London City Airport
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# City Airport Development Programme (CADP1)

## Condition 65: Crossrail Method Statement


ATKINS

February 2018

# Table of contents

# 1. Introduction

1.1. The City Airport Development Programme (CADP1) planning application (13/01228/FUL) was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March/April 2016.

1.2. Condition 65 requires that:

*a) No Phase of the Development shall take place until a method statement to demonstrate and ensure that Crossrail structures and tunnels are not impeded by the relevant Phase of Development has been submitted to and approved in writing by the Local Planning Authority.*

*b) The approved method statement shall be implemented on Commencement of Development of the relevant Phase.*

*Reason: To ensure there is no conflict in terms of safeguarding or safety with Crossrail*

1.3. The Airport submitted a Construction Phasing Plan to LBN pursuant to Condition 4 of the CADP1 permission in February 2017. It was proposed to build out CADP1 as a single uninterrupted period of construction over 5 years split into two distinct phases. Consistent with terminology used in the UES, the two phases were referred to as the 'Interim Works' and the 'Completed Works' – each delivering different parts of the CADP infrastructure. The Interim Works would be delivered first and would be immediately followed by the Completed Works. This Construction Phasing Plan was approved by LBN in March 2017 (ref. 17/00500/AOD) and the details pursuant to Condition 65 for the 'Interim Works' were also approved in May 2017 (ref. 17/00232/AOD).

1.4. Ahead of the commencement of construction of CADP1, the Airport's Delivery Partner have identified a number of programme efficiencies and improvements to the 5 year build which would reduce the duration of the construction programme by 14 months to 3 years and 10 months and deliver the full CADP1 infrastructure in an accelerated single phase (2017 Accelerated Construction Plan. The new 2017 Accelerated Construction Plan has been submitted to London Borough of Newham pursuant to Condition 4 under separate cover.

1.5. This submission seeks approval of the details pursuant to Condition 65 for all of the approved CADP1 infrastructure. The substance of the document has not changed from that approved in May 2017 and as agreed with Crossrail in January 2017. It confirms that there will be 'no significant impact on Crossrail' and that the information provided within is sufficient to discharge the condition accordingly.

1.6. At the request of LBN Officers, new text added to the previously approved details (17/00232/AOD).) has been distinguished in blue text in this document.

# 2. Scope

2.1. Following initial assessment of the distance between the CADP1 development works area and Crossrail alignment, which included initial discussions with Crossrail on 12th September 2016, it is deemed unnecessary for a detailed impact assessment to be undertaken to demonstrate that the proposed CADP1 works will not conflict, in terms of safeguarding or safety, with Crossrail.

2.2. This document will seek to satisfy the requirements of Condition 65 and demonstrate to Crossrail that CADP1 works will not create conflict, in terms of safeguarding or safety, through presentation of the following:

- A plan showing the distance between the areas of construction and the Crossrail alignment (see Plan at Appendix A);
- An illustrative section of adjacent Crossrail structure;
- An overview of the type of works to be undertaken; and
- A logistics and route plan.

# 3. Site Location

3.1. The CADP1 site boundary encompasses the entire airport as illustrated in Appendix A.

3.2. The Crossrail alignment between Crossrail's Custom House Station and Woolwich Station runs in a tunnel under the west end of the airport then emerges from a tunnel portal adjacent to the A112 (Connaught Road) junction with Hartmann Road. The Crossrail route then continues alongside the southern boundary of Connaught Road/Albert Road until entering the tunnel portal at the Albert Road/Fernhill Street junction before going under the River Thames to the south. Typical sections of the areas in close vicinity to the airport site are included in Appendix B.

# 4. Construction Method

4.1. The landside and airside works will involve the installation of underground services within the airport boundary, with the deepest ground penetrations occurring during installation of the piling foundations for the proposed buildings and suspended deck over the existing King George V dock:

<u>Apron Deck and East Terminal Extension Deck</u>

4.2. It is currently proposed that a "vibrodriver casing and rotary bore" method is used to install 1200mm diameter piles, generally to an approximate toe level of -15.0mOD, in the King George V dock bed to support the suspended decks (circa 190m from Crossrail). Some piles may have a deeper toe level at -19.0m but the exact depth of all piles will be confirmed by the piling contractor.

4.3. The vibrations associated with the vibrodriver casing and rotary bore method are likely to be localised given (a) the sediments should be easily disturbed, and (b) the vibrations are usually high frequency, low amplitude. Moreover, at a distance of 190m it is highly unlikely that there will be any measureable impact on any Crossrail assets requiring detailed assessment.

4.4. For the majority of the section where over-dock works are proposed Crossrail is running on the surface over the former North London Line, only towards the eastern end of the over-dock works does Crossrail dip below ground as it dives down under the River Thames. With reference to Crossrail's own "Guidance for Developers" the distance (proximity) at which Crossrail would object to percussive or vibration inducing piling methods is 15m - the proposed works are at least 12x this distance.

<u>West Terminal Extension; Western Energy Centre & other Dockside Buildings</u>

4.5. The proposed landside buildings are also designed to be supported by piled foundations, which will be installed using an auger piling method. The Western Terminal Extension (circa 200m from Crossrail) is proposed to have 600mm piles that are expected to be in the order of 20m deep, though the exact depth will be confirmed by the piling contractor. The Western Energy Centre (circa 230m from Crossrail) will include a 5m deep basement structure that will require minor

dewatering during its construction. The dewatering required for the Western Energy Centre basement should also not be an issue to Crossrail given the distance and permeable nature of the underlying strata.

4.6. Auger piling methods used for the WTE; WEC; East Energy Centre and the Decked Car Park. All foundations will be constructed using replacement piling techniques and are located >150m from Crossrail assets and therefore are unlikely to pose any risk to existing structures.

# 5. Logistics and Delivery Routes

5.1. Illustrative routes for deliveries are shown on Appendix C.

5.2. In terms of access, the following routes have been identified:

- Route 1 – Barge Access, via King George V Dock;
- Route 2 – Airside Site Access, via the A1020 Connaught Bridge Road and the A112 Connaught Road;
- Route 3 – Compound and Landside Site Access, via the A117 Woolwich Manor Way or Albert Road; and
- Route 4 – Secondary Compound and Landside Site Access, via the A1020 Connaught Bridge Road, the A112 Connaught Road, Camel Road and Hartmann Road. The secondary route is intended to be used only under exceptional or emergency situations.

5.3. In general, it is proposed that the larger plant used for the construction of the deck is delivered to the site via barge in line with Condition 60 and that barges will also be used to remove waste material from the site. Deliveries and the larger plant used for the landside construction are proposed to enter the site from the East via Woolwich Manor Way

5.4. The appointed contractors will ensure, in consultation with LBN, that site delivery access and egress is properly signposted and that any diversionary routes do not cause undue disturbance to residential properties. Site road access by large or heavy loads to the landside compound and material storage area will be restricted to agreed times.

# 6. Conclusions

6.1. After assessment of the distances between the areas of works for CADP1 and the adjacent Crossrail infrastructure, as well as reference to Crossrail's own "Guidance for Developers", the works are deemed to be a sufficient distance away from Crossrail to not cause any impact to Crossrail structures.

6.2. In addition, Crossrail have confirmed that the information provided in the Crossrail Method Statement is sufficient for their purposes to discharge Condition 65 given that the CADP1 works will have no significant impact on its infrastructure (see correspondence in Appendix D)

# Appendices

# Appendix A.

## CADP1 Layout and Crossrail Alignment

Millimetres 0 10 100

DO NOT SCALE

SEE SECTION 20-20 IN APPENDIX C FOR TYPICAL CROSS SECTION

NEW WESTERN TERMINAL EXTENSION

C TAXILANE

NEW RUNWAY LINK JULIET

NEW APRON DECK

EDGE PROTECTION BARRIER

NOISE BARRIER

NEW WESTERN ENERGY CENTRE

NEW EAST TERMINAL EXTENSION DECK

232

202

193

105

SEE SECTION 22-22 IN APPENDIX C FOR TYPICAL CROSS SECTION

0 50 100 150 200 250m

SCALE 1:2500

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

CONSTRUCTION

MAINTENANCE/CLEANING

DECOMMISSIONING/DEMOLITION

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

## NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. AIRCRAFT OUTLINES AND STAND MARKINGS ARE SHOWN FOR ILLUSTRATION PURPOSES ONLY.
3. THIS DRAWING IS BASED UPON TPS DRAWING A400-TPS-C-00-L00-DR-GA-100-200-Rev03
4. CROSSRAIL ALIGNMENT SHOWN IS INDICATIVE

## LEGEND

- CROSSRAIL ALIGNMENT (TUNNEL)
- CROSSRAIL ALIGNMENT (OPEN)
- LONDON CITY AIRPORT BOUNDARY
- 'CADP1' - INTERIM WORKS

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|

Drawing Status: FOR INFORMATION

Suitability: S2

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Tel:
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Client: London City Airport Get closer.

Project Title: LCY CADP1

Drawing Title: CADP1 INTERIM WORKS LAYOUT & CROSSRAIL ALIGNMENT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| 1:2500@A1 | AB | RJM | AB | KR |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/10/2016 | 10/10/2016 | 10/10/2016 | 10/10/2016 |

Drawing Number: Proj.Code Orig Dis Zone Level Type Sub Series / Num Rev Status

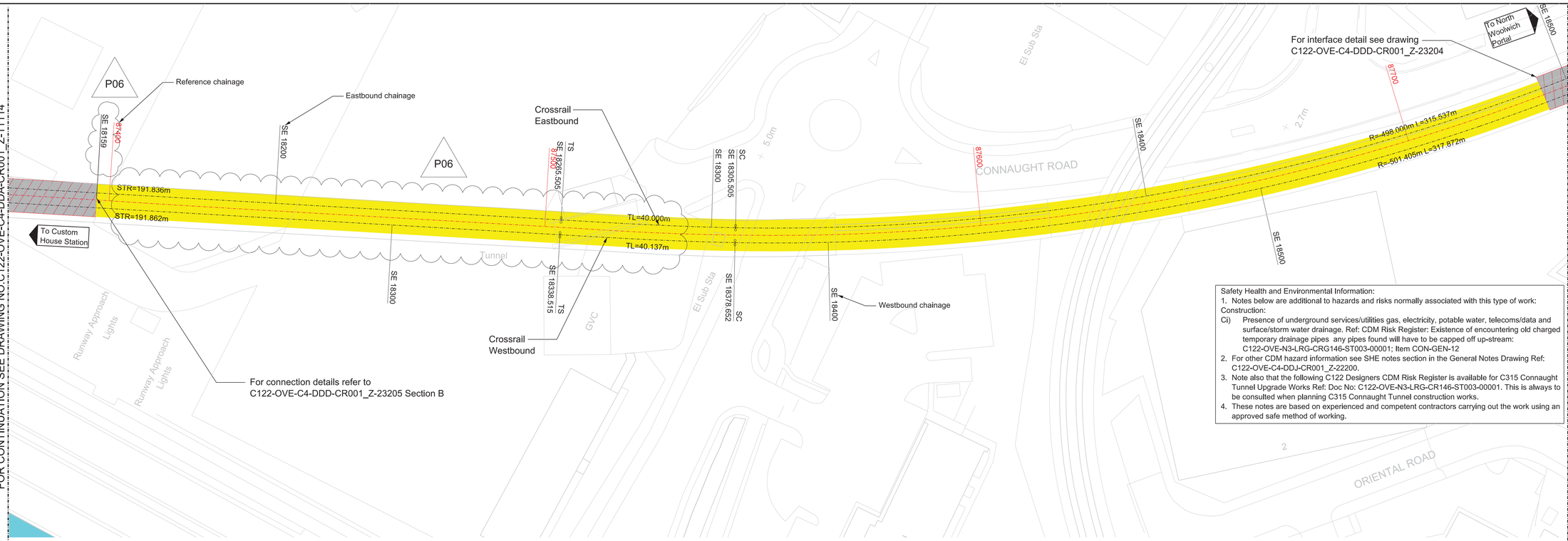
APPENDIX A

# Appendix B.

## Crossrail illustrative Sections

FOR CONTINUATION SEE DRAWING NO.C122-OVE-C4-DDA-CR001_Z-11114

FOR CONTINUATION SEE DRAWING NO.C122-OVE-C4-DDA-CR001_Z-11116



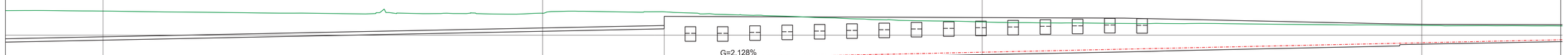

Safety Health and Environmental Information:

1. Notes below are additional to hazards and risks normally associated with this type of work:

Construction:

Ci) Presence of underground services/utilities gas, electricity, potable water, telecoms/data and surface/storm water drainage. Ref: CDM Risk Register: Existence of encountering old charged temporary drainage pipes any pipes found will have to be capped off up-stream: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-12

2. For other CDM hazard information see SHE notes section in the General Notes Drawing Ref: C122-OVE-C4-DDJ-CR001_Z-22200.
3. Note also that the following C122 Designers CDM Risk Register is available for C315 Connaught Tunnel Upgrade Works Ref: Doc No: C122-OVE-N3-LRG-CR146-ST003-00001. This is always to be consulted when planning C315 Connaught Tunnel construction works.
4. These notes are based on experienced and competent contractors carrying out the work using an approved safe method of working.




| EASTBOUND CHAINAGE | SE 18180 | SE 18190 | SE 18200 | SE 18210 | SE 18220 | SE 18230 | SE 18240 | SE 18250 | SE 18260 | SE 18270 | SE 18280 | SE 18290 | SE 18300 | SE 18310 | SE 18320 | SE 18330 | SE 18340 | SE 18350 | SE 18360 | SE 18370 | SE 18380 | SE 18390 | SE 18400 | SE 18410 | SE 18420 | SE 18430 | SE 18440 | SE 18450 | SE 18460 | SE 18470 | SE 18480 | SE 18490 | SE 18500 | SE 18510 | SE 18520 | SE 18530 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROPOSED EASTBOUND TRACK CENTRELINE LEVEL | 91.725 | 92.005 | 92.283 | 92.533 | 92.743 | 92.913 | 93.066 | 93.220 | 93.373 | 93.526 | 93.680 | 93.840 | 94.037 | 94.243 | 94.455 | 94.668 | 94.881 | 95.094 | 95.307 | 95.520 | 95.732 | 95.945 | 96.158 | 96.371 | 96.584 | 96.797 | 97.009 | 97.222 | 97.435 | 97.648 | 97.861 | 98.073 | 98.286 | 98.499 | 98.712 | 98.925 |
| EXISTING GROUND LEVEL | 105.582 | 105.221 | 105.441 | 105.269 | 105.188 | 105.187 | 104.878 | 104.910 | 104.904 | 104.809 | 104.878 | 104.757 | 104.444 | 105.384 | 105.203 | 105.117 | 104.691 | 104.428 | 104.082 | 103.704 | 103.397 | 103.196 | 102.975 | 102.831 | 102.773 | 102.661 | 102.659 | 102.545 | 102.533 | 102.431 | 102.342 | 102.310 | 102.210 | 102.135 | 102.134 | 102.105 |
| TOP OF TRACK SUPPORTING SLAB LEVEL (SSL) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 97.722 | 97.935 | 98.148 | 98.362 |
| STRUCTURAL EXCAVATION LEVEL (SEL) | 91.270 | 91.550 | 91.829 | 92.078 | 92.288 | 92.458 | 92.611 | 92.450 | 92.652 | 92.868 | 93.067 | 93.266 | 93.466 | 93.671 | 93.865 | 94.098 | 94.311 | 94.525 | 94.738 | 94.951 | 95.164 | 95.378 | 95.591 | 95.804 | 96.018 | 96.231 | 96.444 | 96.657 | 96.870 | 97.084 | 97.292 | 97.505 | | | | |
| STRUCTURAL FILL LEVEL (SFL) | | | | | | | 92.611 | 92.765 | 92.917 | 93.071 | 93.225 | 93.394 | 93.582 | 93.671 | | | | | | | | | | | | | | | | | | | | | | | | |

P06

| Rev. | PTR Number (COT-CRL RFI-C315) |
|---|---|
| C03 | |
| C02 | |
| C01 | |

| Rev. | Date | Description | By | Chkd | App | Auth |
|---|---|---|---|---|---|---|
| P01 | 28/07/2010 | Issued For Tender Purposes | SD | AC | RM | |
| P02 | 24/08/2010 | Issued for Tender Purposes | AH | KR | RM | |
| P03 | 10/11/2011 | Issued for Construction | SD | JC | RM | - |
| C01 | 15/11/2011 | Issued as Fit for construction | SD | JC | RM | IT |
| P04 | 05/03/2012 | --- | SD | JC | RM | - |
| C02 | 13/03/2012 | Issued as Fit for construction | SD | JC | RM | IT |
| P05 | 07/02/2013 | Revised to suit Alignment U PAC 102 changes. | GP | JC | JW | - |
| P06 | 01/03/2013 | Issued as Fit for Construction | GP | GP | RM | - |

Notes

1. Levels are metres above tunnel datum (mATD).
2. This drawing is based on the Crossrail Alignment Revision U + PAC 102.
3. Dimensions are not to be scaled from this drawing.
4. Locations and levels shown for existing structures/ground levels are for information only and shall be confirmed by the Contractor on site.
5. For Key Location Plan refer to Drg. C122 OVE-C4 DDA-CR001_Z-22000.
6. Levels given for the track supporting slab (SSL) and SEL apply the full width of the slab.

Key

- Extent of new track supporting slab (SSL)
- Existing slab excavated to new levels (SEL)
- Track centreline level (as shown on elevation)
- Ground level (as shown on elevation)

10m 0 10m 20m 30m 40m 50m
1:500


Crossrail Limited
25 Canada Square
Canary Wharf
London
E14 5LQ




www.crossrail.co.uk

Contract : Bored Tunnels (Alignment and Track)

Originator : Ove Arup & Partners Limited

Location : Crossrail General

Title : Connaught Tunnel and Surface Rail Structural Slab Levels Sheet 4 of 6 C315

By : G.POTTER
Chk : G.POTTER
App : R.MCCRAE
Auth : ---

Scale : 1:500@ A1

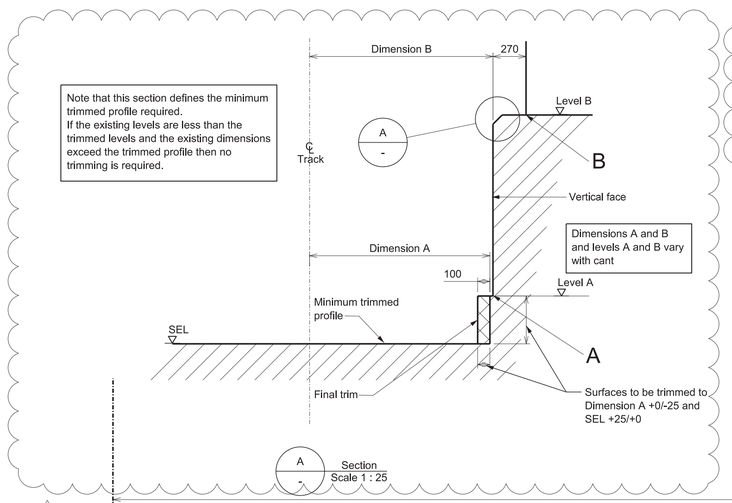
Drawing and CAD file No : C122-OVE-C4-DDA-CR001_Z-11115

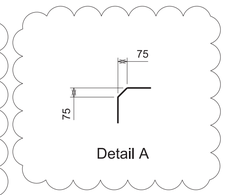
Rev : P06

Suitability : S4

RESTRICTED

Fit for authorisation

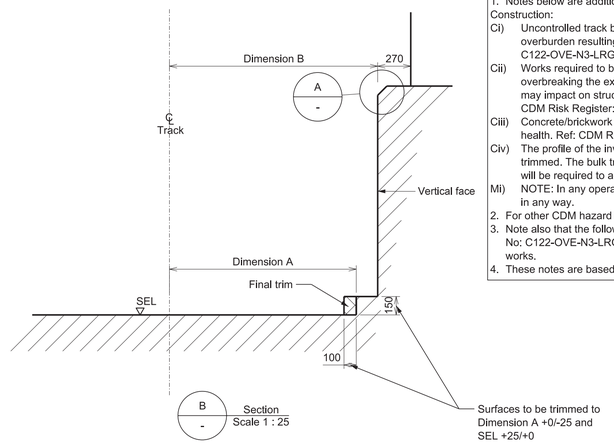



P03

SE 18195

SE 18200




Safety Health and Environmental Information:

1. Notes below are additional to hazards and risks normally associated with this type of work:

Construction:

CI) Uncontrolled track ballast removal - Risks of undermining during excavations for removal leading to insufficient/unstable overburden resulting in structural failure/collapse and potential for crushing/partial engulfment Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-019.

Cii) Works required to breakout/excavate to extend/alter the existing tunnel drainage invert - design checks indicate tolerances for overbreaking the existing single arch tunnel invert cannot exceed 50mm at various section locations. Exceeding this tolerance may impact on structural stability of theexisting tunnel walls, with potential for structural collapse and crushing/inundation. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-LOC-13a.

Ciii) Concrete/brickwork trimming, etc potential for dust (including respirable silica (RCS)) noise and vibration exposure and harm to health. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-016.

Civ) The profile of the invert corner between chainages SE 18159 and SE 18195 are critical to structural integrity and must not be over trimmed. The bulk trimming is to be carried out maintaining a minimum of 100mm of brickwork adjacent to the corner, a final trim will be required to achieve final profile.

Mi) NOTE: In any operational maintenance modification or civil works the haunch noted in Civ) must not be compromised or reduced in any way.

2. For other CDM hazard information see SHE notes section in the General Notes Drawing Ref: C122-OVE-C4-DDJ-CR001_Z-22200.
3. Note also that the following C122 Designers CDM Risk Register is available for C315 Connaught Tunnel Upgrade Works Ref: Doc No: C122-OVE-N3-LRG-CR146-ST003-00001. This is always to be consulted when planning C315 Connaught Tunnel construction works.
4. These notes are based on experienced and competent contractors carrying out the works using an approved safe method of working.

P03

EB 0mm cant
Level B = invert SEL + 1.295m maximum
Level A = invert SEL + 0.140m maximum

FOR CONTINUATION SEE DRAWING NO.C122-OVE- C4-DDA-CR001_Z-23711

20
22709

X=92050.434
Y=34955.712

A = 1500
B = 1550

A = 1525
B = 1550

-
A

B
23713

FOR CONTINUATION SEE DRAWING NO.C122-OVE- C4-DDA-CR001_Z-23713

A = 1500
B = 1700

A = 1700
B = 1700

P04

Section B-B applied to chainages SE 18159 to SE 18195

B
-

A
-

Dimensions A and B applied to chainages SE 18159 to SE 18195 are CRITICAL TO STRUCTURAL INTEGRITY and must not be over trimmed.
Section A allows for high tolerance trimming.
100mm diameter circular not degradable yellow plastic warning discs are to be fixed to the trimmed vertical face of the wall and the trimmed invert at not less than 1m centres staggered between SE 18159 to SE 18195.
The discs are to be installed with a clear gap of not more than 50mm from the invert/wall corner.
The discs are to be printed with the words DO NOT REMOVE STRUCTURE BELOW.
The printing shall be in non-removable black.
The discs shall be fixed into the brickwork using screws and plugs.
A sample of the disc shall be submitted to the Project Manager for approval prior to bulk manufacturing.

WB 0mm cant
Level B = invert SEL + 1.295m maximum
Level A = invert SEL + 0.140m maximum

SE 18300

Key:

Concrete infill over previously trimmed invert

Partial removal of existing invert

| | |
|---|---|
| | |
| C02 | 181 and 235 |
| C01 | |
| Rev. | PTR Number (COT-CRL RFI-C315) |

| Rev. | Date | Description | By | Chkd | App | Auth |
|---|---|---|---|---|---|---|
| P01 | 05/03/2012 | First Issue | SD | JC | RM | |
| C01 | 13/03/2012 | Issued as Fit for construction | SD | JC | RM | |
| P02 | 07/02/2013 | Revised to suit Alignment U PAC 102 changes. Incorporating PTR's 181, 235 | GP | JC | JW | - |
| P03 | 01/03/2013 | Revised to suit Alignment U PAC 102 changes. Incorporating PTR's 181 and 235 | GP | GP | RM | - |
| P04 | 19/03/2013 | Corrected to suit cable trough requirements | GP | JC | SR | - |

Notes

1. Levels are metres above tunnel datum (mATD).
2. The RIBA F design is based on the Crossrail Alignment U + PAC 102
3. Laser scan survey of approach ramps and tunnel section carried out in June 2007 (unknown reference)
4. Swept envelope is based on the Crossrail reference train and the standard locomotive, W6a and W8 gauges.
5. Details of OHLE provided by FDC 124 should be considered as indicative only.
6. Dimensions are in millimeters unless noted otherwise.
7. Locations and levels shown for existing structures/ground levels are for information only and shall be confirmed by the Contractor on site.
8. For Structural Slab levels (S.S.L.) and Structural Excavation Levels (S.E.L.) refer to Drgs. C122-OVE-C4-DDA-CR001_Z-11110, 11113, 11114. 11115.
9. For general notes refer to drawing C122-OVE-C4-DDJ-CR001_Z-22200
10. For section locations refer to drawing C122-OVE-C4-DDB-CR001_Z-22217.
11. For reinstatement of existing invert refer to Detail A on drawing C122-OVE-C4-DDA-CR001_Z-23701.

2m 0 2m 4m 6m 8m 10m
1:100

Crossrail Limited
25 Canada Square
Canary Wharf
London
E14 5LQ



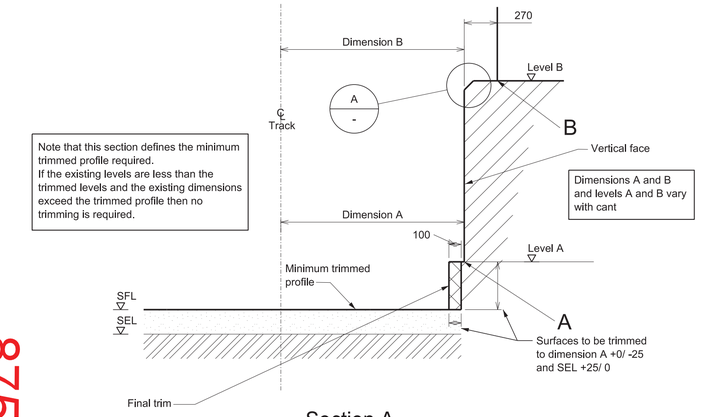
www.crossrail.co.uk

Contract : Bored Tunnels (Alignment and Track)
Originator : Ove Arup & Partners Limited
Location : Crossrail General
Title : Connaught Tunnel
General Arrangement Plan
Sheet 11 of 16
C315
By : G.POTTER
Chk : J.CRAFT
App : S.READING
Auth : ---
Scale : 1:100@ A1
Drawing and CAD file No : C122-OVE-C4-DDA-CR001_Z-23712
Rev : P04
Suitability : S4

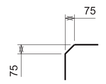
RESTRICTED

Fit for authorisation

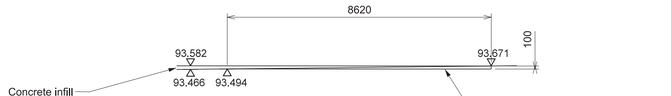
Safety Health and Environmental Information:
1. Notes below are additional to hazards and risks normally associated with this type of work:
Construction:
Ci) Uncontrolled track ballast removal - Risks of undermining during excavations for removal leading to insufficient/unstable overburden resulting in structural failure/collapse and potential for crushing/partial engulfment Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-019.
Cii) Works required to breakout/excavate to extend/alter the existing tunnel drainage invert - design checks indicate tolerances for overbreaking the existing single arch tunnel invert cannot exceed 50mm at various section locations. Exceeding this tolerance may impact on structural stability of the existing tunnel walls, with potential for structural collapse and crushing/inundation. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-LOC-13a.
Ciii) Concrete/brickwork trimming, etc – potential for dust (including respirable silica (RCS)) noise and vibration exposure and harm to health. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-016.
2. For other CDM hazard information see SHE notes section in the General Notes Drawing Ref: C122-OVE-C4-DDJ-CR001_Z-22200.
3. Note also that the following C122 Designers CDM Risk Register is available for C315 Connaught Tunnel Upgrade Works Ref: Doc No: C122-OVE-N3-LRG-CR146-ST003-00001. This is always to be consulted when planning C315 Connaught Tunnel construction works.
4. These notes are based on experienced and competent contractors carrying out the works using an approved safe method of working.



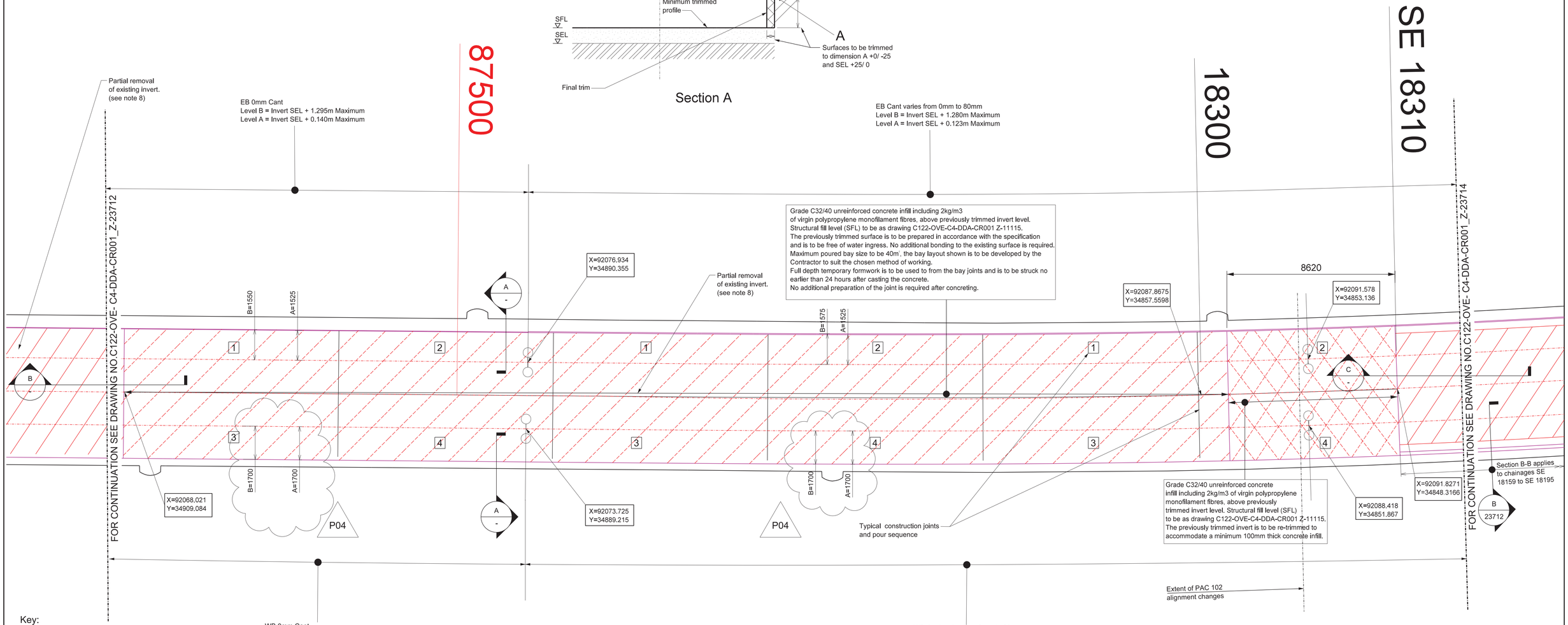

Section A




Detail A




Section C

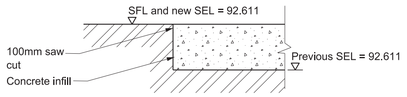



Key:

Concrete infill over previously trimmed invert to be re-trimmed

Concrete infill over previously trimmed invert

Partial removal of existing invert




Section B

| Rev. | PTR Number (COT-CRL RFI-C315) |
|---|---|
| C02 | 181, 208 & 235 |
| C01 | |

| Rev. | Date | Description | By | Chkd | App | Auth |
|---|---|---|---|---|---|---|
| P01 | 05/03/2012 | First Issue | SD | JC | RM | |
| C01 | 13/03/2012 | Issued as Fit for construction | SD | JC | RM | IT |
| P02 | 07/02/2013 | Revised to suit Alignment U PAC 102 incorporating PTR's 181, 208 & 235 | GP | JC | JW | - |
| P03 | 01/03/2013 | Revised to suit Alignment U PAC 102 incorporating PTR's 181, 208 & 235 | GP | GP | RM | - |
| P04 | 19/03/2013 | Corrected to suit cable trough requirements | GP | JC | SR | - |

Notes
1. Levels are metres above tunnel datum (mATD).
2. The RIBA F design is based on the Crossrail Alignment U + PAC 102
3. Laser scan survey of approach ramps and tunnel section carried out in June 2007 (unknown reference)
4. Swept envelope is based on the Crossrail reference train and the standard locomotive, W6a and W8 gauges.
5. Details of OHLE provided by FDC 124 should be considered as indicative only.
6. Dimensions are in millimeters unless noted otherwise.
7. Locations and levels shown for existing structures/ground levels are for information only and shall be confirmed by the Contractor on site.
8. For Structural Slab levels (S.S.L.) and Structural Excavation Levels (S.E.L.) refer to Drgs. C122-OVE-C4-DDA-CR001_Z-11110, 11113, 11114. 11115.
9. For general notes refer to drawing C122-OVE-C4-DDJ-CR001_Z-22200
10. For section locations refer to drawing C122-OVE-C4-DDB-CR001_Z-22217.
11. For reinstatement of existing invert refer to Detail A on drawing C122-OVE-C4-DDA-CR001_Z-23701.
12. For Notes on Existing Embedded Timber Removal refer to C122-OVE-C4-DDJ-CR001 Z-22200.

2m 0 2m 4m 6m 8m 10m
1:100


Crossrail Limited
25 Canada Square
Canary Wharf
London
E14 5LQ


www.crossrail.co.uk

Contract : Bored Tunnels (Alignment and Track)
Originator : Ove Arup & Partners Limited
Location : Crossrail General
Title : Conaught tunnel
General Arrangement Plan
Sheet 12 of 16
C315
By : G.POTTER
Chk : J.CRAFT
App : S.READING
Auth : ---
Scale : 1:100@ A1
Drawing and CAD file No : C122-OVE-C4-DDA-CR001_Z-23713
Rev : P04
Suitability : S4

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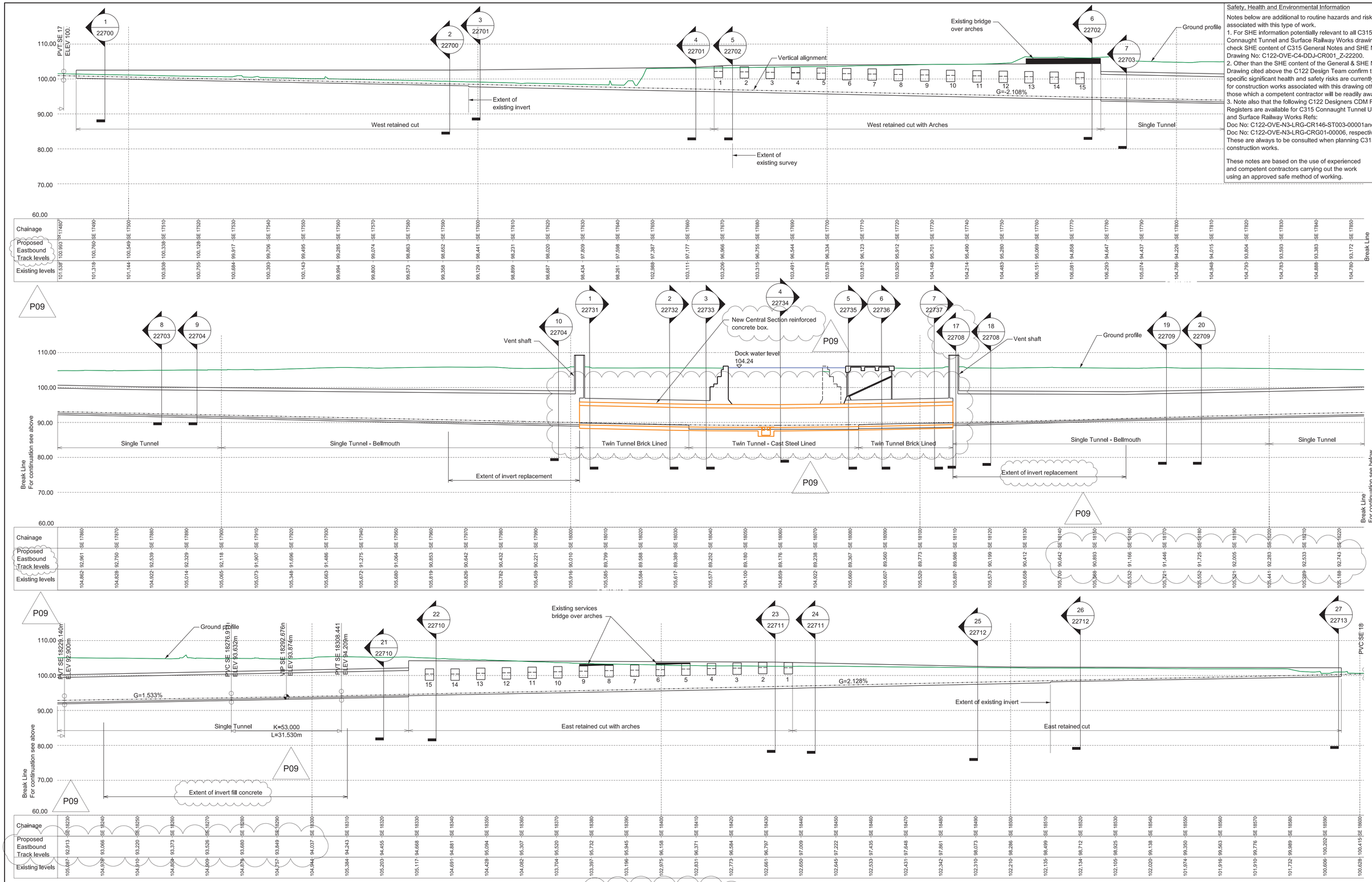
Fit for authorisation
Copy Approved for Design - Created: 19-MAR-2013




## Safety, Health and Environmental Information

Notes below are additional to routine hazards and risks normally associated with this type of work.

1. For SHE information potentially relevant to all C315 Connaught Tunnel and Surface Railway Works drawings always check SHE content of C315 General Notes and SHE Notes Drawing No: C122-OVE-C4-DDJ-CR001_Z-22200.
2. Other than the SHE content of the General & SHE Notes Drawing cited above the C122 Design Team confirm that no specific significant health and safety risks are currently identified for construction works associated with this drawing other than those which a competent contractor will be readily aware.
3. Note also that the following C122 Designers CDM Risk Registers are available for C315 Connaught Tunnel Upgrade and Surface Railway Works Refs:
Doc No: C122-OVE-N3-LRG-CR146-ST003-00001and
Doc No: C122-OVE-N3-LRG-CRG01-00006, respectively.
These are always to be consulted when planning C315 construction works.

These notes are based on the use of experienced and competent contractors carrying out the work using an approved safe method of working.

| Rev. | Date | Description | By | Chkd | App | Auth |
|---|---|---|---|---|---|---|
| P01 | 28/05/2010 | First Issue | SD | KR | RM | |
| P02 | 28/07/2010 | Issued For Tender Purposes | SD | AC | RM | |
| P03 | 24/08/2010 | Issued for Tender Purposes | AH | KR | RM | |
| P04 | 01/10/2010 | --- | AH | KR | RM | |
| P05 | 01/12/2011 | Issued for Construction | SD | JC | RM | |
| C01 | 05/12/2011 | Issued as Fit for construction | SD | JC | RM | IT |
| P06 | 05/03/2012 | --- | SD | JC | RM | - |
| P07 | 12/03/2012 | --- | SD | JC | RM | - |
| C02 | 13/03/2012 | Issued as Fit for construction | SD | JC | RM | IT |
| P08 | 07/02/2013 | Revised to suit Alignment U PAC 102 changes | GP | JC | JW | - |
| P09 | 01/03/2013 | Issued as Fit for Construction | GP | GP | RM | - |

Notes
1. Levels are metres above tunnel datum (mATD).
2. The RIBA F design is based on alignment U + PAC 102.
3. Laser scan survey of approach ramps and tunnel section carried out in June 2007 (unknown reference).
4. For General notes refer to drawing C122-OVE-C4-DDJ-CR001_Z-22200.
5. The proposed levels relate to the track centreline. The applied cant is rotated around this point.

| | |
|---|---|
| C03 | |
| C02 | |
| C01 | |
| Rev. | PTR Number (COT-CRL RFI-C315) |

1:500

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25 Canada Square
Canary Wharf
London
E14 5LQ

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www.crossrail.co.uk

Contract : Bored Tunnels (Alignment and Track)
Originator : Ove Arup & Partners Limited
Location : Crossrail General
Title : Connaught Tunnel Longitudinal Profile
C315
By : G.POTTER
Chk : G.POTTER
App : R.MCCRAE
Auth : ---
Scale : 1:500@ A1
Drawing and CAD file No : C122-OVE-C4-DDB-CR001_Z-22217
Rev : P09
Suitability : S4

Fit for authorisation

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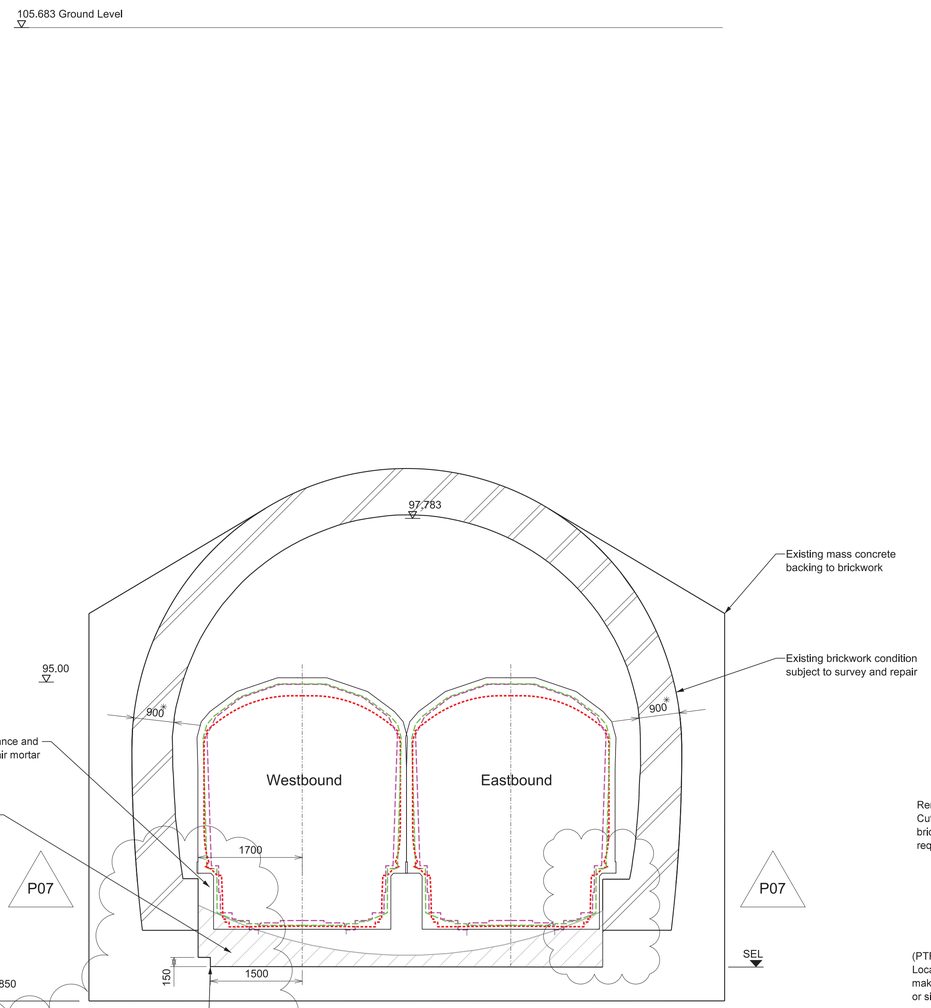
Copy Approved for Design - Created: 04-MAR-2013

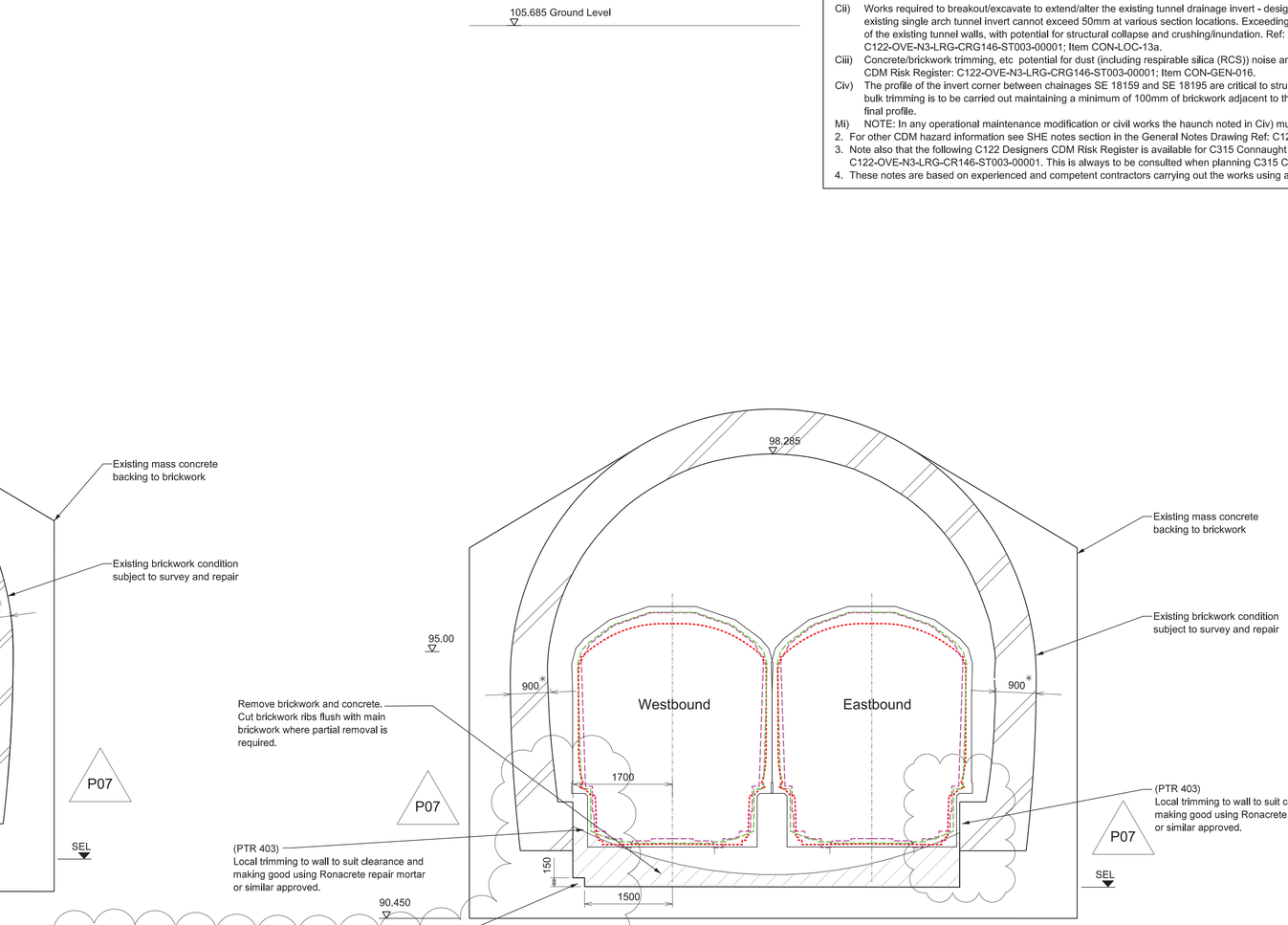
Safety Health and Environmental Information:
1. Notes below are additional to hazards and risks normally associated with this type of work:
Construction:
Ci) Uncontrolled track ballast removal - Risks of undermining during excavations for removal leading to insufficient/unstable overburden resulting in structural failure/collapse and potential for crushing/partial engulfment Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-019.
Cii) Works required to breakout/excavate to extend/alter the existing tunnel drainage invert - design checks indicate tolerances for overbreaking the existing single arch tunnel invert cannot exceed 50mm at various section locations. Exceeding this tolerance may impact on structural stability of the existing tunnel walls, with potential for structural collapse and crushing/inundation. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-LOC-13a.
Ciii) Concrete/brickwork trimming, etc potential for dust (including respirable silica (RCS)) noise and vibration exposure and harm to health. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-016.
Civ) The profile of the invert corner between chainages SE 18159 and SE 18195 are critical to structural integrity and must not be over trimmed. The bulk trimming is to be carried out maintaining a minimum of 100mm of brickwork adjacent to the corner, a final trim will be required to achieve final profile.
Mi) NOTE: In any operational maintenance modification or civil works the haunch noted in Civ) must not be compromised or reduced in any way.
2. For other CDM hazard information see SHE notes section in the General Notes Drawing Ref: C122-OVE-C4-DDJ-CR001_Z-22200.
3. Note also that the following C122 Designers CDM Risk Register is available for C315 Connaught Tunnel Upgrade Works Ref: Doc No: C122-OVE-N3-LRG-CR146-ST003-00001. This is always to be consulted when planning C315 Connaught Tunnel construction works.
4. These notes are based on experienced and competent contractors carrying out the works using an approved safe method of working.




The profile of the invert corner between chainages SE 18159 and SE 18195 are CRITICAL TO STRUCTURAL INTEGRITY and must not be over trimmed.
Refer to Section A on drawing C122-OVE-C4-DDA-CR001 Z-23712 for high tolerance trimming.
100mm diameter circular not degradable yellow plastic warning discs are to be fixed to the trimmed vertical face of the wall and the trimmed invert at not less than 1m centres staggered between SE 18159 to SE 18195.
The discs are to be installed with a clear gap of not more than 50mm from the invert/wall corner.
The discs are to be printed with the words DO NOT REMOVE STRUCTURE BELOW.
The printing shall be in non-removable black.
The discs shall be fixed into the brickwork using screws and plugs.
A sample of the disc shall be submitted to the Project Manager for approval prior to bulk manufacturing.

P07

## Section 19-19
Reference CH. 87407.955
EB. CH. 18170.00




The profile of the invert corner between chainages SE 18159 and SE 18195 are CRITICAL TO STRUCTURAL INTEGRITY and must not be over trimmed.
Refer to Section A on drawing C122-OVE-C4-DDA-CR001 Z-23712 for high tolerance trimming.
100mm diameter circular not degradable yellow plastic warning discs are to be fixed to the trimmed vertical face of the wall and the trimmed invert at not less than 1m centres staggered between SE 18159 to SE 18195.
The discs are to be installed with a clear gap of not more than 50mm from the invert/wall corner.
The discs are to be printed with the words DO NOT REMOVE STRUCTURE BELOW.
The printing shall be in non-removable black.
The discs shall be fixed into the brickwork using screws and plugs.
A sample of the disc shall be submitted to the Project Manager for approval prior to bulk manufacturing.

P07

## Section 20-20
Reference CH. 87417.950
EB. CH. 18180.00

| | |
|---|---|
| C03 | 126, 133, 184, 189, 194, 208, 235, 251, 294, 306 |
| C02 | |
| C01 | |
| Rev. | PTR Number (COT-CRL RFI-C315) |

P07

| Rev. | Date | Description | By | Chkd | App | Auth |
|---|---|---|---|---|---|---|
| P01 | 01/10/2010 | First Issue | AH | KR | RM | --- |
| P02 | 20/10/2010 | Issued for Tender Purposes | SD | AC | RM | --- |
| P03 | 30/03/2011 | Issued for Conforming Set | SD | AC | RM | --- |
| P04 | 05/03/2012 | Issued for RIBA F | SD | JC | RM | --- |
| C01 | 13/03/2012 | Issued as Fit for authorisation | SD | JC | RM | IT |
| P05 | 15/03/2012 | --- | SD | JC | RM | - |
| C02 | 16/03/2012 | Issued as Fit for construction | SD | JC | RM | IT |
| P06 | 07/02/2013 | Revised to suit Alignment U PAC 102 changes. Incorporating PTR's | SD | JC | BS | - |
| P07 | 01/03/2013 | Revised to suit Alignment U PAC 102 changes. Incorporating PTR's | GP | GP | RM | - |

Notes
1. Levels are metres above tunnel datum (mATD).
2. The RIBA F design is based on the Crossrail alignment revision U + PAC 102.
3. Laser scan survey of approach ramps and tunnel section carried out in June 2007 (unknown reference)
4. Swept envelope is based on the Crossrail Reference Train (Class 345), W6A, Loco gauge, Mk2 and Mk3 coaches.
5. Details of OHLE provided by FDC 124 should be considered as indicative only.
6. Dimensions are not to be scaled from this drawing.
7. Locations and levels shown for existing structures/ground levels are for information only and shall be confirmed by the Contractor on site.
8. For Structural Slab levels (S.S.L.) and Structural Excavation Levels (S.E.L.) refer to Drgs. C122-OVE-C4-DDA-CR001_Z-11110, 11113, 11114, 11115,11116 and 11117.
9. Dimensions to be confirmed by investigation or direct measurement on site are indicated ( ).
10. For general notes refer to drawing C122-OVE-C4-DDJ-CR001_Z-22200
11. For section locations refer to drawing C122-OVE-C4-DDB-CR001_Z-22217.
12. Drawings C122-OVE-C4-DDB-CR001_Z-22700 to C122-OVE-C4-DDB-CR001_Z-22713 supersedes drawings C122-OVE-C4-DDB-CR001_Z-22620 to C122-OVE-C4-DDB-CR001_Z-22626.
13. Existing structural thicknesses based on core holes taken.
14. (PTR 208) For Notes on Existing Embedded Timber Removal refer to C122-OVE-C4-DDJ-CR001_Z-22200.
15. (PTR 189) The invert replacement walls can be constructed as flat without curvature in the vertical plane.

1m 0 1m 2m 3m 4m 5m
1:50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25 Canada Square
Canary Wharf
London
E14 5LQ

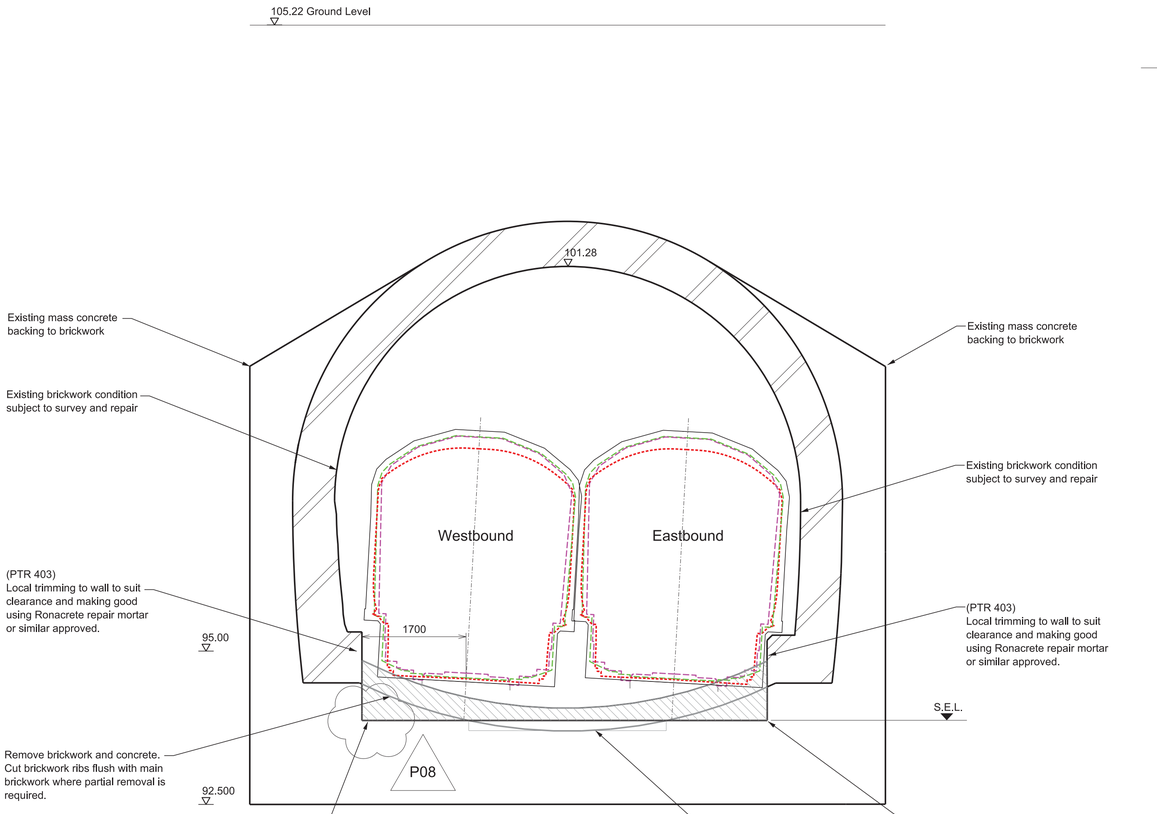

www.crossrail.co.uk

Contract : Bored Tunnels (Alignment and Track)
Originator : Ove Arup & Partners Limited
Location : Crossrail General
Title : Connaught Tunnel Cross Sections Sections 19-19 and 20-20 Sheet 10 of 14 C315
By : G.POTTER
Chk : G.POTTER
App : R.MCCRAE
Auth : ---
Scale : 1:50@ A1
Drawing and CAD file No : C122-OVE-C4-DDB-CR001_Z-22709
Rev : P07
Suitability : S4

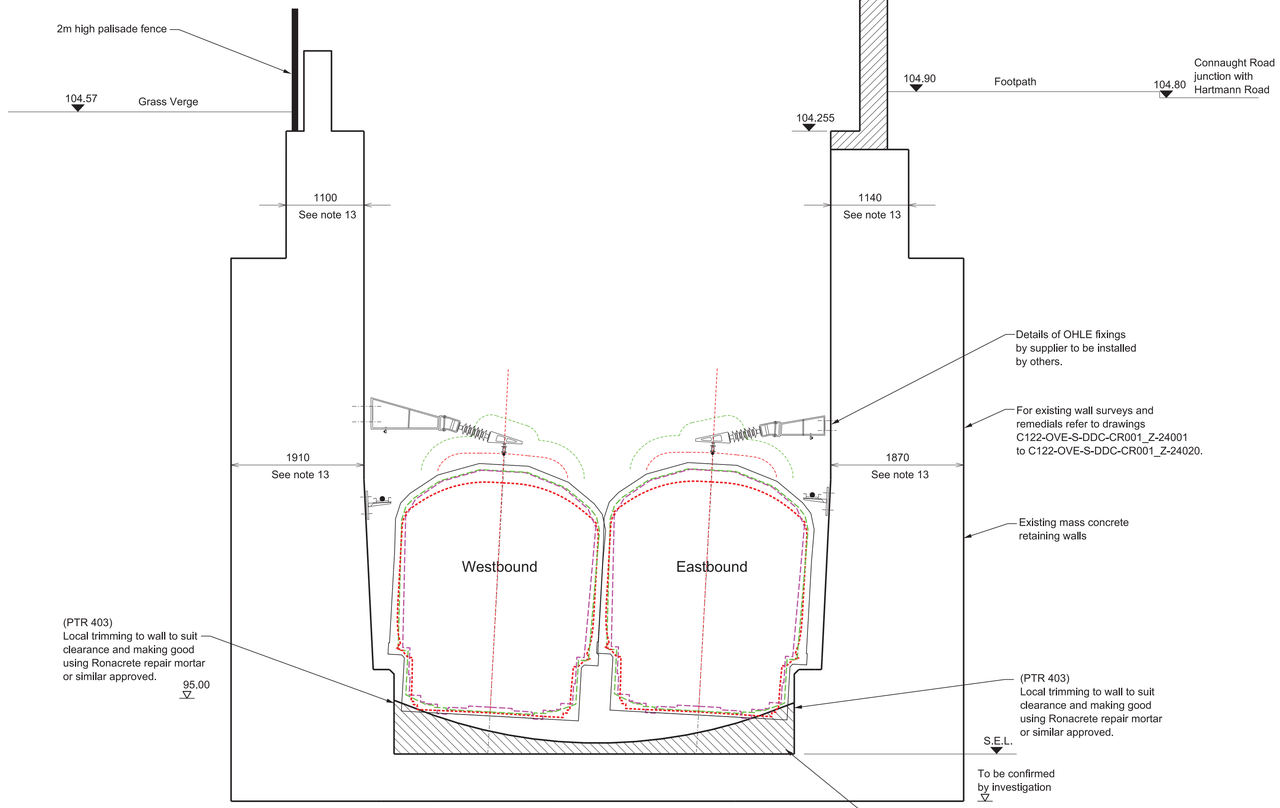
Fit for authorisation
RESTRICTED
Copy Approved for Design - Created: 04-MAR-2013

Safety Health and Environmental Information:
1. Notes below are additional to hazards and risks normally associated with this type of work:
Construction:
Ci) Uncontrolled track ballast removal - Risks of undermining during excavations for removal leading to insufficient/unstable overburden resulting in structural failure/collapse and potential for crushing/partial engulfment Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-019.
Cii) Concrete/brickwork trimming, etc – potential for dust (including respirable silica (RCS)) noise and vibration exposure and harm to health. Ref: CDM Risk Register: C122-OVE-N3-LRG-CRG146-ST003-00001; Item CON-GEN-016.
2. For other CDM hazard information see SHE notes section in the General Notes Drawing Ref: C122-OVE-C4-DDJ-CR001_Z-22200.
3. Note also that the following C122 Designers CDM Risk Register is available for C315 Connaught Tunnel Upgrade Works Ref: Doc No: C122-OVE-N3-LRG-CR146-ST003-00001. This is always to be consulted when planning C315 Connaught Tunnel construction works.

The extent of demolition is shown on the drawings. Demolition shall not exceed the extent by more than 50mm on each vertical face and not more than 50mm on each horizontal face for structural safety reasons only.




## Section 21-21
Reference CH. 87558.805
EB. CH. 18320.00




## Section 22-22
Reference CH. 87573.055
EB. CH. 18335.00

| | |
|---|---|
| C03 | 145, 208 and 403 |
| C02 | |
| C01 | |
| Rev. | PTR Number (COT-CRL RFI-C315) |

| Rev. | Date | Description | By | Chkd | App | Auth |
|---|---|---|---|---|---|---|
| | | | | | | |
| P01 | 01/10/2010 | First Issue | AH | KR | RM | --- |
| P02 | 20/10/2010 | Issued for Tender Purposes | SD | AC | RM | --- |
| P03 | 30/03/2011 | Issued for Conforming Set | SD | AC | RM | --- |
| P04 | 05/03/2012 | --- | SD | JC | RM | --- |
| C01 | 13/03/2012 | Issued as Fit for construction | SD | JC | RM | IT |
| P05 | 15/03/2012 | --- | SD | JC | RM | - |
| C02 | 16/03/2012 | Issued as Fit for construction | SD | JC | RM | IT |
| P06 | 07/02/2013 | Revised to suit alignment U PAC 102 changes. Incorporating PTR's 145, 208 & 403 | SD | JC | BS | - |
| P07 | 01/03/2013 | Revised to suit alignment U PAC 102 changes. Incorporating PTR's 145, 208 & 403 | GP | GP | RM | - |
| P08 | 19/03/2013 | Corrected to suit cable trough requirements | GP | JC | SR | - |

Notes
1. Levels are metres above tunnel datum (mATD).
2. The RIBA F design is based on the Crossrail alignment revision U - PAC102.
3. Laser scan survey of approach ramps and tunnel section carried out in June 2007 (unknown reference)
4. Swept envelope is based on the Crossrail Reference Train (Class 345), W6A, Loco gauge, Mk2 and Mk3 coaches.
5. Details of OHLE provided by FDC 124 should be considered as indicative only.
6. Dimensions are not to be scaled from this drawing.
7. Locations and levels shown for existing structures/ground levels are for information only and shall be confirmed by the Contractor on site.
8. For Structural Slab levels (S.S.L.) and Structural Excavation Levels (S.E.L.) refer to Drgs. C122-OVE-C4-DDA-CR001_Z-11110, 11113, 11114, 11115,11116 and 11117.
9. Dimensions to be confirmed by investigation or direct measurement on site are indicated (*).
10. For general notes refer to drawing C122-OVE-C4-DDJ-CR001_Z-22200
11. For section locations refer to drawing C122-OVE-C4-DDB-CR001_Z-22217.
12. Drawings C122-OVE-C4-DDB-CR001_Z-22700 to C122-OVE-C4-DDB-CR001_Z-22713 supersedes drawings C122-OVE-C4-DDB-CR001_Z-22620 to C122-OVE-C4-DDB-CR001_Z-22626.
13. Existing structural thicknesses based on core holes taken.
14. For location of palisade fencing refer to drawing C122-OVE-C-DDA-CR001_Z-31102 to C122-OVE-C-DDA-CR001_Z-31105.
15. (PTR 208) For Notes on Existing Embedded Timber Removal refer to C122-OVE-C4-DDJ-CR001 Z-22200.

1m 0 1m 2m 3m 4m 5m
1:50

Crossrail Limited
25 Canada Square
Canary Wharf
London
E14 5LQ

www.crossrail.co.uk

Contract : Bored Tunnels (Alignment and Track)
Originator : Ove Arup & Partners Limited
Location : Crossrail General
Title : Connaught Tunnel Cross Sections
Sections 21-21 and 22-22
Sheet 11 of 14
C315
By : G.POTTER
Chk : J.CRAFT
App : S.READING
Auth : ---
Scale : 1:50@ A1
Drawing and CAD file No : C122-OVE-C4-DDB-CR001_Z-22710
Rev : P08
Suitability : S4

Fit for authorisation
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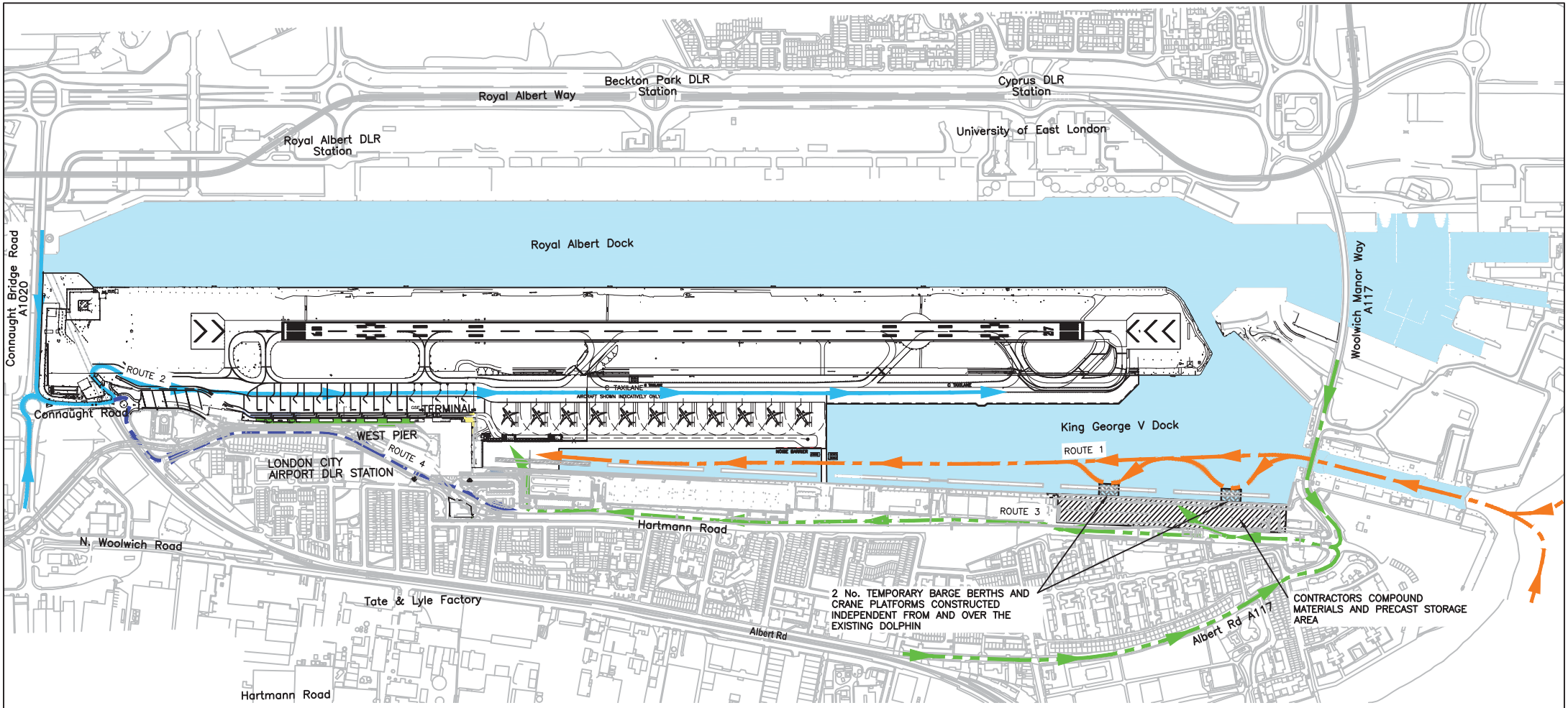
Copy Approved for Design - Created: 19-MAR-2013

# Appendix C.

## Logistics and Route Plan




KEY:

- ROUTE 1 – BARGE ACCESS
- ROUTE 2 – AIRSIDE SITE ACCESS
- ROUTE 3 – COMPOUND AND LANDSIDE SITE ACCESS
- ROUTE 4 – SECONDARY COMPOUND AND LANDSIDE SITE ACCESS

- CONTRACTORS COMPOUND, MATERIALS AND PRECAST STORAGE AREA
- TEMPORARY BARGE BERTHS AND CRANE PLATFORMS
- EXISTING DOLPHINS CUT DOWN BELOW WATER LEVEL.

Fig. 6.11 SCHEMATIC LAYOUT OF CONTRACTORS FACILITIES AND ACCESS

# Appendix D.

## Correspondence with Crossrail

## Suenson-Taylor, Jonty

**From:** Geoff Rankin <GeoffRankin@crossrail.co.uk>
**Sent:** 16 January 2017 14:23
**To:** Bangura, Allan
**Cc:** Will Orlik
**Subject:** RE: Lond City Airport CADP - Pre-commencement Condition 65 (Crossrail Method Statement)

Allan,

Thanks for the telephone discussion and construction logistics report containing method statements which appear to have no significant impact on Crossrail.

Therefore we would be in a position to recommend release of condition 65, if asked to do so by the planning Authority.

Regards,

Geoff Rankin
3rd Party Developments Manager – Chief Engineer's Group - Crossrail Limited
Desk 30 B5 07,
25 Canada Square, Canary Wharf, London, E14 5LQ
0203 229 9600
0754 066 6875

---

**From:** Bangura, Allan [mailto:allan.bangura@atkinsglobal.com]
**Sent:** 05 January 2017 14:25
**To:** Geoff Rankin
**Subject:** Lond City Airport CADP - Pre-commencement Condition 65 (Crossrail Method Statement)

Dear Geoff,

Happy New Year!

I was in contact with you briefly last year (for email chain click link below) about works that London City Airport are proposing and the requirement for Planning Condition 65 (extract in email provided) to be discharged.

We have sent a draft copy of the attached report (click link below) to Newham and pending your agreement that we have provided sufficient detail to satisfy your requirements, they will most likely sign it off.

I would be grateful if you could review and confirm acceptance.

Please let me know if you have any queries.

Kind regards,

Allan Bangura
| Tel: +44 13727 52135 | Mob: +44 781 231 9296 |

---

**Files attached to this message**

| Filename | Size | Checksum (SHA1) |
|---|---|---|
| PCC65 Crossrail Method Statement Rev. 04 (LBN DRAFT).pdf | 12.6 MB | 68654dc301a7bae2ff825ca00fb1161678eb9bb6 |
| RE LCY CADP - Crossrail Sections details.msg | 7.06 MB | 47f979751036de9fd780364cf3fb42791ce74dcc |

Please click on the following link to download the attachments:
https://FiletransferGB.atkinsglobal.com/message/e1jTgFLyNNbQgAfzCL84bA

This email or download link can not be forwarded to anyone else.

The attachments are available until: **Thursday, 12 January.**

Message ID: e1jTgFLy

**LiquidFiles Appliance: FiletransferGB.atkinsglobal.com**

**Allan Bangura**
Atkins
Woodcote Grove
Ashley Road
Epsom
KT18 5BW

**Allan.Bangura@atkinsglobal.com**
**01372 75 2135**