Thames Water

Development Consent Order

Application Reference Number: WWO10001

Documents for Certification September 2014

We, Lindsay Speed and Sarah Fairbrother hereby certify that this is a true copy of the environmental statement referred to in Article 61 (1) (f) of the Thames Water Utilities Limited (Thames Tideway Tunnel) Order 2014.

Lidsay Speed

Saran Firbnither

September 2014



Thames Water Utilities Limited

Application for Development Consent

Application Reference Number: WWO10001

Environmental Statement

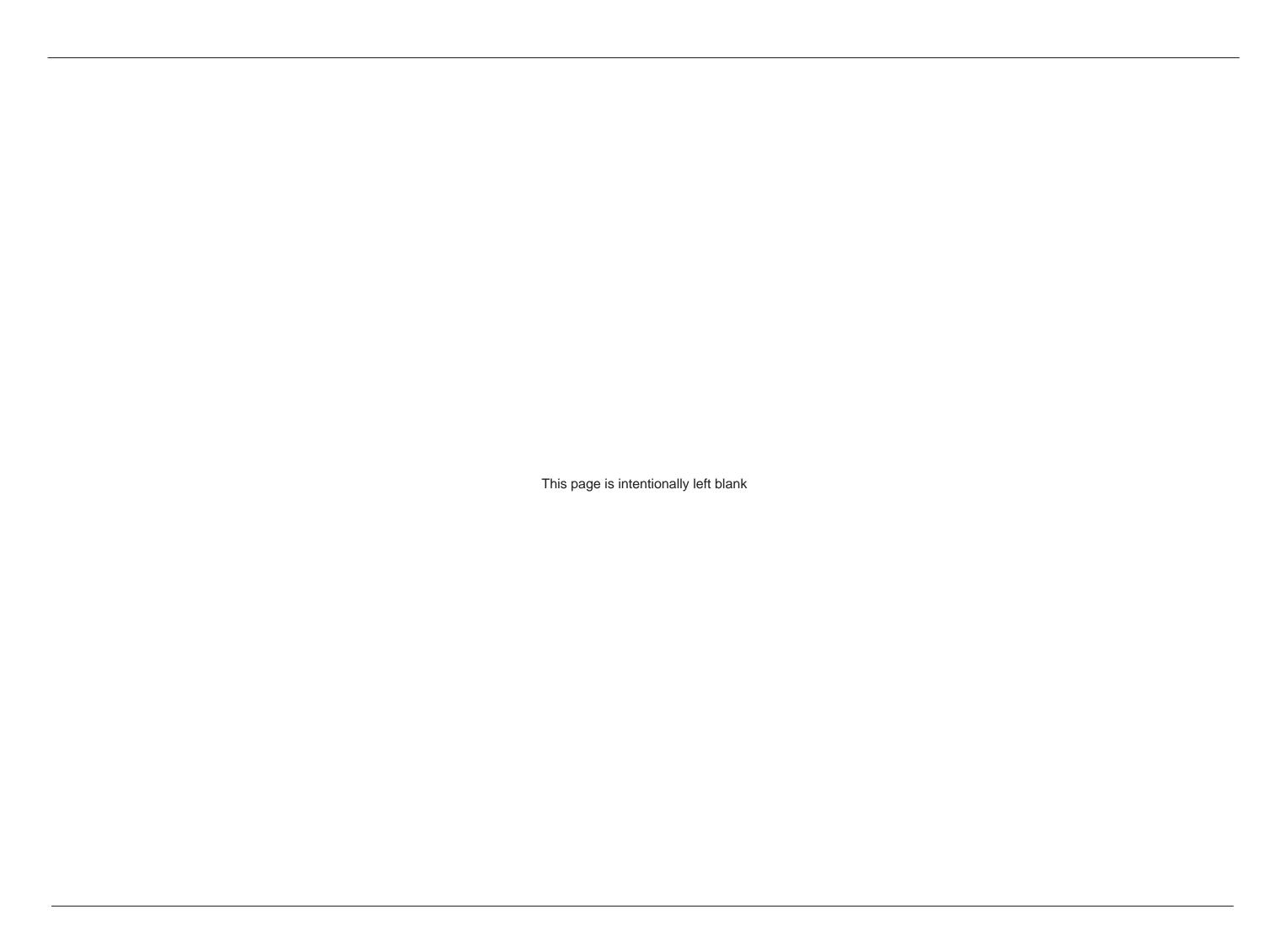
Doc Ref: **6.2.18**

Volume 18: Blackfriars Bridge Foreshore figures

APFP Regulations 2009: Regulation **5(2)(a)**







Environmental Statement

List of contents

| Environmenta | Statement glossary and abbreviations |
|--------------|---|
| Volume 1 | Introduction to the Environmental Statement |
| Volume 2 | Environmental assessment methodology |
| Volume 3 | Project-wide effects assessment |
| Volume 4 | Acton Storm Tanks site assessment |
| Volume 5 | Hammersmith Pumping Station site assessment |
| Volume 6 | Barn Elms site assessment |
| Volume 7 | Putney Embankment Foreshore site assessment |
| Volume 8 | Dormay Street site assessment |
| Volume 9 | King George's Park site assessment |
| Volume 10 | Carnwath Road Riverside site assessment |
| Volume 11 | Falconbrook Pumping Station site assessment |
| Volume 12 | Cremorne Wharf Depot site assessment |
| Volume 13 | Chelsea Embankment Foreshore site assessment |
| Volume 14 | Kirtling Street site assessment |
| Volume 15 | Heathwall Pumping Station site assessment |
| Volume 16 | Albert Embankment Foreshore site assessment |
| Volume 17 | Victoria Embankment Foreshore site assessment |
| Volume 18 | Blackfriars Bridge Foreshore site assessment |
| Volume 19 | Shad Thames Pumping Station site assessment |
| Volume 20 | Chambers Wharf site assessment |
| Volume 21 | King Edward Memorial Park Foreshore site assessment |
| Volume 22 | Earl Pumping Station site assessment |
| Volume 23 | Deptford Church Street site assessment |
| Volume 24 | Greenwich Pumping Station site assessment |
| Volume 25 | Abbey Mills Pumping Station site assessment |
| Volume 26 | Beckton Sewage Treatment Works site assessment |
| Volume 27 | Minor works sites assessment |

This page is intentionally blank

Environmental Statement

Volume 18 Blackfriars Bridge Foreshore site assessment

List of contents

| Section 1 | Introduction | | | |
|---|---|--|--|--|
| Section 2 | Site context | | | |
| Section 3 | Proposed development | | | |
| Section 4 | Air quality and odour | | | |
| Section 5 | Ecology – aquatic | | | |
| Section 6 | Ecology – terrestrial | | | |
| Section 7 | Historic environment | | | |
| Section 8 | Land quality | | | |
| Section 9 | Noise and vibration | | | |
| Section 10 | Socio-economics | | | |
| Section 11 | Townscape and visual | | | |
| Section 12 | Transport | | | |
| Section 13 | Water resources – groundwater | | | |
| Section 14 | Water resources – surface water | | | |
| Section 15 | Water resources – flood risk | | | |
| Volume 18 Bla | ckfriars Bridge Foreshore figures | | | |
| Section 1 | Plans from the Book of Plans | | | |
| Section 2 | Environmental impact assessment figures | | | |
| Volume 18 Blackfriars Bridge Foreshore appendices | | | | |
| Appendix A | Introduction | | | |
| Appendix B | Air quality and odour | | | |
| Appendix C | Ecology - aquatic | | | |
| Appendix D | Ecology – terrestrial | | | |
| Appendix E | Historic environment | | | |
| Appendix F | Land quality | | | |
| Appendix G | Noise and vibration | | | |

Socio-economics

Townscape and visual

Appendix H

Appendix I

Appendix J Transport

Appendix K Water resources – groundwater

Appendix L Water resources – surface water

Appendix M Water resources – flood risk

Appendix N Development schedule

Environmental Statement

Volume 18 Blackfriars Bridge Foreshore figures

List of contents

| Section 1: Plans from the Book of Plans | |
|---|--|
| Site works parameter plan | |
| Demolition and site clearance plan 1 of 4 | |
| Demolition and site clearance plan 2 of 4 | |
| Demolition and site clearance plan 3 of 4 | |
| Demolition and site clearance plan 4 of 4 | |
| Access plan | |
| Proposed site features plan (2 of 3) | |
| Proposed landscape plan (1 of 2) | |
| Proposed landscape plan (2 of 2) | |
| Extent of loss of listed river wall (1 of 2) | |
| Extent of loss of listed river wall (2 of 2) | |
| Proposed listed structure interface - river wall | |
| Proposed listed structure interface - bridge stairs (west) | |
| Proposed listed structure interface - bridge stairs (east) | |
| Kiosk and undercroft area design intent | |
| Amenity kiosk design intent | |
| Typical river wall design intent (1 of 2) | |
| Typical river wall design intent (2 of 2) | |
| As existing listed structure interface - bridge stairs (west) | |
| As existing listed structure interface - bridge stairs (east) | |
| Permanent President mooring access and plan elevation | |
| Construction phases - phase 1 | |
| Construction phases – Pier relocation | |
| Construction phases - phase 2 | |
| Construction phases - phase 3 | |
| Construction phases - phase 4 | |
| As existing site features plan - plan 1 of 3 | |
| As existing site features plan - plan 2 of 3 | |
| As existing site features plan - plan 3 of 3 | |
| Proposed site features plan 1 of 3 | |
| Proposed site features plan 3 of 3 | |
| As existing listed structure interface – river wall | |
| Transport – existing highway layout | |
| Transport - highway layout during construction phase 1 | |
| Transport - highway layout during construction phase 2 | |
| Transport - highway layout during construction phase 3 | |

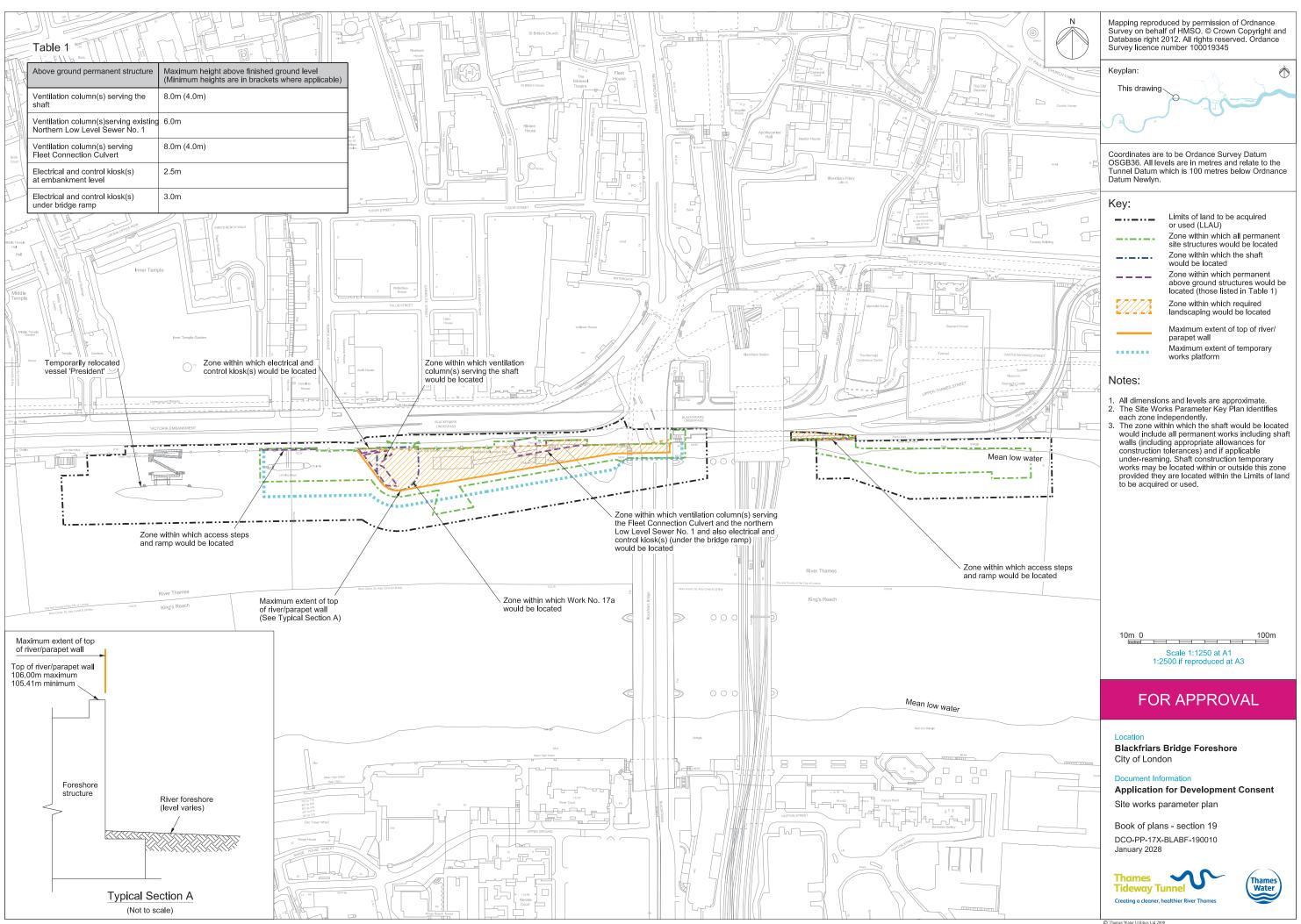
| Transport - highway layout during construction coach bay relocation | |
|--|--|
| Transport - highway layout during construction loading bay relocation | |
| Transport - permanent highway layout | |
| 1 1 2 | |
| Section 2: Environmental impact assessment figures | |
| Site location plan | Vol 18 Figure 2.1.1 |
| Land use | Vol 18 Figure 2.1.2 |
| Environmental setting | Vol 18 Figure 2.1.3 |
| Base case and cumulative development projects | Vol 18 Figure 3.5.1 |
| Air quality and odour - air quality monitoring sites | Vol 18 Figure 4.4.1 |
| Air quality and odour - H2S monitoring locations | Vol 18 Figure 4.4.2 |
| Air quality and odour - modelled air quality receptors | Vol 18 Figure 4.4.3 |
| Air quality and odour - annual mean NO2 for 2010 baseline | Vol 18 Figure 4.5.1 |
| Air quality and odour - annual mean NO2 for peak construction year base case | Vol 18 Figure 4.5.2 |
| Air quality and odour - annual mean NO2 for peak construction year | |
| development case | Vol 18 Figure 4.5.3 |
| Air quality and odour - annual mean NO2 Impact for peak construction year | Vol 18 Figure 4.5.4 |
| Air quality and odour - annual mean PM10 for 2010 baseline | Vol 18 Figure 4.5.5 |
| Air quality and odour - annual mean PM10 for peak construction year base | |
| case | Vol 18 Figure 4.5.6 |
| Air quality and odour - annual mean PM10 for peak construction year | |
| development case | Vol 18 Figure 4.5.7 |
| Air quality and odour - annual mean PM10 Impact for peak construction year | Vol 18 Figure 4.5.8 |
| Aquatic ecology - habitats and sampling locations | Vol 18 Figure 5.4.1 |
| Terrestrial ecology - designated sites | Vol 18 Figure 6.4.1 |
| Terrestrial ecology - Phase 1 Habitat Survey | Vol 18 Figure 6.4.2 |
| Historic environment - historic environment features map | Vol 18 Figure 7.4.1 |
| Historic environment - historic character and setting of heritage assets | Vol 18 Figure 7.4.2 |
| Noise and vibration - receptor locations | Vol 18 Figure 9.4.1 |
| Socio-economics - context plan | Vol 18 Figure 10.4.1 |
| Townscape and visual - Conservation areas | Vol 18 Figure 11.4.1 |
| Townscape and visual - Development pattern and scale | Vol 18 Figure 11.4.2 |
| Townscape and visual - Aerial photo showing pattern of vegetation | Vol 18 Figure 11.4.3 |
| Townscape and visual - Open spaces | Vol 18 Figure 11.4.4 |
| Townscape and visual - Transport routes | Vol 18 Figure 11.4.5 |
| Townscape and visual - Townscape character areas | Vol 18 Figure 11.4.6 |
| Townscape and visual – Viewpoints | Vol 18 Figure 11.4.7 |
| Townscape and visual - Viewpoint 2.1 Operational phase verifiable | |
| photomontage (daytime) | Vol 18 Figure 11.6.1 |
| Townscape and visual - Viewpoint 2.1 Operational phase verifiable | |
| photomontage (night-time) | Vol 18 Figure 11.6.2 |
| Townscape and visual – Viewpoint 2.2 Operational phase verifiable | \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ |
| photomontage | Vol 18 Figure 11.6.3 |
| Townscape and visual – Viewpoint 2.6 Operational phase verifiable | Val 40 Figure 44 C 4 |
| photomontage (daytime) | Vol 18 Figure 11.6.4 |
| Townscape and visual – Viewpoint 2.6 Operational phase verifiable | Vol 10 Figure 11 6 F |
| photomontage (night-time) | Vol 18 Figure 11.6.5 |
| Townscape and visual – Viewpoint 2.7 Operational phase verifiable | Vol 18 Figure 11.6.6 |

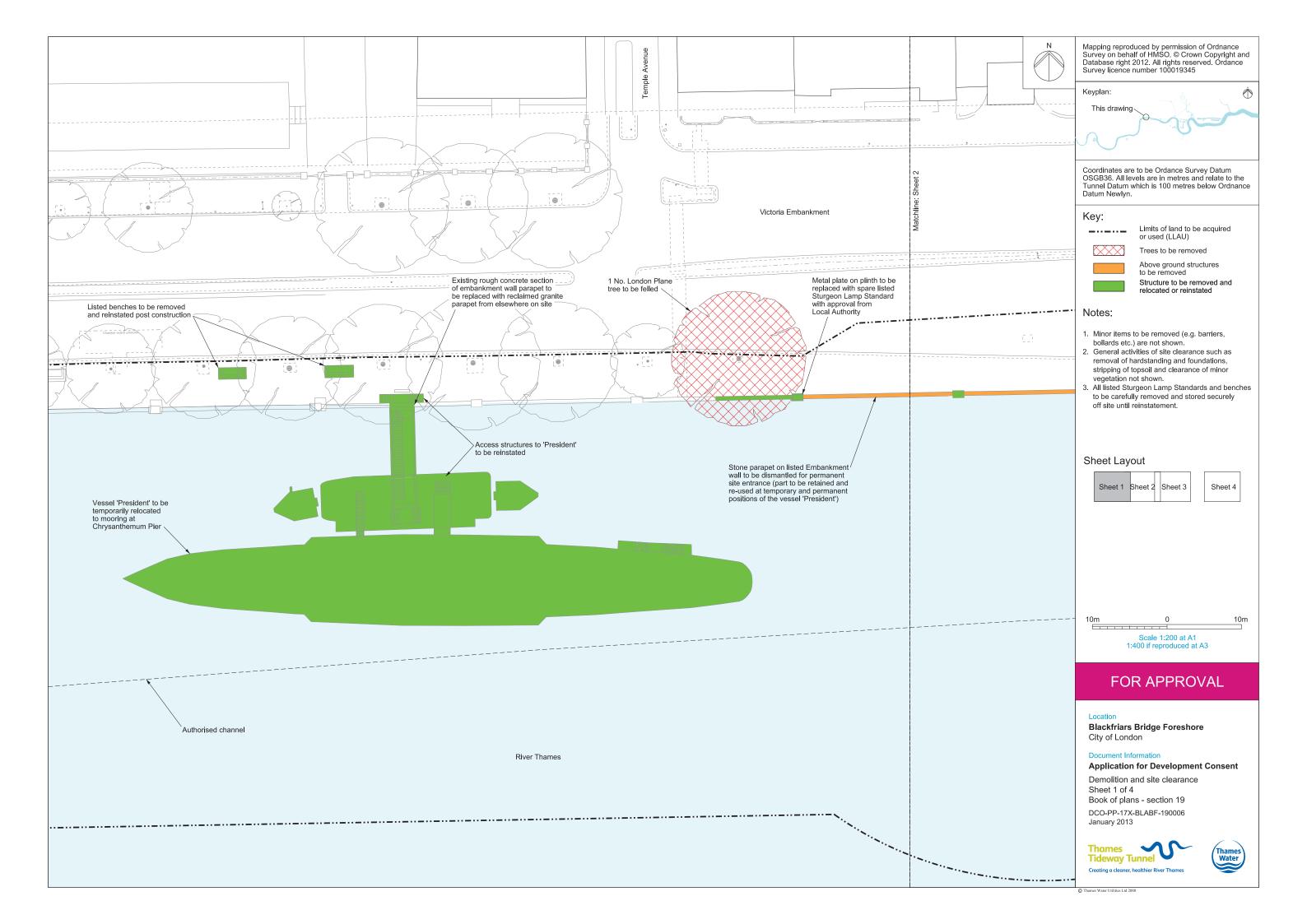
| photomontage | |
|---|----------------------|
| Townscape and visual – Viewpoint 2.8 Operational phase verifiable | |
| photomontage | Vol 18 Figure 11.6.7 |
| Townscape and visual – Viewpoint 2.12 Operational phase verifiable | |
| photomontage | Vol 18 Figure 11.6.8 |
| Construction Traffic Routes | Vol 18 Figure 12.2.1 |
| Site Location Plan | Vol 18 Figure 12.4.1 |
| Pedestrian and Cycle Network | Vol 18 Figure 12.4.2 |
| Public Transport | Vol 18 Figure 12.4.3 |
| Parking | Vol 18 Figure 12.4.4 |
| Survey Locations | Vol 18 Figure 12.4.5 |
| Baseline, Construction and Development case traffic flow (AM peak hour) | Vol 18 Figure 12.4.6 |
| Baseline, Construction and Development case traffic flow (PM peak hour) | Vol 18 Figure 12.4.7 |
| Cycle Diversion for Blackfriars Bridge Foreshore - Construction Phase 3 | Vol 18 Figure 12.5.1 |
| Water resources - groundwater - superficial geology | Vol 18 Figure 13.4.1 |
| Water resources - groundwater - solid geology | Vol 18 Figure 13.4.2 |
| Water resources - groundwater - monitoring locations | Vol 18 Figure 13.4.3 |
| Water resources - groundwater - regional groundwater hydrograph | Vol 18 Figure 13.4.4 |
| Water resources - groundwater - Licensed and unlicensed groundwater | |
| abstractions | Vol 18 Figure 13.4.5 |
| Water resources - surface water - water quality monitoring points | Vol 18 Figure 14.4.1 |
| Flood risk – EA flood zones | Vol 18 Figure 15.3.1 |
| | |
| Land quality - potentially contaminating land-uses | Vol 18 Figure F.1.1 |
| Land quality - borehole locations | Vol 18 Figure F.1.2 |
| Land quality - hazard and waste sites | Vol 18 Figure F.1.3 |
| Noise and vibration - noise survey locations | Vol 18 Figure G.1. |
| Socio-economics - usage survey plan | Vol 18 Figure H.1. |

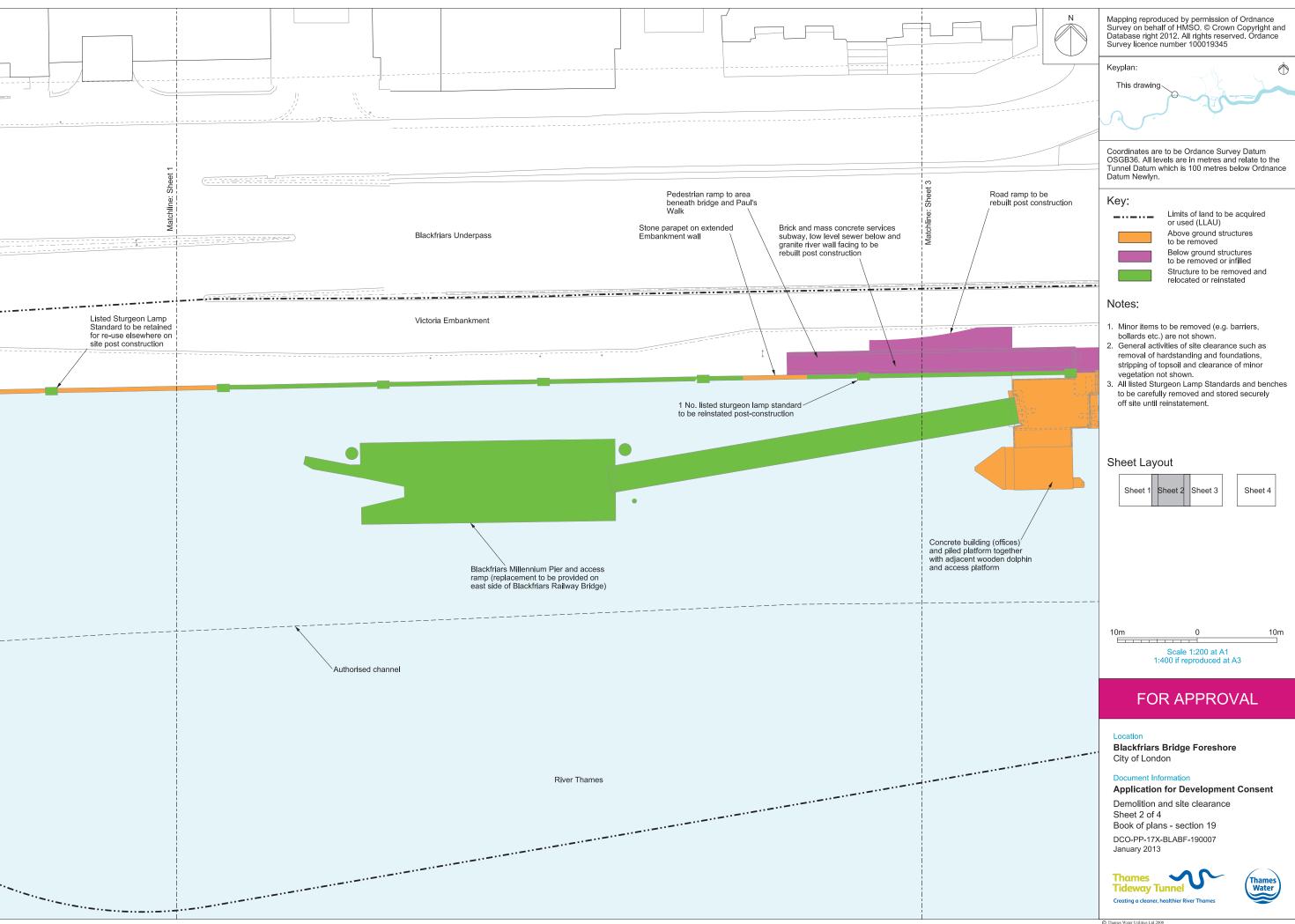
This page is intentionally blank

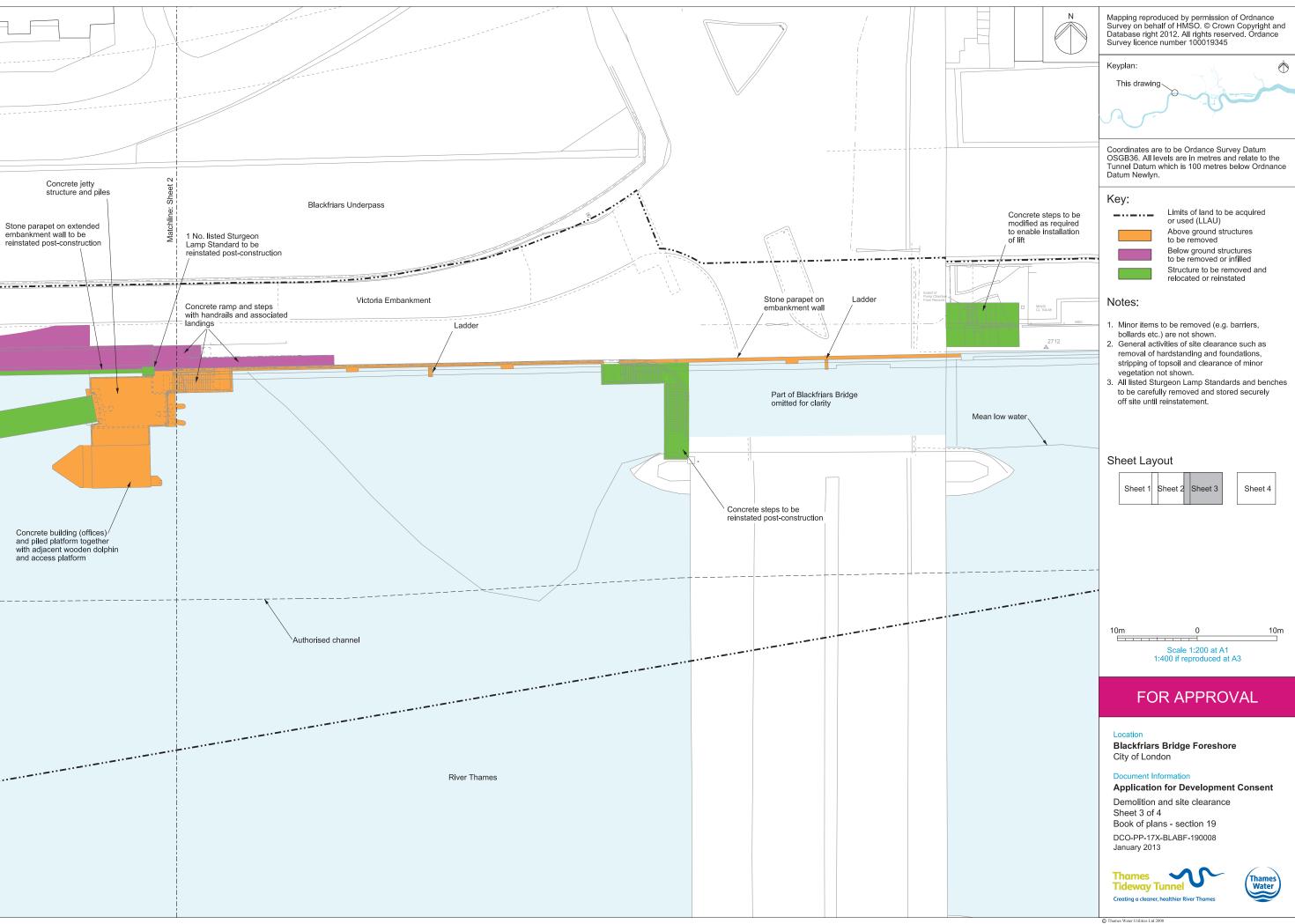
1 Plans from the Book of Plans

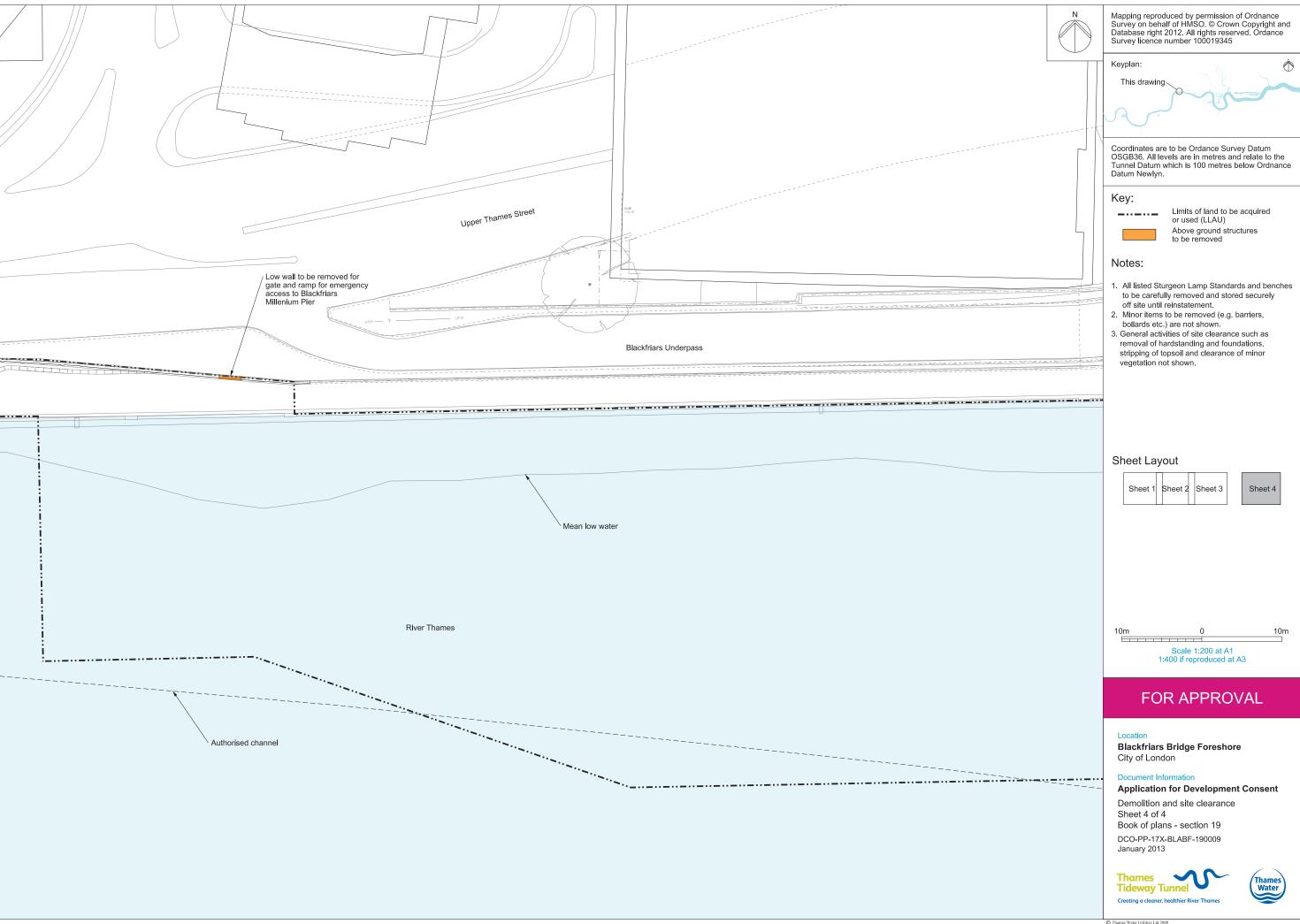
| Environmental Statement | |
|-------------------------|----------------------------------|
| | This page is intentionally blank |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

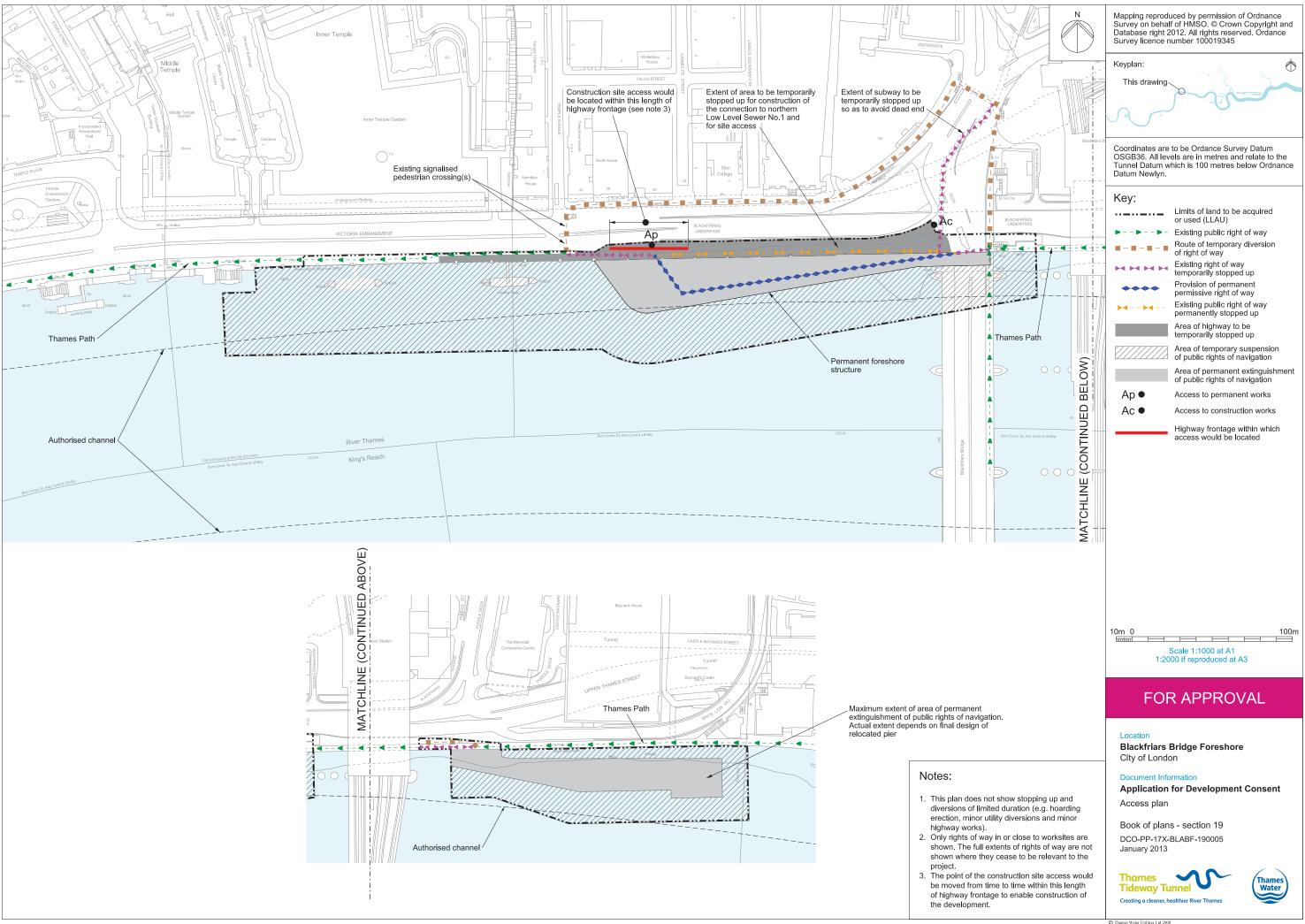


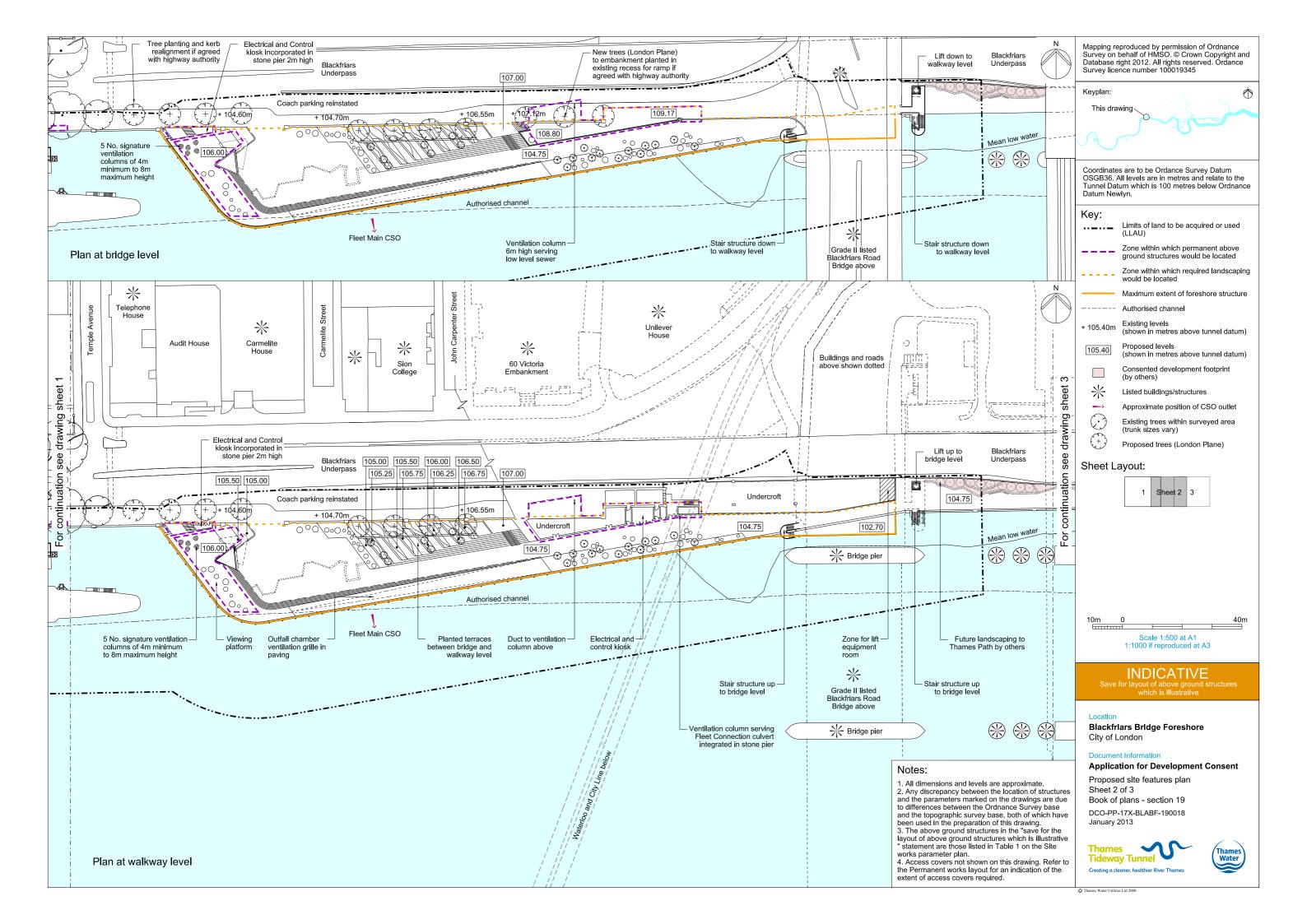


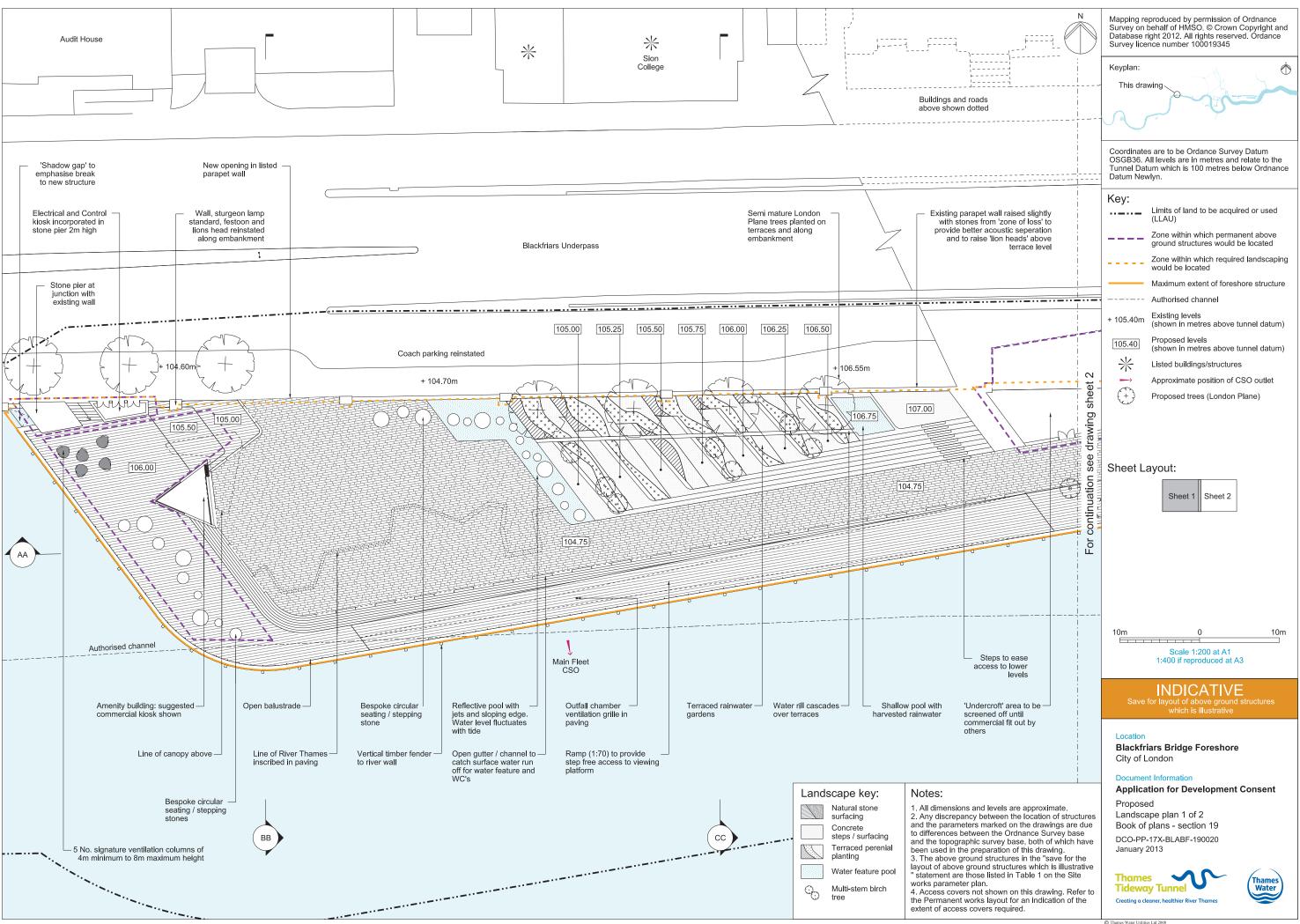


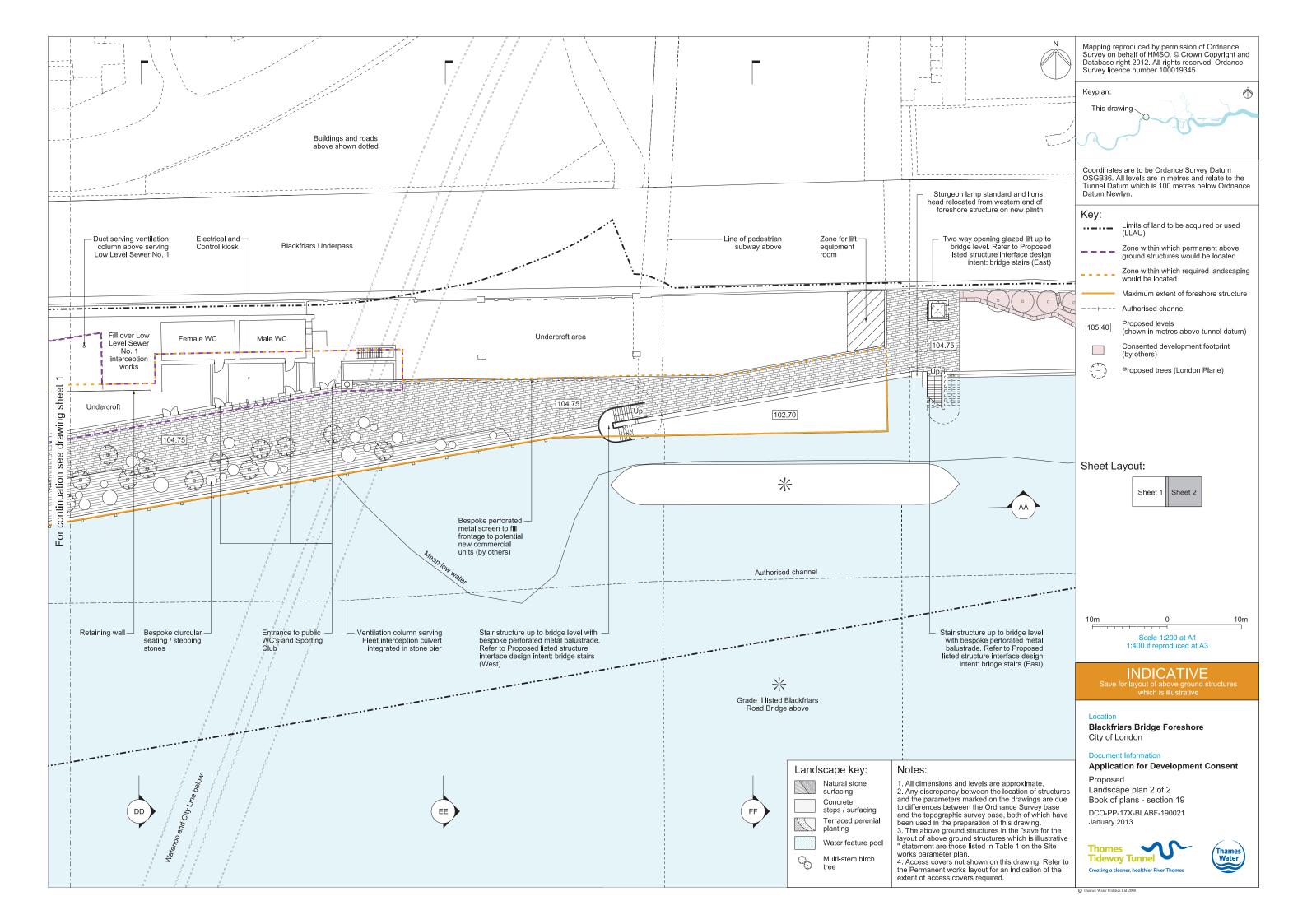


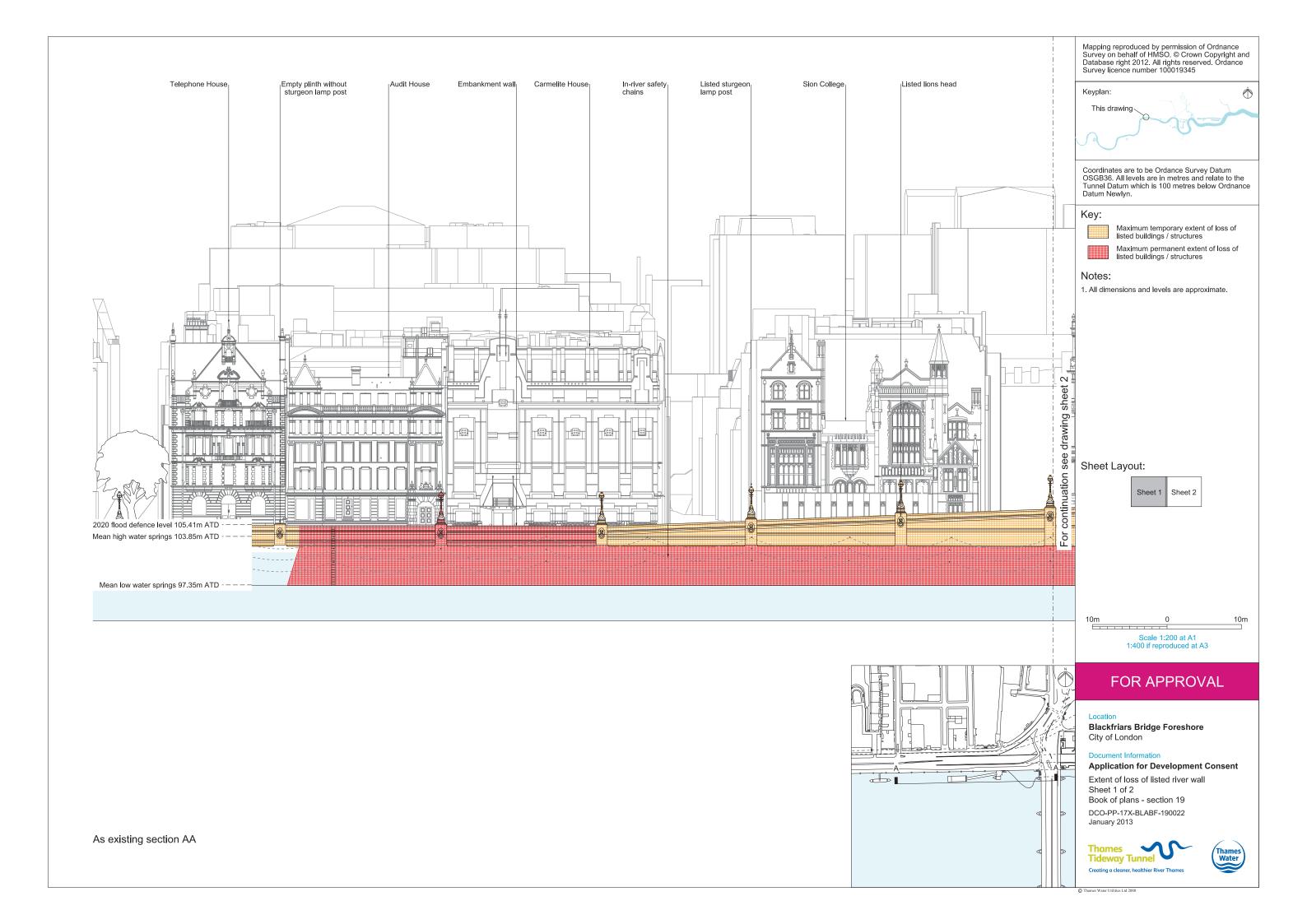


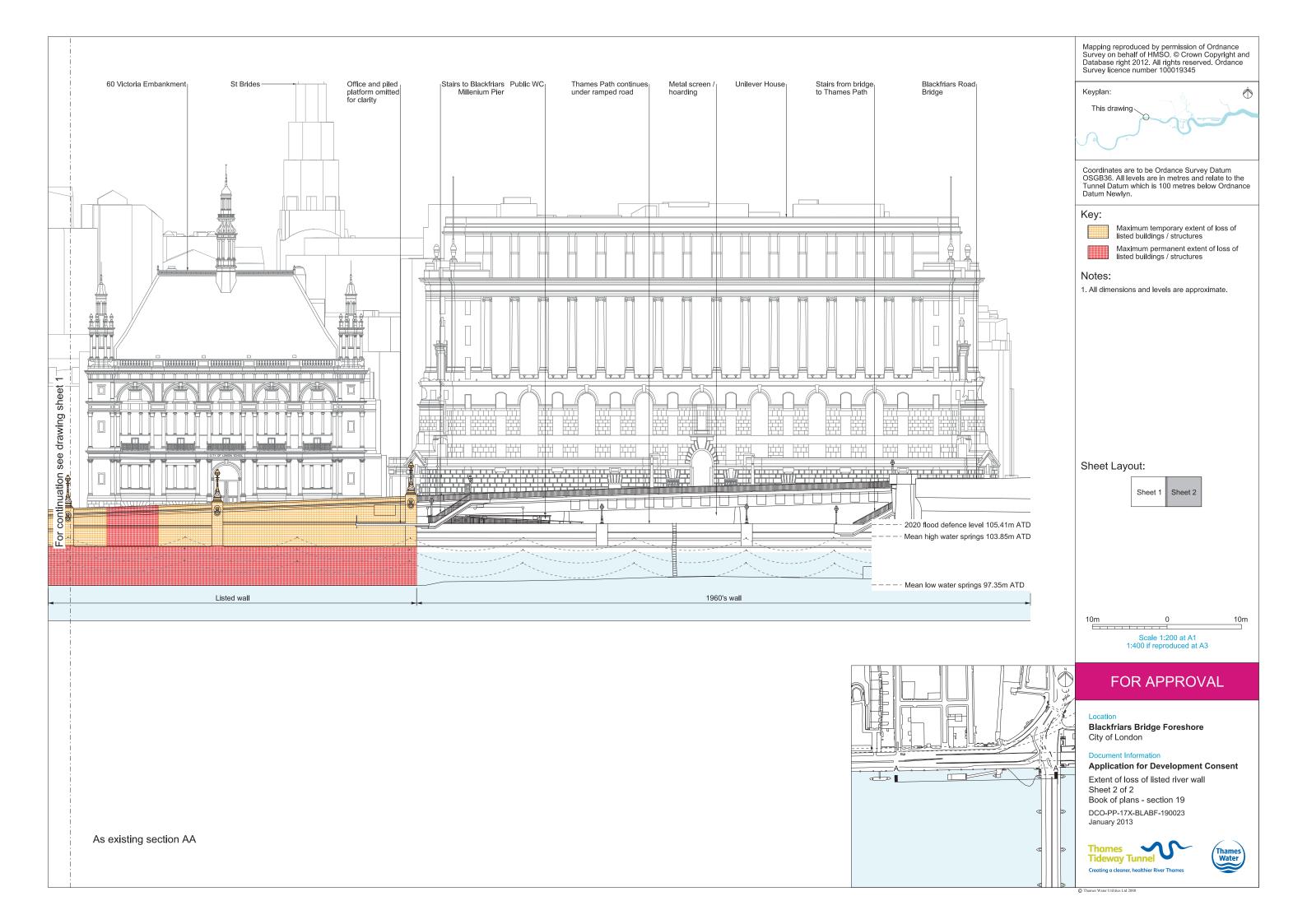


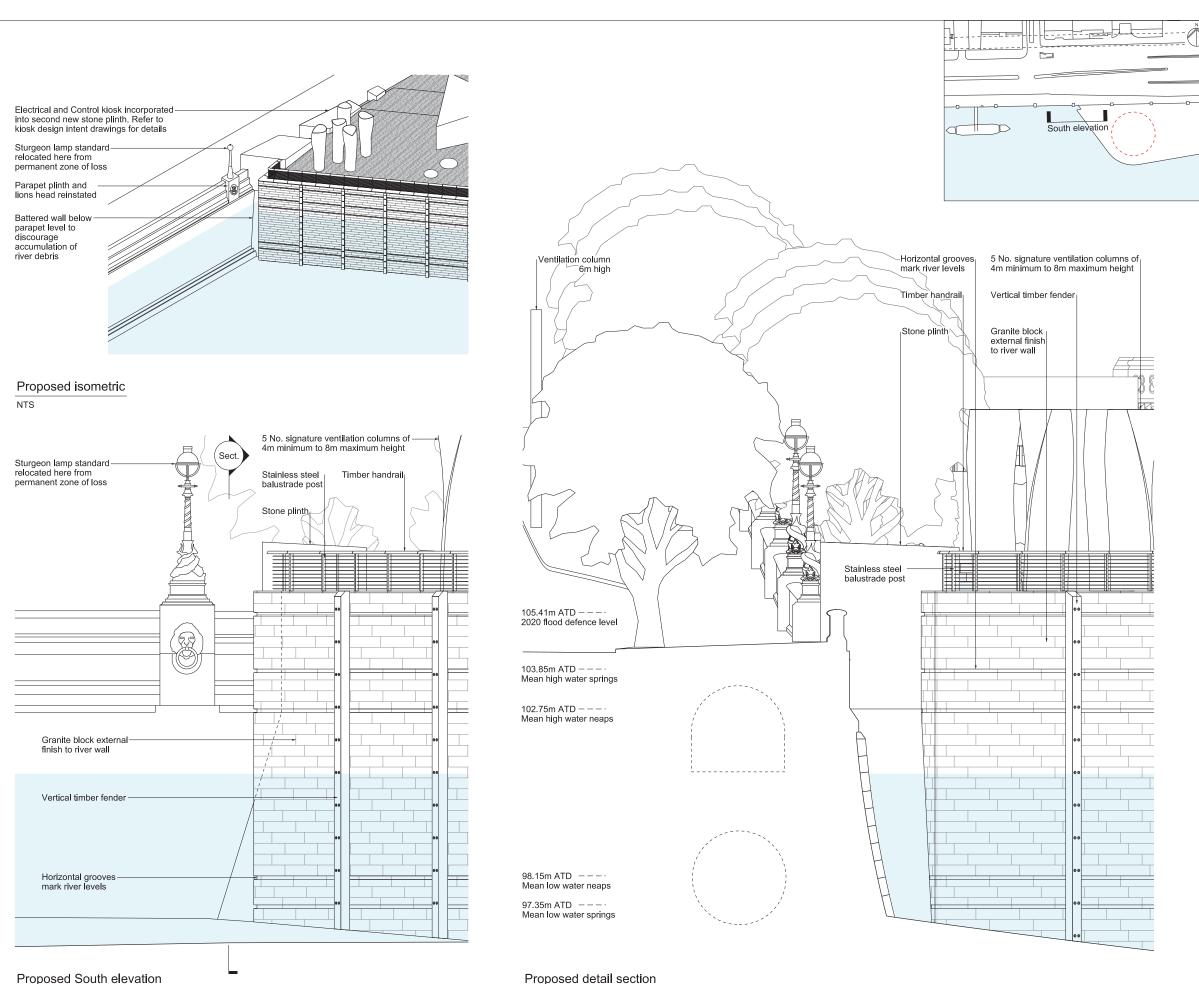












Scale 1:50

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345

 \bigcirc

Keyplan:

This drawing

Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Notes:

- 1. All dimensions and levels are approximate.
- Drawing is based on as-constructed drawings and topographical survey and not on heritage survey.

Scale 1:50 at A1 1:100 if reproduced at A3

INDICATIVE

Locatio

Blackfriars Bridge Foreshore City of London

Document Information

Application for Development Consent

Proposed

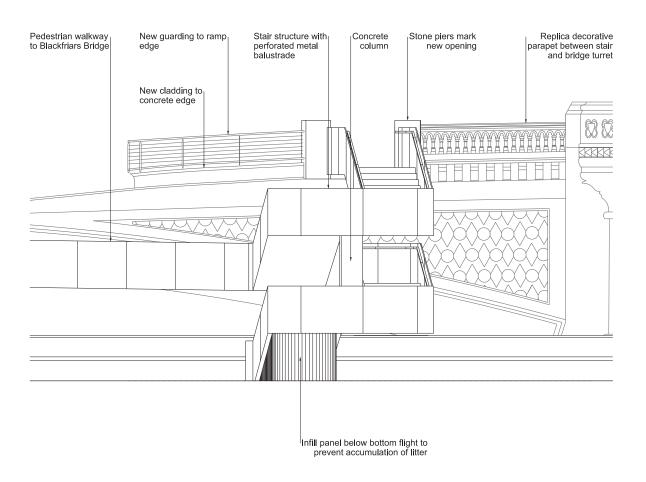
Listed structure interface - river wall Book of plans - section 19 DCO-PP-17X-BLABF-190040

January 2013



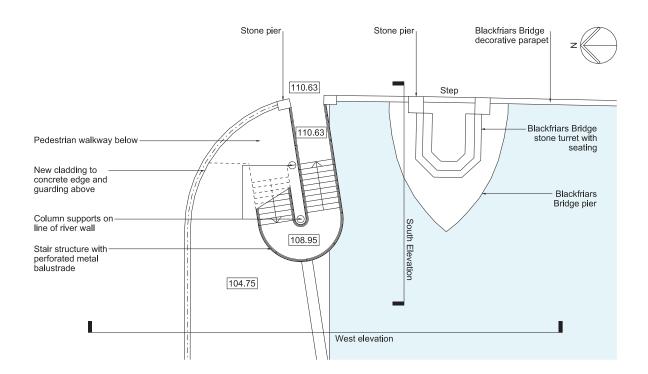


Scale 1:50



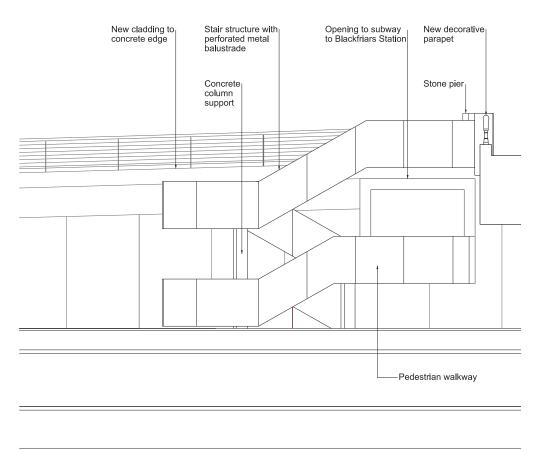
West stair West elevation

Scale 1:50



West stair bridge level

Scale 1:100



West stair South elevation

Scale 1:50

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345



Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Notes:

1. All dimensions and levels are approximate.
 2. Drawing is based on as-constructed drawings and topographical survey and not on heritage survey.

1m 0 4m

Scale 1:50 at A1

1:100 if reproduced at A3

1m 0 10m

Scale 1:100 at A1

1:200 if reproduced at A3

INDICATIVE

Locatio

Blackfriars Bridge Foreshore City of London

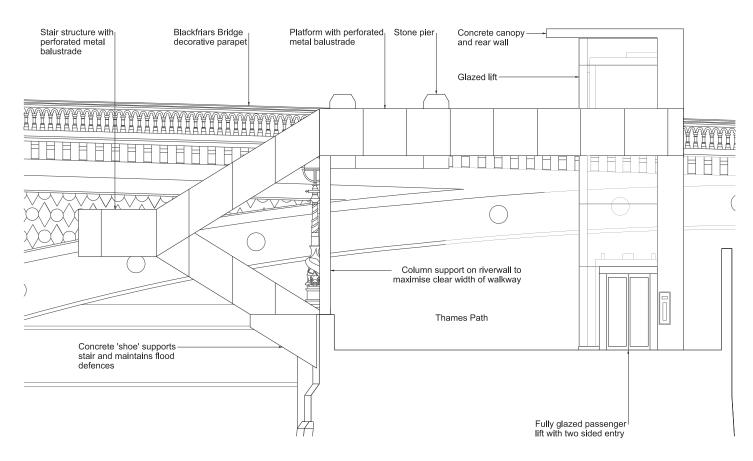
Document Information

Application for Development Consent

Proposed listed structure interface -Bridge stairs (west) Book of plans - section 19 DCO-PP-17X-BLABF-190042 January 2013

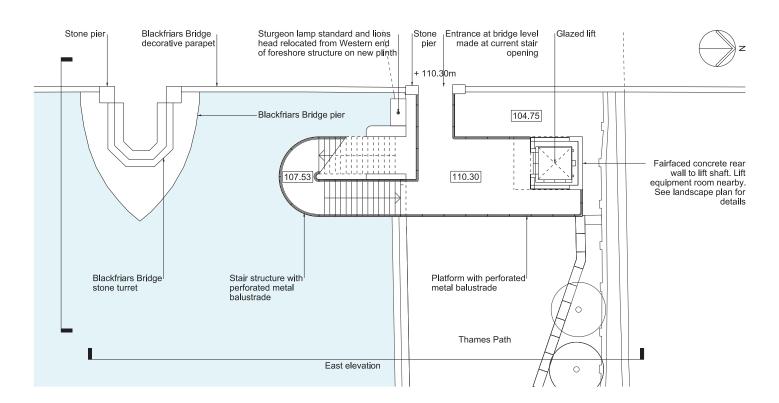






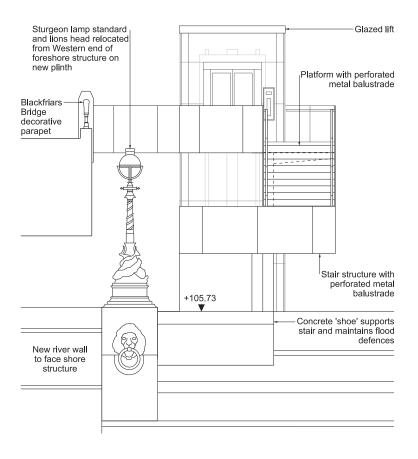
East stair East elevation

Scale 1:50



East stair bridge level

Scale 1:100



East stair South elevation

Scale 1:50

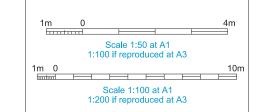
Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345



Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Notes:

All dimensions and levels are approximate.
 Drawing is based on as-constructed drawings and topographical survey and not on heritage survey.



INDICATIVE

Location

Blackfriars Bridge Foreshore City of London

Document Information

Application for Development Consent

Proposed listed structure interface -Bridge stairs (east) Book of plans - section 19 DCO-PP-17X-BLABF-190044 January 2013

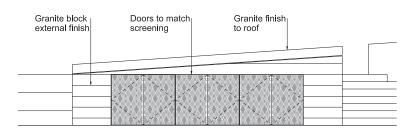






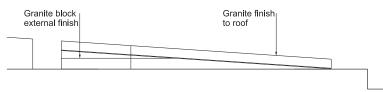
West kiosk section

Scale 1:50



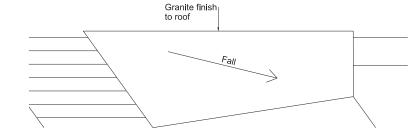
West kiosk North elevation

Scale 1:50



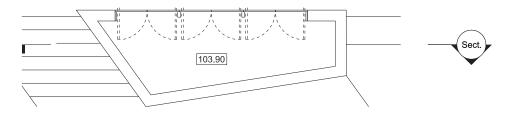
West kiosk South elevation

Scale 1:50



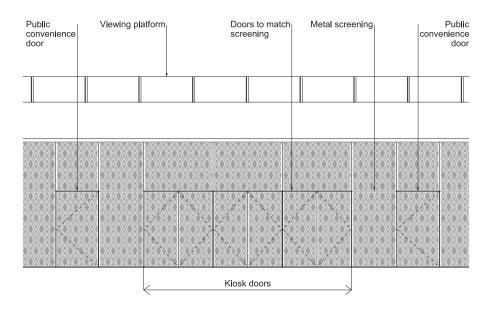
West kiosk roof plan

Scale 1:50



West kiosk floor plan

Scale 1:50



Undercroft kiosk South elevation

Scale 1:50

- Granite block external finish

Granite finish to roof

Scale 1:50

Granite block external

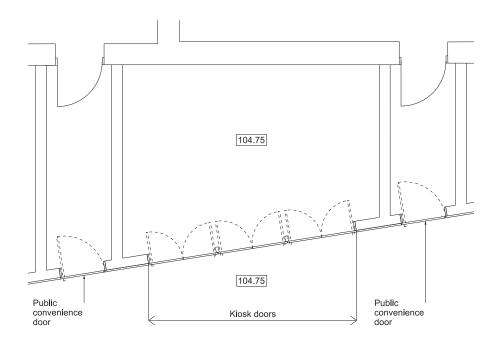
finish

Scale 1:50

West kiosk East elevation

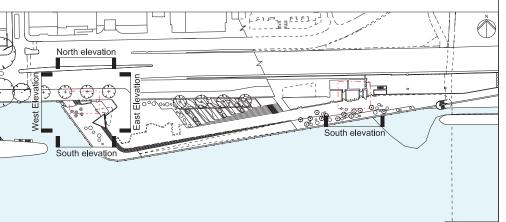
Granite finish to roof

West kiosk West elevation



Undercroft kiosk plan

Scale 1:50



Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345

Keyplan:
This drawing

Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Notes:

1. All dimensions and levels are approximate.

Scale 1:50 at A1
1:100 if reproduced at A3

INDICATIVE

Location

Blackfriars Bridge Foreshore
City of London

Document Information

Application for Development Consent

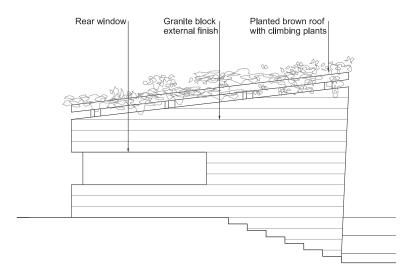
Kiosk and undercroft area design intent

Book of plans - section 19 DCO-PP-17X-BLABF-190035 January 2013



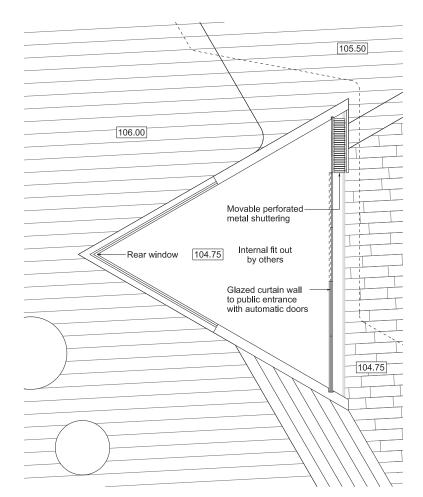


Thames Water Utilities Ltd 2008



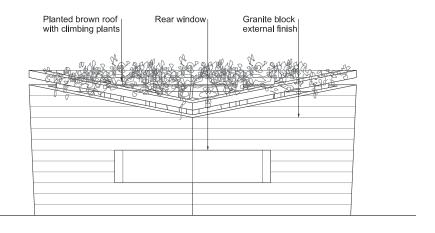
South elevation

Scale 1:50



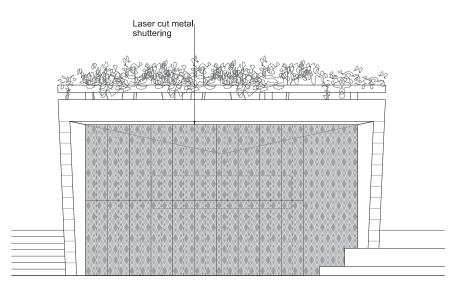
Floor plan

Scale 1:50



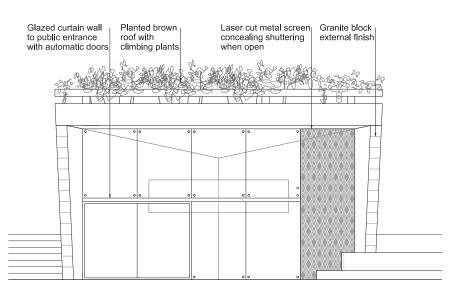
West elevation

Scale 1:50



East elevation (shuttering closed)

Scale 1:50



East elevation (shuttering open)

Scale 1:50

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345

Keyplan:

Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn

Notes:

All dimensions and levels are approximate.



INDICATIVE

Locatio

Blackfriars Bridge Foreshore City of London

Document Information

Application for Development Consent

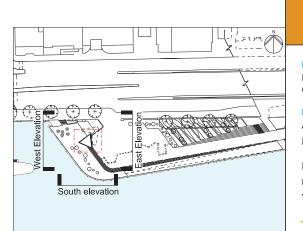
Kiosk design intent

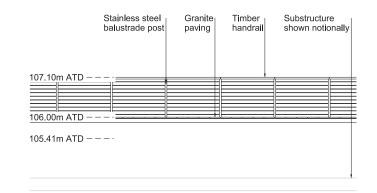
Book of plans - section 19 DCO-PP-17X-BLABF-190036 January 2013





Thames Water Utilities Ltd 2008

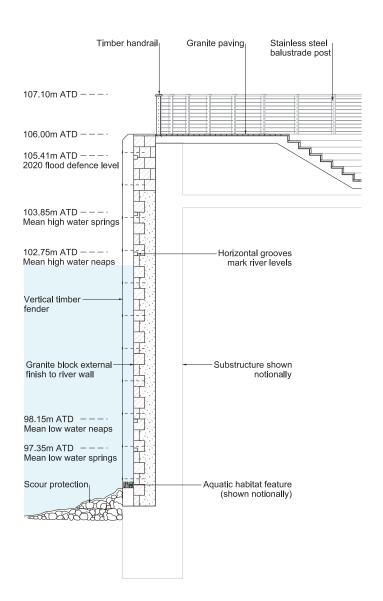




North elevation

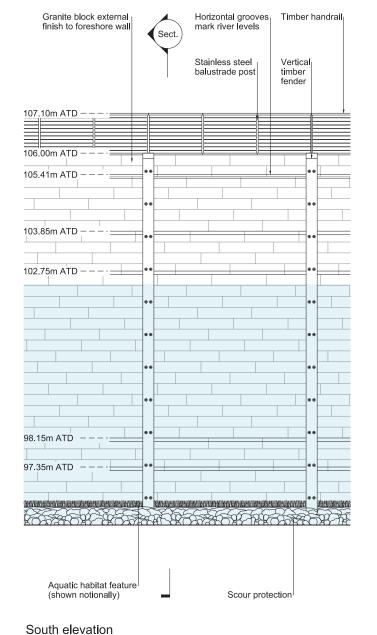
Scale 1:50

Scale 1:50



Detail section

Scale 1:50



Horizontal grooves mark river levels Granite block external finish to foreshore wall Aquatic habitat feature

Stainless steel | Timber handrail

balustrade post

Granite paving

Vertical timber

Substructure shown

notionally only

Isometric

NTS

Scour protection

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345

 \bigcirc

Keyplan:

This drawing

Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance

Notes:

1. All dimensions and levels are approximate.

INDICATIVE

Scale 1:50 at A1

1:100 if reproduced at A3

Blackfriars Bridge Foreshore City of London

Document Information

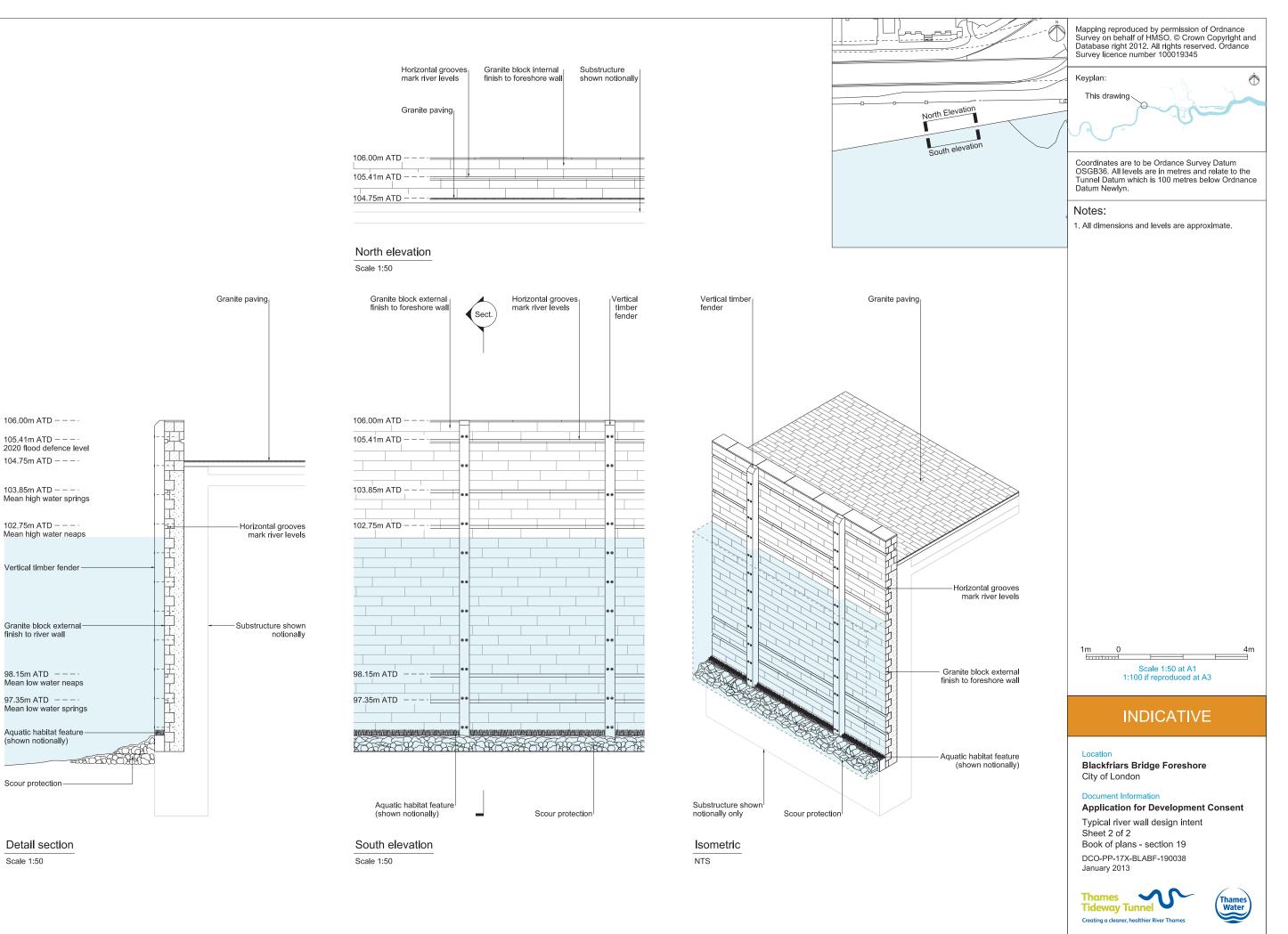
Application for Development Consent

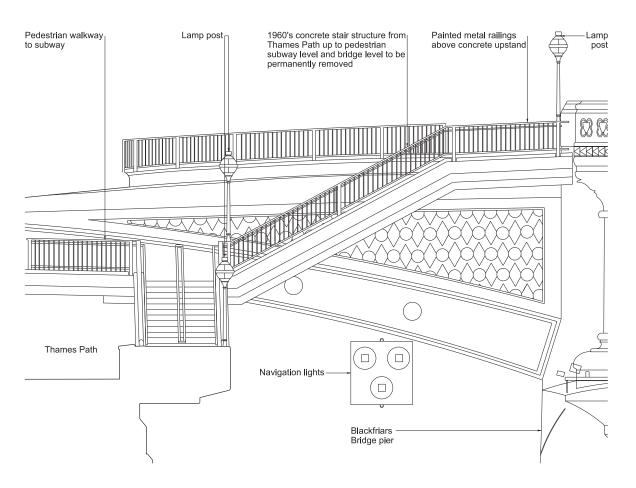
Typical river wall design intent Sheet 1 of 2 Book of plans - section 19 DCO-PP-17X-BLABF-190037 January 2013





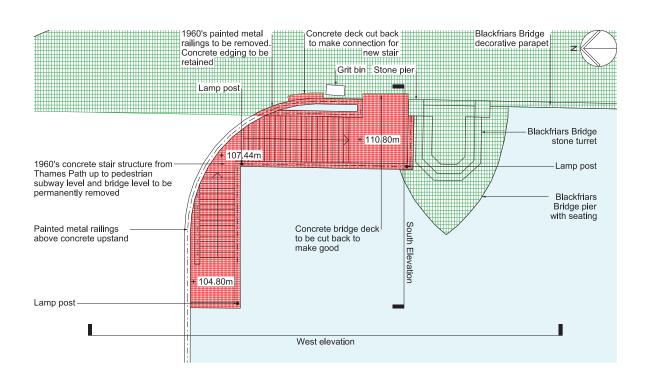






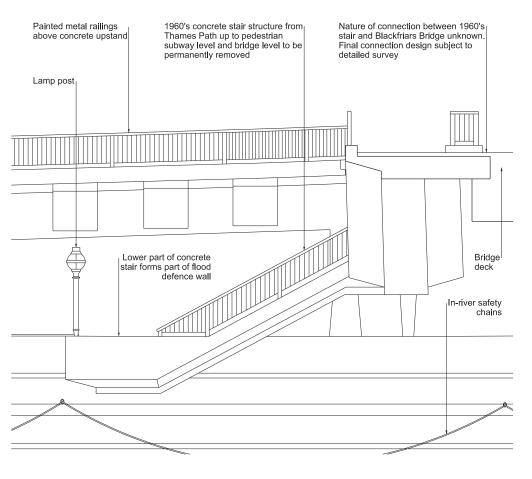
West stair West elevation

Scale 1:50



West stair bridge level

Scale 1:100



West stair South elevation

Scale 1:50

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345



Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key:

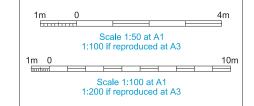
Listed buildings / structures within LLAU (plan only)



Maximum permanent extent of loss of listed buildings / structures (plan only)

Notes:

- All dimensions and levels are approximate.
- Drawing is based on as-constructed drawings and topographical survey and not on heritage survey.



FOR INFORMATION Save for maximum extent of loss of listed structur which is for approval

Location

Blackfriars Bridge Foreshore City of London

Document Information

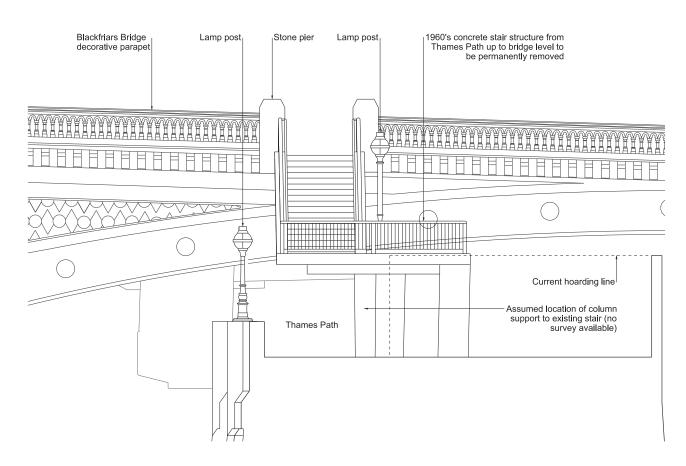
Application for Development Consent

As existing listed structure interface -Bridge stairs (west) Book of plans - section 19 DCO-PP-17X-BLABF-190041 January 2013



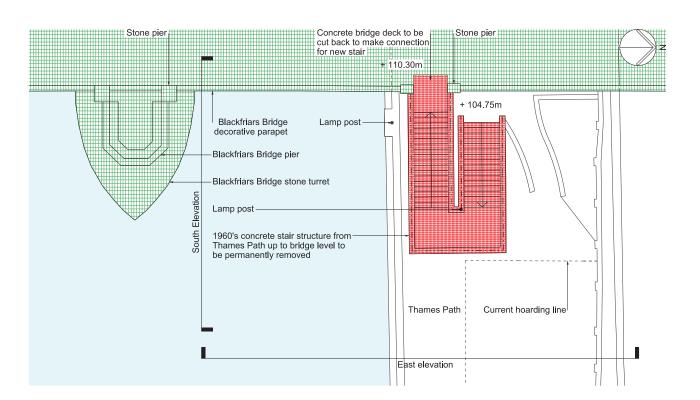






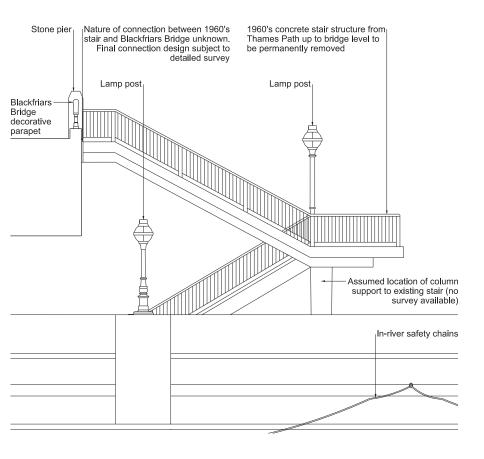
East stair East elevation

Scale 1:50



East stair bridge level

Scale 1:100



East stair South elevation

Scale 1:50

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345



Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance Datum Newlyn.

Key:

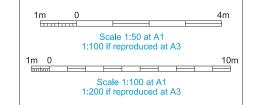
Listed buildings / structures within LLAU (plan only)



Maximum permanent extent of loss of listed buildings / structures (plan only)

Notes:

- 1. All dimensions and levels are approximate.
- Drawing is based on as-constructed drawings and topographical survey and not on heritage survey.



FOR INFORMATION Save for maximum extent of loss of listed structur which is for approval

Location

Blackfriars Bridge Foreshore City of London

Document Information

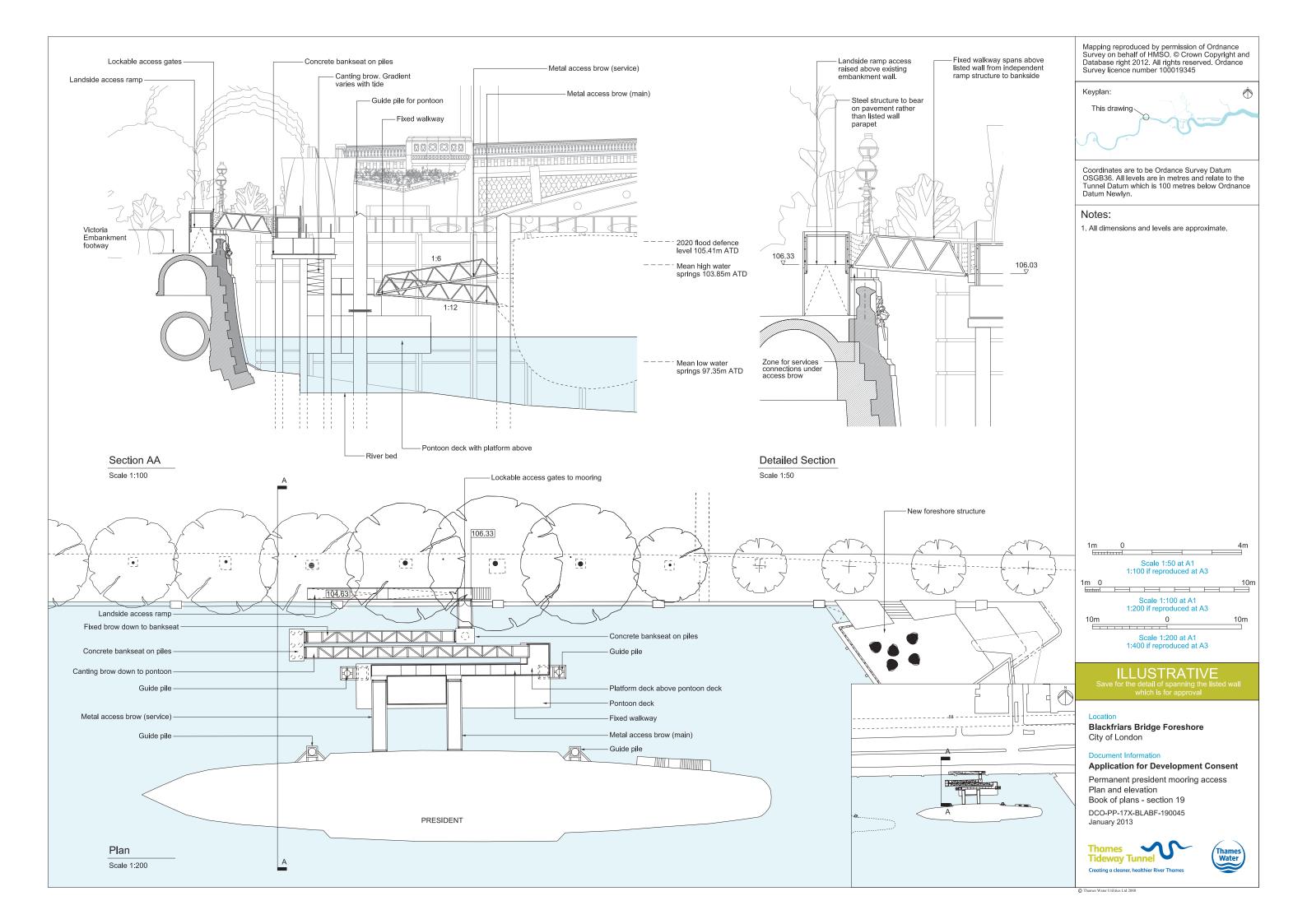
Application for Development Consent

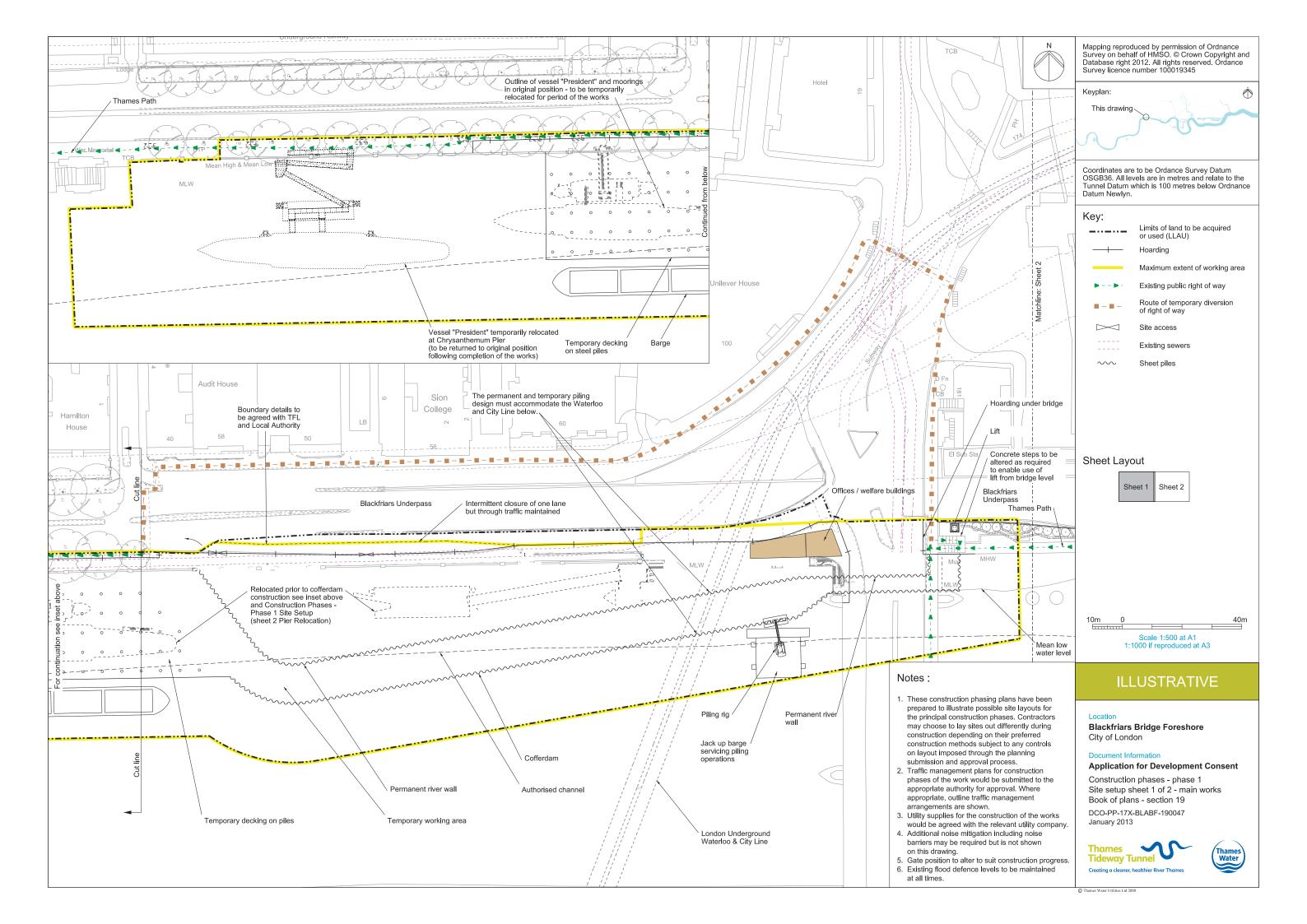
As existing listed structure interface -Bridge stairs (east) Book of plans - section 19 DCO-PP-17X-BLABF-190043

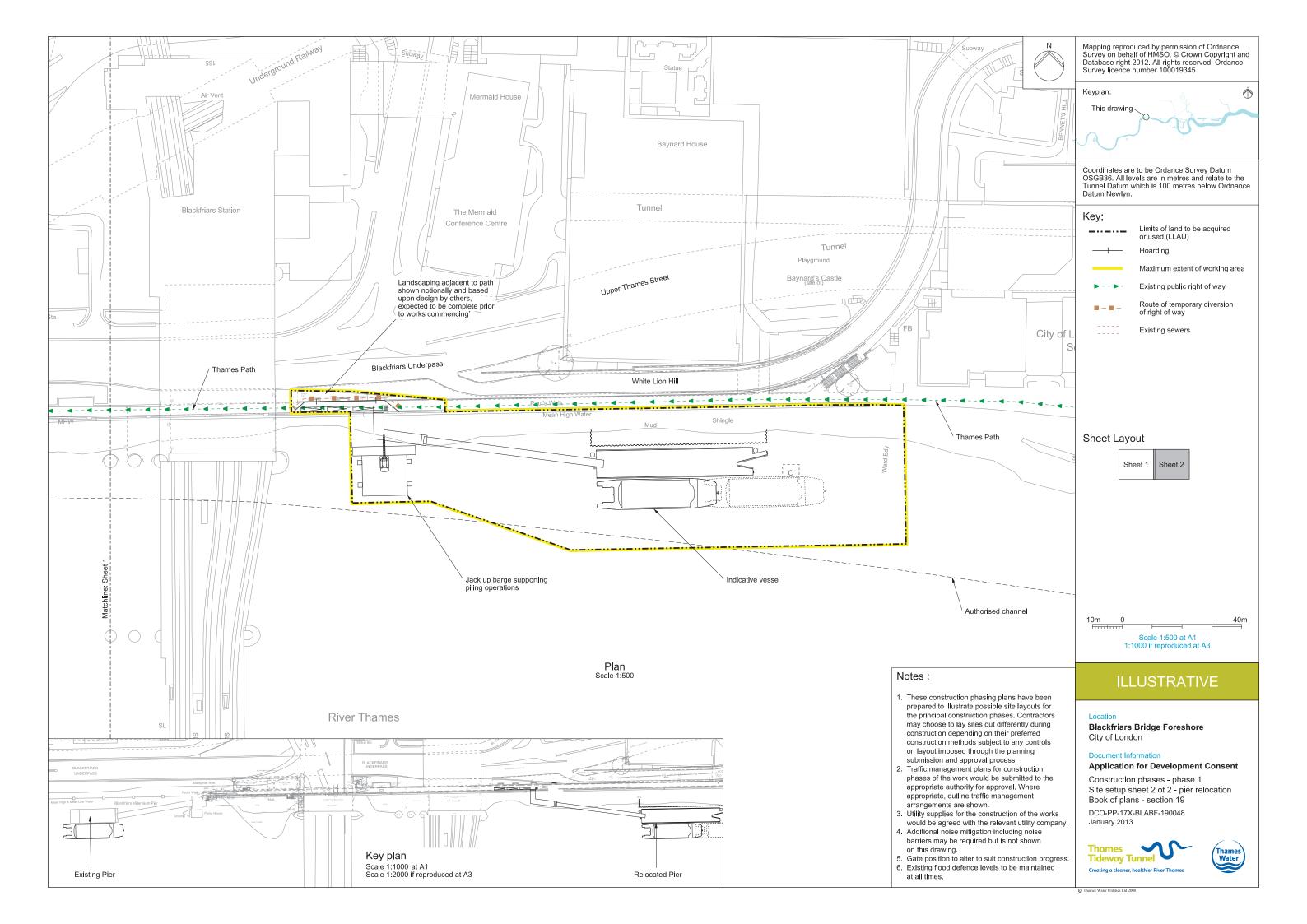


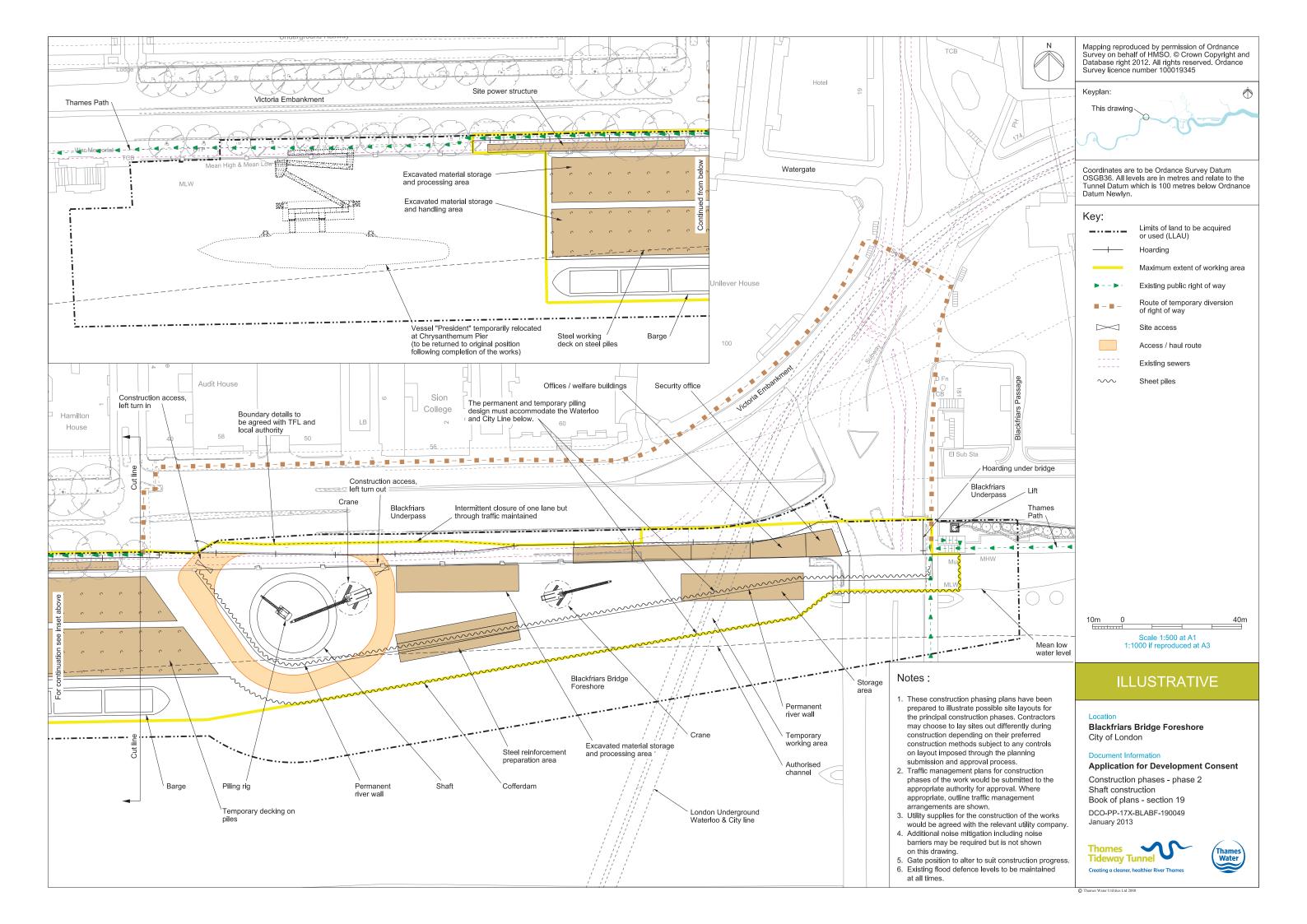


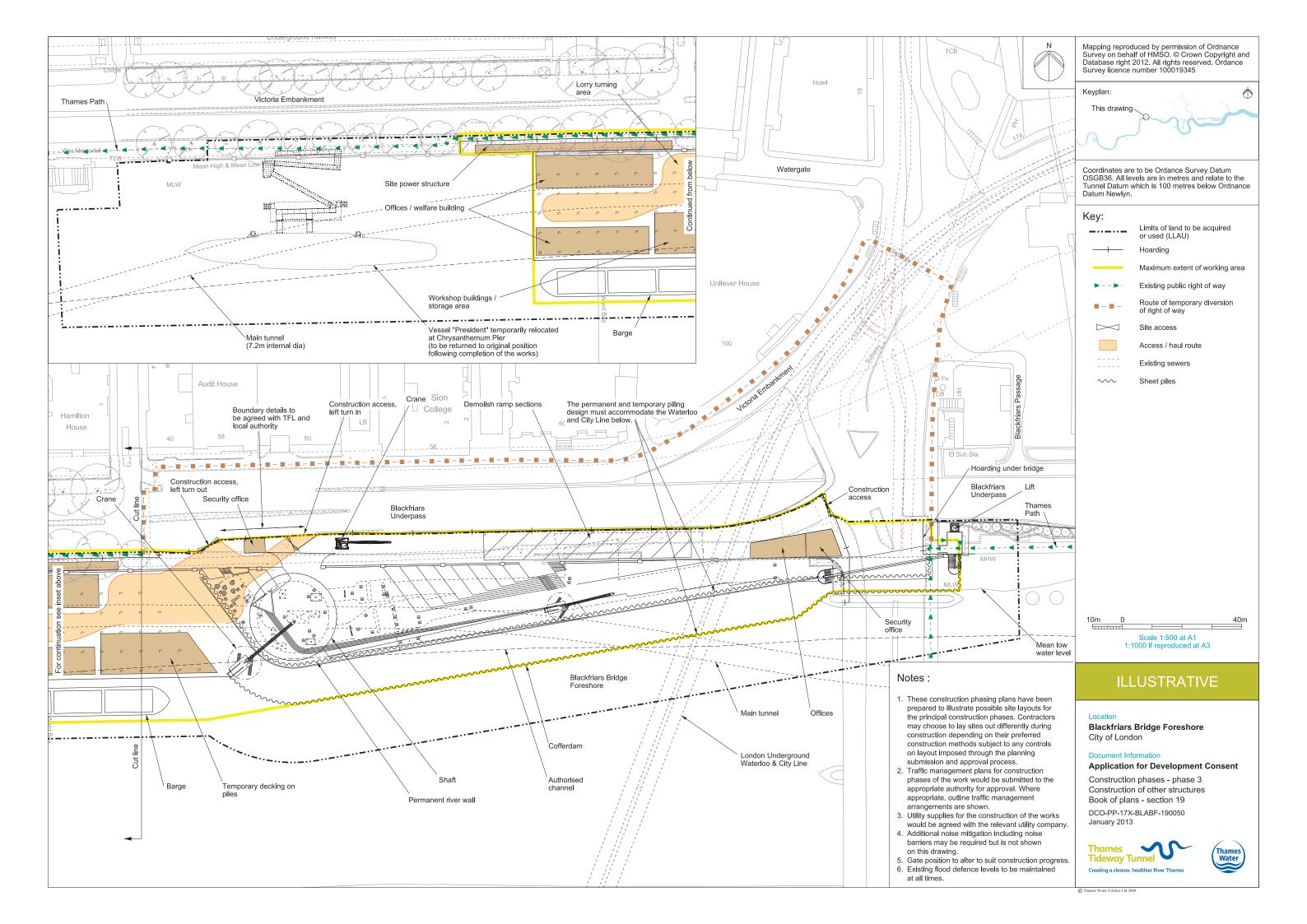


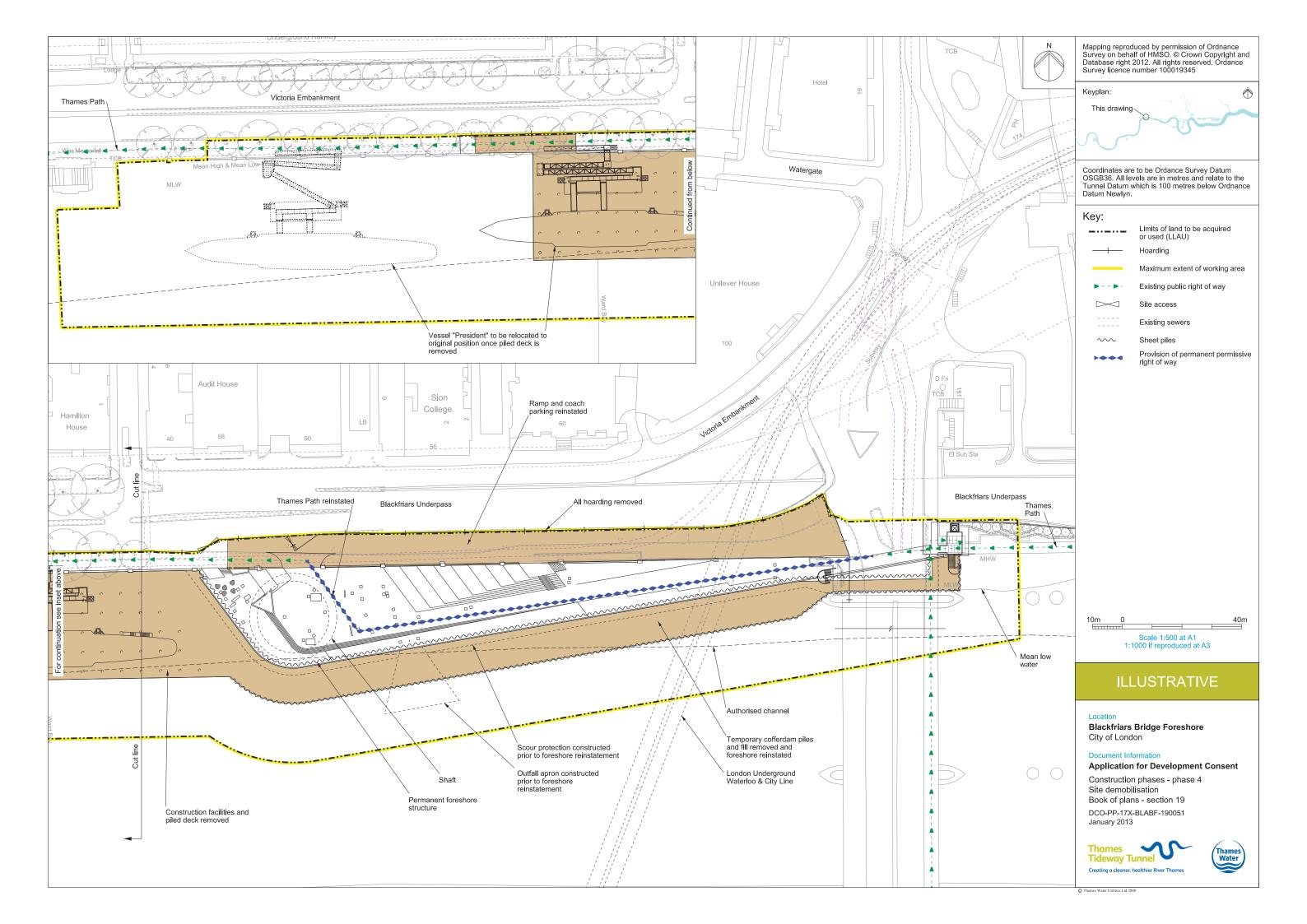


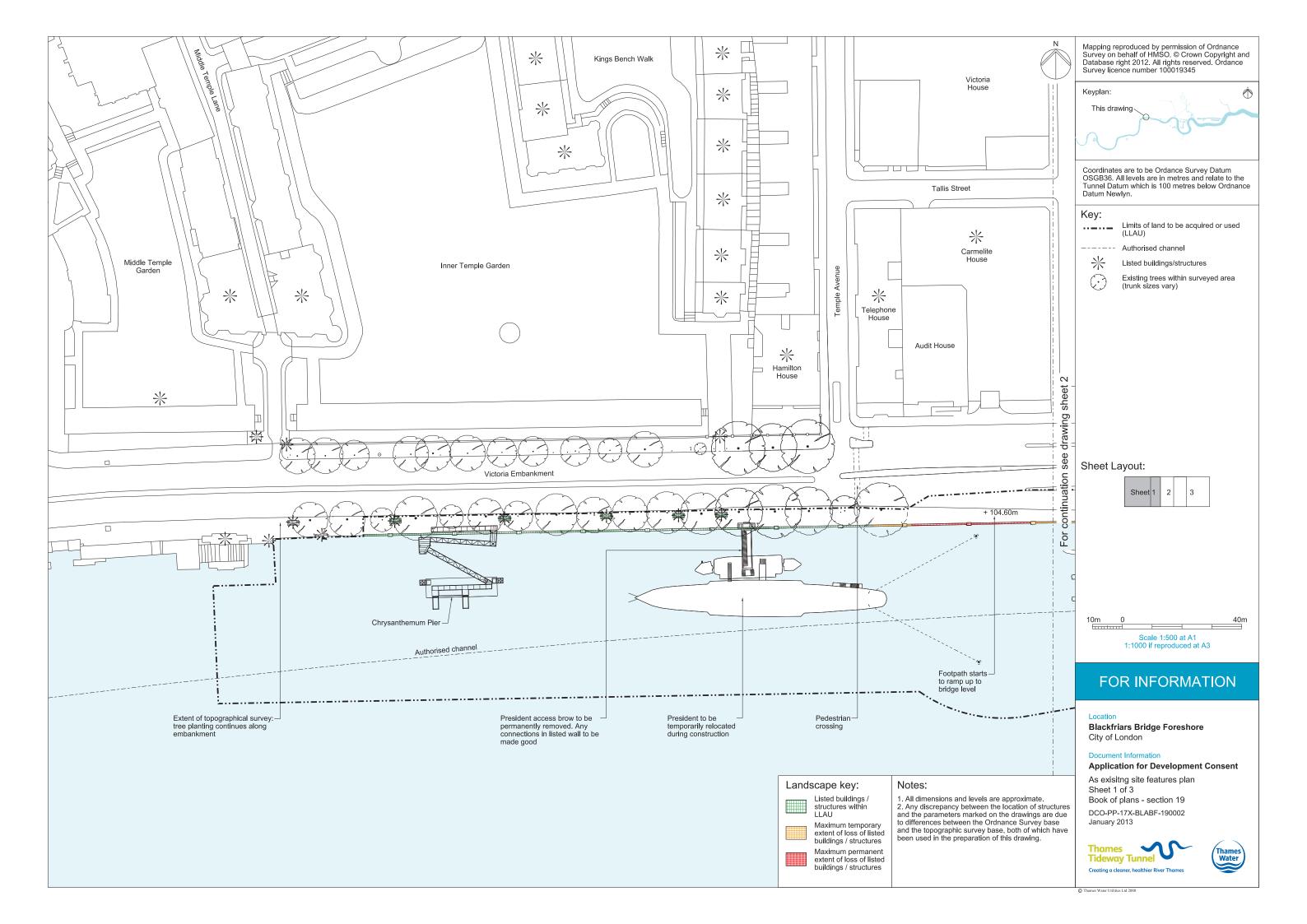


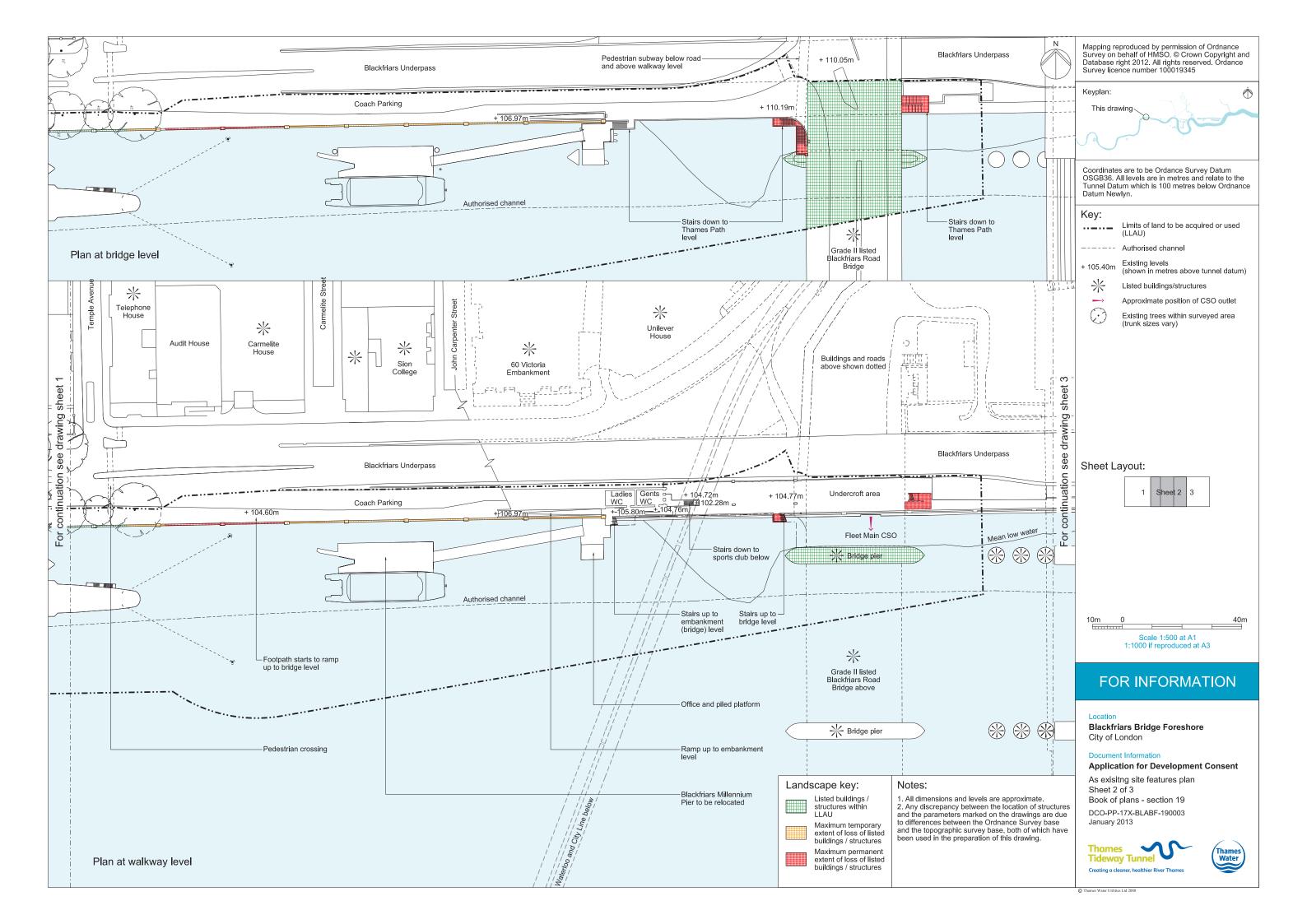


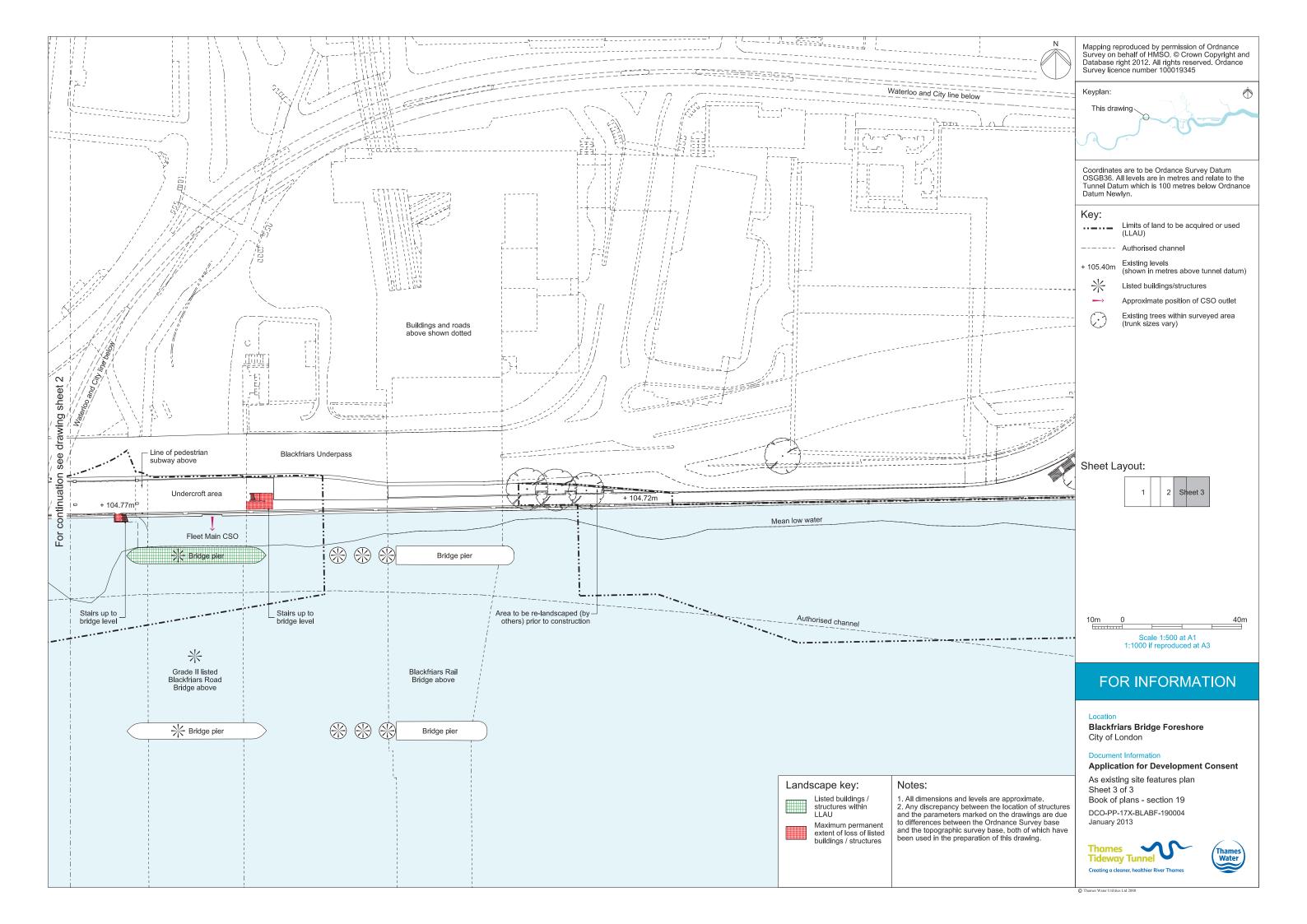


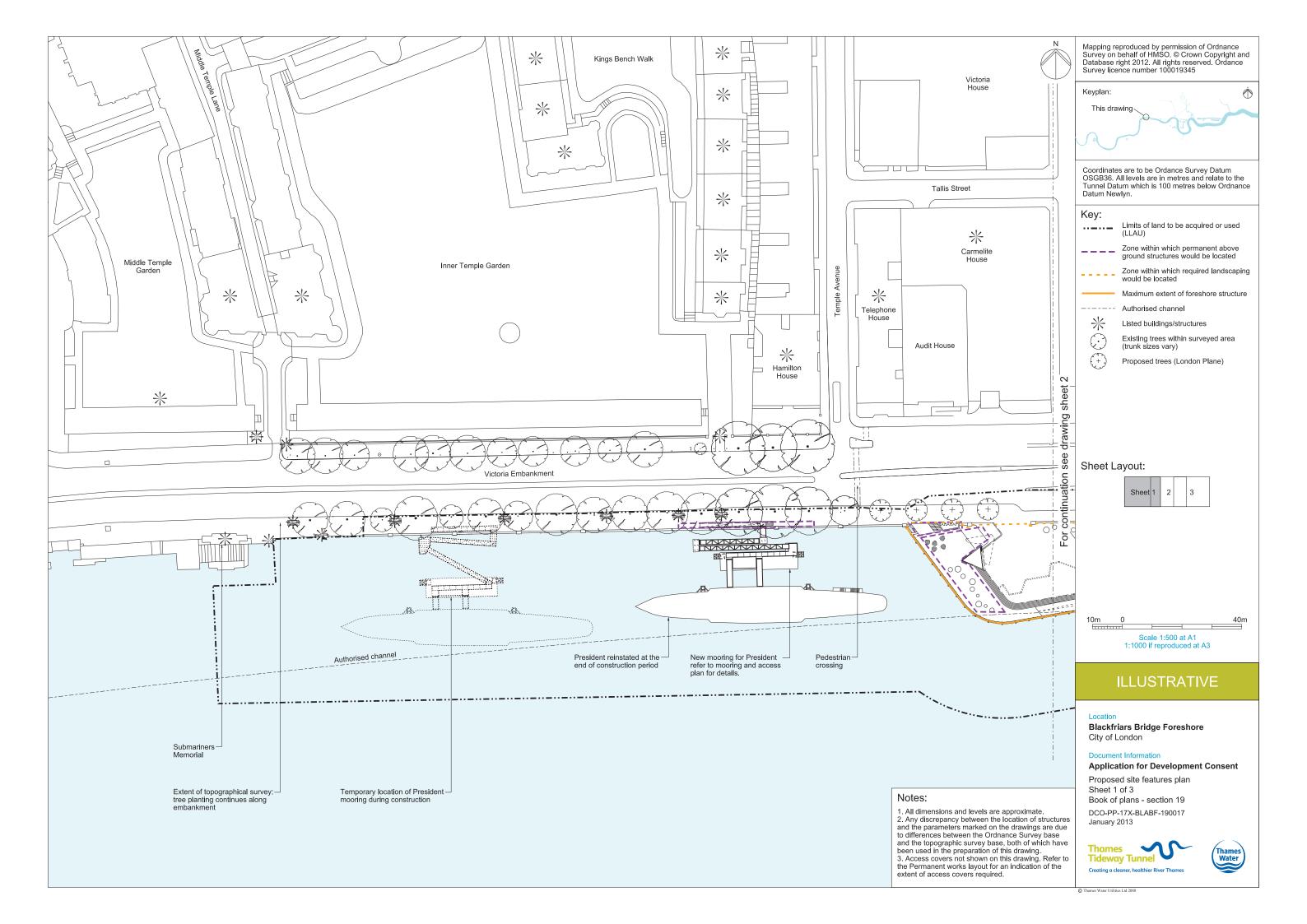


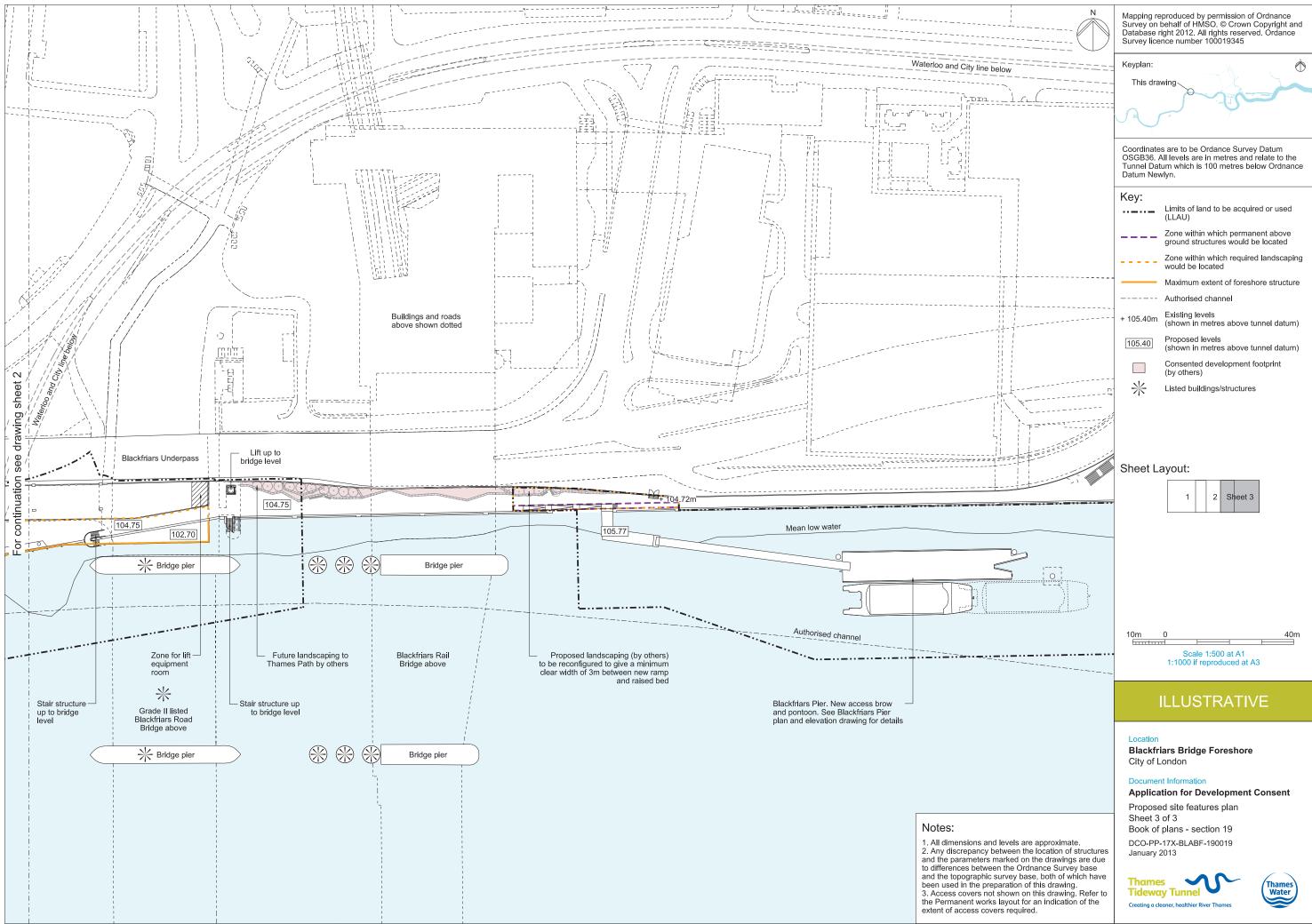


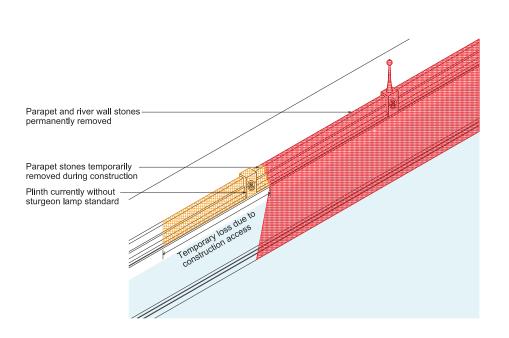






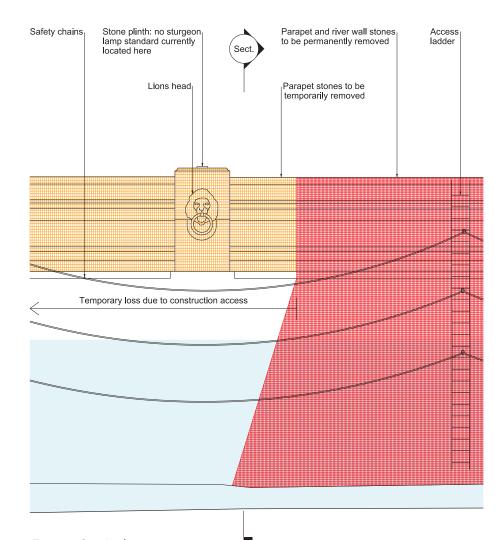






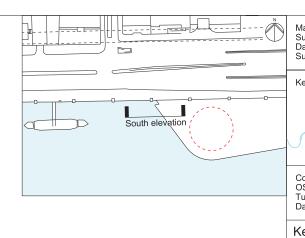
Existing isometric

NTS



Existing South elevation

Scale 1:50



Parapet wall and plinth to be permanently removed. Sturgeon lamp standard and lions head to be relocated Blackfriars Millenium Pump house Pier to be relocated adjacent to new stairs east of Blackfriars road bridge 6 No. sturgeon lamp standards plinths and lions heads and parapet wall to be temporarily Ramp up to embankment level 105.41m ATD — — - 2020 flood defence level Parapet stones to be temporarily removed. Refer to elevation 103.85m ATD ----Mean high water springs 102.75m ATD ----Mean high water neaps

98.15m ATD ----Mean low water neaps

97.35m ATD ---

Scale 1:50

Mean low water springs

Existing detail section

Mapping reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and Database right 2012. All rights reserved. Ordance Survey licence number 100019345

Keyplan:

This drawing

Coordinates are to be Ordance Survey Datum OSGB36. All levels are in metres and relate to the Tunnel Datum which is 100 metres below Ordnance

Key:

Maximum temporary extent of loss of listed buildings / structures



Maximum permanent extent of loss of listed buildings / structures

Notes:

- 1. All dimensions and levels are approximate.
- Drawing is based on as-constructed drawings and topographical survey and not on heritage survey.



FOR INFORMATION

Blackfriars Bridge Foreshore City of London

Document Information

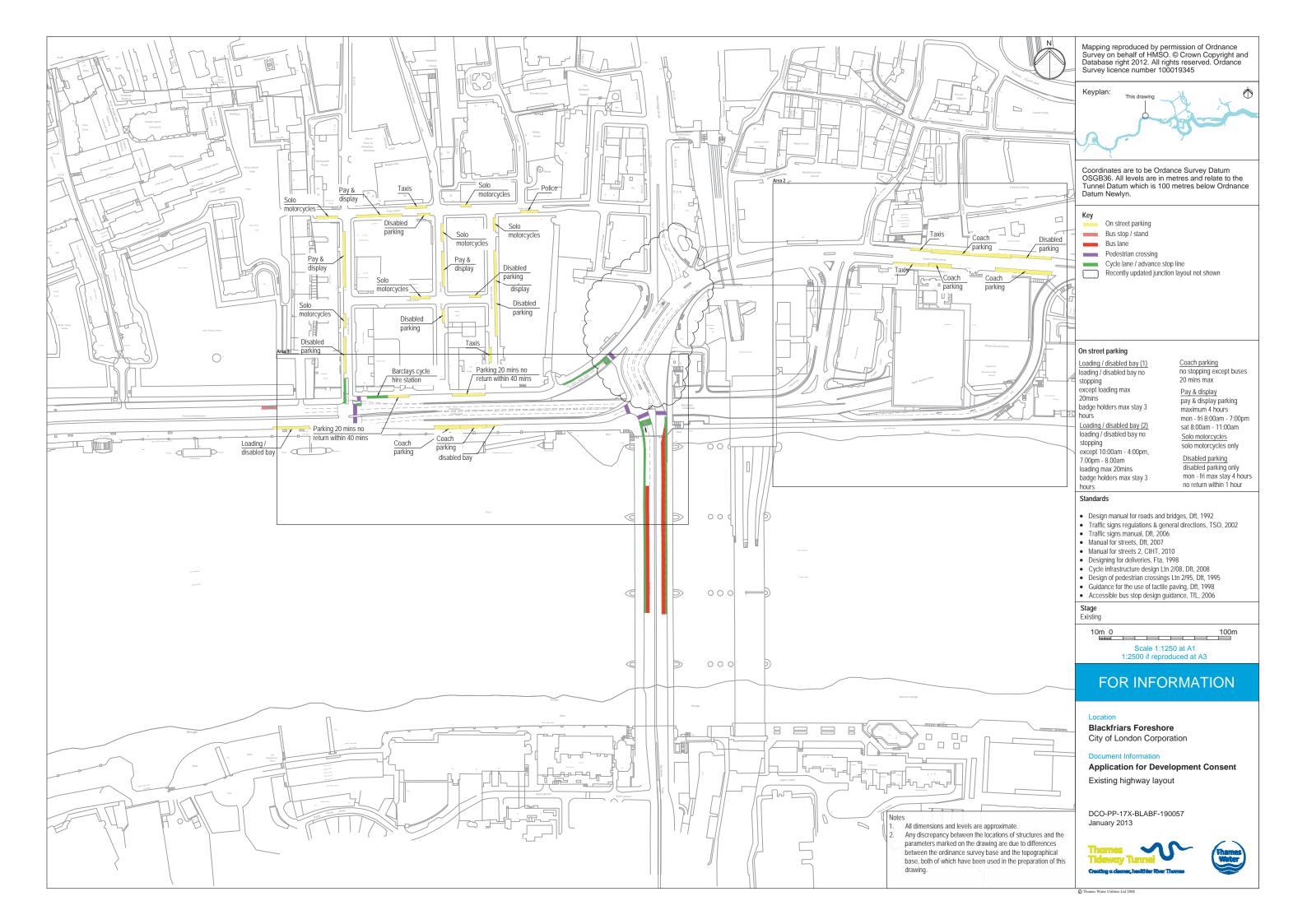
Application for Development Consent

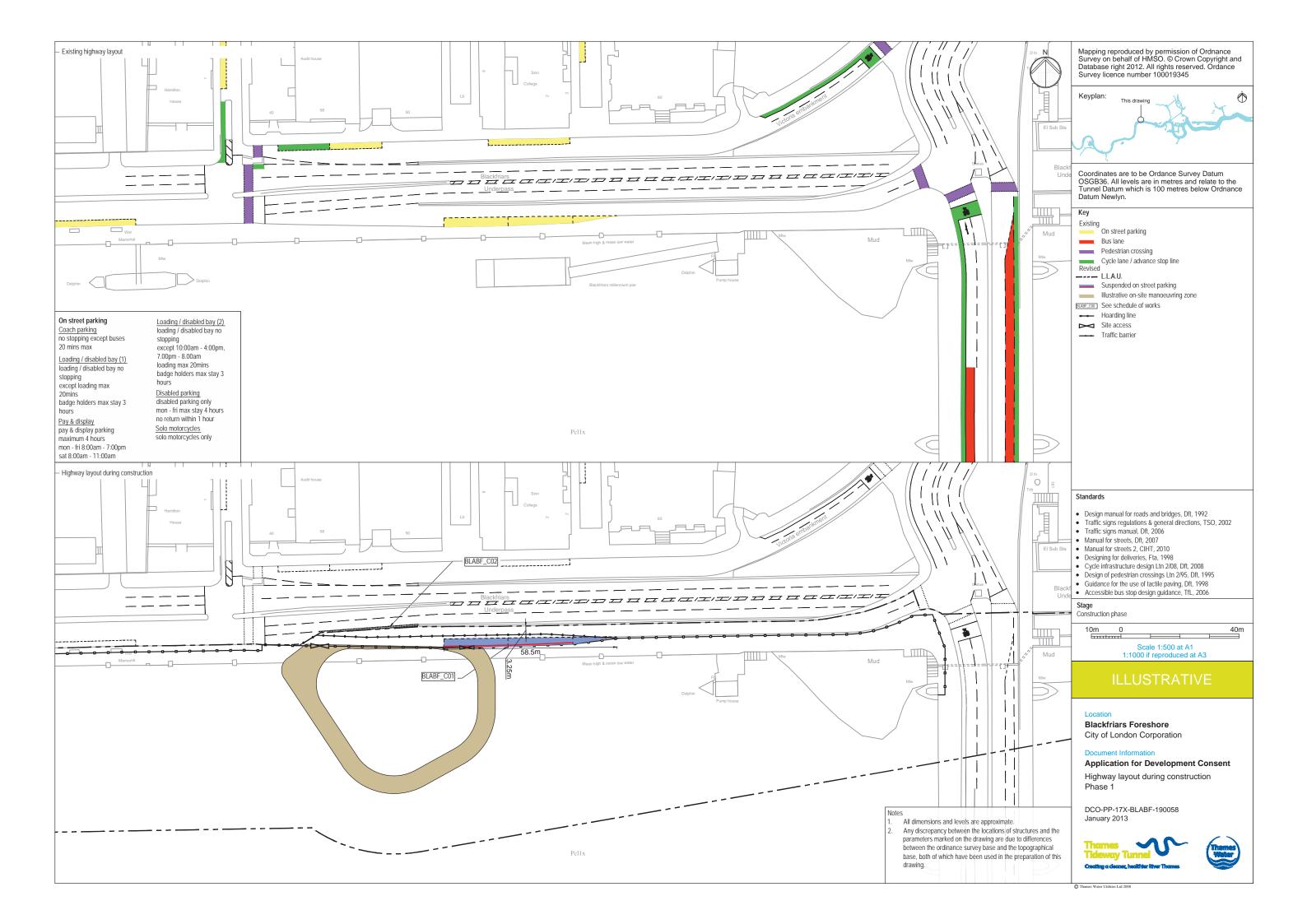
As existing Listed structure interface - river wall Book of plans - section 19

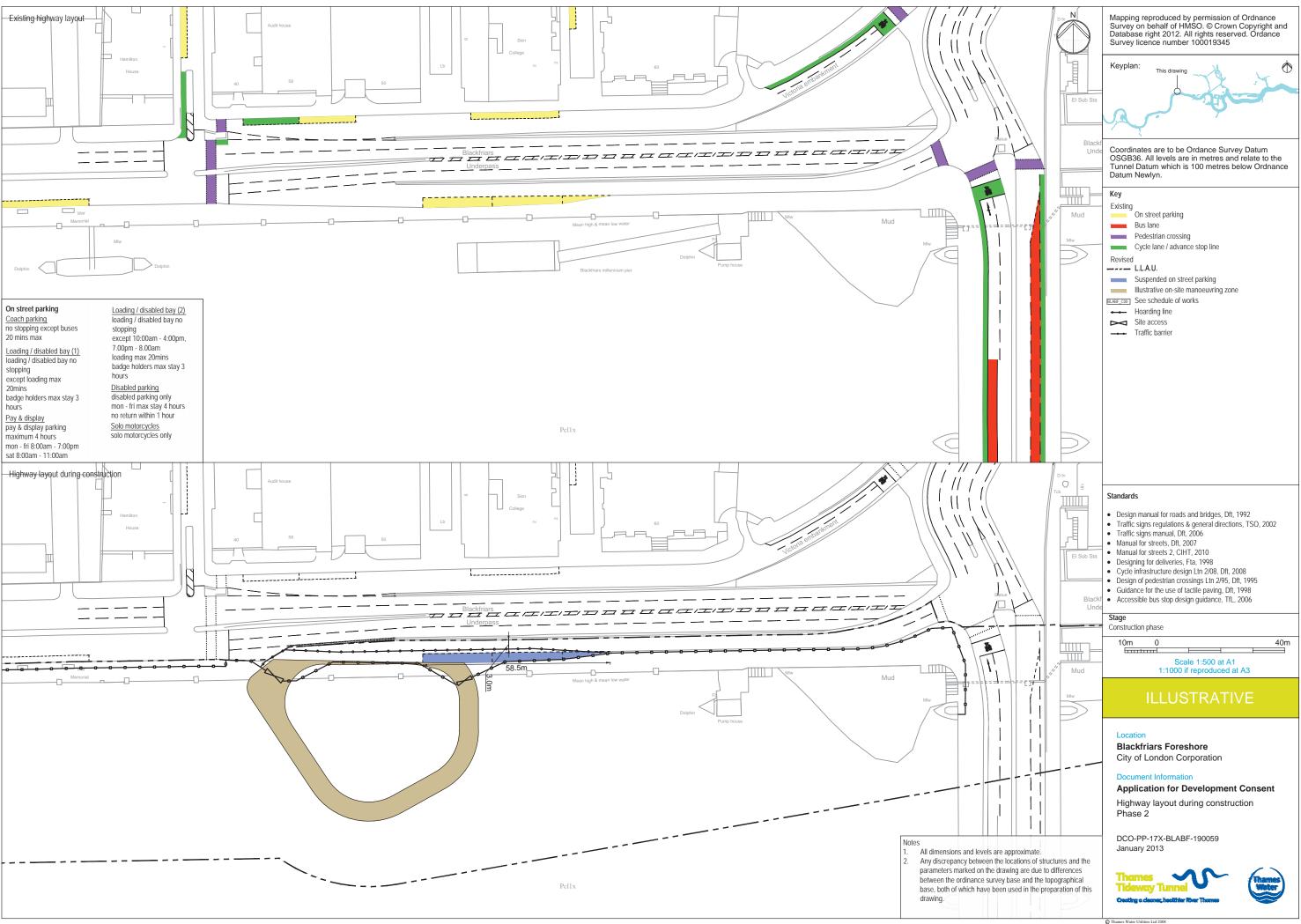
DCO-PP-17X-BLABF-190039 January 2013

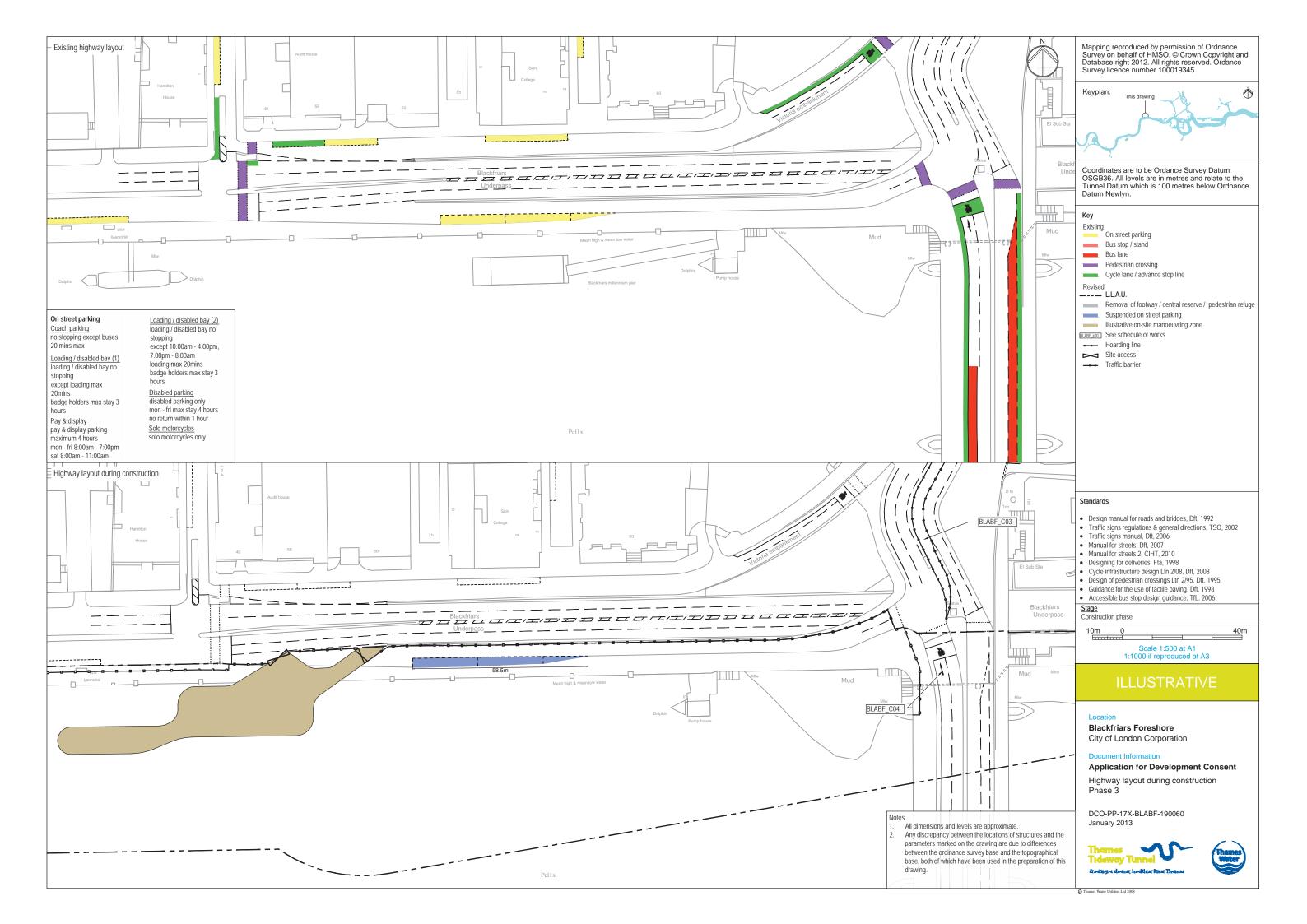


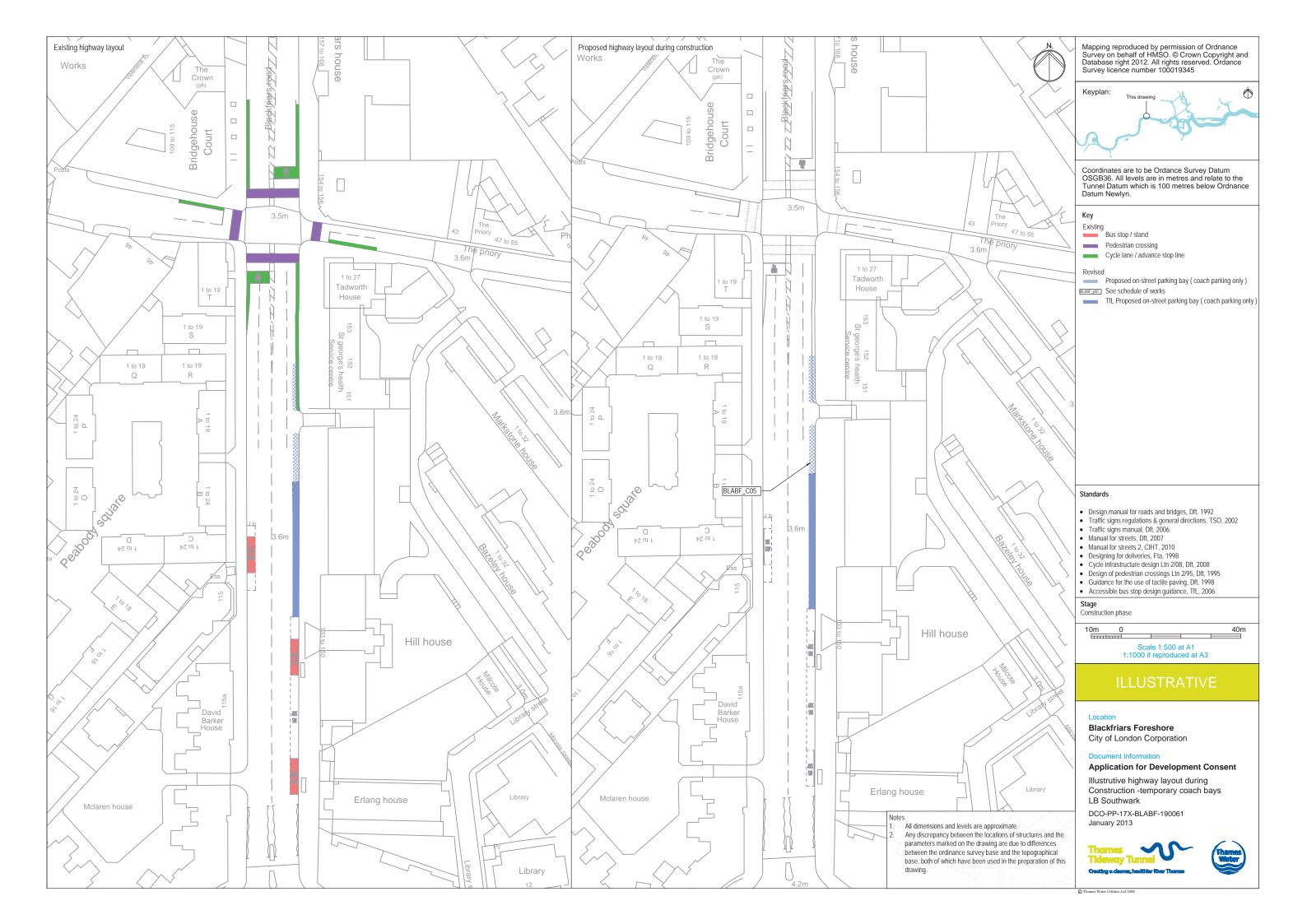


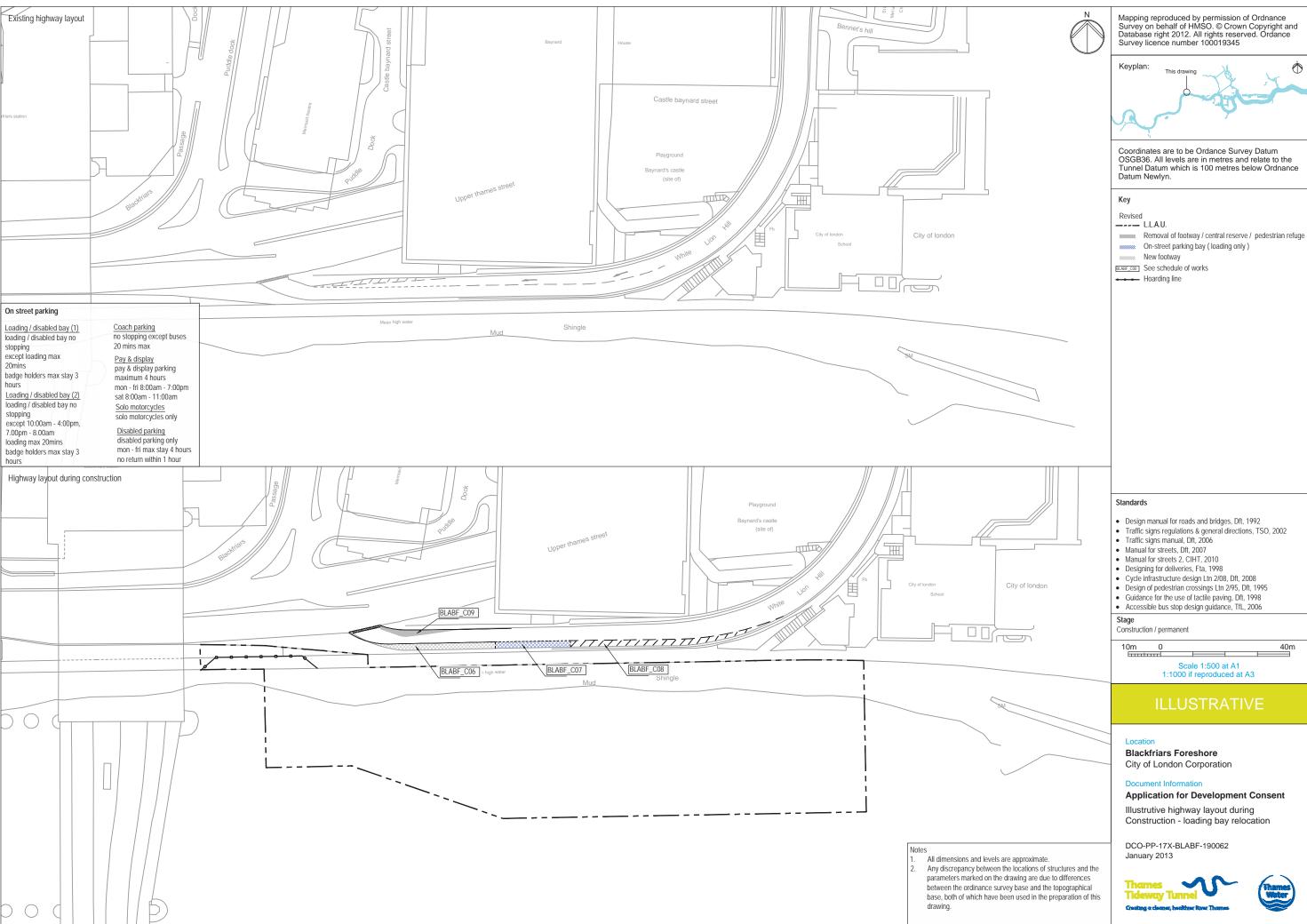


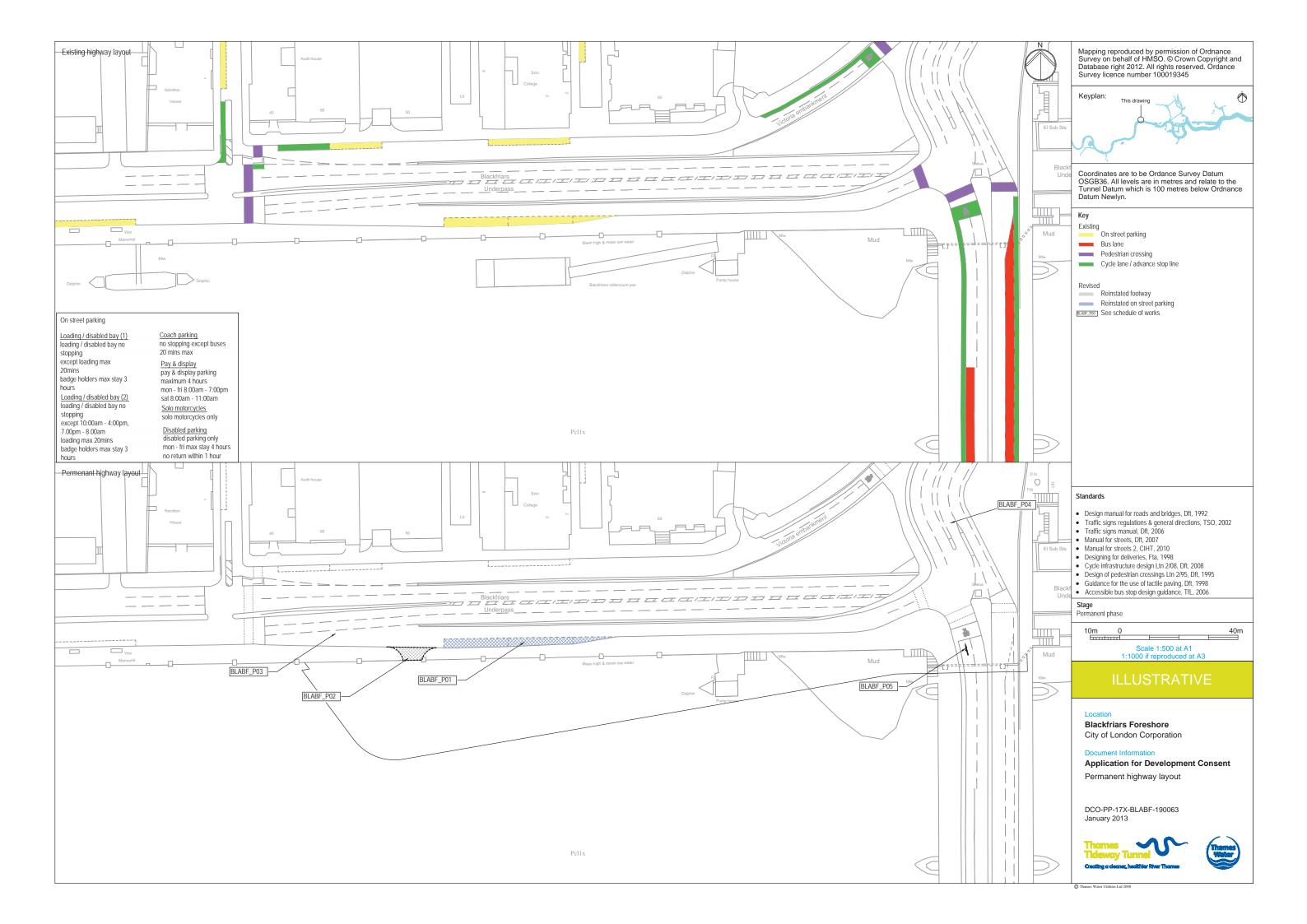












Copyright notice

Copyright © Thames Water Utilities Limited January 2013. All rights reserved.

Any plans, drawings, designs and materials (materials) submitted by Thames Water Utilities Limited (Thames Water) as part of this application for Development Consent to the Planning Inspectorate are protected by copyright. You may only use this material (including making copies of it) in order to (a) inspect those plans, drawings, designs and materials at a more convenient time or place; or (b) to facilitate the exercise of a right to participate in the pre-examination or examination stages of the application which is available under the Planning Act 2008 and related regulations. Use for any other purpose is prohibited and further copies must not be made without the prior written consent of Thames Water.

Thames Water Utilities Limited

Clearwater Court, Vastern Road, Reading RG1 8DB

The Thames Water logo and Thames Tideway Tunnel logo are © Thames Water Utilities Limited. All rights reserved.

