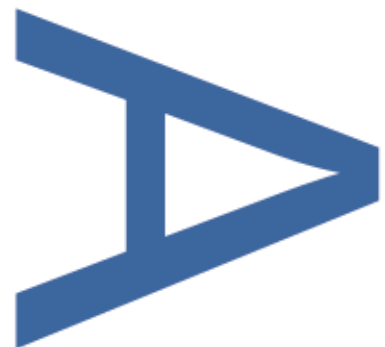


**BUILT HERITAGE RECORDING AT
KING GEORGE V DOCK,
LONDON CITY AIRPORT,
LONDON BOROUGH OF NEWHAM,
E16 2PX**



PCA REPORT NO: R13162

APRIL 2018

PRE-CONSTRUCT ARCHAEOLOGY

**Built Heritage Recording at King George V Dock, London City Airport,
London Borough of Newham, E16 2PX**

Researched and written by Alfred R. J. Hawkins, BA (Hons) MA (PCIfA) and
Charlotte Matthews

Site Code: CIY17

Project Manager: Charlotte Matthews (MIfA)

Commissioning Client: RPS Group on behalf of London City Airport

Central National Grid Reference: NGR TQ 42499 80266

Contractor:

Pre-Construct Archaeology Limited

Unit 54, Brockley Cross Business Centre

96 Endwell Road, Brockley

London SE4 2PD

Tel: 020 7732 3925

Fax: 020 7732 7896

Email: cmatthews@pre-construct.com

Web: www.pre-construct.com

© Pre-Construct Archaeology Limited

April 2018

© The material contained herein is and remains the sole property of Pre-Construct Archaeology Limited and is not for publication to third parties without prior consent. Whilst every effort has been made to provide detailed and accurate information, Pre-Construct Archaeology Limited cannot be held responsible for errors or inaccuracies herein contained.

PCA Report Number: R13162

DOCUMENT VERIFICATION

Site Name

King George V Dock,
London City Airport,
London Borough of Newham,
E16 2PX

Type of project

Built Heritage Recording

Quality Control

Pre-Construct Archaeology Limited Project Code		K5310	
Pre-Construct Archaeology Limited Report Number		R13162	
	Name & Title	Signature	Date
Text Prepared by:	Alfred R. J. Hawkins		17/04/2018
Graphics Prepared by:	Hayley Baxter		17/04/2018
Graphics Checked by:	Josephine Brown	Josephine Brown	17/04/2018
Project Manager Sign-off:	Charlotte Matthews	Charlotte Matthews	17/04/2018

Revision No.	Date	Checked	Approved
1	24/04/2018	Alfred R. J. Hawkins	Charlotte Matthews
Revision 1: RPS comments			

Pre-Construct Archaeology Ltd
Unit 54
Brockley Cross Business Centre
96 Endwell Road
London
SE4 2PD

CONTENTS

1	NON-TECHNICAL SUMMARY	9
2	INTRODUCTION	10
3	PLANNING BACKGROUND	12
4	METHODOLOGY	13
5	HISTORICAL BACKGROUND	16
6	DESCRIPTIONS	22
7	CONCLUSION	26
8	ACKNOWLEDGEMENTS	28
9	BIBLIOGRAPHY	29
10	APPENDIX 1: OASIS FORM	31

APPENDICES

1	OASIS RECORD SHEET
---	--------------------

FIGURES

Figure 1:	Site Location
Figure 2:	Detailed Site Location
Figure 3:	Plan of Proposed Works
Figure 4:	1777 Chapman & Andre
Figure 5:	1862 Ordnance Survey map
Figure 6:	1872 Wyld's Topographic map of the Country in the vicinity of London
Figure 7:	1893 Ordnance Survey map
Figure 8:	1913 Ordnance Survey map
Figure 9:	1923 Plan of King George V Dock (Binns, 1923)
Figure 10:	1923 Cross Section through King George V Dock, looking west (Binns, 1923)
Figure 11:	1938 Ordnance Survey Map
Figure 12:	1958-60 Ordnance Survey Map
Figure 13:	1964 Port of London Authority, Royal Victoria and Albert and King George V Docks
Figure 14:	1982-1984 Ordnance Survey Map
Figure 15:	1991-1996 Ordnance Survey Map
Figure 16:	Historic Building Recording Plate Locations King George V Dock (Modern OS)
Figure 17:	Historic Building Recording Plate Locations King George V Dock (Historic OS)
Figure 18:	Historic Building Recording Plate Locations Royal Victoria Dock
Figure 19:	Watching Brief Plate Locations
Figure 20:	Cross section through Dolphin 7 showing phases of alteration

Historic Plates

- Historic Plate 1: Photograph taken on 11 September 1913 showing the excavation of King George V Dock using a steam-powered excavator (© PLA collection/Museum of London)
- Historic Plate 2: Construction of a new entrance lock at King George V Dock in November 1915 (© PLA collection/Museum of London)
- Historic Plate 3: Construction of the Dolphins and King George V Dock looking east along the South Quay in December 1917 (© PLA collection/Museum of London)
- Historic Plate 4: Dry dock and King George V Dock beyond in May 1919 with the Royal Albert dock (left), looking east (© PLA collection/Museum of London)
- Historic Plate 5: Forty-two new Babcock & Wilcox electric quayside cranes on the Dolphins at the south side of King George V Dock on opening day, 8 July 1921, looking west (© PLA collection/Museum of London)
- Historic Plate 6: Flooding King George V Dry Dock for the first time 23rd July 1921 (© PLA collection/Museum of London)
- Historic Plate 7: King George V Dock, 1928, looking west (©Britain from Above)
- Historic Plate 8: King George V Dock (left) and Royal Albert Dock (right) c.1930s, looking west
- Historic Plate 9: Manor Way bascule bridge closing behind the SS 'Morvada' as she enters King George V Dock on 13th September 1931, looking north-west (© Museum of London)
- Historic Plate 10: King George V Dock and the Royal Albert Dock, 1934, looking west
- Historic Plate 11: A transit shed at King George V Dock and the Royal Albert Dock, c.1945 to 1965, looking west
- Historic Plate 12: Aerial view of King George V Dock c.1945, looking north
- Historic Plate 13: Lifting an elephant at King George V Dock c.1947
- Historic Plate 14: King George V Dock in 1950, looking west
- Historic Plate 15: Royal Albert Dock (left) and King George V Dock (right), 1948 to 1950, looking east (©Britain from Above)
- Historic Plate 16: Photograph taken in 1953 of the Bascule Bridge, looking west from King George V Lock
- Historic Plate 17: Loading the Corfu in 1955 with cargo for the Far East on the North Quay of King George V Dock, looking south-east (© National Maritime Museum, London)
- Historic Plate 18: The P&O liner 'Surat' in 1955 alongside the North Quay of King George V Dock, looking south-east (© National Maritime Museum, London)
- Historic Plate 19: Photograph taken c.1960 of the 'Menestheus' (1958) moored at one of the concrete 'Dolphins' or jetties in the King George V Dock, looking east (©National Maritime Museum, London)
- Historic Plate 20: Photograph taken c.1960 of a Union-Castle lorry by the 'Kenya Castle' on the North Quay of the King George V Dock, looking south-east (©National Maritime Museum, London)
- Historic Plate 21: Photograph taken 15 April 1961 of dockers unloading a cargo of frozen meat on to the South Quay of King George V Dock, looking east (©National Maritime Museum, London P37752)

- Historic Plate 22: HMS Belfast in King George V Dry Dock, 1971-1982, looking east (© Imperial War Museum MH14568)
- Historic Plate 23: King George V Dock in June 1983, its final year of commercial operations, looking north-west (©Newham Archives and Local Studies Library Collection H1755)
- Historic Plate 24: Aerial view of King George V Dock c.1999
- Historic Plate 25: Aerial view of King George V Dock showing DLR c.2005
- Historic Plate 26: Photograph taken in 2016 of the underside of Dolphin 7 by Constructex following the lowering of the water in King George V Dock, looking south-east
- Historic Plate 27: Photograph taken in 2016 of the underside of Dolphin 7 by Constructex following the lowering of the water in King George V Dock, looking south-east

Plates

- Plate 1: Dolphin 7 before removal of its cap, looking north-west (CIY17 D100 010)
- Plate 2: Dolphin 7 before removal of its cap, looking east (CIY17 D100 011)
- Plate 3: Historic crane mooring at east end of south side of King George V Dock, looking north (CIY17 D1 4)
- Plate 4: Historic crane mooring at east end of south side of King George V Dock, looking north (CIY17 D1 5)
- Plate 5: Historic crane remaining on the Royal Victoria Dock, looking west (CIY17 D6 15)
- Plate 6: Historic cranes on the Royal Victoria Dock, looking east (CIY17 D6 18)
- Plate 7: Glass walkway on the South Quayside of King George V Dock, looking north (CIY17 D101 070)
- Plate 8: City Aviation House at the west end of the south side of King George V Dock, looking south-east (CIY17 D101 074)
- Plate 9: KGV House on the south side of King George V Dock at the east end of former Transit Shed 5, looking south-east (CIY17 D101 061)
- Plate 10: View north-west from the east side of King George V Dock showing the North Quay of King George V Dock with the Royal Albert Dock beyond (CIY17 D1 19)
- Plate 11: Blocks of flats to the south of the Site, looking south-east (CIY17 D1 29)
- Plate 12: Tate and Lyle factory buildings to the south of the Site, looking south-east (CIY17 D1 34)
- Plate 13: Railway tracks and mooring posts along the east end of the south side of King George V Dock with the Dolphins 2 and 3 to the right, looking west (CIY17 D5 48)
- Plate 14: Mooring posts along the east end of the south side of King George V Dock with the Dolphins 1 and 2 to the left, looking east (CIY17 D5 39)
- Plate 15: Mooring post on the east side of King George V Dock, looking north (CIY17

- D100 039)
- Plate 16: Mooring post at the west end of the south side of King George V Dock, looking south-east (CIY17 D3 89)
- Plate 17: Coping stones along the west end of the South Quay of King George V Dock, looking south (CIY17 D3 78)
- Plate 18: Coping stones and steps along the west end of the South Quay of King George V Dock, looking south-east (CIY17 D3 87)
- Plate 19: Railway line crossover towards the east end of South Quay of King George V Dock originally to the north of the gap between former Transit Sheds 1 and 2, looking east (CIY17 D100 033)
- Plate 20: Railway line double crossover towards the east end of South Quay of King George V Dock originally to the north of the gap between former Transit Sheds 1 and 2, looking west
- Plate 21: Rusted railway lines outside KGV House on the north side of Transit Shed 5 with King George V Dock on the right, looking west (CIY17 D100 016)
- Plate 22: Original steel frame of Transit Shed 4 re-clad on the south side of King George V Dock, looking north-east (CIY17 D5 11)
- Plate 23: Original steel frame of Transit Shed 4 re-clad on the south side of King George V Dock, looking north-east (CIY17 D5 12)
- Plate 24: Steel angle roof trusses of Transit-Shed 4 on the south side of King George V Dock, looking west (CIY17 D100 026)
- Plate 25: Steel angle roof trusses of Transit-Shed 4 on the south side of King George V Dock, looking west (CIY17 D100 027)
- Plate 26: Platform and south steel wall frame of Transit-Shed 4 on the south side of King George V Dock, looking north-west (CIY17 D101 003)
- Plate 27: Granite setts in the gap between former Transit Sheds 2 and 3 on the south side of King George V Dock, looking south (CIY17 D100 052)
- Plate 28: Granite setts in the gap between Transit Sheds 4 and 5 on the south side of King George V Dock, looking north (CIY17 D5 3)
- Plate 29: Granite setts in the gap between former Transit Sheds 3 and 4 on the south side of King George V Dock, looking north (CIY17 D5 26)
- Plate 30: Railway line crossover to the south of the gap between former Transit Sheds 3 and 4 on the south side of King George V Dock, looking east (CIY17 D100 025)
- Plate 31: Patch of granite setts and railway lines at the east end of the south side of King George V Dock, looking east (CIY17 F100 048)
- Plate 32: Later extension to the platform over the railway line to the south of former Transit Shed 4, looking west (CIY17 D101 051)
- Plate 33: Railway line crossover to the south of the gap between former Transit Sheds

- 3 and 4 on the south side of King George V Dock, looking west (CIY17 D100 044_2)
- Plate 34: Platform edge on the south side of former Transit Shed 1 at the east end of the south side of King George V Dock, looking north-east (CIY17 D1 3)
- Plate 35: Platform to the south of Transit Shed 4, looking north-east (CIY17 D101 002)
- Plate 36: Stairs at the east end of the platform to the south of former Transit Shed 4, looking north (CIY17 D101 048)
- Plate 37: Stairs at the east end of the platform to the south of Transit Shed 4, looking east (CIY17 D100 018)
- Plate 38: Housing for mechanism of Bascule Bridge at the mouth of King George V Dock, looking east (CIY17 D100 041)
- Plate 39: Steel Bascule Bridge that replaced the former Bascule Bridge at the mouth of King George V Dock, looking north-east (CIY17 D100 042)
- Plate 40: Lock gates of King George V Lock, looking east (CIY17 D100 043)
- Plate 41: Brick building in the south-east corner of the Site, looking north-east (CIY17 D100 046)
- Plate 42: Brick building in the south-east corner of the Site, looking south-east (CIY17 D1 7)
- Plate 43: Waterborne crane used to cradle sections of Dolphin 7, looking south-west (CIY17 D3 122)
- Plate 44: Cradled brace cut from Dolphin 7 using waterborne diamond wire saw, looking north-west
- Plate 45: Floating platform/barge used to transfer sections of Dolphin 7's cap to Topbond's Compound, looking north (CIY17 D2 9)
- Plate 46: Lifting Dolphin 7's cap sections from the floating platform into Topbond's Compound, looking north (CIY17 D2 13)
- Plate 47: Detail of Dolphin 7's cap lifting operations, looking north (CIY17 D2 17)
- Plate 48: Demolition and separation of Dolphin 7's cap, looking east (CIY17 D2 12)
- Plate 49: Detail of Dolphin 7's cap, looking east (CIY17 D2 6)
- Plate 50: Detail of Dolphin 7's cap, looking east (CIY17 D2 5)
- Plate 51: Dolphin 7's cap stored on timber platform over dockside railway lines on the south side of King George V Dock, looking east (CIY17 D2 8)
- Plate 52: Dolphin 7 after the removal of its 1980s cap, looking south-west (CIY17 D3 68)
- Plate 53: Dolphin 7 after the removal of its 1980s cap, looking north-east (CIY17 81)
- Plate 54: Dolphin 7 after the removal of its 1980s cap, looking north-east (CIY17 D3 91)
- Plate 55: Large section of brace and mid-brace of Dolphin 7, looking north (CIY17 D5 59)

-
- Plate 56: Aquatic growth on the below-water part of Dolphin 7, looking north (CIY17 D3 26)
- Plate 57: Aquatic growth on below water Dolphin 7 brace, looking north (CIY17 D3 5)
- Plate 58: Lifting Dolphin 7 brace from King George V Dock into Topbond's Compound, looking south (CIY17 D3 148)
- Plate 59: Demolition and separation of steel rebars and concrete from Dolphin 7's brace sections, looking east (CIY17 D3 160)
- Plate 60: Disposal of dismantled Dolphin 7's brace sections, looking east (CIY17 D4 1)
- Plate 61: Modern cap and original Dolphin 7 structure in Topbond Compound, looking north (CIY17 D3 3)
- Plate 62: Cut section of Dolphin braced frame showing steel reinforcements, looking east (CIY17 D3 9)
- Plate 63: Detail of steel bolt, possibly used to secure timber facing to Dolphin 7, looking east (CIY17 D3 29)
- Plate 64: Below water part of Dolphin 7, looking north (CIY17 D4 29)
- Plate 65: Cross section of Dolphin 7 step for downturned lip cover, looking west (CIY17 D3 109)
- Plate 66: Cross sections of Dolphin 7's step for downturned lip cover in situ, looking north-west (CIY17 D3 108)
- Plate 67: West end of King George V Dock after removal of the upper part of Dolphin 7, looking north-west
- Plate 68: Coping stones on North Quayside of King George V Dock, looking north
- Plate 69: Railway tracks and coping stones along North Quayside of King George V Dock, looking east
- Plate 70: Railway tracks and coping stones along North Quayside of King George V Dock, looking east
- Plate 71: Railway tracks and coping stones along North Quayside of King George V Dock, looking east
- Plate 72: Railway tracks and coping stones continue under runway extension along North Quayside of King George V Dock, looking east
- Plate 73: Runway extension into King George V Dock, looking east
- Plate 74: Coping stones continue under runway extension along North Quayside of King George V Dock, looking west
- Plate 75: Railway lines continue under runway extension along North Quayside of King George V Dock, looking east
- Plate 76: Coping stones and stairs at east end of North Quayside of King George V Dock, looking north-east
- Plate 77: Remains of mooring post on the North Quayside of King George V Dock, looking south-east
-

- Plate 78: Remains of mooring post on the North Quayside of King George V Dock, looking south-west
- Plate 79: Remains of mooring post on the North Quayside of King George V Dock, looking east
- Plate 80: Railway tracks along North Quayside of King George V Dock, looking east
- Plate 81: Railway tracks along North Quayside of King George V Dock, looking east
- Plate 82: Brace bar on railway track along North Quayside of King George V Dock, looking east
- Plate 83: Railway tracks along North Quayside of King George V Dock, looking east
- Plate 84: Manual railway track switch along North Quayside of King George V Dock, looking east
- Plate 85: Manual railway track switch along North Quayside of King George V Dock, looking south
- Plate 86: Railway tracks along North Quayside of King George V Dock, looking west
- Plate 87: Railway tracks along North Quayside of King George V Dock, looking east
- Plate 88: Railway tracks along North Quayside of King George V Dock, looking west
- Plate 89: Railway tracks along North Quayside of King George V Dock, looking west
- Plate 90: Railway tracks to the north of the former warehouses on the North Quayside of King George V Dock, looking west with Canary Wharf in the background
- Plate 91: View of Dolphin 5 from North Quayside of King George V Dock, looking south
- Plate 92: View of the former Bascule Bridge from the North Quayside of King George V Dock, looking east
- Plate 93: View from North Quayside of King George V Dock towards the industrial buildings to the south, looking south-west

1 NON-TECHNICAL SUMMARY

- 1.1.1 Pre-Construct Archaeology was commissioned by RPS Group on behalf of London City Airport to undertake built heritage recording at King George V Dock, Newham. The recording consisted of a Level 2 photographic record of the Dock and a built heritage recording watching brief during the removal of the upper part of Dolphin 7 (the westernmost jetty close to the South Quay). The recording was carried out as part of a condition of planning permission for Interim Works for the London City Airport Development Programme 1.
- 1.1.2 Although construction work on King George V Dock began in 1912, it was not opened until 1921 because of World War I. As the third of the 'Royal' docks, King George V Dock was built to extend the trade that was passing through the Royal Victoria and Albert Docks. As the newest of the docks, King George V was well equipped with electric cranes, mechanical devices and extensive refrigeration facilities. As a result the main goods traded through the Dock were fruit, vegetables, frozen meat and later bulk grain. The Dock was just over 1372m long, 11.6m deep and some 152 to 213m wide with a small dry dock at its west end. It had over 5km of quays. The North Quay was designed to feed directly into rail and road transport to move goods from the docks. The South Quay was built as a series of seven long jetties (Dolphins) parallel to the wall and 9.8 metres away from it. Barges were intended to lie in-between the jetties and the wall, and the goods were unloaded and sorted in Transit Sheds. There were 5 railway lines available for the 7 Transit Sheds on the South Quay.
- 1.1.3 The Royal Docks flourished in the early and mid 20th century, however their decline into redundancy began during the 1960s. As container vessels became larger, the docks became unusable and most of the trade it used to facilitate was redirected downriver to Tilbury. The last maritime operations at the Dock took place in 1983. In 1982, a planning application for London City Airport was filed. In May 1987, the airport runway along the disused quay between the King George V Dock and the Royal Albert Dock was completed and the Queen officially opened the airport in November 1987. The construction of the airport has had an effect on the dock infrastructure of King George V Dock. The railway connections along the North Quay were largely removed in order to construct the airport runway. The airport terminal building was built over the large dry dock at the western end of the Dock. Various buildings immediately surrounding the Dock were removed. In addition, the Dolphins on the southern side of the Dock were altered.
- 1.1.4 The built heritage recording established that remnants of features of the 1921 dock still survive including coping stones at the edge of the north and South Quay, iron mooring posts and stone and iron steps into the dock. Railway lines survive on both the north and South Quay. On the south side, two railway lines are still visible to the north of the former Transit Sheds and three lines are visible to the south. These include crossovers to the north and south of the gaps between the former Transit Sheds. Patches of granite setts still remain between the former Transit Sheds. Part of one of the seven Transit Shed is still extant with its steel angle roof trusses. Platforms to the south, east and west sides of the former Transit Sheds still survive in places.
- 1.1.5 The built heritage recording watching brief on the removal of the upper part of Dolphin 7 confirmed that all the Dolphins had been lowered down to water level and covered with new concrete decks in the 1980s when the airport was built. It established that the new decks were constructed of pre-cast concrete and that the original structures constructed of reinforced concrete beams were still extant below.

2 INTRODUCTION

2.1 Background

2.1.1 Pre-Construct Archaeology Limited was commissioned by RPS Group on behalf of the London City Airport to undertake built heritage recording at King George V (KGV) Dock, London Borough of Newham in connection with Interim Works for the London City Airport Development Programme 1. The recording consisted of a Level 2 photographic record of King George V Dock and a built heritage recording watching brief during the removal of the upper part of Dolphin 7 (the westernmost island jetty close to the South Quay). King George V Dock is not listed nor does it lie within a designated Conservation Area.

2.1.2 Planning permission (13/01228/FUL) has been granted for the Interim Works of City Airport Development Programme 1. Condition 62 attached to this permission requires that:

'No Phase of the Development shall Commence other than demolition to existing ground level unless and until there has been secured the implementation of a programme of archaeological evaluation in relation to that Phase in accordance with a Written Scheme of Investigation which has been submitted to and approved by the Local Planning Authority. Such a submitted Scheme shall include:

- Details of a programme for investigating and recording archaeological assets, works and historic structures that might be found during Development of that Phase; and
- Lists all historic buildings at the Airport,

The Phase shall be implemented in accordance with the relevant approved Scheme.

Reason: The site has archaeological potential in terms of heritage assets of archaeological interest. The Local Planning Authority wishes to secure the provision of archaeological investigation and the subsequent recording of the remains prior to Development, in accordance with recommendations given by the Local Planning Authority, English Heritage and in the NPPF'.

2.1.3 In 2016/2017, RPS Group and the Historic England Greater London Archaeological Advisor to Newham Council agreed a framework for discharging planning Condition 62. This framework consists of:

- 'A Level 2 photographic record of King George V Dock to supplement existing reports. This can be achieved from land and will not require access to the Dock water;
- A watching brief on Dock wall and Dolphin 7 removal so that any significant structural information can be recorded. This watching brief will not be a full time watching brief but will be undertaken at significant parts of the Dock wall and Dolphin 7 removal programme (e.g. initial breaking / at times and locations that the archaeologist believes may reveal any new structural information regarding these items); and
- Geo-archaeological boreholes within the area of the WEC and the WTE'.

2.1.4 This report details the results of the Level 2 photographic record of King George V Dock and the watching brief on the removal of Dolphin 7. The built heritage recording was carried out in accordance with a Written Scheme of Investigation (RPS, 2017a),

approved in advance of the work by Adam Single, Historic England Greater London Archaeological Advisor to Newham Council. The recording was also guided by a *Specification for Historic Building Recording and Watching Brief* (RPS, 2017b).

- 2.1.5 The built heritage recording watching brief on the removal of the North Quay dock wall is yet to be undertaken.

2.2 Site Description

- 2.2.1 The Site is broadly located on land between King George V Dock and the Royal Albert Dock (the Docks) and to the south and west of the King George V Dock (**Figure 1**). The Site is approximately centred on Ordnance Survey NGR 542351 180376.
- 2.2.2 The Royal Docks have undergone dramatic change since the last maritime operations in 1983, altering from a maritime, industrial based landscape (with associated warehouse, jetties, cranes and associated infrastructure) to a modern transport landscape consisting of airport buildings, airplane taxi stands and an east-west aligned runway with associated modern transport infrastructure (e.g. the Docklands Light Railway to the north and south of the airport).
- 2.2.3 The Level 2 photographic record of King George V Dock was carried out along the south and north sides of this Dock (**Figures 16 and 17**). The remnants of the area's industrial past are visible through train tracks, mooring posts, platforms and Dolphins.

3 PLANNING BACKGROUND

3.1 Introduction

3.1.1 National legislation and guidance relating to the protection of historic buildings and structures within planning regulations is defined by the provisions of the *Town and Country Planning Act 1990*. In addition, local planning authorities are responsible for the protection of the historic environment within the planning system and policies for the historic environment are included in relevant regional and local plans.

3.2 Legislation and Planning Guidance

3.2.1 Statutory protection for historically important buildings and structures is derived from the *Planning (Listed and Conservation Areas) Act 1990*. Guidance on the approach of the planning authorities to development and historic buildings, conservation areas, historic parks and gardens and other elements of the historic environment is provided by the National Planning Policy Framework (NPPF), which was adopted on 27 March 2012.

3.2.2 Historic buildings are protected through the statutory systems for listing historic buildings and designating conservation areas. Listing is undertaken by the Secretary of State; designation of conservation areas and locally listed buildings is the responsibility of local planning authorities. The historic environment is protected through the development control system and, in the case of historic buildings and conservation areas, through the complementary systems of listed building and conservation area control.

3.2.3 Development also falls under the remit of the Mayor of London's London Plan [July 2016, updated 2017] which addresses Heritage, Conservation Areas, World Heritage Sites and Protected sites. The core intent of the Mayor's strategy in the London Plan is expressed as follows:

Policy 7.8 Heritage Assets and Archaeology

London's heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, World Heritage Sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.

Development should incorporate measures that identify record, interpret, protect and, where appropriate, present the site's archaeology.

4 METHODOLOGY

4.1 Aims and Objectives

4.1.1 The scope of the built heritage recording as set out in the Written Scheme of Investigation (RPS, 2017a) were to provide:

- A Level 2 photographic record of the King George V to supplement existing reports. This can be achieved from land and will not require access to the Dock water;
- Watching brief on the Dolphin 7 removal so that any significant structural information can be recorded;

4.1.2 The aims of the built heritage recording as set out in the Written Scheme of Investigation (RPS, 2017a) were as follows:

- To undertake a Level 2 photographic record of the King George V Dock in its present condition and supplement existing survey information;
- To review the removal of the Dolphin and supplement existing survey information;
- To make the results of the investigation available to interested parties.

4.1.3 The scope of the built heritage recording as set out in the Specification (RPS, 2017b) were to provide:

- A Level 2 photographic record of the King George V Dock and surrounding former industrial lands to supplement existing reports. This can be achieved from land and will not require access to the Dock water;
- Watching brief on the King George V Dock Wall and Dolphin 7 removal so that any significant structural information can be recorded;

4.1.4 The aims of the built heritage recording as set out in the Specification (RPS, 2017b) were as follows:

- To undertake a Level 2 photographic record of the King George V Dock and surrounding former industrial lands plus current context and supplement existing survey information;
- To provide a written account of the form, function, date and sequence of development and industrial usage of the site;
- To photograph the exterior of buildings to create a permanent archive record.
- To photograph the overall appearance of the remaining evidence of the principle form and function of the former dock and associated infrastructure;
- To create measured and sketched plans and sections, as appropriate, in line with Level 2 standards;
- To photograph and create a Level 2 record of any pieces of architectural decoration, structural features and details;
- To create a permanent archive of the historic fixtures, fittings and associated structures;
- To review the removal of the capping of the Dock Wall and supplement existing survey information;
- To review the removal of the Dolphin and supplement existing survey information;
- To make the results of the investigation available to interested parties.

4.2 Documentary Research

4.2.1 The historical background was mainly compiled using existing reports. A search for historic maps was made in Newham Archives and Local Studies Library and the British Library.

4.3 On-Site Recording

- 4.3.1 Alfred Hawkins, PCA Historic Building Team, and Strephon Duckering, PCA Photographer, carried out built heritage recording on the south side of King George V Dock (Airport Landside) from the west end of Dolphin 7 in the west (**Plates 1 and 2**) to the lock-gates at the mouth of the Dock in the east (**Plate 40**) on 20th and 27th November 2017.
- 4.3.2 Alfred Hawkins, PCA Historic Building Team, also carried out the built heritage recording watching brief on the removal of the upper part of Dolphin 7. Visits were made on 1st, 8th and 15th December 2017; 12th, 19th, 25th, 29th January and 2nd and 8th February 2018. The removal was carried out by Topbond PLC Group. Some recording was carried out from Topbond's skiff/boat (**Plates 43 to 45, 52 to 54, 65 and 66**) with most of the recording undertaken in Topbond's Compound (**Plates 46 to 51; 55 to 64**), where removed elements of Dolphin 7 were stored before demolition and removal.
- 4.3.3 Alfred Hawkins, PCA Historic Building Team, carried out built heritage recording on the north side of King George V Dock (Airport Airside) on 24th February 2018 (**Plates 68 to 93**).
- 4.3.4 The 1958-60 Ordnance Survey map (1:2,500) (**Figures 12 and 17**) was used as a base map on Site because it showed heritage assets (railway tracks) that were still extant at the time of the on-site recording. The base map was also used to annotate the location and direction of photographs. A section through the *ex-situ* cap and historic frame of Dolphin 7 in Topbond's Compound was drawn by hand on permatrace at a scale of 1:20, this has been combined with an historic section of the Dolphin (**Figures 10 and 20**).
- 4.3.5 The photographic survey comprised high resolution digital images. General view or views of the Dock in its wider setting were taken to give an overall impression of its size and shape. Detail shots of "industrial structures" (Dolphins, mooring posts, railway lines and other industrial remains) were also taken as well as shots setting these remains in their context. Photographs were also taken during the watching brief on the removal of Dolphin 7 showing *in situ* and *ex situ* elements. A selection of photographs (**Plates 1 to 93**) has been included in this report and **Figures 16 to 19** show the location and direction of these photographs.

4.4 Project Archive

- 4.4.1 The project archive is currently held at the offices of Pre-Construct Archaeology Limited in Brockley, London, under the site code CIY17. This archive consists of 582 high-quality digital photographs, 3 permatrace drawings at 1:20 and 1 written report with associated plates and figures. It is anticipated that the archive (copies of the report, drawings and photographs) will be lodged with the LAARC (London Archaeological Archive Research Centre). A copy of this report will be submitted to RPS Group for onward submission to the Client; Adam Single, Historic England Greater London Archaeological Advisor to Newham Council and the GLHER (Greater London Historic Environment Record).

4.5 Guidance

- 4.5.1 All works were undertaken in accordance with standards set out in:
- ClifA (2014) *Standards and guidance for the archaeological investigation and recording of standing buildings or structures*

- English Heritage (now Historic England) (2005) *The presentation of historic building survey in CAD*
- Historic England (2016) *Understanding Historic Buildings: A Guide to Good Recording Practice*
- Historic England Greater London Archaeological Advisory Service (2015) *Standards for Archaeological Work*

5 HISTORICAL BACKGROUND

5.1 Plaistow Marshes

- 5.1.1 The Site lies in the Plaistow Levels, which was an area of marsh next to the Thames. In the past, the Site was in Kent, in the parish of Woolwich, a part of which was north of the River Thames, adjacent to the manor of East Ham. The Plaistow Levels historically have suffered extensive recurrent flooding, periods of higher sea levels causing the Thames and other freshwater courses to inundate the low ground (RPS, 2013). The ditches dug to drain the levels developed into major drainage dikes, becoming open sewers feeding into the tributaries of the Thames and the river itself as the Plaistow marshes joined the industrial expansion of the 19th century (Tyler, 1989, 12).
- 5.1.2 By the early 16th century much of the marsh had been reclaimed for pasture, although this was temporarily reversed by severe flooding in 1612-13. The process of land reclamation continued until the 19th century, increasing the area of marsh lands (Powell, Torday 1973, 94). Good grazing land could only form with the successful embanking of the River Thames. Such embanking prevented uncontrolled flooding of the levels, allowed the drainage system to accelerate the drying out of the land. The marshes provided excellent grazing and watering for domestic livestock, the ditches not only draining water but allowing its controlled retention, enabling a rich grass pasture to develop (Tyler, 1989). Several enclosures for livestock can be seen on early maps of the area with the rich drained land on the marshes being used for market gardening as London expanded, and demand for fresh fruit and vegetables grew. Chapman & Andre's map of 1777 (**Figure 4**) shows the Plaistow Levels divided into fields surrounded by drainage ditches.

5.2 Victoria Dock and Royal Albert Dock

- 5.2.1 A large part of the marsh between Barking Road and the River Thames was bought by the North Woolwich Land Company in 1843. Shortly afterwards, the Eastern Counties and Thames Junction Railway was built between North Woolwich and Stratford, in order to capitalise on the transport of coal from the Thames. Having opened to traffic in April 1846, and was absorbed by the Eastern Counties Railway in 1847. The railway stimulated the growth of new manufacturing industries along Bow Creek, most notably the shipyard of C.J. Mare and Co, known subsequently as the Thames Ironworks and Shipbuilding Company.
- 5.2.2 The workforce who fuelled this expansion of infrastructure was housed in two new townships near Barking Road Station, an intermediate stop on the Thames Junction line. The first of these was Canning Town, which grew up on the north side of Barking Road between the River Lea and the railway line. The second settlement emerged to the south and east of the road, close to the shipyard. Known originally as Plaistow New Town, in the latter part of the 1850s it became known briefly as Hallsville (The Illustrated London News, June 27 1857, 650), before becoming subsumed by the expanding Canning Town, as it is currently known.
- 5.2.3 The development of the Royal Docks grew in tandem with the expansion of London as an Imperial Capital throughout the late 19th to mid-20th century. The Victoria Dock was built first and was designed and promoted by the engineer George P. Bidder, who had also been the chief promoter of the Eastern Counties and Thames Junction Railway (Smith, 2001, 106). Construction of the Victoria Dock commenced in 1850 by

the contractors, Peto, Brassey and Betts, a civil engineering partnership, and was promoted due to the extensive railway links with the capital (ibid.). The Dock was completed and opened to shipping in 1855 as the first port in London. It utilised hydraulic cranes and was capable of holding the large steam ships of the day. The use of these 'modern' methods of good transportation exponentially increased the profitability of the area; the proximity of the Eastern Counties Railway also allowed a steady increase in output from the dock (Pratt, 2014, 79).

- 5.2.4 Both the 1862 Ordnance Survey map and 1872 Wyld's 'Topographic map of the Country in the vicinity of London' show the Victoria Dock and the Great Eastern Railway (**Figures 5 and 6**). The land to the east is shown as marshland drained by a series of ditches.
- 5.2.5 The combination of the railway connection and dockyard caused an expansion of industry in the local area and in 1852 the rubber firm of S. W. Silver & Co. opened a factory near Ham Creek, a short distance from the parish boundary with East Ham. A small number of houses were erected beside the factory to accommodate Silver's workforce, giving rise to the name of Silvertown, which is labelled on the 1862 Ordnance Survey map (**Figure 5**). Silvertown to the west of the Site developed in what were formerly the Plaistow Levels. This large area of marsh formed part of the extensive wetlands which extended along both sides of the river Thames. The industrial and residential development of the area accelerated rapidly after 1870.
- 5.2.6 Due to the success of the Victoria Dock, alongside the increasing transportation of goods from the British Empire to the capital, it was proposed that a second dock be built connected to the east end of the Victoria Dock. Under an Act of 1875 obtained by the London and St Katherine Dock Company construction of the Royal Albert Dock began. It was built by Lucas & Aird with Sir Alexander Rendel acting as lead engineer; the dock was opened in 1880. The Royal Albert Dock is just over a mile in length with 71 acres of dock proper and with three miles of quayside. It greatly expanded the potential for trade and tourism from the docks and surrounding area. It is shown on the 1893 Ordnance Survey map (**Figure 7**) with North Woolwich to the south. The opening of the Royal Albert Dock encouraged the continued growth of manufacturing in Silvertown and the surrounding area, which was accompanied by further residential development.

5.3 The Royal Docks

- 5.3.1 The Docks gained the prefix 'Royal' in 1880 due to their naming after Queen Victoria and Prince Consort Albert; as opposed to royal ownership and are known as the Royal Docks (Smith, 2001, 106).
- 5.3.2 The London Port Authority came into existence on 31st March 1909 having been constituted under the Port of London Act 1908. This new Port Authority, due to the profitability of the Royal Docks, proposed an extension of the dock network towards the south of Royal Albert Dock. The new dock was to have its own entrance to the Thames while maintaining access to its sister dockyards (Binns, 1923, 372). The 1913 Ordnance Survey map shows the area cleared for the new King George V Dock (**Figure 8**).
- 5.3.3 The detail designs for the King George V Dock proposed by the Lead Engineer of the London Port Authority, Frederick Palmer, were provisionally adopted by the Authority in 1910. These were not taken in hand until 1911 due to diverging opinions surrounding the placement and passages of the dock. Construction of the King George V Dock started in 1912 by the contractors, Messrs S. Pearson and Son.

Frederick Palmer oversaw the construction of the dock and was succeeded by Sir Cyril Kirkpatrick and Asa Binns (Smith, 2001, 108). Photographs taken in the early 20th century show construction of King George V Dock in progress (**Historic Plates 1 to 4**).

5.3.4 One of the terms of the construction of King George V Dock and surrounding infrastructure was that it would be completed in 4 years (Binns, 1923, 373), however construction was delayed by the First World War. Due to a lack of both resources and manpower, it was not until 1918 that adequate funding and manpower could be granted by the government (*ibid.*).

5.3.5 The dock was completed and opened in 1921 representing the culmination of the evolution of London's Royal Docks as a result of imperial trade (**Historic Plates 5 and 6**). The continuing industrial development of the area surrounding the site resulted in the site possessing first-class railway facilities, in addition to direct road and river access to the metropolis whilst drawing upon national and international markets resulting in a wide variety of cargo passing through King George V Dock (**Historic Plate 13**).

5.3.6 The wet dock at King George V Dock covers an area of approximately 64 acres with a depth of 39.6 feet and a total length of quay just over 2 miles (Binns, 373) giving berthing accommodation for fourteen large vessels of either military or domestic tonnage (**Figure 9; Historic Plates 7 and 8**). It had a dry dock, which is some 750 feet long and 100 feet wide with a depth of 34 feet at its west end (now covered by London City Airport Terminal building (**Figure 9; Historic Plates 4, 6, 11 and 22**)). Access to the King George V Dock is gained from the Thames by a lock some 800 feet long and 100 feet wide with a depth of 35 feet of water over the keel blocks (**Figure 9; Historic Plates 2, 9, 15, 16, 24 and 25**). Passage from the King George V Dock to the Royal Albert Dock is by a 100ft wide passage with a depth of 34 feet. Royal Albert Dock Swing Bridge bridges the connection from the Royal Albert Dock to the Royal Victoria Dock (Binns, 1923, 373-4).

5.3.7 Steel framed transit sheds, the frames of which partially remain on Site, are described by Binns (1923, 378) as follows:

'Transit-Sheds – On the south side of the dock are seven single-storey transit-sheds, each 528 feet long and 120 feet wide, in two spans of 60 feet. They are carried on reinforced concrete pile foundations and have steel frames covered with corrugated iron. Continuous skylights are fitted on the northern slopes. The floors are of concrete, and thirty sets of sliding doors giving openings 10 feet square are distributed around the sides and ends' (**Figure 9; Historic Plates 5, 7, 10 to 12, 14 and 15**).

5.3.8 Train lines on the South Quay of the King George V Dock and to the south of the sheds and associated paving remain on Site and are described in Binns (1923, 378) as:

'The quay, which is 25 feet wide, is of reinforced concrete on the Walker-Weston system, and is provided with 2 lines of railway track with the necessary crossovers...On the south side (of the sheds) are three lines of railway track with the necessary crossovers'.

5.3.9 Platforms and granite setts also remain on the Site and are described in Binns (1923, 378) as follows:

'For dealing with road and rail deliveries, the ends and south side of each shed are

provided with platforms 10' wide paved with Victoria stone and sheltered by canopy roofs. The cart areas at the ends of the sheds are 76 feet wide between platforms and are paved with granite sets on concrete.'

- 5.3.10 The Dolphins, island jetties, are a unique feature of King George V Dock with seven Dolphins along the South Quay (**Figures 9 and 10**). The cranes for the South Quay sat on the Dolphins (**Historic Plates 3, 5, 7, 19 and 21**), whereas the cranes along the North Quay, for the Victoria Dock and the Royal Albert Dock were housed on the quayside (**Historic Plates 17, 18 and 20**). The Dolphins are mentioned by Binns (1923, 374):

'Wet Dock - A feature in the design of the wet dock is the provision of reinforced-concrete jetties [Dolphins] parallel with the South Quay wall, with barge passage between the jetties and the quay. Cranes on the jetties work the ships' cargo either into barges or to the quay and transit-shed as may be required. The dock-bottom slopes upward at a 1-in-5 gradient from the outer face of the jetty to the face of the quay-wall, thus reducing the height of the wall by 11 feet when compared with the North Quay-wall.'

- 5.3.11 A cross-section through a Dolphin at King George V Dock is shown in Binns (1923) and reproduced here as (**Figures 10 and 20**). The structure of the Dolphins is also shown in a photograph taken in 1917 during the construction of King George V Dock (**Historic Plate 3**).

- 5.3.12 Binns (1923, 377) states: 'The seven jetties in the wet dock were constructed of reinforced concrete using the Considère system'. This is a method of reinforcing concrete established by the Frenchman Armand-Gabriel Considère. The Considère system worked on the basic principle of the reinforcement of compression members with heavy spiral reinforcing bars, much heavier than would be necessary for a simple ligature. Considère's compression members were usually circular or polygonal in section, and he introduced spiral winding in other zones of compression, such as the haunches of beams, where they were angled up on the slope.

- 5.3.13 Binns (1923, 377) also states: 'The piles (of the Dolphins on the southern quayside) are octagonal in section and measure 18 ½ inches across the flats. They were driven in the dry by means of a special pile-driving plant mounted on a bogie with a cross traverse to take the three lines of piles, the pile leaders being swivelled to give the required batter in either direction. The monkey weighed 83 cwt (hundredweight: 112 pounds (Imperial)) and the average drop was about 6 feet...

The deck of the jetty is of heavy section with special beams for carrying the crane-rails. The jetties were protected by timber fendering and copings; and cast-iron bollards were provided on both sides. A timber gangway which can be lifted by the cranes connects each jetty with the quay'.

- 5.3.14 The Dolphins at King George V Dock originally housed large cranes for use in loading and unloading goods from shipping to lighters, rail and the transit sheds and vice versa. Dolphins are usually numbered from the mouth of a dock to its rear (in this case east to west) making Dolphin 7 the westernmost Dolphin in the King George V Dock. Dolphin 7 was approximately 158.58x5.45m and, before its alteration in 1980, was 113 feet (34.44m) vertical (including below ground piles).

- 5.3.15 Dolphin 7 is specifically mentioned by Binns (1923, 377):

'The only difficulty in driving (in the piles for the jetties) arose on the western jetty (Dolphin 7) where Thanet sand was encountered, and here a water-jet had to be

used. The lower back braces were pre-moulded with an eyelet which slipped over the pile, the surface being roughed at the point of articulation and the annular space between the pile and brace being grouted up'.

- 5.3.16 King George V Dock is shown on the 1938 Ordnance Survey map (**Figure 11**). As the threat of conflict in Europe grew during the mid-1930s, the British Government began to make preparations for the protection of the national infrastructure and the civilian population against attack from the air especially concerning British shipping infrastructure. A large reconstruction effort took place across the Royal Docks from 1935-1940 in order to reinforce them in case conflict did erupt in Europe (Smith, 2001, 106). Although an Air Raid Precautions (ARP) Department had been established at the Home Office as early as March 1935, it took the Munich crisis of September 1938 to focus attention on the country's lack of preparedness for war.
- 5.3.17 The fear surrounding the protection of the docks was well founded, as displayed by Luftwaffe maps of London show that the docklands were the primary target within the city. Furthermore, on the first night of the Blitz in September 1940, both the Docks and the surrounding industrial areas, such as Silvertown, were heavily bombed. Throughout the conflict, extensive damage was caused to the docks by the prolonged bombing of the area (Smith, 2011, 154).
- 5.3.18 The Damage caused during the Second World War fed into the preparation of the Docks for the possibility of conflict during the Cold War with the addition of new set of lock gates at the entrance of King George V Dock.
- 5.3.19 Although the infrastructure surrounding the docks continued to expand into the 1950s (**Figure 12**), the Royal Docks began their decline into redundancy during the 1960s (**Figure 13**). As container vessels became larger, the docks became unusable and most of the trade it used to facilitate was redirected downriver to Tilbury. The last maritime operations at King George V Dock took place in 1983 (**Historic Plate 23**). The 1982-84 Ordnance Survey map (**Figure 14**) shows the loss of Transit Shed 5 from the South Quay of King George V Dock.

5.4 London City Airport

- 5.4.1 Due to their redundancy, the infrastructure surrounding the docks began to dissipate, taking with it the industry that had supported the surrounding area resulting in the poor condition of the district in the late 20th/early 21st century.
- 5.4.2 Captain Harry Gee demonstrated the use of sites such as the Royal Docks as airports in 1987 through the landing a De Havilland Canada Dash 7 aircraft on Heron Quay. This demonstrated the feasibility of the STOLport project, the forerunner to the London City Airport project (Simons and Bowman, 2011, 80).
- 5.4.3 After this demonstration and due to the location of the docks and the size of the central landmass between Royal Victoria Dock, Royal Albert Dock and King George V Dock, an airport was proposed by the construction and civil engineering company Mowlem in 1981 (Simons and Bowman, 2011, 79). This proposal resulted in the construction of London City Airport in 1986 and it's opening in 1987 (**Historic Plates 24 and 25**). When the airport opened, the runway was only 1080m (3,543 ft) in length along a glideslope of seven and a half degrees for noise abatement purposes. The airport runway was therefore limited to Dash-7 and smaller Dornier Do 228 aircraft. This limited both the destinations offered by the airport and the number of passengers it could handle (Simons and Bowman, 2011, 84).
- 5.4.4 The construction of London City Airport had an immediate effect on the maritime

infrastructure of King George V Dock. The railway connections along the North Quay of King George V Dock were largely removed in order to construct the airport runway. The airport terminal building was built over the large dry dock at the western end of King George V Dock (**Figure 15**). The dock was first drained, then 128 concrete columns with steel beams were erected in it and it was then re-flooded in order to provide structural support to the columns. Various buildings immediately surrounding the dock were removed in order to build the new airport terminal.

- 5.4.5 In addition, the Dolphins on the southern side of King George V Dock were altered. The uppermost level of each Dolphin was removed, bringing them down to just above water level (**Figure 20**). This level was then capped using reinforced concrete. It is unknown why this removal took place – presumably it is an aesthetic choice. As a result, none of the previous maritime fittings housed on the Dolphins are visible.
- 5.4.6 In 1989 London City Airport was granted planning permission to extend the runway to 1508 meters (4,948 feet), allowing the use of larger aircraft. This resulted in the number of passengers doubling by 1990. In 1993, the glideslope was reduced to five and a half degrees in order to allow a larger range of aeroplanes to serve the airport (Simons and Bowman, 2011, 84).
- 5.4.7 The 1991-96 Ordnance Survey map (**Figure 15**) shows that by this date all the warehouses along the North Quay of King George V Dock and Transit Sheds 5 to 7 on the South Quay had been removed
- 5.4.8 In 2001, planning permission was granted allowing the construction of an extended apron on piles above the water of the King George V Dock with four additional parking stands and four new gates to the east terminal. They became operational on 30th May 2008 (Simons and Bowman, 2011, 87).
- 5.4.9 The 2006 London City Airport's Master Plan outlines its vision for growth and shows a phased expansion of the airport, giving the capability of handling eight million passengers per annum by 2030. 'Phase 1 would include the construction of the eastern apron extension and provision of a finger pier to the south of this apron to provide passenger access to aircraft using new parking stands. The terminal building would also be extended to use the triangle of land between it and the railway station. The jet centre would be extended, a new hanger built to allow aircraft maintenance, and a replacement fire station provided. Phases 2 and 3 would be undertaken between 2015 and 2030. Further aircraft parking stands would be built to the east of the terminal, and a taxiway would be constructed alongside and to the south of the runway...Both these developments would involve further reduction in the water area of the King George V Dock' (Simons and Bowman, 2011, 88).

6 DESCRIPTIONS

6.1 Introduction

6.1.1 The results of the built heritage recording are described below in the order that they were carried out:

1. Level 2 photographic recording along the south side of King George V Dock and surrounding former industrial lands.
2. Built heritage recording watching brief during the removal of the upper part of Dolphin 7
3. Level 2 photographic recording along the north side of King George V Dock.

6.1.2 For ease of reference, the seven Transit Sheds, which aligned with the Dolphins along the South Quay have been given the same numbers as the Dolphins e.g. former Transit Shed 7 beside Dolphin 7 is the westernmost transit shed.

6.2 South Quay of King George V Dock

6.2.1 King George V Dock had seven concrete 'Dolphins' or jetties (**Plates 1, 2, 13 and 14**). These were all a regular in size and each was 520 feet (158.58m) long and 32 feet (5.85m) wide and built 32 feet out from, and parallel to, the South Quayside. The original height of the Dolphins was lowered in the 1980s when the airport was built, and the remaining structures were capped with a concrete platform (**Figure 20**; compare **Historic Plates 5 and 19** with **Plates 1 and 2**). At the time of the initial recording, only the 1980s caps were visible with associated fittings (ladders, edge protection and life buoys).

6.2.2 The Dolphins originally had cranes for loading and unloading ships (**Historic Plate 5**). All the cranes have been removed from King George V Dock, although several still survive at the Royal Victoria Dock (**Plates 5 and 6**). Some crane moorings were still visible at the east end of the South Quay of King George V Dock to the south of the west end of Transit Shed 1 (**Plates 3 and 4**).

6.2.3 Late 20th/early 21st century London City Airport buildings and structures cover much of the west end of the south side of King George V Dock close to the airport terminal building (**Plates 7 and 8**). The airport car park also covers this end of the Site (**Plates 8 and 9**). KGV House was built in the centre of the south side of the King George V Dock in the early 21st century (**Plate 9**).

6.2.4 The north side of King George V Dock is used as a runway for London City Airport and all the cranes from its former use as a dock have been removed (compare **Historic Plates 17 to 20** with **Plate 10**). Views to the south of the Site include blocks of flats (**Plate 11**) and the Tate and Lyle factory buildings (**Plate 12**). The southern side of the Site is partially bound by the boundary wall of the DLR (Docklands Light Railway; **Plate 11**).

6.2.5 The original rounded coping stones line the edge of the south and North Quays of King George V Dock (**Plates 13 to 18, 68 to 72**). Some of these stones at the west end of the South Quay have been altered to take fencing in order to protect pedestrians from falling into the dock. A variety of cast iron mooring posts still survive along the edge of the South Quay of King George V Dock (**Plates 13 to 17**), while those along the North Quay have been removed to stub height (**Plates 77 to 79**). The posts are located at irregular intervals along the quayside, suggesting that some have been removed. None of the mooring posts have visible stamp or makers marks. A

photograph taken of the South Quay of King George V Dock in 1921 shows the rounded coping stones and a variety of cast iron mooring posts (**Historic Plate 5**).

- 6.2.6 Two railway lines that lay along the South Quay to the north of the Transit Sheds were still visible in places (**Plates 13, 19 to 21**). They were better preserved at the east end of the quay (**Plates 13 and 19**) with rusted railway lines near KGV House (**Plate 21**). The 1958-60 map (**Figures 12 and 17**) shows that railway line crossovers were deliberately placed along the South Quay to the north of the gaps between the Transit Sheds. Crossovers survive to the north of the Transit Sheds in the spaces between Sheds nos 1, 2, 3, 4 and 5 (**Plates 19 and 20**).
- 6.2.7 Six of the seven transit sheds along the South Quay have been removed and only parts of Transit Shed 4 still survives (**Figure 16**). The west end of this Transit Shed is extant and has been re-clad (**Plates 22, 23 and 28**). Angle steel roof trusses with gusset plates are exposed without roof coverings to the east of this surviving part of Transit Shed 4 and were originally part of this Transit Shed (**Historic Plates 10 and 11; Plates 24 and 25**). The south steel wall frame of this Transit Shed also survives (**Plate 26**).
- 6.2.8 Granite setts paving the roads between the Transit Sheds still survive between former Transit Sheds 2, 3, 4 and 5 (**Figures 16 and 17; Plates 27 to 29**).
- 6.2.9 Three railway lines that lay to the south of the Transit Sheds were still visible (**Figures 16 and 17; Plates 30 to 33**). They were recorded over an intermittent length of 812m along the Site. The 1958-60 map shows that railway line crossovers were placed symmetrically on the railway lines to the north and the south of the spaces between the Transit Sheds. A crossover still survives to the south of the gap between Transit Sheds 3 and 4 (**Plates 30 and 33**). At the east end of the Site, a patch of granite setts and railway lines survive (**Plate 31**).
- 6.2.10 Concrete railway platforms survive on the east, west and south side of former Transit Sheds 1, 2, 3 and 4 (**Plates 34 and 35**). Concrete steps at the west and east ends of the platform survive to the south of former Transit Shed 4 (**Plates 36 and 37**). A small brick building with a flat concrete roof and a doorway and window in its west wall is almost entirely buried in the south-east corner of the Site (**Plates 41 and 42**). The building is mid 20th century in appearance, although its function is not known.
- 6.2.11 A Bascule Bridge at the mouth of the King George V Dock used to carry Woolwich Manor Way over King George V Lock (**Historic Plates 10 and 16**). It was replaced c.1990 with a steel bascule bridge (**Plate 39**). The bridge has classical red brick and stone abutments and was built c.1920 (**Plates 38 and 92**). King George V Lock lies to the east of the bridge (**Plate 40**).

6.3 Built heritage recording watching brief

Dolphin 7 1980s Deck

- 6.3.1 The original structure of the Dolphins is known from a cross-section drawn by Binns (1923) and a photograph taken during the construction of the King George V Dock (**Figure 10; Historic Plate 3**). During the 1980s as part of the construction of London City Airport, the Dolphins were lowered and each was given a new concrete deck (**Figure 20**; compare **Historic Plate 5** with **Plates 1 and 2**). Photographs (**Historic Plates 26 and 27**) taken of the underside of the 1980s deck of Dolphin 7 in 2016 (Constructex, 2016) show that the upper part of the original Dolphin (deck and braces) was removed down to the second horizontal concrete beams above the base, a level just below water level (**Figure 20**).

- 6.3.2 The 1980s concrete cap or deck of Dolphin 7 was removed from east to west by cutting it up into large slabs (some 5 to 6m in length and 2.7 to 3m in width) with a diamond wire saw. The slabs were then 'cradled' (held by two slings (looped chains) attached to a bar) and lifted by waterborne crane onto a floating compound/barge for transfer to the east end of the South Quay of the King George V Dock (**Plates 43 to 45**). The slabs were then lifted from the floating compound/barge by a crane on the dockside into the Topbond's Compound, where they were stacked, broken/crushed up and separated into steel rebars and concrete (**Plates 46 to 48**). The built heritage recording watching brief was carried out intermittently both from Topbond's boat and within Topbond's Compound (**Figure 19**).
- 6.3.3 The large slabs of Dolphin 7's cap were photographed in Topbond's Compound as part of the built heritage recording watching brief (**Plates 49 to 51**). The 1980s cap was constructed of sections of pre-cast reinforced Portland cement. Four identical sections placed side-by-side formed the underside of the cap. These were covered with the overall deck, which was attached to a downturned lip at each side (north and south) of the Dolphin (**Figure 20**). The lip is, in turn, connected to each frame of the Dolphin through 2 vertical members and a horizontal concrete beam also constructed in the 1980s - forming the frame of the cap. These are keyed into the original horizontal beam where the former timber and concrete fittings of the Dolphin have been removed (**Figure 20; Historic Plates 26 and 27; Plates 65 and 66**).

Dolphin 7 Braced Frames

- 6.3.4 The removal of 1980s cap slabs left the vertical braced frames initially *in situ* (**Plates 52 to 54**). The 1917 photograph of the Dolphins during construction shows that the west end five vertical frames were also diagonally braced east-west (termed here 'mid-braces') as well as north to south (**Historic Plate 3**). The upper parts of the vertical braced frames were removed from east to west down to the first horizontal concrete beams above the base (**Figures 10 and 20; Historic Plate 3**). The braces were removed using a diamond wire saw in pieces approximately 5-7m in length. The largest frame observed during the built heritage recording watching brief weighed approximately 26 tonnes (**Plate 55**).
- 6.3.5 The original braced frames that had been below water were covered with aquatic growth some 1 to 40cm thick (**Plate 56 and 57**). The braced frames were moved to the Topbond Compound in the same way that the cap slabs had been moved (**Figure 19; Plate 58**) and were separated into steel rebars and concrete and disposed of in the same way (**Plates 59 and 60**).
- 6.3.6 The original braced frames were constructed of Portland cement with steel reinforcing bars (**Plates 62 and 64**). A bolt was visible on the *ex situ* braces, presumably used to house the timber fittings/cover of the first tier of the Dolphins (**Plate 63, Historic Plate 5**). The construction joint between the 1980s deck structure and the frame below was visible both *in situ* (**Plate 66**) and *ex situ* (**Plate 61**). The frames of the 1980s concrete cap were visible both *in-situ* and *ex-situ* connected to the original braced frame (**Plates 54, 65 and 66**). The cross-sections of these show that they were constructed of pre-cast concrete with steel reinforcements. Once removal of the cap and original upper frame of Dolphin 7 had been completed, it was not possible to see its remaining structure, which remains underwater (**Figure 20; Plate 67**).

6.4 North Quay of King George V Dock

- 6.4.1 The built heritage recording along the North Quay of King George V Dock was undertaken on 24th February 2018. The original granite coping stones survive along

the edge of the North Quay from the aeroplane bays in the west along the entire length of the dock, including underneath the aircraft turning extension, which protrudes from the North Quay towards the south approximately 716m east from the aircraft bays (**Figure 16**) – in total a length of some 1149m (**Plate 68 to 71**). This extension was constructed using pre-cast concrete sections and reinforced concrete piles in the same way that the airport terminal was built (**Plate 72**). The pre-cast concrete sections appear to have been laid over the coping stones and railway lines along the North Quay (**Plates 72 to 75**).

- 6.4.2 A set of original stone stairs was recorded at the eastern tip of King George V Dock (**Plate 76**). Most of the mooring posts had been removed leaving only a stub as evidence of their former existence (**Plates 77 to 79**). Railway lines are better preserved along the North Quay than along the South Quay and extend along its entire length (**Figure 16; Plates 80 to 89**). Crossovers, braced railway lines (**Plate 82**) and switch levers are visible (**Plates 84 and 85**).
- 6.4.3 From the North Quayside, the Dolphins are visible along the South Quay (**Plate 91**), the Bascule Bridge at the mouth of King George V Dock (**Plate 92**), and the industrial landscape of Silverton and Woolwich (**Plate 93**) and Canary Wharf (**Plates 86 and 90**).

7 CONCLUSION

- 7.1.1 The design for the third of the 'Royal' Docks, King George V Dock, was finalised by Frederick Palmer in the autumn of 1911. The contract for the new dock was awarded to S. Pearson & Son in August 1912, however World War I saw most of the construction force join the armed forces, leaving the project at a near standstill. In 1918 new labour and materials were granted to complete the project and on 8th July 1921, King George V officially opened the dock.
- 7.1.2 As the third of the 'Royal' docks, King George V Dock was built to enhance and extend the trade that was passing through the Royal Victoria and Albert Docks. As the newest of the docks, King George V was well equipped with electric cranes and mechanical devices to aid the dockers. There were also extensive refrigeration facilities on site. As a result the main goods traded through the docks were fruit and vegetables, frozen meat and later bulk grain.
- 7.1.3 The King George V Dock was designed with modern shipping in mind. Therefore the depth and size of the entrance locks were suitable for the large steam ships and passenger liners that frequented London in the mid-twentieth century.
- 7.1.4 The site covered 64 acres of land. The dock was just over 1372 metres long and 11.6 metres deep. Its width varied from 152 metres to 213 metres. There was also a small dry dock at the west side of the dock. King George V Dock had total length of quay just over 2 miles (Binns, 373); all furnished with steel-frame sheds and electric cranes. The North Quay was designed to feed directly into rail and road transport to move goods from the docks. The South Quay was built as a series of seven long jetties (Dolphins) parallel to the wall and 9.8 metres away from it. Barges were intended to lie in-between the jetties and the wall, and the goods were unloaded and sorted in transit sheds on the jetties. There were 5 railway lines available to the 7 Transit Sheds on the south side of the Dock.
- 7.1.5 The Royal Docks flourished from the 1920s to the 1950s, however their decline into redundancy began during the 1960s. As container vessels became larger, the docks became unusable and most of the trade it used to facilitate was redirected downriver to Tilbury. The last maritime operations at King George V Dock took place in 1983.
- 7.1.6 In 1982, a planning application for London City Airport was filed. The runway was to be housed on the disused quay between the King George V Dock and the Royal Albert Dock. In May 1987, the airport runway was complete and the Queen officially opened the City Airport on 5th November 1987.
- 7.1.7 The construction of London City Airport has had an effect on the dock infrastructure of King George V Dock. The railway connections along the North Quay of King George V Dock were largely removed in order to construct the airport runway. The airport terminal building was built over the large dry dock at the western end of King George V Dock. Various buildings immediately surrounding the dock were removed in order to build the new airport terminal. In addition, the Dolphins on the southern side of King George V Dock were altered. The uppermost level of each Dolphin was removed, bringing them down to water level. This level was then capped using reinforced concrete.
- 7.1.8 The built heritage recording established that remnants of features of the 1921 dock still survive. These include coping stones at the edge of the north and South Quay, iron mooring posts and stone and iron steps into the dock. Railway lines survive on both the north and South Quay. On the south side, two railway lines are still visible to

the north of the former Transit Sheds and three lines are visible to the south. These include crossovers to the north and south of the gaps between the former Transit Sheds. Patches of granite setts still remain between the former Transit Sheds. Part of one of the seven Transit Shed is still extant with its steel angle roof trusses. Platforms to the south and east and west sides of the former Transit Sheds still survive in places.

- 7.1.9 The built heritage recording watching brief on the removal of the upper part of Dolphin 7 confirmed that all the Dolphins had been lowered in the 1980s when the airport was opened and covered with new concrete decks. It established that the new decks were constructed of pre-cast concrete and that the original structures were still extant below and were constructed of reinforced concrete beams.

8 ACKNOWLEDGEMENTS

- 8.1.1 Pre-Construct Archaeology Limited would like to thank RPS Group for commissioning the project on behalf of London City Airport.
- 8.1.2 The built heritage recording was managed by Charlotte Matthews for Pre-Construct Archaeology. Alfred Hawkins and Strehon Duckering carried out the built heritage recording. Alfred Hawkins and Charlotte Matthews wrote this report and Hayley Baxter prepared the illustrations.

9 BIBLIOGRAPHY

Binns, A, 1923, '*The King George V Dock, London*', in Minutes of Proceedings of the Institution of Civil Engineers, Volume 216, pp.327-398

Constructex, 2016 *Inspection of Dolphin 7*

Doubleday, H.A. and Page, W. (ed.) 1973 '*The Victoria History of the County of Essex, Volume 6*' (Publisher: Constable)

Historic England. 2006. *Understanding Historic Buildings; A Guide to Good Recording Practice*.

Inman, M. L., 2017 'London Docks in the 1960s' (Amberley Publishing Limited)

Journal of the Institute of Transport, Volumes 6-7

Marden, D., 2012 'London's Dock Railways: The Royal Docks, North Woolwich and Silvertown, Part 1' (Kestrel Railway Books)

Marden, Dave, 2013 'London's Dock Railways: The Royal Docks, North Woolwich and Silvertown, Part 2' (Kestrel Railway Books)

Pratt, D. 2014 '*London's Waterways*' (A&C Black)

Powell, K. Torday, R. 2006 'Architecture of the Future' (Birkhäuser)

RPS 2013, *London City Airport (LCY), The Proposed City Airport Development Programme (CADP) Cultural Heritage Desk-Based Assessment*. Prepared on behalf of London City Airport

RPS 2017a, *City Airport Development Programme Interim Written Scheme of Investigation. Submission under Condition 62 of Planning Permission 13/01228/FUL*. Prepared on behalf of London City Airport

RPS 2017b, *City Airport Development Programme Specification for Historic Building Recording and Watching Brief*. Prepared on behalf of London City Airport

Smith, A. E. 2011 '*London's Royal Docks in the 1950's: a memory of the docks at work*' (Lulu)

Smith, D. 2001 '*Civil Engineering Heritage: London and the Thames Valley*' (Thomas Telford)

Simons, G. and Bowman, M.W. 2011 '*London's Airports*' (Casemate Publishers)

The Illustrated London News, June 27 1857

Tyler, D 1989, *The Natural History of Docklands*. London Wildlife Trust, Southwark Group.

Cartographic Sources

1777 Chapman & Andre

1862 Ordnance Survey map

1872 Wyld's Topographic map of the Country in the vicinity of London

1893 Ordnance Survey map

1913 Ordnance Survey map

1923 Plan of King George V Dock (Binns, 1923)

1923 Cross Section through King George V Dock, looking west (Binns, 1923)

1938 Ordnance Survey Map

1958-60 Ordnance Survey Map

1964 Port of London Authority, Royal Victoria and Albert and King George V
Docks

1982-1984 Ordnance Survey Map

1991-1996 Ordnance Survey Map

10 APPENDIX 1: OASIS FORM

OASIS ID: preconst1-312903

Project details

Project name	Built Heritage Recording at King George V Dock, London City Airport, London Borough of Newham, E16 2PX
Short description of the project	Pre-Construct Archaeology was commissioned by RPS Group on behalf of London City Airport (LCY) to undertake built heritage recording at King George V (KGV) Dock, Newham The recording of the Dock and a watching brief during the removal of the upper part of Dolphin 7 were carried out as part of a condition of planning permission for LCY's Development Programme. As the third of the 'Royal' docks, KGV Dock was built between 1912 and 1921 to extend the trade that was passing though the Royal Victoria and Albert Docks. The North Quay was designed to feed directly into rail and road transport. The South Quay was built as a series of seven long jetties (Dolphins) parallel to, and 9.8m away from, the wall. The Dock flourished in the 20 th century, however its decline began during the 1960s as container vessels became larger. The last maritime operations took place at KGV Dock in 1983 and in 1987 LCY was officially opened. The built heritage recording established that although the construction of the airport has had an effect on the dock infrastructure, many original features still survive including coping stones along the quay edges, mooring posts, steps into the dock, quayside railway lines, part of a transit shed, railway platforms and patches of granite setts. The watching brief established that all the Dolphins were lowered and covered with new pre-cast concrete decks in the 1980s and the original structures constructed of reinforced concrete beams were still extant below.
Project dates	Start: 01-12-2017 End: 24-02-2018
Previous/future work	Not known / Yes
Any associated project reference codes	CIY17 Site Code
Type of project	Building Recording
Current Land use	Transport and Utilities 2 - Other transport infrastructure
Monument type	DOLPHIN Modern
Monument type	RAILWAY Modern
Methods & techniques	"Measured Survey","Photographic Survey","Survey/Recording Of Fabric/Structure"
Prompt	Planning condition

Project location

Country	England
Site location	GREATER LONDON NEWHAM ROYAL DOCKS King George V Dock, London City Airport, London Borough of Newham
Postcode	E16 2PX

Study area	1.46 Kilometres
Site coordinates	TQ 4226 8025 51.502757 0.049878898 51 30 09 N 000 02 59 E Line
Site coordinates	TQ 4370 8017 51.50171 0.070550139 51 30 06 N 000 04 13 E Line
Site coordinates	TQ 4350 8048 51.50456 0.067834169 51 30 16 N 000 04 04 E Line
Site coordinates	TQ 4226 8047 51.504766 0.049948108 51 30 17 N 000 02 59 E Line

Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Adam Single
Project design originator	Simon Blatherwick
Project director/manager	Charlotte Matthews
Project supervisor	Alfred R. J. Hawkins
Name of sponsor/funding body	London City Airport

Project archives

Physical Archive Exists?	No
Digital Archive recipient	LAARC
Digital Archive ID	CIY17
Digital Contents	"Survey"
Digital Media available	"Images raster / digital photography", "Spreadsheets", "Text"
Paper Archive recipient	LAARC
Paper Archive ID	CIY17
Paper Contents	"none"
Paper Media available	"Correspondence", "Drawing", "Map", "Plan", "Report", "Section"

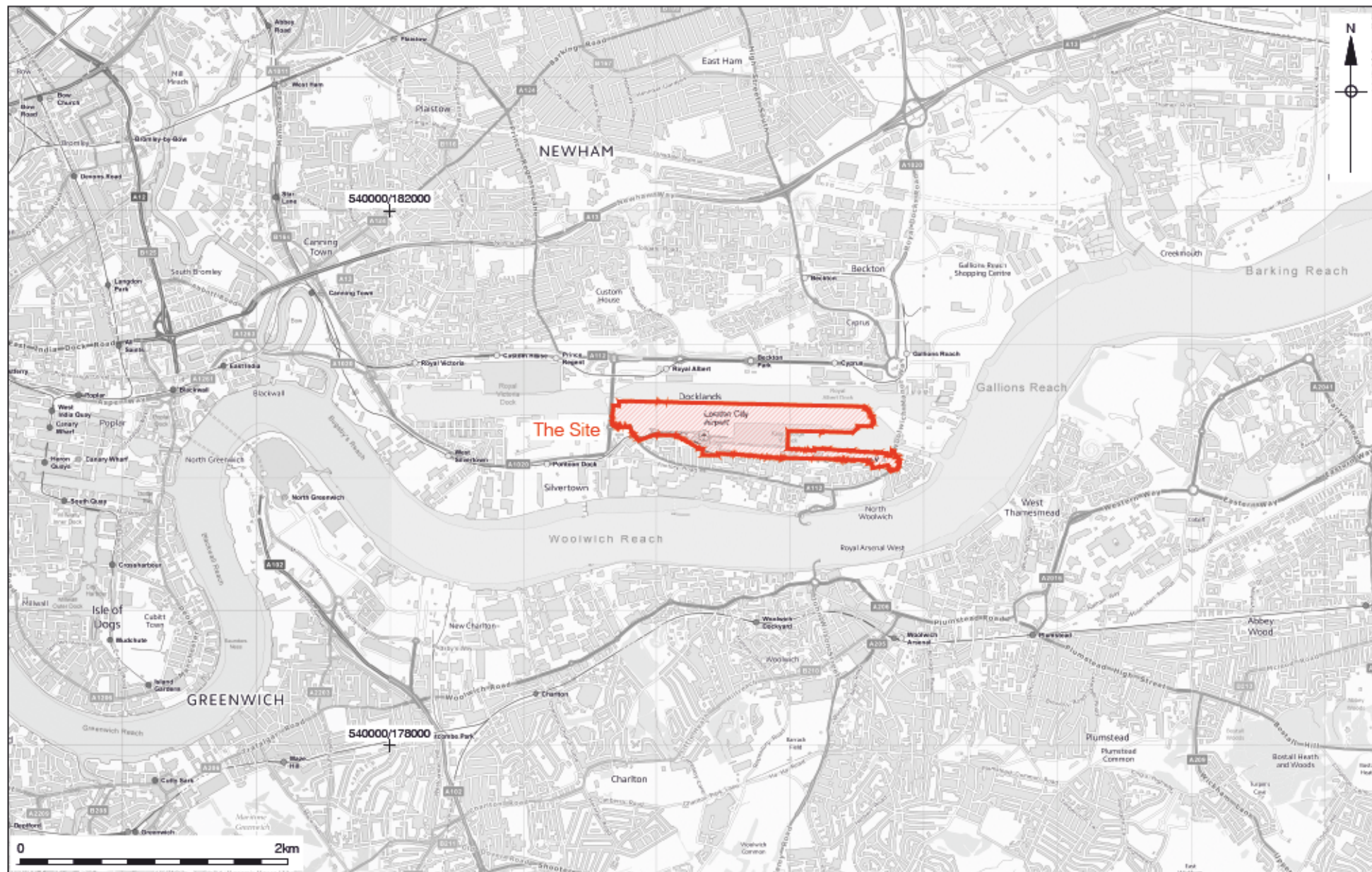
Project Bibliography

Publication Type	Grey Literature (unpublished document/manuscript)
Title	Built Heritage Recording at King George V Dock, London City Airport, London Borough of Newham, E16 2PX
Author(s)/Editor(s)	Hawkins, A. R. J. and Matthews, C.
Other bibliographic details	PCA Report No. R13162

Date 2018
Issuer or publisher Pre-Construct Archaeology Limited
description A4 PDF

Entry

Entered by Charlotte Matthews (cmatthews@pre-construct.com)
Entered on 17 April 2018

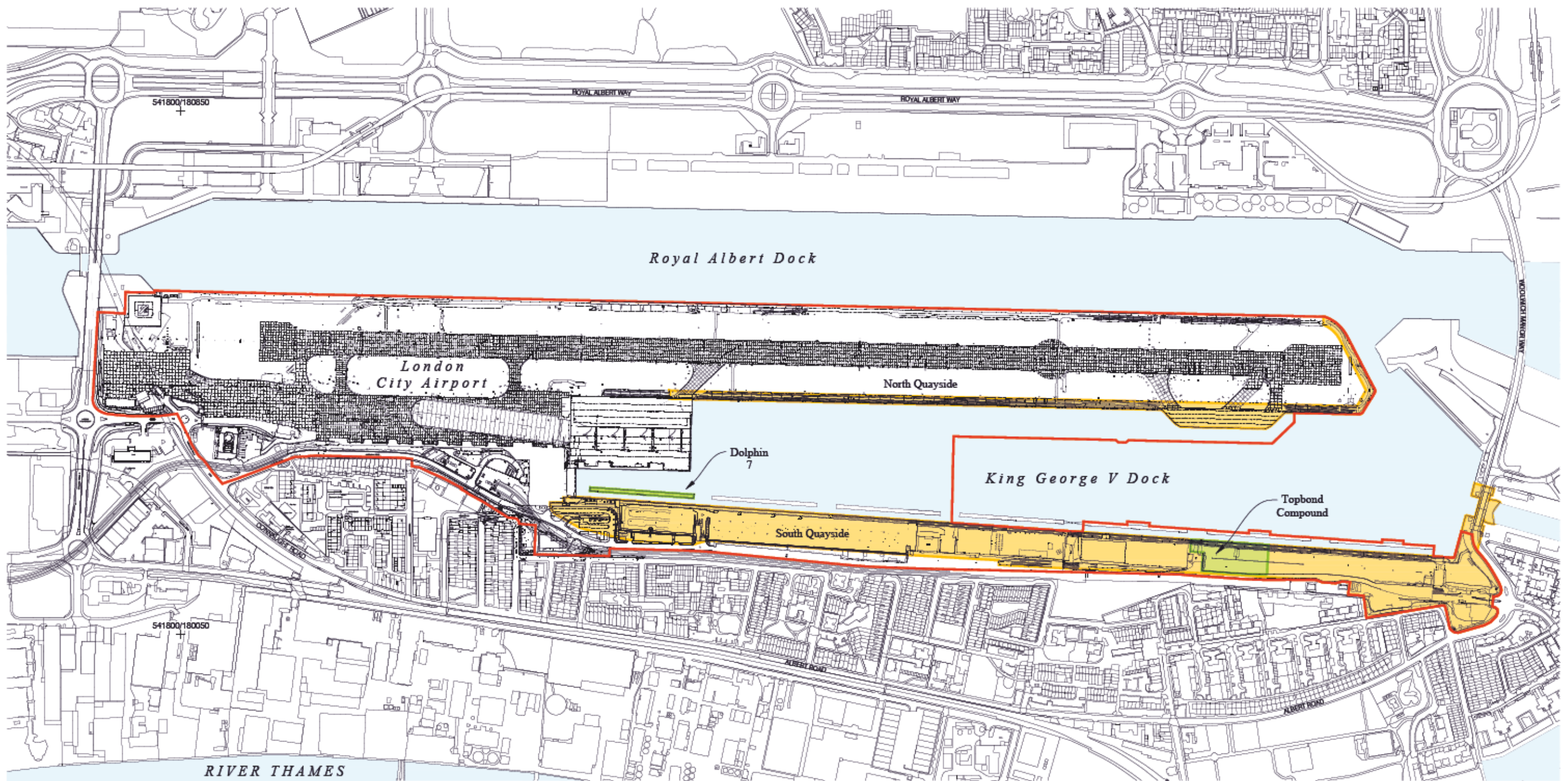


Contains Ordnance Survey data ©Crown copyright and database right 2018

© Pre-Construct Archaeology Ltd 2018

17/04/18 HB

Figure 1
Site Location
1:40,000 at A4



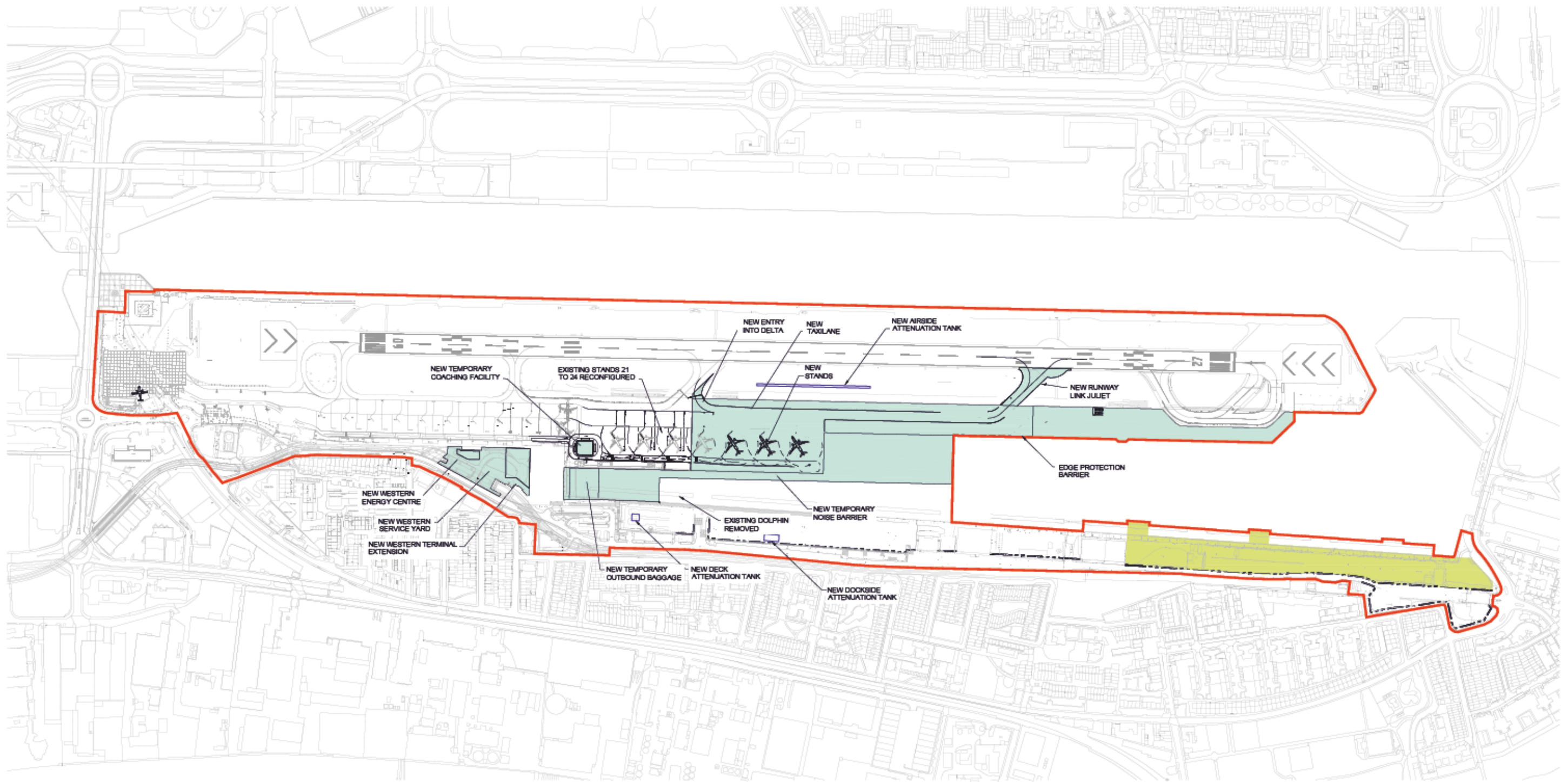
 Built Heritage Recording

 Watching Brief Areas

0 250m

Ordnance Survey Mapping supplied by the client
© Pre-Construct Archaeology Ltd 2018
17/04/18 HB

Figure 2
Detailed Site Location
1:6,250 at A3

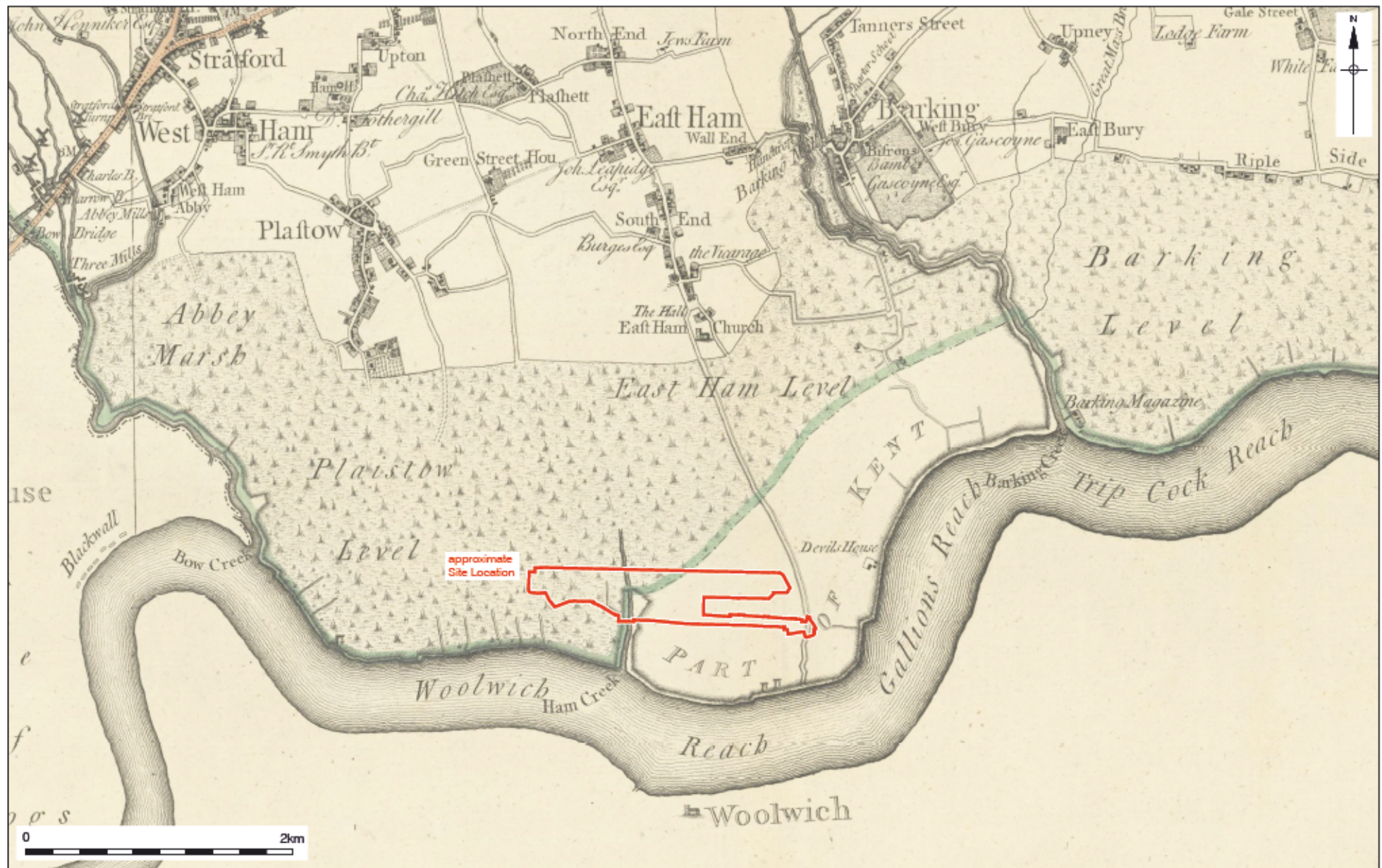


- DEVELOPMENT AREA
- CONSTRUCTION COMPOUND

0 250m

Proposed Development based on extent of Interim Works Plan supplied by the client
© Pre-Construct Archaeology Ltd 2018
17/04/18 HB

Figure 3
Plan of Proposed Works
1:6,250 at A3

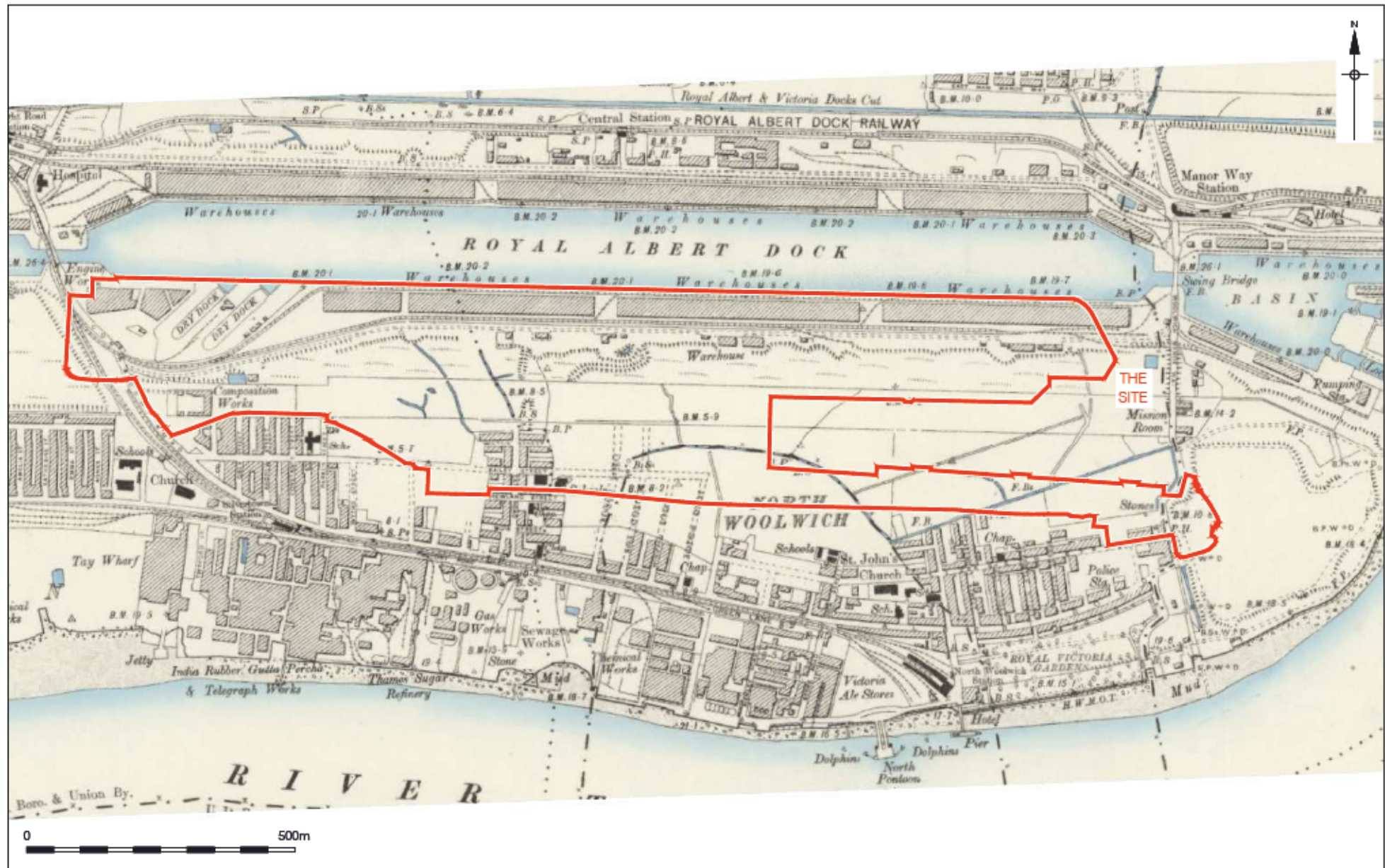






© Pre-Construct Archaeology Ltd 2018
 17/04/16 HB

Figure 6
 Wylde's Topographic Map of the County in the Vicinity of London, 1872
 1:20,000 at A4





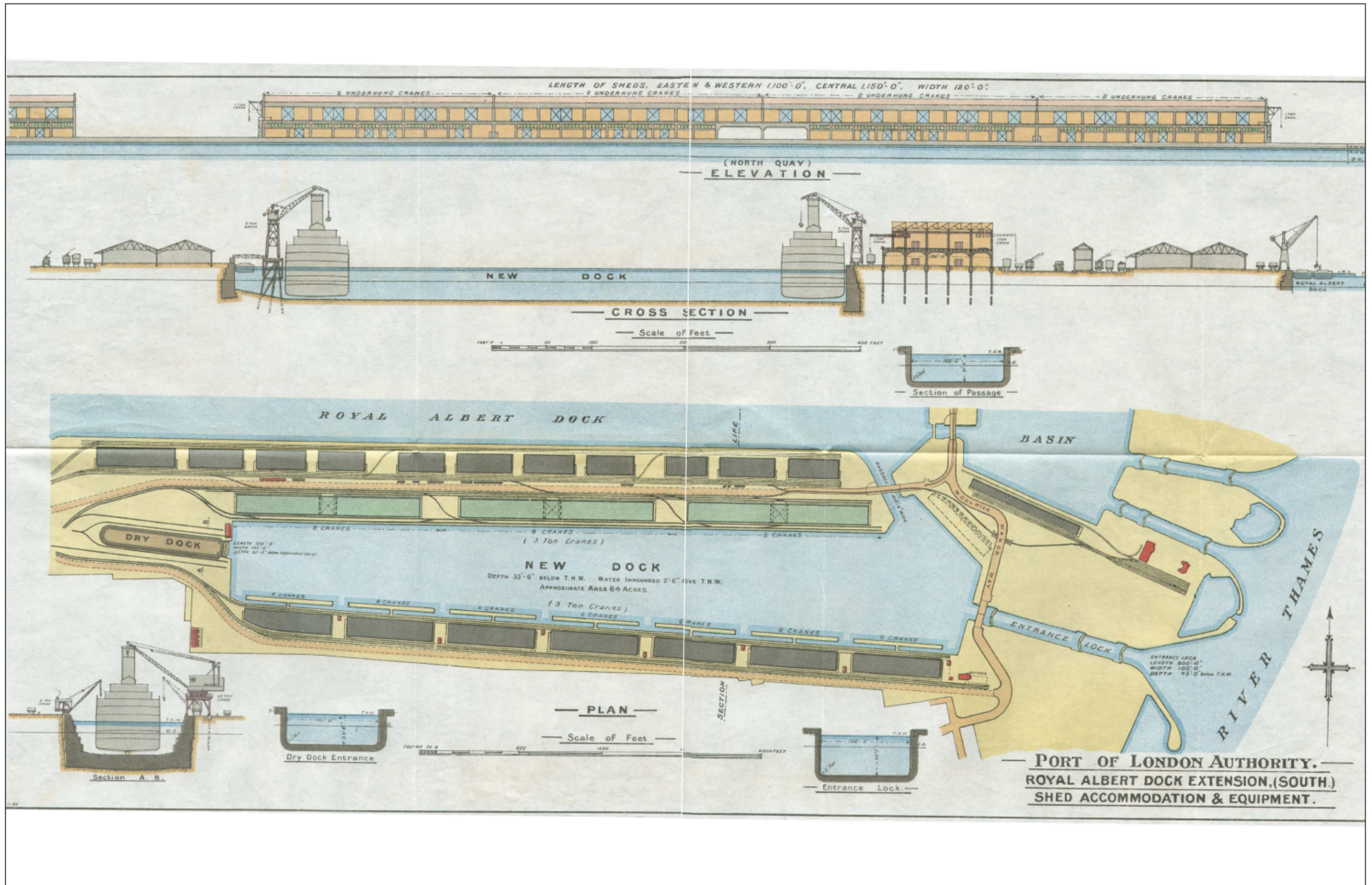
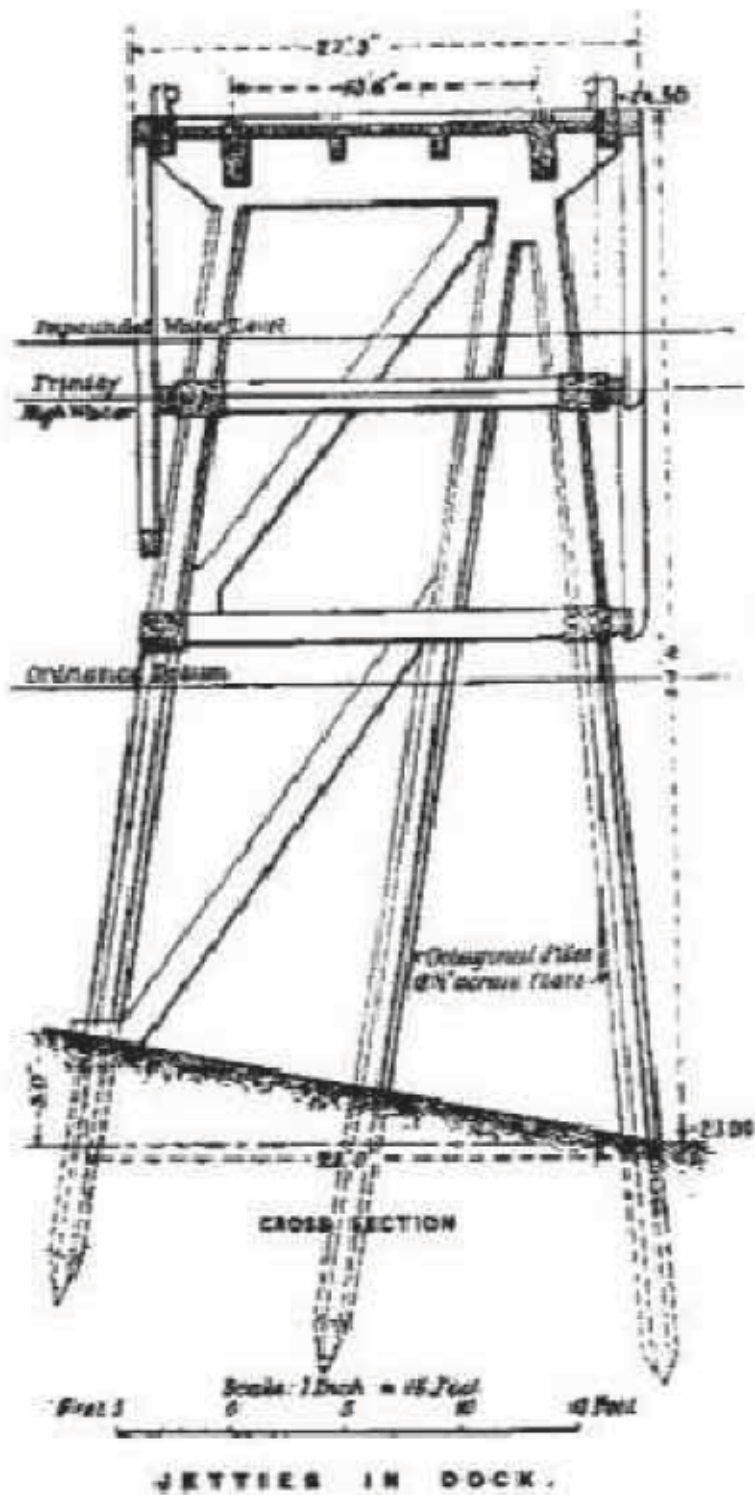
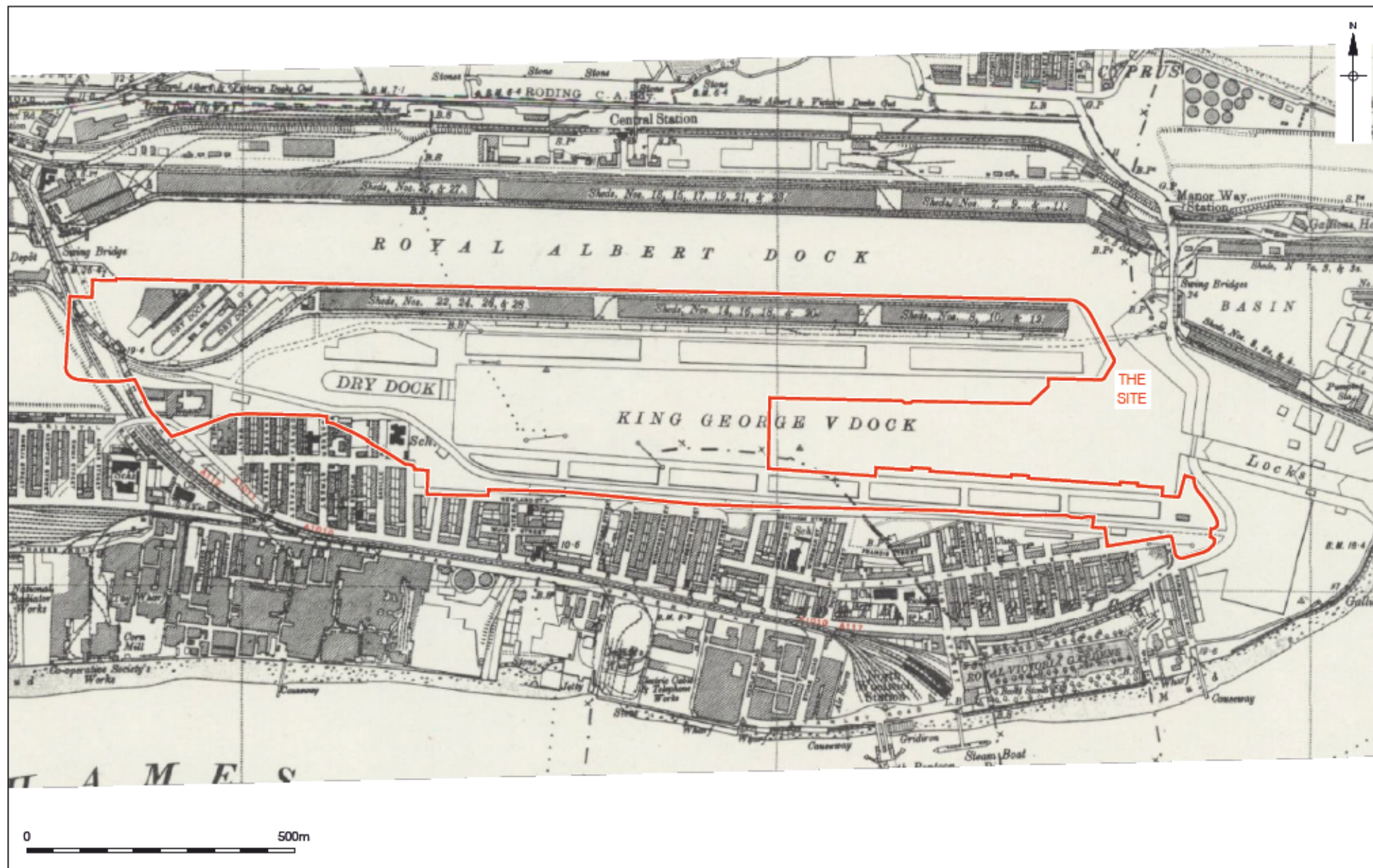
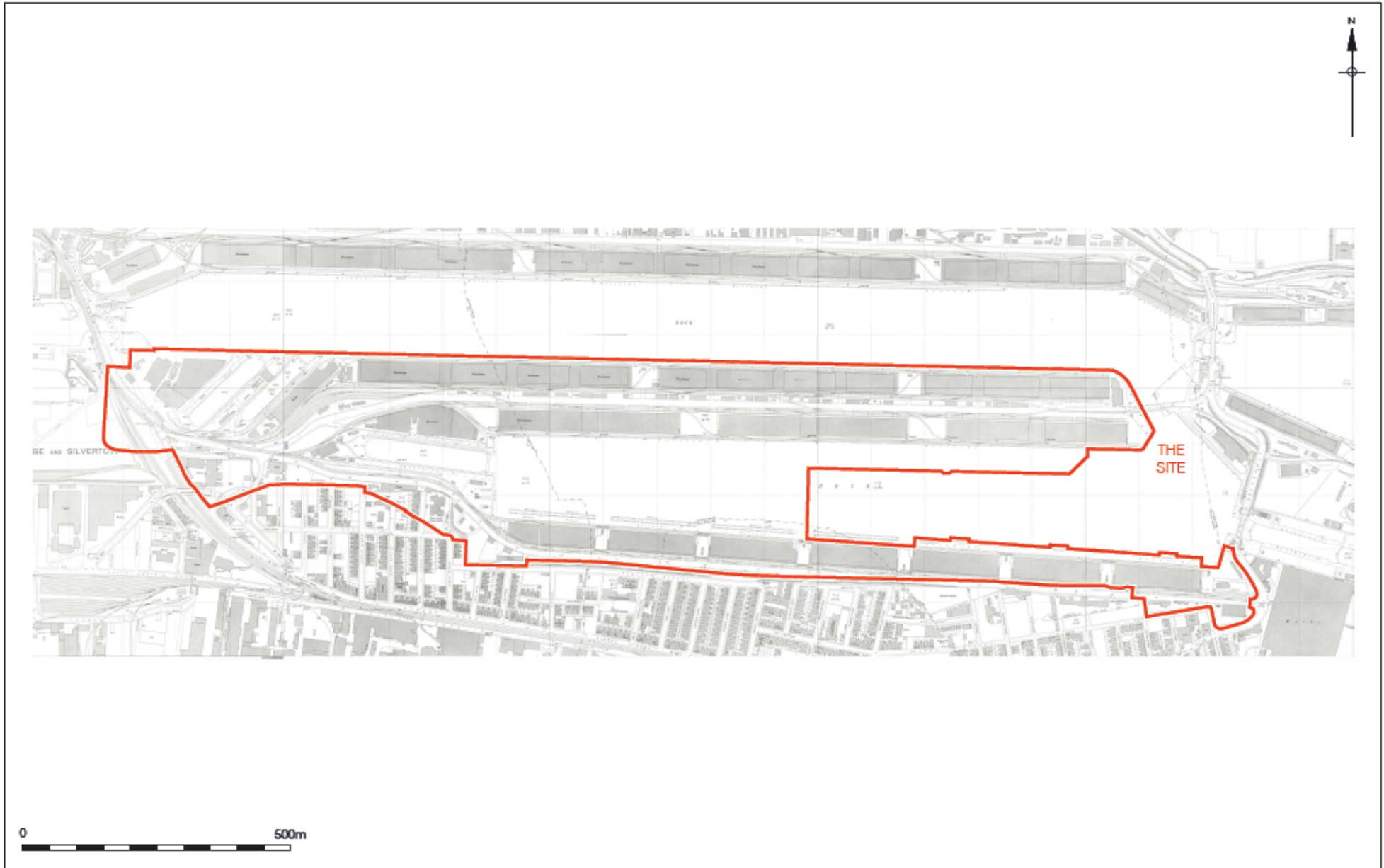


Figure 9
 Plan & Cross Section of King George V Dock (Binns, 1923)
 not to scale at A3

Fig. 8.

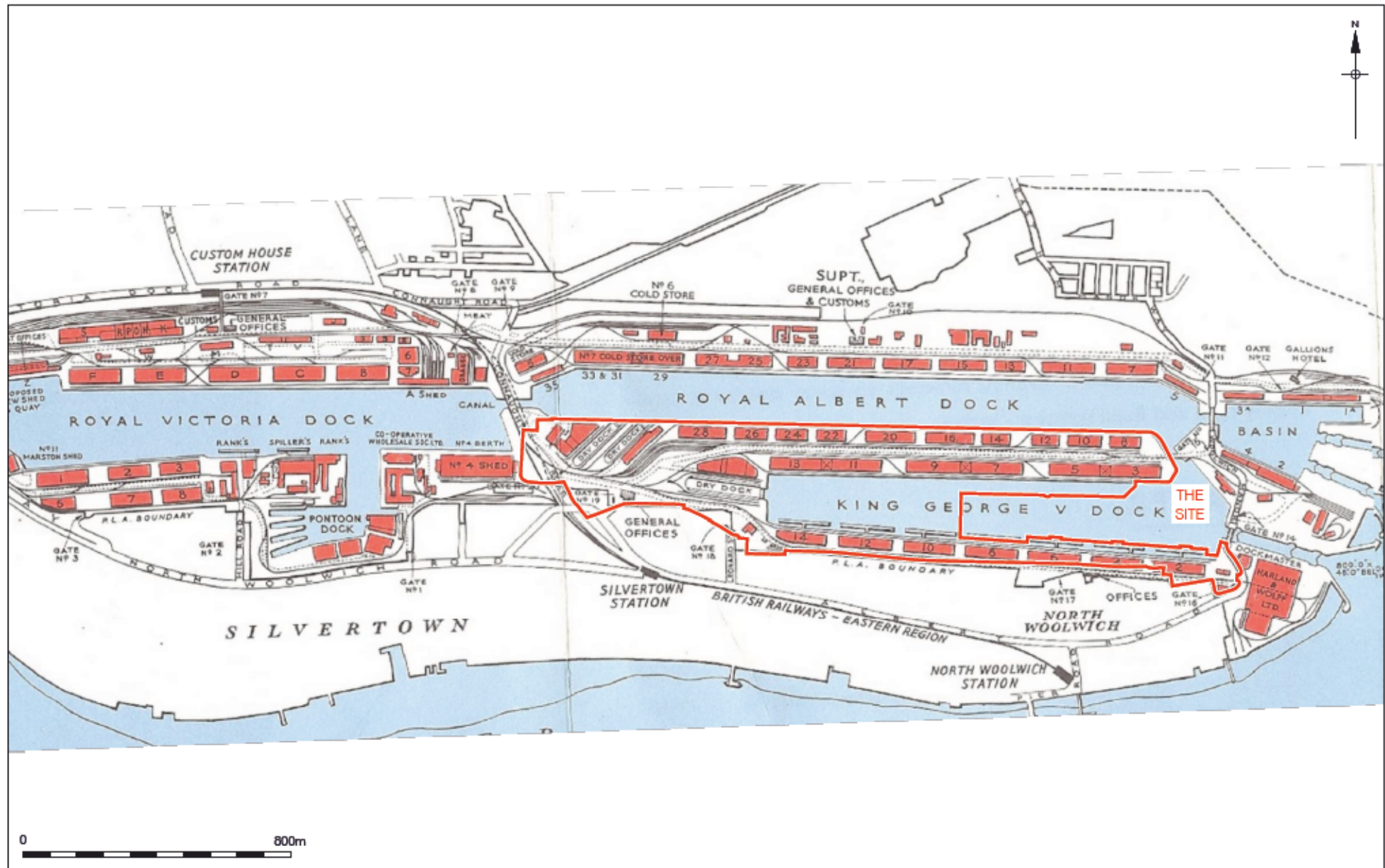


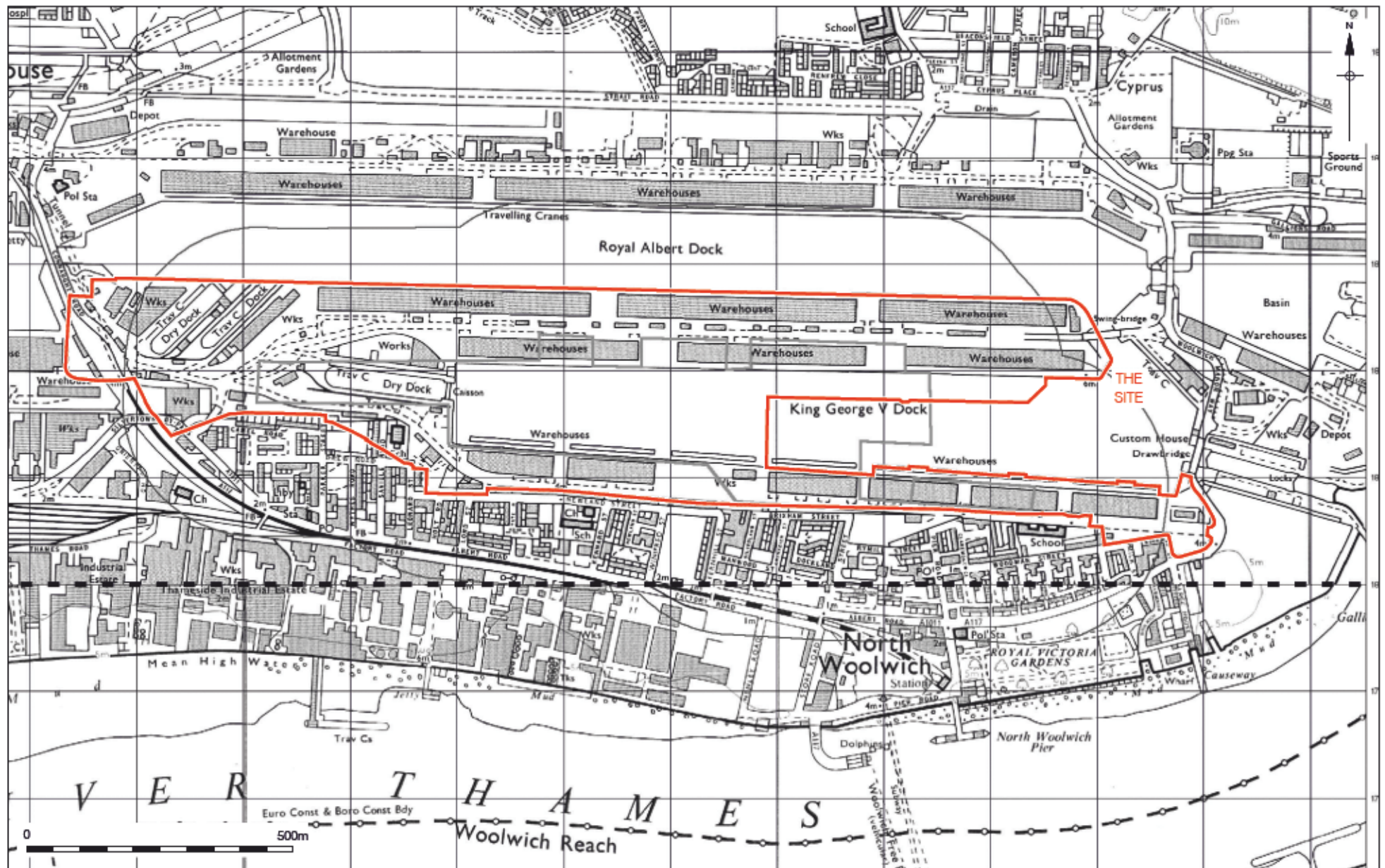




© Pre-Construct Archaeology Ltd 2018
17/04/16 HB

Figure 12
Ordnance Survey, 1958-60
1:10,000 at A4



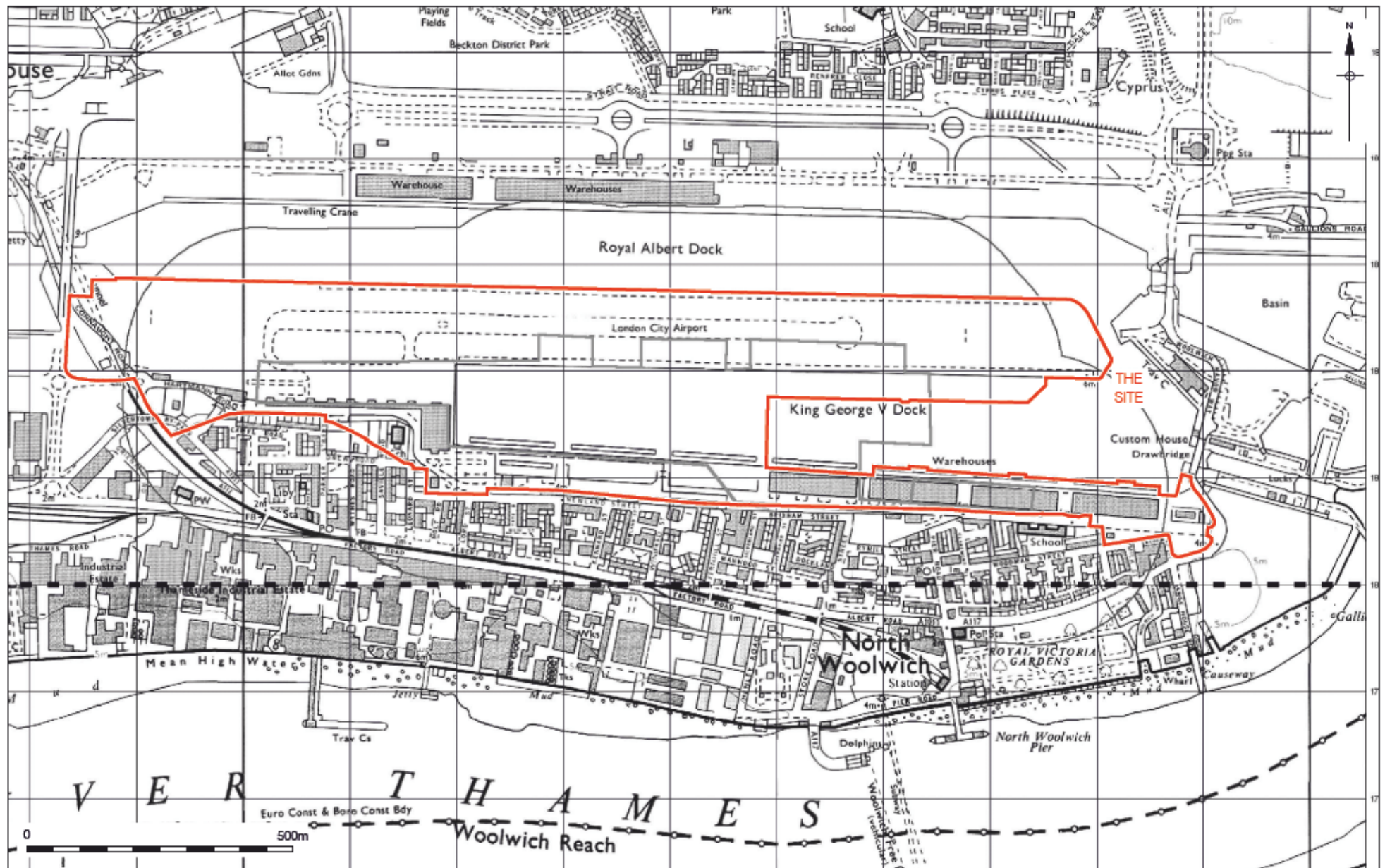


© Crown copyright 1982-84. All rights reserved. License number 36110309

© Pre-Construct Archaeology Ltd 2018

17/04/18 HB

Figure 14
 Ordnance Survey, 1982-84
 1:10,000 at A4

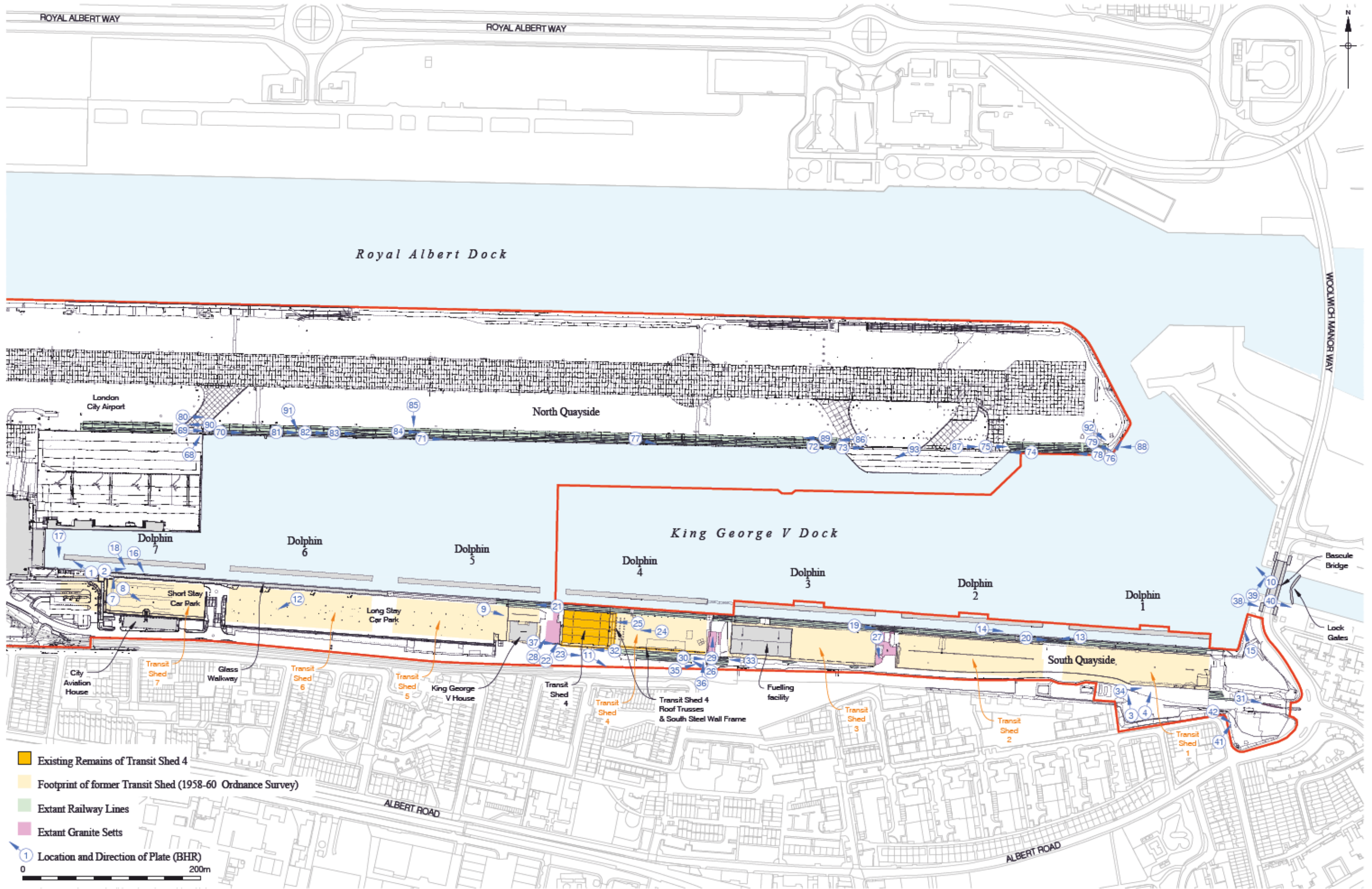


© Crown copyright 1991-96. All rights reserved. License number 36110309

© Pre-Construct Archaeology Ltd 2018

17/04/18 HB

Figure 15
Ordnance Survey, 1991-96
1:10,000 at A4



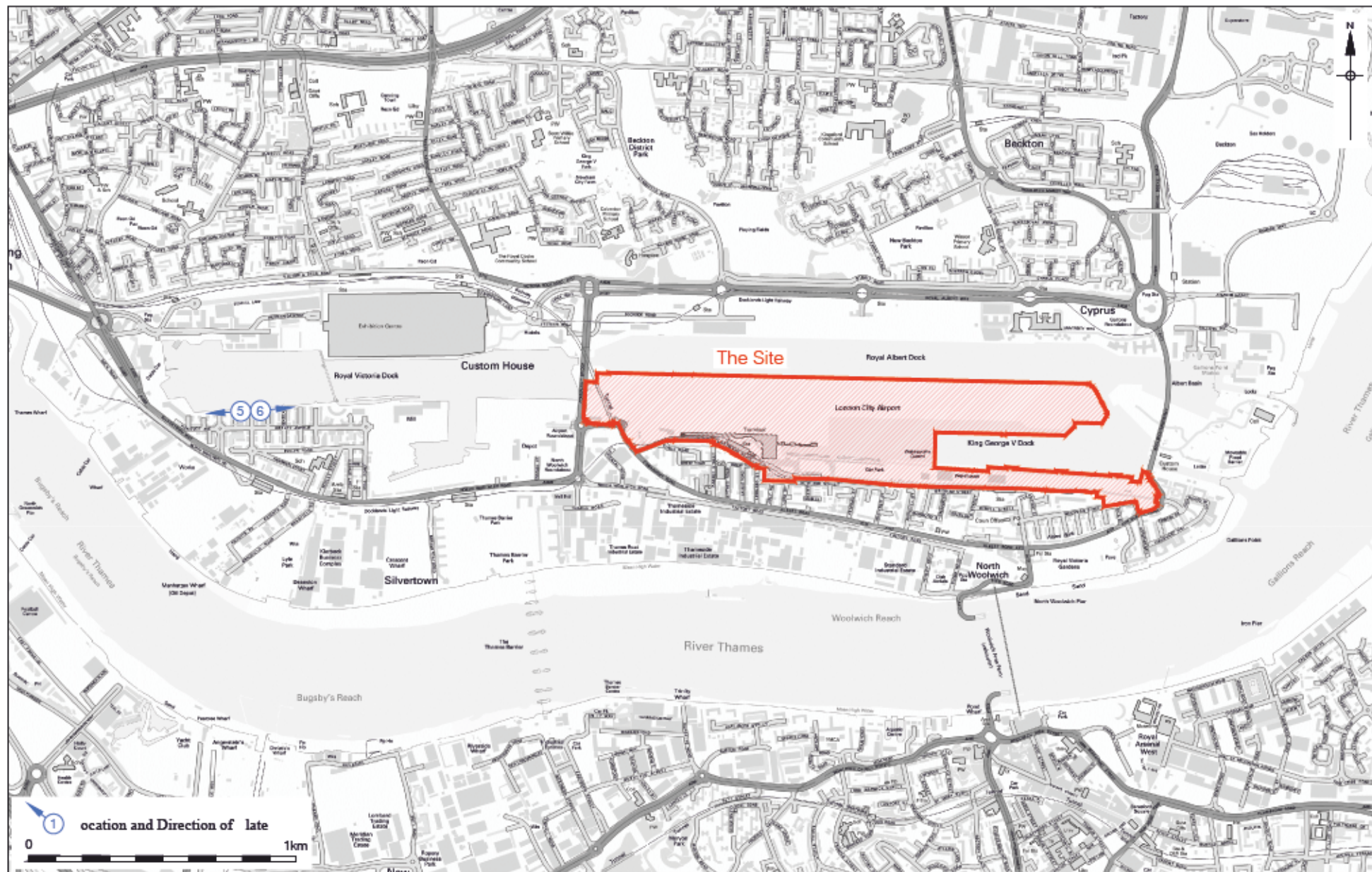
Ordnance Survey Mapping supplied by the client
 © Pre-Construct Archaeology Ltd 2018
 17/04/18 HB

Figure 16
 Built Heritage Recording Plate Locations, King George V Dock
 1:4,000 at A3



- Transit Shed & Dolphin
 - Extant Railway Lines
 - Extant Granite Sets
 - ① Location and Direction of Plate (BHR)
- 0 200m

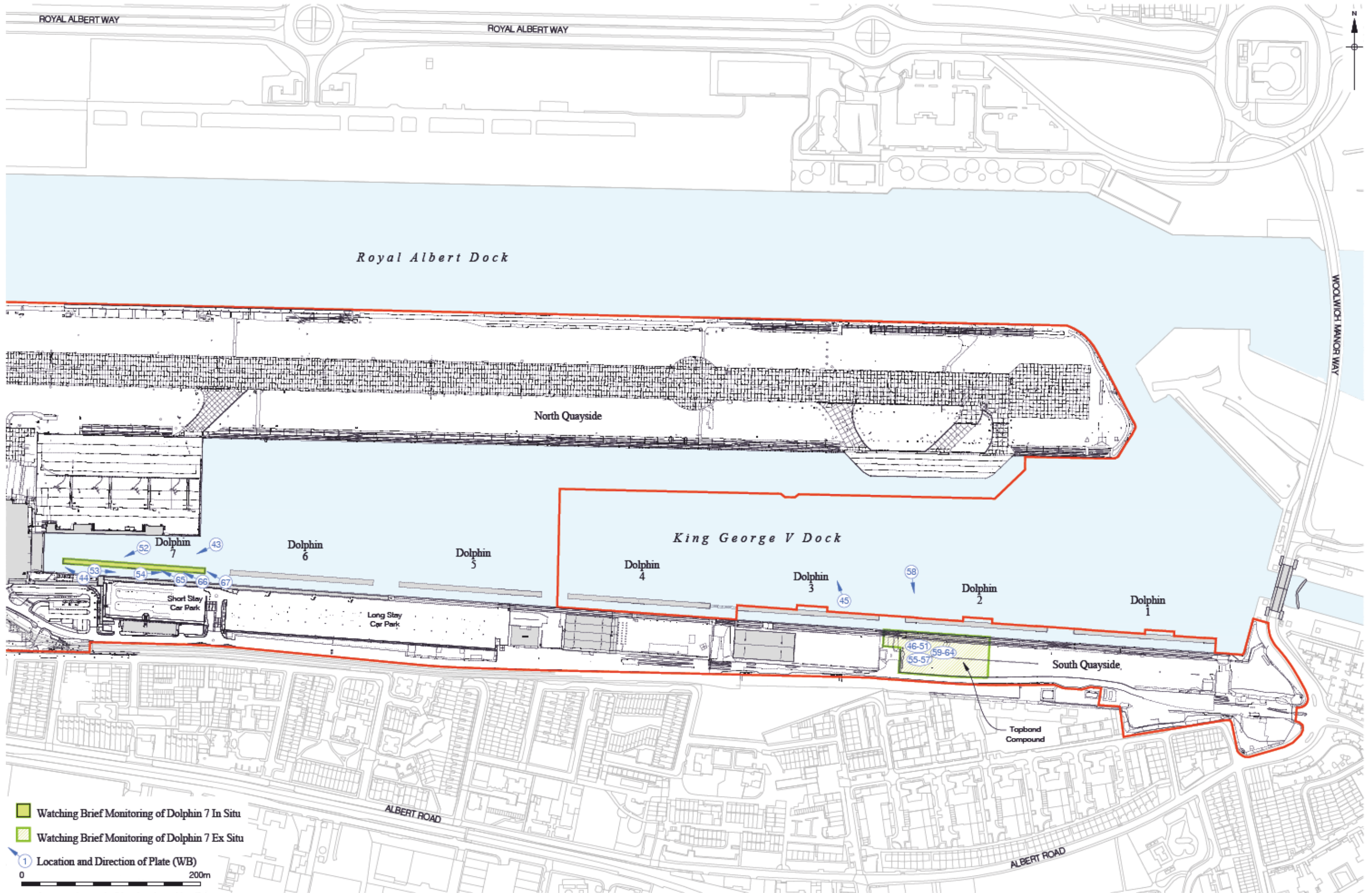
Figure 17
Built Heritage Recording Plate Locations, King George V Dock
overlay onto 1958-60 Ordnance Survey
1:4,000 at A3



Contains Ordnance Survey data ©Crown copyright and database right 2018

© Pre-Construct Archaeology Ltd 2018
17/04/18 HB

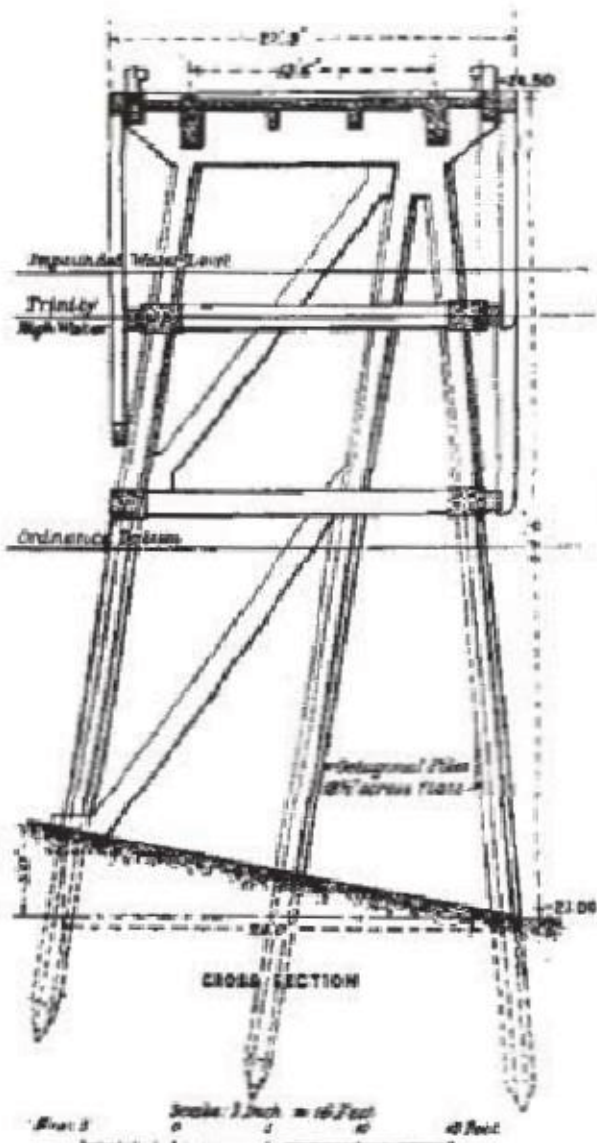
Figure 18
Built Heritage Recording Plate Locations, Royal Victoria Dock
1:20,000 at A4



Ordnance Survey Mapping supplied by the client
 © Pre-Construct Archaeology Ltd 2018
 17/04/18 HB

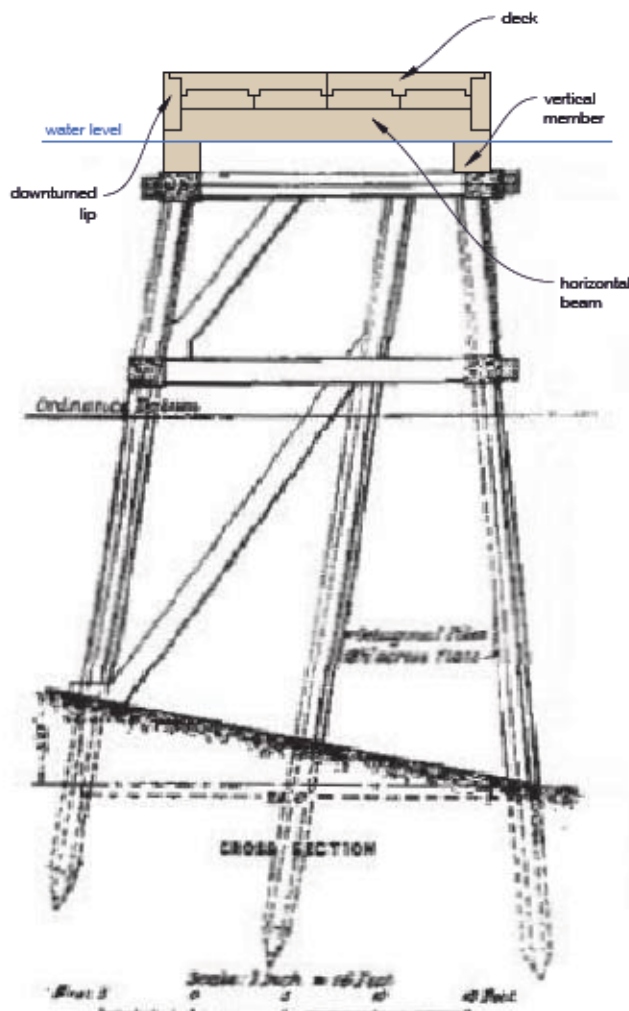
Figure 19
 Watching Brief Plate Locations, King George V Dock
 1:4,000 at A3

Phase 1 (1920s - 1980s)



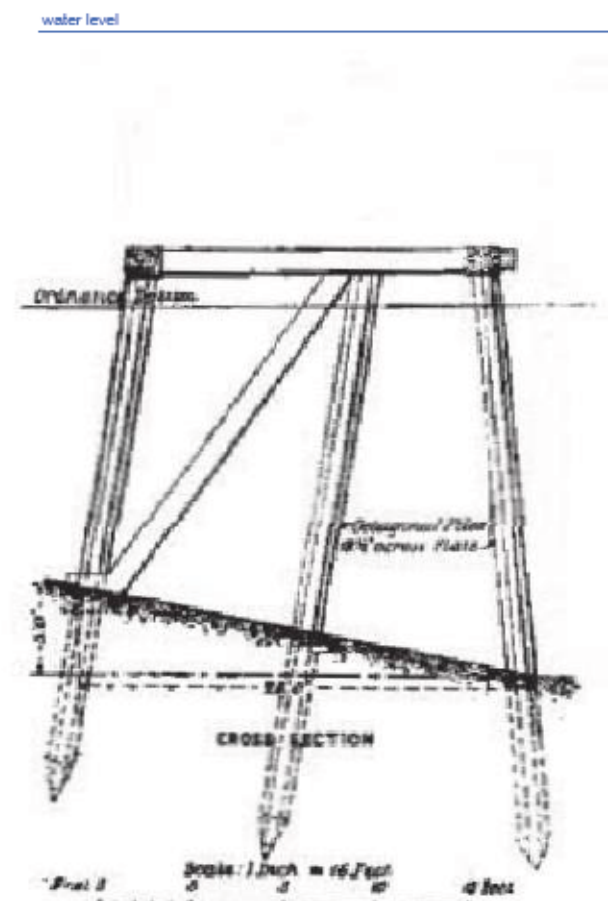
JETTIES IN DOCK.

Phase 2 (1980s - 2018)

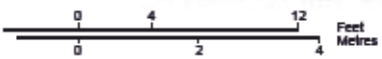


JETTIES IN DOCK.

Phase 3 (2018)



JETTIES IN DOCK.



■ 1980s concrete cap

Figure 20
Cross Section through Dolphin 7, showing phases of alteration
Looking West
1:125 at A4



Historic Plate 1: Photograph taken on 11 September 1913 showing the excavation of King George V Dock using a steam-powered excavator (© PLA collection/Museum of London)



Historic Plate 2: Construction of a new entrance lock at King George V Dock in November 1915 (© PLA collection/Museum of London)



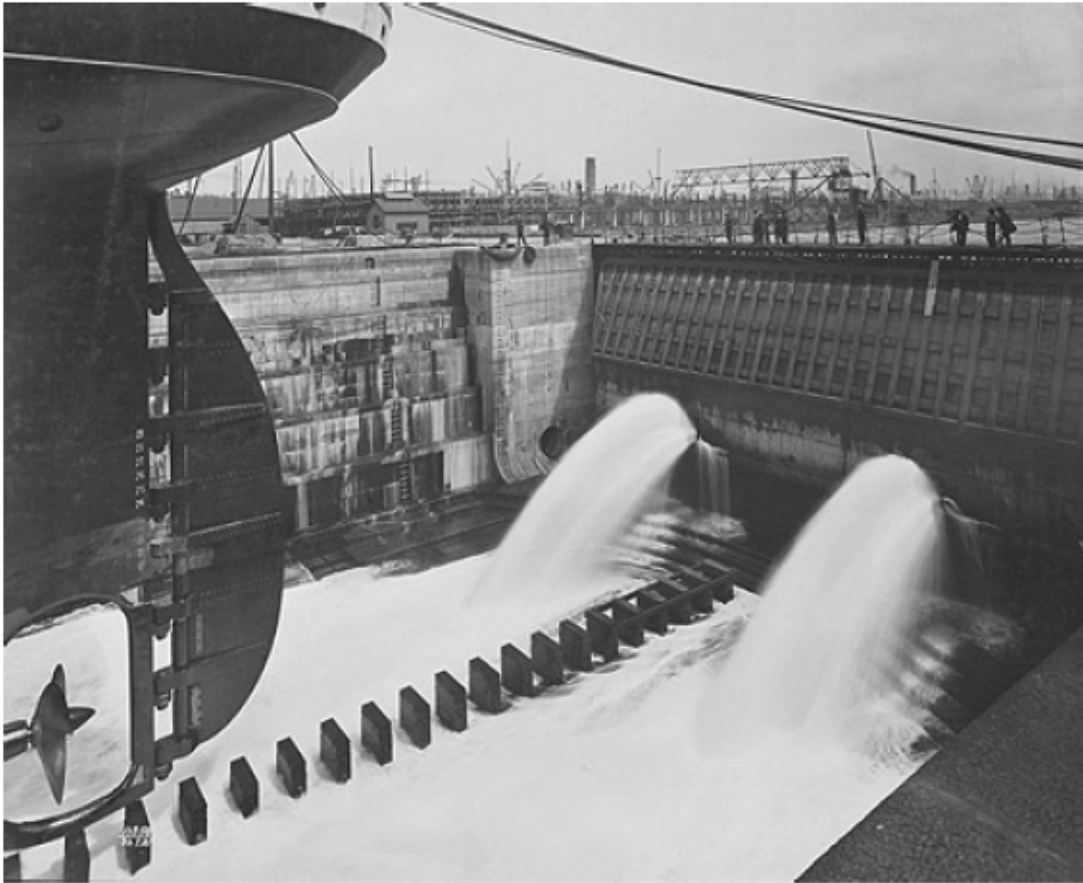
Historic Plate 3: Construction of the Dolphins and King George V Dock looking east along the south quay in December 1917 (© PLA collection/Museum of London)



Historic Plate 4: Dry dock and King George V Dock beyond in May 1919 with the Royal Albert dock (left), looking east (© PLA collection/Museum of London)



Historic Plate 5: Forty-two new Babcock & Wilcox electric quayside cranes on the Dolphins at the south side of King George V Dock on opening day, 8 July 1921, looking west (© PLA collection/Museum of London)



Historic Plate 6: Flooding King George V Dry Dock for the first time 23rd July 1921 (© PLA collection/Museum of London)



Historic Plate 7: King George V Dock, 1928, looking west (©Britain from Above)



Historic Plate 8: King George V Dock (left) and Royal Albert Dock (right) c.1930s, looking west



Historic Plate 9: Manor Way bascule bridge closing behind the SS 'Morvada' as she enters King George V Dock on 13th September 1931, looking north-west (© Museum of London)



Historic Plate 10: King George V Dock and the Royal Albert Dock, 1934, looking west



Historic Plate 11: A transit shed at King George V Dock and the Royal Albert Dock, c.1945 to 1965, looking west



Historic Plate 12: Aerial view of King George V Dock c.1945, looking north



Historic Plate 13: Lifting an elephant at King George V Dock c.1947



Historic Plate 14: King George V Dock in 1950, looking west



Historic Plate 15: Royal Albert Dock (left) and King George V Dock (right), 1948 to 1950, looking east (©Britain from Above)



Historic Plate 16: Photograph taken in 1953 of the Bascule Bridge, looking west from King George V Lock



Historic Plate 17: Loading the *Corfu* in 1955 with cargo for the Far East on the north quay of King George V Dock, looking south-east (© National Maritime Museum, London)



Historic Plate 18: The P&O liner '*Surat*' in 1955 alongside the north quay of King George V Dock, looking south-east (© National Maritime Museum, London)



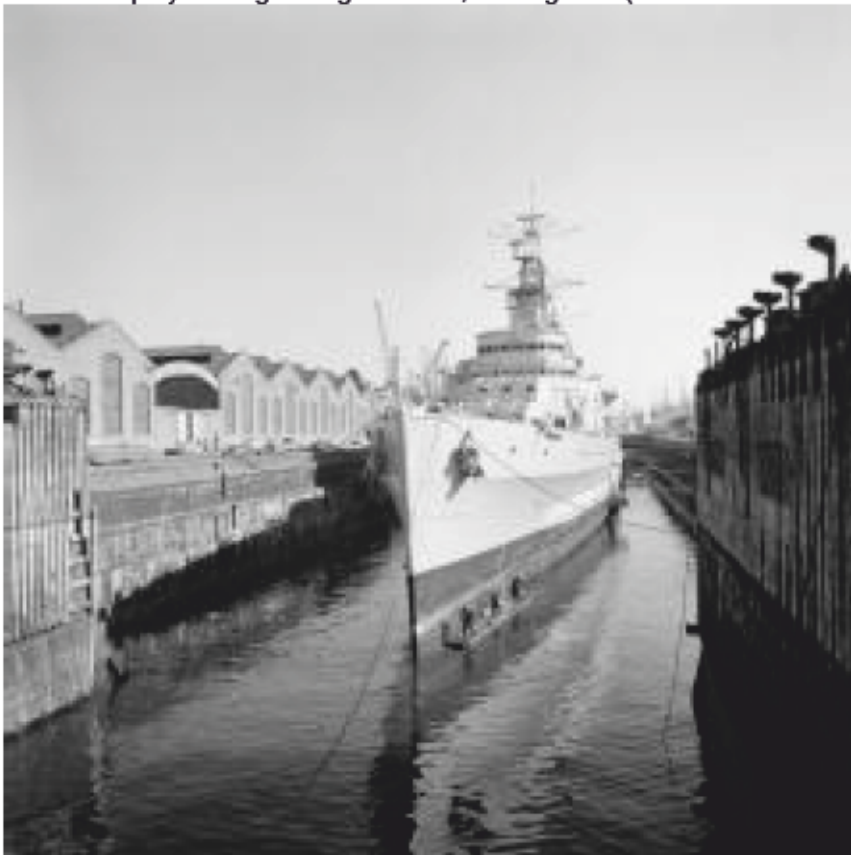
Historic Plate 19: Photograph taken c.1960 of the 'Menestheus' (1958) moored at one of the concrete 'dolphins' or jetties in the King George V Dock, looking east (©National Maritime Museum, London)



Historic Plate 20: Photograph taken c.1960 of a Union-Castle lorry by the 'Kenya Castle' on the north quay of the King George V Dock, looking south-east (©National Maritime Museum, London)



Historic Plate 21: Photograph taken 15 April 1961 of dockers unloading a cargo of frozen meat on to the south quay of King George V Dock, looking east (©National Maritime Museum, London P37752)



Historic Plate 22: HMS Belfast in King George V Dry Dock, 1971-1982, looking east (© Imperial War Museum MH14568)



Historic Plate 23: King George V Dock in June 1983, its final year of commercial operations, looking north-west (©Newham Archives and Local Studies Library Collection H1755)



Historic Plate 24: Aerial view of King George V Dock c.1999



Historic Plate 25: Aerial view of King George V Dock showing DLR c.2005



Historic Plate 26: Photograph taken in 2016 of the underside of Dolphin 7 by Constructex following the lowering of the water in King George V Dock, looking south-east



Historic Plate 27: Photograph taken in 2016 of the underside of Dolphin 7 by Constructex following the lowering of the water in King George V Dock, looking south-east



Plate 1: Dolphin 7 before removal of its cap, looking north-west (CIY17 D100 010)

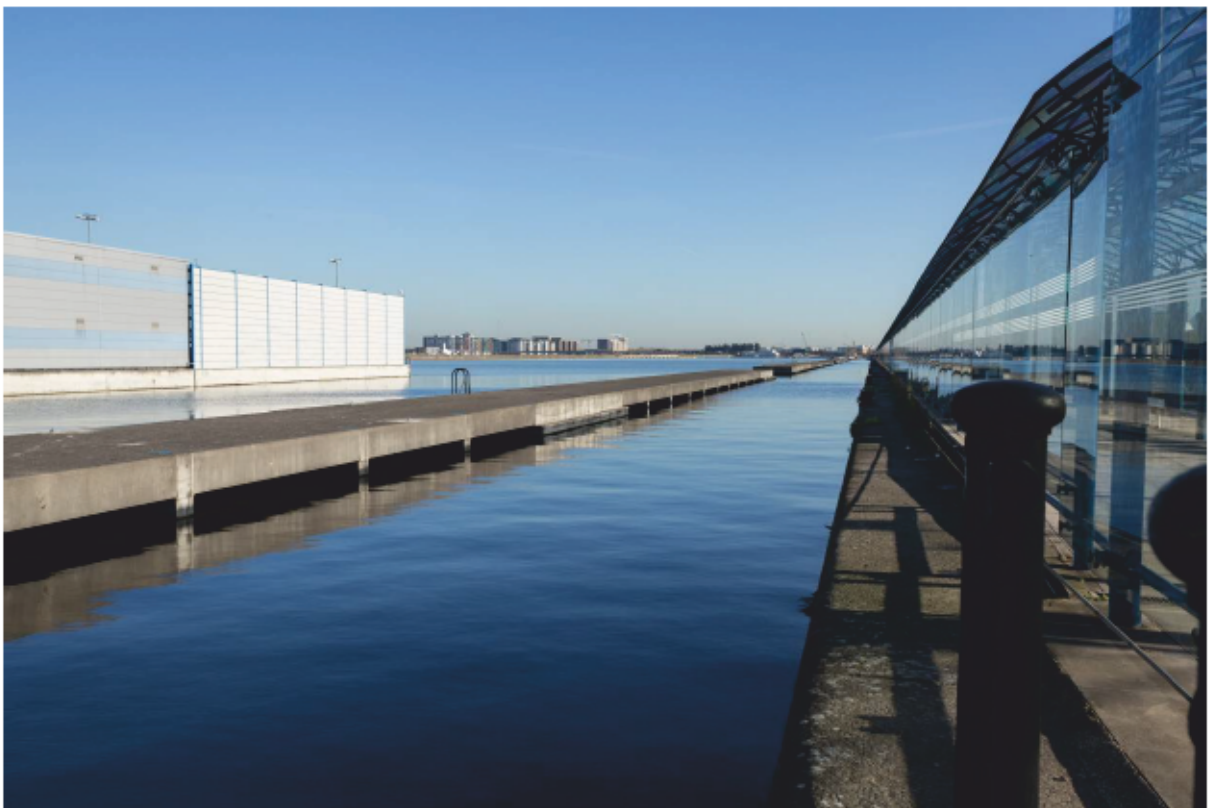


Plate 2: Dolphin 7 before removal of its cap, looking east (CIY17 D100 011)



Plate 3: Historic crane mooring at east end of south side of King George V Dock, looking north (CIY17 D1 4)



Plate 4: Historic crane mooring at east end of south side of King George V Dock, looking north (CIY17 D1 5)



Plate 5: Historic crane remaining on the Royal Victoria Dock, looking west (CIY17 D6 15)



Plate 6: Historic cranes on the Royal Victoria Dock, looking east (CIY17 D6 18)



Plate 7: Glass walkway on the south quayside of King George V Dock, looking north (CIY17 D101 070)



Plate 8: City Aviation House at the west end of the south side of King George V Dock, looking south-east (CIY17 D101 074)



Plate 9: KGV House on the south side of King George V Dock at the east end of former Transit Shed 5, looking south-east (CIY17 D101 061)



Plate 10: View north-west from the east side of King George V Dock showing the north quay of King George V Dock with the Royal Albert Dock beyond (CIY17 D1 19)



Plate 11: Blocks of flats to the south of the Site, looking south-east (CIY17 D1 29)



Plate 12: Tate and Lyle factory buildings to the south of the Site, looking south-east (CIY17 D1 34)



Plate 13: Railway tracks and mooring posts along the east end of the south side of King George V Dock with the Dolphins 2 and 3 to the right, looking west (CIY17 D5 48)



Plate 14: Mooring posts along the east end of the south side of King George V Dock with the Dolphins 1 and 2 to the left, looking east (CIY17 D5 39)



Plate 15: Mooring post on the east side of King George V Dock, looking north (CIY17 D100 039)



Plate 16: Mooring post at the west end of the south side of King George V Dock, looking south-east (CIY17 D3 89)

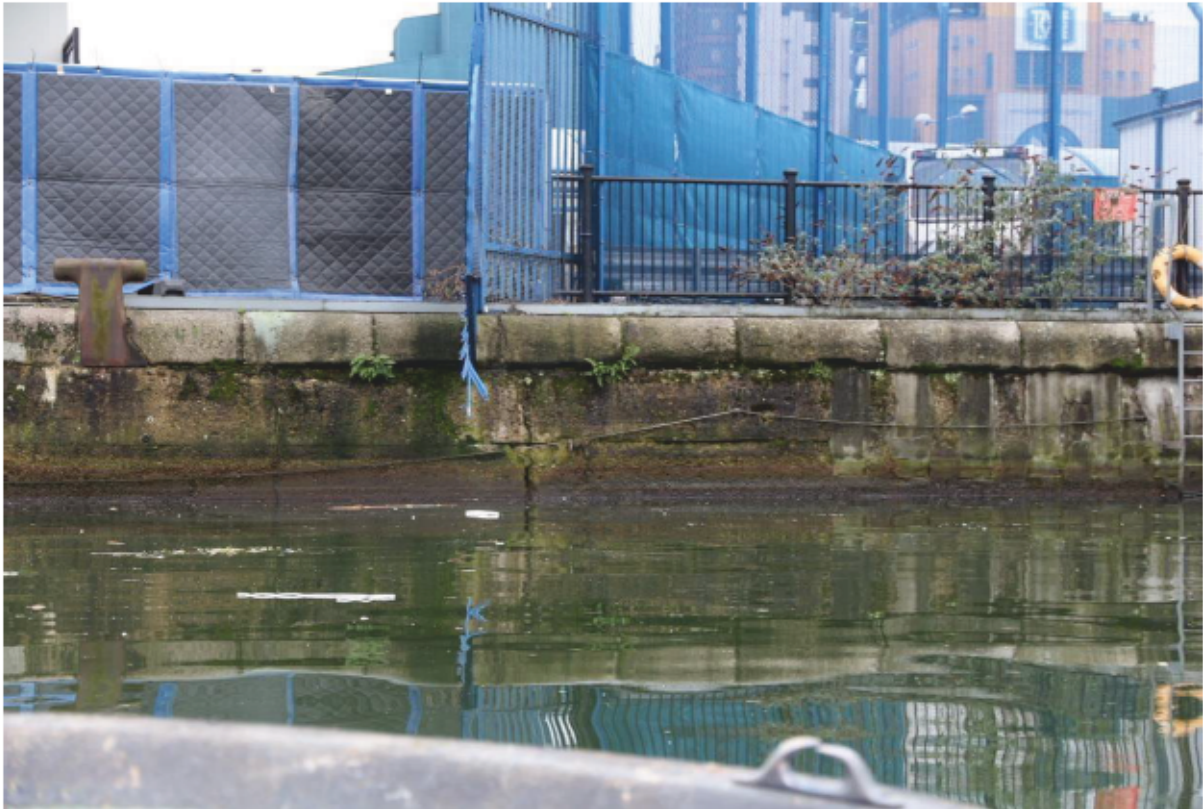


Plate 17: Coping stones along the west end of the south quay of King George V Dock, looking south (CIY17 D3 78)



Plate 18: Coping stones and steps along the west end of the south quay of King George V Dock, looking south-east (CIY17 D3 87)



Plate 19: Railway line crossover towards the east end of south quay of King George V Dock originally to the north of the gap between former Transit Sheds 2 and 3, looking east (CIY17 D100 033)

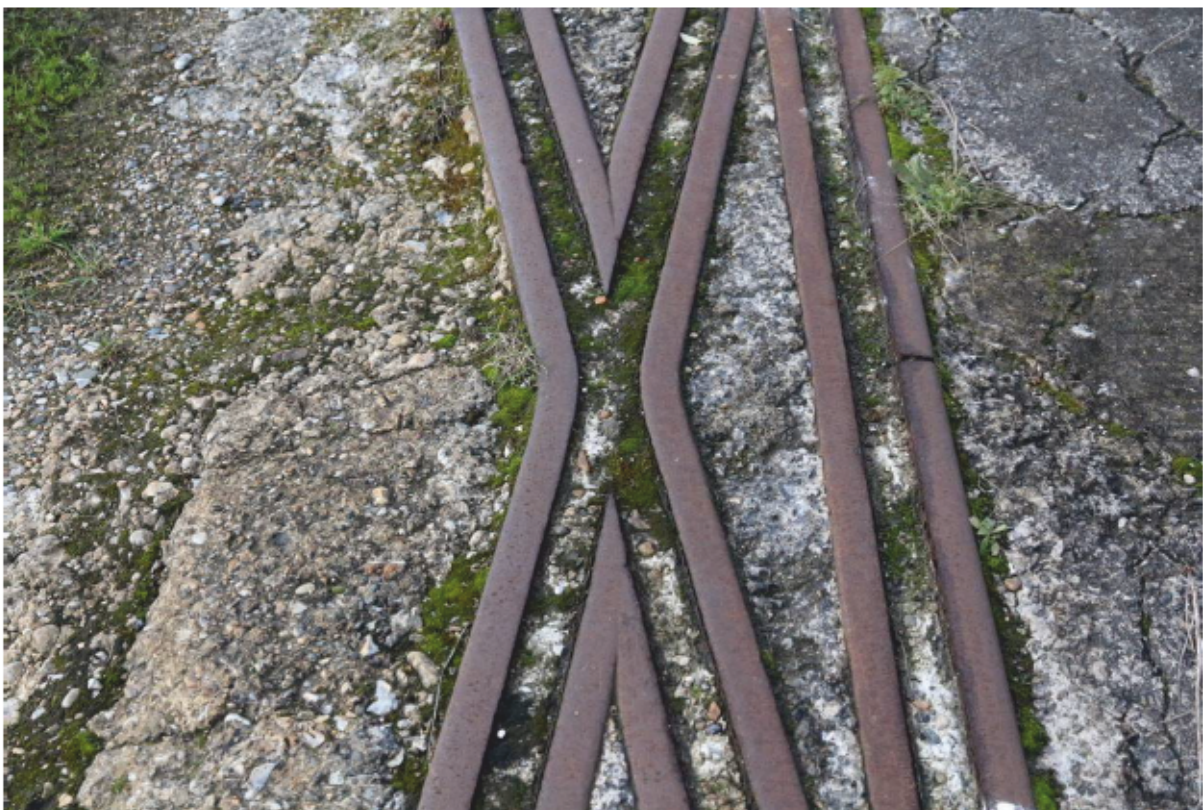


Plate 20: Railway line double crossover towards the east end of south quay of King George V Dock originally to the north of the gap between former Transit Sheds 1 and 2, looking east.



Plate 21: Rusted railway lines outside KGV House on the north side of Transit Shed 5 with King George V Dock on the right, looking west (CIY17 D100 016)



Plate 22: Original steel frame of Transit Shed 4 re-clad on the south side of King George V Dock, looking north-east (CIY17 D5 11)



Plate 23: Original steel frame of Transit Shed 4 re-clad on the south side of King George V Dock, looking north-east (CIY17 D5 12)



Plate 24: Steel angle roof trusses of Transit-Shed 4 on the south side of King George V Dock, looking west (CIY17 D100 026)



Plate 25: Steel angle roof trusses of Transit-Shed 4 on the south side of King George V Dock, looking west (CIY17 D100 027)



Plate 26: Platform and south steel wall frame of Transit-Shed 4 on the south side of King George V Dock, looking north-west (CIY17 D101 003)



Plate 27: Granite setts in the gap between former Transit Sheds 2 and 3 on the south side of King George V Dock, looking south (CIY17 D100 052)



Plate 28: Granite setts in the gap between Transit Sheds 4 and 5 on the south side of King George V Dock, looking north (CIY17 D5 3)



Plate 29: Granite setts in the gap between former Transit Sheds 3 and 4 on the south side of King George V Dock, looking north (CIY17 D5 26)



Plate 30: Railway line crossover to the south of the gap between former Transit Sheds 3 and 4 on the south side of King George V Dock, looking east (CIY17 D100 025)



Plate 31: Patch of granite setts and railway lines at the east end of the south side of King George V Dock, looking east (CIY17 F100 048)



Plate 32: Later extension to the platform over the railway line to the south of former Transit Shed 4, looking west (CIY17 D101 051)



Plate 33: Railway line crossover to the south of the gap between former Transit Sheds 3 and 4 on the south side of King George V Dock, looking west (CIY17 D100 044_2)



Plate 34: Platform edge on the south side of former Transit Shed 1 at the east end of the south side of King George V Dock, looking north-east (CIY17 D1 3)



Plate 35: Platform to the south of Transit Shed 4, looking north-east (CIY17 D101 002)



Plate 36: Stairs at the east end of the platform to the south of former Transit Shed 4, looking north (CIY17 D101 048)



Plate 37: Stairs at the east end of the platform to the south of Transit Shed 4, looking east (CIY17 D100 018)



Plate 38: Housing for mechanism of Bascule Bridge at the mouth of King George V Dock, looking east (CIY17 D100 041)



Plate 39: Steel Bascule Bridge that replaced the former Bascule Bridge at the mouth of King George V Dock, looking north-east (CIY17 D100 042)



Plate 40: Lock gates of King George V Lock, looking east (CIY17 D100 043)



Plate 41: Brick building in the south-east corner of the Site, looking north-east (CIY17 D100 046)



Plate 42: Brick building in the south-east corner of the Site, looking south-east (CIY17 D1 7)



Plate 43: Waterborne crane used to cradle sections of Dolphin 7, looking south-west (CIY17 D3 122)



Plate 44: Cradled brace cut from Dolphin 7 using waterborne diamond wire saw, looking north-west



Plate 45: Floating platform/barge used to transfer sections of Dolphin 7's cap to Topbond's Compound, looking north (CIY17 D2 9)



Plate 46: Lifting Dolphin 7's cap sections from the floating platform into Topbond's Compound, looking north (CIY17 D2 13)



Plate 47: Detail of Dolphin 7's cap lifting operations, looking north (CIY17 D2 17)



Plate 48: Demolition and separation of Dolphin 7's cap, looking east (CIY17 D2 12)



Plate 49: Detail of Dolphin 7's cap, looking east (CIY17 D2 6)



Plate 50: Detail of Dolphin 7's cap, looking east (CIY17 D2 5)



Plate 51: Dolphin 7's cap stored on timber platform over dockside railway lines on the south side of King George V Dock, looking east (CIY17 D2 8)



Plate 52: Dolphin 7 after the removal of its 1980s cap, looking south-west (CIY17 D3 68)



Plate 53: Dolphin 7 after the removal of its 1980s cap, looking north-east (CIY17 81)

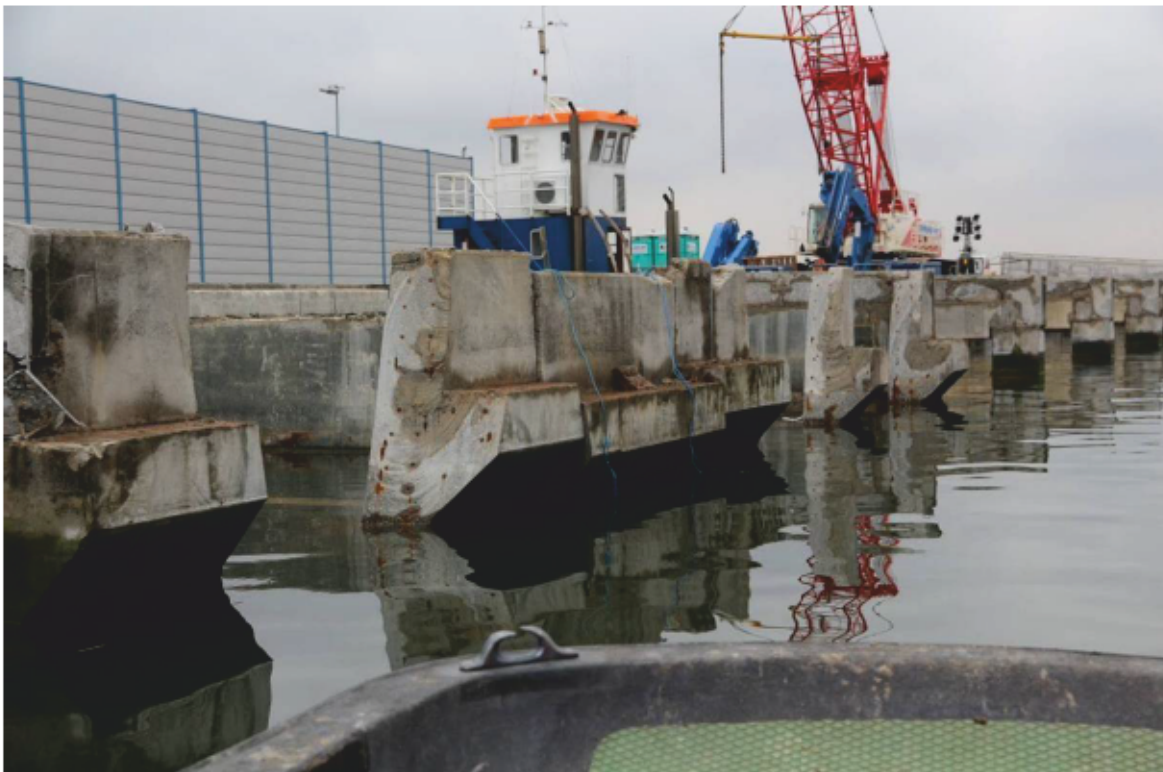


Plate 54: Dolphin 7 after the removal of its 1980s cap, looking north-east (CIY17 D3 91)

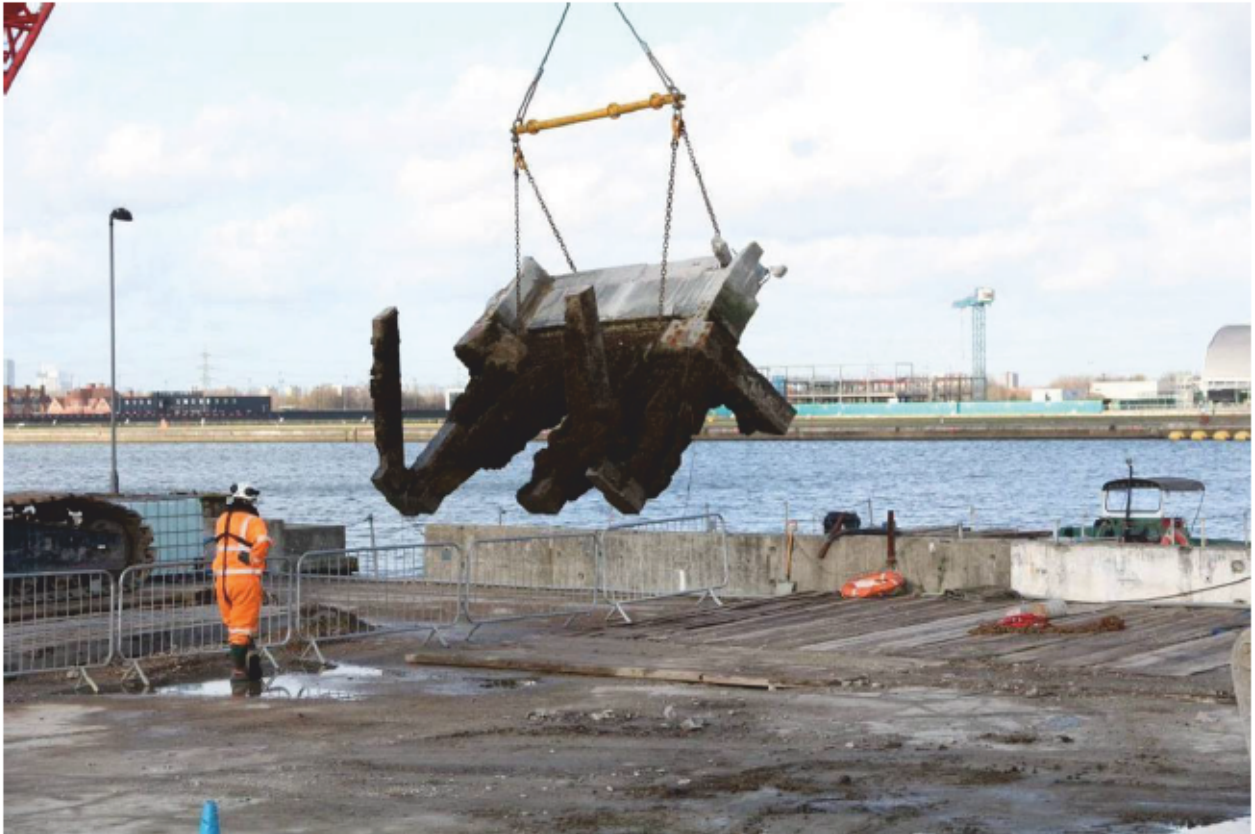


Plate 55: Large section of brace and mid-brace of Dolphin 7, looking north (CIY17 D5 59)



Plate 56: Aquatic growth on the below-water part of Dolphin 7, looking north (CIY17 D3 26)



Plate 57: Aquatic growth on below water Dolphin 7 brace, looking north (CIY17 D3 5)



Plate 58: Lifting Dolphin 7 brace from King George V Dock into Topbond's Compound, looking south (CIY17 D3 148)



Plate 59: Demolition and separation of steel rebars and concrete from Dolphin 7's brace sections, looking east (CIY17 D3 160)



Plate 60: Disposal of dismantled Dolphin 7's brace sections, looking east (CIY17 D4 1)



Plate 61: Modern cap and original Dolphin 7 structure in Topbond Compound, looking north (CIY17 D3 3)



Plate 62: Cut section of Dolphin braced frame showing steel reinforcements, looking east (CIY17 D3 9)



Plate 63: Detail of steel bolt, possibly used to secure timber facing to Dolphin 7, looking east (CIY17 D3 29)



Plate 64: Below water part of Dolphin 7, looking north (CIY17 D4 29)



Plate 65: Cross section of Dolphin 7 step for downturned lip cover, looking west (CIY17 D3 109)



Plate 66: Cross sections of Dolphin 7's step for downturned lip cover *in situ*, looking north-west (CIY17 D3 108)



Plate 67: West end of King George V Dock after removal of the upper part of Dolphin 7, looking north-west



Plate 68: Coping stones on north quayside of King George V Dock, looking north



Plate 69: Railway tracks and coping stones along north quayside of King George V Dock, looking east



Plate 70: Railway tracks and coping stones along north quayside of King George V Dock, looking east



Plate 71: Railway tracks and coping stones along north quayside of King George V Dock, looking east



Plate 72: Railway tracks and coping stones continue under runway extension along north quayside of King George V Dock, looking east



Plate 73: Runway extension into King George V Dock, looking east



Plate 74: Coping stones continue under runway extension along north quayside of King George V Dock, looking west



Plate 75: Railway lines continue under runway extension along north quayside of King George V Dock, looking east



Plate 76: Coping stones and stairs at east end of north quayside of King George V Dock, looking north-east

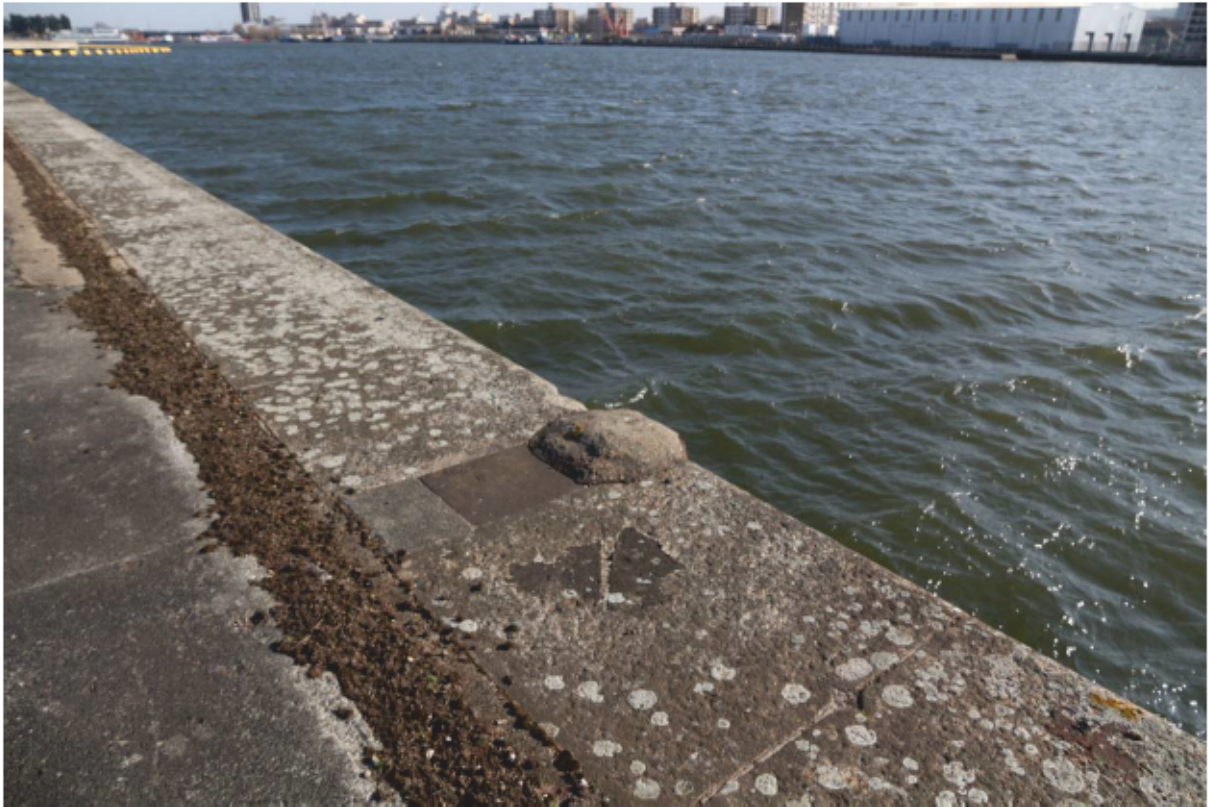


Plate 77: Remains of mooring post on the north quayside of King George V Dock, looking south-east



Plate 78: Remains of mooring post on the north quayside of King George V Dock, looking south-west



Plate 79: Remains of mooring post on the north quayside of King George V Dock, looking east



Plate 80: Railway tracks along north quayside of King George V Dock, looking east



Plate 81: Railway tracks along north quayside of King George V Dock, looking east



Plate 82: Brace bar on railway track along north quayside of King George V Dock, looking east



Plate 83: Railway tracks along north quayside of King George V Dock, looking east



Plate 84: Manual railway track switch along north quayside of King George V Dock, looking east



Plate 85: Manual railway track switch along north quayside of King George V Dock, looking south



Plate 86: Railway tracks along north quayside of King George V Dock, looking west



Plate 87: Railway tracks along north quayside of King George V Dock, looking east



Plate 88: Railway tracks along north quayside of King George V Dock, looking west

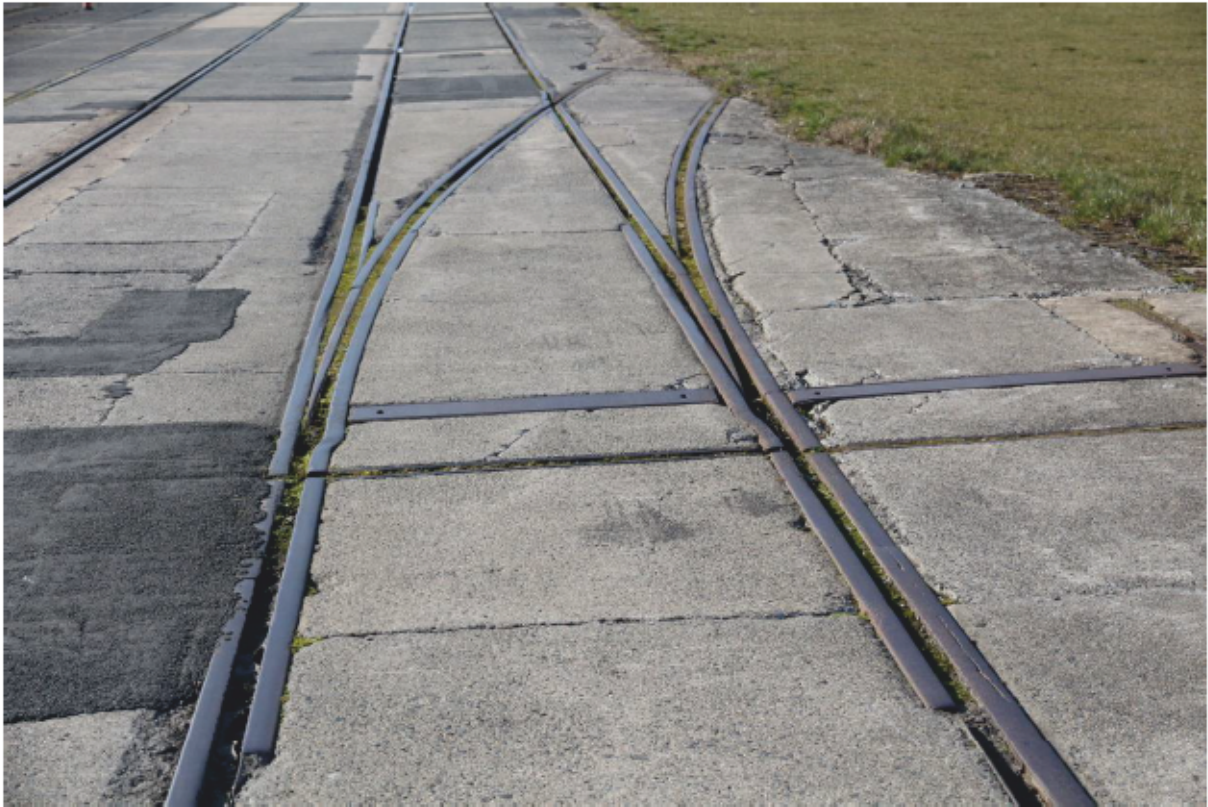


Plate 89: Railway tracks along north quayside of King George V Dock, looking west



Plate 90: Railway tracks to the north of the former warehouses on the north quayside of King George V Dock, looking west with Canary Wharf in the background



Plate 91: View of Dolphin 6 from north quayside of King George V Dock, looking south



Plate 92: View of the former Bascule Bridge from the north quayside of King George V Dock, looking east



Plate 93: View from north quayside of King George V Dock towards the industrial buildings to the south, looking south-west

PCA

PCA CAMBRIDGE

THE GRANARY, RECTORY FARM
BREWERY ROAD, PAMPISFORD
CAMBRIDGESHIRE CB22 3EN
t: 01223 845 522
e: cambridge@pre-construct.com

PCA DURHAM

UNIT 19A, TURSDALE BUSINESS PARK
TURSDALE
DURHAM DH6 5PG
t: 0191 377 1111
e: durham@pre-construct.com

PCA LONDON

UNIT 54, BROCKLEY CROSS BUSINESS CENTRE
96 ENDWELL ROAD, BROCKLEY
LONDON SE4 2PD
t: 020 7732 3925
e: london@pre-construct.com

PCA NEWARK

OFFICE 8, ROEWOOD COURTYARD
WINKBURN, NEWARK
NOTTINGHAMSHIRE NG22 8PG
t: 01636 370410
e: newark@pre-construct.com

PCA NORWICH

QUARRY WORKS, DEREHAM ROAD
HONINGHAM
NORWICH NR9 5AP
T: 01223 845522
e: cambridge@pre-construct.com

PCA WARWICK

UNIT 9, THE MILL, MILL LANE
LITTLE SHREWLEY, WARWICK
WARWICKSHIRE CV35 7HN
t: 01926 485490
e: warwick@pre-construct.com

PCA WINCHESTER

5 RED DEER COURT, ELM ROAD
WINCHESTER
HAMPSHIRE SO22 5LX
t: 01962 849 549
e: winchester@pre-construct.com

