WELLINGTON DOCK, REGENT ROAD

Liverpool

Merseyside

Trial Trenching and Archaeological Watching Brief Report

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SUMMARY

Wellington Dock is owned by Peel Ports Ltd and held on a long-term lease by United Utilities (UU). UU is currently seeking to develop an extension to the existing Liverpool Waste Water Treatment Works (WWTW) by constructing a new Sequencing Batch Reactor (SBR) within Wellington Dock (NGR 333530 392670). The proposed development entails the infilling of Wellington Dock and the construction of new buildings in and around the dock. As part of the recommended mitigation measures for this development, Oxford Archaeology North were commissioned to undertake a scheme of historic building recording and, further to that, a series of watching briefs within the site boundary while trial trenching and additional investigation work was carried out.

Wellington Dock (Fig 1 and 2) was constructed as part of the northern expansion of Liverpool Docks under the renowned Dock Engineer, Jesse Hartley. The dock and its half-tide dock, was originally constructed in 1848 and opened in 1851 and were used to receive mixed cargo, principally that imported from West Africa and the Americas. There has been little major alteration to the dock itself, and the fabric survey indicates that the principal elements of the original construction are still *in situ*. The characteristic Cyclopean masonry dock walls remain, for the most part, intact and the majority of the coping stones and original dock furniture are present, although sometimes in a less than perfect condition.

The principal alterations to this area of dockland relate to the demolition of the transit sheds which were located along the northern and southern quays of Wellington Dock, along with the demolition in the 1980s, of the High Level Coal Railway, which was a brick and iron structure situated along the eastern quayside.

Thirty five trial trenches were excavated by McDermott Construction but not subject to an archaeological watching brief. Engineering records and photographs were provided by GCA which demonstrated that beneath quayside granite setts there were the surviving remains of cranes and dock furniture associated with the second and third phases of use for both the Wellington and Sandon Dock. Sections of the north- and south-facing elevations of the, now backfilled, Sandon Dock retaining walls were exposed providing a clear view of the *in-situ* coping stones and cyclopean granite masonry facade in Trial Trenches 14, 15 and 33. Furthermore Trial Trench 14 exposed well-preserved timber stays at the rear (southern side, south-facing elevation) of the southern Sandon Dock retaining wall. Almost all of the trial trenches provided evidence of the granite sett surfaces which represent the original or early quayside within this section of the dock complex. Numerous clusters of setts, particularly at the northern side of the Wellington Dock, were laid out in curvilinear patterns which relate to the locations of former transit sheds.

Following this initial phase of trenching, two further phases of trenching work were undertaken under watching brief conditions: the first, to examine areas within the existing footprint of the WWTW, all of which took place within the boundary created by the retaining walls of the infilled Sandon Dock; and the second, to examine the nature of the Wellington Dock retaining walls with particular reference to counterforts, which are sloping buttresses supporting the quayside of the wall, and made ground behind the wall.

Further to this period of trial trenching it is recommended that a programme of mitigation recording be undertaken in advance of, and during, the proposed development works. This would entail open area excavation in areas of greatest archaeological potential and a watching brief in areas of reduced potential.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) wish to thank United Utilities for commissioning the project and for their support, but we would also like to thank Galliford Try, Costains and Atkins (GCA) for their considerable help during the fieldwork. At UU and GCA thanks are due to Sarah Jakubiak, Stephen Carter, Merfyn Pugh and Dane Curtis for their co-operation and on site-assistance. Thanks are also due to the staff of McDermott for their co-operation during the works. We would like to thank Lily Tai for her support and advice throughout the course of the additional trial trenching.

The trial trench watching brief and survey was undertaken by Caroline Raynor, who also compiled the report; and the drawings were produced by Anna Hodgkinson and Anne Stewardson. The report was edited by Jamie Quartermaine, who was also responsible for overall project management.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Wellington Dock is owned by Peel Ports Ltd and held on a long-term lease by United Utilities (UU). UU is currently seeking to develop an extension to the existing Liverpool Waste Water Treatment Works (WWTW) by constructing a new Sequencing Batch Reactor (SBR) within Wellington Dock. The proposed development entails the infilling of Wellington Dock and the construction of new buildings in and around the dock. United Utilities requested that Oxford Archaeology North provide a mitigative record for a series of investigative trial trenches that were undertaken by McDermott Construction (Figs 2, 3 and 4), in advance of construction in the area of Wellington Dock, within the area of the northern docks on Liverpool waterfront (centred at NGR 333530 392670). The work followed on from a desk-based assessment produced by Jacobs Engineering Ltd (2011), and an archaeological fabric and landscape survey of Wellington Dock by OA North (2011). The present report sets out the investigations relating to the area surround the Wellington Dock, Sandon Dock and the existing WWTW, in the form of a short document with accompanying photographs and plans. The below ground investigations were undertaken between May and July 2011. The watching brief during the below ground works was undertaken alongside a watching brief during the closure of the Wellington Dock gates, which has been reported separately (OA North 2012).

1.1.2 The primary aims of the present investigations has been to establish the location, construction method and level of preservation of any surviving below ground remains associated with the five phases of use of the Wellington Dock and associated Sandon Dock (as discussed in the archaeological fabric survey report (OA North 2011)) including investigations of the former warehouses / transit sheds and the High Level Coal Railways that were associated with this particular group of docks.

1.1.3 Wellington Dock is located beyond the northern limit of the Maritime Mercantile City of Liverpool World Heritage Site Boundary but falls within its Buffer Zone (Fig 1). The dock, and its associated dock furniture, are not listed and are not Scheduled Monuments. The site boundary wall, however, is within The Maritime Mercantile City of Liverpool World Heritage Site Boundary and is, along with the distinctive gate piers, Grade II listed.

1.2 LOCATION AND TOPOGRAPHICAL SETTING

1.2.1 Wellington Dock (Plates 1 and 2) is constructed on reclaimed land which extends into the River Mersey; it is located on the west side of Regent Road, at NGR 333530 392670, and occupies approximately 28,900m² (Fig 1). The site is bounded to the north by the former site of the Sandon Dock, now the Sandon Dock Waste Water Treatment Facility, to the east by Regent Road and the original Dock Boundary Wall constructed in Hartley's Cyclopean granite design; to the south by Bramley-Moore Dock and its associated quays and warehouses, and to the west by the Sandon Half-Tide Dock. The Wellington Dock is orientated east/west on its

long axis and the dock gut feeds into the Sandon Half-Tide Dock. The quayside around the dock is characterised by three phases of dock furniture, including mooring rings, bollards and capstans, as well as machinery associated with the dock gates. Elements of the original quay surfaces are also evident in places represented by a variety of square and rectangular granite stone setts, arranged in irregular patterns interspersed with the remaining rails of the dockside railway. No original warehouse structures exist within the perimeter of the quay and the nearest contemporary building associated with the original construction of the dock is the Bramley-Moore Hydraulic pumping station.

1.3 HISTORIC BACKGROUND

1.3.1 ***Medieval Liverpool (1066-1500):*** the establishment of the town of Liverpool is well documented. The name '*Liuerpol*' is first mentioned in a charter of 1190-4, with the town forming a part of the hundred of West Derby (Nicholson 1981). In 1207, a further charter was granted by King John which effectively elevated the settlement from a fishing and farming village to a royal borough (OA North 2009). The town then consisted of seven streets arranged in an 'H'-shaped street plan. These streets survive in the modern plan of the town, although they have been much widened.

1.3.2 The town was positioned next to the Pool, a prominent topographical feature and natural inlet, and the ancient shore-line of the Mersey is marked by the present line of The Strand. The Pool is believed to have formed an important part in the town's life and in its maritime trade, acting as an area where cargoes would have been unloaded, and ships built and repaired. However, no medieval records survive relating to the use of the Pool (Stewart-Brown 1932, 89). By the turn of the eighteenth century, the Pool was probably shallow and unusable by anything other than relatively small ships (*op cit*, 105).

1.3.3 ***The Old Dock (1710-1826):*** the limitation of the Pool brought increasing demand for better accommodation for ships. In 1707, the scheme for an enclosed wet dock was set out, and was aided by the energetic efforts of two notable tradesmen, Thomas Johnson and Richard Norris, both MPs and later mayors of the town (MacLeod 1982, 7). Thomas Johnson visited George Sorrocold, the engineer who had built the Howland Dock at Rotherhithe in London in 1708, in order to gain his help. Thomas Steers was appointed as dock engineer and work began in May 1710. Ritchie-Noakes, discussing the water-encroaching design of the dock, says that 'the novelty of Steers' dock lay in its being formed by building within the tidal area of the Pool rather than by excavating on land (as had been Sorrocold's plan). This first dock subsequently became the prototype for most of the subsequent Liverpool docks' (Ritchie Noakes 1984, 9).

1.3.4 The impact of the opening of the Old Dock was immense and its success was the catalyst for the subsequent, hugely ambitious campaign of dock construction and singularly innovative dock engineering which followed. In 1714 a graving dock had been built by Alderman Norris and partners which was superseded by the construction of the Dry Basin (later Canning Dock) in 1740 (*ibid*). A second graving dock to replace that destroyed by construction of the Dry Dock was built in 1746 at the north end of the Dry Dock itself (*ibid*).

1.3.5 ***Jesse Hartley:*** Wellington Dock was designed and built by Jesse Hartley, one of Liverpool's most prolific and innovative dock engineers. Jesse Hartley was born in Pontefract, Yorkshire in 1780 and as a youth was apprenticed to his father, Bernard Hartley, himself a noted stone-mason and bridge builder in the employ of the Duke of Bridgewater (Skempton 2002, 302). Hartley employed his bridge building skills in Ireland between 1808 and 1818 before returning to England where he was employed as Bridgemaster in Salford (*ibid*).

1.3.6 In 1823 the Liverpool Dock Trustees were seeking to employ a deputy dock surveyor who could make up for, or at least detract in some way from the shortcomings of the existing Dock Surveyor, John Foster, who was embroiled in a financial scandal. It has been remarked that a stone mason with expertise in bridge building, but no formal training in the design of docks, seemed to be an odd choice for the post of Deputy Dock Surveyor. However, the local newspaper, the Liverpool Mercury, postulated that rather than engineering expertise, the Dock Trustees were instead seeking honesty, force of character and managerial skills (Skempton 2002, 302). Hartley was employed for only two weeks as Deputy before taking on the role of Dock Surveyor, a role which he would fulfil with both flair and ingenuity from 1824 till his death in 1860.

1.3.7 Initially, Hartley was forced to address issues created by his predecessor, largely focusing on management matters ranging from regaining control of the finances and procurement as well as addressing aspects of safety and maintenance which had been left outstanding by John Foster. He expanded the draughtsman's office and brought the design work in-house, allowing him to exercise greater control over even the smallest elements of design. By 1828, a mere four years into his tenure, the dock estate was already beginning to take on a more integrated form with the completion of the long awaited Princes Dock and the formative stages of the Brunswick Dock's construction (*op cit*, 302).

1.3.8 Hartley went further to stamp out corruption within the procurement of raw materials by leasing two quarries in Scotland (one in 1826 and another in 1830) and from here he procured the granite which was to help form his trademark 'Cyclopean Granite' masonry style. As well as being visually pleasing, the Cyclopean Granite masonry style was both economical and structurally effective. The core of the wall was constructed from readily available sandstone rubble and then faced with the irregular pieces of granite which locked together to create very durable retaining walls.

1.3.9 The first area of the docks to be designed and built by Hartley from start to finish was the Clarence Dock, which was begun in 1825 and opened in 1830. As well as the principal wet dock, Hartley also included a complex of half-tide docks, graving dock basin and two large graving docks which are now Grade II listed (LCC 2005, 68). This initial work set a benchmark for Hartley and amply demonstrated the scope of his ambition and engineering skills. The table below shows the sequential construction dates for the dock network during Hartleys tenure as Liverpool Dock Engineer:

Dock	**Constructed**	**Closed**	**Function (where specific)**
Clarence Dock	1825-1830	-	Principal dock for steamships
Brunswick Dock	1832	-	Timber Trade

Waterloo Dock	1834	Modified but still present	Site of the original Observatory and later used for grain and seed importing
Victoria Dock	1836	1988	Deep sea / Atlantic traffic
Trafalgar Dock	1836	Modified but still present	Deep sea / Atlantic traffic
Canning Half Tide Dock	1837	-	Access to river from Canning Dock
Toxteth Dock	1842	1884	
Albert Dock	1845	-	Deep sea shipping and warehousing
Salisbury Dock	1848	-	
Bramley-Moore	1848	-	Coal import
Collingwood	1848	-	Coastal Trade
Nelson Dock	1848	-	
Sandon Dock	1849	-	Ship Building/ Repair
Stanley Dock Complex		Part infilled in 1897	Coastal and Canal Trade
Wellington	1848-1851	-	
Huskisson Dock	1852	-	Timber Trade
Canada Dock	1859	-	Timber Trade

1.3.10 Further docks followed soon after, including Brunswick in 1832 (part of the southern docks complex), Waterloo (1834), Victoria (1836) and Trafalgar Docks (1836; south of the Wellington Dock), constructed in the fire-gap originally left between Clarence and Prince's Docks (Skempton 2002, 302). In 1842 Hartley set about remodelling the Canning Dock, making significant alterations to the orientation and size of the dock which had previously operated as the old Dry Basin originally constructed in 1740.

1.3.11 Three years later Hartley had completed the construction of the Albert Dock, the complex for which he is best remembered. The central dock and the iconic fireproof warehousing system (built from iron, brick and stone only), with the distinctive colonnade which surrounds it, are probably the most admired elements of Hartley's legacy to the city of Liverpool and now represent the largest group of Grade I listed buildings in the UK. This structure forms a core element of the southern part of the Maritime Mercantile City of Liverpool World Heritage Site. In 1848 the Dock Traffic Office was added to the complex and modifications were made, including the installation of the first hydraulic cranes.

1.3.12 One year before the completion of the Albert Dock a further Act of Parliament was passed to continue the expansion of the docks. The 1844 Dock act stated; '*the increasing commerce of the Town and Port of Liverpool requires that additional Docks, Basins and other works should be forthwith provided for the further Accommodation of Vessels trading to and from the said Town and Port'* (*Section 83*, 1844 Dock Act) (Jacobs 2011, 5). This Act enabled the construction of the

Salisbury, Collingwood, Stanley, Nelson, Bramley-Moore, Sandon and Wellington Docks (LCC 2005, 131).

1.3.13 Hartley held the position of Dock Engineer for 36 years, in which time he had proved his excellence and versatility as an engineer through the development and expansion of the world's first enclosed dock system (McIntyre-Brown 2001, 77). During Hartley's tenure as Dock Engineer, the dock accommodation was more than doubled (Jacobs 2011). Hartley was succeeded in his position by another equally dynamic engineer, George Lyster, who continued to add to the dock system; however, his impact was not as dramatic as Hartley's. The formal post of Liverpool Dock Engineer ceased to exist in 1917.

1.3.14 ***Wellington Dock:*** Wellington Dock, and the accompanying Wellington Half-Tide dock, were constructed in their original configuration between 1848 and 1851. Similarly, the Sandon Dock was opened at the same time with it's own approach via the Sandon Basin (still in existence today but in a much modified format). The Sandon Basin was larger than the Wellington Dock with an enclosed water space of 10 acres and 100 square yards and an accompanying quay frontage of 867 yards, some of which was shared with the neighbouring Wellington Dock (Baines 1859, 83). Unlike Wellington, Sandon was chiefly used as a place for careening of large ships while they awaited repair in one of the six Graving docks which extended from the northern side of Sandon Dock. The Wellington Dock occupied 7 acres, 4,120 square yards of enclosed water and 820 yards of quay space, while the Half-Tide dock was smaller and encompassed 3 acres, 813 yards of enclosed water and 400 linear yards of quay space (Baines 1859, 84). Baines noted that the sill of the Wellington Half-Tide Dock is six feet and nine inches under the sill of the Old Dock datum with the average water over the Wellington Dock sill at ordinary springs being twenty-four feet and three inches (Baines 1859, 84). At the time that Baines wrote his description of the waterfront, the Wellington Dock was still accessed via a 70 foot wide passage from the Half-Tide dock, which in turn fed into the Sandon Basin via two entrances.

1.3.15 Despite the Wellington Dock being of new construction, and of the most up to date design, its location and size still posed problems for ships wishing to berth there. In April 1855, Captain Hardy, part owner and Captain of the Harvest Queen (a ship of 1556 tons with a draught of 21 feet when fully laden), testified to the Dock Committee that he had been putting into port at Liverpool for over six years, but was finding it difficult to negotiate the currents putting to port in the winter months. Hardy stated that,

"*The North Docks are well suited for our trade in that large class of vessel as regards convenience when you are in [port]; but I have always a dread of going in, in the winter season; difficulty is constantly occurring and it is unsafe for larger vessels to dock there...*" (Webster 1857, 176).

1.3.16 He goes on to explain that *"I tried to dock in the Wellington Dock, the last voyage and I knocked the carved work off my stern and was very glad to get my ship off." (ibid).* By way of further explanation he noted that the area of the river where ships were detained had a high enough level of water during the spring tide, but not during the rest of the year. The general consensus was that there was not enough water lying across the sills at all times of the year and that the entrances to the northern docks (those at Waterloo, Salisbury and Sandon Dock) were unsafe and difficult to navigate, especially during high winds.

1.3.17 In 1856 the High Level Coal Railway was constructed by the Lancashire and Yorkshire Railway company. This viaduct allowed loaded coal wagons to run along the edge of the quays of both Wellington and Bramley-Moore docks and dump coal directly into the holds of waiting ships. Originally, this service only operated during the day time; however, the high demand for bunker coal led to a night time loading service that was illuminated by gas lights up and down the length of the quays. The system was a series of rail lines, elevated above the level of the quayside on a brick and iron viaduct structure, and was located at the eastern side of Wellington Dock and extending south to Bramley-Moore dock. In his book *Liverpool in 1859*, Thomas Baines describes the route of the railway, stating;

"*It joins that line at Sandhills-lane bridge near Liverpool, crosses the Regent Road by viaduct bridge, and runs along the north side of Wellington Dock to the south side of the Bramley-Moore dock. The length of the railway is 1000 lineal feet, and the height is eighteen feet above the level of the dock quay. The High level railway is supported on wrought-iron girder beams of sixty feet span, twenty five feet apart. The sides have arches to form openings across the quays, under the railway."* (Baines 1859, 76).

1.3.18 The arched red brick supports of the viaduct faced westwards and were sited parallel to the waters edge, directly behind the coping stones of the eastern dock retaining wall with the arches and rails rising to eighteen feet above the cobbled quayside. The pillar of each arch was constructed of a lower band of cyclopean Granite masonry to mimic the retaining walls of the dock and this was surmounted by a series of segmental red brick arches with a denticulated string course. Fifteen arches spanned the length of the eastern quay of Wellington Dock, some of which were used as ballast pens rather than thoroughfares. The central span of each arch was supported by a cast iron column with the outer sections of the span being supported by fish-bellied deck beams. An abutment at the southern end of the eastern Wellington Dock quay linked the viaduct with that of the Bramley-Moore viaduct.

1.3.19 In 1857 the management of the docks underwent a dramatic alteration when an Act of Parliament created the Mersey Docks and Harbour Board, effectively removing control of the docks from the town council (McIntyre-Brown 2001, 77) which had been largely responsible for the finances, expansion and property of the dock estate since it was conceived as an enterprise in 1715.

1.3.20 Baines noted that *" The amount of tonnage which entered the Wellington Dock in the financial year ending 24th June 1858 was 135,474 tons"* (Baines 1859, 85). He also noted that the total revenue of the dock was £17,611 8s.4d and that this revenue was generated through trade with the Mediterranean, the United States, British American Colonies, the West Coast of Africa, the Brazils, the Baltics as well as other European ports (*ibid*).

1.3.21 In 1859, the bulk of shipping entering and leaving the Wellington Dock was bound for the coast of West Africa. The dock was used by the African Steam Ship Company who operated services from Wellington Dock to numerous West African ports including Bathurst, Sierra Leone, Cape Palmas, Monrovia, Accra, Lagos, Benin, Old Calabar and Cameroon. The African Steam Ship Company was heavily involved in the rubber trade and helped to support the exploitative activities of King Leopold II of Belgium. The company was run by Elder-Dempster who still operate today. Also operating from the dock were smaller companies including the

Londonderry Steam Boat Company (services to Londonderry, Ireland) and steam ship passenger services to Hamburg.

1.3.22 The 1885 Map of Liverpool (source unknown) (Fig 5) shows the shape and orientation of the Wellington Half-Tide Basins and the Sandon Half Tide Basin, prior to the alteration of the dock system which took place after 1890 (Fig 6). Both Half-Tide Basins were small irregular-shaped structures, with only the Sandon Half-Tide Basin having a gate linking it to the river. All traffic wishing to pass into the Wellington Dock had to first negotiate either the Sandon Half-Tide Basin or traverse the Salisbury, Nelson and Bramley-Moore Docks if moving from south to north up the dock system.

1.3.23 The 1890 OS Map of Liverpool (Fig 6) provides a very clear image of the Wellington Dock just prior to major alteration work. The north side of the dock was lined with an extensive complex of transit sheds which are divided into Shed 1, Shed 1a, Shed 2 and Shed 3. The centre of the shed complex features a recess which houses a crane. Similarly two cranes are located on the east side of the dock, although in this area the transit sheds have disappeared to make way for the High Level Coal Railway which terminates to the north at Shed No 3 and continues southwards, towards the Bramley-Moore and Nelson Docks. One large shed, lacking in any remarkable features, is located parallel to the edge of the quay at the south side of the dock. In 1890 the gated entrance between Bramley-Moore Dock and Wellington Half Tide Dock was spanned by a central swing bridge.

1.3.24 The 1890s saw a significant period of alteration to the docks within the study area. This included the alteration and reconstruction of the Huskisson Dock, Sandon Dock, Sandon Basin and Wellington Half-Tide Docks. The six graving docks at Sandon Dock were replaced by an extension of a new branch dock as part of Huskisson Dock, and the Wellington Half-Tide Dock and Sandon Basin were replaced by the Sandon Half-Tide Dock (Jacobs 2011, 6) which is still extant today.

1.3.25 By 1908, the work to remove the Sandon and Wellington Half-Tide docks was complete. The OS Map of 1908 (Fig 7) shows that in their place stood the extensive Sandon Half-Tide Dock which spanned the entrances of both Wellington and Sandon Dock, creating a larger, more easily navigable, stretch of inland waterway. At this time, the extensive storage of goods on the western side of Bramley-Moore Dock had been halted and, as a consequence, the swing bridge, which was previously located between the dock gates, was replaced with a smaller foot bridge.

1.3.26 The Ordnance Survey map of 1954 (Fig 8) shows further alterations to the areas around the quayside, including the addition of the T-shaped mooring bollards. These are arrayed along the north and south sides of the Wellington Dock and along the south-east side of the Sandon-Half Tide Dock. At this point all of the previously described transit sheds are still *in situ*; however, their internal subdivisions have disappeared, suggesting that they are possibly now all owned by the same group or company.

1.3.27 Further additions were made to the south-west side of the Wellington Dock at some point between 1954 and 1967 (Ordnance Survey 1968, Fig 9); a number of new sheds had appeared north of the eastern terminus of the High Level Coal Railway. Although there is nothing to suggest the purpose of the sheds, their size would imply short-term storage and perhaps some kind of administrative building. The

High Level Coal Railway was officially closed in 1966 (LCC 2005, 133), however the structure remained largely extant until the end of the 1980s.

1.3.28 In 1989, the Sandon Dock, to the north of Wellington Dock, was in-filled to facilitate the construction of the Liverpool WWTW. This sewage treatment plant was designed by Athanassios Migos for Kingham Knight Associates and is characterised by its post-modern trim which is very characteristic of the period (Pevsner *et al* 2006, 279). In 2008 a permanent barrier, in the form of an isolation structure, was erected at the gates between the Bramley-Moore and Nelson Dock. This was carried out as part of the construction of the Liverpool Canal Link which created a new 1.4 mile stretch of navigable waterway linking the Albert Dock with the Leeds-Liverpool Canal (OA North 2009).

1.4 ARCHAEOLOGICAL WORKS

1.4.1 ***Wellington Dock Archaeological Fabric Survey:*** an archaeological investigation in the form of an archaeological fabric and landscape survey took place in conjunction with the trial trenching. This included a detailed survey of the Wellington Dock and environs undertaken by means of a laser scan survey, creating a 3D model which was used to provide plans, elevations of the dock walls and sections of the extant dock furniture (OA North 2011). A mitigative record, including detailed site phase plans and extensive photography, was also undertaken as part of this brief.

1.4.2 ***Wellington Dock Gate Closure:*** after completion of the first watching brief phase a watching brief was undertaken to oversee the final closure of the dock gates (OA North 2012).

2. AIMS AND OBJECTIVES

2.1 OBJECTIVES

2.1.1 Previous excavations, evaluations and the assessments have demonstrated that within the docklands of Liverpool there is the potential for archaeological deposits and structures to survive from the post-medieval period.

2.1.2 The primary objectives of the watching brief programme were:

- to establish the presence or absence of archaeological remains within the identified area;
- to determine the extent, condition, nature, character, quality and date of any archaeological remains present;
- to establish any ecofactual and environmental potential of archaeological deposits and features;
- where possible, to implement a programme of mitigation recording in advance of construction works, should this be achievable;

2.1.3 To these ends, it was necessary to assess the thickness, depth and depositional history of any significant archaeological structures and/or deposits. Despite the likelihood that the dock structures extend to a depth of 9m, it was proposed to only excavate to a depth of 2-3m. The specific objectives of the 35 trenches were to fulfill the investigative requirements set out by GCA and United Utilities, specifically targeting areas with the aim of locating and identifying any services which may not have been previously documented, as well as clarifying the nature and quality of the ground surrounding the Wellington Dock.

2.1.4 A later phase of work was undertaken under watching brief conditions and entailed the excavation of four trial pits within the footprint of the existing Waste Water Treatment Works. In addition a series of evaluation trenches were excavated at the rear of the dock wall prior to the infilling of the dock. This entailed the excavation of five trenches of various dimensions against the north-, south- and west-facing elevations of the dock to determine below ground conditions and to check for the presence of any additional structures relating to the structural integrity of the dock, including counterforts, balancing chambers, ties and stays. The location for these trenches was by Lily Tai, Geotechnical Engineer for Atkins.

3. METHODOLOGY

3.1 FIELDWORK INTRODUCTION

3.1.1 The programme of trial trenching implemented by GCA and UU was targeted areas around the perimeter of the Wellington Dock (Fig 3) in order to identify the presence of services, culvert and other features associated with the existing Sandon Dock WWTW (Fig 4), as well as ascertaining the nature and integrity of the sub-surface deposits in the area likely to be impacted upon by the development. This investigation also provided an opportunity to examine the sub-surface archaeological potential of these areas. This trial trenching programme was intended to inform the requirements for any further mitigation.

3.1.2 The trenches were set out by a United Utilities surveyor in locations pre-determined by UU and GCA and were excavated using a 12 ton 360 degree tracked excavator. Once the trench locations were established the existing quayside surfaces (tarmac or concrete slab, but most frequently original square or rectangular granite setts) were removed mechanically. Machine stripping of the trenches was undertaken using a 360º mechanical excavator (rubber duck) fitted with a narrow (2 foot) bladed bucket. It was also necessary, in places, to use a breaker to remove thick layers of concrete. The work was supervised by a banksman and a member of staff from GCA. When larger features or structures were encountered further mechanical excavation was undertaken to define the extent of features in order to ascertain, where possible, their extent and purpose. Spoil was retained on site and stockpiled at a safe distance from the evaluation/trial trench and then used to backfill the trenches on completion.

3.1.3 Where the depth of the trench exceeded 1.2m, trench boxes were installed to provide access for inspection of services and other features, such as the extant sections of Sandon Dock wall. Where elements relating to the rear of the Wellington Dock retaining walls were identified, the trench was immediately closed as Wellington Dock was still water-filled at the time of the investigation work. There was no archaeological presence during this work, as it was undertaken prior to OA North's involvement in the project, but the areas of work were recorded by note taking and digital photography undertaken by a GCA employee prior to backfilling. The excavation work and installation of trench boxes was carried out by McDermott, who also undertook the reinstatement.

3.2 RECORDING METHODOLOGY

3.2.1 Oxford Archaeology North were not informed of the initial excavation programme for the thirty-five trial trenches and therefore was not afforded the opportunity to implement a watching brief for this phase of work. The information relating to these thirty-five trenches was obtained after examining the records produced by GCA. At the time this report was written, GCA had not provided any digital images to illustrate the trenching, hence Trial Trenches 1 -35 are not visually represented within this report.

3.2.2 Following on from this, a watching brief was established for the final stages of the investigation and all elements of the work were recorded in accordance with current

English Heritage guidelines (1991) and the best practices formulated by English Heritage's Centre for Archaeology (CfA).

3.2.3 ***Survey Control:*** a series of survey control points was established across the site with respect to a survey control from an earlier survey undertaken on behalf of ARUP; further control stations were installed throughout the duration of the works, as required. Station descriptions were established for each principal new control station.

3.2.4 ***Planning:*** archaeological planning was undertaken using a data-logging Leica differential GPS. All planning data was digitally incorporated into a CAD system in the course of the evaluation and was superimposed with the base survey provided by United Utilities and GCA.

3.2.5 ***Context Recording:*** the archaeological stratigraphy was recorded using *pro-forma* sheets in accordance with those used by English Heritage. Similar object record and photographic record *pro-formas* were used. All written records of survey data, contexts, artefacts and ecofacts were cross-referenced from *pro-forma* record sheets using sequential numbering.

3.2.6 ***Photography:*** a full and detailed photographic record of individual contexts was maintained and, similarly, general views from standard view-points of the overall site at all stages of the evaluation were generated. Photography was undertaken using a Digital SLR camera with 10megapixel resolution. Photographic records were maintained on special photographic *pro-forma* sheets.

3.3 FINDS

3.3.1 Finds recovery and sampling programmes put in place were in accordance with current best practice (following IFA and other specialist guidelines) and subject to appropriate expert advice. However, no finds were recovered from the first phase of trial trenching work as this element of the investigation was not carried out under watching brief conditions. The later stages of the investigation - Trenches TP1 to TP4 (Fig 2) and TT1X, TT1XX, TT25X, TT25XX, TT29X and GP1 (Fig 3) did not yield any finds as no access to the trenches was permitted. A rapid assessment of the spoil yielded by each trench showed that the backfill beneath the quayside was largely created using sterile sandstone quarry waste deposits.

3.4 ARCHIVE

3.4.1 A full professional archive has been compiled in accordance with OA North standard best practice, and in accordance with current IFA and English Heritage guidelines (1991). The paper archive will be deposited with the Liverpool Record Office (Central Library, William Brown Street, Liverpool, L3 8EW).

4. SUMMARY OF THE FIELDWORK RESULTS

4.1 INTRODUCTION

4.1.1 The following chapter details the significant results of the trial trenching. A total of 44 trenches was excavated in three phases. Trenches TT1-TT35 were excavated during the first phase, Trial Pits 1 - 4 were excavated during the second phase of work, and the third phase entailed the expansion of previously investigated trenches to a greater depth in order to identify the location of counterforts and any other structures, such as culverts or sluices, which might be impacted upon by the infill process. These trenches were given the same number as their closest counterpart, but with an X-suffix to define them as being part of this later phase of investigation (Fig 3).

4.1.2 The first phase of trial trenching focused on the undeveloped area surrounding the Wellington Dock (within the areas of the north, east and south quayside) and all the excavation work was conducted without the benefit of an archaeological watching brief. This section of the report is based on the written and photographic evidence held in the GCA/UU site archive. No photographs from the first phase of work are reproduced as plates in this report. Trial Pits 1 - 4, undertaken as part of Phase Two works (excavated under archaeological monitoring) were located at the northern and western limits of the Sandon Dock WWTW, within the footprint of the Sandon Dock which was infilled in 1989. The third phase of trial trenching and test pits against the face of the Wellington Dock was undertaken at the request of Lily Tai, Geotechnical Engineer for GCA.

4.2 TRIAL TRENCHES TT1 - TT35

4.2.1 ***Introduction:*** Trial Trenches 1-13 and 34-35 (Figs 2 and 3) were located on the northern side of the Wellington Dock in the area between the north retaining wall of Wellington Dock and the now buried southern retaining wall of the in-filled Sandon Dock. Trial Trenches 14, 15 and 33 were located within the footprint of the existing waste water treatment works. Trial trenches 16-22 were located along the edge of the eastern retaining wall of the Wellington Dock, and in some cases extending eastwards into the area now used as a staff car park by United Utilities. Trenches 23-32 were located along the southern quayside of the Wellington Dock, south of the existing retaining wall. No trenches were excavated in the area of the dock gate piers, or in the area adjacent to the Bramley-Moore and Sandon Half-tide Dock.

4.2.2 ***Trial Trench 1 (TT1)*** (Figs 2 and 3): Trial Trench 1 was located on the north-western side of Wellington Dock, and south of the site of the former Sandon Dock and the existing WWTW; it was the westernmost of the trenches on the north side of the Dock. The trench was proposed to be 25m in length and 0.6m in width but in the event only 17.4m was completely excavated. The trench was orientated north/south on its long axis and spanned the width of the area between northern retaining wall of the dock and the perimeter fence for the WWTW. Four modern services were encountered within the limit of the excavation, as well as a thick uneven layer of reinforced concrete, indicating that this area of the quayside had already been partially disturbed, probably in 1989 when the treatment plant was

constructed. The earliest deposit identified was a made ground layer of mid-reddish-brown sandy silt, mixed with rubble material, which in turn was overlain by a single course of square granite setts, which represent an original element of the quayside. The setts were sealed by a layer of modern tarmac.

4.2.3 ***Trial Trench 2 (TT2)*** (Figs 2 and 3): Trial Trench 2 was located 65m east of Trial Trench 1, also on the north side of Wellington Dock, and south of the site of the former Sandon Dock and existing WWTW. This trench was aligned north/south and measured 30m in length by 0.6m wide. Six modern services were identified within this trench indicating that a substantial part of the area had already been disturbed. A robust red-brick and sandstone structure was identified within the trench which may represent the foundations of an earlier dockside structure, such as a transit shed. The earliest deposit identified was a mixed made ground layer of mid-reddish-brown sandy silt mixed with rubble material, which in turn was overlain by a single course of square granite setts, which represent an original element of the quayside. The setts were sealed by a layer of modern tarmac.

4.2.4 ***Trial Trench 3 (TT3)*** (Figs 2 and 3): Trial Trench 3 was located approximately 25m east of, and parallel to, Trial Trench 2, also on the north side of Wellington Dock, and south of the site of the former Sandon Dock. This trench was aligned north/south and measured 30m in length by 0.6m wide and was excavated to maximum depth of 0.9m. Seven modern services were identified within this area as well as nineteenth century brick foundations, that are assumed to be elements of transit shed foundations, crossing the trench on an east/west orientation. This trench also contained three large parallel concrete slabs which were situated approximately 0.10m beneath the existing ground surface and overlying a made ground layer of crushed sandstone, sand and rubble infill. This suggests that a substantial modern structure once stood in this area but which most likely predates the construction of the WWTW in 1989. As before, the made-ground deposit was sealed by square granite setts which in turn were sealed by tarmac.

4.2.5 ***Trial Trench 4 (TT4)*** (Figs 2 and 3): Trial Trench 4 was located approximately 25m to the east of Trial Trench 3, measuring 10m long by 0.6m wide and 1.2m deep, on a north/south orientation. This trench comprised a 0.8m thick layer of mixed sandy-brown clay with crushed brick and sandstone inclusions which was overlain by a single course of square granite setts, sealed by a 0.1m thick layer of modern tarmac. One modern service was also identified within this trench.

4.2.6 ***Trial Trench 5 (TT5)*** (Figs 2 and 3): Trial Trench 5 was located approximately 10m to the east of Trial Trench 4 on the north side of the Wellington Dock and measured 20m long by 0.6m wide with a maximum depth of 1m. This trench was orientated north/south and extended from the WWTW perimeter fence line to the centre of the quayside. This trench was found to contain three modern services cutting through a mixed sandy-brown clay with crushed brick and sandstone inclusions. This was overlain by sporadic patches of disturbed square grey granite setts and layers of concrete and concrete ballast, associated with the installation of the perimeter fence line. No archaeological features were identified within this trench.

4.2.7 ***Trial Trench 6 (TT6)*** (Figs 2 and 3): Trial Trench 6 was located approximately 17m to the east of Trial Trench 5 on the north side of the Wellington Dock and measured 30m long by 0.6m wide with a maximum depth of 1m. This trench was orientated north/south and was found to contain six modern services cutting into a

0.7m thick layer of mid-yellow/brown sandy clay which was in turn overlain by broken patches of rectangular granite setts (elements of the original 1851 quayside) and extensive areas of modern reinforced concrete. No archaeological features were identified within this trench.

4.2.8 ***Trial Trench 7 (TT7)*** (Figs 2 and 3): Trial Trench 7 was located approximately 34m to the east of Trial Trench 6, on the north side of the Wellington Dock and measured 30m long by 0.6m wide with a maximum depth of 1m. This trench was orientated north/south. Seven modern services were identified, cutting into a 0.6m thick made ground layer of yellow-brown sandy silt which was noted to contain shells and pebbles implying that this made ground was probably obtained from the foreshore or from dredging processes. Overlying this were intermittent patches of rectangular granite setts, interspersed with layers of reinforced concrete. No archaeological features were identified within this trench.

4.2.9 ***Trial Trench 8 (TT8)*** (Figs 2 and 3): Trial Trench 8 was located approximately parallel to the back of the northern retaining wall of the Wellington Dock on an east/west orientation, between Trial Trenches 1 and 2. Trial trench 8 measured approximately 8m long by 0.6m wide and was excavated to a maximum depth of 1.2m. Following the removal of a 0.05m thick layer of tarmac and a 0.25m thick layer of tarmac, the north-facing elevation of the Wellington Dock retaining wall was encountered. A section of the trench was excavated to a depth of 1.2m to demonstrate the nature of the backfill against the face of the wall. The backfill was found to be homogeneous reddish-brown-sandy clay containing crushed red brick fragments. The extant Wellington Dock wall was the only archaeological feature identified within this trench.

4.2.10 ***Trial Trench 9 (TT9)*** (Figs 2 and 3): Trial Trench 9 was located parallel to the perimeter palisade fencing at the northern limit of the site, between Trial Trenches 1 and 2, parallel to the buried southern retaining wall of the Sandon Dock. This trench was orientated east/west and measured approximately 15m long by 0.6m wide with a maximum depth of 3m. No services were identified within this trench and the deposits noted appear to be undisturbed. The earliest deposit encountered was a 2.6m thick layer of mid brown/yellow compact sandy clay soil with large crushed sandstone fragments. This deposit was sealed by a 0.3m thick layer of granite setts (the original 1851 quayside) and these were overlain by a 0.15m thick layer of modern tarmac.

4.2.11 ***Trial Trench 10 (TT10)*** (Figs 2 and 3): Trial Trench 10 was located in the centre of the quayside, south-east of Trial Trench 9 and bisecting Trial Trench 2; this trench was orientated east/west and measured 30m long by 0.6m wide and was approximately 1.2m deep. It contained a homogeneous made-ground layer of mid-reddish-brown sandy clay with crushed brick and stone inclusions measuring 0.7m deep. The made ground deposit was overlain by a 0.3m thick layer of rectangular granite setts interspersed with patches of modern concrete. These deposits were sealed by a modern 0.1m thick layer of tarmac. No services or archaeological features were identified within this trench.

4.2.12 ***Trial Trench 11 (TT11)*** (Figs 2 and 3): Trial Trench 11 was located on the north side of the Wellington Dock, orientated east/west, between Trial Trenches 3 and 5, and abutting the north-east of Trial Trench 4. This trench measured approximately 17m long by 0.6m wide and was excavated to a maximum depth of 1.2m. Much

like Trial Trench 10 (above), this trench was found to be devoid of services and contained the same thickness and type of deposits as described above.

4.2.13 ***Trial Trench 12 (TT12)*** (Figs 2 and 3): Trial Trench 12 was located on the north side of the Wellington Dock, on an east/west orientation and abutting the western edge of Trial Trench 5. This trench varied between 0.6m and 2m wide and was approximately 5m in length. When excavation commenced a circular structure was identified immediately beneath the modern surfaces, and the trench was expanded to the north and south in order to expose the limits of this structure. Photographs provided by GCA engineers would suggest that this 2m diameter brick structure, with a 0.6m wide circular aperture at the centre, represents part of a redundant crane base. The trench is in closer proximity to the southern retaining wall of the infilled Sandon Dock than the Wellington Dock and it is likely that the structures identified relate to dock furniture and machinery installed to service the Sandon Dock and not Wellington Dock.

4.2.14 ***Trial Trench 13 (TT13)*** (Figs 2 and 3): Trial Trench 13 was located on the north side of the Wellington Dock at the eastern end and was orientated east/west, parallel to the Wellington dock wall, and is abutted by the western side of Trial Trench 7. It measured approximately 25m long and 0.6m wide. The ground within the trench had been heavily truncated by four large bundles of multiple services. Examination of the south-facing section revealed a truncated wall on a north/south orientation at the western end of the trench, which was made of handmade red brick and may be the remains of a warehouse or transit shed foundation contemporary with the construction of the Wellington Dock. The deposits surrounding this structure were typical of the made ground material described in the previous trenches.

4.2.15 ***Trial Trench 14 (TT14)*** (Figs 2 and 3): Trial Trench 14 was located at the south-west side of the infilled Sandon Dock; this trench was orientated north/south and measured roughly 5m long by approximately 1.2m wide. Within this trench were structures associated with alterations that were carried out on the Sandon Dock at the beginning of the twentieth century, following the closure of the graving docks. Features associated with the dock retaining wall included, what appeared to be, a metal tie rod and elements of timber stays. Six services were also identified which account for the disturbed nature of the made ground deposits surrounding the south-facing elevation of the Sandon Dock wall.

4.2.16 ***Trial Trench 15 (TT15)*** (Figs 2 and 3): Trial Trench 15 was located beyond the area of the Wellington Dock, within the footprint of the existing waste water treatment facility and the infilled Sandon Dock. This trench was orientated north/south and measured approximately 30m long by 0.6m wide with a maximum depth of 3m, and extended from the northern end of Trial Trench 14. The north-facing elevation of Sandon Dock retaining wall was encountered within this trench and appears to be undamaged with the coping stones still *in situ*. The made ground and backfill material within this trench is all representative of modern activity, contemporary with the construction of the WWTW facility. These deposits have been truncated by the addition of nine services, all of which relate to the WWTW.

4.2.17 ***Trial Trench 16 (TT16)*** (Figs 2 and 3): Trial Trench 16 was located on the eastern side of the Wellington Dock within the car park of the GCA site compound, and was orientated north-west/south-east, extending from the rear of the eastern dock retaining wall to the edge of the site cabins for a distance of 25m with a maximum

width of 0.6m and a depth of 1.2m. The stratigraphy of the trench comprised a layer of modern tarmac overlying a layer of square granite setts which, in turn, overlay a homogeneous made ground deposit comprising reddish-brown, medium compact sandy clay. The remnants of a small brick structure were visible within the north-facing section and may relate to the remains of a transit shed on the eastern side of the dock. In addition, the area had been heavily disturbed by the installation of seven modern services which bisected the trench at irregular intervals.

4.2.18 ***Trial Trench 17 (TT17)*** (Figs 2 and 3): Trial Trench 17 was located on the eastern side of the Wellington Dock, orientated north-east/south-west and running parallel to the dock wall; it crosses Trial Trench 16 and is perpendicular to it. This trench was approximately 30m in length, 0.6m in width and was excavated to a depth of 1.2m. The stratigraphy of this area comprised a modern concrete slab overlying a surface of rectangular granite setts (likely to have been contemporary with the construction of the dock) which in turn overlay a made ground layer of homogenous mid-brown sandy clay with crushed sandstone and red brick fragments. Four services were identified within the footprint of this trench. No archaeological features of note were identified within this trench.

4.2.19 ***Trial Trench 18 (TT18)*** (Figs 2 and 3): Trial Trench 18 was located on the eastern side of the Wellington Dock, and was orientated north/west/south-east. This trench measured 25m in length by 0.6m in width and was 1.2m deep. As with Trial Trench 16 and Trial Trench 17 the ground has been heavily disturbed by the installation of at least 12 modern services. No features of archaeological significance were noted within the footprint of this trench.

4.2.20 ***Trial Trench 19 (TT19)*** (Figs 2 and 3): Trial Trench 19 was located on the eastern side of the Wellington Dock, parallel to the eastern retaining wall, between Trial Trenches 18 and 21. This excavation was halted after it reached a depth of 0.3m, following the removal of 0.1m of tarmac and 0.2m of square granite setts, where the east-facing elevation of the dock retaining wall was exposed.

4.2.21 ***Trial Trench 20 (TT20)*** (Figs 2 and 3): Trial Trench 20 was located on the eastern side of the Wellington Dock, parallel to the eastern retaining wall and bisected by Trial Trench 21 at the northern end. Measuring 30m in length and 0.6m wide, this trench was excavated to a maximum depth of 1.2m. A number of substantial concrete blocks were identified but not fully exposed as was the remnant of a brick wall footing which may have been part of one of the transit sheds. The basal made ground deposit identified within the trench was the same reddish-brown sandy clay with crushed sandstone fragments that has been identified in all the other trenches on the eastern side of the dock.

4.2.22 ***Trial Trench 21 (TT21)*** (Figs 2 and 3): Trial Trench 21 was located on the eastern side of the Wellington Dock, orientated north-west/south-east, and measured 30m long by 0.6m wide and was excavated to a maximum depth of *c*0.8m. The trench was perpendicular to, and bisected by, Trench 20. Excavation within this area was hampered by the presence of remnants of the ground level dockside railway, specifically the confluence of three pairs of tracks set into the granite setts. At a depth of 0.8m the typical made ground deposit of reddish-brown sandy clay was encountered. This was overlain by the granite setts and railways lines which were, in turn, sealed by a modern 0.1m thick layer of tarmac.

4.2.23 ***Trial Trench 22 (TT22)*** (Figs 2 and 3): Trial Trench 22 was located at the south-eastern return of the eastern Wellington Dock retaining wall, and was orientated on a roughly north-west/south-east orientation. This trial trench measured 40m long by 0.6m wide and 0.7m deep and extended between the east-facing elevation of the Wellington Dock wall and the dock estate boundary wall at Regents Road. At a depth of 0.7m the ground comprised made ground/levelling deposits of reddish-brown silty clay with crushed red brick inclusions. This deposit was overlain by a granite sett surface (original 1851 quayside surface although probably re-laid in this area after the installation of the dockside railway lines), which was in turn sealed by a 0.1m thick layer of modern tarmac. No services and no archaeological remains were encountered within this trench.

4.2.24 ***Trial Trench 23 (TT23)*** (Figs 2 and 3): Trial Trench 23 was located on the southern side of the Wellington Dock, and was orientated north/south; this trench measured 25m in length by 0.6m wide and was approximately 1.2m deep. This trench did not exhibit any disturbance and no services were observed. The earliest deposit represented within the trench was a layer of mid-brown/red sandy clay with crushed brick and sandstone inclusions. This was overlain by a 0.2m thick layer of square granite setts (part of the original 1851 quayside surfacing). The setts were sealed by a 0.1m thick layer of modern tarmac.

4.2.25 ***Trial Trench 24 (TT24)*** (Figs 2 and 3): Trial Trench 24 was located on the southern side of the Wellington Dock, parallel to the retaining wall but at a distance of 7m away from the rear of the coping stones. This trench was orientated east/west and measured 20m long by 0.6m wide and was excavated to a depth of approximately 1.1m. It was perpendicular to, and abutted the western side of, Trial Trench 27. The basal deposit identified within the trench was commensurate with the made ground deposit identified in the majority of the other trial trenches. This was overlain by granite setts of a larger more irregular type, suggesting that they were possibly recycled from elsewhere on the dockside. These were in turn sealed by a layer of modern tarmac. Two modern services were identified within this trench but no other archaeological features were noted.

4.2.26 ***Trial Trench 25 (TT25)*** (Figs 2 and 3): Trial Trench 25 was located on the southern side of the Wellington Dock, opposite the Bramley Moore hydraulic pumping station and lay to the west of Trial Trench 23. This trench was orientated north/south and measured 25m long by 0.6m wide. The maximum depth of the trench was not noted. The area was difficult to excavate as it was largely filled with reinforced concrete and steel runners associated with the foundations of former transit sheds which according to cartographic sources were constructed in 1908, modified in 1927 and demolished at an unknown point between 1968 and 1991.

4.2.27 ***Trial Trench 26 (TT26)*** (Figs 2 and 3): Trial Trench 26 was located on the southern side of the Wellington Dock on an east/west orientation, parallel to the dock wall; it measured 30m long by 0.6m wide and was excavated to a depth of 1.2m. It was perpendicular to, and bisected the northern part of, Trial Trench 25. This trench was found to contain a 0.7m thick layer of reddish-brown sandy clay made ground deposit overlain by a 0.2m thick layer of granite setts which were in turn sealed by a 0.3m thick layer of modern concrete. Two modern services were identified within this trench but no archaeological features were noted.

4.2.28 ***Trial Trench 27 (TT27)*** (Figs 2 and 3): Trial Trench 27 was located on the southern side of the dock to the west of Trial Trench 25; it was orientated

north/south and measured 25m long by 0.6m wide and was excavated to an average depth of 1.2m. All the deposits were broadly contiguous with those identified on the south side of the dock from Trench 23 onwards. No services were identified within this trench; however, an undefined structure, possible relating to a more modern (early - mid twentieth century) crane base or transit shed foundation, was observed, but was not defined, at the base of the trench, approximately 2.9m into the trench.

4.2.29 ***Trial Trench 28 (TT28)*** (Figs 2 and 3): Trial Trench 28 was located on the southern side of the dock on an east/west orientation, parallel to the rear of the dock wall and measured 15m in length, 0.6m wide and excavated to a depth of 1.4m. This trench revealed deposits similar to those encountered in Trial Trench 27, including the presence of a concrete and steel structure, most likely associated with the stanchion base for one of the large transit sheds that lined the south side of the dock. Two modern services were also identified.

4.2.30 ***Trial Trench 29 (TT29)*** (Figs 2 and 3): Trial Trench 29 was located on the southern side of the dock and aligned on an north/south orientation. This trench measured 25m in length, 0.6m wide and was excavated to a maximum depth of 1.15m. Deposits identified within the trench were broadly the same as those in trenches 27 and 28, aside from the absence of any original granite cobble surfacing above the made-ground layer. This suggests that this area was already heavily disturbed prior to the trial trenching taking place. Two services were identified, but no structures of archaeological significance were noted.

4.2.31 ***Trial Trench 30 (TT30)*** (Figs 2 and 3): Trial Trench 30 was located on the southern side of the dock, aligned east/west parallel to the dock wall, and it bisected Trial Trench 29; Trial trench 30 measured 30m in length, 0.6m in width and was excavated to a maximum depth of 1m. The stratigraphy was similar to that recorded within Trial Trench 28 but with the addition of three modern services. No deposits or structures of archaeological significance were identified within this trench.

4.2.32 ***Trial Trench 31 (TT31)*** (Figs 2 and 3): Trial Trench 31 was located at the south-west side of the dock, orientated east/west, directly against the rear of the coping stones. This trench was 10m long and 0.6m wide but was aborted at a depth of 0.3m as the rear of the dock wall was exposed.

4.2.33 ***Trial Trench 32 (TT32)*** (Figs 2 and 3): Trial Trench 32 was located adjacent to the south-western return of the dock wall; it spanned the width of the quayside on a north/south orientation. The trench measured 25m long, 0.6m wide and was excavated to a depth of 1.2m. No services or features of archaeological significance were identified and the stratigraphic sequence within the trench comprised 0.7m of red-brown compact sandy clay overlain by a 0.2m thick granite sett surface, sealed by a 0.15m thick layer of modern tarmac.

4.2.34 ***Trial Trench 33 (TT33)*** (Figs 2 and 3): Trial Trench 33 was located on the northern side of the Wellington dock, within the perimeter of the existing WWTW (and was therefore within the perimeter of the infilled Sandon Dock). The trench was orientated north/south and measured 40m in length, *c* 1m wide and was excavated to a depth of *c* 4m (no engineers notation stating maximum depth).

4.2.35 ***Trial Trench 34 (TT34)*** (Figs 2 and 3): Trial Trench 34 was located on the northern side of the Wellington Dock, within the footprint of the demolished transit sheds and formed a western extension to Trial Trench 13; it was orientated east/west and

measured 10m long by 0.6m wide and was excavated to a depth of 3m. As with previous trenches, the bulk of the deposits were represented by large episodes of dumped sand and clay material to the north of the dock wall. Overlying this was a 0.3m thick layer of rectangular cobbles which represent part of the original quayside. This surface was in turn sealed by 0.15m of modern tarmac. No services were identified within this trench and no deposits of archaeological significance were observed.

4.2.36 ***Trial Trench 35 (TT35)*** (Figs 2 and 3): Trial Trench 35 was located on the northern side of the Wellington Dock to the east of Trial Trench 34 and was orientated east/west. It was located within the footprint of the demolished transit sheds. The trench measured 10m by 0.6m and was excavated to a depth of 3m. All deposits were contiguous with those in Trial Trench 34, there were no services and/or deposits of archaeological significance were encountered.

4.3 TRIAL PITS 1-4 (WITHIN THE FOOTPRINT OF THE EXISTING WASTE WATER TREATMENT WORKS)

4.3.1 Four Trial Pits were excavated within the footprint of the existing Waste Water Treatment Works which sits within the perimeter of the former Sandon Dock (Fig 2). The four trenches were excavated under archaeological watching brief conditions and were situated according to GCA requirements with the excavation being carried out by contractor group McFour. All of the trenches were located in order to identify unmapped subterranean services prior to further modifications to the treatment works. Prior to the excavation of each trench, the area was marked out by a GCA surveyor and the modern tarmac and concrete upper layers were removed by a mini-digger fitted with a pneumatic breaker.

4.3.2 ***Trial Pit 1:*** Trial Pit 1 (Plate 3) was located to the west of the access ramp to the Screw Pumping Station and to the north-east of the Regional Sludge Pumping station, this trench measured 1.5m long by 1m wide and was excavated to a depth of 2.2m. The trench was situated entirely within made ground (principally the backfill associated with the infilling of the Sandon Dock). No archaeology was observed within this trench.

4.3.3 ***Trial Pit 2:*** Trial Pit 2 (Plate 4) was located adjacent to, and directly west of, the west wall of the Regional Sludge Pumping Station, this trench was orientated east/west and measured 2m long by 1m wide with a maximum depth of 1.5m. As with the previous trial pit, the trench was sited within the backfilled Sandon Dock and no archaeology was observed.

4.3.4 ***Trial Pit 3:*** Trial Pit 3 (Plate 5) was located on the southern side of the existing Waste Water Treatment Works, and was orientated on a north-east/south-west alignment and measured 1.5m long with projected depth of 1.2m in order to confirm the location, depth and diameter of feed ducts and LV cable ducts known to be located within the area. This trench was not fully excavated and the location meant that it was not practicable to complete the work. As previously observed, the upper deposits within the trench were modern deposits; principally concrete overlain by chipped stone. The pit was largely filled with a reddish-brown sandy backfill material which is part of the modern backfill of a construction cut for the nearby structure. No archaeology was identified within this trench.

4.3.5 ***Trial Pit 4:*** Trial Pit 4 (Plate 6) was located to the west of the access ramp to the Screw Pumping Station and to the east of a large square subterranean overflow sump, this trench measured approximately 2m long by 1m wide and was excavated to a depth of approximately 2.5m. This trench was filled with sharp sand backfill associated with the construction cut for the creation of the concrete lined subterranean sump to the west. As before, the upper two layers of the trench comprised a 0.4m thick layer of concrete and tarmac.

4.4 TRIAL TRENCHES TO EXAMINE THE STRUCTURE OF WELLINGTON DOCK

4.4.1 Following the main phase of trial trenching an additional five trenches (Figs 8 and 9) were excavated and extended earlier trenches in order to examine the structural integrity of the retaining walls of the Wellington Dock and the associated made ground deposits which formed the basis of the quayside on the northern, southern and western limits of the site. Each trench was excavated to a width of just over 1m wide in order to accommodate the installation of trench boxes which supported the sides of the excavation and enabled safe working to a depth of 4m. The findings of these trenches are detailed below.

4.4.2 ***Trial Trench 1X (TT1X)*** (Fig 3; Plate 9): Trial Trench 1 trench was re-opened in order to observe a clear profile of the rear north-facing elevation of the Wellington Dock wall. Initially, a slot measuring 1.4m wide by 3m long was opened on a north/south orientation directly against the north-facing elevation of the dock; however, at a depth of approximately 1.35m a large sandstone structure was observed (Plate 10). Hand excavation around the edge of the structure revealed substantial interlocking pink sandstone blocks forming the top of a counterfort, which was buttressed against the dock wall. Further investigation indicated that this structure was tied into the rear of the dock wall; however, its full extent was not revealed at this point with the extent of the counterfort extending beyond the northern and western limits of the excavation. The trench was extended in an easterly direction in order to obtain a clear profile view of the rear elevation of the dock without disturbing the counterfort structure. The area around the counterfort was backfilled and compacted and the extended trench was opened directly east of this structure, with excavation continuing unimpeded to a depth of 4m without excessive ingress of water.

4.4.3 This excavation revealed the north-facing (rear) elevation of the dock wall to be an almost vertical face constructed of pink roughly-hewn sandstone blocks bonded with a grey cement mortar. Unlike the exterior elevation of the wall, viewed at the south-eastern side of the dock, in Trial Trench 25X, there was no 'toe' evident at this part of the wall. As with previous excavations, the backfill against the dock retaining wall was found to be a homogeneous reddish-brown sandy clay overlying compact plastic grey silty clay (glacial till) at a depth of 3.9m below the present ground level.

4.4.4 ***Trial Trench 1XX (TT1XX)*** (Fig 3; Plates 11-13): a further slip trench was excavated on an east/west orientation, parallel with the rear of the dock wall between Trial Trench 1 and Trial Trench 8 in order to identify the presence of further counterforts and identify whether a pattern of counterforts existed along the rear of the dock retaining wall. At an approximate distance of 10m from the Trial Trench 1X counterfort, a further sandstone structure was identified within the slip

trench at a depth of 1.5m below the present ground level, projecting from the north-facing elevation of the dock. The trench was then expanded from a narrow slip trench to a larger trial trench in order to further examine the structure.

4.4.5 This counterfort (Plate 12) was constructed of two large, solid blocks of pink sandstone arranged in a stepped formation to provide additional support for the dock retaining wall. The upper, 0.9m wide, step was identified at a depth of 1.5m below the existing level of quayside with a further 0.7m wide step located approximately 0.8m lower down. A sondage, with a depth of 1m, was excavated against the north-facing elevation of the counterfort and the base of the structure was not reached. It is anticipated that the counterfort extends to the same depth as the final toe of the dock wall (as seen in other docks within the Liverpool network, including the George's Dock Basin).

4.4.6 In addition to the presence of the counterfort, the original slip trench was also found to contain substantial concrete and modern red brick footings which relate to the construction of large transit sheds along the northern perimeter of the Wellington Dock.

4.4.7 ***Trial Trenches 25X and 25XX*** (Fig 3; Plates 7, 14 and 15): it was determined by GCA that further investigations were required on the southern side of the dock to identify the presence of counterforts or associated structures along the rear of the Wellington Dock wall. As a result, three further targeted trenches were excavated in order satisfy this requirement - Trial Trenches 25X, 25XX and 29XX. Trial Trenches 25X and 25XX (Plate 14) effectively revisited the partial excavation conducted in the area of original Trial Trench 25.

4.4.8 ***Trial Trench 25X (TT25X)*** (Fig 3; Plate 7): the original Trial Trench 25 (*Section 4.2.26*) was re-opened with a view to excavating a deeper trench which would expose the south-facing (rear) elevation of the southern dock retaining wall to a depth of 4m. This trench was not excavated under archaeological watching brief conditions; however, the trench was left open for inspection.

4.4.9 The dock wall was exposed to a depth of 4m (Plate 8); however, rapid ingress of water after a depth of *c*3m made it difficult to adequately record the wall at depth. The trench was pumped in order to remove some of the ground water and this provided a clearer view of the structure. The rear elevation of the Wellington Dock within this area comprises an irregular bond of pink sandstone blocks with a cement mortar bond. Concrete and tarmac had been poured directly against the rear face from the level of the top of the *in situ* coping stones to a depth of 0.8m forming a concrete slab. It is likely (based upon observations elsewhere along the Liverpool dock system) that this slab is obscuring a small step or toe in the rear of the wall. The wall continued at an almost vertical angle until a second step or toe was observed at a depth of 2.1m below the level of the quayside.

4.4.10 On the east side of the trench a further counterfort was identified less than 1m east of the original Trial Trench 25 location (Plate 17). This feature was constructed using identical pink sandstone to that observed on the northern side of the dock with the minor difference of the depth at which the upper step was identified. The counterfort on this side of the wall was identified as being both slightly broader and slightly shallower (0.2m) than those on the northern side. This difference may be accounted for by the variation in ground conditions on the northern and southern sides of the dock.

4.4.11 Although the trenching was undertaken without archaeological supervision, elements of the east-facing section were visible which showed that the backfill behind the wall comprised 3.5m of homogeneous mid-reddish-brown waterlogged sandy clay with crushed sandstone fragments and small stone inclusions. This was overlain by a 0.05m thick layer of ashy grey clinker which acted as a bedding for the overlying 0.2m thick surface of square granite setts. These were sealed by a 0.15m thick layer of modern concrete slab which was in turn sealed by a 0.1m thick layer of modern tarmac.

4.4.12 ***Trial Trench 25XX (TT25XX)*** (Fig 3; Plate 7): the trench was extended to the west by 15m with the aim of uncovering a counterfort. This trench proved difficult to excavate as it was located within the footprint of one of the large transit sheds which had previously lined the southern side of the Wellington Dock. The foundations of this structure were much more substantial than anticipated with a poured concrete slab over 1m in thickness containing the remains of a massive steel stanchion base. Removal of this material exposed the remains of a sandstone crane base with a truncated cast iron column at the centre (Plate 16). This structure was left as the relationship between the sandstone crane base and the rear of the *in situ* wall could not be adequately determined. On the west side of the trench a further counterfort was identified less than 1m east of the original Trial Trench 25 location (Plate 17).

4.4.12 ***Trial Trench 29X (TT29X)*** (Fig 3): this trench was located at the south-west side of the Wellington Dock, within an area that had previously been excavated by McDermott's, and which had been designated Trial Trench 29. Excavation of the trench extension, measuring approximately 4m long by 1.2m wide, was against the south-facing (rear) elevation of the dock wall with the aim of identifying another counterfort. This trench was excavated to a depth of 2.4m and allowed the exposure of a substantial stepped pink sandstone counterfort that was tied into the back of the dock wall (Plate 18). This structure was similar to all the counterforts previously described in this report although the first step was identified at a greater depth and the width of the structure was larger, measuring 1.5m wide. The full width and extent of the second step was not identified during the course of this work as it extended beyond the practical limits of the excavation. Following the recording process, the trench was backfilled.

4.4.13 ***Southern Gate Pier Trench (GP1)*** (Fig 3; Plate 15): additionally, a trench was excavated within the area of the southern gate pier. This area was not subject to investigation during the earlier trenching works but was a focus area during the building investigation of the structure and its associated dock furniture and quayside surfaces. The trench was orientated east/west and was located adjacent to the stone steps which are recessed into the western return of the dock wall on the southern side. This trench measured approximately 4m long by 1.2m wide and extended to a depth of 4m; however, rapid ingress of ground water at a depth of 2m meant that it was difficult to observe the dock wall and related structures and deposits below this depth.

4.4.14 The dock wall was noted as being more substantial in this area with the total width increasing to 2.55m where the steps interface with the rear of the wall. This area is also noteworthy as being an area where numerous engineering features of the dock wall interface with each other; these include the stone steps, the corbelling in the wall at the south-western return and the outflow for a balancing chamber. The rear

of the dock wall was identified as being constructed of irregular pink sandstone blocks and had a grey cement mortar in an irregular bond (Plate 19). The face of the wall was almost vertical with no additional features, such as stays or counterforts, observed.

4.4.15 At the south-western limit of the trench was a liner sandstone structure, which was only visible in section and was not further defined and so its purpose is unclear. It comprises large (in excess of 1m in length) yellow, rectangular ashlar sandstone blocks with no obvious mortar bond (Plate 20); this structure appeared to have a south-east/north-west alignment suggesting that its function may relate to one of the balancing chambers, although this could not be confirmed. GCA stated that it was not necessary to expand this trench further and therefore it was not possible to establish the function. This structure was located within the reddish-brown sandy clay layer, which characterises the made ground surrounding the dock wall in this area. There was no evidence of a construction cut or any modern excavation, which suggests that this structure is contemporary with, and related to, the dock wall, although the relationship between the two could not be determined at this time.

5. FINDS

5.1 ARTEFACTS

5.1.1 No artefacts or ecofacts were recovered during the trenching process and it appears that the made ground, which comprises the majority of material behind the dock retaining walls and beneath the quayside, is made up of a single episode of dumped imported quarry waste/recycled ships ballast and / or material dredged from the river.

6. DISCUSSION OF RESULTS

6.1 INTRODUCTION

6.1.1 The thirty-five trial trenches and four test pits revealed a limited number of archaeological remains of varying date and significance. The overall sequence of events, demonstrated by the stratigraphy and nature of the deposits, began with numerous makeup deposits reflecting the reclamation of the foreshore and which were intended to extend the dock areas outward into the Mersey. These makeup deposits, seen in all trenches, exceeded a depth of 2m or more and were varied in colour but were mostly sandy in texture and were probably derived from the estuary environment of the Mersey, perhaps from dredging or from a combination of dredged material and quarry waste and ships ballast (which frequently took the form of quarry waste or sand). The land reclamation process in this area was not as large scale a process as that which took place in the areas around Mann Island and the Albert Dock; however, the made ground layers would have still been required to create suitable areas of quayside between each retaining wall in the system. The deposition of material in this area would have been contemporary with the excavation of the dock basins and the construction of the walls between 1848-1851. All archaeological structures identified within the trial trenches were either contemporary with or were later than this phase.

6.1.2 ***Wellington Dock and Quayside:*** the rear elevation (or construction face) of the Wellington Dock, as examined in Trial Trenches 25X, 25XX, 1X, 1XX, 29X and GP1, was found to be uniform and well constructed. In each instance the rear of the wall was found to be constructed from ashlar blocks of pink sandstone (probably locally obtained) and arranged in an irregular rubble-style bond with a grey cement mortar. Where counterforts were located (specifically in Trial Trenches 1X, 25XX and 29X) the construction of the wall was little altered aside from the accommodation of the large stepped sandstone blocks which form the counterfort structure and which were directly incorporated in the rear of the wall.

6.1.3 The counterfort structures identified at the rear of the Wellington Dock, had a different construction from those previously identified at the rear of broadly contemporary dock structures within the Liverpool dock network, specifically those of the Trafalgar and Victoria Docks, both of which were also constructed by dock engineer Jesse Hartley in 1836. As mentioned previously, the counterforts at the Wellington Dock were constructed from very large individual blocks of pink sandstone keyed into the rear of the wall. By contrast the counterforts excavated at the rear of the Trafalgar and Victoria Docks were built using much smaller pink sandstone ashlar blocks around a more irregular rubble core; although the basic construction technique and bond type were similar to those from Wellington Dock.

6.1.4 None of the trenches reached sufficient depth to allow the exposure of all the steps which make up the counterfort (it is assumed that there is at least one further step below the depth of the lowest step encountered), and the heel of the dock was not exposed either.

6.1.5 ***Sandon Dock:*** no archaeological investigation was conducted during the original backfilling of Sandon Dock, in advance of the construction of the existing WWTW. The additional trenching, as part of this phase of work, allowed an assessment of

the nature and condition of the remodelled Sandon Dock retaining walls. Sandon Dock was remodelled *c* 1901, with the removal of the six graving docks to the north, so as to create an additional spur of the Huskisson Dock. Part of this involved deepening the dock; subsequent undermining of the toe meant that it was necessary to insert tie rods through the rear of the wall which were then anchored to substantial structures such as transit sheds along the dockside (Bray and Tatham 1992, 109). The transit sheds constructed along the quays of the Sandon Dock were constructed using the Hennebique system, which is a combination of concrete around a steel frame, and would have provided an adequate level of support.

6.1.6 The Sandon Dock wall, observed in Trenches 14, 15 and 33 was found to survive in good condition with the south-facing (rear) elevation being constructed of irregularly-bonded pink sandstone masonry, much like that observed at the rear of the Wellington Dock. This is unsurprising given that the two structures were originally contemporary and were designed by the same Dock Engineer. Within Trench 14, a timber stay associated with the dock was identified. In addition to this, there was also a substantial horizontal metal bar which may have been one of the later tie rods. No counterfort structures were identified in the trenches to the rear of the Sandon Dock but it is likely that this dock also had such structures.

6.1.7 ***High Level Coal Railways and other transport:*** the High Level Coal Railways, which served the area around the Wellington Dock, were closed in 1966 but remained partially extant until the late 1980s (J Horne *pers comm*). The system was a series of rail lines, elevated above the level of the quayside on a brick and iron viaduct structure that was located at the eastern side of Wellington Dock. The arched red brick supports of the viaduct faced westwards and were sited parallel to the water's edge, directly behind the coping stones of the eastern dock retaining wall. Originally, the railway traversed the quayside and dock estate boundary wall, just to the north of the Bramley Moore hydraulic pumping station. The remnants of a former pier, which supported the railway allowing it to span Regents Road, are within the site. The pier was attached to the Grade II listed dock boundary wall, but is unlikely to be affected by the development. Elements of ground level tramlines within the footprint of the Hennebique-style transit sheds were identified during the course of the excavation in Trench 16.

7. IMPACT OF THE DEVELOPMENT

7.1 PRESENCE OF ARCHAEOLOGICAL REMAINS

7.1.1 The excavation of Trial Trenches 14, 15 and 33 demonstrated that there are surviving remains of the infilled Sandon Dock, and the associated quayside. Various structures and numerous surfaces of nineteenth to twentieth century date were also uncovered and these relate to the presence of former transit sheds along the northern side of Wellington Dock and the southern side of Sandon Dock. Evidence of now vanished dock furniture were identified in Trench 12 and *in-situ* tracks and cobbles associated with the dockside tram lines were found in Trench 16. The majority of trenches provided evidence for the remains of the original granite sett quayside, as well as contemporary made-ground deposits that related to the infilling behind the retaining walls within this area of the dock system.

7.2 CONDITION OF DOCK STRUCTURES

7.2.1 The evaluation aimed to determine the extent, condition, nature, character, quality and date of any archaeological remains present. The remains of Sandon Dock were seen in Trenches 14, 15 and 33 and are in a good state of preservation, with clear survival of the cyclopean granite-facing and massive granite coping stones. The wall was entirely constructed in the complex granite cyclopean style, pioneered by Hartley. The face of the wall, as far as was seen, was vertical, and there was variation in erosion that revealed the watermark. The remains are very close to the present ground surface level and will survive to depth. Although the Sandon Dock has been infilled for a number of years it is still desirable to maintain the integrity of the buried structure and limit the number of breaches within the wall where possible.

7.2.2 The trenches excavated to expose the construction face of the Wellington Dock, including Trenches 25X. 25XX, 1X, 1XX and Gate Pier Trench 1 (GP1) all showed that the rear of the dock wall is in excellent preservation, as would be expected of a functioning dock (functioning in the sense that it still retains water even if it is no longer actively used as part of the port) with a generally intact quayside. The counterforts identified are all in excellent condition and the nature of the made ground deposits was generally good with limited water ingress below a depth of 4m.

7.3 ENVIRONMENTAL POTENTIAL

7.3.1 An aim of the evaluation was to establish the potential for any environmental deposits and features. Given that the majority of land comprising the quayside and space around the retaining walls is constructed of reclaimed ground and sterile quarry waste or ballast, it is unlikely that any deposits of environmental significance will be impacted. Material viable for environmental study may only be present at the level of the toe and heel of the dock but it is unlikely that such depths will be reached during the course of any future construction work.

7.3.2 No ecofactual material was retrieved from the deposits encountered. Similarly no finds were retrieved during the excavation of the initial thirty-five trial trenches or the additional work to established the presence of counterforts behind the dock wall.

7.4 IMPACT

7.4.1 The main aim of the evaluation and trial trenching was to assess the impact of the scheme on any significant remains or deposits encountered to enable the appropriate level of mitigation recording.

7.4.2 The proposed development is likely to have an adverse impact on the structures encountered during the evaluation; however, it is not possible to comment on this in more detail until a fully approved series of plans has been presented for inspection. It is possible that the scope of the development may affect elements of the remaining early transit shed foundations, elements of the dockside railway, contemporary quayside surface and the foundations of crane bases and other structures associated with cargo management at the dockside, as well as altering the characterisation of the area by removing a further dock from the pre-existing network.

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ILLUSTRATIONS

FIGURES

PLATES

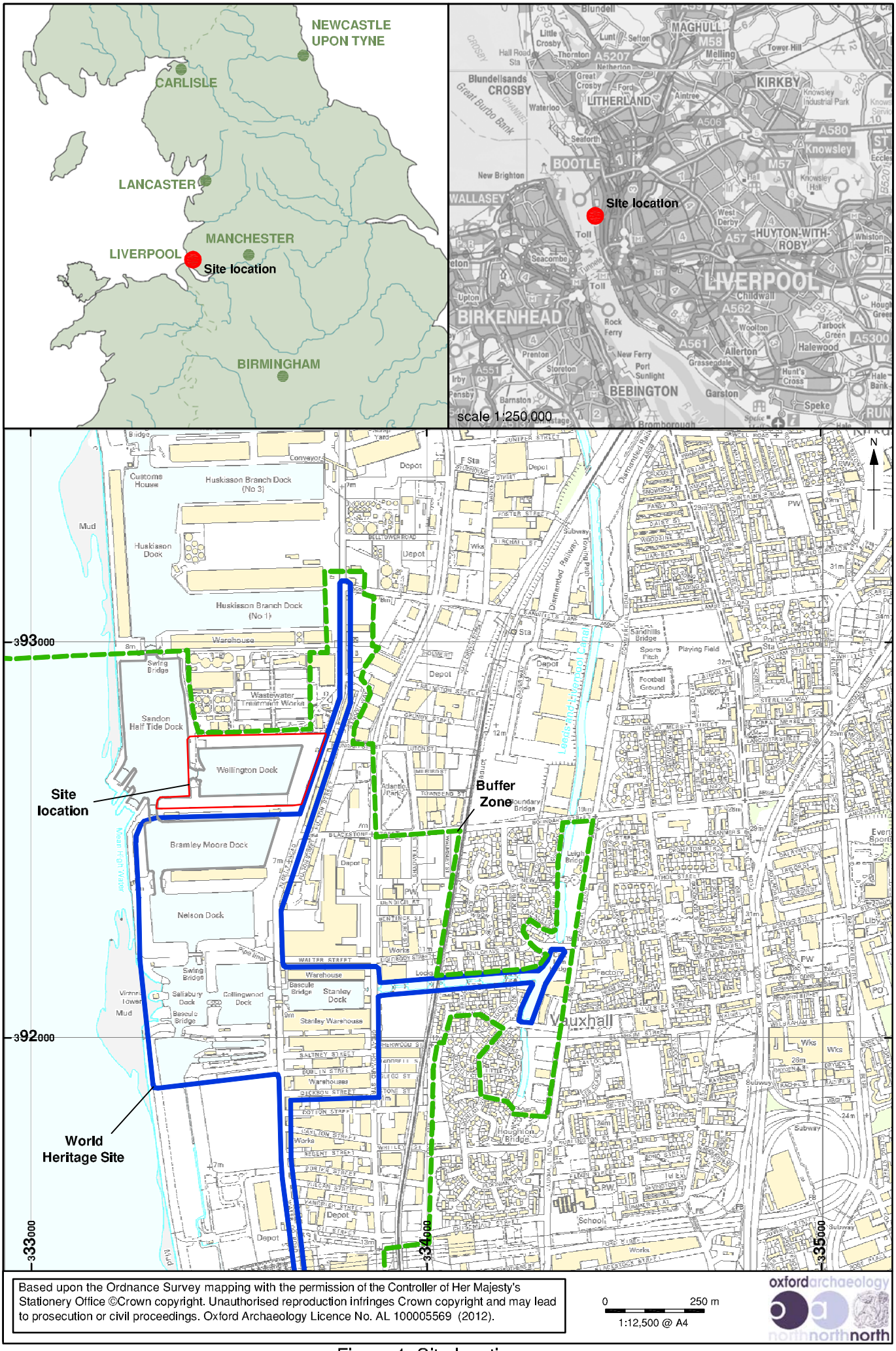

Figure 1: Site location map

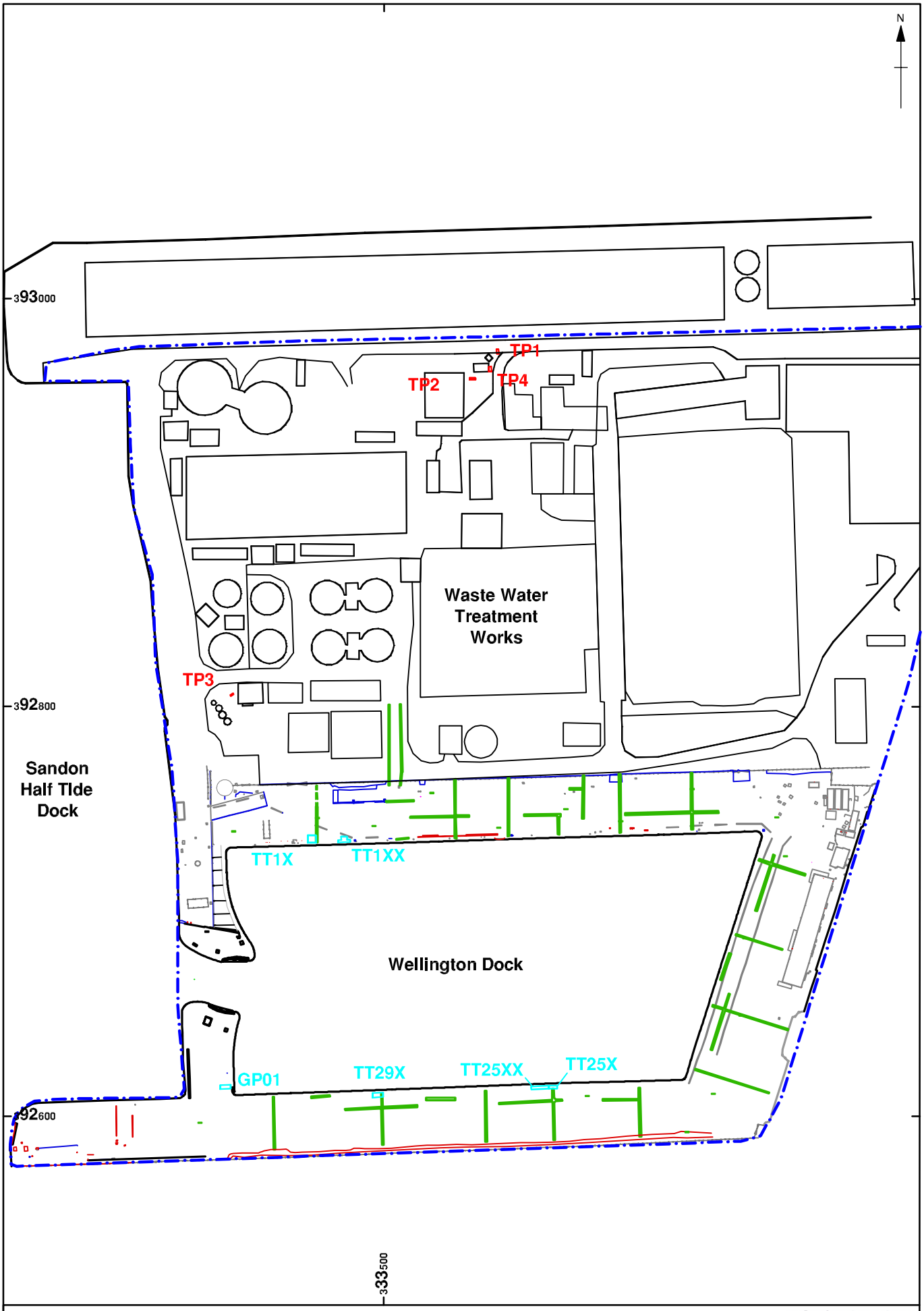

Figure 2: Trench locations within the area of Wellington Dock (all trenches)

Figure 3: Trial Trenches and Counterfort investigation trench locations around the perimeter of Wellington Dock

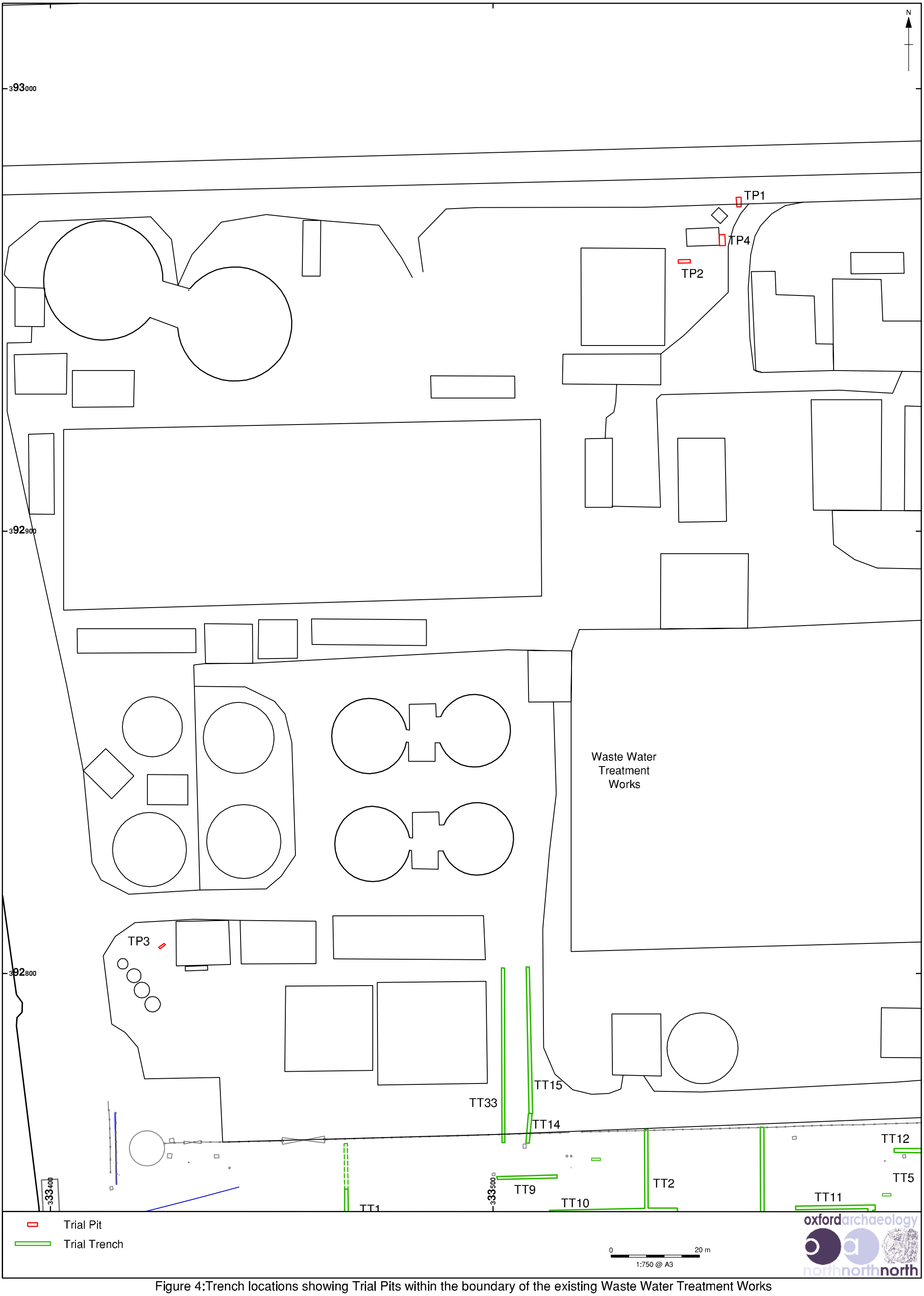

Figure 4:Trench locations showing Trial Pits within the boundary of the existing Waste Water Treatment Works

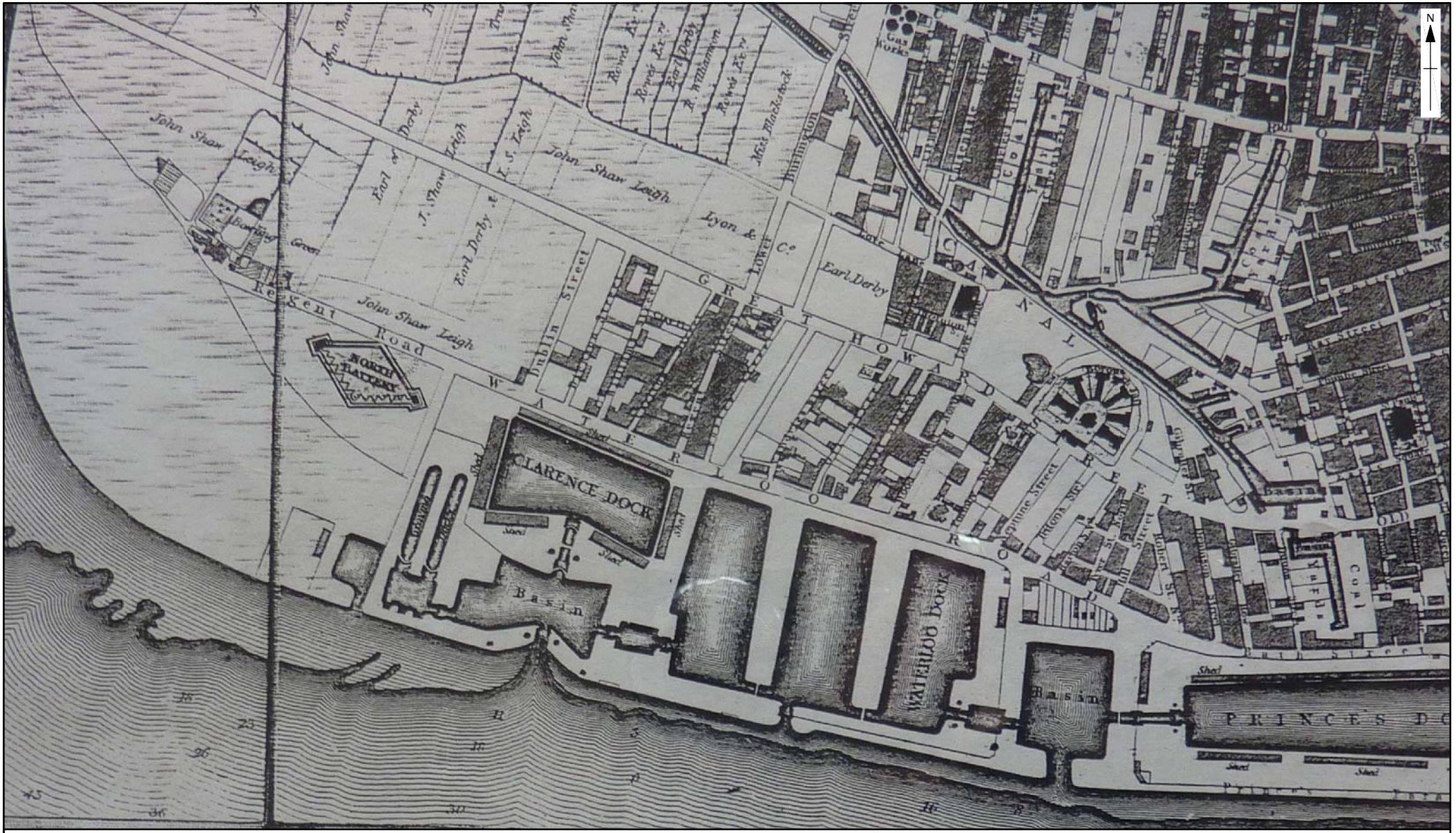

Figure 5: Excerpt from the 1885 Map of Liverpool (source unknown)

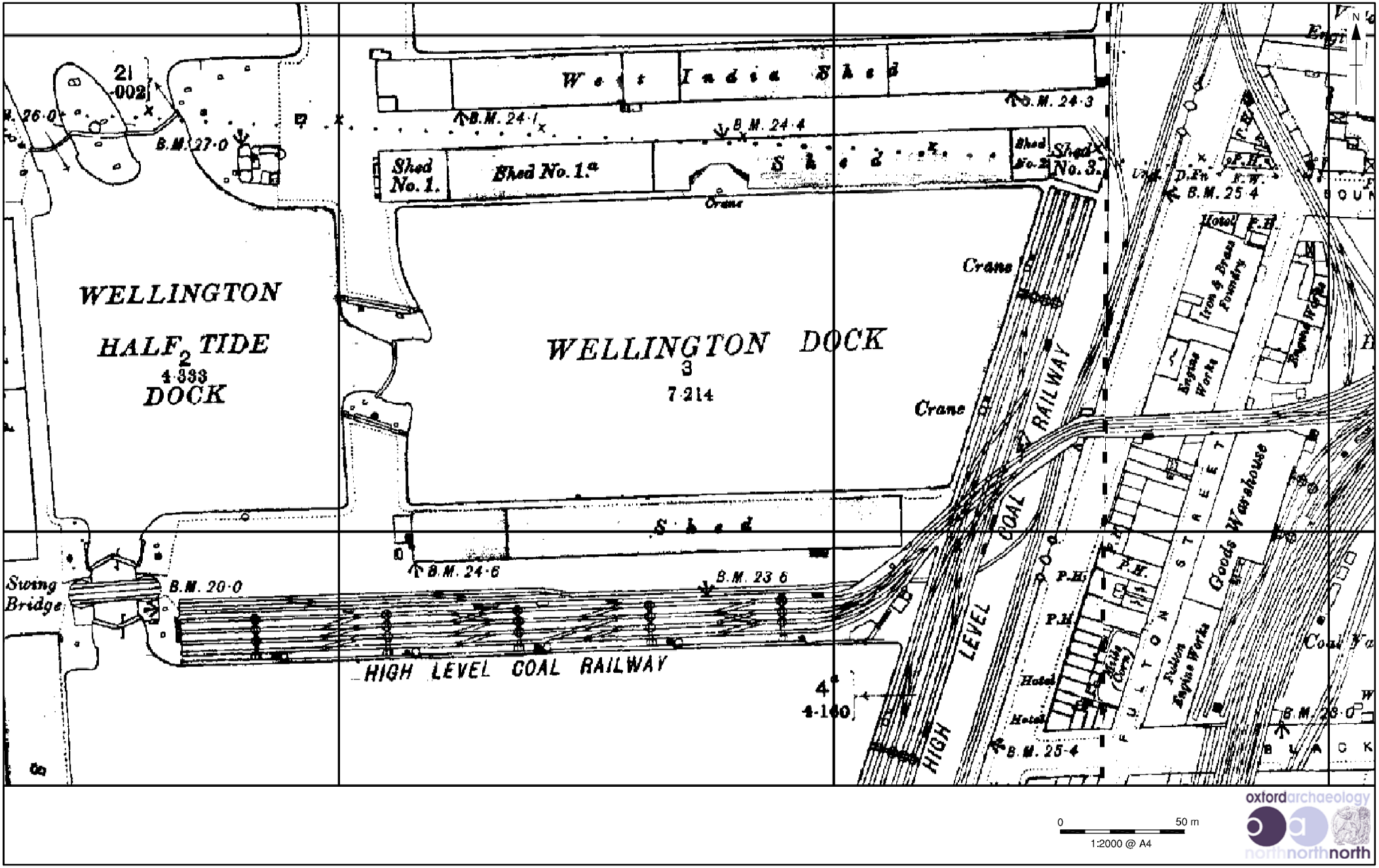

Figure 6: Extract from Ordnance Survey 1:2,500 map, 1890

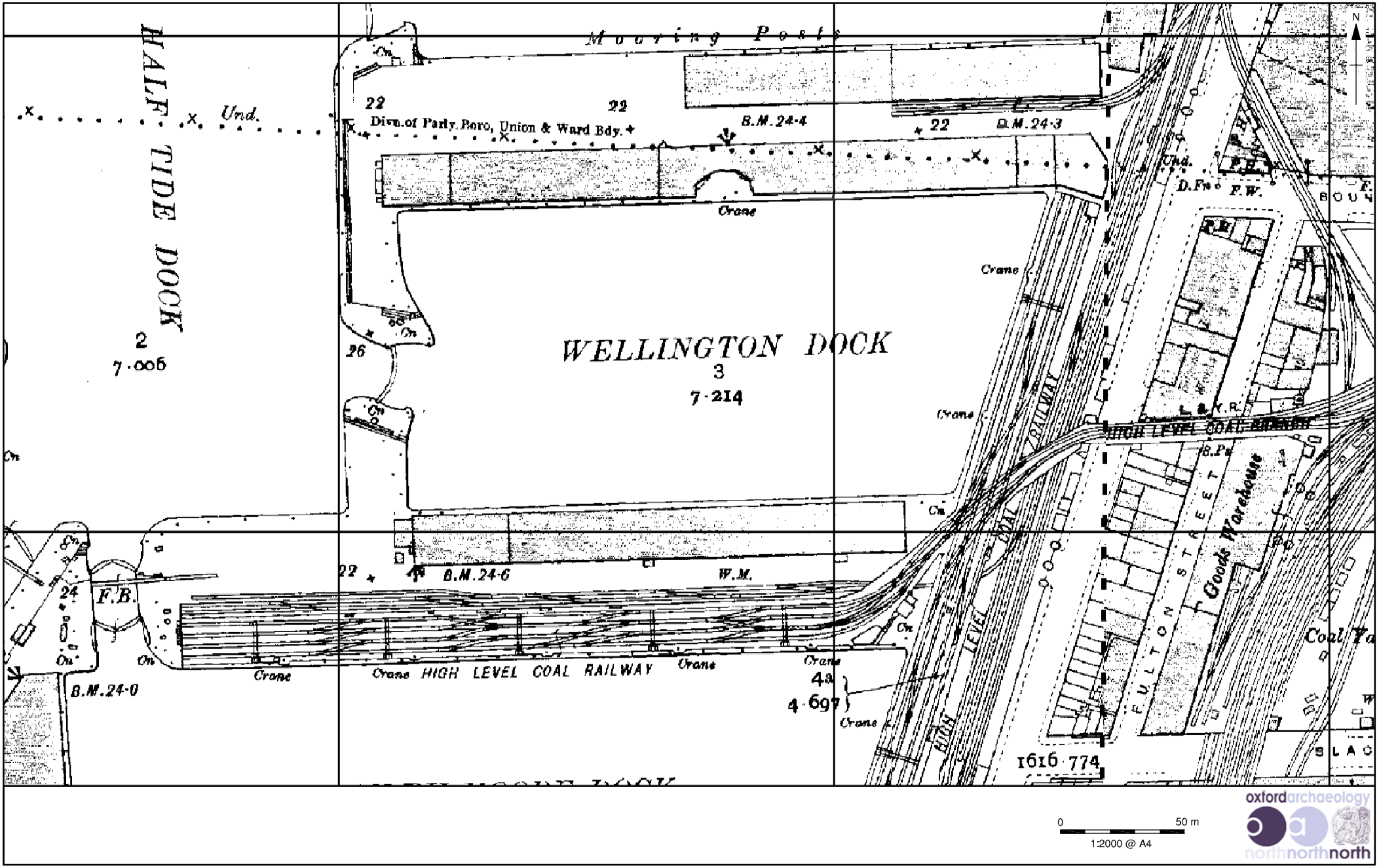

Figure 7: Extract from Ordnance Survey 1:2,500 map, 1908

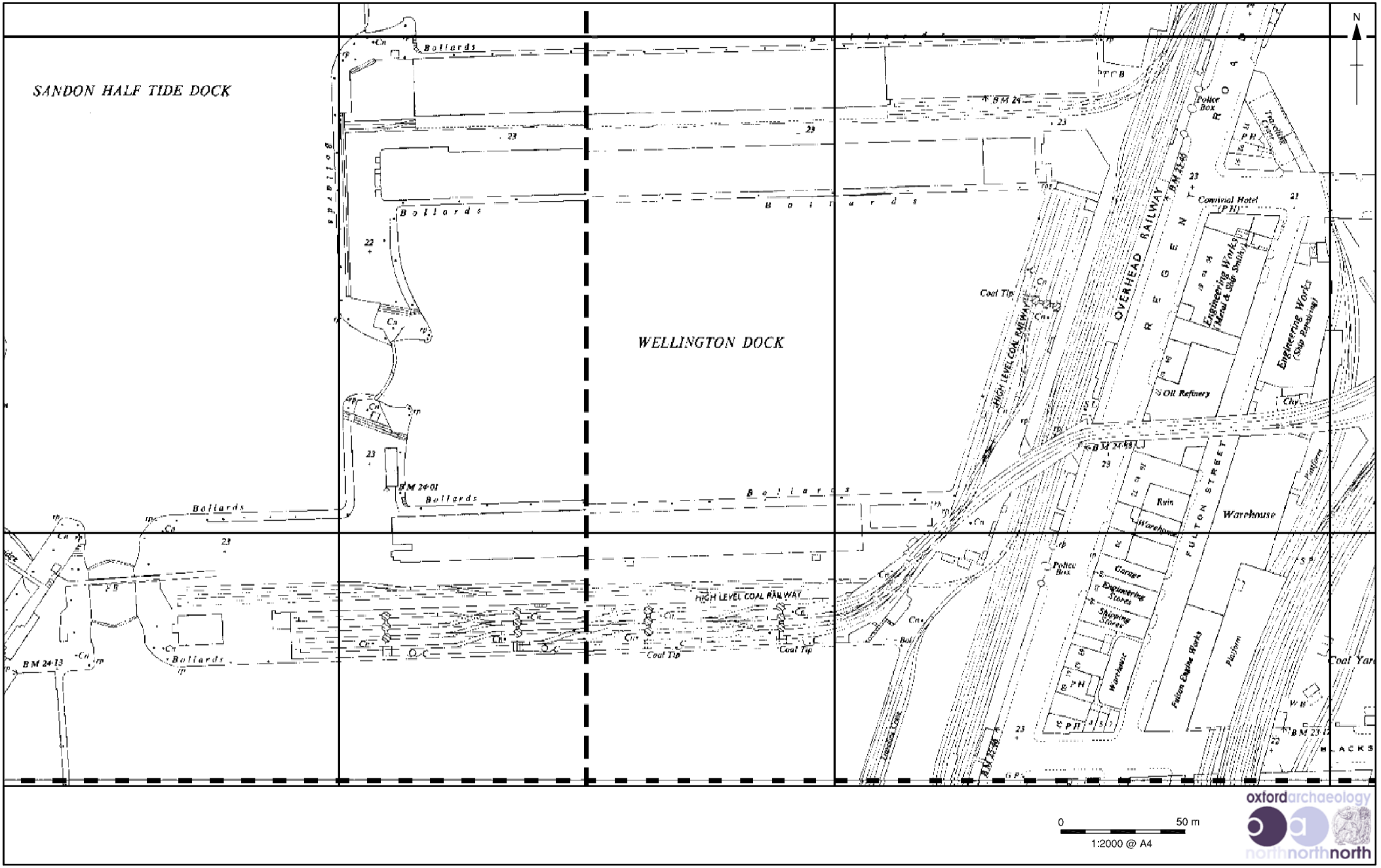

Figure 8: Extract from Ordnance Survey 1:2,500 map, 1954

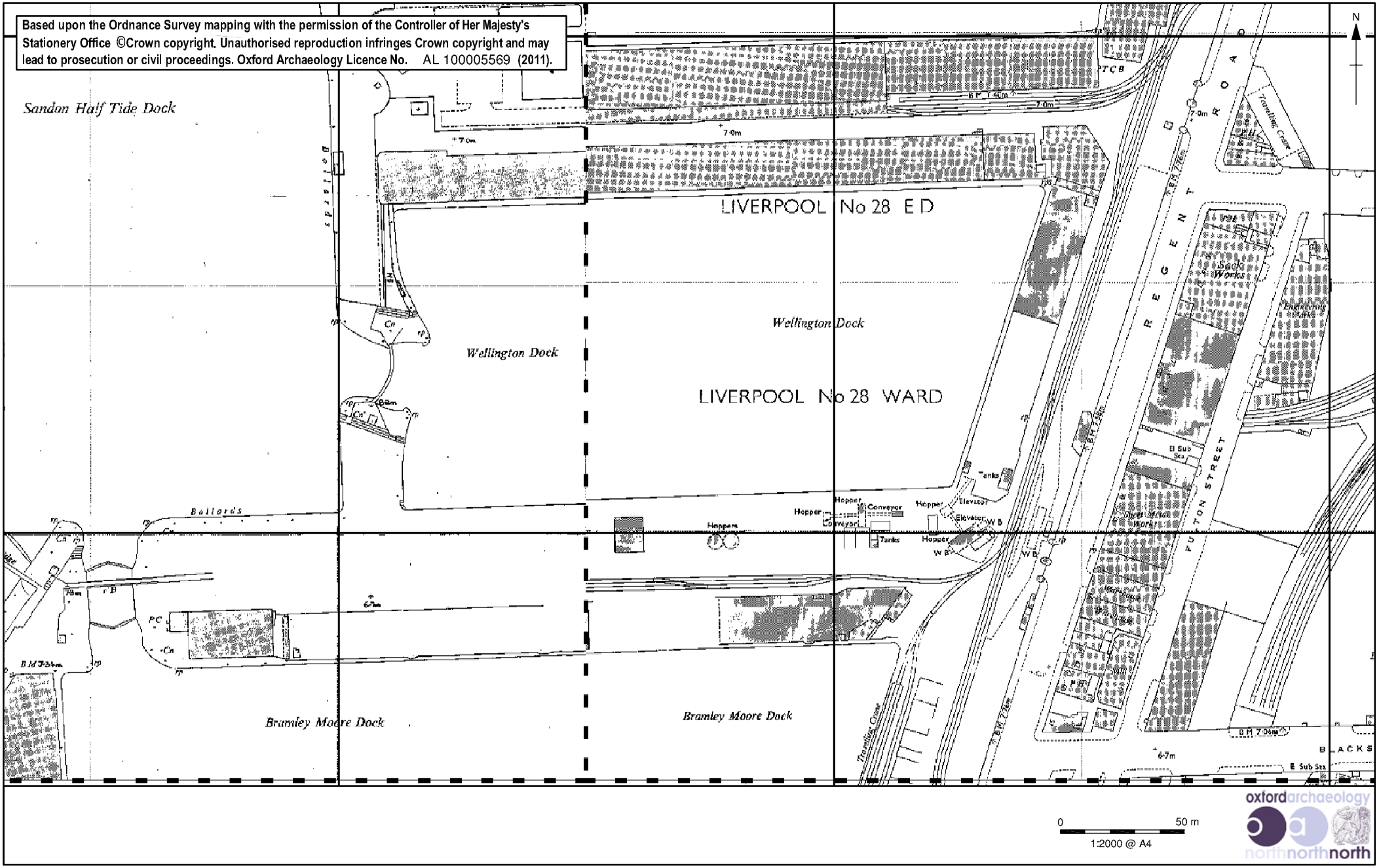

Figure 9: Extract from Ordnance Survey 1:2,500 map, 1968

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Plate 1: General east-facing working-shot of Wellington Dock

Plate 2: View looking north-east towards existing Sandon Dock Waste Water Treatment Works

Plate 3: TP1 within the existing Waste Water Treatment Works

Plate 4: TP2 within the existing Waste Water Treatment Works

Plate 5: TP3 within the existing Waste Water Treatment Works

Plate 6: TP4 within the existing Waste Water Treatment Works

Plate 7: Trial Trench 25X showing its general location

Plate 8: Trial Trench 25X, south-facing elevation (construction face) of dock wall

Plate 9: Trial Trench 1X, showing its general location

Plate 10: Trial Trench 1X showing the position of the counterfort

Plate 11: Trial Trench 1XX, showing the general location

Plate 12: Trial Trench 1XX showing the position of the counterfort

Plate 13: Trial Trench 1XX showing made ground deposits to the rear of the counterfort

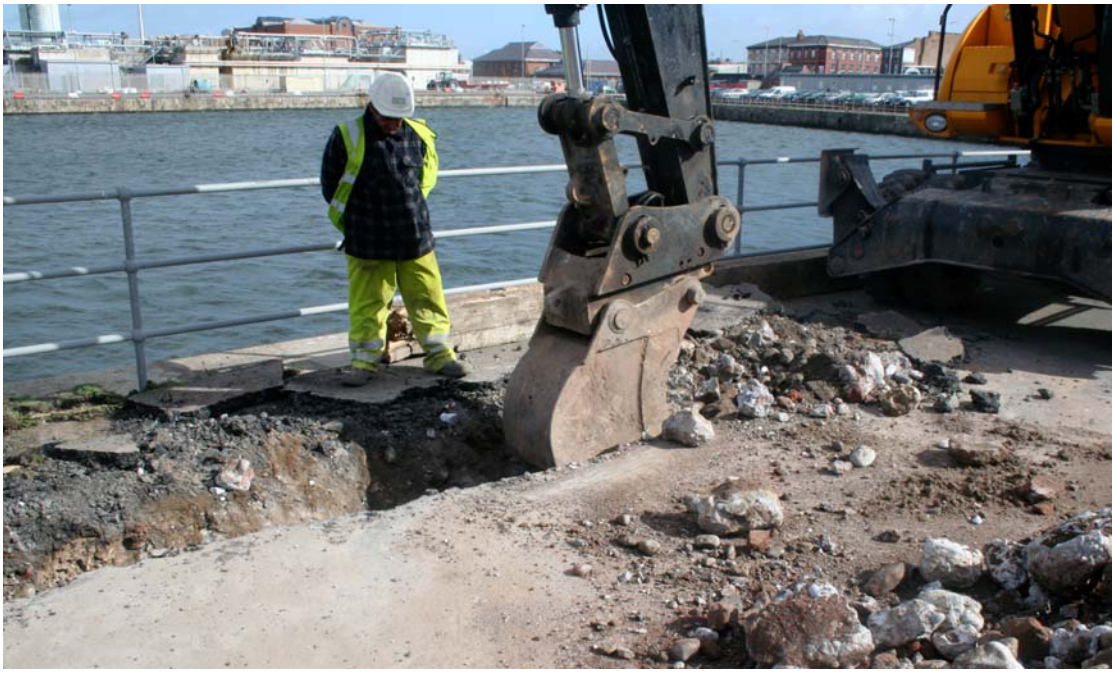

Plate 14: Trial Trench 25X, showing general location

Plate 15: Gate Pier Trench (GP1), showing the general location

Plate 16: Trial Trench 25X showing the position of the sandstone crane base

Plate 17: Trial Trench 25 XX, showing the position of the counterfort

Plate 18: Trial Trench 29X showing the position of the partially exposed counterfort

Plate 19: Gate Pier Trench 1 showing the west-facing elevation (construction face) of the dock wall

Plate 20: Gate Pier Trench 1 showing a partially exposed sandstone structure at the base of the trench