-south row of square stone plinths (8588/8589/8590/8591) arranged 2.46m apart supported the sheds and formed the sheds the entrance at its eastern end (Plate: 14). A photograph of the Prince Christian Steam Locomotive standing outside the narrow gauge shed at Westbourne Park, shows that the eastern end wall of the shed was built in wood. The arrangement at the shed's western end was not clear, although parts of a north-south running brick wall (8644/8649) would suggest that was not completely open. Although these walls could be a much later addition.

8.1.34 Three east-west aligned brick built pits (8708/8706 and 8707) were excavated within the 1861 shed. Rectangular in plan, these inspection pits were 42.67mm long x 11.8m wide and 0.78m deep (Plates: 12-13). A row of cuts, containing metal nails and short timber sleepers ran along both sides of the pits. These remains of the pads for the standard gauge bulk rail, which must have run along each side of the pit. Both the floors and the pits' sidewalls were of red brick.

8.1.35 All the pits were equipped with a series of water catchment pits used to channel liquid waste and water away from the pits. The catchment pits were rectangular in plan and were set into the floors of the pits. Brick built they were all covered with metal grills.

8.1.36 To the north of the original narrow gauge engine shed, a large, 8m x 3m x c.4m deep, north-south aligned brick built "tank" (8828) was uncovered during the demolition of the

narrow gage shed by the main contractor (Plate: 16). The structure was built with blue engineering bricks, no pipes or openings were seen into the tank, which has provisionally been identified as a water tank associated with the narrow gauge shed.

8.1.37 In the broad gauge engine shed the OA/R archaeologists found that a set of additional parallel walls (south 8921/8923/8925, north 8922/8924 and 8926) were built up against the inner face of the original walls and over the original pit floor. These walls, which narrowed the width of the pit from 1.81 m down to 1.07m, have been provisionally dated to, the change over by the GWR from the broad gauge to a mixed gauge system from 1861. These walls were 0.37m wide and were built of hard well-made red bricks (Plate: 51). A single row of chamfered engineering bricks was set longitudinally along the inner leading edge of the wall. Unlike the earlier pit, these bricks did not over hang the face of the wall.

8.1.38 The upper surface of these walls were covered in a light brown cement render, in which square and rectangular shaped impressions of varying size were seen. These were almost certainly the traces of jackscrews or other temporary props used in the day to day maintenance and running of the engines (Plate: 52).

8.1.39 A line of 60mm deep cuts was also seen cutting into the top of each of the pit's walls. These were filled with short lengths of timber (pine), which were in various states of decay. The cuts each contained two 10" long metal bolts driven vertically into the fabric of the wall (Plate: 52). These cuts, which were 2.14m apart, represent the remains of the sleepers for the two parallel bulk rails on which the standard gauge locomotives ran.

8.1.40 A row of oval shaped backfilled cuts, uncovered behind each of the standard gauge sleeper cuts, were almost certainly robbed out remains of the sleeper cuts for the shed's earlier broad gauge baulk tracks.

Phase 3b: 1871- 1880 Westbourne Park Depot

8.1.41 The 1872 Ordnance Survey map depicts the Site having developed further since the 1860s.

8.1.42 The "tank" (8828) which stood to the north of the original narrow gauge shed, which is not shown on any maps or mentioned in any available documents, appears to have been filled with re deposited London Clay and Structure 32 built over it.

8.1.43 No connections, pipes etc from the tank into Structure 32 were seen during its demolition by the Principal Contractor. Nor was the tank's roof, having presumably been destroyed during the construction of the northern extension to the shed (Structure 32).

8.1.44 The narrow gauge engine shed appears to have been enlarged in 1872 or 1873 with a northern extension added to the original sheds northern (outer) wall. This extension is not shown on the 1872 OS map but is shown on a GWR drawing dating to 1880. This extension was partly excavated during the project and was found to be 44.8m long and 12.5m wide (this phase is shown in blue in Figure: 5). Making the building in its final phase, 44.8m long and 25.6m wide. The narrow gauge shed is described in a 1901 itinerary of the depot, which states that it was 147ft (44.8m) long 84ft (25.6m) wide and 26ft (7.92m) high (the walls are said to be 16ft (4.85m) high). It is described as being built of brick with a gabled slate roof, which is held up with iron principles and fitted with smoke troughs, a row of chimneys can be clearly seen on early photographs of this shed. The shed's six lines are described in the itinerary as being equipped with six "Engine pits for running engines" 140ft (42.67m) in length. The itinerary notes that the

shed was not fitted with special pits for engine repairs, stating that “Engines are repaired on running lines as required” (Hawkins and Reeve 1987).

8.1.45 The excavations showed that the northern wall 8742 of the original shed acted as the southern partition wall of the newly enlarged shed. The northern wall (8833) of the northern extension was also revelled and recorded during the project.

8.1.46 Three brick built inspection pits (8785, 8775 and 8835) were uncovered running east-west along the length of the extension. These were rectangular in plan and were 1.12m wide 42.67m long and c.0.7m deep (Plates: 17-19).

8.1.47 A step made from brick and plastered with a solid layer of coal mortar, stood at the eastern end of the pits. The floors of these pits were built of brick lain in an off-set stretcher bond running north-south. The floors were slightly cambered down towards the edges of the pit. Where two east-west gullies ran along the base of the sidewalls. These gullies, which were one brick wide, connected to a series of rectangular catchment pits set into the floor. These carried wastewater away from the pits in ceramic drains. The northern extension of the shed appears to have been built at a slightly higher level than the earlier phase. As a result the pit sidewalls were not extent, and none of the sleeper cuts and sleepers, which were so prominent a feature of the earlier pits were present.

8.1.48 As with the early shed the eastern side of this part of shed was open; both of the external walls terminated in square brick built buttresses at their eastern end. Instead of a wall two square brick built plinths (8782 and 8762) were situated at the southeast corner of each pit. These plinths were 0.92m in plan and1.5m thick and were almost certainly the bases for metal columns, which supported the roof of the shed and formed the shed’s the entrance at its eastern end.

8.1.49 A 40ft (12.19m) in diameter turntable is mentioned by A J L White, in the 1906, Great Western house magazine, (reproduced by Hawkins and Reeve 1987, 61). And is shown on the 1872 OS map as being situated on a track linking the narrow gauge shed with the Locomotive Department’s workshop and office building. The brick built turntable pit (Structure 8) was excavated and recorded in October 2014 at this point and was found to be 12.98m (42ft 7”) in diameter and 0.7m deep (Plates: 21-23). The brick sidewall (8746) and floor (8748) of this phase of the turntable were revealed and recorded, as was the outer gully for the guide rail (8801) on which the guide wheels of the turntable deck ran. This gully ran along outer edge of the brick floor at the base of the turntable’s sidewall. A number of shorn off metal fixtures set into the base of the floor and gully could date to this period.

8.1.50 A shallow drainage gully inset into the brick floor, ran around the inside of pit within this a line of eight shorn off metal bolts used to anchor down the inner central pivot of the turntable formed a circle 1.5m in diameter.

8.1.51 From documents it is known that the turntable was hand operated by a pair of winches. However aside from the cut of ends of fixing bolts, none of the turntable deck's superstructure or turning mechanism were uncovered during the archaeological works.

8.1.52 Six external inspection/ash pits were uncovered at PNY. Four; 8724, 8732, 8787 and 8788 to the east of the narrow gauge shed (Plate: 20), and one each to the east of the eastern turntable pit (8908) and the broad gauge shed (8854). They have all been tentatively dated to this phase of development of the Site, but could equally be later. They were all very similar in design and were built of similar bricks. They also all had a single row of bevelled blue grey engineering bricks, some stamped with the markers

monogram "CBB", running along the inside upper edge. Although this could be because they all had a similar function, as ash pits, rather than because they were of the same date (See bricks 8720, 8730 and 8767 in **Table 6**).

8.1.53 The 1901 itinerary of the structures found at Westbourne Park Depot reproduced in Hawkins and Reeve, 1987 mentions a series of "Outside Shed" "Engine Pits". These include four at the east end of the broad gauge shed, described as being 60 ½, 58, 65 and 38 ½ feet long and three at its west end 24½, 25½ and 18 ½ feet long. The narrow gauge shed had four at its east end, 50, 61, 29 ½ and 50 feet long (ibid.)

8.1.54 On the 1872 OS map a turntable (Structure 7) of 12.8m diameter (42ft), is shown to the west of the broad gauge shed, as is an adjacent hexagonal building, which was probably a boiler house (Structure 9). Although initially set to be included within the trial trenching exercise (see **Table 3** above), these structures lie within the Network Rail's Operational Railway area. As a result it was decided not to include them in the current phase of archaeological mitigation programme.

8.1.55 At around the same time that the narrow gauge shed was being enlarged the Locomotive Depatment's workshop and office building was substantially altered. A fact shown on the 1870 OS map.

8.1.56 The eastern wing of the building and an adjoining section of the Locomotive Department's workshops, that had housed the carpenters and coppersmiths rooms were retained, being described in 1901 as offices (above) and stores below (Hawkins and Reeve 1987 65). The rest of the building appears to have been heavily reconfigured.

8.1.57 The results from C254's work showed that north-south partiition wall which had seperated the smiths shop from two rooms for two boilers and a stokehole had been removed and the smiths', fitters' and carpenters' shops enlarged. The night foremans room and base of the stairwell (between walls 8043 and 8256) and the stores appear to have been retained (walls 8043, 8068 and 8072).

8.1.58 The OS map and the 1901 plan show a 103ft (31.39m) long extension, containing three roads, tacked on to the western end of the original workshop building. The total width of the workshop now being 298ft (90.80m). This addition, is called the "Paint and Repair Shops" on the 1901 plan (Hawkins and Reeve ibid).

8.1.59 The OA/R excavations revealed the remains of this extension, which was found to contain three east-west brick built inspection pits (8914, 8915 and 8916 - Plates: 33-35). These were 22.3m long with innernal width of 1.18m. These appear to have initally been attached to the outer western wall (8072) of the 1853 building (8072).

8.1.60 Design drawings for this structure have not been discovered, but excavation suggests that this may have been a relatively lightweight construction. The southern elevation was formed from uprights supported on square limestone blocks (8061, 8062, 8070, 8071, 8080, 8086, and 8088 - Plate: 38). The western gable was carried by uprights located by a pair of vertical steel bars embedded into brick bases two of which were uncovered during the excavationS (8087 and 8257). The norther side was not found but it was probably the same as the southern side. The 1901 plan of the building shows the northern wall as an interupted line (Hawkins and Reeve ibid).

Phase 3c: 1881-1900 – Westbourne Park/Paddington New Yard Depot

8.1.61 With an incessant growth in traffic the demands on Westbourne Park would have been relentless, and the Site continued to fill with new tracks and buildings.

8.1.62 One of these was a new double-pitched brick building of 19ft width which was added to the northern elevation of the workshop, repair and office building (Structure 2). This extension which is shown on the 1892 OS map, allowed a fourth road to be added to the repair and paint shop at the western end of the building and provided accommodation for the coppersmiths and rooms for a stationary engine and a pair of boilers. These are shown on a drawing which has been dated to 1891 (see Figure 13) but may be earlier (WSHC 2515/409/0040). A limehouse, a vertical engine and a pump over a 10ft (3.04m) diameter "well" are shown in a brick building roofed in corrugated iron and attached to the angle between the workshops and their extension.

8.1.63 In November 1886 Swindon detailed how one of the boilers was to be removed and two additional boilers installed (see Figure 14 - WSHC 2515/406/0852). By demolishing the eastern wall of the boiler house it was to be extended eastwards to accommodate the new boilers, which were to drive two vertical engines linked to a set of pumps seated over the 10ft diameter well. An external coal bunker was accessed by a door in the northern wall of the boiler room.

8.1.64 None of the archaeological work uncovered any remains of this extension, presumably because of later truncation. However, the GWB did uncover a complex of three interconnecting circular brick-lined shafts of differing diameters (3.5m 3.66m and 0.62m) but of equal depth (8235, 8236, and 8243 - Plates: 40-44) and with associated brick-built conduits (8213, 8237, 8244, 8250 and 8251). Their sheer depth had contributed to their survival, as had a 1.60m thick concrete capping. (8049 - Plate: 45).

8.1.65 What was the purpose of these shafts? Clues are provided by a drawing issued in 1898 (WSHC 2515/406/0881) and the 2014 excavations. These suggested that their purpose had been to provide temporary storage capacity for water brought from outside the site.

8.1.66 The three shafts were interlinked at two levels by short passages [8213 and 8237], and brick-built culverts (8244, 8250 and 8251 - Plate: 44) which linked them to the "running shed", "subway" and "Paddington Electric Light". A report by Westbourne Park's Assistant Divisional Superintendent D. Stanier, given in February 1907 (Hawkins and Reeve, 1987, 69) explains how hot water returning from the condenser of the latter was used "to great advantage" by the locomotive depot to wash out boilers whilst they were still hot. The Paddington Electric Light was probably the power station built by the Telegraph Construction & Maintenance Company in a former carriage shed behind Gloucester Crescent in 1885 (Brindle 2004, 57).

8.1.67 The 1898 drawing makes it clear that water was being pumped northwards under the goods lines to a pumphouse set in a cutting in the bank. Twin lifting pumps by Gwynnes Centrifugal Pumps Co., operating at 600 revs per minute, then lifted it into a tank surmounting the engine house. Perhaps also, water could then be transferred to the reservoir and tanks that sat at the highest point of the site.

8.1.68 A small section of the badly damaged lifting shed building was recorded in November 2014 (Plates: 56-57). Shown in 1879 proposal plans (WSHC 2515/409/0056 ms 1879) and on the 1896 OS map. This building was situated to the north of the easternmost turntable (structure 8). Referred to in a schedule drawn up in 1901 as the "Shear Legs" Shed (Hawkins and Reeve 1987, 66) it housed two cranes, one fixed, the other a hydraulic travelling unit. We know from early photographs, in which the southern side of the shed features shows that the roof was of saw-tooth construction rather than the double-pitched profile seen elsewhere on the Site (Brindle 2004 fig 7.39 133). The works showed that very little of the lifting shed had survived the construction of the Alfred road warehouse and the bins and tanks of the Tarmac batching plant. However

a stretch of the northern and southern exterior walls, both furnished with brick buttresses and parts of an east –west internal brick built pit were uncovered. In the "late 19th century" photograph shown in Brindle the southern wall of the shed has a line of bricked in arches separated by brick buttresses in the sheds southern wall (ibid.).

8.1.69 Although little aside from the "wells" survived of the northern extension to the Locomotive Department's workshop and office building. The excavations revealed a slight alteration in the southwest corner of this building. The three southern inspection pits (8914, 8915 and 8916), which had previously come up to the west wall of the 1853 building, were extended eastwards into the workshop's former stores. The former outer west wall of the 1853 building (8072) was demolished to accommodate the newly extended pits (Plate: 33). The pits now stretched right up to wall [8043]. Which appears to have been left standing, now servings as a dividing wall between the paint and repair shop with its three inspection pits and the workshop's remaining smithy. It is probable that an opening in the southern wall (8068) of the stores and shown as a bow window on the 1853 drawing (Brindle 2004 fig. 7.40 134) is blocked up with wall 8067 at this point.

8.1.70 Although we know from drawings issued in 1880 (WSHC 2515/409/0051 ms) that a sand house was built to the north of the narrow gauge shed. None of the remains of this elegant brick building were uncovered during the archaeological works. The sand house appears in later OS maps and is still shown in photographs of the Site taken in 1960. However, although it seems likely that it survived into the 1970s, it was apparently destroyed when the road ramp down on to Site from the Great Western Road was built in the 1980s.

8.1.71 The most western turntable (Structure 14) investigated at PNY dates from this phase. A GWR plan for a proposed turntable at Westbourne Park, dated to 1881 (see Figure 12) shows it to be 40ft in diameter (WSHC 2515/405/308 WSHC 2515/406/3201). In a 1901 itinerary of the structures at the Westbourne Park Depot reproduced in Hawkins and Reeve (Hawkins and Reeve, 1987, 65). This turntable, which the itinerary calls "Engine Turntable no.1 is described as being to the west of the narrow gauge shed. The itinerary goes on to say that this turntable built in GWR Swindon 1882 although the itinerary places a question mark is placed behind this date. It is described as being 45ft (13.7m) in diameter with "hinge extension rails" this is somewhat wider than the 40ft turntable of the 1881 plan, but the 45ft could include the "extension rails". Then again the 40ft (12.19m) diameter of the 1881 plan could be simply wrong or it could be the proposed width, which for some reason was changed. The itinerary also mentions that it was driven by a "small vertical engine and boiler in house on table" (Ibid.).

8.1.72 The brick built pit of this turntable was almost fully excavated and recorded during the works in August and September 2014. This was seen to be 1m deep and 13.71m (45ft) in diameter (this is the internal diameter of the pit). The brick built sidewall (8521) and brick floor (8524/8526) of this structure were revealed during the works, as were a number of shorn off metal fixtures set into the floor and top of sidewall (Plates: 21-23). A 0.35m wide gully (8523) containing sections of wooden sleepers and the cut off bases metal bolts was found inserted into the base of the pit. The gully ran along the outer edge of the floor at the base of the sidewall (8521). This gully and the shorn off fixtures were obviously for the guide rail on which the deck's driving wheels ran. Records show, that this turntable was equipped with a rather complicated hydraulic slewing mechanism. The full circle girders were of wrought iron, the account notes "W.I.", and the deck was of timber (Hawkins and Reeve 1987, 65). However, none of the turntable platform's decking superstructure or turning mechanism was found during the works.

8.1.73 A small brick built extension (8530) 2014 to the turntable pit was also discovered attached to the pit's northeast side. This probable motor room was clearly built of a different type of brick from the pit's sidewalls. It was also not keyed into the pit walls. Although obviously later than the date of the extension is unknown. Although it could be the "boiler house" mentioned in the 1901 itinerary (Ibid.)

8.1.74 The same itinerary mentions that in 1896 the initial eastern turntable (Structure 8) was replaced by a 55ft 6" (16.95m) diameter turntable, which the itinerary calls "Engine Turntable no.2". Built in GWR's Swindon works, the new turntable's deck's girders are described as being of wrought iron or steel. Driven by hand levers, the itinerary calls it "a balance table with girders above rail level" (ibid.).

8.1.75 The archaeological works showed that the eastern turntable (Structure 8) had been enlarged with the construction of a brick wall (8752) 1.2m beyond the initial pit's sidewall (8746 - Plates: 24-25). Increasing the pit's diameter from 12.98m to 16.77m.

8.1.76 The turntable pit's original brick floor was kept, but a further circular wall (8747) was built at the centre of the pit forming a 4.16m diameter circle (Plate: 24). This wall was built of blue engineering bricks and cut through the brick floor (8751). A small conjoining brick built room (8800) was added to the northern side of the pit. The added width of the new turntable deck must have required the addition of the inner wall (8747) for support.

8.1.77 The 1901 itinerary gives us an idea as to how much the depot was pressured for space. It states that only one 468ft long line, to the north of the broad gauge shed was available for "standing engines". All the other outside lines are described as being; "required for circulation of engines; standing coal wagons etc, but when available used as required for standing engines". It goes on to say that practically all the lines "are full at times e.g. Sunday night when four engines at work" (Hawkins and Reeve ibid.).

Phase 4: 1900-1937- Paddington New Yard- Goods Yard

8.1.78 The enlargement of the eastern turntable was one of the last changes to be made at Westbourne Park. In November 1898 the GWR's General Manager proposed an ambitious scheme of works to relieve the chronic shortage of storage capacity bedevilling the company's Paddington operations. The idea was to erect new carriage sheds beside the up line at Old Oak Common in order to replace those on the down line at West London Junction, the site of which was required for a new line and engine sheds to replace those at Westbourne Park. There was also to be a general goods and coal depot at Old Oak Common and the provision of additional sidings for standing and marshalling wagons (TNA RAIL 250/339: 255-257). Whilst there were to be a number of changes and refinements before this scheme was enacted, it clearly signalled the end of locomotive operations for Westbourne Park. On 17th March 1906 the new depot at Old Oak Common opened and by June of that year the broad gauge engine shed (and probably also the narrow gauge engine shed) had been demolished. Few remains from this period were found at PNY. However the project did uncover evidence of the demolition of the former Locomotive Depot, which took place between 1902 and 1906.

8.1.79 Most of the floors of the buildings had been removed although the traces of the brick cobbles were clearly visible in places. The walls of the broad gauge and narrow gauge engine sheds had obviously been cut down to the ground (c.121.8m ATD). Although their below ground foundations and inspection pits were mostly left in. The robbing out of the guide rails and shearing off of various metal bolts in the base of the pits is evidence of the dismantling of the turntable's deck and superstructure. The turntable pits and the inspection/ash pits were all back filled with a broadly similar deposit a mix of ashy track ballast and brick and concrete rich rubble. This rubble was almost

certainly derived from the demolition of the standing buildings on Site, these fills were relatively devoid of finds and it seems that the GWR's reputation for parsimony was well deserved.

8.1.80 Of some interest was the lowest (earliest) fill of the inspection pit in the broad gauge shed (8626). Which was rich in fragments of roofing slate and ribbed windowpane glass, these have been tentatively interpreted as the remains of the "soft strip" demolition phase when the roofs and windows were taken down and disposed of. The demolition deposits were all overlain with a 0.1m-0.6m thick makeup deposit of ashy track ballast, which appears to have formed the goods yard surface across most of the Site.

8.1.81 The former lifting shop (see Figure 11a+b), after its one through-road had been removed, was retained as a goods store but the 55ft turntable, scarcely 10 years old, was removed.

8.1.82 The 1916 OS map shows few standing buildings left at PNY with the majority of the site given over to an extensive goods yard. The broad gauge and narrow gauge engine sheds had been demolished and the two turntables (Structures 8 and 14) and much of the tracks removed.

8.1.83 The sand house (Structure 15) was still extant at this time but the lifting shed (Structures 17 and 22) had been converted into a goods shed.

8.1.84 The remains of a number of brick walls and a small stretch of brick surface found in the lifting shed and at the eastern edge of the narrow gauge shed probably date from this time.

8.1.85 The Locomotive Department's former workshop is shown on the 1915-1916 OS map but had been reduced in size since the 1896 OS map.

8.1.86 A plan drawn up in 1907, to show how Westbourne Park was to be converted into goods yard shows that the eastern wing of the 1853 workshop and office building had already been removed. So that the eastern gable of the foreshortened structure now aligned approximately with the former east wall of the "well house". Two of the four roads that had serviced the repair and paint shop end of the building were now extended through the building (Plate: 35). Whilst the other two were removed, entering and leaving the shed along its northern edge. The eastern bay was probably the only original part of the 1850s workshops to have survived being turned into an engine shed in the late 19th century. It had continued to house the Locomotive Superintendents' offices, which presumably became surplus to requirements after the move to Old Oak Common. The three inspection pits of the original western extension had presumably been backfilled. When the former paint and repair shop had been moved in c. 1906.

8.1.87 It seems likely that the north–south walls [8089 and 8090] sealing the western gable of the western extension also date from this phase. The two north–south walls (8043 and 8256) of the original 1853 workshop, which had formed the north-south corridor, were also possibly demolished if they had not been removed before. Thus forming a large one roomed shed. The doorway at the southern end of the corridor was probably blocked off with wall 8097 at this time.

8.1.88 The short section of in situ standard gauge road 8049 uncovered running over the "well" complex are the only remains of the track of the former Portobello Junction/goods yard investigated during the project. This track consisted of lengths Bullhead type rails sitting on iron chairs set into timber transversal sleepers. All of which were set in a 1.5m thick concrete base (Plates: 45-46). A similar stretch of track was recorded in an earlier phase of work at PNY (OA/R 2013a). Whilst in November

2014 lengths of an in situ standard gauge road could still be seen embedded into the cobble yard surface at the bottom of the access ramp in the northwest corner of the Site.

Phase 5: 1938-1972 Alfred Road Goods Depot

8.1.89 Rows of large concrete blocks and concrete-encased steel frames uncovered along the northern edge of the site during the GWB were the only remains recorded for Alfred Road Warehouse. The warehouse had been built during 1938 and had led to Paddington New Yard being re-named as Alfred Road Goods Depot (Network Rail drawing DMFP60028459; the building was renamed Great Western Studios in the 1990s) (Plate: 59). This enormous building was assessed and recorded by MoLA in 2010 (C150-CSY-T1-RGN-CR076_PT001-00010). It was described then as a 'three storey, twenty bay, purpose built brick building surmounted by two timber rectangular stair towers'. The rear of the building beside the retaining wall to the site's access ramp featured a projecting section, extended further on cantilevered concrete piers that formed part of a covered vehicle bay. It was the base of these piers that were recorded in the GWB. The cobbled surface which covered much of the site is provisionally dated to this phase.

Phase: 1972- 2010- Marcon Sidings

8.1.90 Alfred Road Goods Depot closed as a goods yard in 1972 and the Alfred Road Warehouse became a British Rail lost property depot until its sale and conversion into the Great Western Studios in 1994. Two remaining sidings, known as the Marcon Sidings, were subsequently used to serve the concrete/aggregate batching plant and as a service area and washing facility for the nearby bus garage. The eastern end of the Site was used as a storage area by Murphy's and Sons and was until recently called Murphy's Yard. A number of features uncovered during the project, date to this phase. These included some quite substantial concrete structures, amongst which the storage bins, below ground tanks and concrete plant bases of the former batching plant were the most substantial. The Site was also crossed by numerous services belonging to this phase.

8.1.91 Much more recent, was the evidence found for the demolition the Great Western Studios that had involved the machine grubbing out of foundations.

8.1.92 The activities of the first stage of Crossrail generated works were also very evident. Including a 0.4m thick reinforced concrete slab which covered much of the eastern half of the PNY, as well as evidence for the grubbing out of the below ground concrete foundation beams for C300 gantry cranes.

9 Constraints

9.1.1 The main constraint on the archaeological work was the necessarily staged nature of the works, and spatial restrictions caused by a congested worksite in multiple occupancy.

9.1.2 Health and Safety issues also imposed a number of constraints, principally where excavations were too deep to allow safe physical entry or where contaminants were present.

10 Assessment of Results in Relation To Investigation Aims

10.1.1 At each stage of this project, aims were established as part of the framework of investigation. After the completion of each stage the aims were re-examined and the results checked to see whether the general and site-specific objectives had been achieved.

10.1.2 Although it is not intended to reiterate the detailed findings of this exercise they are briefly outlined below:

- *The foundations and other below ground evidence for the site's engine sheds, workshops, Sand House, turntables and track layouts within the site's GWR cutting, and also the remains of any associated railway infrastructure. Whilst ex-situ lengths of early rail may be expected to be uncovered, it would be of greater interest to find any of the earliest track formations, supporting timbers, transoms or associated ironwork*

10.1.3 The project found the well-preserved remains of several of the GWR's Locomotive Depot buildings. Including; two engine sheds, the brick built pits of two turntables, and sections of the building which housed the Locomotive Department's workshops, stores offices and staff quarters. The depot's lifting shed had only partly survived having been mostly destroyed during the construction and demolition of the 1930s Alfred Road Warehouse. No trace of the sand house was found and it appears to have been removed during the construction of the Green Lane Bridge access ramp. The almost complete remains of a number of internal inspection pits and external ash pit were also recorded during the project

10.1.4 Only a small section of in situ track was uncovered at PNY. This was a standard gauge road made up of bullhead type rails resting in chairs and set on transversal wooden sleepers. These are almost certainly part of the Portobello Junction or later goods yard. However, lengths of ex situ bridge rails were found on site covering the disused entrance to inspection chambers into the Marcon Sewer.

- *Possible geoarchaeological remains cut through or overlain by the London Clay which underlies the site*

10.1.5 The investigations did not revealed a similar sedimentary sequence to that found at the Crossrail Royal Oak Portal. Where deposits associated with cool climate water lain deposition and an assemblage of around 100 identifiable large mammal bones was recovered from a channel, dating to the Pleistocene (Bates et al 2013 OA/R 2013). Instead the project revealed that the uppermost sequence was truncated by the GWR railway cutting which had removed between 2m-3m of potential Holocene and later Archaeological deposits from the top of the sequence. Down to the archaeologically sterile, mid brown weathered London Clay. This deposit was revealed across the entire Site during bulk ground-reduction excavations at c. 0.9m –1m below ground level.

10.1.6 Selected research themes derived from A Research Framework for London Archaeology 2002 (Nixon et al, 2003) are included in the Assessment of Archaeology Impacts Technical Report (Crossrail 2005). Specifically here, archaeological investigation and mitigation within the PNY worksite should provide evidence relating to early railway construction. This evidence would have the potential to contribute to the following research themes:

- *Understanding the reasons for evolution of the road systems, street layouts, river crossings and ferries, and their importance as engines of development and change.*

10.1.7 There was relatively little evidence from the investigations at Westbourne Park of these aspects. The GWR rail corridor and the site itself are both in substantial cuttings, which would have influenced the surrounding road system, and the considerable workforce would obviously require to get on and off site at an entrance at the western end of Alfred Road. However for most of its history the Locomotive Depot does not seem to have been initially connected into the surrounding road network. With access to the Site from the street entrance at Alfred Road taking place via a footbridge. The cobbled ramp down form Alfred Road that currently runs along the north side of the Site is first shown on the 1914 OS map. The present Site entrance via a ramp from Green Lane Bridge is a 1980s addition.

- *Examining the concept of core/periphery for different periods in London's past, as a means of understanding how evolving settlement patterns reflect the need for sustainable, beneficial relationships between a settlement and its environs, a city and its hinterland.*

10.1.8 Westbourne Park and even Paddington itself were essentially rural until the 19th century with only small settlements. At that stage they were certainly at the periphery of London. It was the construction of the Grand Junction Canal (Grand Union Canal) followed by the GWR railway and the location of the major route westwards that was instrumental in extending the core of London into these areas. The expansion of the transport network allowed the establishment of residential and light manufacturing into these areas.

10.1.9 *Establishing how daily work and life in London reflected and contributed to the rise of London as the commercial centre of the British Empire and to its continued eminence as a world city thereafter*.

10.1.10 The Westbourne Park depot was an important feature of a railway that linked London to the port city of Bristol which, despite the failure of Brunel's dream to make Paddington Station the London railway terminus of the Trans-Atlantic passenger trade, still connected the capital to a major international port. The GWR also connected London to a rich agricultural hinterland in the West Country as well as the South Wales coalfield. Allowing coal and agricultural produce to be shipped into the capital. The importance of this trade is illustrated by the construction of large goods yards to the west of the Bishops Bridge as well as specific milk platforms to the west of Platform 1 at Paddington Station and on the northern side of the Station. Yards for storage and shipment of coal, which remained the capital's main fuel until the 1960s, were also built to the north of the station and at PNY. Whilst platforms for cattle ran along the north side of the mainline railway cutting between Westbourne and Lord Hill's Bridges.

10.1.11 The development of the railway system, of which the GWR was an important part, meant that goods and raw materials could be moved further, cheaper and quicker than previously. With all its obvious benefits to London both as the capital of Britain but as the capital of the British Empire. The railway's ability to bring in and take out vast amounts of materials and goods from the capital was, when coupled with the expansion of London's docks, a key factor in London's rapid expansion as the world's largest mercantile city and put it on the road to becoming a "world city".

10.1.12 Crucially the railways also enabled a growing population, essential for an ever-expanding metropolis both as a workforce and as consumers, to travel quickly and relatively cheaply to and from centre of London into the suburbs and further afield.

10.1.13 The development of the railways as a means to mass transport also enabled the movement of building materials in bulk this when coupled with the abolition of tax on glass and bricks in the 1850s made these items much cheaper. They could now be

manufactured elsewhere, at low cost and to standard sizes and methods, and brought to the capital. The railway was crucial in the rapid expansion of the built up area of London

10.1.14 The different materials used in the building of the depot itself reflect this with slate from North Wales being used in the sheds roofs and bricks used in their walls. A case in point is the blue engineering bricks with chamfered edges used in the upper edge of most of the inspection pits. These were stamped with the markers marks showing that they had been manufactured at the Cakemore blue brick company of Rowley Regis, Worcestershire which stood on a branch of the GWR into Birmingham's Snow Hill Station.

10.1.15 The considerable size of the workforce employed at the depot in its heyday would have had an effect on the local area, with numbers of skilled and well-paid workers living and spending locally.

11 Assessment of the Results

11.1.1 The results of the evaluation and excavation have produced a body of data that can be gauged using the criteria for assessing national importance outlined in documents. Such as MoRPHE (Management of Research Projects in the Historic Environment) and DCMS Scheduling (Department for Culture, Media and Sport), PPS5 (and its predecessor, PPG16), and in accordance with section 8.F.7.of the Method Statement (CR-PN-LWS-EN-SP-00001).

11.1.2 Assessing the results of the watching brief and excavations against the original expectations may be done by comparing the results against the previous baseline.

11.1.3 Historic Environment Record data (HER) from the GLSMR (Greater London Sites and Monuments Record), as derived from the DDBA (CR-SD-CT1-EN-SR-00002), shows 7 known sites in the vicinity.

11.1.4 In the ADS ArchSearch site there are over 10,000 entries for Post-Medieval Westminster. These entries range from standing buildings of various functions to below ground investigations.

11.1.5 A similar search of the English Heritage Pastscape site, conducted at the same time and using parameters as closely matched as possible (sites in the City of Westminster) produced 786 entries (1,285 entries for all periods), and within 1 km of TQ 251 817 there were 25 results. The majority of these was standing buildings rather than below ground archaeological remains.

11.2 Period

11.2.1 The Site produced remains dating exclusively to the 19th and 20th centuries.

11.3 Relative Completeness

11.3.1 None of the various elements of the Site survived intact. All the Structures had suffered truncation both vertically and horizontally. Most of the structures found on site had been backfilled and /or partly demolished down to ground level when the Locomotive Depot was transferred to Old Oak Common in 1906. Later building i.e. the 1930s Alfred Road Warehouse and the Tarmac Yard buildings had further damaged many of the structures.

11.4 Condition

11.4.1 The surviving features deposits and artefacts encountered were all in a reasonable state of preservation. All remains were incomplete (see above) but were not so fragmentary as to obscure their form and function. Brickwork was generally in good order although damaged in parts by service trenches. Deposits were uncontaminated and were either site wide, i.e. track ballast or were fills of discreet structures i.e. turntable pits or inspection pits, which had been lain down over very short period of time.

11.5 Rarity

11.5.1 The uncovered remains are not rare examples of railway infrastructure dating to the period. They are however unique in representing works of this period of development in the GWR particularly the company's change from broad gauge to narrow gauge. The structures were all integral parts of a pioneering Locomotive Depot, partly designed by Brunel, one of Victorian Britain's most original and influential engineers, and which played an essential role in the running of the early railway in this part of London.

11.6 Group Value

11.6.1 The group value of the PNY site can be described as high. When taken together they have the potential to represent the physical evidence for the developing organisational complexity of the railway at this period. The Westbourne Park Locomotive Depot was designed and built under the supervision of Brunel, widely seen as one of the 19th century's most important engineers and his Deputy Gooch, who is also seen as one of the pioneers of the early railway in this country. The depot therefor played a crucial part in the development and workings of the early railway in London and of the development of the GWR in particular. The GWR is acknowledged as one of the most innovative railways both in Britain and the world. The international significance of the GWR is reflected in the fact that it was deemed worthy of consideration for UNESCO World Heritage Site status in1999.

12 Statement of Potential of Archaeology

12.1 Stratigraphic Data

12.1.1 The potential for analysis of the stratigraphic data lies in the confirmation of the phasing and dating of the sequence of sedimentary and archaeological deposits revealed by the investigation.

12.1.2 The stratigraphic data can also provide the framework within which further analysis can take place. Further analytical study of the stratigraphic record may elucidate a more detailed, chronological sequence of events relating to the development of the surrounding urban landscape, and aid understanding of the transport, social and economic history of London as represented by the surviving structures on the Site.

12.2 Finds Data

12.2.1 The moderate assemblage and variety of finds recovered from the works has a low potential; their presence is useful in terms of the archaeological record and as a record of the Site for the future. The brick samples, where stamped or otherwise identifiable to source has some usefulness in mapping the facets of building material supply that do not appear in documentation.

12.3 Primary Potential

12.3.1 If the results of these excavations are added to the body of knowledge generated by the Crossrail scheme they will contribute positively at all levels.

12.3.2 The PNY findings have clear potential to answer the main research aims and can help determine the levels of landscape change due to human interaction. The PNY findings have great potential to contribute to the understanding of layout and development of the railway landscape from its earliest days in this part of London. And as such would add to the knowledge of how daily work and life in London was an aspect of the commercial centre of the British Empire.

12.4 Documentary Study

12.4.1 The supporting primary documentary evidence available increases the significance of the fieldwork results. Further detailed examination of the primary documentary evidence, particularly records relating to property ownership and use, probates, leases, bibliographic records and photographic material could provide significant additional information. Antiquarian and contemporary reports of life in London during the periods of occupation would provide an intriguing comparison to the results of the fieldwork and their interpretation.

12.4.2 Key primary resources for any future documentary research on the site are likely to include Network Rail, the National Archives at Kew, the National Railway Museum in York, the British Library, the City of Westminster Archives Centre and the Wiltshire and Swindon History Centre (WSHC). Other sources likely to provide useful information include the Great Western Society and STEAM, the Museum of the Great Western Railway.

13 Conclusions and Recommendations

13.1.1 Many of the archaeological remains uncovered at PNY are very well dated by documentary and cartographic sources. This has allowed the development of the site from its establishment in 1853 through to its use in the late 20th century as a concrete batching plant and bus depot to be well charted. Although the documentary and cartographic sources provide a relatively detailed external plan for many of the structures at PNY the archaeological works have provided important contextual information on the materials the GWR used, the construction techniques employed and the changes and modifications that the buildings underwent during the course of their life. In terms of significance of the results, this new, primary information is an important addition to that held on the depot, and will provide a valuable additional resource to historians and researchers of railway development in the UK.

13.1.2 Of particular interest were the remains associated with the GWR's broad gauge railway, and rare evidence uncovered to show how the GWR accommodated the gradual change to standard gauge. Isambard Kingdom Brunel's broad gauge, still considered by many to be the better of the two gauges, allowed the GWR, at the time one of the most innovative railways, to run the fastest trains in the world for several decades. Other areas of interest focus on how the company overcame the hydraulic challenges inherent in operating a depot that used prodigious volumes of water in its day-to-day operations but lay in a cutting through London clay.

13.1.3 Westbourne Park Depot was designed and built under the supervision of Brunel, widely seen as one of the 19th century's most visionary engineers, and his deputy Daniel Gooch, another pioneer of the early railway. Because few of the developments

ascribed to the two men survive in London the remains uncovered at PNY can be viewed as more or less unique. The wider significance of the remains becomes apparent when the fact that the Paddington–Bristol section of the GWR was deemed worthy in 2000 of consideration for UNESCO World Heritage Site status in 2000 is considered. The depot played a crucial role in the running and maintenance of the GWR's broad gauge engine stock at the London end of the Paddington to Bristol line, and was essential in the running of the GWR in the London area. It could be said that without the Westbourne Park Depot neither Paddington Station nor the rest of the GWR's network in London would have been able to function.

14 Publication and Dissemination

14.1.1 The results of the archaeological work detailed in this report will appear in summary form in *Crossrail Essays on the Railway Heritage of London* (a working title), one of the publications currently being prepared by Crossrail to disseminate the results of the archaeological work undertaken on the Crossrail scheme.

15 Archive

15.1.1 The complete project archive includes paper context records and indices, permatrace drawings, both black and white and colour photographs, digital plans and photographs.

15.1.2 These were prepared following the guidelines set out in: *Guidelines for the preparation of excavation archive for long-term storage* (Walker, 1990).

15.1.3 The digital data will be temporarily stored on the server at OA South, which is backed up on a daily basis. For long term storage of the digital data CDs/DVDs will be used and will include the reports, plans, scanned images and digital photographs. Each disk will be fully indexed and accompanied by the relevant metadata as provenance.

15.1.4 The project archive and finds are currently held at the offices of Oxford Archaeology (south) in Osney Mead, Oxford, under the Site code XSI 10.

15.1.5 It is anticipated that in due course, subject to agreement with the landowner, the archive will be deposited with LAARC (London Archaeological Archive and Research Centre).

15.1.6 Copies of the report will be lodged with English Heritage Greater London Archaeological Advisory Service, GLHER (Greater London Historic Environment Record), the City of Westminster and Westminster City Archives.

15.1.7 All dry and stable finds will be packaged according to the Museum of London's specifications, in either acid-free cardboard boxes, or in airtight plastic boxes for unstable material. Each box will have a compiled list of its contents and the boxes will in general contain only one type of material e.g.: bone or ceramic etc. It is anticipated that the finds will also be deposited with LAARC.

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17 Acknowledgements

Oxford Archaeology and Ramboll would like to thank Crossrail Ltd for commissioning the work and Jay Carver, Crossrail's Project Archaeologist.

The archaeological work was undertaken by Ben Attfield, Pat Cavanagh, Matt Edmonds, Gary Evans, Vix Hughes, Dave Jamieson, Deborah Nadal, Fergal O Donoghue, Wayne Perkins and Leanne Warring. Andy Shelley and Richard Brown provided Oxford Archaeology/Ramboll project management.

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Appendix 1 Archaeological Context Inventory

Context Number	Context Type	Category
0	Deposit	General surface deposit-mix of modern and re-deposited
7034	Deposit	Make up layer uncovered during GWB in upper terrace of Murphy's Yard
7035	Deposit	Friable brownish grey clay silty clay with occasional brick fragments impressed into it, of an old soil horizon, possibly the original ground surface. Uncovered in GWB on upper terrace of Murphy's Yard
8001	Structure	Concrete footing
8002	Deposit	London Clay-Natural Geology
8003	Deposit	Crushed brick layer
8004	Structure	E-W wall
8005	Structure	N-S wall
8006	Structure	E-W wall
8007	Structure	E-W wall
8008	Structure	E-W wall
8009	Structure	N-S wall
8010	Structure	E-W wall
8011	Structure	N-S wall
8012	Structure	Brick course
8013	Timber	Plank associated with 8009
8014	Deposit	Wall infill
8015	Cut	Construction cut
8016	Cut	Construction cut
8017	Cut	Construction cut
8018	Deposit	Layer
8019	Structure	Concrete slab
8020	Structure	Concrete slab
8021	Cut	Cut for 8019
8022	Cut	Cut for 8020
8023	Deposit	Layer
8024	Cut	Construction cut

8025	Deposit	Layer
8026	Cut	Construction cut
8027	Structure	“Quenching” pit
8028	Void	N/A
8029	Structure	Brick “Forge base”
8030	Structure	E-W Outer wall of Workshop
8031	Void	N/A
8032	Structure	Concrete footing
8033	Structure	Concrete footing
8034	Structure	Concrete footing
8035	Structure	Brick drain
8036	Cut	Cut for 8035
8037	Deposit	Fill
8038	Deposit	Fill
8039	Cut	Construction cut
8040	Structure	Concrete footing
8041	Structure	Concrete footing
8042	Structure	Concrete footing
8043	Structure	Wall of workshop stores
8044	Structure	Wall of workshop stores
8045	Structure	E-W Inspection pit wall latest phase
8046	Structure	E-W Inspection pit wall 2nd phase
8047	Structure	Wall of at eastern end of inspection pit
8048	Structure	N-S wall
8049	Iron	Rails part of in situ standard gauge line
8050	Structure	Concrete above rail
8051	Structure	Drainage
8052	Structure	Concrete footing
8053	Cut	Pipe trench
8054	Deposit	Fill
8055	Deposit	Fill
8056	Cut	Construction cut
8057	Cut	Construction cut
8058	Structure	Ceramic pipe
8059	Structure	Drainage
8060	Structure	Plinth

8061	Structure	Plinth
8062	Structure	Iron drain
8063	Structure	Drain outlet
8064	Timber	Timber post
8065	Structure	Drain
8066	Structure	Wall
8067	Structure	Wall blocking former window of workshop stores
8068	Structure	Wall of workshop stores
8069	Slate	Slate surface
8070	Structure	Plinth
8071	Pipe	Drain pipe
8072	Structure	Wall of workshop stores
8073	Deposit	Fill
8074	Structure	Concrete footing
8075	Deposit	Fill
8076	Structure	E-W Inspection pit wall 1st phase
8077	Structure	E-W Inspection pit wall 1st phase
8078	Structure	E-W Inspection pit wall 1st phase
8079	Structure	E-W Inspection pit wall 1st phase
8080	Structure	E-W Inspection pit wall
8081	Structure	Floor of Inspection pit 2nd phase
8082	Structure	Floor of Inspection pit 1st phase
8083	Structure	Floor of Inspection pit 2nd phase
8084	Deposit	Fill
8085	Deposit	Fill
8086	Structure	Plinth
8087	Structure	Brick base
8088	Structure	Plinth
8089	Structure	N-S wall
8090	Structure	N-S wall
8091	Structure	N-S western end wall of inspection pit
8092	Structure	Ex situ Bridge Rail
8093	Deposit	Fill
8094	Deposit	Fill
8095	Deposit	Fill
8096	Deposit	Fill

8097	Cut	Construction cut
8098	Cut	Robbing cut
8099	Structure	Drain in floor
8100	Cut	Cut for 8099
8101	Structure	Brick drain
8102	Structure	E-W wall
8103	Structure	Concrete footing
8104	Structure	Concrete footing
8105	Deposit	Drain
8106	Structure	Pipe
8107	Deposit	Fill
8108	Cut	Construction cut
8109	Structure	Brick floor 1st phase of inspection pit
8110	Iron	Drain grill
8111	Structure	Drain in floor
8112	Deposit	Fill
8113	Deposit	Fill
8114	Structure	Addition to wall 8050
8115	Structure	N-S Inspection pit wall, latest phase
8116	Structure	E-W Inspection pit wall, latest phase
8117	Structure	N-S wall eastern end of 2nd phase of inspection pit
8118	Structure	N-S wall eastern end of 2nd phase of inspection pit
8119	Structure	E-W wall 2nd phase of inspection pit
8120	Deposit	Fill
8121	Cut	Construction cut
8122	Deposit	Fill
8123	Cut	Construction cut
8124	Deposit	Fill
8125	Cut	Construction cut
8126	Deposit	Fill
8127	Cut	Construction cut
8128	Deposit	Fill
8129	Cut	Construction cut
8130	Structure	Brick floor of Inspection pit
8131	Structure	Brick floor of inspection 1st phase

8132	Structure	Brick in fill
8133	Structure	Pipe
8134	Cut	Construction cut drain
8135	Cut	Drain cut
8136	Deposit	Layer- track ballast
8137	Cut	Cut for pipe
8138	Structure	Concrete footing
8139	Structure	Ceramic drain
8140	Structure	Ceramic pipe
8141	Structure	brick floor
8142	Deposit	Fill
8143	Cut	Cut for pipe
8144	Cut	Cut for pipe
8145	Deposit	Fill
8146	Cut	Service trench
8147	Cut	Construction cut
8148	Cut	Cut for drain
8149	Deposit	Fill
8150	Structure	Concrete bedding for floor of inspection pit
8151	Structure	Concrete bedding for floor of inspection pit
8152	Deposit	Fill
8153	Structure	Culvert
8154	Cut	Construction cut
8155	Deposit	Fill
8156	Structure	Wall
8157	Cut	Construction cut
8158	Cut	Construction cut
8159	Void	N/A
8160	Void	N/A
8161	Deposit	Fill
8162	Deposit	Fill
8163	Cut	Construction cut
8164	Void	N/A
8165	Cut	Construction cut
8166	Void	N/A
8167	Cut	Construction cut

8168	Cut	Cut for pipe
8169	Cut	Construction cut
8170	Cut	Construction cut
8171	Cut	Construction cut
8172	Structure	Culvert
8173	Structure	Curved Wall upper level of 8206 shaft
8174	Structure	Northern Wall of workshop
8175	Structure	E-W wall Partition?
8176	Structure	Drain
8177	Structure	Concrete footing
8178	Cut	Construction cut
8179	Cut	Cut for drain
8180	Structure	Internal wall of workshop
8181	Structure	Internal wall of workshop
8182	Structure	Brick chimney base
8183	Structure	Brick base of rail 8049
8184	Structure	Concrete base of rail 8049
8185	Structure	Northern wall of workshop
8186	Structure	Internal wall of workshop
8187	Structure	Eastern outer wall of workshop
8188	Structure	Wall Internal wall of workshop
8189	Structure	Wall Internal wall of workshop
8190	Structure	Wall Internal wall of workshop
8191	Structure	Wall
8192	Structure	Wall
8193	Structure	Wall
8194	Structure	Wall
8195	Structure	E-W wall
8196	Structure	Concrete floor
8197	Structure	N-S partition wall
8198	Structure	Outer wall of workshop
8199	Structure	Partition wall
8200	Structure	Drain outlet
8201	Structure	Brick lined shaft (upper level)
8202	Deposit	Fill
8203	Deposit	Fill

8204	Structure	Brick lined shaft
8205	Cut	Construction cut
8206	Structure	Brick lined shaft
8207	Structure	Construction cut
8208	Cut	Cut for small brick lined shaft
8209	Structure	Rectangular room joined to 8201
8210	Cut	Construction cut
8211	Cut	Construction cut
8212	Void	N/A
8213	Structure	Culvert
8214	Structure	Rectangular room joined to 8201
8215	Deposit	Fill
8216	Deposit	Fill
8217	Cut	Construction cut
8218	Cut	Construction cut
8219	Cut	Construction cut
8220	Cut	Construction cut
8221	Cut	Construction cut
8222	Cut	Construction cut
8223	Cut	Construction cut
8224	Cut	Construction cut
8225	Cut	Construction cut
8226	Deposit	Demolition layer
8227	Structure	Brick lined shaft (lower level)
8228	Deposit	Fill
8229	Deposit	Fill
8230	Deposit	Fill
8231	Deposit	Fill
8232	Group	Western extension to Workshop 8233
8233	Group	Workshop
8234	Cut	Construction cut for conduit
8235	Group	Brick lined Shaft
8236	Group	Brick lined Shaft
8237	Structure	Conduit
8238	Cut	Construction cut
8239	Structure	Concrete cap- of brick lined shaft

8240	Cut	Construction cut
8241	Deposit	Fill
8242	Deposit	Fill
8243	Group	Brick lined shaft (larger of 3)
8244	Structure	Conduit
8245	Structure	Rectangular room joined to shaft 8203
8246	Deposit	Crushed brick - bedding layer
8247	Cut	Construction cut
8248	Cut	Construction cut
8249	group	Engine Shed
8250	Structure	Conduit
8251	Structure	Conduit
8252	Deposit	Fill
8253	Group	Inspection pit
8254	Group	Inspection pit
8255	Group	Inspection pit
8256	Structure	N- S Wall of smiths shop
8257	Structure	Brick Buttress
8300	Deposit	Layer- track ballast
8301	Deposit	Layer-demolition
8302	Group	Turntable
8303	Deposit	Layer-track ballast
8304	Deposit	Layer-demolition
8305	Deposit	Fill
8306	Cut	Modern pit
8307	Structure	Course of brick
8308	Structure	Concrete foundation
8309	Structure	Fill
8310	Cut	Construction cut
8311	Structure	Brick course
8312	Structure	Brick course
8313	Deposit	Render
8314	Structure	Brick course
8315	Structure	Capping bricks
8316	Structure	Brick course
8317	Structure	Brick course

8318	Structure	Brick course
8319	Structure	Floor
8320	Structure	Concrete footing
8321	Cut	Turntable cut
8322	Deposit	Layer-ballast
8323	Group	Inspection pit
8324	Structure	Wall
8325	Structure	Inspection pit wall
8326	Structure	Inspection pit wall
8327	Structure	Inspection pit wall
8328	Structure	inspection pit floor
8329	Deposit	Fill
8330	Structure	E-W wall
8331	Structure	Floor of turntable
8332	Group	Turntable
8333	Structure	Inspection pit wall
8334	Deposit	Render
8335	Deposit	Render
8336	Structure	Inspection pit wall
8337	Structure	Gully
8338	Group	Wall
8339	Structure	Inspection pit wall
8340	Pipe	Pipe
8341	Structure	Wall
8342	Cut	Pipe trench
8343	Deposit	Fill
8344	Structure	Course of brick
8345	Deposit	Bedding layer
8346	Structure	Indentations in rendered wall
8347	Structure	Wall
8348	Cut	Sleeper
8349	Structure	Construction cut
8350	Deposit	Fill
8351	Deposit	Fill
8352	Cut	Sleeper
8353	Deposit	Fill

8354	Cut	Sleeper
8355	Deposit	Fill
8356	Cut	Sleeper
8357	Cut	Sleeper
8358	Structure	Manhole
8359	Structure	Manhole
8360	Deposit	Fill
8361	Cut	Sleeper
8362	Cut	Sleeper
8363	Cut	Construction cut
8364	Structure	Wall
8365	Cut	Sleeper
8366	Cut	Sleeper
8367	Deposit	Fill
8368	Cut	Sleeper
8369	Cut	Sleeper
8370	Structure	Render
8371	Structure	Copping
8372	Structure	Wall
8373	Structure	Copping
8374	Structure	Wall
8375	Deposit	Fill
8376	Cut	Sleeper
8377	Deposit	Fill
8378	Cut	Sleeper
8379	Structure	Dividing wall inspection pit
8380	Deposit	Fill pipe trench
8381	Cut	Construction trench service
8382	Deposit	Render
8383	Structure	Capping brick
8384	Structure	Capping brick
8385	Structure	Copping
8386	Structure	Wall
8387	Structure	Wall
8388	Deposit	Backfill
8389	Cut	Construction trench

8390	Structure	Concrete foundation
8391	Deposit	Fill
8392	Deposit	Fill
8393	Deposit	Fill
8394	Deposit	Fill
8395	Service	Pipe
8396	Group	Wall
8397	Group	Wall
8398	Structure	Gully
8399	Deposit	Fill
8400	Cut	Catchment pit
8401	Structure	Wall
8402	Structure	Manhole
8403	Structure	Floor
8404	Structure	Plate
8405	Deposit	Concrete foundation
8406	Cut	Construction trench
8407	Deposit	Rubble fill
8408	Deposit	Fill
8409	Cut	Sleeper
8410	Deposit	Fill
8411	Cut	Sleeper
8412	Deposit	Fill
8413	Cut	Sleeper
8414	Deposit	Fill
8415	Cut	Sleeper
8416	Deposit	Fill
8417	Cut	Manhole
8418	Structure	Wall
8419	Structure	Floor
8420	Deposit	Fill
8421	Cut	Sleeper
8422	Deposit	Fill
8423	Cut	Sleeper
8424	Structure	Gasoil pipe
8425	Deposit	Fill

8426	Cut	Sleeper
8427	Deposit	Fill
8428	Cut	Sleeper
8429	Deposit	Fill
8430	Cut	Sleeper
8431	Deposit	Fill
8432	Cut	Sleeper
8433	Deposit	Fill
8434	Cut	Sleeper
8435	Deposit	Fill
8436	Cut	Sleeper
8437	Deposit	Fill
8438	Cut	Sleeper
8439	Cut	Construction trench
8440	Structure	Floor
8441	Deposit	Mortar bedding
8442	Deposit	Mortar bedding
8443	Deposit	Fill
8444	Deposit	Fill
8445	Cut	Construction trench
8446	Structure	Wall
8447		Rails
8448	Structure	Manhole
8449	Cut	Manhole
8450	Deposit	Fill
8451	Structure	Wall
8452	Deposit	Fill
8453	Cut	Sleeper
8454	Deposit	Fill
8455	Cut	Sleeper
8456	Deposit	Fill
8457	Cut	Sleeper
8458	Deposit	Fill
8459	Cut	Sleeper
8460	Deposit	Fill
8461	Cut	Sleeper

8462	Deposit	Fill
8463	Cut	Sleeper
8464	Deposit	Fill
8465	Cut	Sleeper
8466	Deposit	Fill
8467	Cut	Sleeper
8468	Deposit	Fill
8469	Cut	Sleeper
8470	Deposit	Fill
8471	Cut	Sleeper
8472	Deposit	Fill
8473	Cut	Sleeper
8474	Deposit	Fill
8475	Cut	Sleeper
8476	Deposit	Fill
8477	Cut	Sleeper
8478	Deposit	Fill
8479	Cut	Sleeper
8480	Deposit	Fill
8481	Cut	Sleeper
8482	Deposit	Fill
8483	Cut	Sleeper
8484	Deposit	Fill
8485	Cut	Sleeper
8486	Structure	Floor
8487	Deposit	Fill
8488	Cut	Sleeper
8489	Deposit	Fill
8490	Cut	Modern pit
8491	Deposit	Fill
8492	Cut	Sleeper
8493	Deposit	Fill
8494	Cut	Sleeper
8495	Deposit	Fill
8496	Cut	Sleeper
8497	Deposit	Fill

8498	Cut	Sleeper
8499	Deposit	Fill
8500	Cut	Sleeper
8501	Deposit	Fill
8502	Cut	Service trench
8503	Deposit	Fill
8504	Cut	Sleeper
8505	Deposit	Fill
8506	Cut	Sleeper
8507	Deposit	Fill
8508	Cut	Sleeper
8509	Deposit	Fill
8510	Cut	Sleeper
8511	Deposit	Fill
8512	Cut	Sleeper
8513	Deposit	Fill
8514	Cut	Sleeper
8515	Deposit	Fill
8516	Cut	Sleeper
8517	Deposit	Fill
8518	Cut	Sleeper
8519	Deposit	Render
8520	Structure	Course of bricks
8521	Structure	Wall
8522	Structure	Rail around inner wall of turntable
8523	Structure	Gully
8524	Structure	Floor
8525	Structure	Gully
8526	Structure	Floor
8527	Structure	Floor
8528	Structure	Wall
8529	Cut	Construction trench
8530	Structure	Floor
8531	Deposit	Fill
8532	Cut	Sleeper
8533	Deposit	Fill

8534	Cut	Sleeper
8535	Structure	Manhole
8536	Cut	Manhole
8537	Deposit	Fill
8538	Cut	Sleeper
8539	Cut	Construction trench
8540	Structure	Floor
8541	Deposit	Mortar bedding
8542	Deposit	Mortar bedding
8543	Deposit	Fill
8544	Deposit	Fill
8545	Cut	Construction trench
8546	Structure	Wall
8547	Rails	Manhole
8548	Structure	Manhole
8549	Cut	Drain
8550	Deposit	Fill
8551	Structure	Wall
8552	Deposit	Fill
8553	Cut	Sleeper
8554	Deposit	Fill
8555	Cut	Sleeper
8556	Deposit	Fill
8557	Cut	Sleeper
8558	Deposit	Fill
8559	Cut	Sleeper
8560	Deposit	Fill
8561	Cut	Sleeper
8562	Deposit	Fill
8563	Cut	Sleeper
8564	Deposit	Fill
8565	Cut	Sleeper
8566	Deposit	Fill
8567	Cut	Sleeper
8568	Deposit	Fill
8569	Cut	Sleeper

8570	Deposit	Fill
8571	Cut	Sleeper
8572	Deposit	Fill
8573	Cut	Sleeper
8574	Deposit	Fill
8575	Cut	Sleeper
8576	Deposit	Fill
8577	Cut	Sleeper
8578	Deposit	Fill
8579	Cut	Sleeper
8580	Deposit	Fill
8581	Cut	Sleeper
8582	Structure	N-S wall
8583	Structure	Floor
8584	Structure	Wall
8585	Structure	Wall
8586	Structure	E-W wall
8587	Structure	E-W wall
8588	Structure	Plinth
8589	Structure	Plinth
8590	Structure	Plinth
8591	Structure	Plinth
8592	Structure	Drain
8593	Structure	Drain
8594	Structure	E-W wall
8595	Structure	Concrete
8596	Structure	N-S wall
8597	Structure	N-S wall
8598	Structure	Metal fixture
8599	Structure	Wooden sleeper
8600	Structure	Metal fixture
8601	Structure	Construction cut
8602	Structure	Construction cut
8603	Structure	Construction cut
8604	Structure	Construction cut
8605	Structure	Construction cut

8606	Structure	Construction cut
8607	Structure	Concrete inlay in floor
8608	Structure	Metal fixture
8609	Structure	Metal fixture
8610	Structure	Metal fixture
8611	Structure	Metal fixture
8612	Structure	Metal fixture
8613	Structure	Metal fixture
8614	Structure	Metal fixture
8615	Structure	Metal fixture
8616	Structure	Metal fixture
8617	Structure	Metal fixture
8618	Structure	Metal fixture
8619	Structure	Metal fixture
8620	Structure	Metal fixture
8621	Structure	Metal fixture
8622	Structure	Metal fixture
8623	Structure	Metal fixture
8624	Structure	Metal fixture
8625	Structure	Metal fixture
8626	Structure	Metal fixture
8627	Deposit	Fill
8628	Deposit	Fill
8629	Cut	Sleeper
8630	Structure	Wall
8631	Structure	Floor
8632	Structure	Floor
8633	Structure	Drain
8634	Group	
8635	Structure	Wall
8636	Structure	Floor
8637	Structure	Wall
8638	Structure	Drain
8639	Group	
8640	Structure	Floor
8641	Structure	Wall

8642	Structure	Wall
8643	Structure	Wall
8644	Structure	Wall
8645	Structure	Floor
8646	Structure	Floor
8647	Deposit	Fill
8648	Group	
8649	Cut	Construction cut
8650	Group	Inspection pit
8651	Structure	Drain
8652	Structure	Drain
8653	Structure	Wall
8654	Structure	Semi-circular access chamber
8655	Structure	Conduit
8656	Structure	E-W wall
8657	Structure	Wall
8658	Structure	Wall
8659	Structure	Wall
8660	Structure	Wall
8661	Structure	Brick buttress
8662	Structure	Wall
8663	Structure	N-S wall
8664	Structure	N-S wall
8665	Structure	Wall
8666	Structure	Wall
8667	Structure	Brick buttress
8668	Structure	Brick buttress
8669	Structure	Drain
8670	Structure	Wall
8671	Deposit	Mortar bedding
8672	Group	Wall
8673	Group	Wall
8674	Deposit	Layer
8675	Deposit	Crushed red brick layer
8676	Deposit	Layer
8677	Structure	Wall

8678	Structure	Brick buttress
8679	Structure	Brick buttress
8680	Structure	Floor
8681	Deposit	Floor
8682	Deposit	London Clay- Natural Geology
8683	Structure	Inspection pit wall
8684	Structure	Floor
8685	Structure	Drain
8686	Deposit	Bedding for floor
8687	Deposit	Bedding for floor
8688	Structure	Drain
8689	Structure	Inspection pit wall
8690	Deposit	Bedding for floor
8691	Structure	Floor
8692	Structure	Drain cover
8693	Structure	Inspection pit wall
8694	Deposit	Bedding for floor
8695	Structure	Inspection pit wall
8696	Structure	Floor
8697	Structure	Inspection pit wall
8698	Deposit	Bedding for floor
8699	Structure	Wall
8700	Cut	Construction trench
8701	Structure	Inspection pit wall
8702	Structure	Render
8703	Structure	Drain
8704	Deposit	Backfill
8705	Deposit	Sub base
8706	Group	Inspection pit
8707	Group	Inspection pit
8708	Group	Inspection pit
8709	Group	Inspection Pit
8710	Group	Inspection pit
8711	Structure	Conduit
8712	Cut	Construction trench
8713	Cut	Construction trench

8714	Cut	Construction trench
8715	Deposit	Tiles
8716	Deposit	Bedding for floor
8717	Deposit	Layer
8718	Structure	Wall
8719	Deposit	Concrete
8720	Structure	Wall
8721	Structure	Inspection pit wall
8722	Structure	Inspection pit wall
8723	Structure	Floor
8724	Group	Inspection pit cut
8725	Cut	Construction trench
8726	Deposit	Concrete
8727	Deposit	Fill
8728	Structure	Inspection pit wall
8729	Structure	Inspection pit wall
8730	Structure	Inspection pit wall
8731	Cut	Construction trench
8732	Group	Inspection pit wall
8733	Structure	Buttress
8734	Structure	Wall
8735	Deposit	Concrete
8736	Deposit	Fill
8737	Deposit	Concrete
8738	Deposit	Fill
8739	Structure	Tiles
8740	Deposit	Concrete
8741	Structure	Buttress
8742	Structure	Wall
8743	Structure	Wall
8744	Cut	Construction cut
8745	Cut	Construction trench
8746	Structure	Wall
8747	Structure	Wall
8748	Fixtures	Iron plates
8749	Deposit	Fill

8750	Deposit	Fill
8751	Structure	Inspection pit wall
8752	Structure	Wall
8753	Deposit	Fill
8754	Cut	Construction trench
8755	Deposit	London Clay-Natural geology
8756	Structure	Drain cover
8757	Structure	Floor
8758	Structure	Inspection pit wall
8759	Structure	Step
8760	Structure	Inspection pit wall
8761	Structure	Inspection pit wall
8762	Structure	Stanchion base
8763	Structure	Step
8764	Structure	Inspection pit wall
8765	Structure	Inspection pit wall
8766	Cut	Construction trench
8767	Group	Inspection pit
8768	Structure	Inspection pit wall
8769	Structure	Floor
8770	Cut	Construction trench
8771	Structure	Floor
8772	Deposit	Concrete
8773	Structure	Manhole
8774	Structure	Pipe
8775	Structure	Floor
8776	Structure	Step
8777	Cut	Construction Cut
8778	Structure	Inspection pit wall
8779	Structure	Inspection pit wall
8780	Structure	Pipe
8781	Deposit	Fill
8782	Cut	Construction Cut
8783	Structure	Wall
8784	Cut	Construction Cut
8785	Group	Inspection pit wall

8786	Group	Inspection pit wall
8787	Group	Inspection pit wall
8788	Group	Inspection pit wall
8789	Cut	Construction Cut
8790	Cut	Construction Cut
8791	Structure	Outer Wall
8792	Group	Turntable pit
8793	Structure	Foundation
8794	Deposit	Underpinning
8795	Structure	Drain
8796	Structure	Buttress
8797	Structure	Wall
8798	Structure	Buttress
8799	Structure	Buttress
8800	Structure	Machine room
8801	Structure	Gully
8802	Structure	Guide Rail
8803	Structure	Fitting
8804	Structure	Floor
8805	Structure	Fitting
8806	Structure	Inspection pit wall
8807	Structure	Iron plate
8808	Deposit	Sub base cinders
8809	Deposit	Concrete
8810	Structure	Concrete
8811	Deposit	Fill
8812	Deposit	Fill
8813	Deposit	Cobbles
8814	Deposit	Layer
8815	Voided	Voided
8816	Cut	Construction Cut
8817	Structure	Manhole
8818	Structure	Manhole
8819	Structure	Gully
8820	Structure	Gully
8821	Deposit	Concrete

8822	Deposit	Concrete
8823	Deposit	Concrete
8824	Deposit	Layer ash
8825	Structure	Wall
8826	Deposit	Foundation
8827	Deposit	Foundation
8828	Structure	Tank
8829	Cut	Construction Cut
8830	Cut	Construction Cut
8831	Deposit	Fill
8832	Structure	Wall
8833	Structure	Wall
8834	Deposit	Layer cinder
8835	Group	Wall
8836	Structure	Floor
8837	Cut	Construction Cut
8838	Group	Turntable pit
8839	Structure	Drain
8840	Service	Drain
8841	Structure	Wall
8842	Structure	Wall
8843	Structure	Cobbles
8844	Structure	Wall
8845	Deposit	Sub base concrete
8846	Structure	Wall
8847	Structure	Wall
8848	Structure	Wall
8849	Structure	Wall
8850	Structure	Wall
8851	Structure	Drain
8852	Structure	Catchment pit
8853	Group	Catchment pit
8854	Group	Inspection pit
8855	Structure	Wall
8856	Structure	Wall
8857	Structure	Wall

8858	Structure	Wall
8859	Structure	Wall
8860	Structure	Wall
8861	Structure	Catchment pit
8862	Structure	Wall
8863	Structure	Wall
8864	Deposit	Fill
8865	Deposit	Fill
8866	Service	Pipe
8867	Cut	Service Trench
8868	Cut	Sleeper
8869	Cut	Sleeper
8870	Structure	Wall
8871	Structure	Wall
8872	Structure	Wall
8873	Structure	Concrete sub base
8874	Deposit	Gravel sub base
8875	Deposit	Floor
8876	Deposit	Floor
8877	Deposit	Mortar sub base
8878	Cut	Pipe trench
8879	Deposit	Fill
8880	Structure	Wall
8881	Structure	Plinth
8882	Cut	Drainage
8883	Deposit	Fill
8884	Structure	Foundation
8885	Structure	Wall
8886	Structure	Buttress
8887	Deposit	Wall
8888	Structure	Buttress
8889	Cut	Construction Cut
8890	Deposit	Gravel sub base
8891	Structure	Access Chamber
8892	Structure	Access Chamber
8893	Structure	Access Chamber

8894	Cut	Construction Cut
8895	Cut	Construction Cut
8896	Cut	Construction Cut
8897	Group	Access Chamber
8898	Structure	Marcon Sewer
8899	Structure	Buttress
8900	Structure	Wall
8901	Structure	Wall
8902	Structure	Wall
8903	Structure	Wall
8904	Structure	Buttress
8905	Structure	Wall
8906	Deposit	Fill
8907	Group	Inspection pit
8908	Structure	Wall
8909	Structure	Drain
8910	Structure	Concrete
8911	Structure	Wall
8912	Group	Narrow Gauge shed Phase I
8913	Group	Narrow Gauge shed Phase II
8914	Group	Inspection pit
8915	Group	Inspection pit
8916	Group	Inspection pit
8917	Group	Inspection pit wall
8918	Group	Inspection pit wall
8919	Group	Inspection pit wall
8920	Group	Inspection pit wall
8921	Group	Inspection pit wall
8922	Group	Inspection pit wall
8923	Group	Inspection pit wall
8924	Group	Inspection pit wall
8925	Group	Inspection pit wall
8926	Group	Inspection pit wall

Appendix 2 Summary of Site Details

Client name: Crossrail Ltd

Site name: Paddington New Yard

Site code: XSI10

Grid reference: TQ 257 815
Type of investigation: Targeted and General Watching Brief

Date and duration of project: 11th April- 21st November 2014, 30 Weeks
Location of archive: The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES, and were deposited with the Museum of London in due course.

Appendix 3 – SMR / HER / OASIS Record forms

OASIS DATA COLLECTION FORM: England

Printable version

OASIS ID: oxfordar1-218369

Project details

Project name	Paddington New Yard, Westbourne Park, London W9
Short description of the project	This report details archaeological work undertaken by Oxford Archaeology/Ramboll during 2014 in connection with Crossrail works at Paddington New Yard, City of Westminster, London W9. The site lies just to the west of the newly constructed western portal for the Crossrail tunnels (Royal Oak Portal). The archaeological works comprised a mixture of trial trenching, and Targeted and General Watching Briefs. These took place during the construction of an elevated bus deck for the Westbourne Park bus garage and concrete batching plant as well as track realignment, and drainage for the Crossrail tunnel approaches. The well-preserved below ground remains of a number of structures were uncovered and recorded during the project. These included brick-built turntable pits, the walls of engine sheds and below-ground inspection pits, as well as sections of the Marcon Sewer. All of the remains related either to the Great Western Railway's locomotive department workshops and stabling sheds which were present on the site from c.1853 to 1907, or subsequent developments of the site by the GWR and their successor bodies. These remains can be reasonably well-dated by documentary and cartographic sources. The depot, which was designed by the Great Western Railway's Chief Engineer Isambard Kingdom Brunel and his Locomotive Superintendent Daniel Gooch, was an important component of, what was at the time, one of the most innovative railways in the world. The national and international significance of the Paddington to Bristol section of the Great Western Railway is shown by the fact that it was considered for UNESCO World Heritage Site status in 2000.
Project dates	Start: 11-04-2014 End: 21-11-2014
Previous/future work	Yes / Not known
Any associated project reference codes	XSI10 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Transport and Utilities 2 - Other transport infrastructure
Monument type	TURNTABLE PIT Post Medieval
Monument type	WORKSHOPS Post Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	TOBACCO PIPE Post Medieval
Significant Finds	BRICKS Post Medieval
Significant Finds	BRICKS Modern
Methods & techniques	"'Targeted Trenches'"

Development type	Rail links/railway-related infrastructure (including Channel Tunnel)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	GREATER LONDON CITY OF WESTMINSTER PADDINGTON BAYSWATER AND KNIGHTSBRIDGE Paddington New Yard, Westbourne Park, London W9
Study area	9000.00 Square metres
Site coordinates	TQ 25118 81775 51.5205232632 -0.196426751151 51 31 13 N 000 11 47 W Point

Project creators

Name of Organisation	Oxford Archaeology/Ramboll (OAR)
Project brief originator	Crossrail
Project design originator	Oxford Archaeology/Ramboll (OAR)
Project director/manager	R. Brown
Project supervisor	Oxford Archaeology
Type of sponsor/funding body	Crossrail

Project archives

Physical Archive recipient	Museum of London
Physical Archive ID	XSD10
Physical Contents	"Ceramics","Glass","Metal"
Digital Archive recipient	Museum of London
Digital Archive ID	XSD10
Digital Contents	"other"
Digital Media available	"Images raster / digital photography","Survey","Text"
Paper Archive recipient	Museum of London
Paper Archive ID	XSD10
Paper Contents	"Ceramics","Metal","other"
Paper Media available	"Context sheet","Photograph","Plan","Report","Section","Unpublished Text"

Project bibliography 1

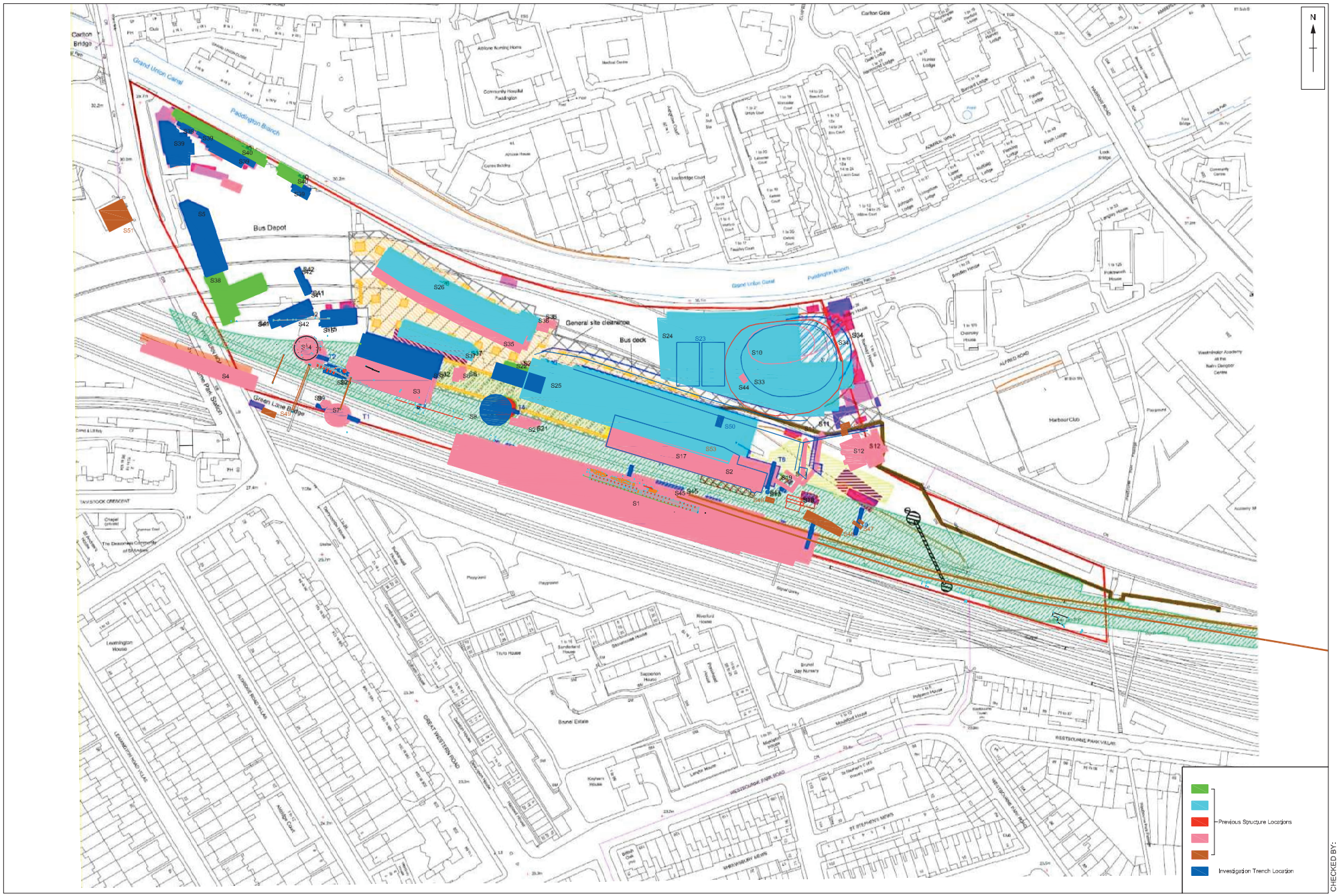
Publication type	Grey literature (unpublished document/manuscript)

Title	Paddington New Yard, Westbourne Park, London W9
Author(s)/Editor(s)	OA/Ramboll
Date	2015
Issuer or publisher	OA/Ramboll
Place of issue or publication	Oxford
Description	Client report

Entered by	Susan Rawlings (susan.rawlings@oxfordarch.co.uk)
Entered on	20 July 2015

OASIS:

Please e-mail Historic England for OASIS help and advice



0 100 m

Scale at A3 1:2000

Figure 2: Location of structures (from historic sources) and investigation trenches.

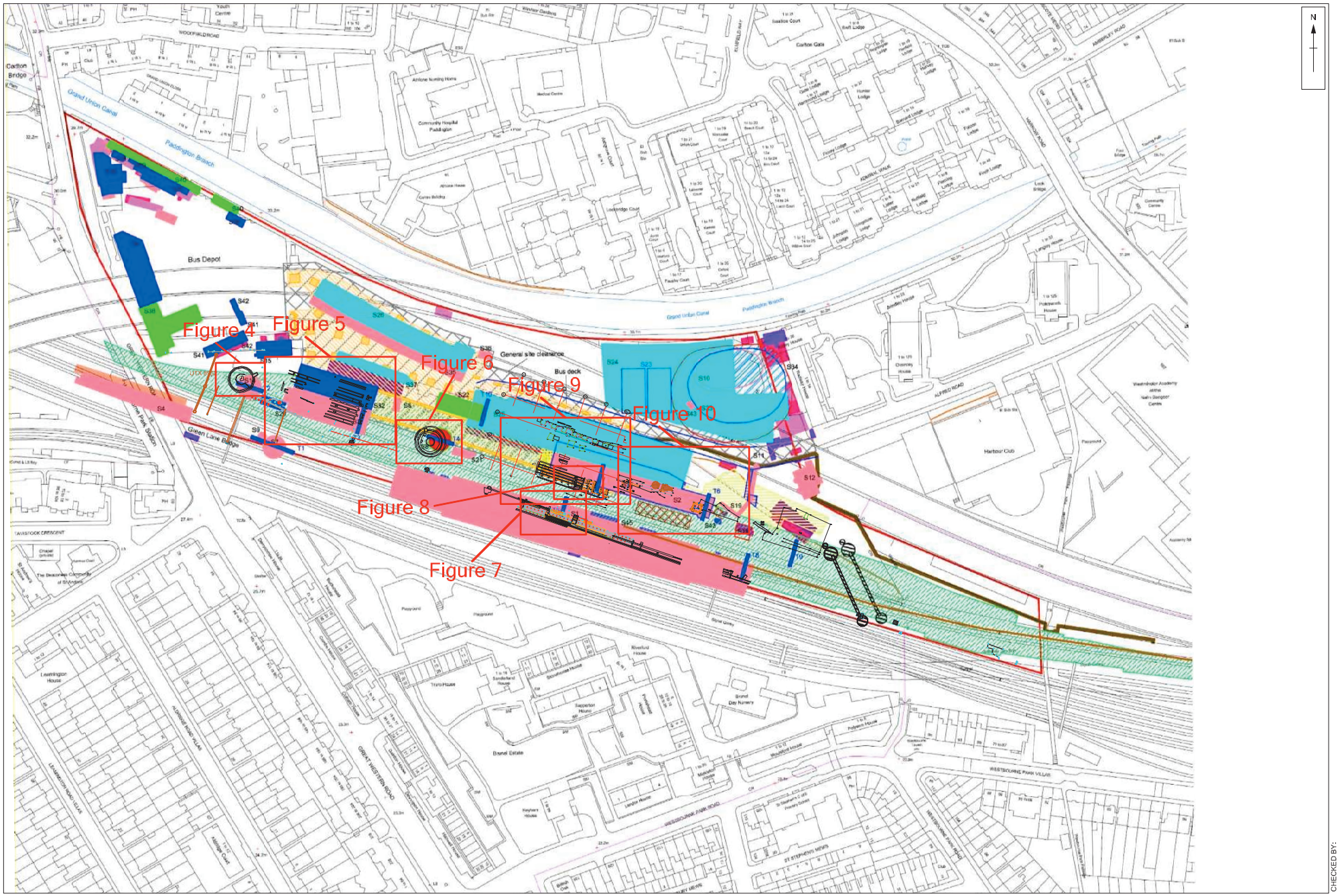


Figure 3: Overview of archaeological areas

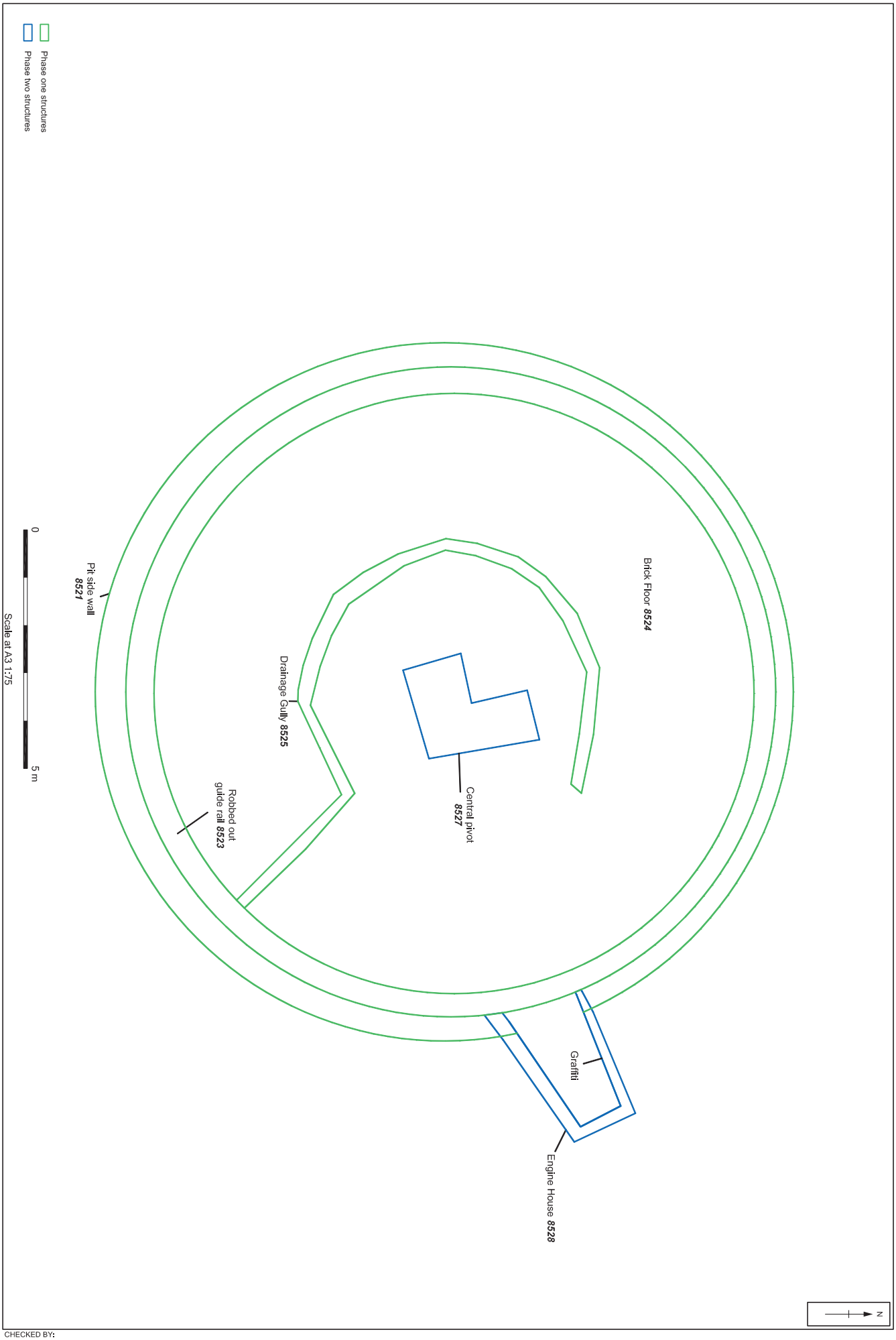


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Figure 4: Plan of Turntable - Structure 14

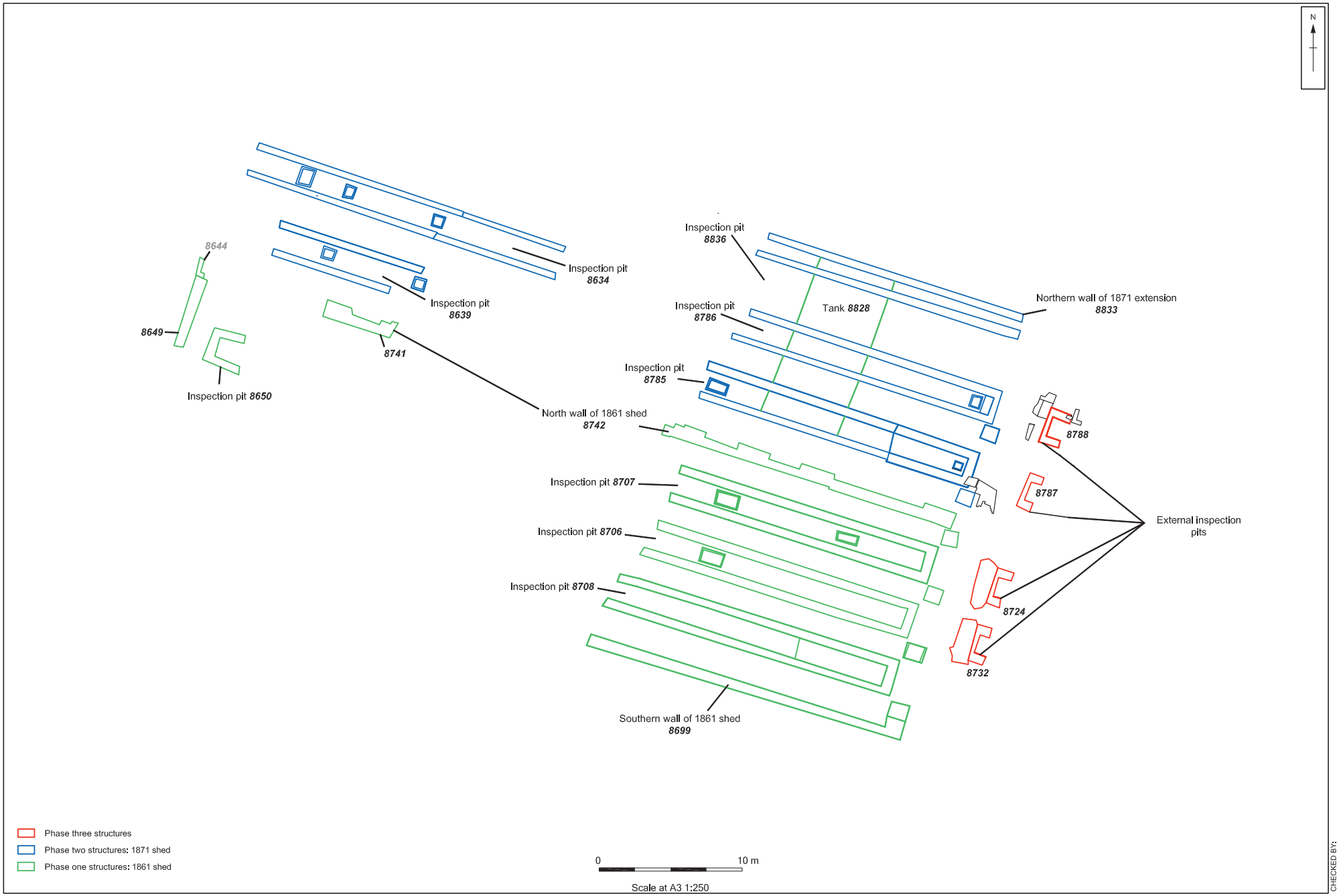
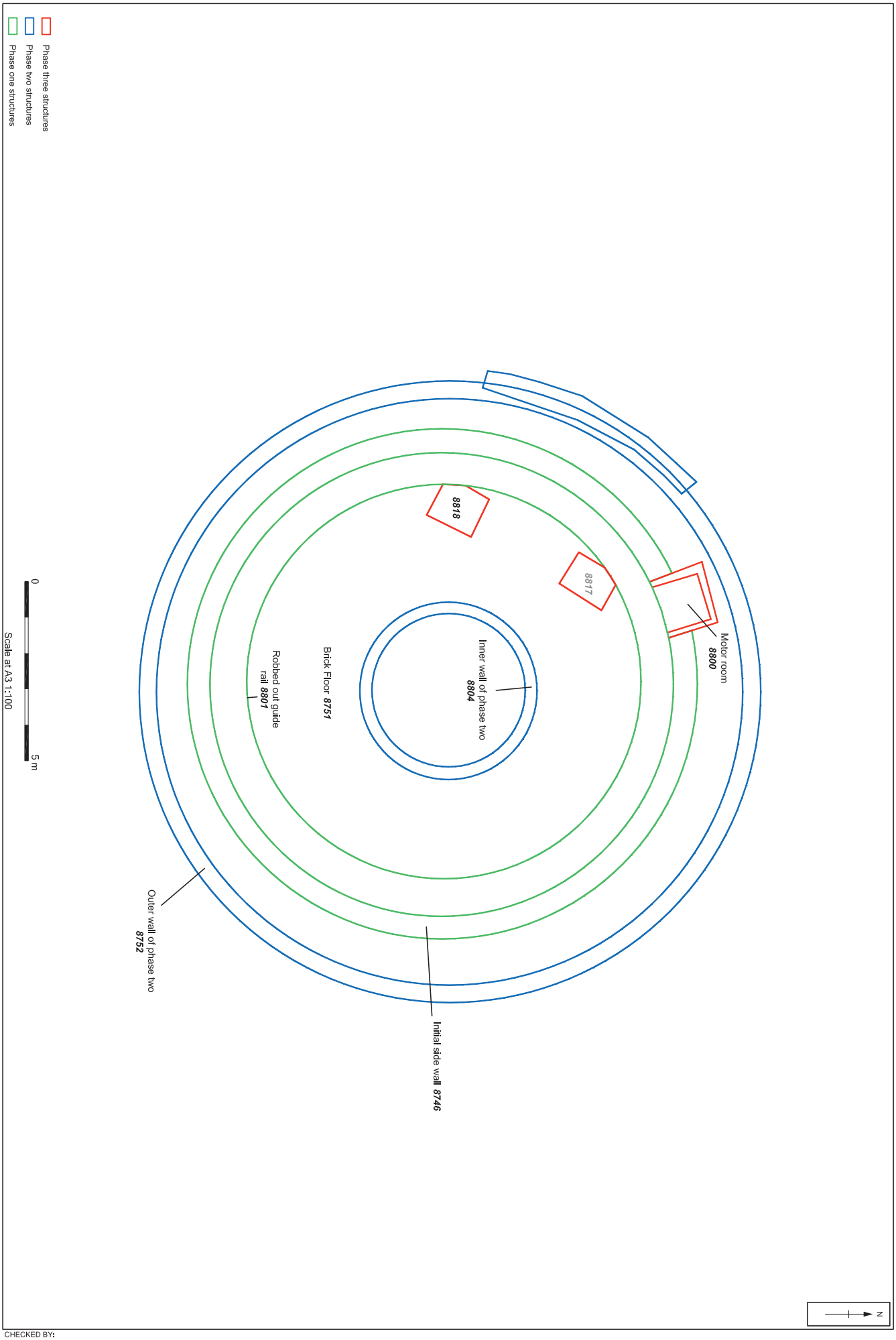


Figure 5: Plan of Narrow Gauge Engine Shed - Structure 3/32



CHECKED BY:

Figure 6: Plan of Turntable - Structure 8

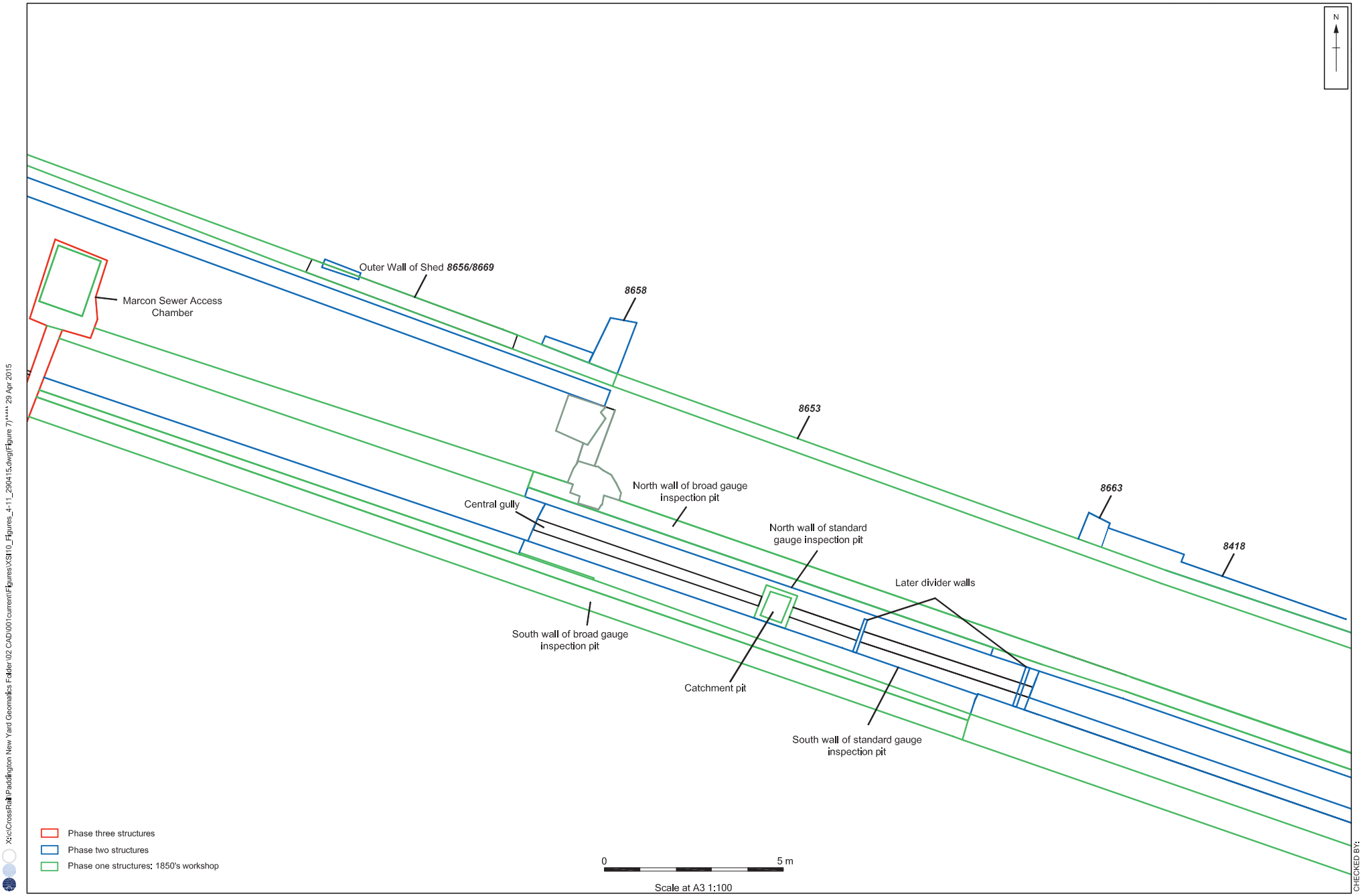


Figure 7: Plan of Middle Section of Broad Gauge Engine Shed - Structure 1

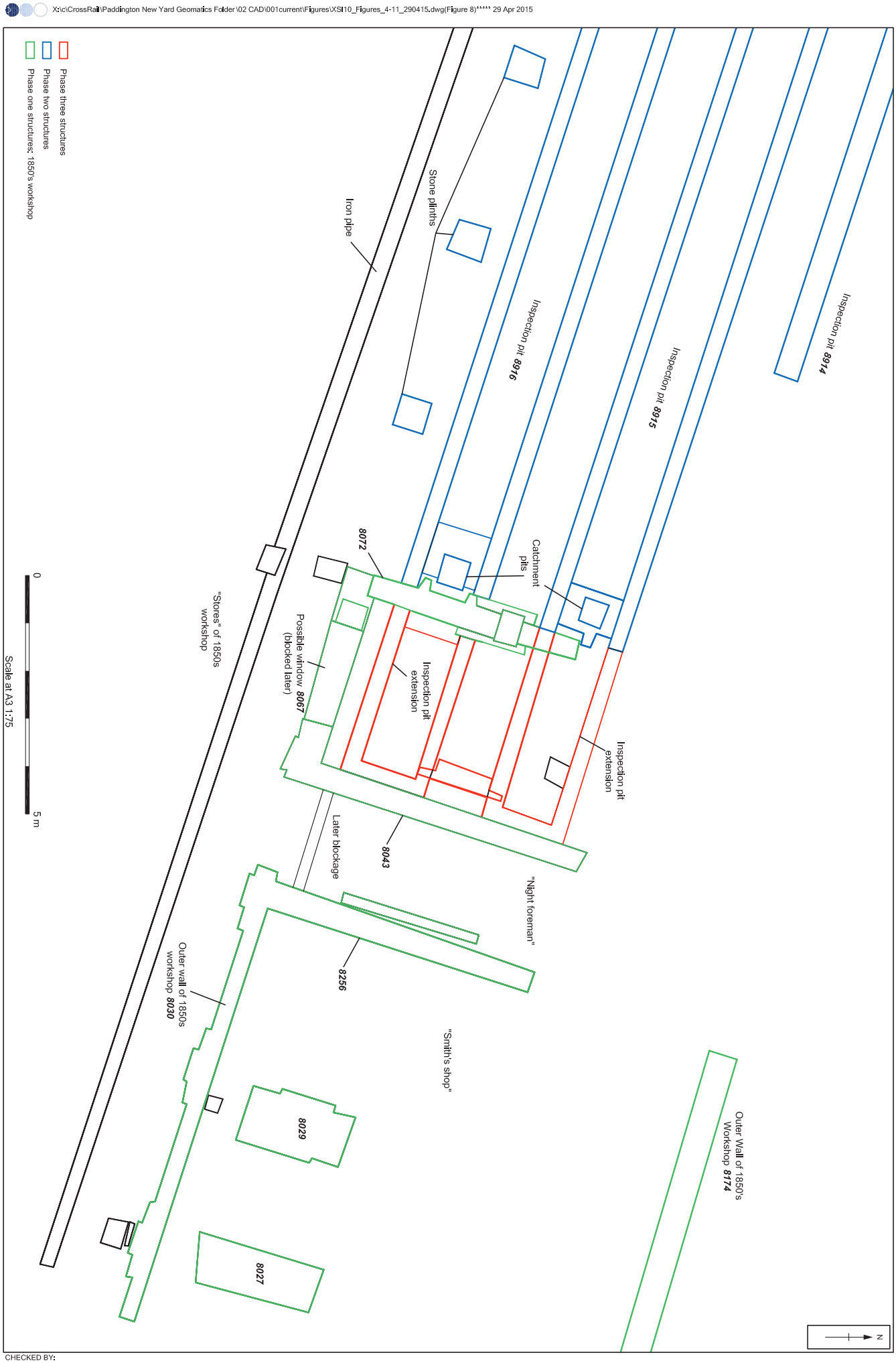


Figure 8: Plan of Western End of Workshop Structure 2

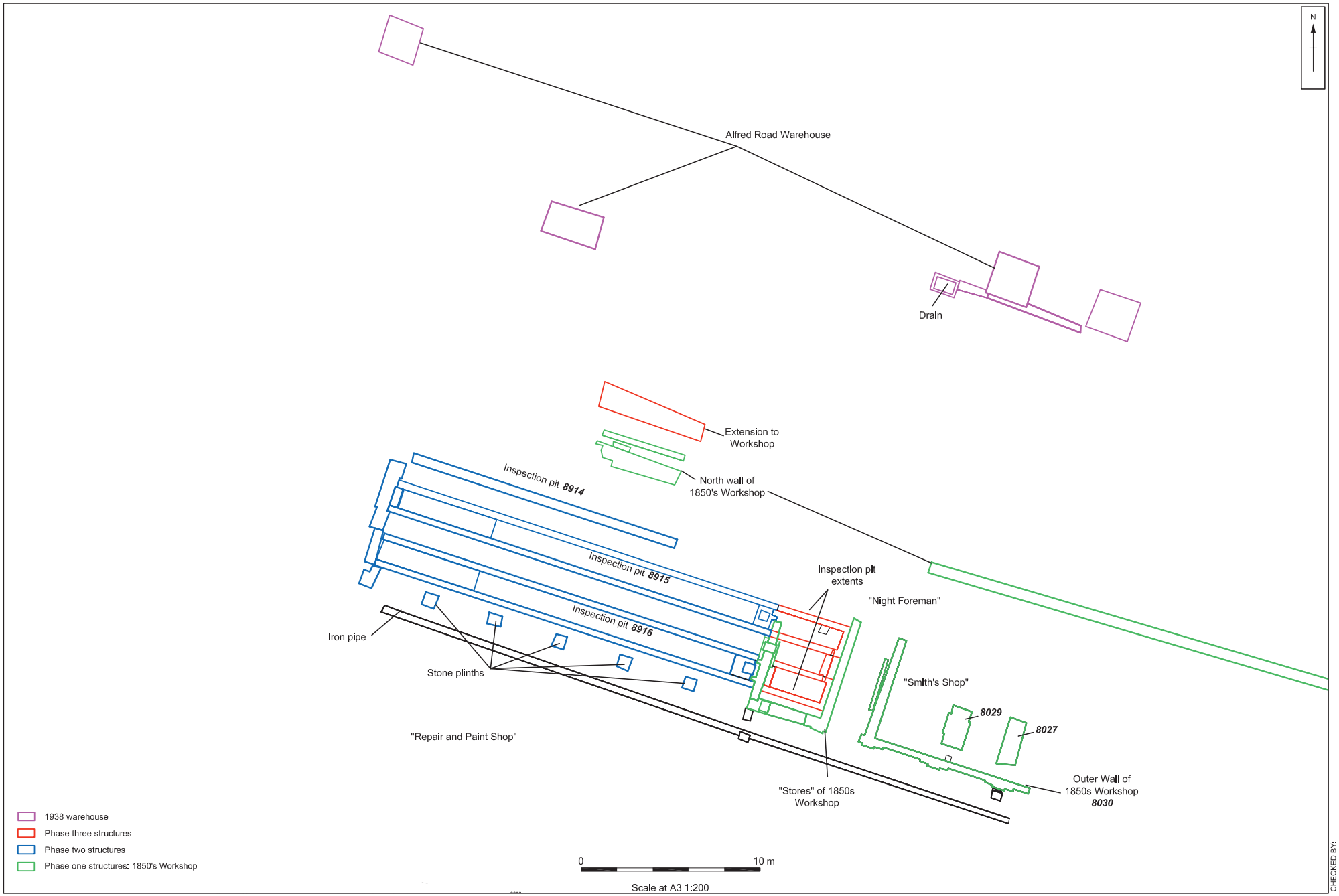


Figure 9: Plan of Workshop (Structure 2) and Alfred Road Warehouse Structure 17

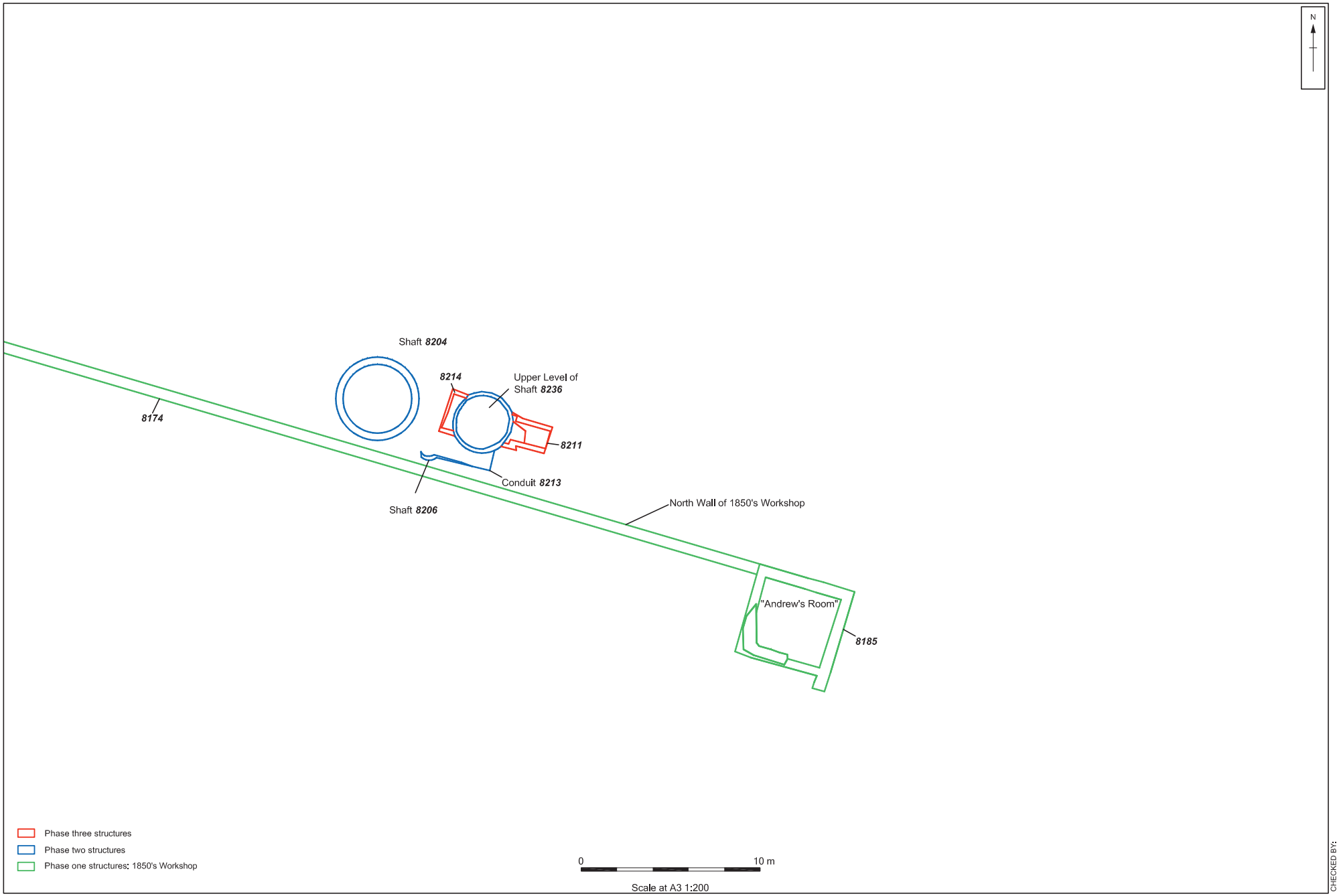


Figure 10: Eastern End of Workshop (Structure 2) and Later "Well" Complex

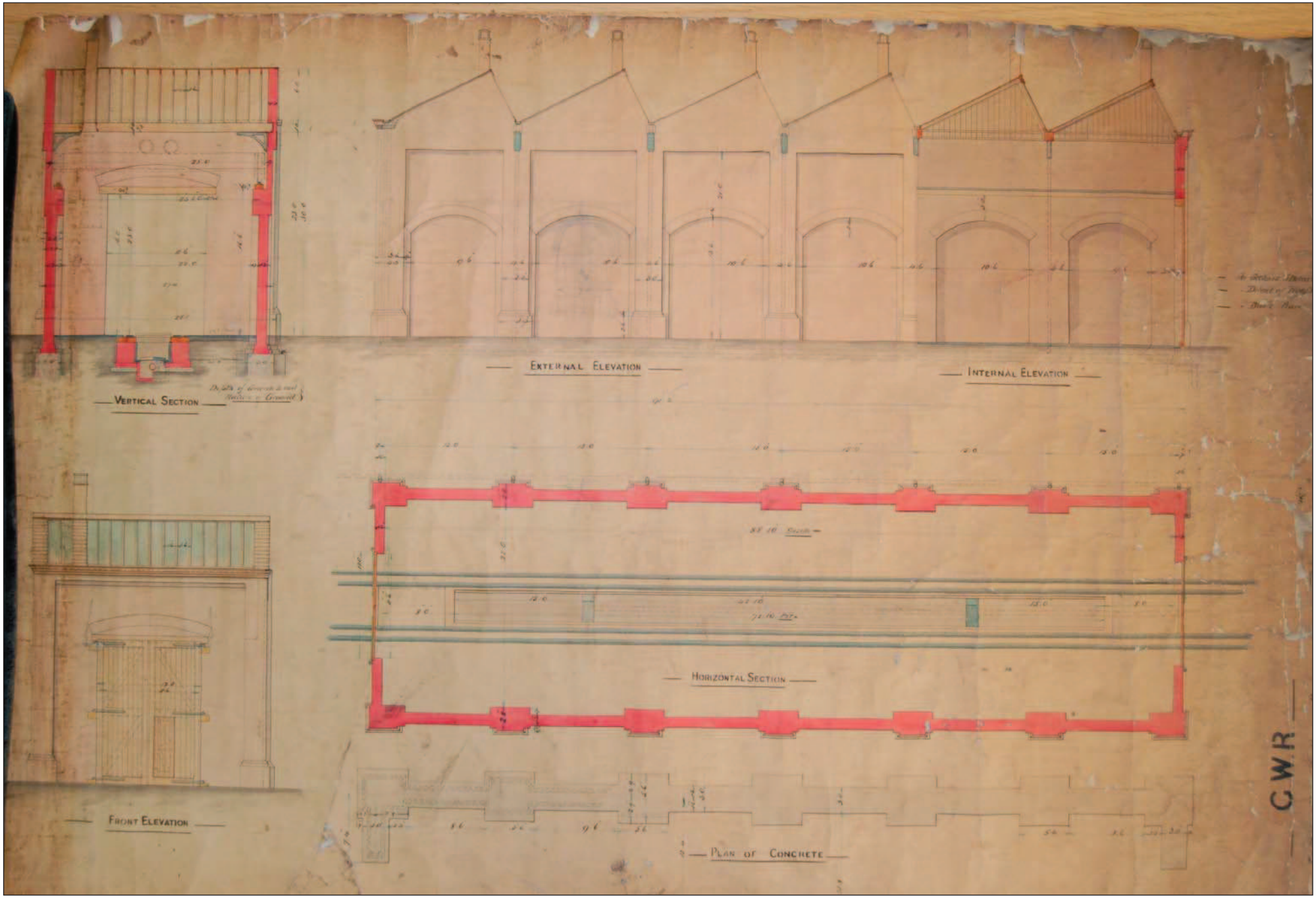


Figure 11 a: 1879 Proposed lifting shop; plan and elevation

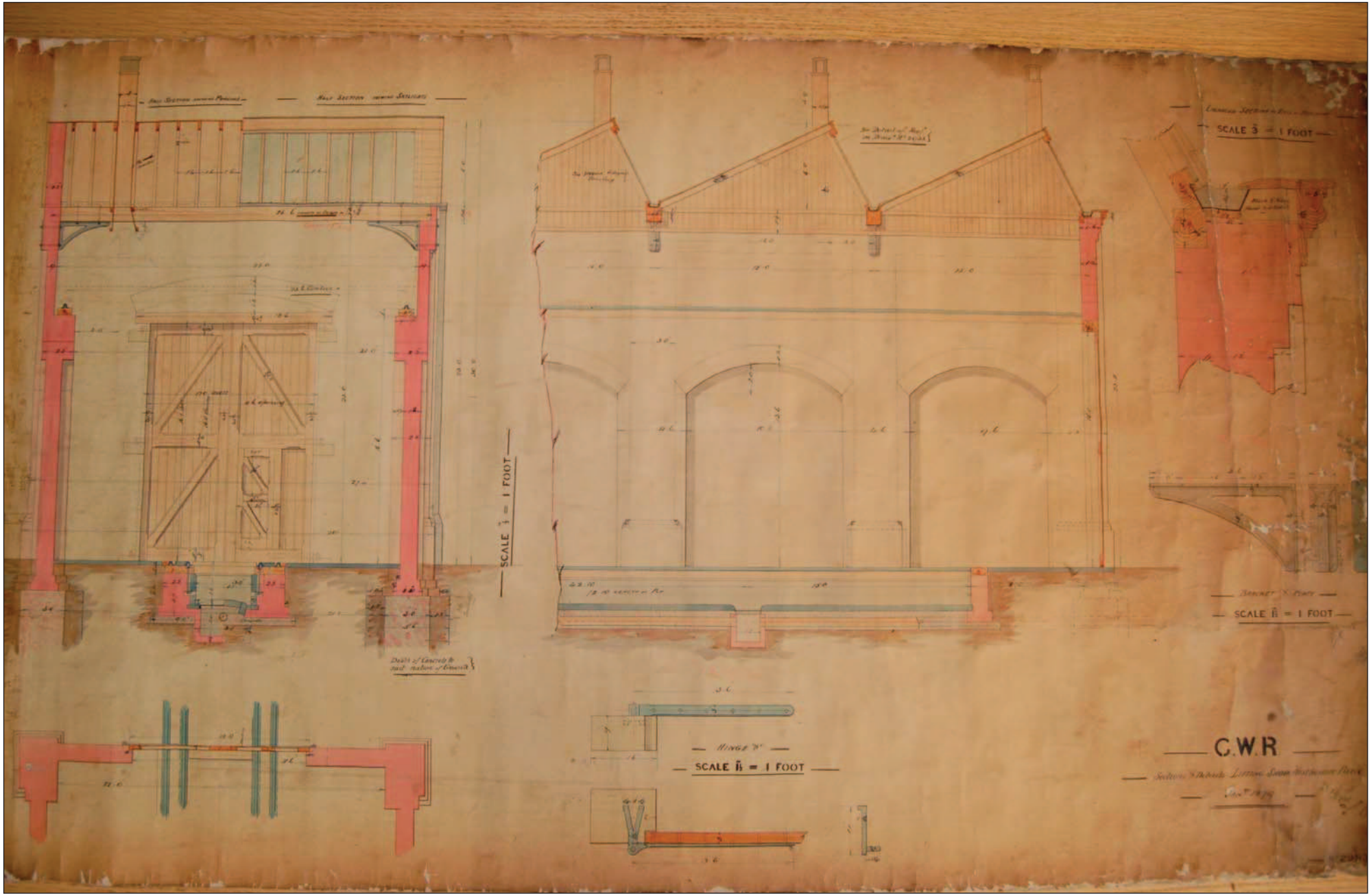


Figure 11 b: 1879 Proposed lifting shop; plan and elevation

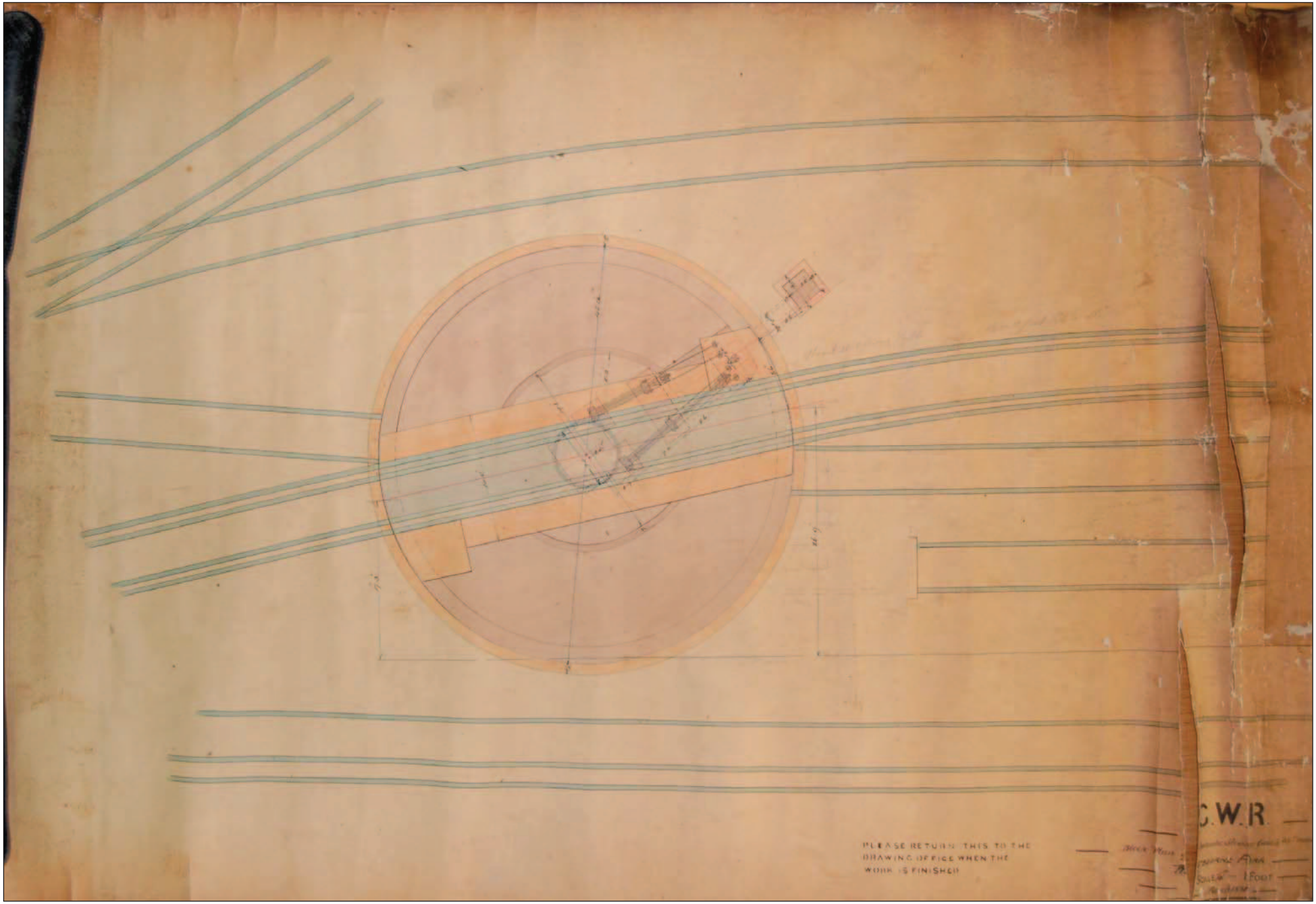


Figure 12: 1881 Plan for a turntable

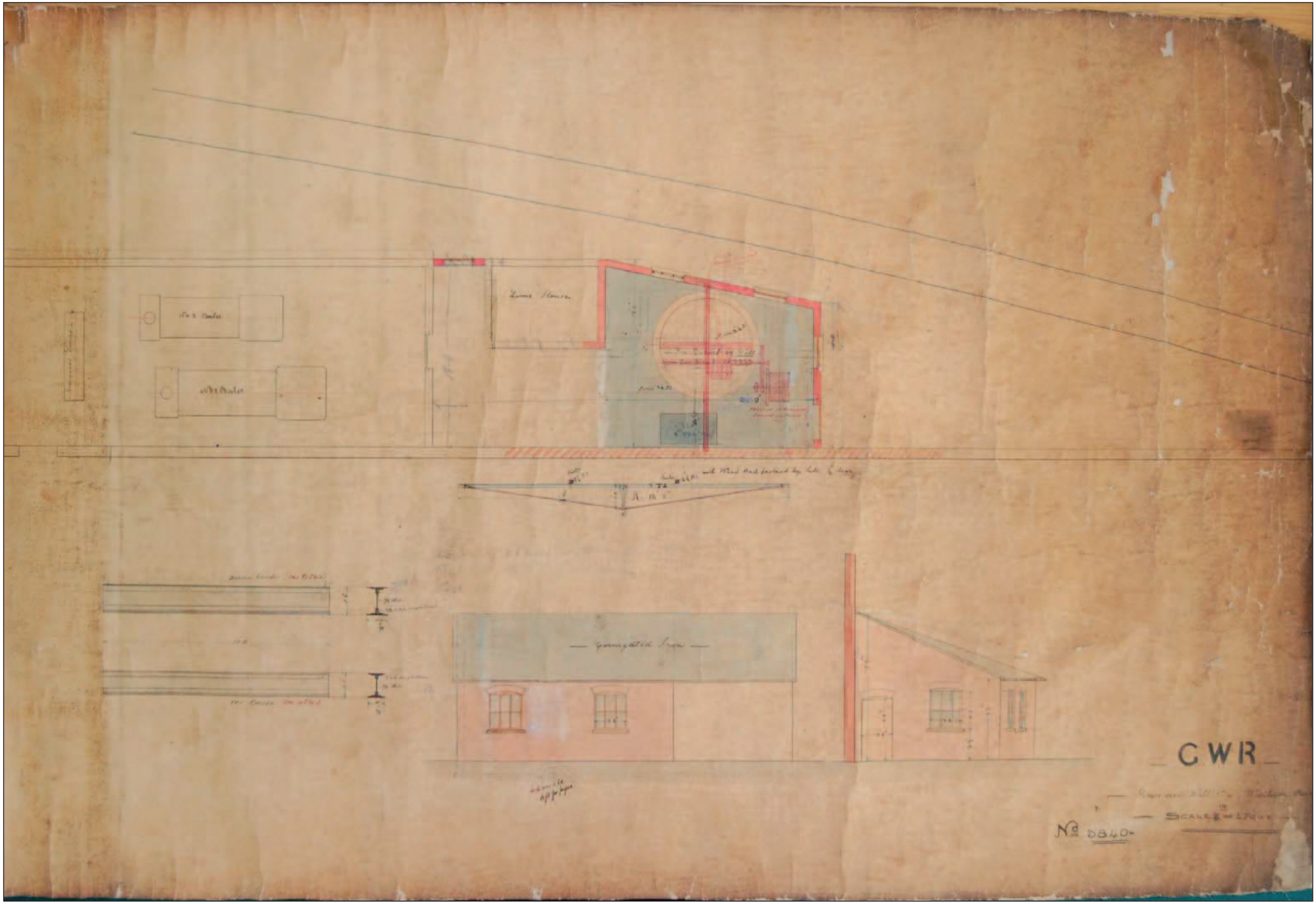


Figure 13: 1891 Plan of boiler and pump room

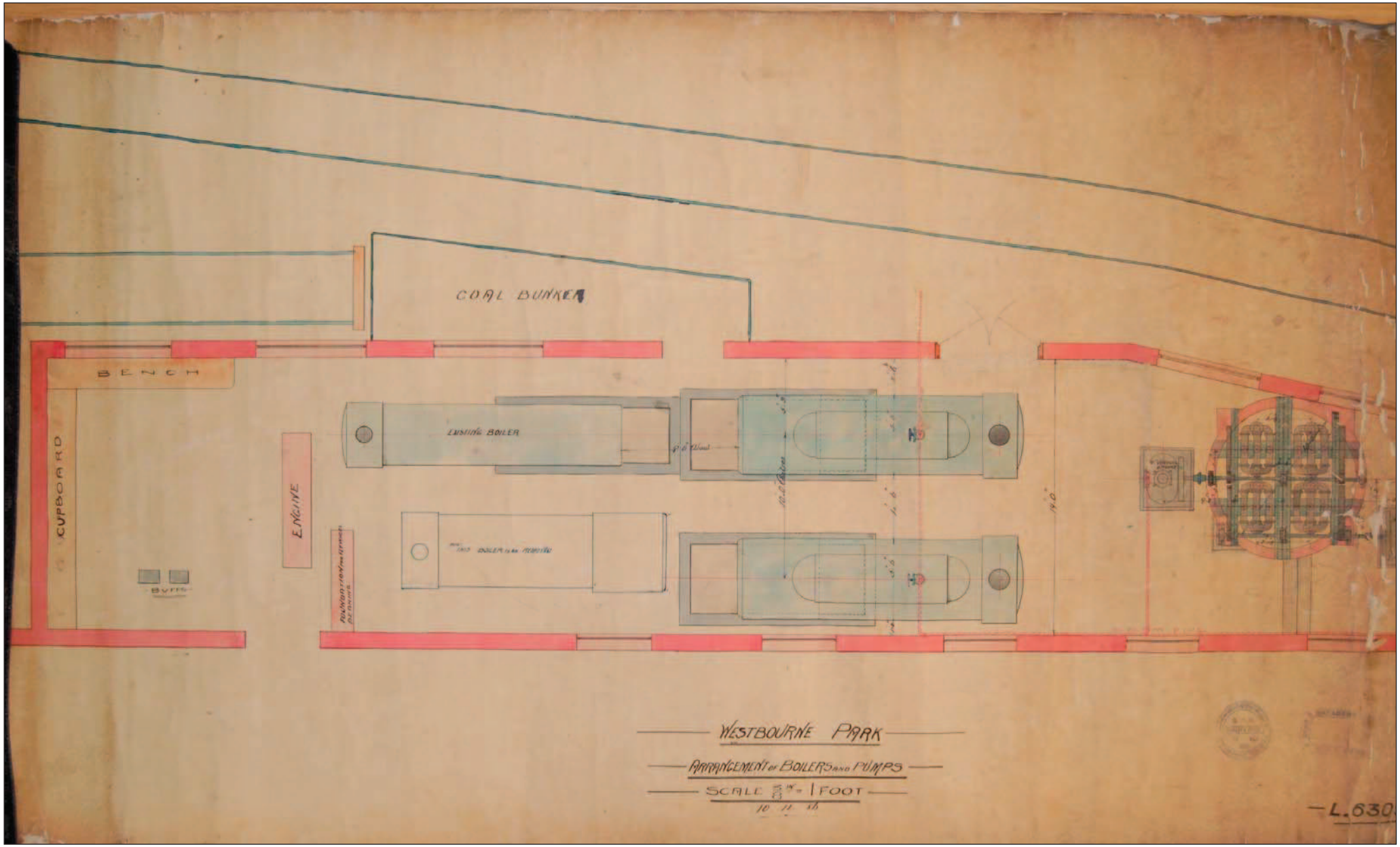


Figure 14: 1886 Workshop engine, boiler and pump room proposal plan

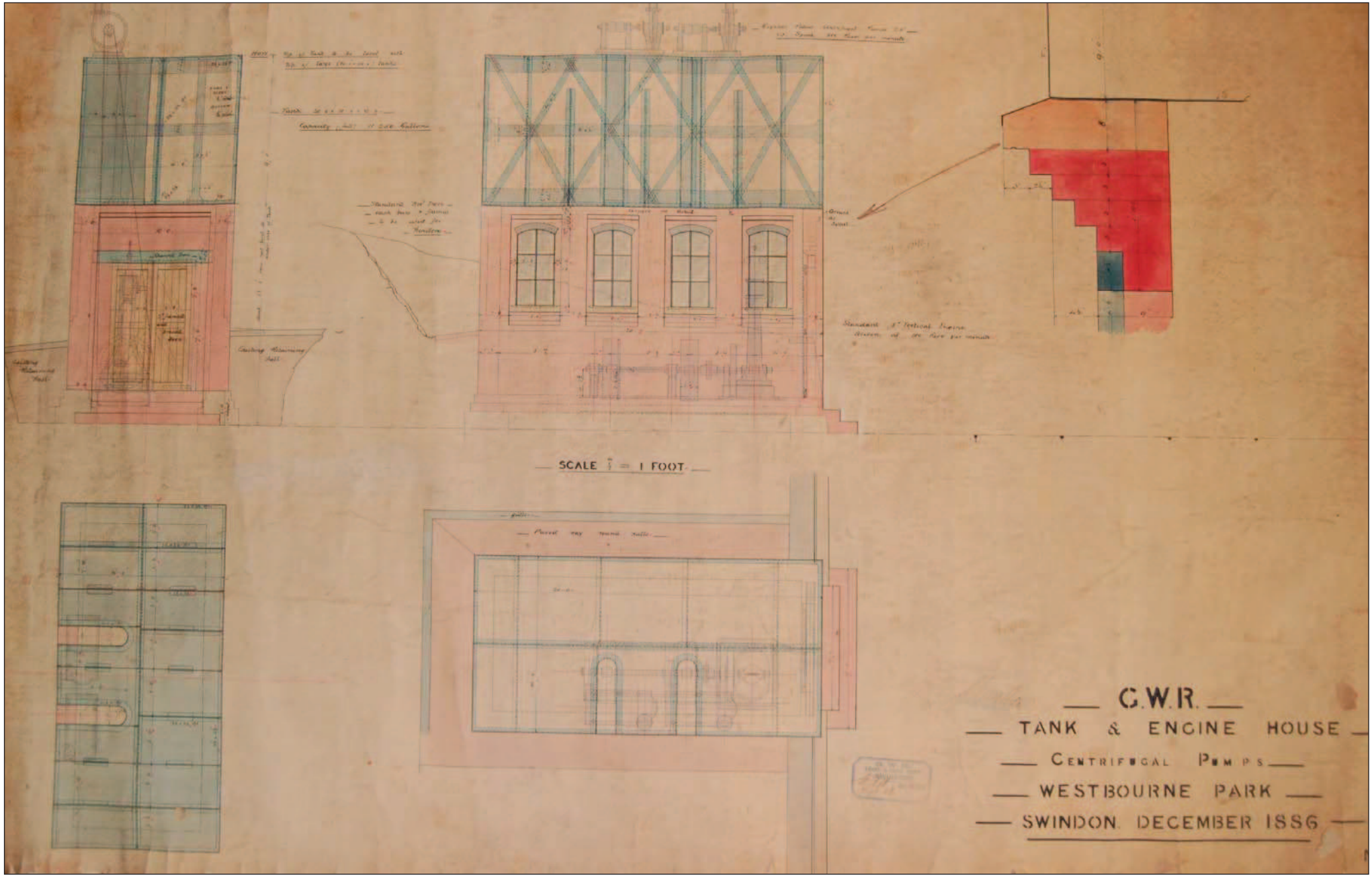


Figure 15: 1886 Design for tank engine house

STRUCTURE 14

Plate 1: Overall view of western Turntable from southeast

Plate 2: Turntable pit floor [8524] and drainage gully [8525]

Plate 3: Guide rail gully [8523] and pit sidewall [8521]

Plate 4: Overall from east showing floors [8524] and [8526]

Plate 5: Guide rail gully [8523] showing timber sleepers and shorn off bolts

Plate 6: Guide rail gully [8523]

STRUCTURE 14

Plate 7: Overall view from north

Plate 8: Engine house [8528]

STRUCTURE 14

Plate 9: Graffiti on northern wall of engine house [8528]

STRUCTURE 3/32

Plate 10: Overall shot of Narrow gauge shed from northeast

Plate 11: Southern outer wall [8699] of 1861 shed

Plate 12: Eastern end of inspection pit [8707] of 1861 Narrow gauge shed

Plate 13: Western end of 1861 inspection pit showing catchment pit [8685] and sleeper cuts. The floor of shed (8681) is to the left

Plate 14: Eastern end of 1861 shed showing row of stone plinths for metal columns

STRUCTURE 3/32

Plate 15: Sleeper cut into top of inspection pit wall [8693]

Plate 16: Brick Tank [8828] to north of 1861 shed

Plate 17: Inspection pits of 1861 and 1871 shed from north

Plate 18: Western end of inspection pit [8785] of 1871 shed

Plate 19: Inspection pits [8786] and [8785] of 1871 shed from east

Plate 20: Western ends of external pits [8724 and 8732]

Plate 21: Overall View of eastern Turntable from the north

Plate 22: Turntable pit from east

STRUCTURE 8

Plate 23: Metal fixtures on pit sidewall [8746]

Plate 24: Centre of Turntable pit showing phase 2 wall [8747]

STRUCTURE 8

Plate 25: Outer wall [8752] of second phase of Turntable

Plate 26: Turntable from south

STRUCTURE 8

Plate 27: Motor room 8800

STRUCTURE 2

Plate 28: “Smiths shop” of 1852 Workshop showing forges base [8029] and quenching pit [8027]

STRUCTURE 2

Plate 29: Southern wall [8030] of 1853 Workshop showing metal hydraulic pipe [8062]

Plate 30: Forge base [8029]

STRUCTURE 2

Plate 31: Quenching pit [8027]

Plate 32: Conduit [8153] beneath 1852 Workshop's "Store Rooms"

STRUCTURE 2

Plate 33: Former western wall of Workshop's "Stores" [8073] overlain by later inspection pits

Plate 34: Inspection pits 8915 and 8916 from west

STRUCTURE 2

Plate 35: Inspection pits 8915 and 8916 in western extension of Workshop

Plate 36: Northeast corner of Workshop “Mr Andrew’s room”

STRUCTURE 2

Plate 37: Catchment pit 8099 in floor of inspection pit 8916

Plate 38: Stone plinths for roof supports along southern edge of western extension of Workshop

STRUCTURE 2

Plate 39: Inspection pits 8915 and 8916 extending into former west wing of 1852 Workshop

Plate 40: Upper level 8201 of shaft [8236] showing room [8211] and entrance to conduit [8213]

STRUCTURE 2

Plate 41: Base of upper level [8201] showing arched entrance to conduit [8213]

Plate 42: Shaft 8206 and lowest level [8227] of shaft [8236]

Plate 43: Shaft 8206 showing double skinned wall

Plate 44: Base of [8227] showing entrance to [8251] and [8250]

Plate 45: In situ standard gauge railway track

Plate 46: Remains of Portobello Junction

STRUCTURE 1

Plate 47: Northern wall of Broad gauge shed

Plate 48: Inspection pit

Plate 49: Catchment pit [8358] in base of inspection pit

Plate 50: Partly excavated inspection pit

Plate 51: Section through inspection pit sidewalls the southern wall of broad gauge pit on southern sidewall of standard gauge pit

Plate 52: Detail of standard gauge pit wall showing timber sleeper and marks of screw jacks

STRUCTURE 1

Plate 53: Access chamber [8448] into Marcon Sewer covered by sections of bridge rail [8447]

Plate 54: Semi circular inspection chamber [8854] into Marcon Sewer added to outside of northern wall of Broad gauge shed

STRUCTURE 1

Plate 55: Access chamber [8897] and entrance to Marcon Sewer [8898]

STRUCTURE 22

Plate 56: Southern wall of Lifting shed building [8899] and central pit

Plate 57: Central pit of Lifting shed

Plate 58: Drain/manhole

STRUCTURE 22

Plate 59: Concrete foundations of Alfred Road Warehouse

Plate 60: London Clay beneath makeup layer of crushed brick

STRUCTURE 2

Plate 61: Overhead view of Structure 2