



MANN ISLAND, LIVERPOOL, Merseyside

Archaeological Post-excavation Assessment Report



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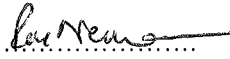
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SUMMARY

The area known as Mann Island (centred at SJ 3403 9008) is bounded on the north by a road of the same name, on the east by The Strand, on the west by the Mersey itself, while the Canning Graving Docks form the southern limit. The Strand, as the name implies, marks the approximate position of the natural shoreline of the Mersey, before two centuries of land reclamation. Mann Island itself, which lies partly within the Maritime Mercantile City of Liverpool World Heritage Site, consists entirely of made ground, created during the construction of a series of docks, each of which experienced phases of rebuilding during its lifetime, with some reaching redundancy and being infilled.

The process of reclamation began in the early eighteenth century, when a tidal basin to ease the approach to the Old Dock (built 1710–17) was established. The later extension and development of this, from *c* 1740, created the Dry Dock, from which Canning Dock was created in 1829. Further phases of reclamation westwards culminated in the establishment of Manchester Dock in 1785.

The archaeological excavations on Mann Island, carried out by Oxford Archaeology North between May 2007 and May 2008, with further work in July 2009, on behalf of Countryside Neptune, occupied ground extending from the early eighteenth-century reclamation close to the original shoreline, westwards to the northern and eastern walls of Manchester Dock, and including successive limits of land reclamation inbetween. From an examination of historical records and maps, it was apparent that the excavation was likely to encounter the remains of sea walls, the Dry Dock, the passage between Canning Dock and George's Dock to the north, Manchester Dock, the Mersey Railway pumping and ventilation station, and buildings which occupied the area marked on maps as Nova Scotia.

The excavation took three forms: a watching brief on trenches excavated by the construction engineers to assess ground conditions; mechanically assisted excavation of areas of complex building remains; and the bulk excavation by machine of infilled ground behind sea walls and within redundant docks. Details of the construction of each of the major features were revealed. In most instances, the dock and sea walls were all remarkably well-preserved, to almost their full original profile. Walling of the Dry Dock, George's Dock Passage, Manchester Dock and three successive sea walls was located, showing developments and variations in construction technique and material over a period of less than 50 years. A watching brief was maintained during piling works in the vicinity of the Dry Dock wall in July 2009, some of which directly impacted upon the wall.

In all areas there were also the remains of the ancillary buildings serving the docks and providing accommodation for those engaged in their operation, which extended across the area of reclaimed land formerly called Novia Scotia. The investigations have generated large quantities of stratigraphical and structural data and substantial assemblages of finds. This report assesses the potential of the archive and presents an updated project design for its analysis and publication. It concludes that the data have a considerable potential to address a number of regional, national and international research aims, unique to the work undertaken in Liverpool. The proposed revised project design provides for the post-excavation analysis of the finds and dataset, culminating in the publication of the results in a volume which is accessible to the general public.

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The evaluation and excavation work was undertaken by Vix Hughes, Andy Lane and Caroline Raynor, with the assistance of Ric Buckle, Caroline Bulcock, Ged Callaghan, Tim Christian, Pascal Eloy, Will Gardner, Fiona Gordon, Annie Hamilton-Gibney, Joanne Hawkins, Pip Haworth, Paul Holmes, Gemma Jones, Andrea Kenyon, Tom Mace, Dave Lamb, Des O'Leary, Mark Oldham, Kieran Power, Andy Proctor, Elizabeth Murray, and Claire Riley. The watching brief work in 2009 was undertaken by Des O'Leary. The assessment of the finds was guided by Chris Howard Davis, with input from David Higgins, Andy Bates, and Jeff Speakman. This report was compiled by Vix Hughes and Caroline Raynor, and the drawings were produced by Vix Hughes and Anne Stewardson. The report was edited by Jamie Quartermaine, who was also responsible for overall project management, and Nick Johnson.

*'At length to Leverpoole we came...
And any man alive who'd guess,
By the Town's sudden rise, no less:
From a small Fishery of late,
Became the darling child of Fate;
So wealthy grown, so full of Hurry,
That she Eclipses Bristol's Glory.'*

From *A Trip to Leverpoole* (Anon), published in London in 1706

1. INTRODUCTION

1.1 INTRODUCTION

1.1.1 This document is a post-excavation assessment, updated project design and publication proposal for the site archive generated by the fieldwork undertaken by Oxford Archaeology North (OA North) at Mann Island, Liverpool. It has been prepared in accordance with the protocols set down by English Heritage in the document *Management of Archaeological Projects 2nd Edition* (English Heritage 1991a).

1.2 PROJECT BACKGROUND

1.2.1 Planning applications were submitted in July 2006 by Neptune Ltd for mixed developments at Mann Island, Liverpool, centred at SJ 3403 9008 (Fig 1; Plate 1). The development area lies partly within the Maritime Mercantile City of Liverpool World Heritage Site, more specifically within the areas defined as Area 1 Pier Head, which includes the Three Graces; and Area 2 Albert Dock Conservation Area. World Heritage Site (WHS) status was granted in 2004. Within the WHS area, the buried archaeological deposits are regarded as ‘a nationally significant resource’, which is ‘highly fragile and vulnerable to damage and destruction’ (Liverpool City Council 2005, 99). The development is focused on two sites on either side of the remains of George’s Dock Passage, leading into the northern side of the present Canning Dock (Figs 1 and 2). One site centred on the former Transit Shed / Voss Garage (Plate 1), and the other on the site of the former Media House, adjacent to The Strand. The archaeological sensitivity of the area has previously been highlighted by a desk-based assessment (Philpott 1999).

1.2.2 OA North undertook an earlier phase of fieldwork associated with the development, a programme of evaluations in 2006 (OA North 2006a), which identified the survival of Manchester Dock; warehouses under the Transit Shed; and cobbled surfaces and structures at the Media House site. The programme of subsequent mitigation excavation across the areas occupied by the Transit Shed and Media House followed on from, and was informed by, the results of these evaluations. The lead contractors were Tisdale Demolition, with plant supplied by Boundary Plant for much of the initial work, and HBG, with plant supplied by Mahers, from November 2007 onwards.

1.3 LOCATION AND TOPOGRAPHICAL SETTING

1.3.1 The development area incorporates 1.1ha of land in Liverpool city centre, at Mann Island, immediately west of the Strand, south of The Dock Office, north of Canning Dock and the Dry Dock, and east of the new Liverpool Museums development (Fig 1). The site has been subdivided by the logistical necessity of excavating in small areas, rather than a full open-area strip, resulting in a series of ‘sites’ or areas. Areas A–C (Fig 2) represent the key locations of the excavations. The ground surface lies at around 6.25m AOD.

1.3.2 Prior to recent demolition works, much of the development area consisted of upstanding buildings of various ages (Plate 1). These included twentieth-century structures such as the Voss Garage and a steel-framed commercial structure

designed by Herbert Rouse, as well as older buildings, such as the adjacent transit shed. There were also open plots of land used as car parks. All these buildings were demolished in 2007, before which the older structures were subject to a separate archaeological building survey (OA North 2007a).

1.4 HISTORICAL BACKGROUND

1.4.1 The following account is drawn largely from secondary sources, including the desk-based assessment of the site by Rob Philpott (1999).

1.4.2 **Medieval Liverpool (1066–1710):** the establishment of the town of Liverpool is well-documented, the name ‘Liuerpol’ first being 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 elevated the settlement from a fishing and farming village to a royal borough. The town was positioned next to the Pool, a prominent topographical feature and natural inlet, the place-name ‘Liverpool’ being derived from it. This natural tidal inlet was fed by streams arising further north, and was nearly 1.5km long at high tide (Stewart-Brown 1932, 88). The Pool acted as an area where cargoes could be unloaded, and ships built and repaired (*op cit*, 89). It silted up, however, and by the turn of the eighteenth century was shallow and unusable by anything other than relatively small ships.

1.4.3 **The Old Dock (1710–1826):** the limitation of the Pool brought increasing demand for better accommodation for ships, and prompted the construction of a dock. The dock was initially designed by George Sorrocold, but the lead on its design and construction was taken up by Thomas Steers, and construction began in May 1710 (Ritchie-Noakes 1984). It ultimately took seven years to complete and, once open, it meant that ships could unload in one and a half days, rather than the 12 to 14 days previously. This greatly increased the commercial viability of Liverpool (MacLeod 1982, 13). The impact was immense: Chester, Bristol and London all lost significant trade throughout the eighteenth century as a result (*op cit*, 14).

1.4.4 **Canning / Dry Dock:** the Old Dock did not stand in isolation, as there was also a 1½ acre octagonal tidal entrance basin with a graving dock off its north side (Jarvis 1996; Ritchie-Noakes 1984). The basin, shown on Chadwick’s plan of 1725, was enlarged at a point between 1740 and 1743 to form what was known locally as the ‘Dry Dock’ because it was empty at low water (Fig 3). This was superseded by Canning Dock, a wet dock, in 1829 (Ritchie-Noakes 1984; Hyde 1971). Contemporary with the construction of Dry Dock was the first of a series of sea walls, advancing westwards into the river (Plate 2).

1.4.5 **George’s Dock:** the success of the Old Dock, and the attendant difficulties in working it, spawned further enclosed docks, including South Dock, opened in 1753 (Hyde 1971), and George’s Dock. This was begun in 1762, completed by 1771 (*op cit*, 75), enlarged in 1810–15, and partially rebuilt in 1822–25 (Fig 4). The dock closed in 1900 and was infilled, whereupon the area, known as The Pier Head, saw the construction of the Three Graces, including the Royal Liver Building of 1908–11 (listed Grade I) at the north end.

1.4.6 **Manchester Dock:** the Manchester Dock was constructed and opened by 1785–9 for the purpose of harbouring the Mersey Flats, barges and lighters which were used for ‘lightening’ other ships’ loads or loading and unloading ships that could

not be wharfed / docked (Jones 1996; Fig 4). Vessels were mostly transferring coal, corn and cotton between the Manchester area, *via* the Mersey-Irwell Navigation, and international markets. The quayside area of the dock saw numerous sheds and warehouses built immediately adjacent, and partly overhanging, in order to house the goods during transhipment. The gradual change in transport systems from canals to railways, to roads led to a decline in the use of Manchester Dock and it was closed in 1928 and infilled by 1936.

- 1.4.7 ***Novia Scotia:*** the area known as Nova Scotia lay in the vicinity of Canning Dock and was an area frequented by the maritime community (Plate 3; Fig 4). Consequently, it contained numerous shops, inns, hostelries, and workshops (Brazendale 2007), which map evidence shows were demolished to make room for the Irwell Street warehouses in the early twentieth century. The name Nova Scotia is shown as referring to the area west of the southern passage into George's Dock on the map of John Eyes of 1765. It last appears on the Ordnance Survey map of 1908.
- 1.4.8 ***Mann Island:*** Mann Island was land reclaimed from the Mersey during the dock expansion period in the mid-eighteenth century, and was first referred to by that name in 1785 (Wakefield 1927). On Eyes' map of 1765, the area is clearly shown as part of the River Mersey foreshore, although the area later to become Nova Scotia has been reclaimed and enclosed by this date (Fig 3).
- 1.4.9 ***Warehouse developments and other associated buildings:*** prior to and during the early eighteenth century, merchants used the cellars of their houses for storage, but with increasing volumes of goods to store, purpose-built warehouses became a more efficient system. The warehouses were often between four and ten storeys in height, with gabled fronts, and were long and narrow in plan. They often had a central pulley, below which were loading doors for each floor.
- 1.4.10 The construction of the warehouses limited the supply of land for building and resulted in the construction of very compact workers' housing. Eighteenth-century dwellings were typically three storey, terraced, back-to-back houses, in groups of six to eight. In 1846, this mode of construction was banned, but 3073 courts, constituting 17,825 dwellings, were already in existence (Sharples 2004, 8). During the late eighteenth century, large numbers of 'cellars' were occupied as dwellings (*op cit*, 179), partly because the warehouses had rendered them redundant as store rooms.
- 1.4.11 ***Mersey Railway Tunnel:*** the building of the Mersey Railway Tunnel was begun in December 1879 and involved two railway lines in a main tunnel (Plate 4; Fig 2), with additional tunnels for ventilation and drainage. It was officially opened in 1886. The brick pump house for the tunnel was sited on Mann Island, being designed by architects Grayson and Ould (*op cit*, 112). The ventilation of the tunnel was dealt with by four large fans, called Guibal fans, in a tunnel connecting the main tunnel to the pumping and ventilation station. However, this system was found to be insufficient to deal with the pollution created by steam locomotives and the line was therefore electrified, making the Mersey Railway the world's first electrified underground railway (Liverpool City Council 2005, 141).
- 1.4.12 ***Twentieth Century: Transit Shed and Voss Garage:*** the Transit Shed was built in 1921 (Plate 1) and served as a warehouse for goods going in and out of Manchester Dock. The closure of the dock in the 1930s necessitated a change of

use and it was modified to become a garage. The Voss garage, designed in an Art Deco style, was built between 1927 and 1939. Its architect, Herbert Rouse, was also involved in the design of the Queensway Tunnel and the Liverpool Philharmonic Hall on Hope Street (Sharples 2004).

2. ORIGINAL AIMS AND OBJECTIVES

2.1 AIMS

2.1.1 Evaluation in 2006 on the site of the Transit Shed and Voss Garage showed that Manchester Dock survived in good condition, close to the surface (OA North 2006a). Around the dock, historical mapping indicated a series of warehouses and ancillary buildings in the area of Mann Island: the same evaluation located these beneath the Transit Shed floors. The works also revealed the line of an eighteenth-century sea wall. In the area of Media House, evaluation revealed the former Dry Dock wall, built of yellow sandstone, and clearly of eighteenth-century origin (OA North 2005). The present Canning Dock, dating from the early nineteenth century, superseded the earlier Dry Dock, and in so doing, preserved remains of its wall. Other surviving remains included the substantial ventilation station for the Mersey Rail Tunnel, in construction from 1879 (*Section 1.4.11*).

2.1.2 Furnished with this information, academic aims were formulated and these formed the basis of the original Project Design for the programme of mitigating works at the Mann Island site (OA North 2007b). The aims 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;
- to provide a mitigative record of the archaeological deposits and structural remains, particularly the dock walls and sea walls, in anticipation of their disturbance by the proposed construction works.

2.2 OBJECTIVES

2.2.1 In order to meet the aims stated above, the following objectives were devised:

- to determine the thickness, depth and depositional history of any significant archaeological and environmental structures and deposits;
- to provide a mitigative record (photographed, drawn, surveyed and textual) of the archaeological deposits and structural remains, particularly the dock walls and sea walls, prior to their disturbance by the construction works;
- to characterise the nature of the main stratigraphic units encountered in terms of their physical composition (stone, gravel, organic materials *etc*) and their archaeological formation (primary deposits, secondary deposits *etc*);
- to assess the overall presence and survival of structural remains relating to the main periods of activity revealed and the potential for the recovery of additional structural information given the nature of the deposits encountered (*eg* extent of later disturbance *etc*);

- to determine the broad phasing of the site to appreciate its development within its historical context;
- to assess the overall presence and survival of the main kinds of artefactual evidence (including pottery, brick, tile, stone, glass, metal, bone, small finds, industrial residues *etc*), its condition and potential, given the nature of the deposits encountered;
- to assess the overall presence and survival of the main kinds of ecofactual and environmental evidence (including animal bone, human bone, plant remains, pollen, peat, charcoal, molluscs, soils *etc*), its condition and potential, given the nature of the deposits encountered;
- to appraise the relative value of the main stratigraphic units revealed, in terms of their importance for preservation and conservation;
- to provide sufficient research in order to place any findings in context;
- to produce a report and archive in accordance with English Heritage guidelines (1991a);
- to create an ordered archive of the work to be housed in a public repository.

3. METHODOLOGY

3.1 GENERAL

- 3.1.1 All elements of the work were recorded in accordance with English Heritage guidelines, published as *Management of Archaeological Projects, 2nd Edition* (MAP2) (English Heritage 1991a) and the best practices formulated and published on-line by English Heritage's Archaeological Projects Team (formerly Centre for Archaeology) (IFA 2001).
- 3.1.2 The archaeological programme sought to investigate and mitigate disturbance of the sub-surface archaeological remains. The site was more or less bisected by the remains of George's Dock Passage located on the north side of Canning Dock (Fig 2). The area to the west was designated Area A, and the area to the east, Area B; a further area, Area C, was to the immediate north of the passage. The areas were investigated at different times, according to construction priorities. In the case of Area A, numerous small investigations took place at an early stage, which were eventually amalgamated during a bulk excavation phase. At the outset, it was anticipated that different levels of recording would be employed depending on location: these are defined below.
- 3.1.3 **Level 1:** this recording was implemented within areas of archaeological potential, typically between the docks, where quayside commercial structures would normally be located, and in particular the area of the former Transit Shed, where evaluation had identified elements associated with warehouses. The methodology applied to meet this standard is detailed below, under individual headings (*Sections 3.3.1–3.3.2*).
- 3.1.4 **Level 2:** this was applied in areas/sites that had significant archaeological remains documented, and comprised the dock walls (Manchester and Dry Dock) and sea walls. It also included the area of the ventilation facilities for the Mersey rail tunnel. The methodology applied to meet this standard is detailed below, under individual headings (*Sections 3.3.3–3.3.5*).
- 3.1.5 **Level 3:** recording at this level was applied to those sections of the dock and sea walls which could not be preserved *in situ*. This entailed the production of a full mitigative record of the structure, including photographs, comprehensive drawings, laser scanning and a written account (as per English Heritage guidelines, 2006) (*Section 3.3.8*).
- 3.1.6 **Archaeological Tasks:** the works for those areas categorised as Levels 1–2 included watching brief, rescue excavation, open-area excavation, and building recording. These are discussed in further detail below.

3.2 ARCHAEOLOGICAL WATCHING BRIEF

- 3.2.1 A programme of field observation took place during ground works in isolated parts of the site. These tended to be trial trenches dug by the construction engineers to determine ground conditions. A full description and preliminary classification of features and materials revealed, and their accurate location, either on plan or section, was completed by the archaeological supervisor. All

archaeological information collected in the course of fieldwork was recorded in standardised form and a photographic record was undertaken simultaneously.

- 3.2.2 **Block 3:** following the discovery of the extant 1737 Dry Dock wall in Block 3 during the 2008 excavations (*Section 4.1*), the piling plan was reconfigured to minimise its impact upon this significant archaeological monument. Despite the revision, there were still six piles on the line of or in the environs of the wall, although three of these will have had only limited impact; Piles 42, 43 and 44 had the greatest impact (Fig 5).
- 3.2.3 A watching brief was undertaken during the piling along the length of the Dry Dock wall, to determine which piles impacted upon the wall, and by watching the risings generated by the piling rig, to measure the approximate depth of the surviving sections of wall (Fig 5). The wall was not re-exposed during this process, and the piling rig was placed on reinstated ground directly over the wall; consequently, archaeologists had no direct sight of the archaeological remains.

3.3 ARCHAEOLOGICAL EXCAVATION

- 3.3.1 Open-area excavation (Level 1) was intended to expose and record quayside features and structures, as well as any other structural elements. The excavation used a variety of techniques, from mechanical excavation to delicate hand excavation, to suit differing conditions. Following machine removal of the overburden, mechanical excavation was used to define carefully the extent of any surviving foundations, floors, and other remains. Thereafter, structural remains were cleaned manually to define their extent, nature, form and, where possible, date. The aim of the work was to explore all features stratigraphically and to produce a clear plan of the complex.
- 3.3.2 Where encountered, cellars were not initially removed, since it was necessary to determine their date and potential association with the docks. Once fully revealed and recorded, the cellars were removed using mechanical excavators under archaeological supervision. Any deposits beneath the cellars and overburden were investigated and sampled according to the appropriate professional standards to enable environmental analysis if required.
- 3.3.3 Level 2 recording was applied to the known dock walls, where a full fabric survey was necessary. The exposure of the dock walls used a combination of mechanical excavation and delicate hand excavation: overlying overburden and backfill were removed mechanically. The work was supervised by a suitably experienced archaeologist and, for the most part, was undertaken to remove large amounts of deposit, in bulk, from those areas where there was a requirement for a substantial basement space such as an underground car park. Manual excavation was employed to remove the deposits immediately adjacent to the dock and sea walls to prevent accidental damage to them and to reveal nuances in the construction. Although not part of the original project design, the full profile of the walls to their lowest level was obtained, specifically the portion of wall surviving below the construction formation level. Any associated tip deposits and fills encountered were recorded in section and any finds were recovered. This was an important consideration to enable the collection of assemblages probably deposited at a defined date, and to determine the nature of the materials used to backfill and reclaim the docks.

- 3.3.4 **Care of the walls:** considerable care was taken to preserve the dock walls in the course of mechanical excavation, and where the walls were to be re-visited and exposed to full depth during the later excavations, provisions were made for their conservation. This included covering the top and upper sides of the walls with a layer of black visqueen and a layer of imported red sand, 0.3m thick. This sand was sourced from a stockpile resulting from the excavations at the Chavasse Park PSDA site, on the opposite side of The Strand (OA North 2010).
- 3.3.5 **Survey:** a series of survey control points was established on the site. Archaeological planning was undertaken using a data-logging total station (Topcon) producing dxf files. All planning data were digitally incorporated into the CAD system during the course of the excavation and superimposed on the base survey. This process generated scaled printouts which could be overlaid with permatrace and manually enhanced. The drawings were generated at an accuracy appropriate to 1:20 scale for the majority of features, but at 1:50 for larger remains. A digital adaptation of single context planning was used, where, as appropriate, each entity was allocated a unique layer. This allowed maximum flexibility in generating views. Section drawings were created manually.
- 3.3.6 **Context Recording:** archaeological stratigraphy was recorded using *pro-forma* sheets. All written records of survey data, contexts, artefacts and ecofacts were cross-referenced. The contexts were incorporated into a Harris matrix, hand-drawn on site for checking purposes, but scheduled for generation by computer.
- 3.3.7 **Photography:** a full and detailed photographic record of individual contexts was maintained, and similarly, general views were taken from standard view-points at all stages of the excavations. An elevated platform was utilised to obtain overall site photographs, showing key features. Photography was undertaken using 35mm-format cameras, and on black-and-white print film, as well as colour transparency (slides), for archival purposes. Extensive use was made of digital photography throughout the course of the fieldwork for presentation and reference purposes. Photographic records were maintained on special photographic *pro-forma* sheets.
- 3.3.8 **Laser Scanning:** those historic structures, principally dock walls, which were to be disturbed by the development, required comprehensive recording at Level 3. In Area B (Fig 2), the faces of the dock walls exposed were surveyed by laser scanning, which is capable of providing a detailed record of surfaces in three dimensions. The resulting ‘cloud’ of millions of points was then examined using Cloudworx software within an AutoCAD environment. This provided the base data for the production of detailed elevation drawings. The same data can be used to create full 3D models of the structure as well as plans or cross-sections as required. The survey was undertaken by an external contractor (APR Services).

3.4 FINDS AND ENVIRONMENTAL SAMPLES

- 3.4.1 **Finds:** finds recovery and sampling programmes were in accordance with current best practice (eg IFA 1992, and other specialist guidelines) and subject to appropriate expert advice. Finds handling, management and storage during and after fieldwork followed professional guidelines (IFA 1992; UKIC 1984). Neither artefacts nor ecofacts were collected systematically during the mechanical excavation of the overburden. Exceptions were made for significant deposits

encountered, for example pottery or clay tobacco pipe waster dumps. In such cases, material was sampled in such a manner as to provide data to enhance present knowledge of the production and dating of such artefacts. Following the removal of overburden, artefacts and ecofacts were collected and handled as per best practice: all material was collected and identified by stratigraphic unit and hand collection was the norm. Animal bone was recovered, by hand, from stratified deposits only, without sieving.

- 3.4.2 Finds were processed at OA North's facilities in Lancaster, following standard practice, *ie* the finds have been washed, dried, re-bagged and packed in stable conditions, boxed by material type. No attempt at marking and conservation has been made, except in special circumstances. Numbers were issued, in sequential blocks, to every individual item or bag of finds, for the purposes of tracking the material. The information has been logged on the site database. No waterlogged finds, gold and silver artefacts, or human remains were encountered.
- 3.4.3 ***Environmental Sampling:*** a programme of palaeoenvironmental sampling was undertaken at the site under the guidance of Sue Stallibrass (the North West regional science advisor for English Heritage, based at the University of Liverpool).

3.5 ARCHIVE

- 3.5.1 ***Archive:*** the results of the fieldwork, and post-excavation assessment, followed by appropriate analysis, will form the basis of a full archive to professional standards, in accordance with English Heritage guidelines (*MAP2*, 1991a) and the *Guidelines for the Preparation of Excavation Archives for Long-Term Storage* (Walker 1990). Arrangements for the deposition of the archive are detailed in *Section 6*. The full archive of digital data, paper records, site drawings, artefacts and ecofacts, has been curated, developed, maintained and stored by Oxford Archaeology North since the start of the project, including the period since the conclusion of fieldwork. Copyright of the digital data, paper records and site drawings resides with Oxford Archaeology Limited.
- 3.5.2 ***Interim Reporting:*** during the course of the works, interim reports were submitted, with the objectives of outlining the results and indicating the importance of the remains. Copies were sent to the client and the Merseyside Archaeological Officer.

4. SUMMARY OF THE RESULTS OF THE FIELDWORK

4.1 INTRODUCTION

4.1.1 The site was bisected by the remains of George's Dock Passage (Fig 2) located to the north of Canning Dock. The area to the west was designated Area A, and the area to the east, Area B (OA North 2007c). A further area, Area C, was to the immediate north of the passage. The areas were investigated at different times, according to the priorities of construction works. Area A occupied an area of 6320m², while Area B was 2210m² in extent and Area C 555m².

4.1.2 In total, seven main phases of activity were established within the excavation. The results, presented below for each area, are described in the order of these phases, which are chronologically broad, and preliminary, being subject to further refinement during course of post-excavation analysis:

<i>Phase 1</i>	Early Post-Medieval Reclamation	pre-1753
<i>Phase 2</i>	Early Post-Medieval Occupation	1753–1765/9
<i>Phase 3</i>	Dock Police Office / Harbour Master's Office	1770–1785
<i>Phase 4</i>	Foreman Sweeper's Office / Manchester Dock	1785–1850
<i>Phase 5</i>	Mersey Railway Tunnel era	1850–1900
<i>Phase 6</i>	Early twentieth century	1900–1925
<i>Phase 7</i>	Modern: twentieth century	1925–2000

4.2 AREA A

4.2.1 Numerous small investigations, named Trenches 5, 6, 7, 7x and 9–14, took place in Area A at an early stage of the programme. The main, and final, part of the Area A excavation, adjacent to Canning Dock, was 2100m² in extent (Figs 6 and 7). The sea walls, docks and more substantial warehouse walls, which were partially uncovered during the course of the initial Area A excavation, were revealed to their full extent and depth during the course of this final element of work. A watching brief was maintained during the piling of the Dry Dock wall in July 2009 (Fig 5).

4.2.2 **Phases 1-2:** major reclamation of the foreshore of the Mersey is known from the early-eighteenth century onwards (Chadwick 1725; Ritchie-Noakes 1984). The main feature of this period located by the excavation was a large yellow sandstone sea wall, **5707** (Fig 7), oriented approximately north-west/south-east, which survived to a height of about 5.45m AOD (Plate 2). This sea wall is depicted on Eyes' map of 1765, and is of the same construction technique and material as the original c 1740 Dry Dock wall, seen in Area B, to the east, and also apparent on Eyes' map (*Section 4.3*).

4.2.3 Three further sea defence walls were identified and excavated. These included north-west/south-east-oriented sea wall **7638**, shown on Eyes' map of 1765; a jetty or breakwater wall, identified as Bird's Slip, **7762**, oriented north/south, and built into sea wall **5707** (Fig 7); and the remains of a further sea wall, **7636**,

oriented north-west/south-east, directly to the west of the **7638** sea wall, partly parallel with it (Fig 6), and shown on Eyes' later map of 1768 (Fig 3).

- 4.2.4 All of the structures were excavated to development formation level, and where walls survived below this level, additional mitigating excavation work was carried out to assess the full depth. This provided the opportunity to examine foundations and assess the prospects for survival beneath the deepest elements of the construction project. Each wall was surrounded by a series of land reclamation deposits. The earliest wall (**5707**) was covered by numerous backfill layers of yellow and pink crushed sandstone, presumably sourced from local quarries. To the west of this wall was a series of 14 vertical timbers, which may have formed a temporary mooring area between the sea wall and Bird's Slip, or may represent the remains of a small pier or wooden jetty (Fig 6). The silts around the timbers were notably rich in animal bones, suggesting there was a butcher operating on Mann Island during this period.
- 4.2.5 A series of buildings was constructed in Phase 2, immediately east of the first sea wall, with their foundations cutting the imported reclamation deposits (Plate 3). The earliest phase of buildings, such as **5722** (Fig 7), had yellow sandstone foundations, which were re-used when reconstruction took place in brick. This early use of sandstone and the later change to brick also occurred at Chavasse Park (LUAU 2001; OA North 2010), and probably dates to the early- to mid-eighteenth century. The later brick buildings survived to varying degrees, and were in better condition along the western side and towards the north. They were constructed from handmade, unfrosted bricks and mortared with a creamy-coloured, lime-rich, soft mortar. The buildings survived only as basements with brick floors and sandstone footings for columns, and probably represent small warehouses, which at the time may have had domestic or office accommodation in an upper storey. A complex of four small joined structures, **5181**, **5187**, **5708** and **5713** (Fig 7), may represent domestic dwellings in a back-to-back arrangement. They probably date to the late-eighteenth to early-nineteenth century.
- 4.2.6 Within the brick basement and cellar structures, it was possible to determine significant alterations, such as the blocking of doorways, addition of steps, the insertion of a well, and the construction of what may be small stores. The date of these modifications is, as yet, unclear. A brick culvert, **5702** (Fig 7), aligned approximately north-west/south-east along the eastern side of the site, was constructed during this phase.
- 4.2.7 **Phases 3–4:** the principal feature of the late eighteenth century was the Manchester Dock (constructed 1785–9) (Figs 2 and 6), which was revealed to a depth of 2.1m. The ashlar masonry of the dock used large blocks of pink sandstone, in courses of uneven depth, bonded with hard grey concrete mortar (Plate 5). At the east end of the dock was a series of timber beams, forming the supporting structure and foundations for an overhanging canopy, with hoists, attached to a warehouse / transit shed built on the quayside, which allowed Mersey Flats to be unloaded directly.
- 4.2.8 **Phases 5–7:** during Phase 5, additional culverts, **5762** and **5189**, were constructed, along with further warehouses, visible at the extreme southern end of

the site (Fig 7). The infilling of some of the Phase 2 warehouse cellars/basements took place at this time.

- 4.2.9 Only a few features, consisting of areas of truncated surfaces, were attributed to the penultimate phase, which dates from the very early part of the twentieth century.
- 4.2.10 The later twentieth-century phase includes the original external cobble and stone sett surfaces laid after the Manchester Dock had been infilled, between 1928 and 1934 (Liverpool City Council 2005). It also includes all the foundations of the Transit Shed and ancillary structures. These were mostly of concrete and brick, and truncated earlier remains.

4.3 AREA B

- 4.3.1 **Natural geology:** during the final ground reduction in this area, an extensive spread of dark-grey silty clay was identified (5661). This deposit, with its significant proportion of organic content, lay at 3.16m AOD, and is likely to represent natural deposits along the shoreline of the Mersey, pre-dating any land reclamation.
- 4.3.2 **Phase 1:** reclamation began in the early- to mid-eighteenth century, shortly after the success of the Old Dock had demonstrated the intrinsic value of controlling water levels. The main feature of this period is the yellow sandstone Dry Dock wall, 5270 (Fig 8), orientated approximately north-east/south-west at the southern end of Area B (Plate 4). This wall was constructed c 1740 (Ritchie-Noakes 1984, 19), and was replaced in the early nineteenth century, when the Dry Dock was converted into a closed wet dock and renamed Canning Dock (*op cit*, 41). The wall was constructed of ashlar sandstone blocks, bonded with a cream-coloured, lime-rich, moderately-hard mortar. The southern, waterside face was vertical and showed some evidence of smoothing by water action, although several examples of masons' marks survived. The rear, northern face preserved tooling marks more clearly. There were also several deposits of dumped material, including clay, which may have helped to seal the lower courses during backfilling behind the wall following construction.
- 4.3.3 During the watching brief on the piling on the Dry Dock wall, it did not prove possible to observe the wall directly. However, a log was maintained of the risings from the piling (Fig 5). In Piles 42, 43 and 44, the top of the wall was identified from the risings at a depth of c 1.3m below the level of the made-ground. It was not possible, though, to identify an interface between the sandstone masonry and the underlying rock. While this does confirm that the wall was constructed directly onto sandstone bedrock, it does not establish the base level of the dock wall. Comparisons with the sea walls from Area A (5707 and 7638), which had similar wall heights, and were broadly contemporary with the Dry Dock, suggest that the Dry Dock was also approximately 6.5–7.0m in height.
- 4.3.4 **Phase 2:** once the Dry Dock was completed, the ground around it was reclaimed and a series of buildings constructed, with their foundations cutting the imported reclamation deposits (Plate 4). These survived best in the western and central parts of the site (Fig 8). The earliest of these had sandstone footings surmounted by brick walls. These are sufficiently comparable with those in Area A to suggest

that they formed a single development, since they shared the same building materials and design principles.

- 4.3.5 **Phase 3:** towards the north-eastern part of the site was a finely constructed building, **5470**, square in plan and built from pink sandstone ashlar masonry (Fig 8). Its location corresponds to that of the Harbour Master's Office, shown on historical maps, and formerly the Dock Police Office.
- 4.3.6 **Phase 4:** adjacent to the Harbour Master's Office, to the immediate south, was another building of pink sandstone, **5408**. This later building had a rusticated finish and an elongated octagonal plan, aligned north/south. The position of this building corresponds to that of the Foreman Sweeper's Office on historical mapping.
- 4.3.7 **Phase 5:** this phase consists of the Pumping and Ventilation Station associated with the Mersey Railway Tunnel (Plate 4). Its construction, in the later nineteenth century, involved some removal of eighteenth-century buildings. The structure proved to be well-preserved. Two separate sub-phases were identified: the first when the fans were powered by steam; the second for the electrically-powered installation (Fig 8). The main distinction between the two was a change in the position of the axles for the fans, the second phase having smaller fans.
- 4.3.8 There were two north-west/south-east-aligned fan-pits, on the same axis (Fig 8). The pit to the west was less well-preserved, following truncation by later developments. The fan-pits were built with walls of pressed red bricks in English bond and English cross bond. The concave floors were of smooth concrete. Later features included bracing walls built from both brick and re-used rectangular granite / sandstone cobble setts. The construction of these resulted in the formation of chambers or rooms adjacent to the fan-pits.
- 4.3.9 **Phase 6:** only a few features were attributed to this phase, which dates from the very early part of the twentieth century. The bulk of the Pumping and Ventilation Station was dismantled at this time, and cobbled areas were laid down in both the southern and the north-western parts of Area B. As well as this, the construction of a brick tank, **5420**, truncated part of the Foreman Sweeper's Office (**5408**).
- 4.3.10 **Phase 7:** the latest phase comprises the foundations of Media House and its ancillary structures. These truncated all earlier remains.

4.4 AREA C

- 4.4.1 **Phase 1:** towards the end of this phase, after a period of land reclamation, the walls for George's Dock Passage were constructed, leading from Canning Dock north into George's Dock, which was built by 1771 (Figs 2 and 9). The western wall of the passage was uncovered approximately 0.25m below the ground surface, extending across the 7m width of the excavation, and was exposed to a depth of 1.25m. The parallel eastern wall was not examined, as it lay outside the area available for excavation and in close proximity to the standing remains of the pumping station. The earliest phase of the George's Dock Passage walling used blocks of yellow sandstone (Fig 9), which appears more brittle than the pink variety. This was visible only on the rear, construction, face of the wall and it is not known whether the external, waterside facing blocks were also of yellow sandstone at a lower depth. Three courses of water-worn ashlar blocks of pink

sandstone were identified on the eastern face, which were probably a repair to the original sandstone wall. In comparison, the lower yellow sandstone blocks were smaller, more roughly hewn and squared, with clear tooling marks. Dock and sea wall construction in Liverpool exhibits a chronological trend, where the earlier walling was executed in yellow sandstone, while later examples used the pink sandstone. Thus the Dry Dock, and sea walls **5707** and **7638** in Area A are all of yellow sandstone, but Manchester Dock itself, built slightly later in 1785–9, is constructed from pink sandstone. George's Dock Passage and Dock were constructed between 1762 and 1771 (Liverpool City Council 2005) (Fig 4; *Section 1.4.5*) and it is suggested that, during this period, yellow sandstone would have been in use.

- 4.4.2 **Phase 2:** once the Dry Dock (Fig 4) and sea walls were completed, the ground behind the walls was reclaimed and several buildings, dating to the mid-eighteenth century, were constructed, with their foundations cutting the imported reclamation deposits. These structures were all built using handmade, unfrosted bricks and were bonded with a creamy-coloured, lime-rich, soft mortar. They survived only as basements, with brick floors, and sandstone footings for columns supporting upper floors. They are likely to represent warehouses, which at the time may also have incorporated accommodation for domestic or office use.
- 4.4.3 **Phases 3, 4 and 5:** no features were attributed to these phases in this area.
- 4.4.4 **Phase 6:** a number of cobbled surfaces in the eastern part of the area respect the positions of buildings and are likely to have been relaid since the mid-eighteenth century. These represent Nova Scotia (*Section 1.4.7*), and are a continuation of the cobbled areas seen in the eastern part of Area A. These areas remained clear of buildings, from their inception to the modern era, providing a space between George's Dock Passage and the warehouses and other structures.
- 4.4.5 **Phase 7:** this phase includes the foundations of the Voss Garage and office premises. The main features were a brick structure, built to contain two tanks for diesel and oil, and another for a single tank. These truncated earlier remains to a substantial depth.

5. RESULTS OF THE ASSESSMENT

5.1 AIMS AND OBJECTIVES

5.1.1 The aim of the assessment was to evaluate all classes of data from the investigations, in order to formulate a project design for a programme of further analysis appropriate to the potential demonstrated by the site archive. A statement of the significance of the results from each element of the archive is given below. These statements are based on the assessment work undertaken, related to the original academic themes defined in *Section 2*. The quantification and assessments represent an amalgamation of the total body of work carried out in the period 2007–9, although no finds were recovered during the 2009 watching brief.

5.1.2 The objectives of this assessment correspond to *Appendix 4 of Management of Archaeological Projects, 2nd edition* (English Heritage 1991a). They are:

- to assess the quantity, provenance and condition of all classes of material: stratigraphical, artefactual and environmental;
- to comment on the range and variety of that material;
- to assess the potential of the material to address questions raised in the course of the project;
- to formulate any further questions arising from the assessment of the material.

5.1.3 This assessment will present:

- a factual summary, characterising the quantity and perceived quality of the data contained within the site archive;
- a statement of the academic potential of the data;
- recommendations for the storage and curation of the data.

5.2 MATERIAL ASSESSED

5.2.1 The entire paper and material archive was examined for the purposes of this assessment. Quantifications are incorporated within the individual assessments. The method of assessment used varied with the class of information examined, although in each case it was undertaken in accordance with guidance provided by English Heritage in *Management of Archaeological Projects, 2nd edition* (English Heritage 1991a). All classes of finds were examined in full, with observations supplemented by the records generated during the course of the fieldwork and maintained within the project archive. A breakdown of the paper and photographic archive appears in Table 1.

Item	Description	Total
Contexts	Cuts	45
	Fills	120
	Layers	678
	Structures	279
	Groups	41
	Other	65
	<i>Total</i>	<i>1228</i>
Drawings	Plans	81
	Sections / elevations	41
	Object / other scale drawings	57
	<i>Total</i>	<i>179</i>
Films	Black-and-white films (complete)	137
	Number of photographs	4952
	Colour slide films (complete)	138
	Number of photographs	4940
	Medium-format films (complete)	6
	Number of photographs	90
	<i>Total number of photographs on film</i>	<i>9982</i>
	Digital photographs	4886
Folders		11

Table 1: Evaluation, watching brief and excavation paper archive

5.3 STRATIGRAPHIC DATA

5.3.1 **Quantification:** a total of 1228 contexts was recorded. The majority of these originate from the excavations in Areas A and B, with the rest from Area C, Trenches 5–7x within Area A and watching briefs.

5.3.2 **Assessment:** the context record has allowed broad phasing to be established for the whole area of the site and has confirmed the identification of areas where earlier remains have been truncated by later development. The technique adopted for excavation on the site varied according to the type of structure extant, taking account, for example, of the difference between the massive construction of a sea wall and the relatively slight, by comparison, remains of a domestic dwelling (*Section 3.3*). The context record reflects this, such that an individual record may represent several tons of infill in the vicinity of a sea wall, or the *minutiae* of a floor repair within a dwelling. In Areas A and C there was a spread of contexts across the eighteenth and nineteenth centuries, while later development has resulted in the truncation of most of the earlier stratigraphy in Area B.

5.3.3 In total, seven main phases of activity were established within the excavations. These phases are briefly described below and are, at this stage of the post-excavation study, broadly defined:

<i>Phase 1</i>	Early Post-Medieval Reclamation	pre-1753
<i>Phase 2</i>	Early Post-Medieval Occupation	1753–1765/9
<i>Phase 3</i>	Dock Police Office / Harbour Master's Office	1770–1785
<i>Phase 4</i>	Foreman Sweepers' Office / Manchester Dock	1785–1850
<i>Phase 5</i>	Mersey Railway Tunnel era	1850–1900

<i>Phase 6</i>	Early twentieth century	1900–1925
<i>Phase 7</i>	Modern: twentieth century	1925–2000

- 5.3.4 Phase 1 represents any activity that can be identified as early development on the shoreline. This includes the earliest phase of reclamation. The early post-medieval period following the establishment of the earliest (5707) sea wall is represented by Phase 2. Several deposits were laid down and a series of buildings constructed, with their foundations built into the reclaimed land. Phase 3 consists specifically of the late eighteenth-century Dock Police Office, which became the Harbour Master's Office. This building is clearly identifiable on the historical maps. The octagonal Foreman Sweeper's Office is defined in Phase 4. Its position demonstrates that the area was becoming increasingly densely occupied. During Phase 5, the structures forming the Pumping and Ventilation Station for the Mersey Railway Tunnel of 1880 were established and operated (*Section 1.4.11*).
- 5.3.5 Phase 6 represents a series of changes from the mid-nineteenth century onwards. These include the removal of the majority of the Pumping and Ventilation Station following the change to electric traction, and the construction of cobbled surfaces, some relating to changes in street layout between 1836 and 1850. This phase encompasses many of the cellars and various sub-phases of alteration of the buildings. Water pipes and brick culverts for both waste water and sewage were installed at this time, together with the original tramlines, dating from the last quarter of the nineteenth century and electrified by 1902.
- 5.3.6 Phase 7 includes all the remaining elements of foundation related to the Voss Garage, and office premises and Media House which stood on the site (*Section 1.4.12*), and which had been surveyed prior to their demolition. The Voss Garage was constructed in the 1920s to an Art Deco design by architect Herbert Rouse, whose work can also be seen at the Philharmonic Hall and the entrance to the Queensway Tunnel. The main features were the concrete foundation and brick structures built to contain diesel and oil tanks inserted beneath the buildings: these truncated the earlier remains to a substantial depth.
- 5.3.7 **Potential:** the relatively narrow time frame within which the development of the site occurred places an additional emphasis on the accuracy of the stratigraphic relationships. The stratigraphic data and its phasing will provide the framework within which all other analysis will take place, and allows that analysis to generate the fullest possible integrated understanding of the site. The excavation has allowed a stratigraphic record of the highest standard to be made of the development of this part of Liverpool. The post-medieval period is the most fully-represented, spanning changes and developments in an area of rapid flux, from the initial reclamation phase through to the advent of the railways and the present day. The key to understanding the chronology of these developments lies within the stratigraphic records. The survey of the standing buildings (Voss Garage and Transit Shed) provides a record of the latest phases of activity across the site.

5.4 PHOTOGRAPHIC DATA

- 5.4.1 **Quantification:** in all, there are 9982 images. This total is made up from 137 complete black and white films, with an additional 171 photographs on films shared with other related projects, and 137 colour slide films, with an additional

177 photographs on shared films (Table 1). There are also approximately 4886 digital photographs (*Section 5.5; Appendix 1*). The photographs cover each of the main areas of work.

5.4.2 **Potential:** the photographs are an invaluable aid in all aspects of post-excavation analysis.

5.5 DIGITAL DATA

Quantification: the digital data include all the records of survey undertaken using the EDM / Total Station and GPS, and the digital photographic archive (Table 2). There are 79 layers of CAD survey data, representing 36 days of survey, concentrated on the excavation areas. There is also a further layer of data digitised from hand-drawn plans into CAD. These digitised drawings exist in four formats: the initial drawing, which is regarded as part of the paper archive (see Table 1); the raster image produced by scanning the drawing; the stand-alone digitised version of the original hand drawing; and the digitised data incorporated into the master site drawing. The scanned images vary in size from 439 KB to 5310 KB and the subsequent individual, digitised plans vary in size from 165 KB to 5310 KB. The overall, inclusive CAD drawing is currently 8649 KB.

Item	No files	Size of files (MB)
CAD <i>Final drawings</i>	74	43.2
<i>digitised drawings</i>	149	100
<i>survey</i>	110	5.45
Database / per table	24	4.35
Images <i>photographs</i>	4886	9.8 (GB)
<i>scans</i>	145	153.4
Spreadsheets	12	1.1
Text / report	8	20

Table 2: Quantification of digital data

5.5.1 Other digital data include the large number of digital photographs taken both during the fieldwork and as part of this post-excavation assessment. The digital photographs fully replicate the colour slide and black and white formats, and were also used as an ongoing general record, fully illustrating the progress of the archaeological excavation. There are to date approximately 4886 digital photographs. The average file size of each photograph is 2000KB, giving an estimated total figure of 9.77GB of digital photographic data.

5.5.2 Digital photographs of finds have also been taken. The images fall into three categories: large finds recorded on site and not retained; large finds recorded on site and retained; and finds recorded during their post-excavation assessment. A fourth category of images consists of finds recorded by scanning, including organics, coins and tokens.

5.5.3 A further set of digital data is secondary in nature. This material effectively duplicates original data from the archive, and consists of the site database and

GIS, where the database and the CAD elements have been combined to form a sophisticated tool for post-excavation analysis.

- 5.5.4 **Potential:** this dataset provides a flexible and adaptable record and a permanent resource. It provides part of the baseline data for the record of the site, in particular the overall plan of features, walls and cellars. The analytical properties of the GIS will play a part in all subsequent study of the finds and structures located by the excavation.

5.6 THE FINDS AND ENVIRONMENTAL ASSEMBLAGE: INTRODUCTION

- 5.6.1 The overall artefactual assemblage was substantial in size and varied in composition (Table 3). An assessment of each class of artefact and the environmental evidence is provided in the following sections. To outline the potential findings of further analysis, the same external and internal specialists were consulted as for the much larger assemblages recovered from the excavations at Chavasse Park and Environs (LUAU 2001; OA North 2010), with the aim of drawing on an existing body of knowledge.

Item	Total fragments for Areas A-C
Pottery	c 2800
Ceramic building material	140
Clay tobacco pipe	3592
Coins / tokens	14
Copper alloy	79
Iron	270
Lead	4
Glass	c 700
Slag	96
Industrial debris/residue	34
Leather	2
Wood	c 100
Shell	c 100
Animal bone	c 300
Environmental samples *	42
Stone	15
Other / composite materials	19

Table 3: Artefact and ecofact archive

The quantities in the tables are preliminary and there are likely to be small adjustments during the progression of analysis.

* each sample was usually 30–40 litres

5.7 POST-MEDIEVAL POTTERY

- 5.7.1 **Methodology:** the detailed assessment carried out on the pottery assemblage from Chavasse Park and Environs (LUAU 2001; OA North 2010) meant that the level of investigation necessary to arrive at a professional judgement of the value of the material from Mann Island was substantially reduced. The material was inspected during its recovery, and following its processing.
- 5.7.2 **Quantification:** the contents of a total of 20 boxes will require examination, *ie* a total of *c* 2800 sherds of pottery. By far the majority of sherds will be of eighteenth-century date and later, and will be indicative of the intensive use and re-use of material and deposits in this part of Liverpool from the eighteenth century onwards.
- 5.7.3 **Assessment:** there is likely to be a wide range of types of pottery, on the basis of what is already known from the assemblage from Chavasse Park and Environs (*op cit*). These include kiln wasters, tin-glazed earthenware (some polychrome decorated), biscuit wares, dark-glazed earthenware, mottled wares, slipware, salt-glazed stonewares and other stonewares, as well as transfer-printed earthenware, many with partial pottery marks. The forms of vessels will also vary and will include, but not be limited to, jugs, cups, bowls, plates, small jars, storage jars, sugar moulds, bottles and tiles.
- 5.7.4 The assemblage from the excavations in Chavasse Park and Environs (*op cit*) proved to be, in many ways, far better and far more important than could have been anticipated, considering the Victorian fashion for digging deep cellars, and the results of the Blitz, combined with the effects of redevelopment in the 1960s. A similar situation is predicted for the material from the Mann Island excavations, although the characteristics of Mann Island includes material from reclaimed land, within which there is an assemblage that reflects deliberate dumping, including wasters. The assemblage will present a particularly interesting, if partial, picture of the lives of the people of Liverpool, and represents a unique opportunity to examine the social history of the area.
- 5.7.5 The pottery is also the easiest method for studying the relative status of buildings and their occupants. There is a very large proportion of cheaper, coarse earthenware within the assemblage, but there are also numerous very high-quality, arguably higher-status, wares, such as tin-glazed wares and white salt-glazed stonewares from the eighteenth century, which reveal the complex nature of the occupation of the site. This highlights the potential offered through analysis.
- 5.7.6 **Potential:** it is likely, on the evidence of surrounding sites, that there will be considerable numbers of joining sherds from different bags and across contexts, and, where possible, attempts should be made to identify these. There may also be complete or near-complete vessels, especially from the eighteenth century (contained in discrete dumps of pottery during the land reclamation). Identification of pottery makers' marks/stamps will allow more precise dates to be assigned.
- 5.7.7 This is the second largest group of pottery excavated from Liverpool and in itself represents a highly significant group of material. Taken in conjunction with the largest group, however, recovered from the excavations at Chavasse Park and

Environs (LUAU 2001; OA North 2010), it is of national significance. Pottery assemblages in general have the potential to shed light on a number of aspects of the site and its archaeology, including, for example, the formation processes of the deposits, the use of the pottery, the function of different types of vessel, the status of the occupants of the different parts of the site, and the chronology of the development. Conversely, analysis of the stratigraphy and associated finds helps to refine the chronology and typology of the pottery, and aids an understanding of the nature of any biases within the surviving artefact assemblage.

- 5.7.8 This assemblage is particularly strong in its potential for detailed analysis of eighteenth- and nineteenth-century groups. Study of the fabric, form, parallels, traded wares and imports within stratigraphic contexts would serve to illustrate Liverpool's trading connections in the post-medieval period and illuminate aspects of trade, economy and settlement in Liverpool through to the mid-twentieth century. Functional analysis of the wares will be able to determine patterns of change and activity across time and from different parts of the site. The nineteenth- and twentieth-century material should be analysed to assess status, function and form, with a view to correlating the information with documentary evidence such as Gore's *Directory* of business premises (1766 *et seq*).

5.8 CERAMIC BUILDING MATERIAL

- 5.8.1 **Methodology:** the detailed assessment carried out on the ceramic building material assemblage from Chavasse Park and Environs (LUAU 2001; OA North 2010) meant that the level of investigation necessary to arrive at a professional judgement of the value of the material from Mann Island was substantially reduced. The material was inspected during its recovery, and following processing.
- 5.8.2 **Quantification:** in all, 140 fragments of ceramic building material (CBM) were recovered. The assemblage is of post-medieval to modern date, the bulk of which was sampled from standing cellar walls and basement floors.
- 5.8.3 **Assessment:** the material, from the initial visual inspection on site, is likely to be in good condition, with some examples of worn, abraded and burnt bricks. The approximate date of the remains suggests that the handmade bricks will comprise examples of slop-moulded and, possibly, pallet-moulded bricks. The bricks will be examined for evidence of pressure marks, both diagonal (suggested by Ryan (1996, 92) to be of seventeenth- to eighteenth-century date) and horizontal (possibly nineteenth century in date (*ibid*)). From data gathered on site, most of the handmade and machine-made bricks fit into the range of 220–240 x 105–115 x 60–90mm, reflecting the thicker standard that prevailed in the north of England (Brunskill 1997, 38). Any machine-made bricks, dating from the nineteenth century onwards, may include examples of frogs and stamps, which will aid in identifying the manufacturer and source.
- 5.8.4 **Potential:** the excavations have produced a small assemblage of samples from *in situ* structures, and a small quantity of stratified debris. Very little work on the typology of bricks in this period has been done outside of London and Essex (Ryan 1996). While quantitative analysis is not possible on this assemblage, a qualitative analysis has the potential to determine the range of sources that may

have been used. The assemblage may also contribute to the dating of the buildings and analysis of their modification.

5.9 CLAY TOBACCO PIPE

- 5.9.1 **Methodology:** the material was assessed using standard procedures. All of the fragments in each bag and/or context group have been individually examined and the numbers of bowl, stem and mouthpiece fragments present have been recorded. A preliminary note has also been made of the numbers of marked or decorated pieces present, and an initial assessment of the date of each pipe group prepared. Two date ranges have been logged, one for the overall range of the fragments represented in each bag and the other for the most likely date of deposition for the group as a whole, based on the pipe evidence. A note has also been made of the context groups containing material that warrants further study and analysis. All of this information has been entered into an *Excel* spreadsheet.
- 5.9.2 **Quantification:** the excavations produced a total of 3592 fragments of clay tobacco pipe (Table 3). Almost all were recovered from stratified archaeological deposits. They range in date from the early seventeenth century to early twentieth century, thus covering nearly the entire range of pipe use in Liverpool.
- 5.9.3 **Assessment:** the majority of the material is in fresh and unabraded condition and many of the contexts produced large fragments, indicating little disturbance since deposition.
- 5.9.4 Clay tobacco pipes had a very short lifespan and no recyclable value once broken. They were also subject to rapid stylistic evolution and many were marked or decorated (Higgins 1987). These characteristics combine to make pipes one of the most sensitive and accurate means of dating archaeological deposits. The pipe evidence will be of prime importance in helping to establish a tightly dated sequence for the archaeology of the site.
- 5.9.5 At least one large deposit of tobacco pipe kiln waste was encountered during the excavations. This dates from the early nineteenth century and includes a range of highly decorated bowls, as well as forms for the export market. This deposit represents the first kiln group from Liverpool ever to have been properly excavated, but also provides the first firm evidence for production directed at the overseas export markets.
- 5.9.6 **Potential:** pipe fragments offer one of the most accurate and reliable classes of artefact for dating deposits of the post-medieval period. The pipes from this site will make a valuable contribution to the phasing, dating and interpretation of the contexts. The majority of the excavated pipes originate from deposits dating from between *c* 1610 and *c* 1930. The seventeenth- and early eighteenth-century pipes occur in relatively small numbers but, from the late eighteenth century onwards, good numbers of pipes have been recovered. Analysis of these will establish an overview of the pipes produced and used in Liverpool. This is only the second good group of excavated pipes to have been recovered from Liverpool and the first that will allow a comprehensive overview, thereby setting a benchmark typology.
- 5.9.7 The assemblage has the potential to distinguish local and regional styles and their development across four centuries on Merseyside. In addition, specific styles of

pipe were manufactured for export markets in the principal ports, such as London and Bristol, and also Liverpool (*ibid*). These include examples with different bowl forms from those used in this country, as well as decorative motifs specifically for the overseas market, for example the American eagle and shield. Many of these styles are type-specific to the Liverpool area.

- 5.9.8 Liverpool housed an internationally important pipe-making industry (*ibid*). Despite this, the lack of archaeological excavation within the city has meant that the products of the hundreds of pipe-makers who worked there are barely understood. This assemblage will not only make an important contribution to the dating and interpretation of the site's archaeology, but is also of outstanding significance in other respects. The material provides the first chronologically extensive sequence of pipes from the city ever to have been recovered. It includes important groups containing marked and decorated pipes as well as kiln material, with specific export patterns among the forms produced. It provides the first opportunity to establish a bowl-form sequence for the city, as well as a sample of marked and decorated pipes that will form a reference point of worldwide significance.

5.10 METALWORK

- 5.10.1 **Methodology:** a rapid visual scan of all the metalwork assemblage has been carried out, and the type of metal identified for each piece.
- 5.10.2 **Quantification:** in all, 359 objects were recovered and recorded, the majority being ferrous (iron or steel), with copper alloy forming the second largest group (Table 4).

Material	Quantity (fragment count)
Aluminium	6
Copper alloy	79
Iron	270
Lead	4
Total	359

Table 4: Quantification of metal artefacts by metal

- 5.10.3 **Assessment:** the different constituent types of metalwork have been assessed in terms of their importance, form, function, dating and other notable characteristics.
- 5.10.4 **Copper and alloys:** some 79 fragments of copper alloy were recovered, mostly from stratified contexts. This total includes 14 probable coins or tokens. The assemblage will include off-cuts and featureless fragments of sheet, strip, or drawn wire and piping, along with a small number of copper nails and fittings. There may also be personal objects, such as buckles, buttons, and dress pins, and household items, including clockwork mechanisms, keys, handles, cutlery, hooks and suspension chains, lamp and furniture fittings. Such material is indicative of style trends and status. The coins/tokens will require x-ray for identification purposes, but offer relatively precise dating potential.

- 5.10.5 **Iron:** in all, 270 items of iron or steel were recovered. Most of the objects are in relatively good condition, recognisable, and from stratified contexts. They include household items, bucket fragments, tools, files, chisels, clamps, and rods, but structural ironwork, such as nails, screws, bolts, rivets, brackets, doorknobs and locks, makes up the bulk of the material, alongside a proportion of featureless fragments.
- 5.10.6 **Lead:** all four pieces are in good condition, with little sign of corrosion. The overall amount of lead is surprisingly small, probably a reflection of its recyclable value.
- 5.10.7 **Potential:** the majority of the metalwork recovered probably dates to the nineteenth and twentieth centuries, the heyday of Liverpool's history as a port with global connections. Any household items will probably offer insights into the aspirations and economic circumstances of the inhabitants of Mann Island, while items of mass manufacture may indicate the extent and nature of trade and industry.

5.11 GLASS

- 5.11.1 **Methodology:** assessment was based on the rapid visual inspection of all available fragments. Data were recorded in a standardised format, noting provenance, type of object, material, period, and a brief written description.
- 5.11.2 **Quantification:** the archaeological investigations as a whole produced a moderate amount of vessel and window glass. In all, *c* 700 fragments were recovered, which will require full recording.
- 5.11.3 **Assessment:** the assemblage matches that of Chavasse Park and Environs (LUAU 2001; OA North 2010), the majority of the material dating from the eighteenth to twentieth centuries. The earlier eighteenth-century material will be of greater interest and significance to the site interpretation. Much of the eighteenth-century glass is likely to comprise dark-green wine bottles and other square or rectangular bottles.
- 5.11.4 The later material is likely to include fragments of drinks bottles of various types, with some complete examples of embossed mineral water bottles, wine and spirits bottles, half-pint beer bottles, milk bottles, medicine bottles, and some sheet glass used in windows. Other items, such as jars, sauce and other bottles, ink bottles, tablewares, wine glasses, beakers, beads, spectacles, and small phials, are also likely.
- 5.11.5 **Potential:** the principal contribution of the assemblage will be to assist in refining dating, allowing on occasion a greater precision than that afforded by the pottery. The names of local or national producers, borne by certain of the types of bottle, in particular those of the mineral-water manufacturers, will allow some insight into the local industry and economy. The assemblage provides some potential for the study of zones of activity on the site, which may be considered alongside evidence from other classes of find, such as the ceramics and the metalwork. This would include both primary consumption and secondary disposal.

5.12 SLAG

- 5.12.1 **Methodology:** a rapid visual scan of all the fuel items and industrial debris has been carried out, and the type and form noted. This has included brief identification on the basis of external morphology only. All fragments were examined for the purposes of this assessment, and outline details of the objects entered on a Microsoft *Access* database to prepare a preliminary catalogue.
- 5.12.2 **Quantification:** a small quantity of industrial debris (96 fragments, approximately 2kg) was recovered. It derived from 32 contexts, with only one producing more than one category of material. The majority of the slag was of a ferrous nature.
- 5.12.3 **Assessment:** present within the assemblage were both cinder and fuel-ash slag (similar to cinder, but higher in silica content); waste derived from reactions between fuel and clay minerals (*eg* in hearth walls); smithing slag lumps, formed from the agglomeration of cinder, fuel ash, and iron oxides produced by the oxidisation of iron artefacts during forging; non-diagnostic slag, comprising silica-rich slag with no obvious diagnostic features and not readily attributable to any process; vitrified stone, generated by contact with high temperatures; and coal and charcoal, possibly in use as a fuel. Material was recovered in small quantities, and may represent both the disposal of rubbish and on-site activities, such as the operation of building heating systems, smithy activities and repairs. Nowhere was the stratified material in close association with hearths or other furnace-type features. With no other clear evidence of specialist activity, there is a greater likelihood that the material was imported.
- 5.12.4 **Potential:** the small quantities of industrial debris recovered from the excavation preclude the potential to inform the interpretation of the site further, particularly in the absence of any dedicated sampling procedure, such as hammerscale analysis. A note of the presence or absence of industrial debris within stratigraphic deposits and the type of residue represented should, however, be made.

5.13 LEATHER

- 5.13.1 **Methodology:** for analysis, a basic record (as defined in Roman Finds Group and Finds Research Group *Guidelines* (Cool *et al* 1993)) of the assemblage will be made, including measurement of relevant dimensions, and identification of species, where possible. In the basic record, all measurements are in millimetres (mm), and weights in kilograms (kg). Leather species can be identified by hair follicle pattern, using low-powered magnification.
- 5.13.2 **Quantification and Potential:** two leather artefacts were recovered during the excavation and these have been treated and stored appropriately. The leather potentially allows close dating.

5.14 WOOD

- 5.14.1 **Methodology:** the timbers and wooden objects have generally been photographed *in situ* and, where appropriate, individual scale drawings were completed following lifting. Examination was directed at identifying form and function.
- 5.14.2 **Quantification and condition:** the majority of the timber and wood objects appear to have been associated with the construction of the Manchester Dock. Some

timber flooring was identified as part of the domestic occupation of the later buildings, but none of this material was retained. Samples of timber from within the Manchester Dock Pier formation were retained, along with samples taken for dendrochronology from the timbers of a jetty associated with the dock.

- 5.14.3 **Assessment:** the limited number of timbers retrieved have been retained and will be dealt with fully during the analysis stage by a designated specialist.
- 5.14.4 **Potential:** analysis of the wood will shed light on the construction of the Manchester Dock, and has the potential to reveal the history of the timbers, including their source, species, and the age of the trees from which they derived, together with details of engineering practices and techniques.

5.15 MARINE MOLLUSCS

- 5.15.1 **Quantification and assessment:** in total, c 100 marine mollusc shells were recorded. These are likely to comprise mostly native oyster shells (*O edulis*), and food debris, rather than inhabitants of the dock or the pre-modification River Mersey, as muddy harbours and tidal pools are not a favoured habitat for this species (Liverpool City Council 2005, 100). Other edible bivalves could include *M edulis*, the common mussel, and *C edule*, the common cockle, both of which may derive from local populations. Examples of *L littoralis*, the common winkle, may also be among the assemblage. Although this common gastropod is also widely regarded as edible, it is more likely to have been an inhabitant of the dock or the pre-dock shore.
- 5.15.2 **Potential:** the small size of the assemblage, and the wide range of contexts from which it was derived, mean that further analysis would not be justified.

5.16 ANIMAL BONE

- 5.16.1 **Quantification and assessment:** a small collection of c 300 fragments of animal bone has been recovered from the excavations. Species present in the larger and comparable assemblage from Chavasse Park and Environs (LUAU 2001; OA North 2010) included domestic and wild mammals, birds and fish, and it is likely that this assemblage will have a similar range. The material, as retrieved from site, is in a good state of preservation, generally of a robust nature, frequently with little erosion of the surface of the bone, although often fragmented.
- 5.16.2 **Potential:** the assemblage is small and will only have limited potential for further analysis. However, analysis to investigate carcass treatment and butchery may shed light on the preparation and consumption activities occurring in different parts of the site.

5.17 PALAEOENVIRONMENTAL EVIDENCE: BULK CHARRED AND WATERLOGGED PLANT REMAINS

- 5.17.1 **Methodology:** the detailed assessment carried out on the charred and waterlogged plant remains from Chavasse Park and Environs (LUAU 2001; OA North 2010) meant that the level of investigation necessary to arrive at a professional judgement of the value of the material from Mann Island was substantially reduced. The material was inspected during its recovery.

- 5.17.2 **Quantification:** 42 bulk samples, 30–40 litres in volume, were taken from a variety of features on the site and will need to be examined for charred and waterlogged plant remains. It is predicted that the samples will yield information about the environment and economy of the site.
- 5.17.3 **Assessment:** with the benefit of the results from Chavasse Park and Environs (*op cit*), it is likely that the largest proportion of plant remains will be waterlogged, given the nature of the sediments, but some samples will also contain charred plant material. Plants that have been identified from samples examined as part of the nearby Chavasse Park and Environs project include: *Euphorbia helioscopia* (sun spurge); *Sambucus nigra* (elder); *Plantago* sp (plantain) seeds; *Lapsana* (nipplewort); *Plantago* (plantain); *Potamogeton* (pondweed); *Corylus avellana* (hazel) fragments; *Potentilla erecta*-type (tormentil); *Chenopodium album* (fat-hen); *Hyoscyamus nigra* (henbane); and seeds from edible fruits, such as *Vitis vinifera* (grape), *Ficus carica* (fig), and *Rubus fruticosus* (blackberry). Plants, such as *Rumex acetosa* (common sorrel), *Stellaria media* (common chickweed), *Potentilla erecta* (tormentil), along with the damp/wet ground indicators, *Carex* (sedges) and *Potamogeton* (pondweed), are likely to represent plants growing at the site, or, indeed, in and around the features themselves.
- 5.17.4 The samples may also contain mineralised organic material, which may represent some cess deposits within the sediments. In addition, the samples may have limited quantities of fish bones/scales, small mammal bones, coal/clinker and industrial material, possibly deriving from waste products. Any insect remains will be significant, as they reflect conditions within features and structures.
- 5.17.5 **Potential:** any abundant and well-preserved waterlogged plant remains will be suitable for analysis and should provide information on the specific functions of features, and the general environmental conditions of the site. Features containing well-preserved insect remains would add to an understanding of the prevailing conditions, and provide details of past hygiene and living conditions.

6. CURATION AND CONSERVATION

6.1 RECIPIENT MUSEUM

- 6.1.1 National Museums Liverpool is a group of eight museums in Liverpool, including the Merseyside Maritime Museum and the Museum of Liverpool Life. The main museum has been nominated as having the capacity to co-ordinate the deposition of the finds and the paper and electronic archive. Paper and digital copies of issued reports will be deposited with the Liverpool Record Office.

Site Code: evaluation **MI 06**, excavation **MI 07**.

National Museums Liverpool, William Brown Street, Liverpool, L3 8EN.
Contact: Liz Stewart. Tel 0151 207 0001 (switchboard).

Liverpool Record Office, Central Library, William Brown Street, Liverpool, L3 8EW. Tel 0151 233 5817.

6.2 CONSERVATION

- 6.2.1 The finds will require marking before being formally accessioned.
- 6.2.2 **Pottery:** some of the finds of pottery may have developed blooms of mould. This material needs further treatment in consultation with a ceramics conservator (L Edge *pers comm*). In view of its fragile nature, the assemblage of tin-glazed earthenwares and decorated tile should be separated and rebagged for storage in appropriate conditions.
- 6.2.3 **Metalwork:** two large iron objects and all the coins and tokens will require X-ray and cleaning to facilitate and confirm identification.

6.3 STORAGE

- 6.3.1 The complete project archive, which will include written records, plans, black and white and colour photographs, digital plans and photographs, artefacts, ecofacts and sieved residues, will be prepared following the guidelines set out in *Environmental standards for the permanent storage of excavated material from archaeological sites* (UKIC 1984, Conservation Guidelines 3) and *Guidelines for the preparation of excavation archives for long-term storage* (Walker 1990), prior to deposition.
- 6.3.2 The digital data will be temporarily stored on the server at OA North, which is backed up on a daily basis. For long-term storage of the digital data, CDs will be used, the content including the reports, plans, scanned images and digital photographs. Each CD will be fully indexed and accompanied by the relevant metadata as provenance. The digital record should ideally be duplicated as a paper record for long-term archiving, including comprehensive printouts of photographs and survey plots, labelled and summarised. All dry and stable finds will be packed according to the Museum's specifications, in either acid-free cardboard boxes, or in airtight plastic boxes for unstable material. Each box will have a list of its contents and will in general contain only one type of material, *eg* bone.

6.4 PACKAGING

- 6.4.1 The assemblage is currently well-packaged and will require no further packaging. Box lists derived from the site database have been compiled and will be updated when the identification of objects is complete. The paper records will be presented in either ring binders or in acid-free storage, fully indexed, and with the contents labelled.

6.5 DISCARD POLICY

- 6.5.1 A Discard Policy will be prepared, in consultation with the recipient museum, National Museums Liverpool. Material of no discernible long-term archaeological potential will be discarded, following appropriate analysis, with the Museum's agreement.

7. STATEMENT OF POTENTIAL

7.1 INTRODUCTION

7.1.1 The Mann Island investigations have provided the first opportunity for archaeological study of a substantial area of reclaimed land in Liverpool city centre. Evidence for activity and extensive remains of the post-medieval urban fabric were uncovered, including dock facilities, public buildings, warehouses and dwellings. These structures and their associated assemblages clearly have significant potential to contribute to knowledge in a regional context, but the overarching range of structures is of international importance, reflected in the World Heritage Site status of the area: in particular the Canning and Manchester Docks, the sea walls and the Mersey Railway ventilation and pumping station. The evidence for international commerce, including imports and the production of goods for trade, has significant potential to contribute to an understanding of Liverpool's rise as a world trading city and Britain's development into an economic and imperial power during the post-medieval period.

7.2 SUMMARY OF PRINCIPAL POTENTIAL

7.2.1 **Stratigraphic data:** further analytical study of the stratigraphic record can elucidate a detailed, chronological sequence for the progressive reclamation of the river's edge and development of the urban landscape (*Section 5.3*).

7.2.2 **Documentary study:** the significance of the fieldwork results is increased by the supporting primary documentary evidence available within the various county record offices and archives. A limited appraisal of these sources has been undertaken as part of earlier desk-based work (Philpott 1999), although this was by no means exhaustive. Further examination of the primary documentary evidence, particularly records relating to dock activities, property ownership and use, probates, leases, bibliographic records and photographic material, is likely to provide significant additional information.

7.2.3 **Artefactual data:** the large and varied assemblage of finds has excellent potential for further analysis (*Sections 5.6–17*). The material culture can be used to examine spatial and temporal distributions of manufactured goods, personal items, wholesale and retail divisions, goods for local consumption, and regional and global trade. It has the potential for differences in the assemblage to be recognised between domestic and commercial structures and the dumps in the backfill of the docks and reclaimed ground. The combined assemblages from Mann Island, and the adjacent Chavasse Park (LUAU 2001; OA North 2010), represent by far the largest body of material from Liverpool and Merseyside, from a period when Liverpool was instrumental in trade across the globe. As such, the finds are of enormous importance.

7.3 INTERNATIONAL RESEARCH PRIORITIES

7.3.1 The Maritime Mercantile City of Liverpool is of international importance, as a World Heritage Site. In 2005, there were 830 recognised World Heritage Sites across the globe, of which only 26 are in the UK, including Stonehenge, the Tower of London, and Hadrian's Wall, and all are designated as having universal

value. This status is a genuine reflection of the archaeological significance of a monument or landscape. Of the seven World Heritage Sites which are historic ports, two (Maritime Greenwich and Liverpool's Maritime Mercantile City) are in Great Britain, reflecting its importance as a seafaring nation. No international or even national research strategy has been formulated to address the development of ports, but the archaeological works at Liverpool provide the opportunity to advance studies in this field.

7.3.2 The implementation of the World Heritage Convention (UNESCO 2005) (which governs the management of World Heritage Sites) includes the following requirements, all of which may be addressed and implemented by the analytical study, publication and presentation of the Mann Island material:

- to provide updated information about the World Heritage properties to record the changing circumstances and state of conservation of the properties (**Point 201**);
- to enhance capacity-building and research (**Point 211**);
- to raise the general public's awareness, understanding and appreciation of the need to preserve cultural and natural heritage (**Point 211**);
- to enhance the function of World Heritage in the life of the community (**Point 211**);
- to increase the participation of local and national populations in the protection and presentation of heritage (**Point 211**);
- States Parties are encouraged to raise awareness of the need to preserve World Heritage. In particular, they should ensure that World Heritage status is adequately marked and promoted on-site (**Point 217**);
- the World Heritage Committee encourages and supports the development of educational materials, activities and programmes (**Point 219**).

7.4 NATIONAL RESEARCH PRIORITIES

7.4.1 In 1991, the English Heritage document, *Exploring Our Past*, included a strategy for dealing with the problems and opportunities which would be encountered during the following decade (English Heritage 1991b). Many of the ideas first raised in this document were developed further in a draft *Research Agenda* which outlined a series of research priorities (English Heritage 1997). The most recent English Heritage Research Strategy documents are *Exploring our Past Implementation Plan* (2003) and *Discovering the Past, Shaping the Future* (2005), although these are, in effect, strategies for English Heritage itself. The draft *Research Agenda* is no longer considered current, although the following research objectives remain pertinent, and are of direct relevance to the Mann Island Site.

7.4.2 **Processes of Change (PC) - (PC8): the Industrial Revolution (c AD 1700–1850):** work on this period of change should 'include studies of the buildings and physical context of engineering, manufacturing and transport, the distribution and retail, water and sewage, interiors of and services to working class housing, and the relationship between traditional and new industries' (English Heritage 1997, 45).

7.4.3 **(T2) Urbanism:** 'the quantity and quality of the data derived from [urban contexts] merits greater attention on a thematic basis. There is a growing ability, especially given computer-based systems, to exploit the research potential of the data gathered to explore considerably more complex models of urbanisation. The opportunities for intra-site spatial analysis of settlements has developed massively

and we would now wish to see the development of thematic and synthetic projects, designed to maximise the research potential of these resources to explore major archaeological research questions. The use of multivariate analysis, to explore spatial and temporal change in butchery, local environment, craft and industrial residues, building form and decoration, functional attributes of pottery and glass, etc, are likely to be particularly important for testing theories relating to social action, economy, politics, ethnicity, etc. It is an urgent priority that we start to draw upon the data now collected, to review current knowledge and develop more complex theories of the past, if we are to create meaningful research agendas which are to inform the management of the urban resource in the coming years' (English Heritage 1997, 52). The large body of structural evidence, the artefactual assemblages and environmental data from the Mann Island excavations provide a significant opportunity to address these issues.

7.4.4 *(T5) The definition of urban and rural poor:* 'this subject is highlighted as an area of potentially important archaeological research. The opportunity, given the quantity of data now amassed, to stand back from simple materialistic interpretations of data and explore the absences and omissions in the record; to examine rarity and re-use within material culture, to explore diet and marginal economic exploitation, urban space and the built environment as more than individual structures, services and infra-structure, offers great potential for exploring this dimension of past societies' (*op cit*, 53). The cellars of the Mann Island properties, which were latterly working-class dwellings, provide rare evidence relevant to this subject, in an area beyond the reach of most documentary material.

7.4.5 *(T7) Patterns of craftsmanship and industry:* suggested ways in which understanding of this subject might be advanced include 'projects to examine aspects of craftsmanship and manufacture deduced from a study of the finished object' and 'exploration of ancient carpentry, timber technology, woodland management' (*op cit*, 54). The clay products from Mann Island, such as ceramic vessels and building materials, and clay tobacco pipes, as well as stone- and wood-working techniques and monumental building methods, can all provide rich evidence for this subject area.

7.5 REGIONAL RESEARCH PRIORITIES

7.5.1 The *North West Archaeological Research Framework* (NWARF) has produced a regional resource assessment (Brennand 2006), and a research agenda and strategy (Brennand 2007) for the post-medieval and industrial to modern periods. These documents consider the known evidence for each period within the region, identify lacunae in knowledge, and define important avenues for further research. Elements of the research agenda relevant to this project are summarised below, including verbatim quotation of specific research initiatives which can be addressed by the Liverpool data.

7.5.2 *Post-medieval Period:* the particular relevance of the post-medieval archaeology of the North West is that it is distinct and different from England south and east of the Pennines. Its material culture was driven by processes, including industrialisation, which are founded upon, and symptomatic of, the environmental and socio-economic conditions. Research on the region's material culture is under-represented in the record, partly because our knowledge of the consumption and production of material goods is lacking. An improved understanding of

‘regional ceramic production and consumption is of central importance in the construction of research frameworks for the whole period’ (Newman and McNeil 2007a, 115). The following initiative applies to the study of ceramics in the region:

- **Initiative 6.1:** the available dataset should be greatly enlarged. Stratified artefact sequences from both small towns and rural settlements need to be collected, in order to establish the character of ceramic use throughout the region and to create the basis for socio-economic interpretation (Newman and McNeil 2007a, 117).

7.5.3 **The Urban Landscape:** the development of small medieval settlements, such as Liverpool, into post-medieval towns and industrial cities, remains poorly understood. There are weaknesses in our understanding of the relationship between centres of population and the surrounding countryside, including patterns of consumption and production. Liverpool offers the opportunity to ‘combine good documentary evidence, such as that contained within probate inventories, with detailed studies of buildings, [which] has been successfully used in towns like Bristol and Norwich... Where there is good documentary evidence it is important to reconstruct the social archaeology of individual buildings’ (*op cit*, 122).

- **Initiative 6.16:** using models such as that proposed by Trinder (2002), attempts should be made to identify the post-medieval elements that may have distinguished the future industrial towns from those that failed to develop early in the Industrial Revolution (McNeil and Nevell 2003, 107);
- **Initiative 6.17:** changes in consumption patterns should be examined across the region and between various social groups (Newman and McNeil 2007a, 122).

7.5.4 **Trade, Exchange and Interaction:** Liverpool is highlighted in the Research Framework for its capacity to elucidate the impact on the region of seaborne, especially Atlantic, trade and the onset of globalisation (*op cit*, 130), which ultimately led to the development of entirely new mercantile and social classes and trades.

- **Initiative 6.33:** improve the regional knowledge of ceramic vessel form and fabric type chronologies (*ibid*);
- **Initiative 6.37:** target for investigation ports where little is known, study Chester and Liverpool together to see how/why one took over from the other (*ibid*).

7.5.5 **Industrial and Modern Period:** ‘Britain was the world’s first industrial nation and the North West was in the vanguard of the process of industrialisation. One of the major challenges facing archaeologists is to recognise and define the extent and relative significance and distinctiveness of the region’s industrial heritage’ (Newman and McNeil 2007b, 133). The breadth and depth of change which occurred during the industrial period encompasses issues which ‘are not merely technological but affect consumption, working patterns and organisation, religion and politics, gender relations, health and most other aspects of human life’ (*ibid*).

7.5.6 **Industrialisation and Infrastructure:** the industrial and urban developments of the later eighteenth and nineteenth centuries were intrinsically linked to developments in the transport infrastructure. The advent of the electric tram and particularly the electric railway under the Mersey were both particularly significant in stimulating urban growth, but are not well studied.

- **Initiative 7.2:** a study or studies of the North West’s tram systems focused on both the associated structures and their wider landscape impact (Newman and McNeil 2007b, 139).

- 7.5.7 **Buildings:** the buildings revealed by the Mann Island excavations provide an excellent resource for interpreting the changing social context of the locality over time, through an analysis of their design, construction and spatial arrangements. The materials used in their construction can reveal much about contacts, markets and trading patterns, especially as the spatial pattern of distribution of these materials is not entirely related to local resource availability (*op cit*, 138).
- 7.5.8 **The Urban Landscape:** particularly in view of the rapidity of change in the Mann Island locality during the late eighteenth to twentieth centuries, and the unique datasets recovered by archaeological excavation, the full analysis of the artefactual assemblages and structures offers the opportunity to ‘supplement and supersede the documentary record’ (*op cit*, 144). The crucial aspect in the study of the development of the urban landscape is the identification and description of ‘difference, similarity, change and continuity’, both over time and between different geographical locations (*op cit*, 143). The Research Framework offers two specific initiatives:
- **Initiative 7.21:** an overview of the impact on the historic landscape of the new towns of the Industrial Revolution and the new monument types developed within them (*op cit*, 146);
 - **Initiative 7.24:** a need to excavate urban cellars to examine life ‘below stairs’ in the middle class house and cellar dwellings and workshops in working class houses (*ibid*).
- 7.5.9 **Technology and Production:** clay products, such as ceramic vessels, clay tobacco pipes and bricks and tiles (together with stone), form the bulk of the material recovered from the archaeological layers from the eighteenth and nineteenth centuries. Consequently, a better insight into many other areas of industrial activity and society can be acquired through their study. They ‘contain messages concerning the basics of everyday life such as, building construction, food preparation, leisure pursuits, consumer choice and social affiliations and emulation’ (*op cit*, 151). The ceramic assemblages from the recent excavations in Liverpool will include building materials, domestic vessels in everyday use, and products for various export markets. Distinctions and differences in cost, design, source and use within this assemblage will help to address specific issues raised by the Research Framework, such as the need for ‘a clear understanding of the likely relevance of product distribution and use’ (*ibid*).
- 7.5.10 **Trade, Exchange and Interaction:** the Research Framework notes that the current investigations of the earlier facilities at Liverpool docks should reveal more of the potential for the archaeological investigation of Industrial-Age ports. It will also be important for the archaeological study of warehouses, where there is a need to examine both their design and distribution (*op cit*, 155). Warehousing evolved in design on the Mann Island site, with a shift away from the use of cellars in merchants’ premises, to the use of quayside warehouses and transshipment sheds. The ergonomic factors linking the design of warehouses to the products they stored, the relationship with vernacular traditions of design and more recent experience in the design of canal and railway warehouses, and the effect of economic imperatives are all ripe for further study. The Research Framework’s initiatives for trade, exchange and interaction are:
- **Initiative 7.41:** the retention of later period artefacts and their routine analysis as part of all archaeological excavation projects (Newman and McNeil 2007b, 156);

- **Initiative 7.42:** examination, mapping and evaluation of the occurrence of vernacular materials and objects in nineteenth-century contexts (*ibid*);
- **Initiative 7.43:** excavation and scientific analysis of eighteenth- and nineteenth-century dock deposits (*ibid*).

8. UPDATED PROJECT DESIGN

8.1 AIMS AND OBJECTIVES OF THE PROGRAMME OF ANALYSIS

8.1.1 This section follows the guidance of English Heritage regarding the formulation of updated research aims (English Heritage 1991a, 2–3). The original aims for the project remain valid, but can be updated with new aims and objectives derived from the statement of potential set out in *Section 7*, as follows.

8.1.2 **Updated research aim 1:** how did the environment of the River Mersey foreshore and its human use develop over time?

- *Objective 1:* to examine the early environment of the River Mersey, including and evidence for early sea level and vegetational changes.
- *Objective 2:* to examine the nature of post-medieval exploitation of the River Mersey, including evidence for the changing shore-line and land surfaces.

8.1.3 **Updated research aim 2:** how did the layout and character of the site develop through the post-medieval period?

- *Objective 1:* to characterise the nature of the main phases of activity *via* their stratigraphy and to detail the archaeological formation of the site.
- *Objective 2:* to determine the phasing of the structures on the site to set its development within an historical context.

8.1.4 **Updated research aim 3:** what is the evidence for the development of trade and industry in post-medieval Liverpool, and its associated infrastructure?

- *Objective 1:* to examine the contribution of the docks to the development of Liverpool's production, industry, trade and transport.
- *Objective 2:* to explore the evidence from the site for the rise of consumerism.
- *Objective 3:* to integrate evidence for the wider development of transport and industrial infrastructure in Liverpool with the evidence for goods, trades and services provided by the artefacts and structures located by the excavation.

8.1.5 **Updated research aim 4:** how can the evidence further our understanding of the social history of post-medieval Liverpool?

- *Objective 1:* to use historical archaeological methods to study 'the poor' or 'the inarticulate' (Ascher 1974), *ie* those invisible in the documentary record.

8.1.6 **Updated research aim 5:** what evidence is there for developments in engineering and methodology in Liverpool's 'dock system'?

- *Objective 1:* to detail the construction methods and materials, including adaptations and rebuilds, for all the maritime features within the site.
- *Objective 2:* to investigate the 'dock system', its development and use, examining the evidence for the Liverpool docks and in other global port cities.

9. METHOD STATEMENT

9.1 INTRODUCTION

9.1.1 The following methodology is required to fulfil the revised research aims outlined in *Section 8*, and relates to the tasks outlined in the task list (*Appendix 2*).

9.2 PROGRAMME STRUCTURE

9.2.1 The post-excavation programme will be divided into the following stages:

- full cataloguing of any data representatively sampled;
- further investigation;
- analysis;
- synthesis;
- preparation of draft text and illustrative material;
- publication;
- archive deposition.

9.3 MANAGEMENT, MONITORING AND REVIEW

9.3.1 **Tasks:** 1–3, to facilitate all Objectives.

9.3.2 Management and monitoring tasks have been built into the project. These tasks will include project monitoring, advice and co-ordination, problem solving, and conducting meetings with project staff and all interested external parties.

9.3.3 Review meetings will include both the specialists and the OA North staff who are undertaking the analysis. The meetings will provide an opportunity for all involved to present and receive information, to discuss the research aims, and permit exchange of ideas. The first meeting will be held before specialists have commenced work on their reports; following this meeting, specialists will be provided with the contextual and dating information they will require. The second meeting will be held on the completion of analysis and draft reports but before completion of final reports, to allow presentation of any revised phasing and discussion of each specialist's results. All specialists will be consulted following editing and prior to publication of their reports.

9.3.4 In addition, there will be regular project review meetings, which will take place at six monthly intervals throughout the preparation of the report. The meetings will involve the Client, the Merseyside County Archaeologist and the staff of OA North who are working on the project on a regular basis.

9.4 STRATIGRAPHY: ANALYSIS AND SYNTHESIS

9.4.1 **Tasks:** 4–9, 15–16, 28–31, and 37, to contribute to all Objectives.

9.4.2 The finds will be marked to allow complete integration into the site database. This is also a prerequisite for archiving and submission to the receiving museum.

- 9.4.3 The stratigraphic data will need to be analysed in greater detail in order to refine the provisional phasing. More detailed structural analysis will be undertaken on complex features, such as the dock and sea walls, the ventilation and pumping station, and the cellars and street frontages.
- 9.4.4 Existing matrices will require assimilation into one overall matrix for each investigation area. Amended periods and sub-phasing will be ascribed, and those contexts which could not be resolved at the assessment stage will be added.
- 9.4.5 Once the data from all the areas have been analysed, a stratigraphic narrative will be completed from this, and it will be possible to prepare phase plans, which are a prerequisite for specialist analysis of the artefact and ecofact assemblages. Analysis and synthesis of the results of specialist analysis of the finds will contribute to the site phasing, however, a reciprocal process which enhances both the stratigraphic and artefactual datasets.

9.5 DIGITAL DATA IN THE ANALYSIS PHASE

- 9.5.1 **Tasks:** 10–11, to contribute to all Objectives.
- 9.5.2 At the start of the major fieldwork in Liverpool in 2004, a basic Microsoft *Access* database was set up to record finds and archaeological contexts, as well as a CAD environment, in which all plans and elevations could be placed to produce an up-to-date composite view of the site, and a GIS (Geographical Information System), using *ArchGIS* version 9, for the integration of the two and as a tool for interpretation. These have been used for all the work on the Liverpool docklands, including the Chavasse Park and Old Dock excavations (LUAU 2001; OA North 2010) and all elements of the Canal Link project (OA North 2006b; 2009a; 2009b). The GIS has proved to be an invaluable method of interrogating the vast amount of data generated from nearly three years of fieldwork and has allowed datasets to be easily contrasted. The Mann Island data have been entered at a basic level into this system, but these are also able to be viewed as an individual site. In order to use the system effectively, it will be fully updated during and upon completion of the analysis.
- 9.5.3 **GIS:** one of the primary aims of the overall GIS will be to form a usable framework / interface for the database and CAD. The GIS will incorporate all known archaeological material within the study area, and will meet national data standards for GIS and databases (eg English Heritage 2004). The main elements in developing the GIS include the following:
- **Site database:** this holds records of the stratigraphy and phasing, as well as the full quantification, forms and dates of all classes of artefactual material. Analysis of the finds will generate an additional large volume of data. This will need to be audited and checked before public dissemination.
 - **Database structure:** the database structure developed by OA North is in accordance with national data standards and has been in use in this form since 2003. Some refinement is anticipated, to take into account the data produced by specialists at the analysis stage. The database structure has been rigorously tested and refined, and is flexible enough to ensure compatibility with all organisations which might require access. In order of priority, compatibility with other databases will include:

- County HER structure;
- English Heritage National Archaeological Record structure.

Where relevant, standardised terminology will be applied, both for field names and data. This may include the use of MIDAS and the NMR *Monument Type Thesaurus* (English Heritage 1998), along with the FISH word lists (Forum in Information Studies in Heritage [www.mda.org.uk/fish]).

- **Digital photographs:** links to digital photographs will be embedded within the database. These photographs will require formatting, checking, and the creation of hyperlinks into the GIS.
- **CAD Drawings and Laser Scan Data:** the database will link into plans of features and the overall site plan. The majority of the fieldwork plans have been digitised. Wall elevations were recorded on site through the use of laser scanning and rectified photographs. It is proposed to combine all the laser scan data to provide a 3D model of the structures, which will provide a modelled structure of the dock and sea walls to act as mitigation for their partial destruction. This will be used to create plans, elevations, cross-sections and oblique views of the datasets.
- **Additional GIS information sources:** the GIS will also incorporate existing and future documentary data, which will be an integral part of the analysis. Historical mapping has already been used within the CAD system to help identify phases of activity and structures, and provides an indispensable link to documentary sources such as addresses listed in trade directories. To date, the maps have been digitised into the GIS/CAD system, but there is a case in some instances for rubber sheeting and for the incorporation of the raster maps directly into the GIS.

9.6 DOCUMENTARY AND ARCHIVE MATERIAL

9.6.1 **Tasks:** 12–14, to contribute to all Objectives.

9.6.2 Further documentary investigation will be undertaken to enhance the fieldwork results. This will include a search of cartographic sources, census records, trade directories and photographic records. In addition, it may be possible to consult the archives of other archaeological units, in relation to adjacent investigations in the area such as those carried out on the new Museum of Liverpool site (MAS forthcoming).

9.6.3 **Primary documentary sources and photographs:** the majority of relevant primary documentary sources are located in the County Record Office. The precise number of references of interest to the present study has not been quantified, but only references relevant to specific, identifiable buildings or other monuments within the study area will be selected for inclusion. There will also be information from the National Museums Liverpool archives, particularly relating to dock activity.

9.6.4 **Cartographic sources:** the principal maps and plans that will be consulted are listed below (Table 5).

Publisher/details	Date	Location
James Chadwick, <i>The mapp of all the streets lanes and alleys within the town of Liverpool</i>	1725	NMMHf 912 POR
T Lightoller, <i>Map of Old Dock</i>	1765	NMM
John Eyes, <i>Plan of Liverpool</i>	1765	LRO Hf 912.1765
George Perry, <i>Liverpool</i>	1769	LRO Hf 912.1769
Charles Eyes, <i>A plan of the town and township of Liverpool</i>	1785	LRO Hf 912.1785
W Jessop, <i>Map of Liverpool Docks</i>	1800	NMM
R Horwood, <i>Liverpool</i>	1803	LRO Hf 912.1803, NMM Drawer Z/F3
J Sheriff, <i>Liverpool and Environs</i>	1816	NMM Drawer Z/F3
WS Sherwood, <i>A plan of the town and township of Liverpool, with the environs</i>	1821	LRO Hf 912.1821
MA Gage, <i>Liverpool</i>	1836	NMM Drawer Z/F3
Ordnance Survey, 1:10,560	1847–9 onward	LRO
J Rapkin, <i>Liverpool, with vignette of Customs House, Sailors' Home and St George's Hall</i>	1851	LRO DX/265
Philip's <i>Trigonometrical Plan of the Town and Port of Liverpool</i>	1858	LRO
Dr Hume, <i>Four maps of Ecclesiastical, Historical, Municipal, Moral and Social Aspects of Liverpool</i>	1858	LRO
Ordnance Survey, 1:500	1891 onward	LRO
<i>Pharus Map of Greater Liverpool with Street Index</i>	c 1910	LRO
Philip's <i>Map of Greater Liverpool with Street Index</i>	c 1912	LRO
Ordnance Survey, 1:1250	1950s onward	LRO

Table 5: Principal cartographic sources. NMM = National Maritime Museum, Liverpool

9.7 POST-MEDIEVAL POTTERY

9.7.1 **Task:** 17, to contribute to Objectives 2.1–2, 3.1–3, 4.1, 5.2.

9.7.2 The assemblage will be fully quantified and recorded. The vessels will be classified by fabric groups and those wares that do not come from the locality or are imported will be distinguished. The assemblage will be correlated with the stratigraphic analysis and with other material assemblages, especially the clay tobacco pipes, to maximise the dating evidence.

9.7.3 Material will be analysed in the light of the specialist knowledge of the Decorative Arts Department of National Museums Liverpool and compared with their fabric reference collection. A small number of objects identified may require illustration. A report will be compiled.

9.8 CERAMIC BUILDING MATERIAL

9.8.1 **Task:** 18, to contribute to objectives 2.1–2, 3.1–3, 4.1, 5.2.

9.8.2 All the material will be quantified and fully catalogued, and comparative material identified. A full report will be prepared. After full analysis, a discard policy may be appropriate. The final archive will be made up of the fabric and form typology; important examples selected for retention (*eg* the stamped bricks); and paper and digital documents generated by the analytical study.

9.9 CLAY TOBACCO PIPE

9.9.1 **Task:** 19, to contribute to Objectives 2.1–2, 3.1–3, 4.1, 5.2.

9.9.2 A full catalogue will be prepared and comparative material sought. The bowls and stems in large and apparently tightly-dated deposits with large fragments will be examined for joins. Where possible, an attempt will be made to reassemble complete pipes.

9.9.3 The most significant pit groups or sealed layers will be studied and described. These will provide the basis for a narrative describing the evolution, character and use of pipes in Liverpool.

9.9.4 Any kiln deposits will be identified and studied in more detail. An attempt will be made to determine the number and range of mould types represented, and the full range of types will be illustrated. The forms being produced in Liverpool will be described, discussed, and compared with examples from elsewhere, both regionally and nationally.

9.9.5 The report will describe the local pipe types represented and set out a framework for the evolution of the Liverpool industry as a whole. The pipes will be placed in both their regional and national context.

9.10 METALWORK

9.10.1 **Tasks:** 21–24, to contribute to Objectives 2.1–2, 3.1–3, 4.1.

9.10.2 The assemblage will be fully recorded. A small proportion of the iron objects and all the coins and tokens will require X-ray and cleaning to confirm identification. Recommendations will be made, after discussions with the relevant curators, for the safe and appropriate disposal of material where appropriate. An illustrated report will be prepared.

9.11 GLASS

9.11.1 **Task:** 20, to contribute to Objectives 2.1–2, 3.1–3, 4.1, 5.2.

9.11.2 A representative sample of the glass vessels will be fully recorded. A detailed report will be prepared for archival purposes, and an illustrated report produced for inclusion in the final publication. Recommendations will be made, after discussions with the relevant curators, for the safe and appropriate disposal of the bulk of the material.

9.12 ANIMAL BONE

9.12.1 **Task:** 27, to contribute to Objectives 2.1–2, 3.1–3, 4.1.

- 9.12.2 The material will be fully recorded. Analysis of data context by context will be carried out with a view to distinguishing the varying levels of carcass treatment and butchery. A short report will be compiled. Unstratified material may be discarded at an early stage with the consent of the receiving museum.

9.13 INTEGRATION OF DATASETS AND SYNTHESIS

- 9.13.1 **Task:** 34, to contribute to all Objectives.
- 9.13.2 The information gathered from analysis of the finds will be reviewed and integrated into the stratigraphic site narrative. This will allow re-interpretation of the site using a more thematic approach. The GIS will allow questions to be asked of the data and hypotheses to be tested.

9.14 ILLUSTRATIONS

- 9.14.1 **Tasks:** 35–6, to contribute to all Objectives.
- 9.14.2 During each part of the analytical programme, a selection will be made of appropriate material for illustration. This will include general plans and sections, phase plans, and artefacts. Illustrations will be produced by experienced illustrators, using standard conventions.
- 9.14.3 **Laser Scan Data:** the laser-scan data will be combined with the comparable data from the sections of the Canal Link to produce an over-arching computerised model of the structures across the reclaimed land of Pier Head and Mann Island; from this, individual drawings will be created. The drawings will include plans, sections, profiles and isometric views of the structures created from the laser-scan data.
- 9.14.4 **Artefact drawings:** artefacts will be drawn in pencil at a scale of 1:1 or as appropriate to the object. These will either be inked up on a stable, archive-quality medium (permatrace) or digitised to create a finished drawing in an electronic format. In some cases, finds may also be photographed for publication.
- 9.14.5 **Plans and sections:** plans and sections will be produced digitally in either CAD or *Illustrator* software packages. Any original work will be archived as a hard copy.

9.15 PRODUCTION OF TEXT AND PUBLICATION

- 9.15.1 **Tasks:** 38-43, 46–54, to contribute to all Objectives.
- 9.15.2 Following the completion of the analysis of the stratigraphic and artefactual evidence, a client report will be produced. This will also incorporate the results of the building survey of the Transit Shed and the Voss Garage. In addition to the baseline requirement of this report, the publication of an accessible book on the archaeology of the docklands is proposed (*Section 10*).
- 9.15.3 The client report will be submitted for internal revision, and will be passed to all specialists after editing, for their comments.

9.16 ARCHIVE DEPOSITION

- 9.16.1 **Tasks:** 44-45, to contribute to all Objectives

- 9.16.2 OA North undertakes to liaise throughout the project with the receiving museum to meet its deposition policies. On completion of the analysis, a discard policy will be implemented (*Section 6.5*). On submission of the completed text for publication, the archive will be updated as necessary and the receiving museum will be contacted to obtain the latest information on its deposition arrangements. Material in files and boxes will be checked, and indices and box lists will be compiled and appended.
- 9.16.3 Some artefacts will need conservation work prior to deposition (*Section 6.2*). Such work needs to be detailed and the information passed to the receiving body with the objects in question. OA North undertakes to consult the specialists and the receiving museum concerning conservation requirements.
- 9.16.4 **Digital Archive:** the digital archive will similarly be checked and indexed, and hard copies will be made of the data if required by the recipient museum. The digital data will be accompanied by metadata, which will explain the origin and accuracy of the data. OA's digital archiving approach is broadly compliant with OASIS guidelines, and is based on the emulation method balanced with the National Archives of Australia's pragmatic approach of 'convert to most open format' of archive data (National Archives of Australia 2006). The latter requires the digital object to be converted as part of the archiving process to the most open compatible format; thus Microsoft Word documents are converted to Open Document Format, AutoCAD files to DXF or PDF, depending on the predicted future use. The emulation method assumes that, given appropriate metadata regarding the digital object, future researchers will be able to make use of period software and operating systems compatible with the stored format running in hardware emulators.
- 9.16.5 Multiple copies will be made of the electronic objects to be stored and placed on dedicated storage hardware hosted at multiple geographic locations. Metadata and checks on the file integrity created during the digital archiving would be stored, along with the original and converted objects. The approach used by OA is the use of relatively low-cost hardware with a robust file system and full backup and disaster recovery arrays, rather than highly specialised enterprise-class storage systems. The file system (Sun's ZFS) and disk array in themselves provide a high degree of protection, while the use of multiple copies in multiple file system and physical locations provides for a very high degree of assurance of bit-level preservation of the stored files.

10. PRESENTATION OF RESULTS

10.1 INTRODUCTION

- 10.1.1 Following the analysis and interpretation of the data, the results should be placed in the public domain, as required by the planning condition. Given the immense importance of the material, it is anticipated that dissemination will consist of a full archive report, and a more accessible publication, targeting other audiences in Liverpool and beyond.
- 10.1.2 The Mann Island excavations form one element of a sequence of archaeological excavations and investigations undertaken along the Mersey shoreline since 2001, including Chavasse Park and Environs (LUAU 2001; OA North 2010), the site of the new museum (MAS forthcoming), and the Canal Link from Stanley Dock southwards to Canning Dock (OA North 2009a; 2009b). Together, these works have recovered an unparalleled assemblage of artefacts and environmental remains, and sophisticated evidence for sequences of structures and engineering techniques during two centuries of intense technological and economic development.
- 10.1.3 ***The target audience:*** the potential readership of any published material needs to be considered. Increased sales and a wider readership are generally achieved by pitching the material appropriately, and ensuring that readers feel an affinity with it.
- 10.1.4 ***Potential demand:*** Liverpool has a healthy tourist trade based on its culture and past heritage. There is thus likely to be a demand, not just from local residents but also from visitors and curious readers as well as academics and other archaeologists. Liverpool marked its 800th birthday in 2007, and throughout 2008 the city was European Capital of Culture. There is a considerable readership in Liverpool for books addressing the heritage of the city and its docklands, and a book examining the archaeological results of the project would provide an effective promotion of the ethos of the Countryside Neptune programme. Heightened awareness among the population of their history and culture makes it reasonable to anticipate an increased readership.
- 10.1.5 A text-based A4 format is the traditional way to publish a synthesis of the baseline data, the primary product of the project, and it is proposed that this format be adapted and improved by the extensive use of illustrations, pitched at the intelligent lay reader. It would essentially consist of a synthesis of the results of the project, in a self-contained form, incorporating sufficient background history and other information to provide an over-arching context for those results.
- 10.1.6 ***Promotion, competition and distribution:*** the overall number of sales is invariably influenced by how widely the book is promoted, and the use of the web can be instrumental in raising the public's awareness. Where the book is available can also determine the readership: local bookshops in Liverpool as well as tourist centres and museums would be principal outlets, in conjunction with sales through the internet.
- 10.1.7 The fact that the proposed book has an archaeological outlook, not offered by any other current or past publication, gives it a fresh and distinctive element. It is one

which will certainly appeal to the population of Liverpool, to judge by the interest of passers-by during the archaeological works, and from the reaction to the displays and leaflets in the temporary exhibition centre. The material generated by archaeological excavation allows a more visceral connection to the past through objects which people can easily comprehend, and images of the archaeological works in progress, and the structures emerging from them, provide an evocative insight into the past life and times of Liverpool, the world port.

10.2 PROPOSALS

10.2.1 **Archive/Client Report:** it is proposed that a client report is produced, formatted for limited distribution in paper copy to local libraries, the Record Office, and the HER. This will include details of structural and stratigraphical elements of the docks and associated activity, and reports on the finds.

10.2.2 **Publication:** an A4 publication will present the results in an easily readable narrative style, with numerous high-quality illustrations and reconstructions. It should incorporate both a study of the area over time and several key themes to engage the widest possible audience. It is important that this volume does not only present the results of the Countryside Neptune programme, but also the results of recent work on the site of the National Museums Liverpool (MAS forthcoming), the British Waterways Canal Link (OA North 2008; 2009a; 2009b), and also work to the east of the Strand (Paradise Street Development Area (OA North 2010)). Most of this work has been undertaken by OA North, but the site of the new museum was excavated by the National Museums Liverpool. The Museums are sympathetic to a joint publication programme. Consequently, the costs of publication can be spread between all the developments, and the resulting book will exemplify the conscientious approach to the heritage of the city by each of the developers, and their outreach to its people.

10.3 STRUCTURE OF THE PUBLICATION

10.3.1 The following sections provide a provisional breakdown of the contents of the proposed client report and publication. In advance of completion of the full post-excavation analysis, these synopses can only be regarded as drafts.

10.3.2 It is anticipated that the archive report will work to the following general headings and content:

Summary and Acknowledgements

1 Introduction

Site location

Circumstances of project

2 Archaeological Background

Documentary evidence

Historical background

3 **Results of the Archaeological Excavations**

Outline of the archaeological works

Earlier post-medieval period, 1700–1800: description of the later post-medieval structural sequence across the site, including the development and abandonment of the early sea walls, docks, land reclamation and early buildings.

Later post-medieval period, 1800–1900: description of the construction and the construction and adaptation of offices and warehouses, including the Mersey Railway ventilation and pumping station.

4 **The finds:** reports on the finds by category, with a brief comment on the significance of the overall assemblage.

5 **General Discussion:** interpretation of the site, describing the results of the archaeological excavations and what they show about the conditions and changes through space and time within the study area. Outline of social conditions and the implication for the community living and working in the area.

Bibliography

10.3.3 The proposed main publication, designed to be accessible to the intelligent lay reader, will include the following (at this stage, the numbering indicates major elements of the book, rather than specific chapters):

Title page

Contents

List of Figures

List of Plates

List of Tables

Acknowledgements

Preface

Summary

1 **Liverpool's Archaeology:** setting the scene, describing the location of the site, and the partnership between the archaeologists, the designers and the construction teams. A description of how a large area of Liverpool city centre was excavated, why it was done, when it started, how the results were obtained, the methods and techniques used, the recording and the post-excavation elements when the fieldwork was over.

2 **Medieval Liverpool:** an archaeological and historical and assessment of early Liverpool, culminating in the construction of the Old Dock.

- 3 ***The development of Liverpool Docks:*** an archaeological and historical approach to the development of the docks: the Old Dock, its use and abandonment, linked into the development of the other docks, such as Dry / Canning Dock and the Manchester and Chester Docks/basins. It will include an examination of the progressive reclamation of the Mersey shoreline. Relevant groups of finds and the evidence for construction methods will be discussed where they illustrate particular aspects of dating or engineering technique.
- 4 ***Life in Liverpool's Past:*** the approach will be to combine information gleaned from the archaeological work and historical sources. The fundamental premise will be to answer questions that people might have, in an accessible yet academically acceptable way. It will address the history of Liverpool's people during the period of the city's rise to prominence, and consider the construction and development of the areas surrounding the docks, including warehouses, workshops, and dwellings. The archaeological evidence recovered by the excavations, both of finds and structures, will provide illuminating insights into the nature and date of the occupation and use of these buildings. This section will also cover the later years of the site, the Blitz, and the subsequent clearance and re-use of the area.

Bibliography

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Illustrations: the volume will be extensively illustrated, incorporating many historical maps, engravings, and photographs of the site before and during excavation, copyright permitting. In particular, it will include reconstructions of the key structures, using the combined laser-scanned data.

CD/DVD: additional data arising from the post-excavation analysis, such as catalogues of the artefacts, with images of a selection of these, will be supplied on a disc included in the volume.

11. RESOURCES AND PROGRAMMING

11.1 NAMED PROJECT TEAM

11.1.1 The team consists of internal OA North staff, with input from Oxford-based OA staff and external specialists. The project will be managed by Nick Johnson, with input from Jamie Quartermaine.

Name	Initials	Organisation	Tasks
Nick Johnson	NCJ	OA North	Project management, publication report and academic editing
Jamie Quartermaine	JQ	OA North	Project champion and author
Rachel Newman	RMN	OA North	Internal quality control and academic editing
Vix Hughes	VH	OA North	Stratigraphic analysis
Caroline Raynor	CR	OA North	Documentary research
Adam Parsons, Anne Stewardson	Illust	OA North	Illustrations
Marie Rowland	MR	OA North	Desk-top publishing
Jo Cook	JC	OA North	GIS
Andy Bates	AB	OA North	Animal bone analysis
Christine Howard-Davis	CHD	OA North	Artefact analysis
Elizabeth Huckerby	EH	OA North	Environmental analysis
Denise Druce	DD	OA North	Environmental analysis
Sandra Bonsall	SB	OA North	Environmental preparation
Joanne Levey	JL	OA North	Archive preparation
Jeff Speakman	EXT	Liverpool Museums	Post-medieval pottery analysis
David Higgins	EXT	External specialist	Clay tobacco pipe analysis
Unallocated archaeologist	Arch	OA North	Various administrative tasks

11.2 MANAGEMENT STRUCTURE

11.2.1 OA North operates a project management system. The team is headed by the Project Manager, who assumes ultimate responsibility for the implementation and execution of this Project Design, and the achievement of performance targets, be they academic, budgetary, or scheduling. The Project Manager may delegate

specific aspects of the project to other key staff, who both supervise others and have a direct input into the compilation of the report. They may also undertake direct liaison with external consultants and specialists who are contributing to the publication report. The Project Manager will define and control the scope and form of the post-excavation programme.

- 11.2.2 Communication between all concerned in the post-excavation programme is of paramount importance, and it is essential that the specialists involved liaise closely in order that comparable data are obtained. To this end, regular meetings and reviews are envisaged between all project staff and between particular groups of specialists. All information will be disseminated at regular intervals, thus ensuring that all concerned are aware of current progress, strategy and thinking.

11.3 HEALTH AND SAFETY

- 11.3.1 All OA North post-excavation work will be carried out under relevant Health and Safety Legislation, including the Health and Safety at Work Act (1974). A copy of the Oxford Archaeology Health and Safety Policy can be supplied on request. The nature of the work means that the requirements of the following legislation are particularly relevant:

- Workplace (Health, Safety and Welfare) Regulations (1992): offices and finds processing areas;
- Manual Handling Operations Regulations (1992): transport of bulk finds and samples;
- Health and Safety (Display Screen Equipment) Regulations (1992): use of computers for word-processing and database work;
- COSHH (1998): finds conservation and environmental processing / analysis.

11.4 TASKS

- 11.4.1 The project has been broken down into a series of summary tasks, which are set out in *Appendix 2*. In addition to the tasks outlined, there is some time allocated to general project monitoring and management. As these tasks are ongoing and not allocated to any specific days, they do not appear on the task sheet. The management and monitoring allocations include project monitoring, advice and co-ordination, and problem solving.

11.5 TOTAL COSTS

- 11.5.1 The total costs for the analysis stage and report production are set out under separate cover.

11.6 COPYRIGHT

- 11.6.1 All records created during the course of the work for OA, of whatever nature, are the property of Oxford Archaeology Ltd. Intellectual property rights, including

copyright of all such material, whether it be written, drawn, photographic or digital, will be that of OA Ltd, unless that right has been contractually waived to a commercial client.

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APPENDIX 1: ARCHIVE DETAILS

A1.1 PROJECT CODES

<i>Site Code</i>		<i>Admin Code</i>	<i>Date</i>
MI 06	Evaluation	L9721	2006
MI 07	Excavation	L9857	2007–09
MI 09	Watching Brief	L9857	2009

A1.2 CONTEXT ARCHIVE

MI 07 folder: complete context index.

MI 07 folder: indices folder, plan index, section index, sample index.

MI 07 folder: trench records folder, record sheets, stratigraphy.

MI 07 folder: contexts 3259–3299, 5000–5099 Area A.

MI 07 folder: contexts 5100–5199, 5700–5899 Area A.

MI 07 folder: contexts 5200–5499, 5600–5699 Area B.

MI 07 folder: contexts 7200–7299 Area C.

MI 07 folder: contexts 7300–7400 Watching Briefs.

A1.3 ARTEFACT ARCHIVE

MI07 folder: finds index, by object number, by box number.

Metal folder: contains object record sheets and printed out copies of digital photographs.

Boxes of ceramics and clay pipes are in Lancaster stores = eight boxes.

All other materials in Lancaster = ten boxes.

A1.4 DRAWN ARCHIVE

MI 07 folder: one A3 folder of enhanced CAD paper plans and permatrace overlays.

MI 07: one tube of large A1 hand-drawn plans, elevations and sections.

A1.5 PHOTOGRAPHIC ARCHIVE

MI 07 folder: photographic indices for black-and-white, colour slide, and digital cameras.

MI 07 folder # 1: negatives, black-and-white films.

MI 07 folder # 2: black-and-white films.

MI 07 folder # 3: black-and-white films.

MI 07 folder # 4: black-and-white films.

MI 07 folder # 5: black-and-white films.

MI 07 folder # 6: colour slide films.

MI 07 folder # 7: colour slide films.

MI 07 folder # 8: colour slide films.

MI 07 folder # 9: colour slide films.

MI 07 folder # 10: colour slide films.

MI 07 folder # 11: Watching brief films.

A1.6 DIGITAL DATA

Twenty-four digital directories, covering approximately 4886 images, with an estimated 9.8GB of data.

Twenty-five layers of CAD survey data, representing 25 days of survey.

Scanned images of site drawings, varying in size from 439KB to 5310KB: the subsequent individual, digitised plans vary in file size from 165KB to 1850KB.

 APPENDIX 2: TASK LISTS

A2.1 BASELINE TASK LIST

The initials of personnel may be derived from *Section 11.1*.

Task No	Task	Personnel	Days
1	Project set-up	JQ/NCJ	2
2	Liaise with project team, set deadlines	JQ/NCJ	4
4	Establish overall site matrix	VH	11
5	Upgrade site database by adding full descriptions	Arch	29
6	Edit matrix	VH	7
7	Main stratigraphic analysis	VH	24
8	Outstanding digitising for CAD; sections, elevations	Illust	13
9	Update CAD / Photographic logging	Illust	15
10	Refresh GIS	JC	3
11	Refine GIS	JC	13
12	Documentary research and data-gathering	Arch	16
13	Input new and check existing historical mapping	JC / Illust	6
15	Produce stratigraphic narrative	VH	24
17	Post-medieval pottery analysis	JS	EXT
18	CBM analysis	PM	EXT
19	Clay tobacco pipe analysis	DAH	EXT
20	Glass analysis	CHD	6
21	Ironwork analysis	CHD	6
22	Copper-alloy and coins analysis	CHD	4
27	Animal bone analysis	AB	3
28	Miscellaneous finds analysis	CHD	9
29	Finds research	CHD	4
30	Finds synthesis	CHD	9
31	Complete stratigraphic analysis	VH	11
34	Converge all datasets into the site database	JC / Arch	11

35	Finds illustrations	Illust	16
36	Site illustrations	Illust	19
37	Update site narrative	VH	5
38	Write report text	NCJ	30
39	Illustrations	Illust	19
40	Edit text/illustrations	RG	13
41	Update text, figures and put in plates	NCJ / Illust	6
42	Quality assurance	Arch	8
43	Disseminate	Arch	1
44	Transfer GIS	JC	4
45	Prepare archive for deposition: database, GIS and CAD system documentation	JL / Arch	15

A2.2 TASK LIST FOR PUBLICATION

Separate tasks to complete the publication are listed below.

Task No	Task	Personnel	Days
46	3D reconstruction drawings	Illust	15
47	Write text for publication	NCJ	14
48	Compile draft publication	NCJ / Illust	6
49	QA	RMN	2
50	Editing, internal	NCJ / RMN	3
51	Corrections	NCJ	3
52	Update text and figures	NCJ / Illust	2
53	Typeset (DTP)	MR	11

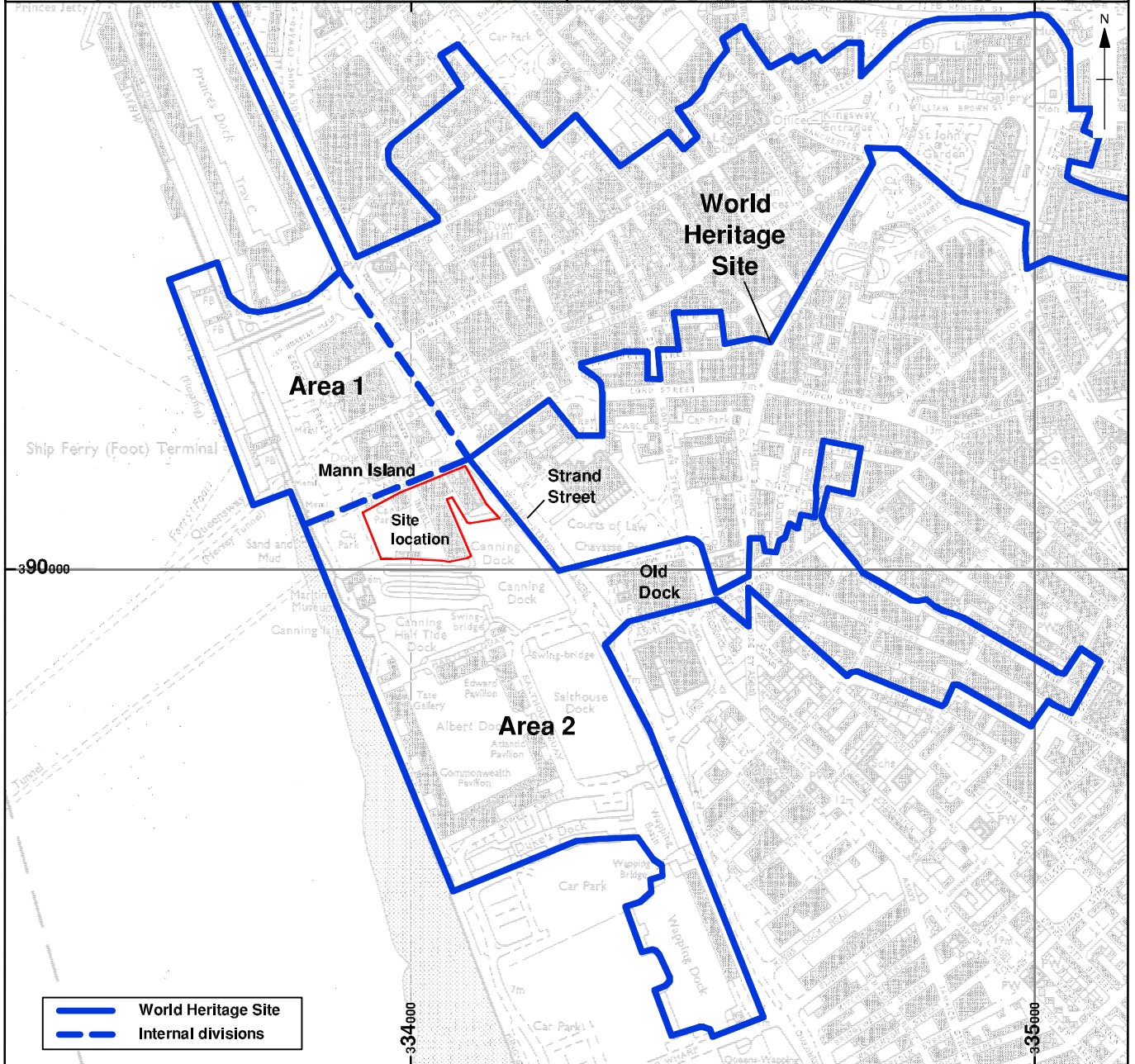
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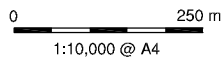


Figure 1: Site location

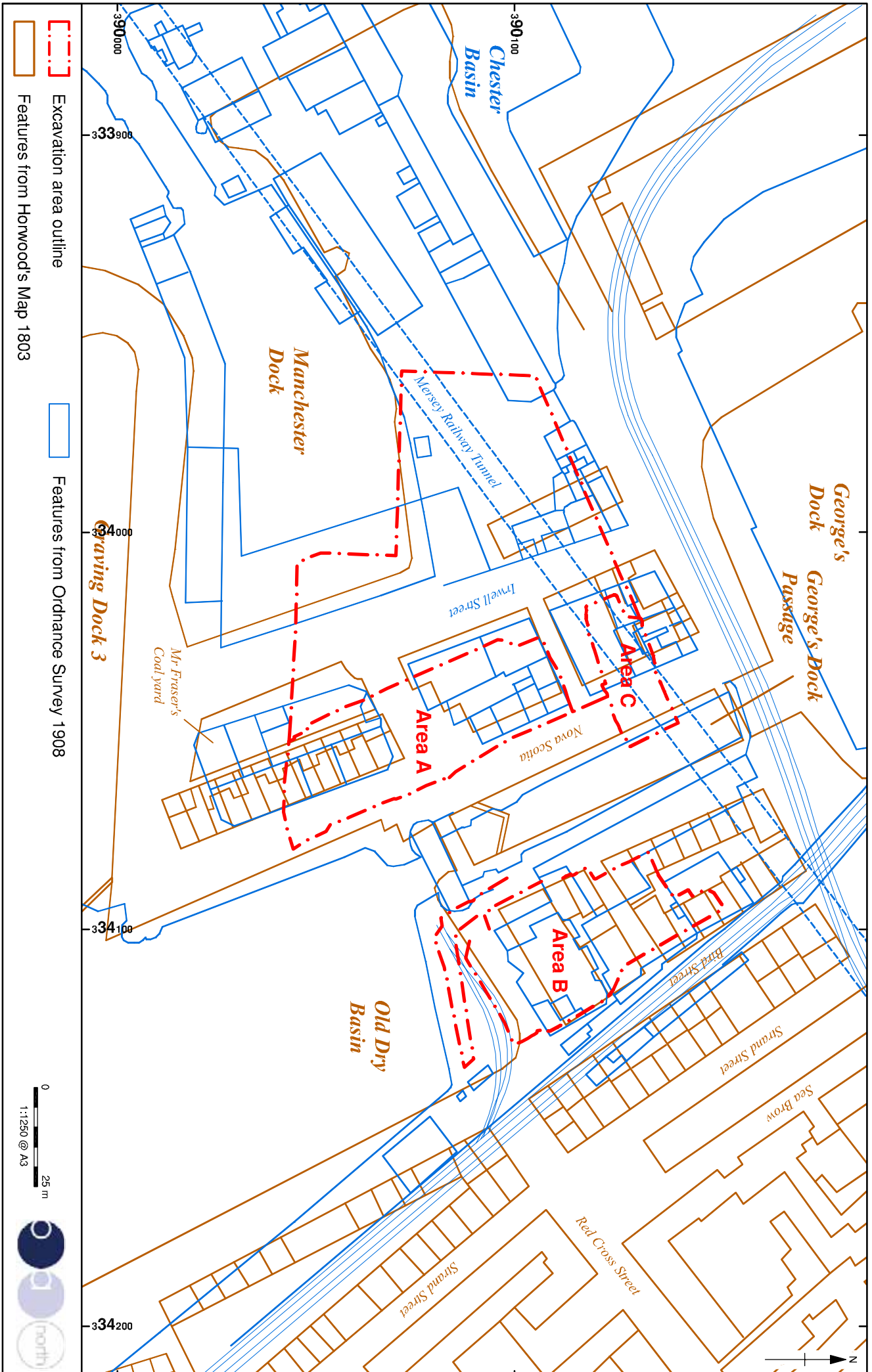


Figure 2: Mann Island Excavation areas, overlain on Horwood's Map of 1803 and Ordnance Survey 1 : 1250 map of 1908

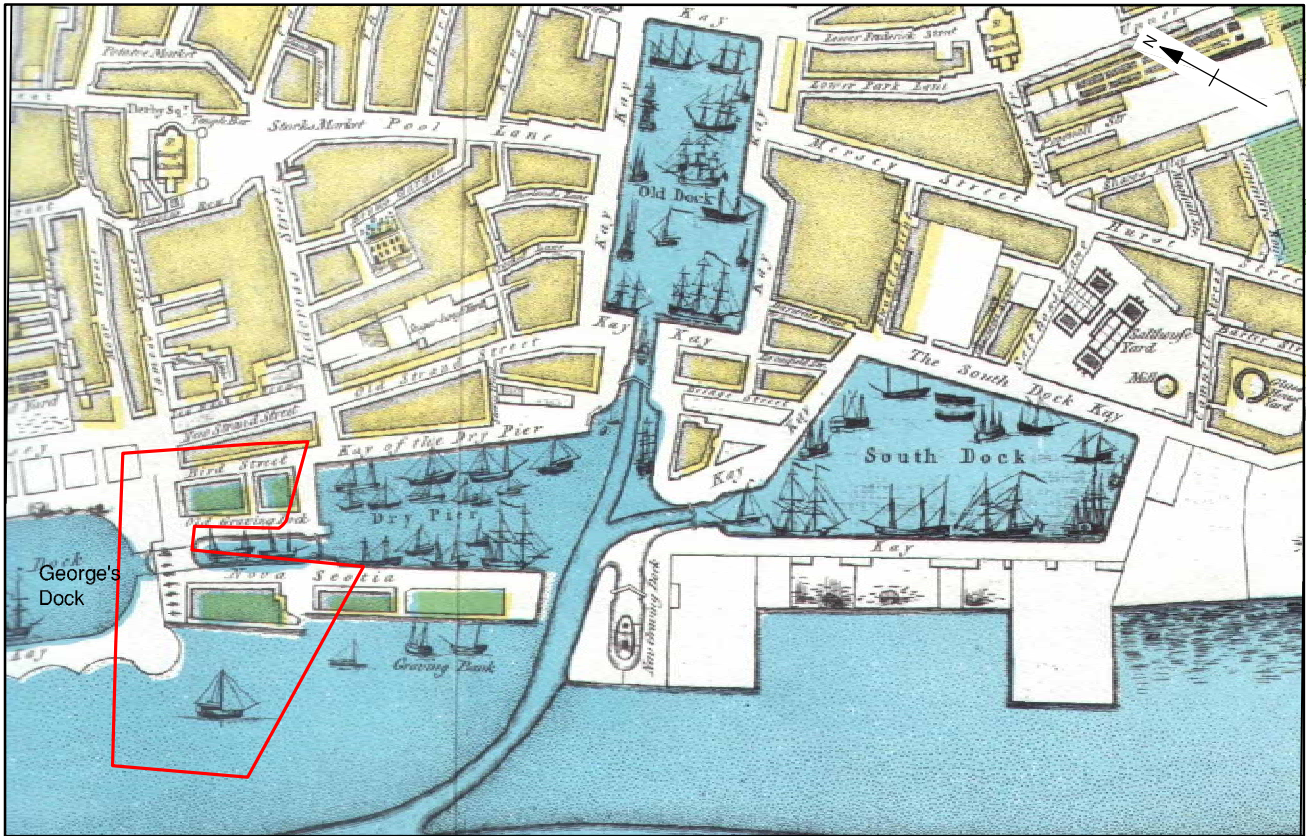


Figure 3: Mann Island Excavation area superimposed on John Eye's map of Liverpool, 1765

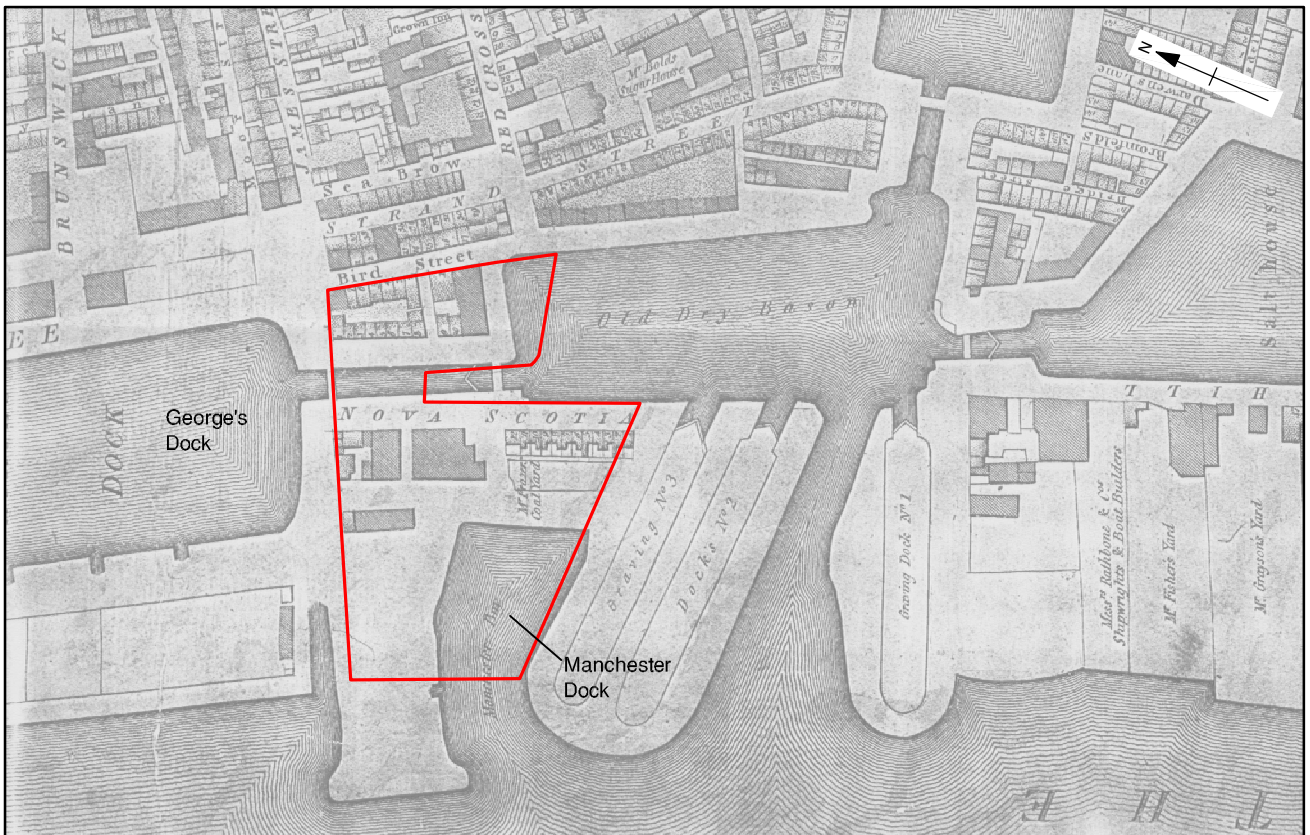



Figure 4: Mann Island Excavation area superimposed on Horwood's map of Liverpool, 1803

 Mann Island excavation area

not to scale



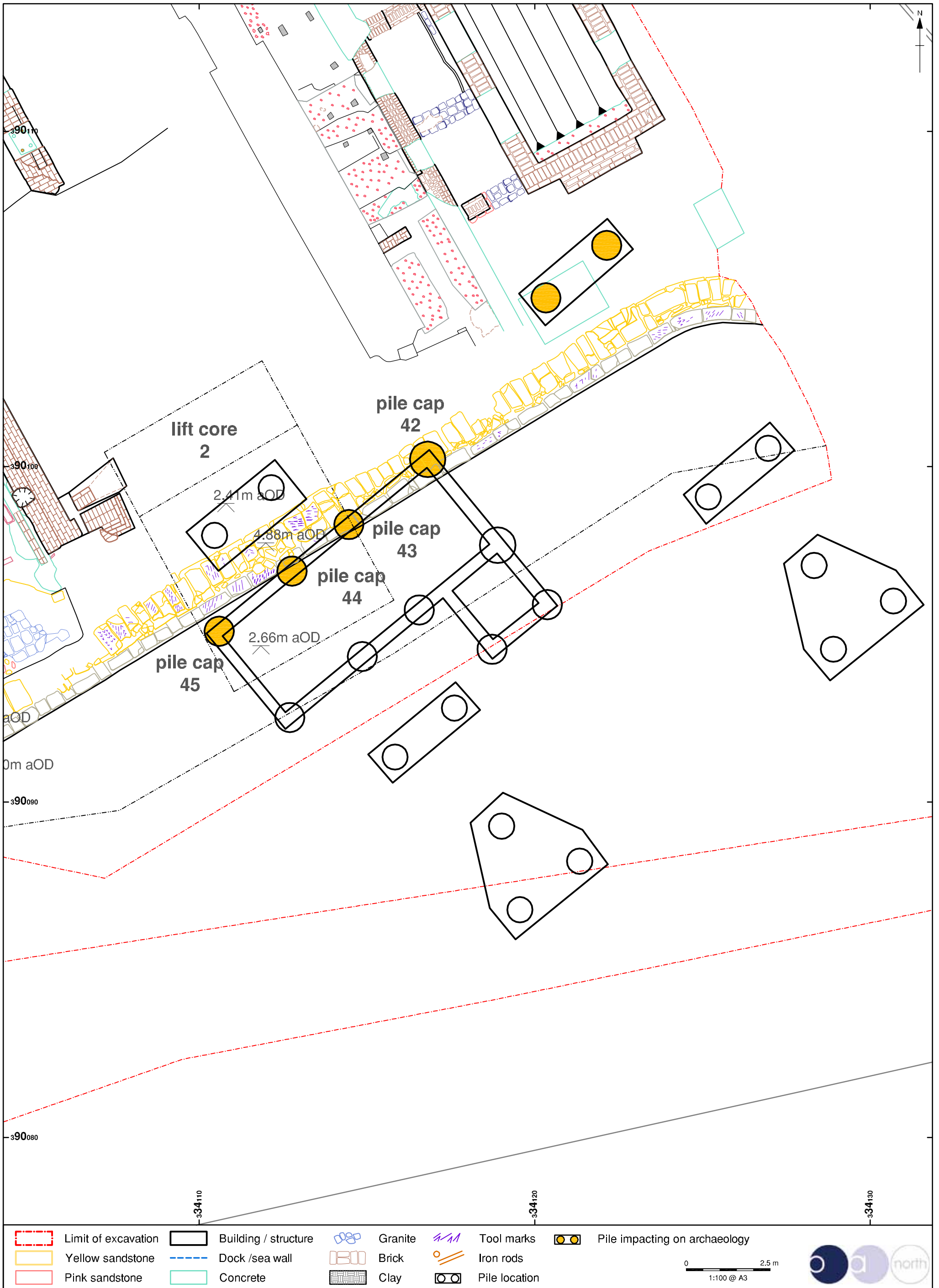


Fig 5: Location of piles in relation to the Dry Dock wall

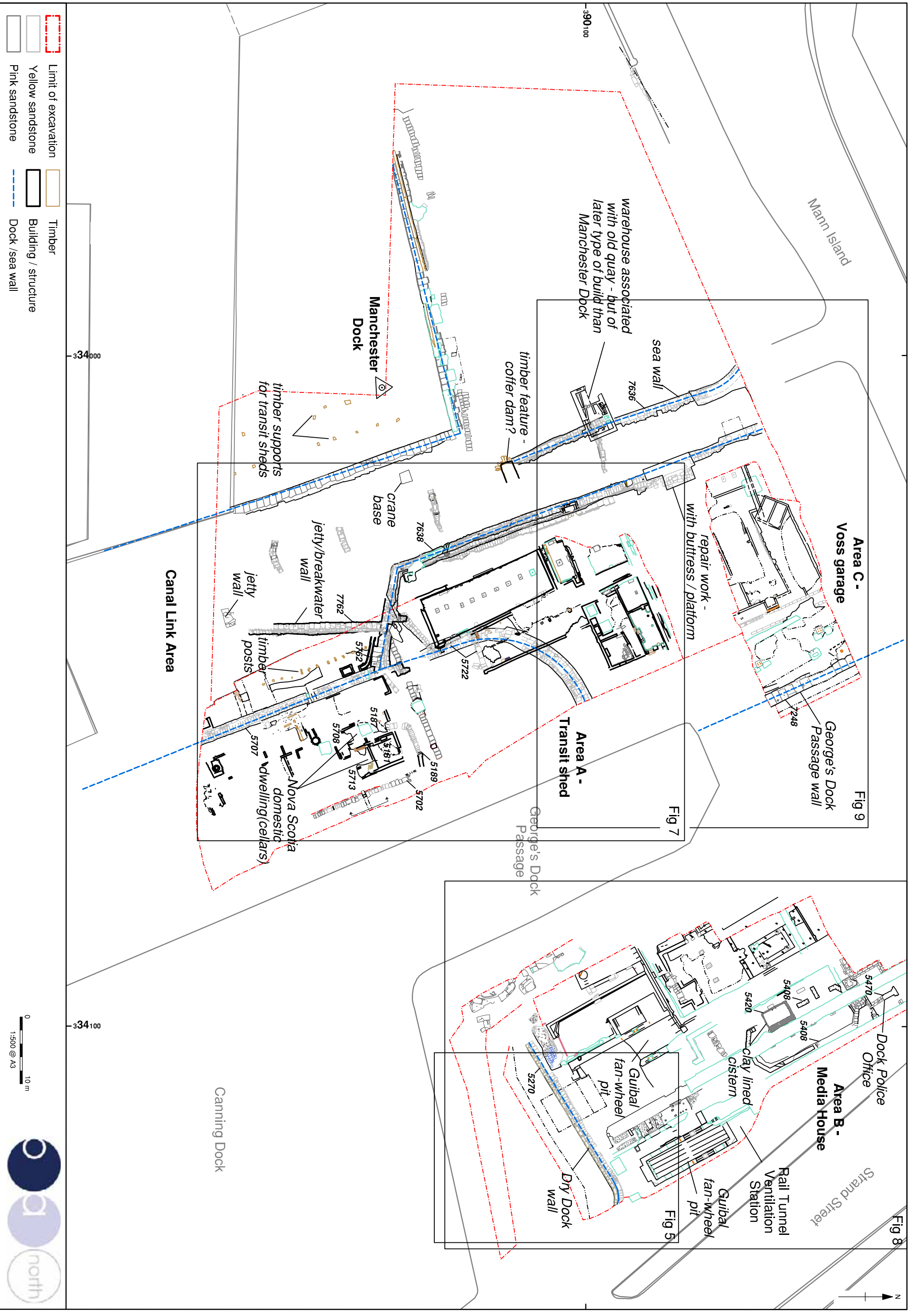


Figure 6: Mann Island: Extent of archaeological excavation

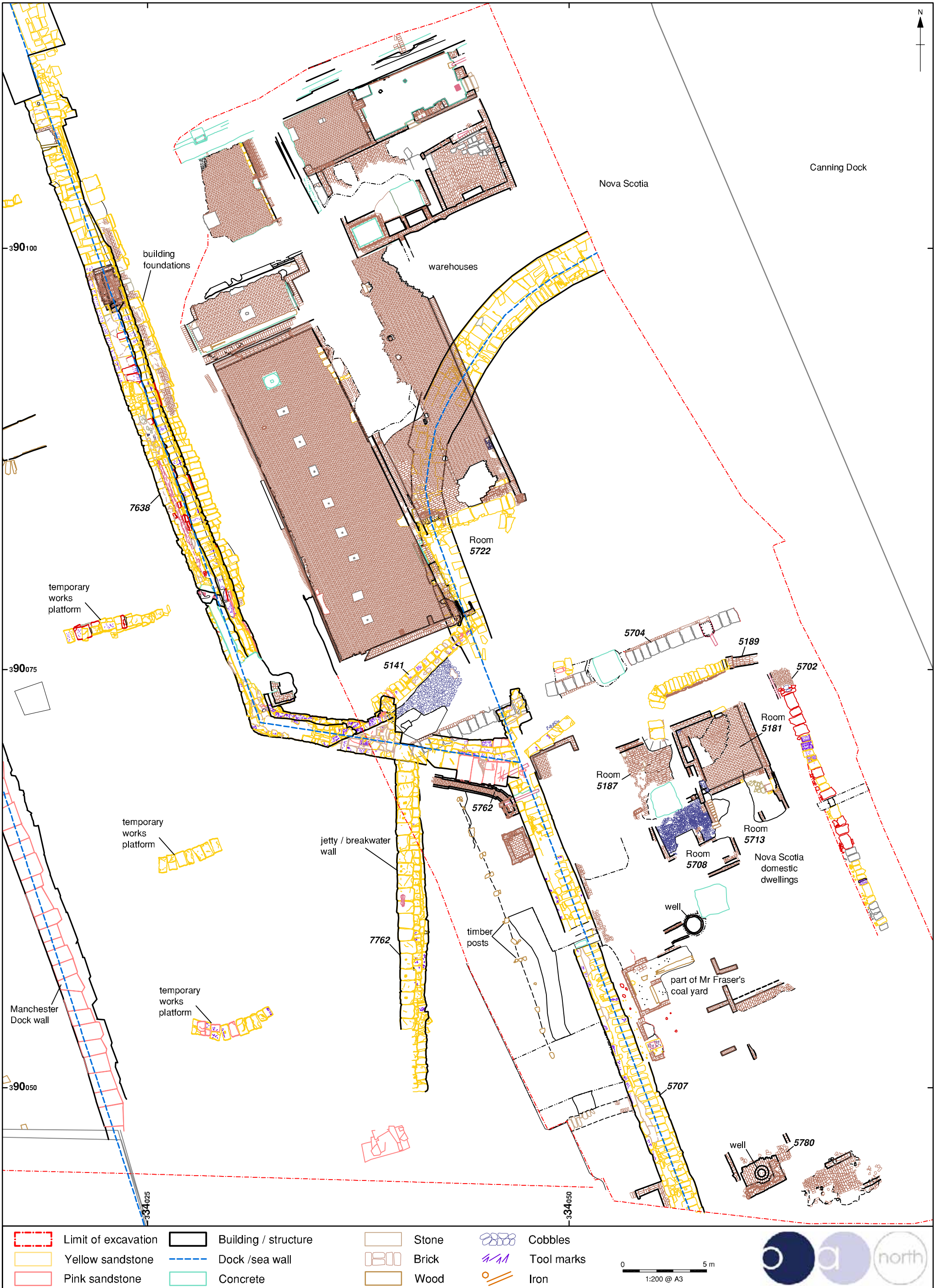


Figure 7: Detail of Area A - Transit shed

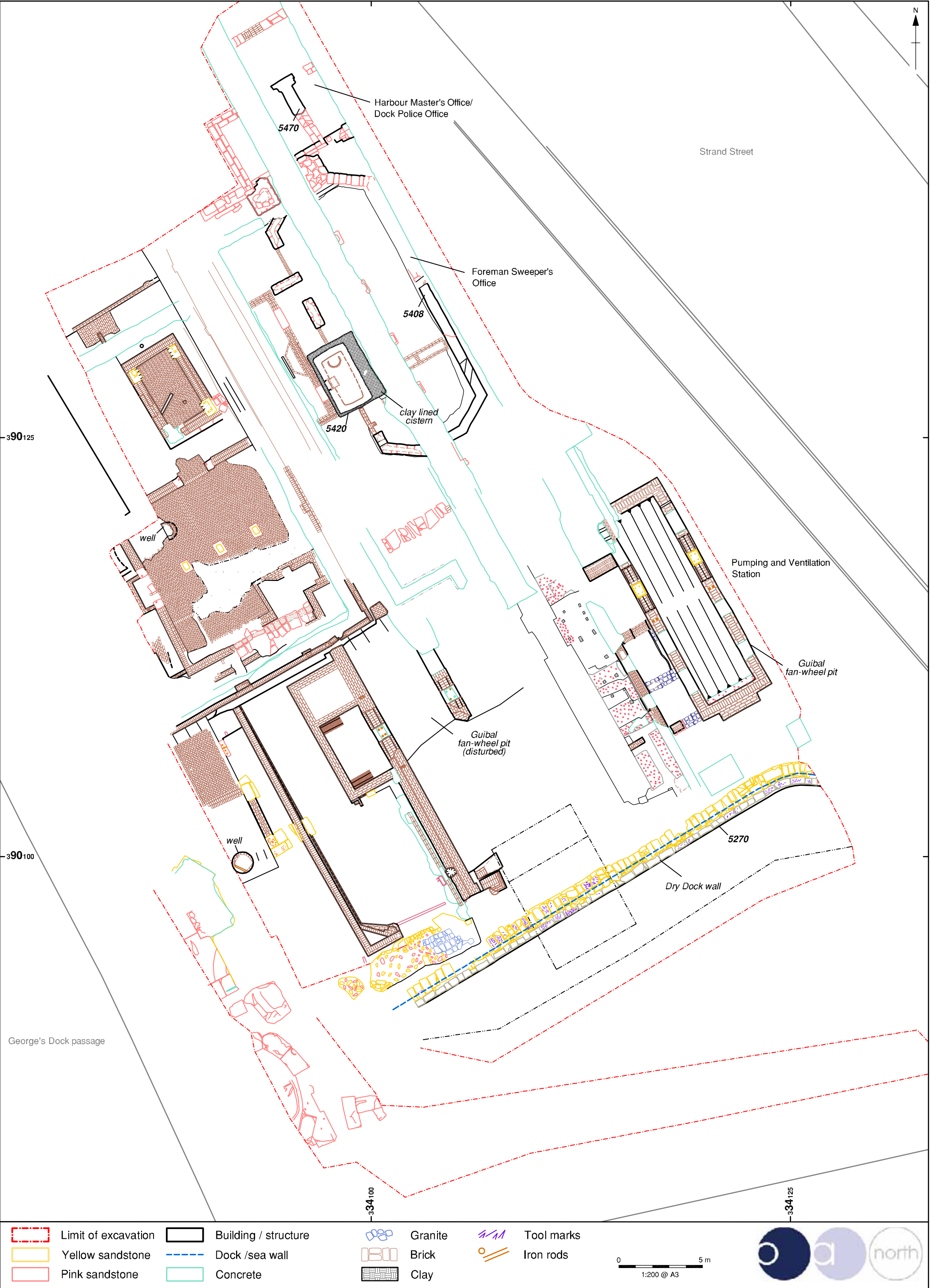


Figure 8: Detail of Area B - Media House excavation



Figure 9: Detail of Area C - Voss Garage



Plate 1: Transit Shed (left) and Voss Garage (centre) adjacent to George's Dock Passage, prior to excavation



Plate 2: Jetty wall 7762 and sea wall 5707 in Area A



Plate 3: Warehouses at the north-west end of Area A

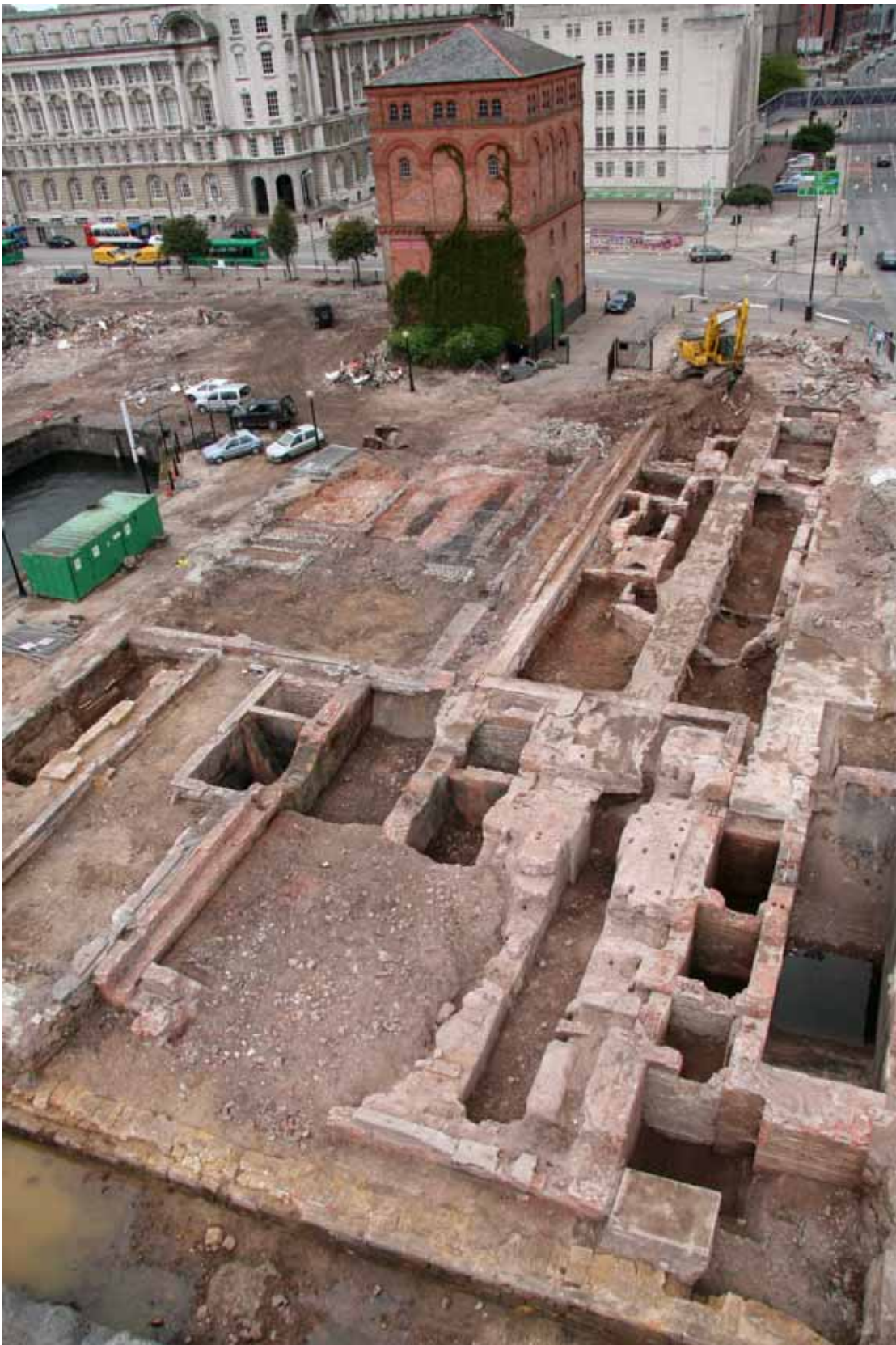


Plate 4: Aerial view of Area B looking north, with the yellow sandstone Dry Dock wall in the foreground and the Mersey Tunnel Ventilation Station immediately behind



Plate 5: Corner of the Manchester Dock wall in Area A