

London Underground Limited (LUL)

Deep Tube Upgrade Programme (DTUP)

One Person Operation (OPO) CCTV System Contract

Section 2

Implementation Work Terms

Schedule 4B

Piccadilly Line Order

Specific Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 01

Piccadilly Line

Description of the Works

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01.1 Geographic extent of the works

- 01.1.1 The *Contractor* shall undertake the *works* necessary to deliver the new OPO CCTV System in support of the new fleet of Passenger Trains for the Piccadilly line that will serve fifty-seven (57) stations. Note: The Piccadilly line services will incorporate Ealing Broadway and Chiswick Park stations as a part of the DTUP upgrade. New DTUP Passenger Trains will also serve Ravenscourt Park and Stamford Brook at times when railway service is disrupted.
- 01.1.2 As part of the *works*, the *Contractor* shall install OPO CCTV cameras on a total of one-hundred-and-twenty-five (125) platforms on the Piccadilly line.
- 01.1.3 The *Contractor* shall provide the OPO CCTV at the stations and platforms locations on the LUL Network as set out in Table 1.

Table 1–Stations and Platforms

| No. | LCS Code | Station | Platform Number | Direction | OPO CCTV required for reverse departure | Stopping mark required for reverse approach |
|-----|----------|-----------------------------|-----------------|-----------|---|---|
| 1 | D237 | Heathrow Terminal 5 | 6 | EB | | |
| 2 | D237 | | 5 | WB | | |
| 3 | D233 | Heathrow Terminals 1, 2 & 3 | 2 | EB | | Yes |
| 4 | D233 | | 1 | WB | Yes | |
| 5 | D235 | Heathrow Terminal 4 | 1 | WB | | |
| 6 | D229 | Hatton Cross | 2 | EB | | Yes |
| 7 | D229 | | 1 | WB | Yes | |
| 8 | D227 | Hounslow West | 2 | EB | | |
| 9 | D227 | | 1 | WB | | |
| 10 | D225 | Hounslow Central | 2 | EB | | |
| 11 | D225 | | 1 | WB | Yes | |
| 12 | D223 | Hounslow East | 2 | EB | | |
| 13 | D223 | | 1 | WB | | |
| 14 | D219 | Osterley | 2 | EB | | |
| 15 | D219 | | 1 | WB | | |
| 16 | D217 | Boston Manor | 2 | EB | | |
| 17 | D217 | | 1 | WB | | |
| 18 | D215 | Northfields | 4 | EBL | Yes | Yes |
| 19 | D215 | | 3 | EBF | Yes | |
| 20 | D215 | | 2 | WBF | Yes | Yes |
| 21 | D215 | | 1 | WBL | | |
| 22 | D213 | South Ealing | 1 | EBL | | |
| 23 | D213 | | 2 | EBF | | |
| 24 | D213 | | 3 | WBF | | |
| 25 | D213 | | 4 | WBL | | |
| 26 | P117 | Uxbridge (to buffer face) | 1 | Term | | |
| 27 | P117 | | 2* | Term | | |
| 28 | P117 | | 3* | Term | | |
| 29 | P117 | | 4 | Term | | |

| No. | LCS Code | Station | Platform Number | Direction | OPO CCTV required for reverse departure | Stopping mark required for reverse approach |
|-----|----------|-----------------------------------|-----------------|-----------|---|---|
| 30 | P129 | Hillingdon | 2 | EB | | |
| 31 | P129 | | 1 | WB | | |
| 32 | P113 | Ickenham | 2 | EB | | |
| 33 | P113 | | 1 | WB | | |
| 34 | P109 | Ruislip | 2 | EB | | |
| 35 | P109 | | 1 | WB | | |
| 36 | P107 | Ruislip Manor | 2 | EB | | |
| 37 | P107 | | 1 | WB | | |
| 38 | P105 | Eastcote | 2 | EB | | |
| 39 | P105 | | 1 | WB | | |
| 40 | P103 | Rayners Lane | 2 | EB | Yes | |
| 41 | P103 | | 1 | WB | Yes | Yes |
| 42 | P095 | South Harrow | 2 | EB | | Yes |
| 43 | P095 | | 1 | WB | Yes | |
| 44 | P093 | Sudbury Hill | 2 | EB | | |
| 45 | P093 | | 1 | WB | | |
| 46 | P089 | Sudbury Town | 2 | EB | | |
| 47 | P089 | | 1 | WB | | |
| 48 | P087 | Alperton | 2 | EB | | |
| 49 | P087 | | 1 | WB | | |
| 50 | P085 | Park Royal | 2 | EB | | |
| 51 | P085 | | 1 | WB | | |
| 52 | P083 | North Ealing | 2 | EB | | |
| 53 | P083 | | 1 | WB | | |
| 54 | C175 | Ealing Broadway (to buffer faces) | 7 | Term | | |
| 55 | C175 | | 8 | Term | | |
| 56 | C175 | | 9 | Term | | |
| 57 | D243 | Ealing Common | 2 | EB | | Yes |
| 58 | D243 | | 1 | WB | Yes | |
| 59 | D205 | Acton Town | 4 | EB | Yes | |
| 60 | D205 | | 3 | EB | Yes | Yes |
| 61 | D205 | | 2 | WB | Yes | Yes |
| 62 | D205 | | 1 | WB | Yes | Yes |
| 63 | D203 | Chiswick Park | 2 | EB | | |
| 64 | D203 | | 1 | WB | | |
| 65 | D185 | Turnham Green | 3 | EB | | |
| 66 | D185 | | 2 | WB | | |
| 67 | D183 | Stamford Brook | 2 | WB | | |
| 68 | D179 | Ravenscourt Park | 3 | EB | | |
| 69 | D179 | | 2 | WB | | |
| 70 | D177 | Hammersmith | 3 | EB | | Yes |
| 71 | D177 | | 2 | WB | Yes | |
| 72 | D175 | Barons Court | 3 | EB | | |
| 73 | D175 | | 2 | WB | | |
| 74 | P077 | Earl's Court | 5 | EB | | |
| 75 | P077 | | 6 | WB | | |
| 76 | P075 | Gloucester Road | 5 | EB | | |
| 77 | P075 | | 4 | WB | | |

| No. | LCS Code | Station | Platform Number | Direction | OPO CCTV required for reverse departure | Stopping mark required for reverse approach |
|-----|----------|------------------------------|-----------------|-----------|---|---|
| 78 | D109 | South Kensington | 4 | EB | | |
| 79 | D109 | | 3 | WB | | |
| 80 | P069 | Knightsbridge | 1 | EB | | |
| 81 | P069 | | 2 | WB | | |
| 82 | P067 | Hyde Park Corner | 1 | EB | | |
| 83 | P067 | | 2 | WB | Yes | |
| 84 | P065 | Green Park | 2 | EB | | |
| 85 | P065 | | 1 | WB | | |
| 86 | P063 | Piccadilly Circus | 3 | EB | | |
| 87 | P063 | | 4 | WB | | |
| 88 | N107 | Leicester Square | 2 | EB | | |
| 89 | N107 | | 1 | WB | | |
| 90 | P057 | Covent Garden | 2 | EB | | |
| 91 | P057 | | 1 | WB | | |
| 92 | P055 | Holborn | 4 | EB | | |
| 93 | P055 | | 3 | WB | | |
| 94 | P053 | Russell Square | 1 | EB | | |
| 95 | P053 | | 2 | WB | | |
| 96 | N123 | King's Cross St Pancras | 6 | EB | Yes | |
| 97 | N123 | | 5 | WB | | |
| 98 | P047 | Caledonian Road | 1 | EB | | |
| 99 | P047 | | 2 | WB | | |
| 100 | P045 | Holloway Road | 2 | EB | | |
| 101 | P045 | | 1 | WB | | |
| 102 | P043 | Arsenal | 1 | EB | | |
| 103 | P043 | | 2 | WB | | |
| 104 | P041 | Finsbury Park | 1 | EB | | |
| 105 | P041 | | 3 | WB | | |
| 106 | P029 | Manor House | 1 | EB | | |
| 107 | P029 | | 2 | WB | | |
| 108 | P027 | Turnpike Lane | 1 | EB | | |
| 109 | P027 | | 2 | WB | | |
| 110 | P025 | Wood Green | 1 | EB | | Yes |
| 111 | P025 | | 2 | WB | Yes | |
| 112 | P023 | Bounds Green | 1 | EB | | |
| 113 | P023 | | 2 | WB | | |
| 114 | P021 | Arnos Grove | 1 | EB | Yes | |
| 115 | P021 | | 2* | Bay/EB | Yes | Yes |
| 116 | P021 | | 3* | Bay/WB | Yes | Yes |
| 117 | P021 | | 4 | WB | | Yes |
| 118 | P015 | Southgate | 1 | EB | | |
| 119 | P015 | | 2 | WB | | |
| 120 | P013 | Oakwood | 2 | EB | Yes | |
| 121 | P013 | | 1 | WB | Yes | |
| 122 | P011 | Cockfosters (to buffer face) | 1 | Term | | |
| 123 | P011 | | 2* | Term | | |
| 124 | P011 | | 3* | Term | | |

| No. | LCS Code | Station | Platform Number | Direction | OPO CCTV required for reverse departure | Stopping mark required for reverse approach |
|-----|----------|---------|-----------------|-----------|---|---|
| 125 | P011 | | 4 | Term | | |

* view of PTI on both sides of the train must be provided for Platforms 2&3 at Uxbridge, Arnos Grove and Cockfosters

- 01.1.4 The *Contractor* shall provide OPO CCTV images for train departure in reverse direction at twenty-three (23) platforms identified in Table 1.
- 01.1.5 The *Contractor* shall ensure that the PTI views displayed in the train's active cab cover both platforms 2 and 3 at Arnos Grove, Cockfosters and Uxbridge. Note that these platforms at Arnos Grove are bi-directional.
- 01.1.6 The *Contractor* shall carry out installation of Stopping Markers to assist stopping at the correct position for normal direction moves at of each of the one-hundred-and-twenty-five (125) platforms. In addition the *Contractor* shall carry out installation of Stopping Markers at the additional fifteen (15) locations where the train can approach from the opposite direction as shown in Table 1.
- 01.1.7 The *Contractor* shall carry out installation of OTC – Infrastructure Borne Equipment at fifty-seven (57) station locations as shown in Table 1.

01.2 OPO CCTV Equipment and Materials

- 01.2.1 The *Contractor* shall determine the exact number of cameras on each Piccadilly line platform and design, install, test and commission the *works* as specified in CWI 05 Technical Requirements and other parts of the Works Information.
- 01.2.2 The *Contractor* shall design, install and commission the camera bracketry on each Piccadilly line platform in the tunnel sections as specified in CWI 05 Technical Requirements and other parts of the Works Information.
- 01.2.3 The *Contractor* shall design, install and commission the camera bracketry / posts on each Piccadilly line platform in the open sections as specified in CWI 05 Technical Requirements and other parts of the Works Information.
- 01.2.4 The *Contractor* shall determine the exact location and length of leaky feeder cable on each Piccadilly line platform and design, install, test and commission the *works* in accordance with the requirements in CWI 05 Technical Requirements and other parts of the Works Information.
- 01.2.5 The *Contractor* shall design, install, test and commission all communications and power cabled services between equipment on the platforms (cameras and leaky feeder) and equipment in the Piccadilly line stations equipment rooms as specified in CWI 05 Technical Requirements and other parts of the Works Information.
- 01.2.6 The *Contractor* shall design, install, test and commission all cable containment required within Piccadilly line stations while demonstrably seeking to maximise the use of the existing cable containment as set out in CWI 05 Technical Requirements and other parts of the Works Information.
- 01.2.7 The *Contractor* shall design, install, test and commission equipment and materials (including equipment rack) constituting Imaging Subsystem and Transmission Subsystem in the space secured by the Employer in the Piccadilly line equipment rooms as set out in the SWI 02 Constraints on the method, order and timing of the works, CWI 05 Technical Requirements and other parts of the Works Information.

- 01.2.8 The equipment rack size shall not be larger than 600mm wide x 600mm deep. The *Contractor* shall determine the height of the equipment rack.

OPO CCTV Train Borne Equipment

- 01.2.9 The *Contractor* shall design, deliver and test Train Borne OPO CCTV Equipment as set out in the Works Information for initially ninety-four (94) Passenger Trains.

01.3 OTC – Infrastructure Borne Equipment

- 01.3.1 The OTC system will be designed by the Rolling Stock Manufacturer and will be free-issued to the *Contractor* for installation in each Piccadilly line station.
- 01.3.2 The *Contractor* shall participate in preparation of Interface Control Document (ICD) as set out in Schedule 9 of the Implementation Works Terms and ensure that all the requirements for design and installation of the fixing bracketry and equipment rack for OTC – Infrastructure Borne Equipment in each Piccadilly line station are adequately defined.
- 01.3.3 The Rolling Stock Manufacturer will provide a technical specification detailing the installation of the OTC – Infrastructure Borne Equipment, relevant tolerances, testing procedures and if required any specialist test equipment and, or tools. This will be available by 31 December 2020.
- 0.1.3.4 The *Contractor* will supply and install the OTC equipment within a standard 19" wall mounted equipment case, either directly or using a sub-frame to allow the fixing of DIN rail mounted equipment. The case must have a minimum mounting capacity of 6U and a minimum useable depth of 450mm. To permit access to terminations and cabling, the sides of the cabinet shall be removable. Alternatively, a swing frame design shall be used. The front door shall be lockable.
- 01.3.5 The *Contractor* shall design, supply and install all the bracketry required for OTC – Infrastructure Borne Equipment fitment in each Piccadilly line station.
- 01.3.6 The *Contractor* shall receive the free-issue OTC – Infrastructure Borne Equipment and carry out installation in each Piccadilly line station as set out in the ICD.
- 01.3.7 The Rolling Stock Manufacturer will deliver the OTC - Infrastructure Borne Equipment to the Employer. The *Project Manager* will arrange delivery of the OTC – Infrastructure Borne Equipment to a location within the M25 nominated by the *Contractor*. Delivery of OTC – Infrastructure Borne Equipment will commence on 30 June 2021 and be completed by 31 January 2024. The detailed of these deliveries will be agreed via the ICD.
- 01.3.8 The *Contractor* shall participate in testing and commissioning of the OTC – Infrastructure Borne Equipment in each Piccadilly line station as set out in the ICD.

01.4 Platform Stopping Markers

- 01.4.1 Platform Stopping Markers will be designed by the *Employer* and will be free-issued to the *Contractor* for installation in each Piccadilly line station.
- 01.4.2 The *Contractor* shall participate in preparation of ICD as set out in Schedule 9 of the Implementation Works Terms and ensure that all the requirements for design and installation of the fixing bracketry for Platform Stopping Markers in each Piccadilly line station are adequately defined.
- 01.4.3 The *Employer* will provide a technical specification and tolerances for the installation of the Platform Stopping Markers on Piccadilly line by 30 June 2021.

- 01.4.4 The *Contractor* shall design, supply and install all the bracketry required for Platform Stopping Markers fitment in each Piccadilly line station.
- 01.4.5 The *Project Manager* will arrange delivery of the Platform Stopping Markers to a location within the M25 nominated by the Contractor after 30 June 2021.
- 01.4.6 The *Contractor* shall receive the free-issue Platform Stopping Markers and carry out installation in each Piccadilly line station as set out in ICD.
- 01.4.7 The *Contractor* shall participate in testing and commissioning of the Platform Stopping Markers in each Piccadilly line station as set out in ICD.

01.5 Rolling Stock Manufactures Test Track

- 01.5.1 In order to facilitate integration testing the Rolling Stock Manufacturer will construct a length of temporary platform at the test track.
- 01.5.2 The Rolling Stock Manufacturer will supply track geometry and a schematic drawing of the platform by 31 August 2021.
- 01.5.3 The *Contractor* shall complete the installation at the test track between the 03 June 2022 and the end the 01 September 2022.
- 01.5.4 The *Contractor* shall be present for the relevant integration testing in accordance CWI 07 Testing, Inspection and Commissioning. These tests expected to be undertaken over a two (2) week period are scheduled for May/June 2023.

01.6 Planning and Other Consents

- 01.6.1 The *Contractor* shall assess with the *Employer* if the works will require any additional permitted development rights or planning consent application in accordance with the requirements in the Works Information with special emphasis on the locations with heritage value as identified in Appendix SWI 01.1.
- 01.6.2 The *Contractor* shall ensure that the design approval process includes time for obtaining heritage consents and that these designs are adequately prioritized in the programme for works on Piccadilly line.

Appendix SWI 01.1 – Stations with Heritage Value

| LCS Code | Station | Platform Number | Direction |
|----------|----------------------------|-----------------|-----------|
| D227 | Hounslow | 2 | EB |
| D227 | West | 1 | WB |
| D219 | Osterley | 2 | EB |
| D219 | | 1 | WB |
| D217 | Boston Manor | 2 | EB |
| D217 | | 1 | WB |
| D215 | Northfields | 4 | EBL |
| D215 | | 3 | EBF |
| D215 | | 2 | WBF |
| D215 | | 1 | WBL |
| P117 | Uxbridge (to buffer face) | 1 | Term |
| P117 | | 2 | Term |
| P117 | | 3 | Term |
| P117 | | 4 | Term |
| P109 | Ruislip | 2 | EB |
| P109 | | 1 | WB |
| P107 | Ruislip Manor | 2 | EB |
| P107 | | 1 | WB |
| P105 | Eastcote | 2 | EB |
| P105 | | 1 | WB |
| P103 | Rayners Lane | 2 | EB |
| P103 | | 1 | WB |
| P093 | Sudbury Hill | 2 | EB |
| P093 | | 1 | WB |
| P089 | Sudbury Town | 2 | EB |
| P089 | | 1 | WB |
| P087 | Alperton | 2 | EB |
| P087 | | 1 | WB |
| P085 | Park Royal | 2 | EB |
| P085 | | 1 | WB |
| P083 | North Ealing | 2 | EB |
| P083 | | 1 | WB |
| C175 | Ealing | 7 | Term |
| C175 | Broadway (to buffer faces) | 8 | Term |
| C175 | | 9 | Term |
| D243 | Ealing | 2 | EB |
| D243 | Common | 1 | WB |
| D205 | Acton Town | 4 | EB |
| D205 | | 3 | EB |
| D205 | | 2 | WB |
| D205 | | 1 | WB |
| D203 | Chiswick Park | 2 | EB |
| D203 | | 1 | WB |
| D175 | Barons Court | 3 | EB |
| D175 | | 2 | WB |
| P077 | Earl's Court | 5 | EB |
| P077 | | 6 | WB |

| LCS Code | Station | Platform Number | Direction |
|----------|---------------------------------|-----------------|------------|
| P075 | Gloucester Road | 5 | EB |
| P075 | | 4 | WB |
| D109 | South Kensington | 4 | EB |
| D109 | | 3 | WB |
| P063 | Piccadilly Circus | 3 | EB |
| P063 | | 4 | WB |
| P057 | Covent Garden | 2 | EB |
| P057 | | 1 | WB |
| P053 | Russell Square | 1 | EB |
| P053 | | 2 | WB |
| P047 | Caledonian Road | 1 | EB |
| P047 | | 2 | WB |
| P045 | Holloway Road | 2 | EB |
| P045 | | 1 | WB |
| P043 | Arsenal | 1 | EB |
| P043 | | 2 | WB |
| P029 | Manor House | 1 | EB |
| P029 | | 2 | WB |
| P027 | Turnpike Lane | 1 | EB |
| P027 | | 2 | WB |
| P025 | Wood Green | 1 | EB |
| P025 | | 2 | WB |
| P023 | Bounds Green | 1 | EB |
| P023 | | 2 | WB |
| P021 | Arnos Grove | 1 | EB |
| P021 | | 2 | Bay/ EB |
| P021 | | 3 | Bay/ WB |
| P021 | | 4 | WB |
| P015 | Southgate | 1 | EB |
| P015 | | 2 | WB |
| P013 | Oakwood | 2 | EB |
| P013 | | 1 | WB |
| P011 | Cockfosters (to buffer face) | 1 | Term |
| P011 | | 2 | Term |
| P011 | | 3 | Term |
| P011 | | 4 | Term |

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 02

Piccadilly Line

**Constraints on the method, order and timing of
the *Works***

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02.1 Equipment Rooms

- 02.1.1 The *Contractor* shall install the OPO CCTV Equipment in the equipment rooms as set out in the approved Space Allocations listed in Appendix SWI 02.1.
- 0.2.1.2 Space Allocations for the OPO CCTV Equipment in Caledonian Road, Barons Court, Chiswick Park and Ealing Broadway stations will be provided by the *Employer* after the Order Commencement Date.
- 0.2.1.3 The *Contractor* shall install OTC Equipment in the equipment rooms as set out in the approved Space Allocations that will be provided by the *Employer* after the Order Commencement Date.

02.2 Interoperable Railway Sections and Legacy Train Systems

- 02.2.1 The *Contractor* shall design and install the OPO CCTV System to operate completely independently and without any interference to and from the systems used for operating legacy trains on the Piccadilly line.
- 0.2.2.2 The *Contractor* shall design and install the OPO CCTV System to operate completely independently and without any interference to and from the systems used for operating other type of trains on the interoperable railway sections on Piccadilly line between Rayners Lane and Uxbridge where operation is shared with the Metropolitan line (S-Stock trains) and between Barons Court and Ealing Broadway where service interfaces with District line.
- 0.2.2.3 In the interoperable railway sections the *Contractor* shall explore opportunities to use some of the existing cameras and / or bracketry.
- 0.2.2.4 The *Contractor* shall cooperate with Others as necessary to deliver the works in the interoperable railway sections in accordance with the Works Information.

02.3 Timing of the Works

- 02.3.1 The *Contractor* shall plan to undertake design and installation works at Chiswick Park and Ealing Broadway stations as late as possible due to the *Employer's* uncertainty regarding the commencement of GOA2 service.

Appendix SWI 02.1 – Space Allocations for OPO CCTV Equipment in Equipment Rooms

The following documents make up this Appendix SWI 02.1:

| Approved applications for an allocation of space on operational property | | |
|---|------------------|--|
| Station | Reference | File Name |
| Acton Town | SA31387 | Acton_Town_SA31387 |
| Alperton | SA31375 | Alperton_SA31375 |
| Arnos Grove | SA31734 | Arnos_Grove_SA31734 |
| Arsenal | SA31621 | Arsenal_SA31621 |
| Barons Court | TBC | To be provided after the Order Commencement Date |
| Boston Manor | SA31610 | Boston_Manor_SA31610 |
| Bounds Green | SA31457 | Bounds_Green_SA31457 |
| Caledonian Road | TBC | To be provided after the Order Commencement Date |
| Chiswick Park | TBC | To be provided after the Order Commencement Date |
| Cockfosters | SA31456 | Cockfosters_SA31456 |
| Covent Garden | SA31935 | Covent_Garden_SA31935 |
| Ealing Broadway | TBC | To be provided after the Order Commencement Date |
| Ealing Common | SA32677 | Ealing_Common_SA32677 |
| Earls Court | SA32286 | Earls_Court_SA32286 |
| Eastcote | SA31618 | Eastcote_SA31618 |
| Finsbury Park | SA31939 | Finsbury_Park_SA31939 |
| Gloucester Road | SA32276 | Gloucester_Road_SA32276 |
| Green Park | SA31898 | Green_Park_SA31898 |
| Hammersmith | SA32282 | Hammersmith_SA32282 |
| Hatton Cross | SA31718 | Hatton_Cross_SA31718 |
| Heathrow T123 | SA31728 | Heathrow_T123_SA31728 |
| Heathrow T4 | SA31698 | Heathrow_T4_SA31698 |
| Heathrow T5 | SA32652 | Heathrow_T5_SA32652 |
| Hillingdon | SA31374 | Hillingdon_SA31374 |
| Holborn | SA31397 | Holborn_SA31397 |
| Holloway Road | SA32267 | Holloway_Road_SA32267 |
| Hounslow Central | SA31392 | Hounslow_Central_SA31392 |
| Hounslow East | SA31396 | Hounslow_East_SA31396 |
| Hounslow West | SA31384 | Hounslow_West_SA31384 |
| Hyde Park Corner | SA31699 | Hyde_Park_Corner_SA31699 |
| Ickenham | SA31479 | Ickenham_SA31479 |
| Kings Cross | SA31773 | Kings_Cross_SA31773 |
| Knightsbridge | SA31700 | Knightsbridge_SA31700 |

| | | |
|-------------------|---------|---------------------------|
| Leicester Square | SA31897 | Leicester_Square_SA31897 |
| Manor House | SA31895 | Manor_House_SA31895 |
| North Ealing | SA31483 | North_Ealing_SA31483 |
| Northfields | SA31394 | Northfields_SA31394 |
| Oakwood | SA33350 | Oakwood_SA33350 |
| Osterley | SA31800 | Osterley_SA31800 |
| Park Royal | SA31391 | Park_Royal_SA31391 |
| Piccadilly Circus | SA31368 | Piccadilly_Circus_SA31368 |
| Ravenscourt Park | SA31369 | Ravenscourt_Park_SA31369 |
| Rayners Lane | SA31395 | Rayners_Lane_SA31395 |
| Ruislip | SA31371 | Ruislip_SA31371 |
| Ruislip Manor | SA32646 | Ruislip_Manor_SA32646 |
| Russell Square | SA31896 | Russell_Square_SA31896 |
| South Ealing | SA31393 | South_Ealing_SA31393 |
| South Harrow | SA31461 | South_Harrow_SA31461 |
| South Kensington | SA31607 | South_Kensington_SA31607 |
| Southgate | SA31382 | Southgate_SA31382 |
| Stamford Brook | SA31609 | Stamford_Brook_SA31609 |
| Sudbury Hill | SA31390 | Sudbury_Hill_SA31390 |
| Sudbury Town | SA32361 | Sudbury_Town_SA32361 |
| Turnham Green | SA31470 | Turnham_Green_SA31470 |
| Turnpike Lane | SA31730 | Turnpike_Lane_SA31730 |
| Uxbridge | SA31899 | Uxbridge_SA31899 |
| Wood Green | SA31614 | Wood_Green_SA31614 |

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 03

Piccadilly Line

Access

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03.1 Night Tube

03.1.1 The Piccadilly Line is a line on which LUL operates Night Tube where train services runs overnight on Fridays and Saturdays. Access in Night Tube areas during the Night Tube Running Period (normally the period between 21:00hrs on Friday night and 06:00hrs on Sunday morning) should be avoided where practicable and only shifts should be utilised to carry out work on Sunday to Thursday inclusive, where possible.

03.2 Access Planning

03.2.1 Traction current switching times are detailed in Appendix SWI 03.1, Appendix 03.2 and Appendix SWI 03.3.

03.3 Working at Heathrow Terminal 5 Station

03.3.1 Heathrow Terminal 5 Station is owned and operated by Others.

03.3.2 Where the *Contractor* requires Access to Heathrow Terminal 5 Station for the purpose of providing the *works*, such Access is subject to additional rules and constraints as stipulated by the station owner and operator, Heathrow Express Limited, from time to time. The *Contractor* shall comply with such Access requirements when requesting and utilising Access at this station. The *Contractor* shall request Access to the Station at this site via the *Project Manager* within the timescales used for Access to all other Stations on the LUL Network.

03.3.3 The *Contractor* shall ensure that all works requiring access at Heathrow Terminal 5 Station are carried out in accordance with the rules and processes stipulated by Heathrow Express Limited.

03.3.4 The *Contractor* should note that the *Employer* owns and operates the track at Heathrow Terminal 5 Station and all applicable Access planning requirements, rules and regulations shall apply when requesting and utilising track Access at this site.

Appendix 03.1 - Guide to switching traction current on and off – Piccadilly Line

See document titled: *“Appendix SWI 03.1 - Guide to switching traction current on and off – Piccadilly Line”*

| Document Name | Issue number | Effective date |
|--|---------------------|-----------------------|
| Guide to switching traction current on and off – Piccadilly Line | 9 | 21/12/2018 |

Appendix 03.2 - Guide to switching traction current on and off – District Line

See document titled: *“Appendix SWI 03.2 - Guide to switching traction current on and off – District Line”*

| Document Name | Issue number | Effective date |
|--|---------------------|-----------------------|
| Guide to switching traction current on and off – District Line | 12 | 21/12/2018 |

Appendix 03.3 - Guide to switching traction current on and off – Metropolitan Line

See document titled: “*Appendix SWI 03.3 - Guide to switching traction current on and off – Metropolitan Line*”

| Document Name | Issue number | Effective date |
|--|---------------------|-----------------------|
| Guide to switching traction current on and off – Metropolitan Line | 13 | 21/12/2018 |

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 04

Piccadilly Line

Interfaces

Not Used

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 05

Technical Requirements

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05.1 Reliability, Availability and Maintainability (RAM)

05.1.1 The Piccadilly Line service shall have no more than 21.4 Service Affecting Failures (SAF) with an initial delay of 2 minutes or more per annum attributed to failures of the OPO CCTV Imaging and Transmission Systems (including that mounted on the train). OPO-394

05.1.2 The delay profile for SAF due to failures of the OPO CCTV System shall follow the following distribution: OPO-395

- ≥ 2 and strictly less than 5 minutes = 57% of the total number of SAF.
- ≥ 5 and strictly less than 15 minutes = 42% of the total number of SAF.
- ≥ 15 minutes = 1% of the total number of SAF.

Appendix SWI 05.1

Not Used

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 06

Piccadilly Line

Engineering Management

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 07

Piccadilly Line

Testing, Inspection and Commissioning

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

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SWI 08

Completion

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

SWI 09

Piccadilly Line

Training

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09.1 Training

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09.1 Training

- 09.1.1 The *Contractor* shall deliver two (2) training courses for the *Employer's* design and assurance staff.
- 09.1.2 The *Contractor* shall deliver two (2) training courses for the *Employer's* test and commissioning staff.

Appendix SWI 09.1

Not Used

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 10

Cyber Security

Not Used

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

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SWI 11

Information Management

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

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SWI 19

Health and Safety

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SWI Appendix 19.1 – QUENSH Menu

See SWI Appendix 19.1 for the Piccadilly Line QUENSH Menu

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 20

Working with the Employer and Others

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20.1 Glossary

20.1.1 The following terms are applicable to this SWI 20:

| Term | Definition |
|------|--------------------------------|
| BAA | British Airports Authority plc |

20.2 Heathrow Terminal 5 Station

20.2.1 Heathrow Terminal 5 station on the Piccadilly Line is owned by Heathrow Airports Holdings (formally BAA) and is operated by Heathrow Express.

Appendix SWI 20.1

Not Used

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 21

Environment

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

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SWI 22

Quality Assurance

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 23

Management and Administration of the Contract

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 24

Project Controls and Reporting

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 25

Programme

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 26

Subcontracting

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 27

Responsible Procurement

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 28

Accounts and Records

See Common Works Information

Deep Tube Upgrade Programme

OPO CCTV System

Specific Works Information

Piccadilly Line

SWI 29

Standards and Guidance

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| 29.2 | Glossary | 1 |
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29.1 General

This SWI document contains the NACHS tables for the Piccadilly Line.

29.2 Glossary

| Term | Definition |
|-------------|---|
| NACHS table | "NACHs" or "Nominally Accumulated Customer Hours" means the system of weights used to estimate the cumulative additional perceived journey time encountered by Customers as a result of planned or unplanned Service Disruptions. |
| DLS | Depot Late Start |
| FLS | Full Line Suspension |
| PLS | Partial Line Suspension |
| SPR | Speed Restriction |
| TCN | Train Cancellation |
| TDG In | In service Train Degradation |
| TDG Out | Out of Service Train Degradation |
| TDL | Train Delay |

29.3 List of Tables

| Title | Version |
|--------------|---------|
| Picc DLS | V28 |
| Picc FLS | V28 |
| Picc PLS | V28 |
| Picc SPR | V28 |
| Picc TCN | V28 |
| Picc TDG In | V28 |
| Picc TDG Out | - |
| Picc TDL | - |